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1 Xpanel Installation

1.1 Installation

Xpanel Designer is a software that allows users to create projects. You can download any version of the software on Cimon website (www.cimon.com).

- When you install Xpanel Designer, check for the software version compatible with product.
- A project created in the higher version cannot be executed in the lower version.
- To establish connection between PC and product, you must download a separate program according to the following OS versions:
  If the OS version is Windows XP, 'ActiveSync' is required.
  If the OS version is Windows 7 and above, 'Mobile device center' is required.
  You can download each program on Microsoft website (www.microsoft.com).

In order to use the project properly, please check if a model is compatible with the software version. The products which do not supported in the Xpanel Designer version are listed in tables below.

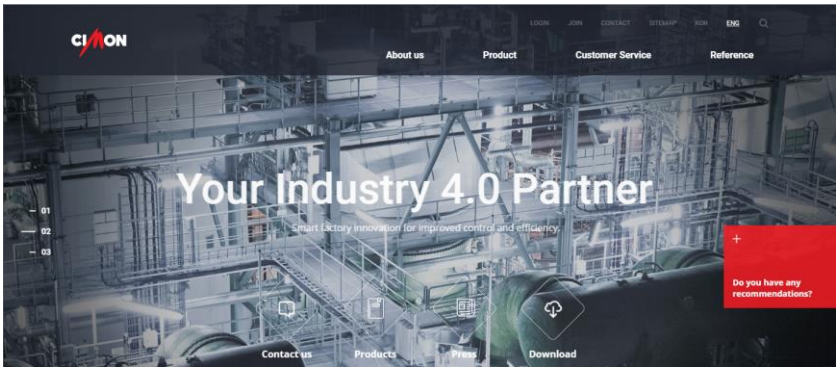
Products not supported between Xpanel Designer 2.11 and 2.35 versions	
CM-XT05	CM-XT06
CM-XT10CA	CM-XT12CA

Products not supported for Xpanel Designer 2.40 / 2.50 / 2.52 version	
CM-XT04CB	CM-XT05MB
CM-XT05SA	CM-XT05SB
CM-XT06CB	CM-XT07CB
CM-XT10CC	CM-XT10CB
CM-XT12CB	CM-XT12CA

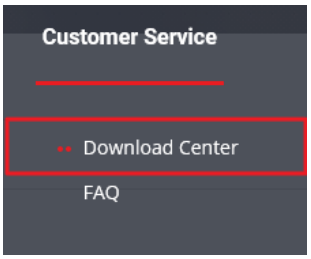
Installation of Xpanel Designer

Follow the steps below to download the Xpanel Designer.

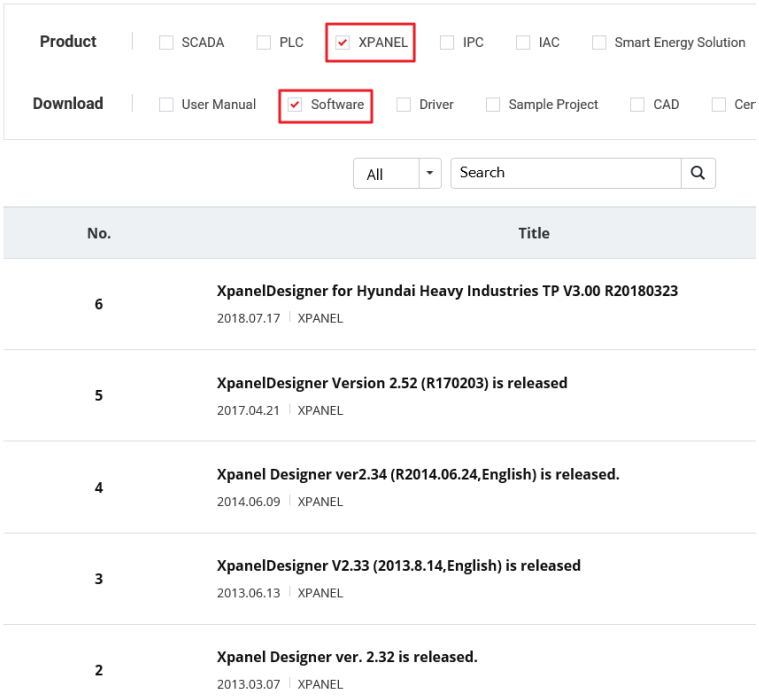
a) Go to Cimon website (www.cimon.com).



b) Go to [Customer Service] - [Download Center] on the top menu of the website.

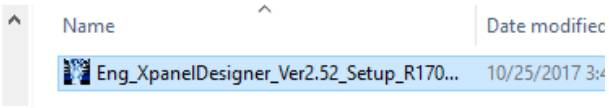


c) Set the filter as shown below, then you can easily find the list of software. Find the Xpanel Designer version you wish to download.

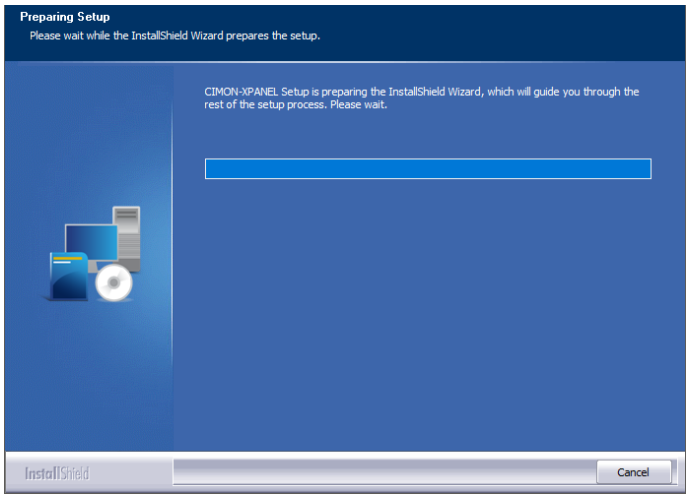


d) Click the download file at the bottom of the page.

e) Execute the installer file on the directory.

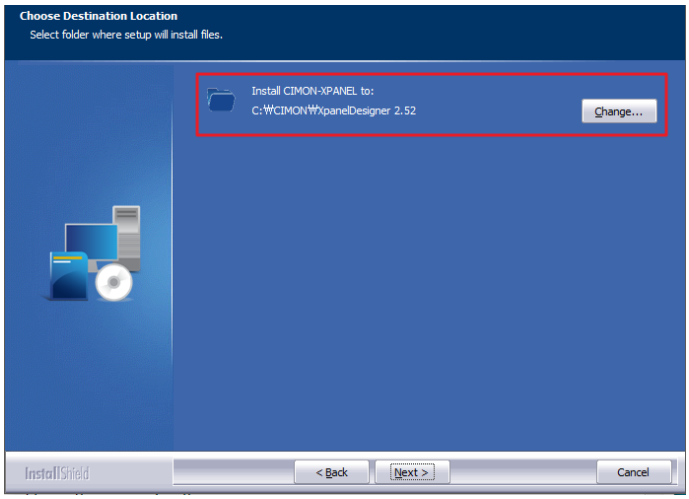


f) Wait until the Installshield program is executed. It may take a while depending upon the system environment.



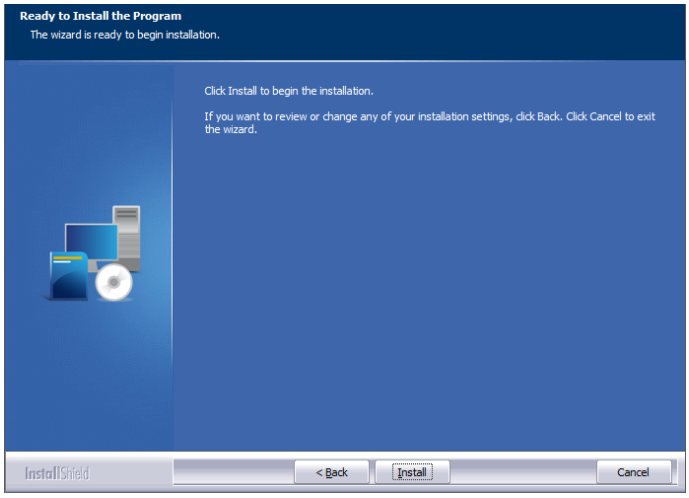
g) Read the End User License Agreement. You must accept the agreement to continue the installation. Select a button labeled 'Accept' and press [Next].

h) Specify the location of Xpanel Designer and press [Next] button. If you have not changed the path, software will be installed in 'C:₩CIMON₩XpanelDesigner "Version"' as default. The default path may differ depending on the version of Xpanel Designer.

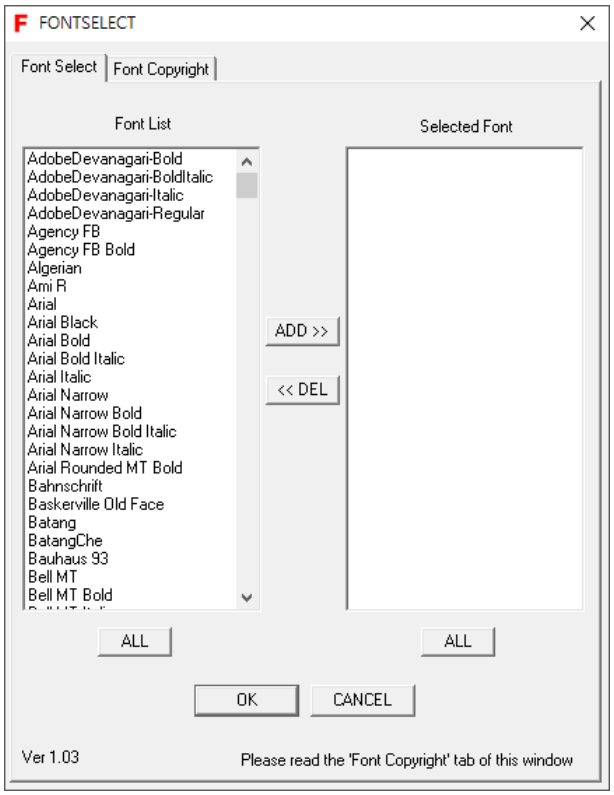


- Xpanel Designer 2.50 and below versions are installed in 'C:₩CIMON₩Xpanel' by default. If you install the higher version upon the lower version, the program will automatically upgrade the software version.
- From Xpanel Designer 2.52 version, the software is installed in the separated path.

i) Now it is ready to install the software. Press [Install] button to begin the installation.

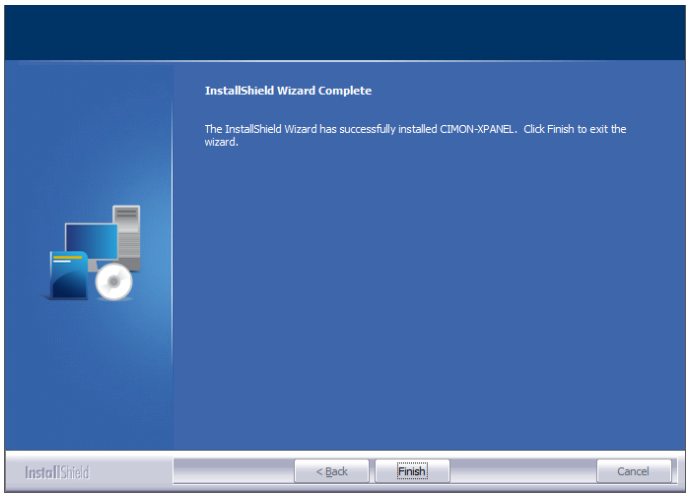


j) A 'Font Select' window will appear as the installation starts. Fonts in the PC are listed in the left side of window. You may add or except the selected fonts for using in the project.

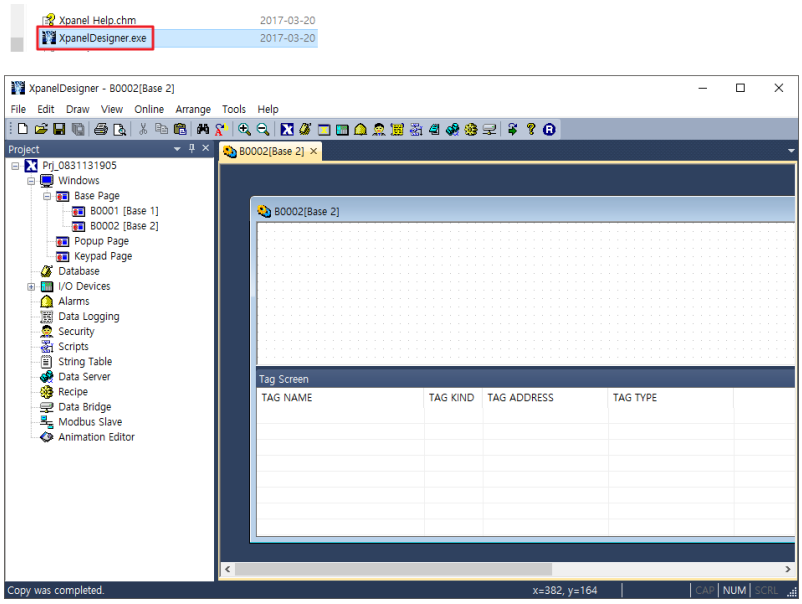


⚠ The use of illegally downloaded fonts can be subject to legal action, and Cimon will not be held liable in such cases. Please make sure to look up the license of any font you wish to use in the Xpanel project.

k) Press [Finish] button to end the Xpanel Designer installation.



l) Launch the Xpanel Designer to check if the installation is successfully done.



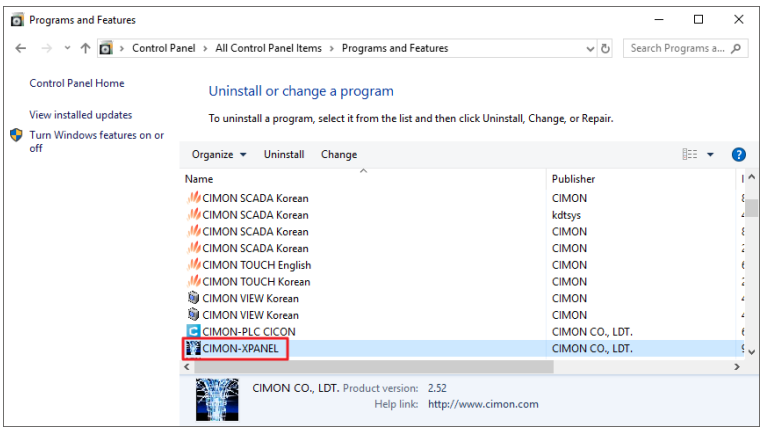
1.2 Uninstall

This section describes the procedure of uninstalling Xpanel Designer.

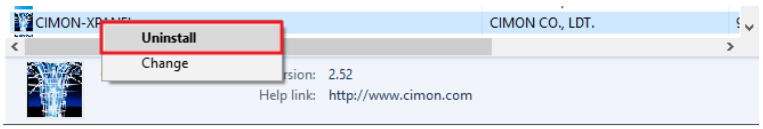
Uninstalling Xpanel Designer

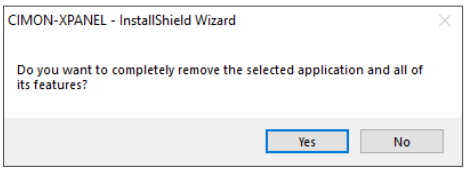
Follow the steps below for the removal of the Xpanel Designer.

a) Open the control panel and go to 'Uninstall or change a program'. Select the Xpanel Designer from the list.

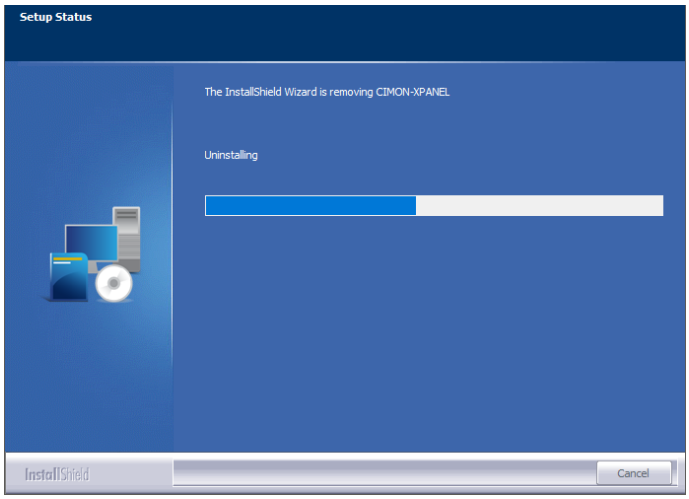


b) Double-click the item or right-click and press [Delete] to begin the uninstallation process.





c) Wait until the program is uninstalled. It may take a while depending upon the system environment.



d) When the uninstall program is closed, you can check the application is successfully removed from the path.

2 Starting Xpanel

2.1 Xpanel Designer Startup

Xpanel Designer is a project editing tool to build a system. With various features available in Xpanel Designer, the users can create projects that suits their needs through various configurations.

2.1.1 Xpanel Designer Startup

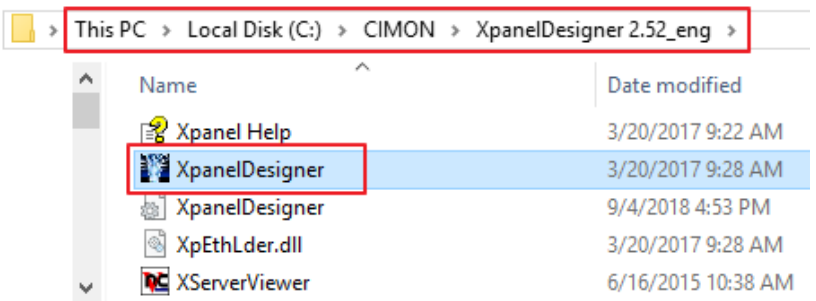
The users can launch Xpanel Designer manually by clicking the application icon or automatically by configuring the application to run upon Windows boot up.

2.1.2 Xpanel Designer Shortcut

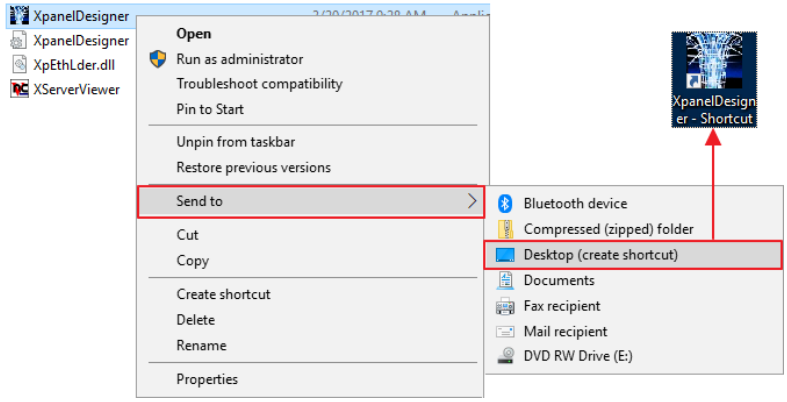
Shortcut for executing Xpanel Designer as administrator

By creating a shortcut icon of Xpanel Designer, the user can start up the program easily.

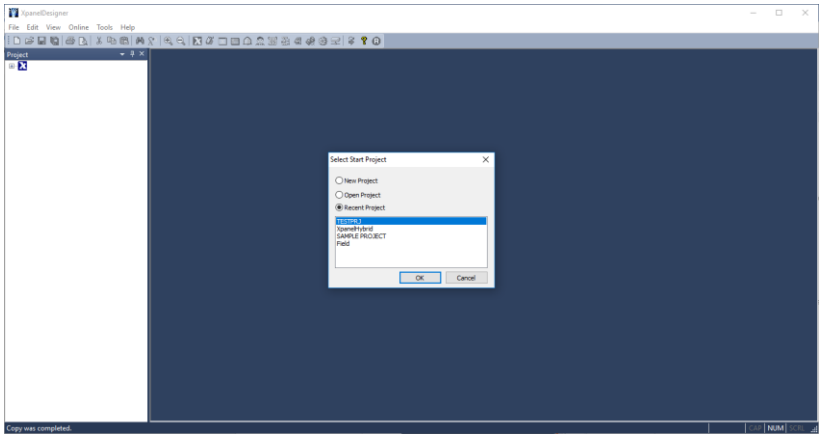
a) Go to Xpanel Designer installed path. The default path is C:₩CIMON₩"XpanelDesigner *Version*_Eng" and it may differ according to the user's system environment.



b) Right-click the “XpanelDesigner.exe” icon and click [Send to] - [Desktop (create shortcut)]. The shortcut icon of Xpanel Designer will appear on the desktop.



c) Double-click the icon to check if Xpanel Designer opens properly. If there are any saved projects from the previous editing sessions, select the project to continue editing.



2.1.3 Xpanel Designer Autorun

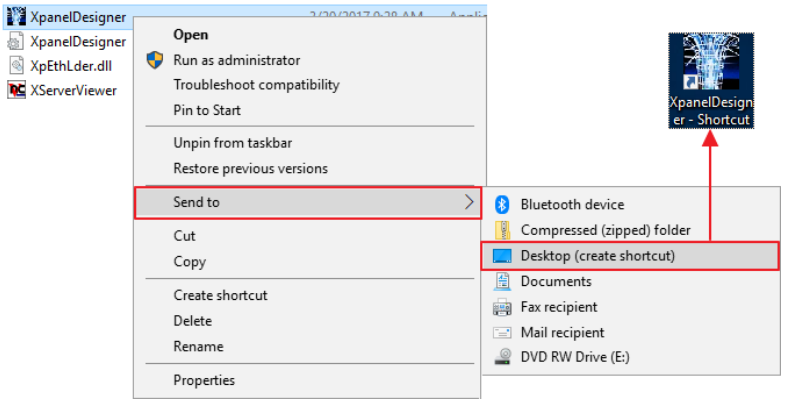
Registering Xpanel Designer as a starting program

The user can configure Xpanel Designer to run automatically when booting up the Windows. Setup methods may differ depending on the versions of Windows.

For the OS versions below Windows 8, Xpanel Designer needs to be added in the [Startup] folder. For Windows 8 and above, Xpanel Designer needs to be added in the [Task Scheduler].

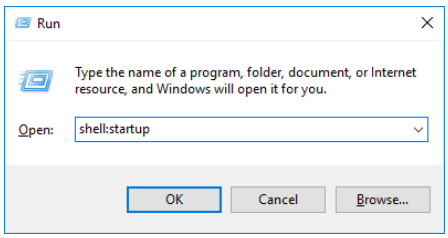
(1) OS version below Windows 8 (Windows XP, Windows 7, etc.)

a) Right-click on the “XpanelDesigner.exe” icon. Click [Send to] - [Desktop (Create Shortcut)] on the pop-up menu.

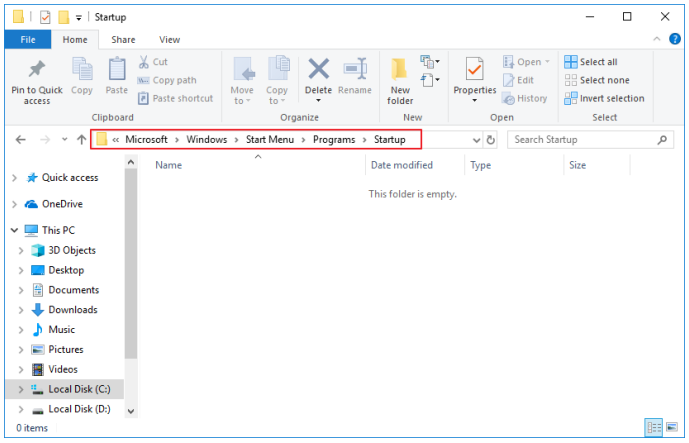


b) Open the [Startup] window.

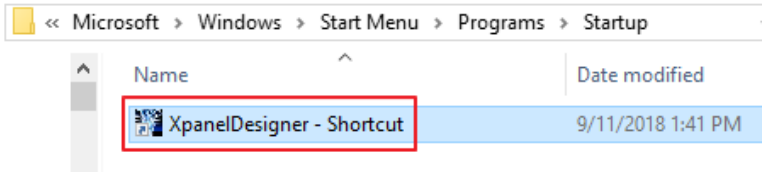
- Press [Windows] + [R] keys to open the [Run] window. Enter “shell:startup” in the input box and press [OK].



- Open the [File Explorer] and enter “Startup” in the path field as shown below.

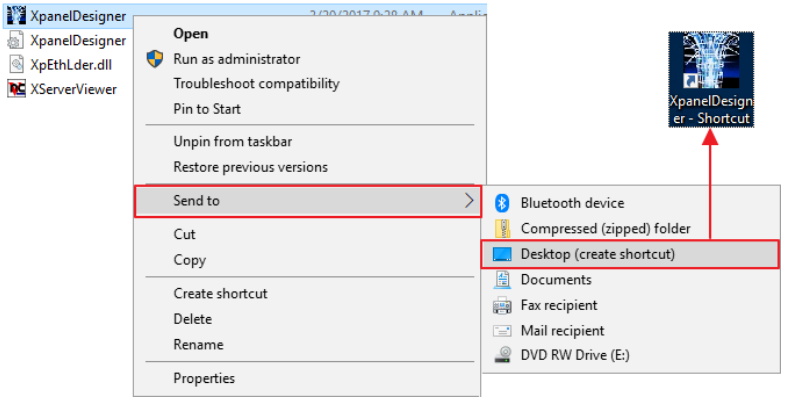


c) Move shortcut icon of Xpanel Designer into the [Startup] folder.

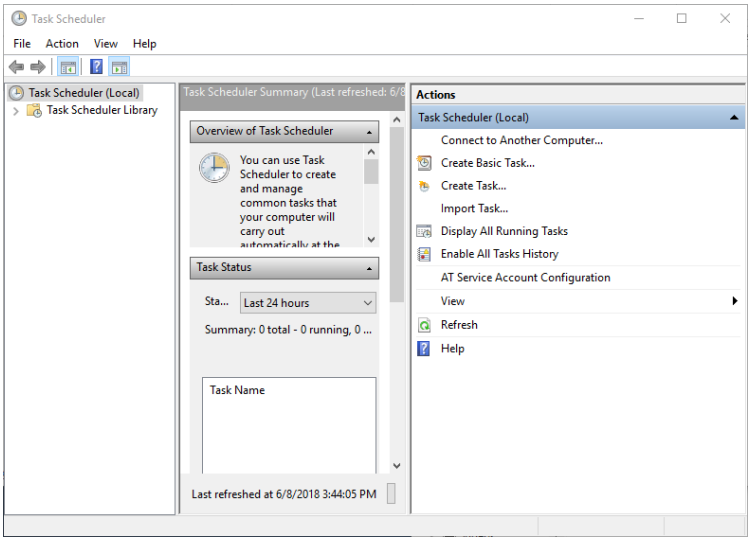


(2) Windows 8 and above (Windows 8, Windows 8.1, Windows 10)

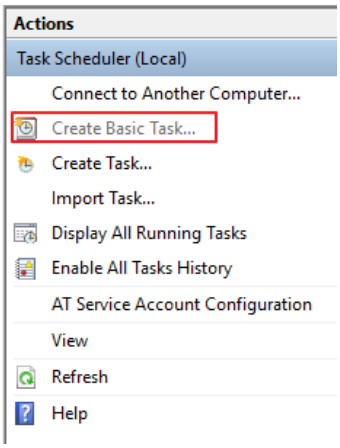
a) Right-click on the “XpanelDesigner.exe” icon. Click {Send to] - [Desktop (create shortcut)] on the pop-up menu.



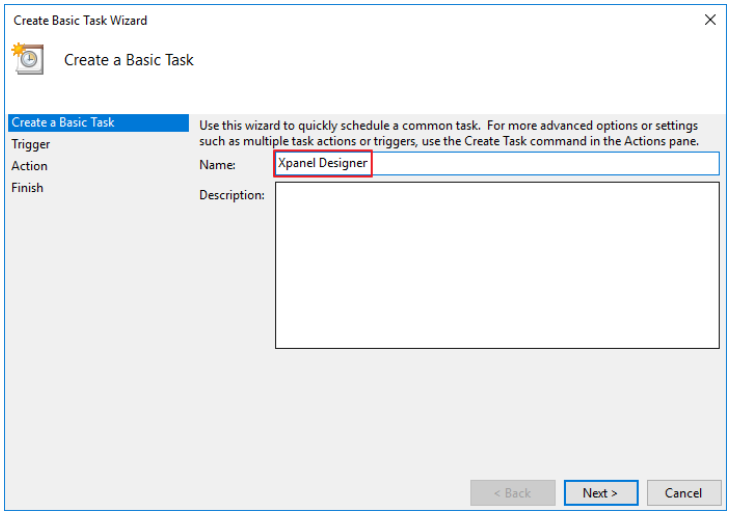
b) Open the [Control Panel] and go to [Administrative Tools] - [Task Scheduler].



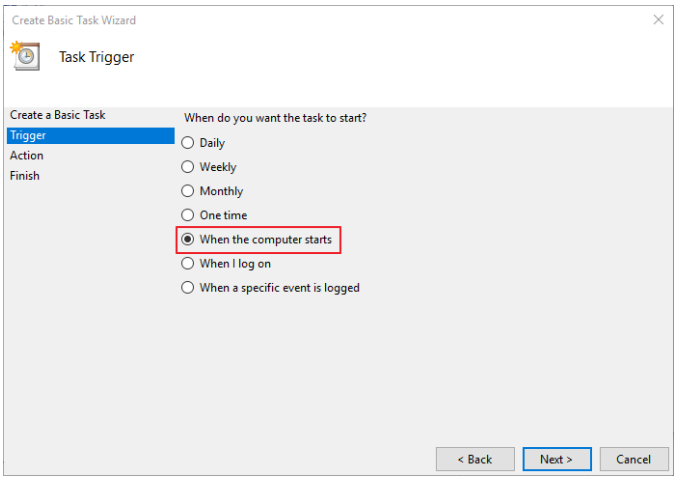
c) Click [Create Basic Task…] on the top right side of the [Task Scheduler] to open the [Create Basic Task Wizard].



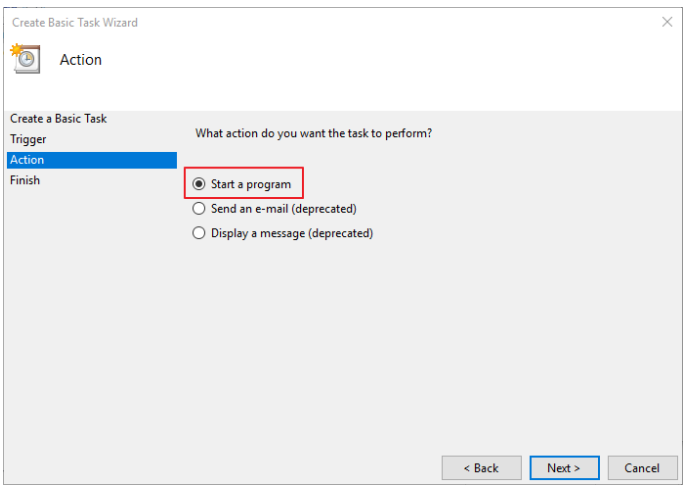
d) In the [Create a Basic Task] window, enter “Xpanel Designer” in the name field, then press [Next].



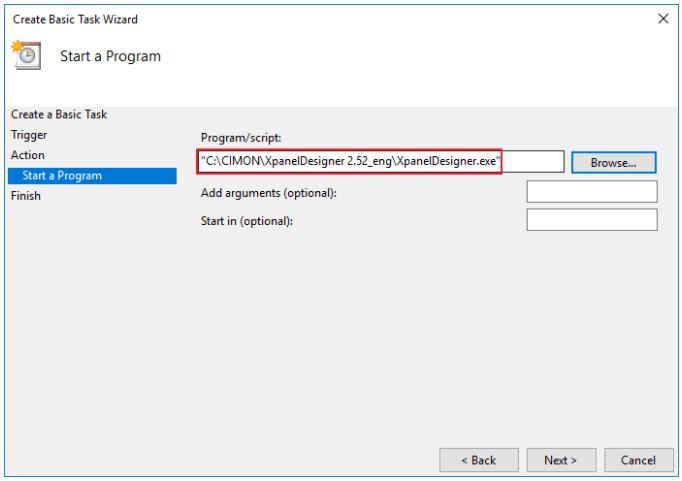
e) In the [Trigger] window, select [When the computer starts] option and press [Next].



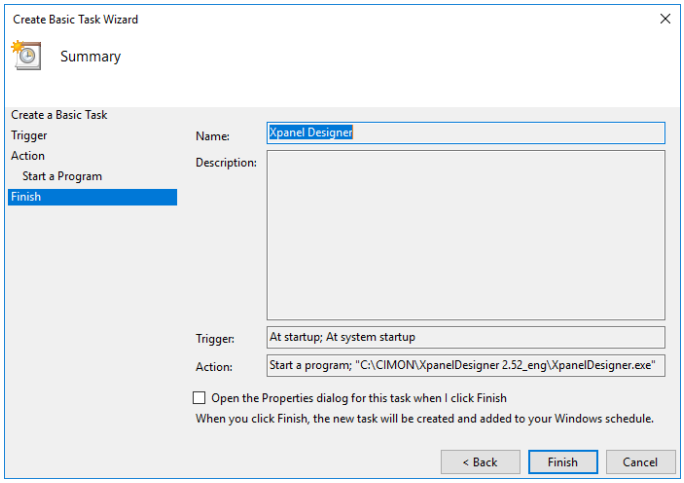
f) In the [Action] window, select [Start a program] option and press [Next].



g) Press the [Browse…] button on the right side of the [Program/Script] field and select the shortcut icon of Xpanel Designer.



h) Finish the configuration by pressing the [Finish] button on the window.

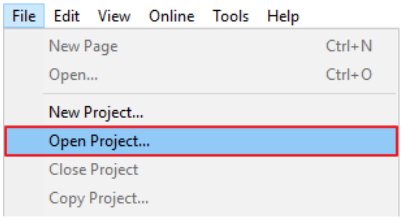


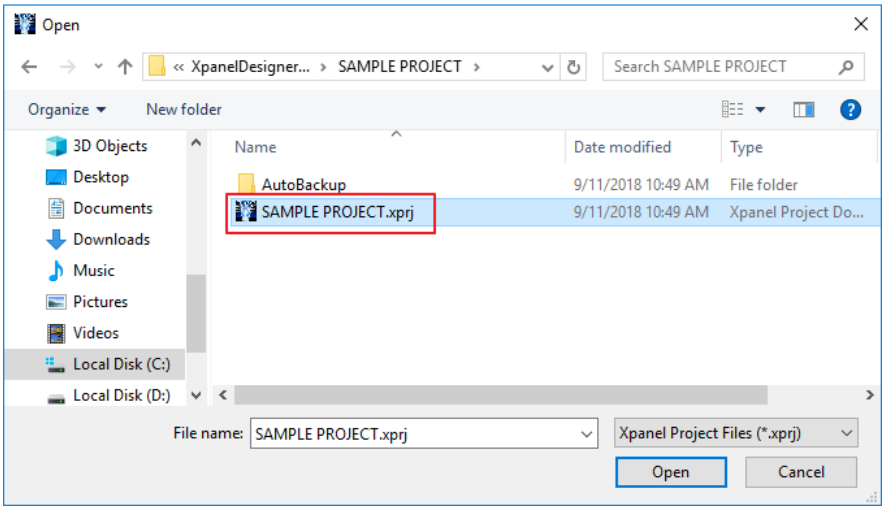
2.1.4 Xpanel Designer Project Execution

Opening project in Xpanel Designer

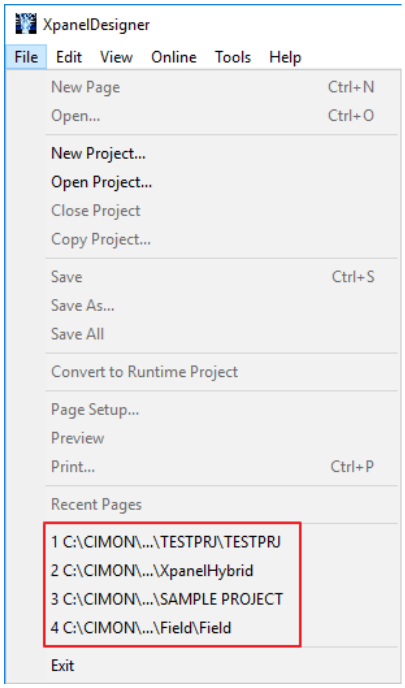
a) Go to [File][- [Open Project] in Xpanel Designer and select a project to open. Only project files with "*.prj" or "*.xprj" file formats can be opened. The default path of the project files is "C:₩CIMON₩XpanelDesigner *Version*_Eng₩*Project Folder*".

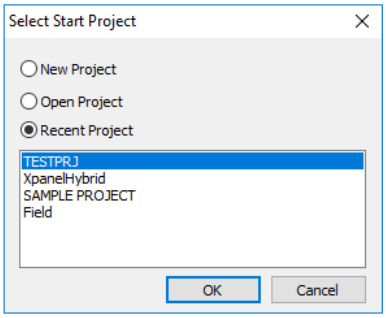
> ⚠ Please be noted that the default project file extension may differ according to the Xpanel Designer version.
> - Below Xpanel Designer V2.40: "*.prj"
> - Xpanel Designer V2.40 and above: "*.xprj"
>
> In the Xpanel Designer V2.40 and above, you may open both "*.prj" and "*.xprj" file format. In the Xpanel Designer below V2.40, you can only open "*.prj" file format.



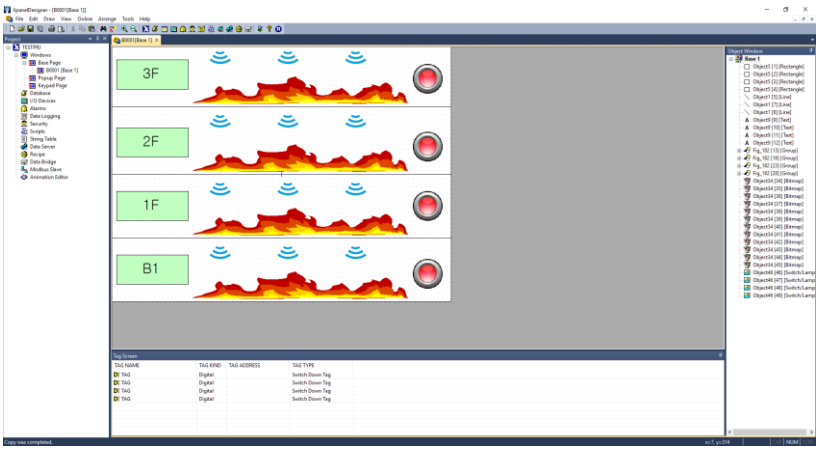


b) In the startup page of Xpanel Designer or at [File] menu, the recently edited projects can be found. The user can also browse or create new projects on the startup page. The user can view up to the 4 most recent projects on the startup page or the [File] menu.





c) The desired project will be opened in Xpanel Designer.

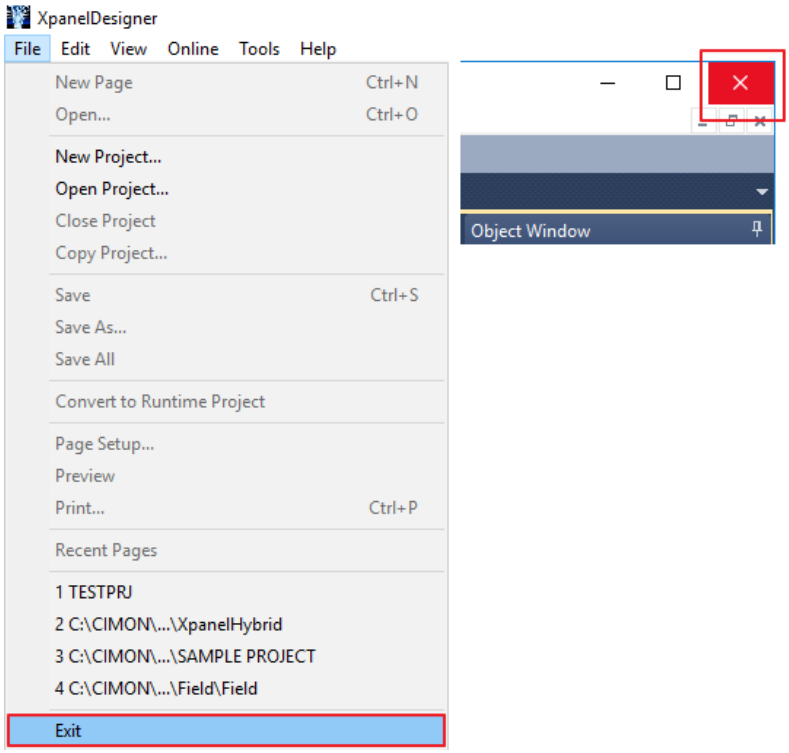


2.2 Xpanel Designer Termination

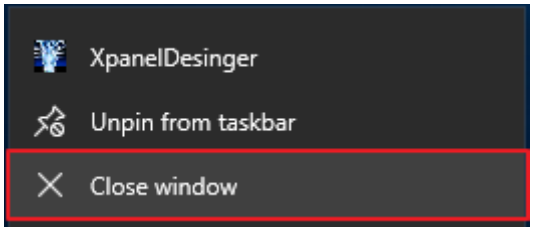
This section will discuss various methods of terminating Xpanel Designer.

Xpanel Designer Termination

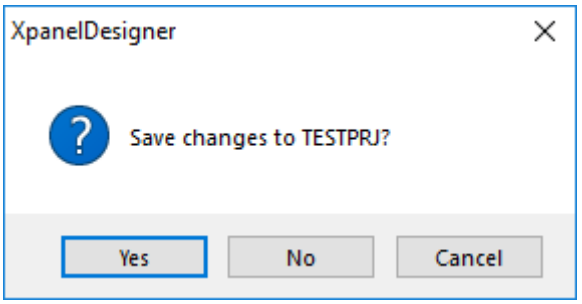
a) Go to [File] - [Exit] or click [X] button on the top right corner of Xpanel Designer.



b) Right-click Xpanel Designer on the taskbar and select [Close window]. Xpanel Designer can also be closed by pressing [Alt] + [F4].

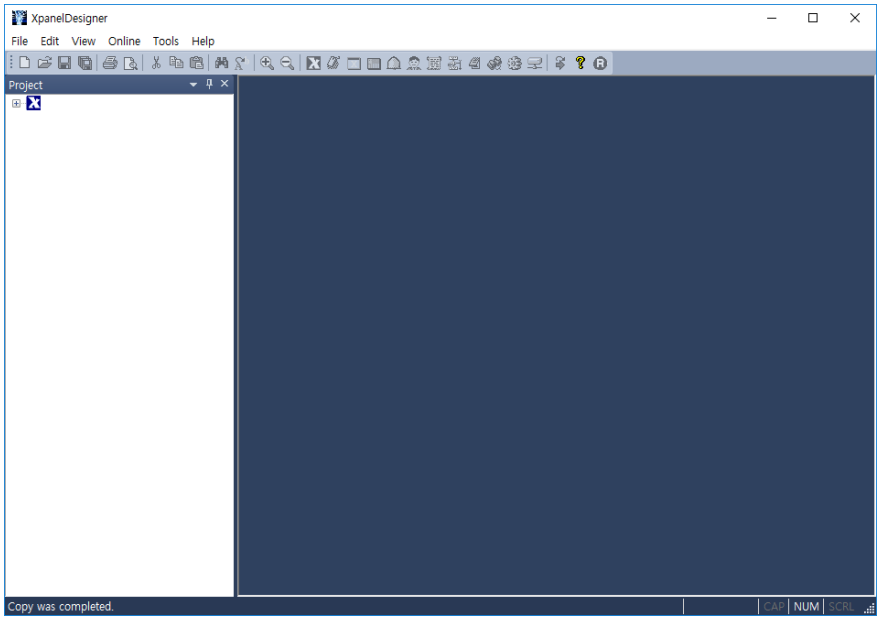


c) If the changes are not saved, the following dialog box will appear.



Item	Description
Yes	Saves the changes and closes Xpanel Designer.
No	Does not save the changes and closes Xpanel Designer.
Cancel	Cancels the termination of Xpanel Designer.

2.3 Xpanel Designer Startup Screen

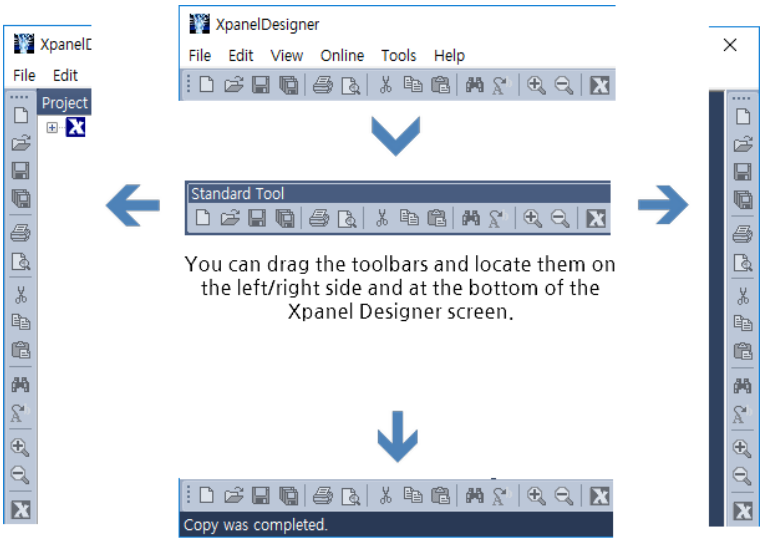


The figure shows the startup page upon the execution of Xpanel Designer.

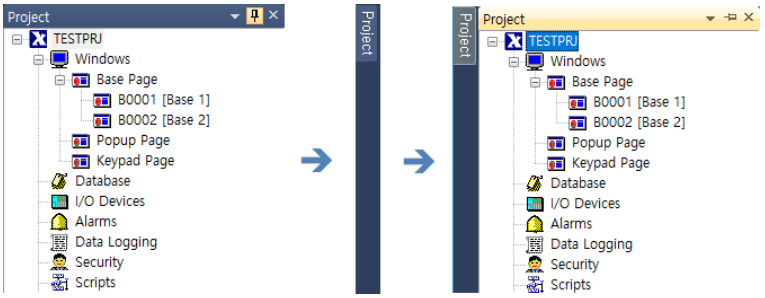
Projects can be created or opened by going through the top menu bar. Once created or opened, additional menus become enabled to interact with the project. The project workspace allows easy management and modifications of the projects. The status toolbar which is positioned at the bottom of the window shows additional information of a selected resource.

2.3.1 Xpanel Designer Startup Page Interface

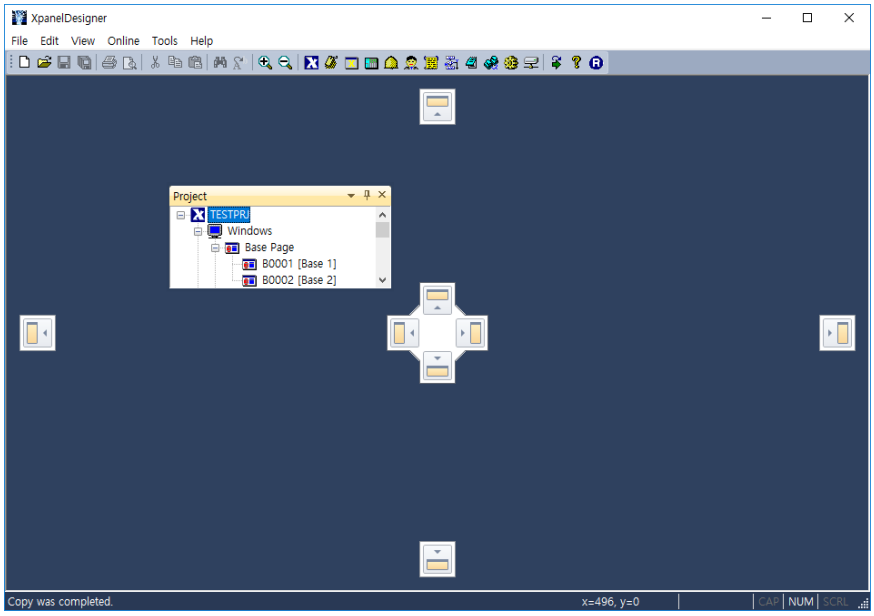
The position of toolbars can be modified according to the users' preference. The toolbars can be dragged to be docked on the selected locations or float at a desired region.



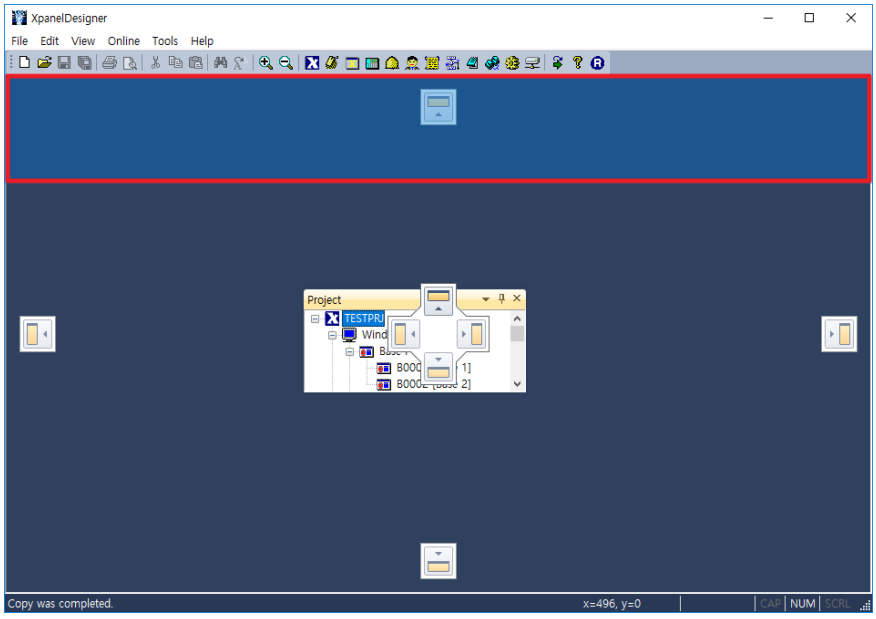
To increase the working space, the project workspace and toolboxes can be minimized. Clicking the [Downpin] button will minimize the side panel. Clicking the [Pinned] button will fix the panel to the screen.



The figure below shows various regions where the side panel can be docked.



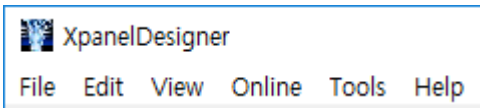
By dragging the panel over a selected region, the corresponding region will be highlighted to indicate where the panel will be docked.



2.3.2 Xpanel Designer Menu

This section describes the initial state of the top menu and the additional menus according to the executed module. You can check the version information of modules only in the Xpanel Designer V2.40 and above.

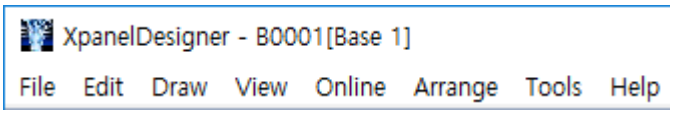
※ Refer to each item's manual for more information.



Name	Description
File	Opens or closes files in Xpanel Designer.
Edit	This menu is disabled in this state of Xpanel Designer.
View	Toggles to hide or show a toolbar of Xpanel Designer. Various options include the standard tool, status tool, and project workspace.
Tools	This menu is disabled in this state of Xpanel Designer.
Help	Displays the information and help of Xpanel Designer.

(1) Page Edit Menu

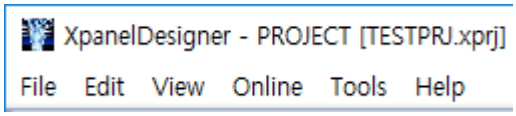
Once a project is opened in Xpanel Designer, the additional menus will be added to the top menu and items will be added to the initial menus.



Name	Description
File	[Close], [Close All Page], [Recent Page] are added.
Edit	[Undo], [Redo], [Clone], [Select All], [Object Config], [Insert Graphic File], [Insert Animation Bitmap] are added.
View	[Redraw], [Current Page Position To Runtime], [Tag Window], [Object Window], [Switch/Lamp Tool], [Tag View Tool], [Zoom in/Out] are added.
Tools	[Page Setup], [User Library Edit], [Bitmap Edit] are added.
Help	[About Graphic Designer] is added.

(2) Project Management Menu

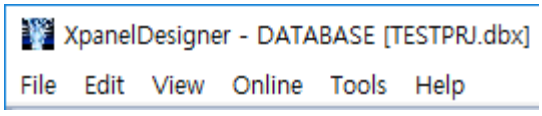
When selecting [Tools] - [Project], following item will be added to the [Help] menu.



Name	Description
Help	[About Project Manager] is added.

(3) Database Menu

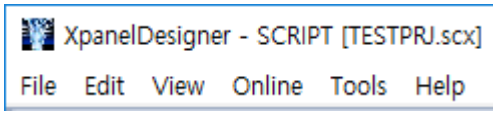
When opening the [Database] window, following items will be added to [Edit] and [Help] menu.



Name	Description
Edit	[New Tag], [Edit Tag] are added.
Help	[About Database Manager] is added.

(4) Script Menu

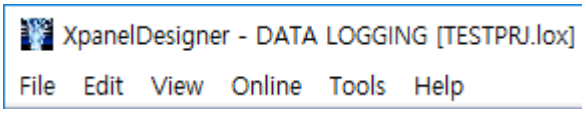
When opening the [Scripts] editor window, following items will be added to [Edit] and [Help] menu.



Name	Description
Edit	[Add New Script], [Edit Script], [Compile Script], [Compile All Scripts] are added.
Help	[About Script Editor] is added.

(5) Data Logging Menu

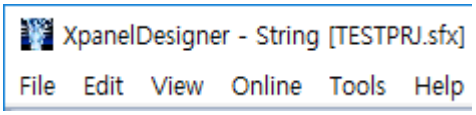
When selecting [Tools] - [Data Logging], following item will be added to [Help] menu.



Name	Description
Help	[About Data Logging] is added.

(6) String Editor Menu

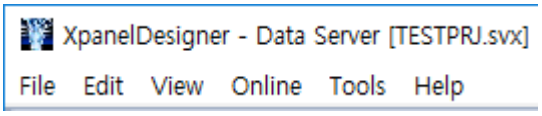
When selecting [Tools] - [String Editor], following items will be added to the [Edit] and [Help] menu.



Name	Description
Edit	[Add String Group], [Delete String Group], [Add String], [Edit String], [Delete String], [Column Property] area added.
Help	[About String Editor] is added.

(7) Data Server (Modbus Slave) Menu

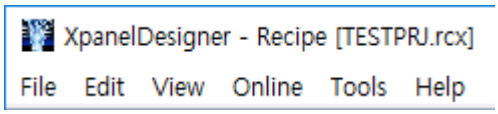
When selecting [Tools] - [Data Server], following items will be added to the [Edit] and [Help] menu.



Name	Description
Edit	[Slave Tag registration], [Slave Tag Edit], [Slave Tag Cancels] are added.
Help	[About MODBUS SLAVE] is added.

(8) Recipe Menu

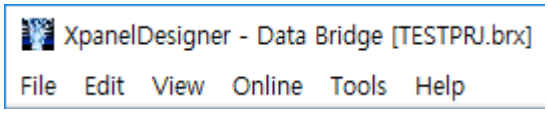
When selecting [Tools] - [Recipe], following items will be added to the [Edit] and [Help] menu.



Name	Description
Edit	[Add Recipe Model], [Edit Recipe Model], [Delete Recipe Model], [Edit Group Name], [Edit Data Name], [Upload Recipe Data From XPANEL] are added..
Help	[About Recipe Editor] is added.

(9) Data Bridge Menu

When selecting [Tools] - [Data Bridge], following items will be added to the [Edit] and [Help] menu.



Name	Description
Edit	[Add Data Bridge Model], [Edit Data Bridge Model], [Delete Data Bridge Model], [Add Data Bridge Tag], [Edit Data Bridge Tag], [Delete Data Bridge Tag] are added.
Help	[About Data Bridge Editor] is added.

2.3.3 Standard Tool

The standard toolbar contains frequently-used commands in Xpanel Designer. Go to [View] - [Standard Tool] to show or hide the toolbar on the top menu. When you execute the Xpanel Designer application, this toolbar shows up on the top menu as default. This toolbar consists of 'Edit tools' and 'Execution tools'.

Edit Tools

These tools are used to edit the graphic page: [New Page], [Open], [Save], [Copy], etc. Refer to the table below for features and their descriptions.

Item	Description
New Page	Creates a new graphic page for the project.
Open	Opens an existing graphic page.
Save	Saves the currently designing graphic page.
Save All	Saves all pages.
Print	Shows the [Print] dialog box.
Preview	Shows the [Print Setup] dialog box.
Cut	Cuts the selected object.
Copy	Copies the selected object
Paste	Pastes the cut or copied object.
Find	Shows a dialog box to find a string.
Replace	Shows a dialog box to find a string and replace it.
Zoom In	Enlarges the magnification of the selected page. (V2.50 or above)
Zoom Out	Reduces the magnification of the selected page. (V2.50 or above)

※ For more information about each feature, please refer to the corresponding manual.

Execution Tools

Execution tools consist of commands for executing the project. Refer to the table below for features and their descriptions.

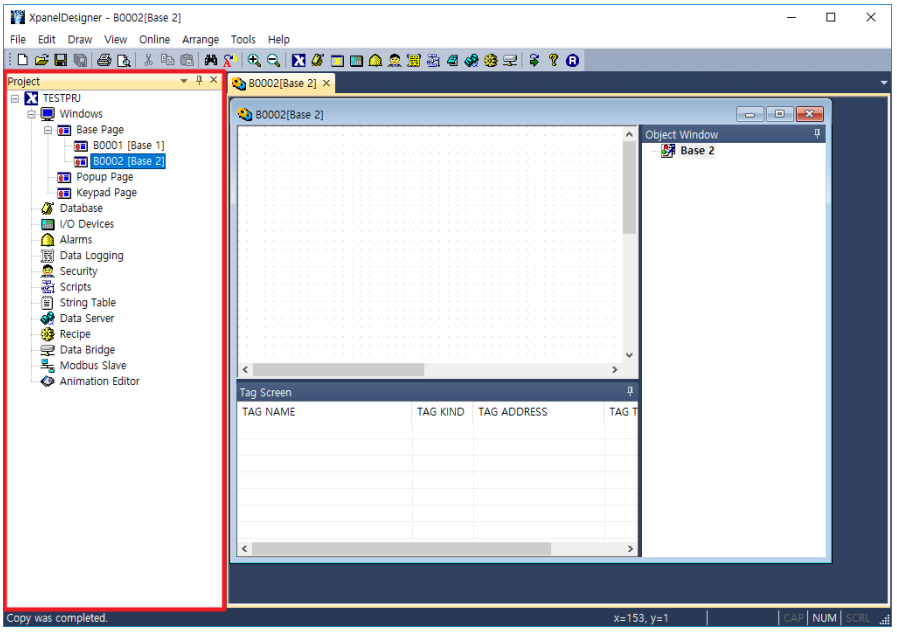
Item	Description
Project	Shows the dialog box about information or configuration of the current project.
Database	Shows the [Database] configuration dialog box.
XPANEL Setup	Shows the [XPANEL Setup] configuration dialog box.
I/O Devices	Shows the [I/O Devices] configuration dialog box.
Alarms	Shows the [Alarm] configuration dialog box.
Security	Shows the [Security] configuration dialog box.
Data Logging	Shows the [Data Logging] configuration dialog box.
Script	Shows the [Script] configuration dialog box.
String Editor	Shows the [String Editor] dialog box.
Data Server	Shows the [Data Server] configuration dialog box.
Recipe Editor	Shows the [Recipe Editor] dialog box.
Data Bridge	Shows the [Data Bridge] configuration dialog box.
Download to XPANEL	Shows the [Download to XPANEL] dialog box.
Help	Shows the [CIMON-Xpanel Help] window.
PC Runtime	Executes the PC runtime with the connected TOUCH PC.

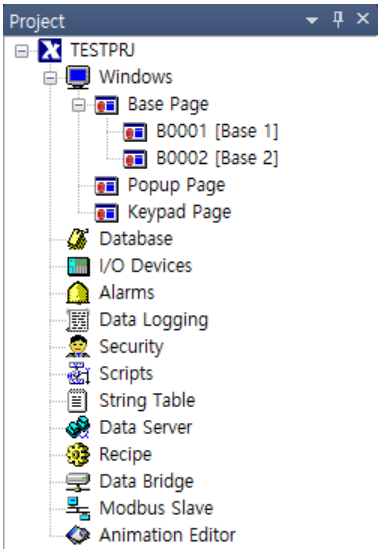
※ For more information about each feature, please refer to the corresponding manual.

2.3.4 Project Workspace (Project)

Project Workspace is an area where the windows and features of Xpanel are listed. It is convenient for project management and modification.

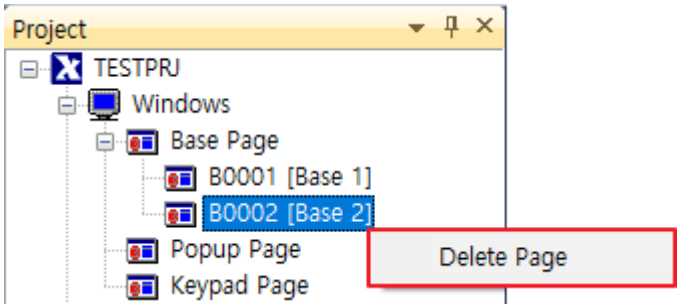
You can show or hide the project workspace at [View] - [Project Workspace]. The project workplace is located on the left side of the screen as default.





Various Xpanel Designer windows such as pages and modules can be quickly executed from this tab. Double-click the item to open the page or module.

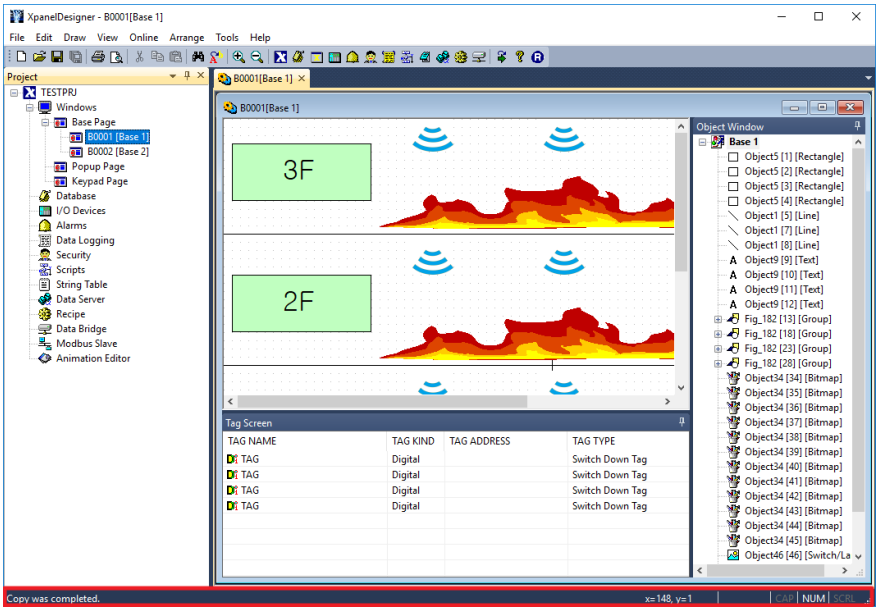
To delete a page, right-click on the page to be deleted and select [Delete Page]. A window will appear asking the user to confirm the page deletion. The page can also be deleted by selecting the page and pressing the [Delete] key.



2.3.5 Status Tool

[Status Tool] show the current state of Xpanel Designer. The status toolbar will contain a short status message of Xpanel Designer, location of the cursor, and the lock status of the keyboard.

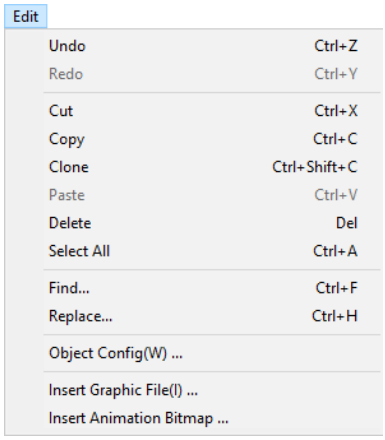
The status toolbar can be hidden or shown through [View] - [Status Tool]. The Status tool is shown at the bottom of the application as the default setting.



(1) Copy was completed.	(2) x=592, y=299	(3) CAP | NUM | SCRL

No.	Description
(1)	Displays the status message of Xpanel Designer.
(2)	Shows the cursor's coordinate on the current graphic page. The coordinate is expressed in x and y, in pixel units. If there are objects on the graphic page, the exact coordinates of the object can be acquired by selecting it.
(3)	Shows the lock status of your keyboard. Depending on the keyboard locks such as Caps Lock, Num Lock, and Scroll Lock, corresponding string lights up.

2.4 Edit Menu



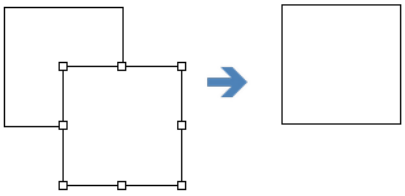
[Edit] menu is located on top menu bar of Xpanel Designer. With this menu, you can edit your own graphic page. [Edit] menu includes basic features such as cut, copy, paste and delete. You can also insert certain objects such as an Animation Bitmap or images on the graphic page.

Contents of the [Edit] menu may differ according to the object or module you have selected.

2.4.1 Undo

'Undo' reverses the last action or command applied to an object. You can execute 'Undo' up to 32 times.

Hotkey: **Ctrl + Z, Alt + E + U**

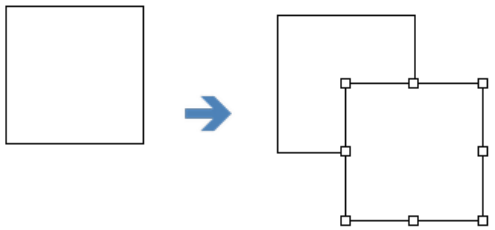


'Undo' reverses the last action or command applied to an object.

2.4.2 Redo

'Redo' reverses the last undo action or command applied to an object.

Hotkey: **Ctrl + Y, Alt + E + R**

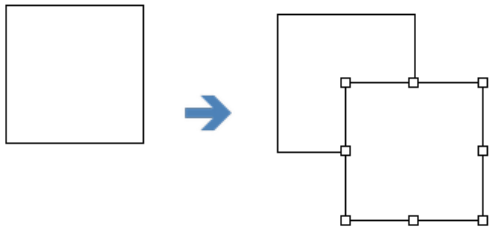


'Redo' reverses the last undo action applied to an object.

2.4.3 Cut

'Cut' command cuts the currently selected object(s) from the graphic page and copies them to the clipboard. You can use 'Paste' command to paste an object(s) that has been cut to the clipboard.

Hotkey: **Ctrl + X, Alt + E + T**



'Redo' reverses the last undo action applied to an object.

2.4.4 Copy

'Copy' command copies the currently selected object(s) and copies them to the clipboard. Unlike the 'Cut' command, copied objects are not erased from the graphic page.

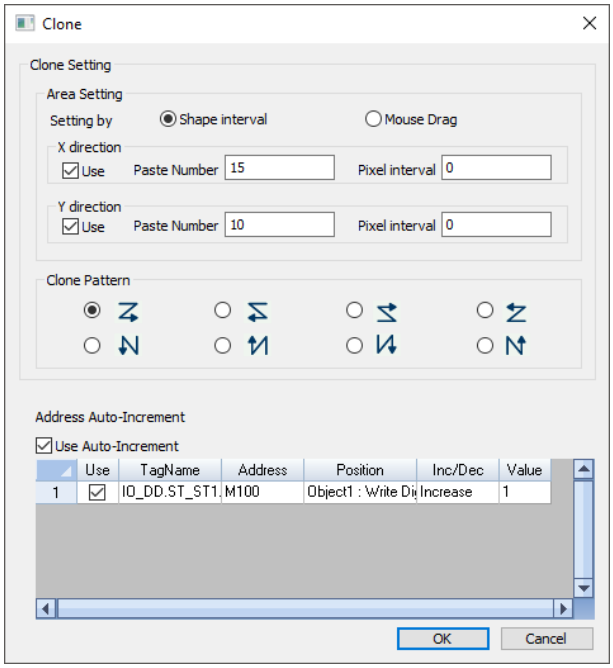
Hotkey: **Ctrl + C, Alt + E + C**

2.4.5 Clone

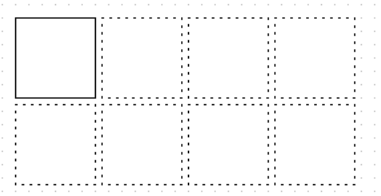
'Clone' command copies and pastes an object multiple times at once. Cloned objects are of identical configuration as the original object. If a tag is cloned, there is an option to differentiate the name of tag and addresses and register them as new tags automatically.

Select the object to be cloned. Go to [Edit]-[Clone] then following dialog box appears.

Hotkey: **Ctrl + Shift + C, Alt + E + S**



(1) Settings

Item	Description	
Area Setting	Configures the range of object cloning.	
	Shape Interval	User can configure the space between the cloned objects by pixes.
	Mouse Drag	User can check the location of object(s) to be cloned through preview. When the location is decided, click on the graphic page. 
	X / Y Axis	Clones the object vertically or horizontally.
	Numbers of Copy[1]	Assigns the number of copy. From 0 to 1024 can be assigned. The maximum number of copy is assigned as default. The default value is decided on the basis of the original location and the size of object. An object can be cloned up to 1024.
	Pixels of Space	Assigns the space between cloned objects by pixels. You can clone the objects within spaces from the location of original object. If you have selected 'Space (By mouse)' option, 'Pixels of Space' option is disabled.
Clone Pattern	User can decide the direction of object cloning.	
Address Auto-Increment	Clones the assigned tag addresses according to user's configuration.	

[1] Total number of copies = (X axis 'Numbers of copy') x (Y Axis 'Numbers of copy')

(2) Auto tag generation

The table below is the list of devices that supports the 'Auto tag generation' feature.
Please check if that your device is compatible with the feature.

Manufacturer	Driver Name	I/O Device Type
CIMON	CIMON-PLC	Ethernet
	CIMON-PLC HMI	Serial
	CIMON-PLC Loader	Serial
	CIMON XPANEL	Ethernet
MITSUBISHI	MITSUBISHI MELSEC 3C (QCPU)	Serial
	MITSUBISHI MELSEC 3C (High Speed)	Serial
	MITSUBISHI MELSEC 3E	Ethernet
	MITSUBISHI MELSEC-Q Loader (Q00/01)	Serial
	MITSUBISHI MELSEC-Q Loader (Q02/06/12/25)	Serial
LSIS	LSIS GLOFA PLC Cnet	Serial
	LSIS GLOFA PLC	Ethernet
	LSIS XGI Series PLC Cnet	Serial
	LSIS XGI FEnet	Ethernet
	LSIS XGI Series PLC Loader	Serial
	LSIS XGT/XGB Series PLC Cnet	Serial
	LSIS XGT Series FEnet	Ethernet
	LSIS XGT/XGB Series PLC Loader	Serial
Allen Bradley	Allen Bradley Control Logix EthernetIP	Ethernet
	Allen Bradley MicroLogix EthernetIP	Ethernet
	Allen Bradley DF1	Serial
	Allen Bradley SLC500 Enet	Ethernet
MODICON	MODBUS ASCII Protocol	Serial
	MODBUS RTU Protocol	Serial
	MODBUS TCP	Ethernet
OMRON	OMRON CS/CJ Series Enet	Ethernet
	OMRON PLC (HostLink)	Serial
	OMRON RFID Reader Enet	Ethernet
	OMRON RFID Reader	Serial

Item	Description
Use Auto-Increment	If a tag is registered to the original object, you can generate the tag according to your own configuration; registering the original tag or cloned tags. Tags can be cloned up to 1024. If an address has assigned to the tag, you can clone it with the tag at the same option. Cloning will be stop if address is no more incremented.
Use	You can decide whether to automatically increase or decrease the tag.
Tag Name	Indicates the current tag name. You cannot edit this section.
Address	Indicates the current address assigned to the tag. You cannot edit this section.
Position	Indicates the object's name where the original tag is registered.
Increase / Decrease	User can decide whether to increase or decrease the target address. When you select 'Decrease', the address only decreases except tag name.
Value	User can assign the amount of increment/decrement value of address. The tag name value is fixed at 1 for increment.

2.4.6 Paste

'Paste' command pastes any object that has been cut or copied to the clipboard.

Hotkey: **Ctrl + V, Alt + E + P**

2.4.7 Delete

'Delete' command deletes selected object from the graphic page.

Hotkey: **Delete, Alt + E + D**

2.4.8 Select All

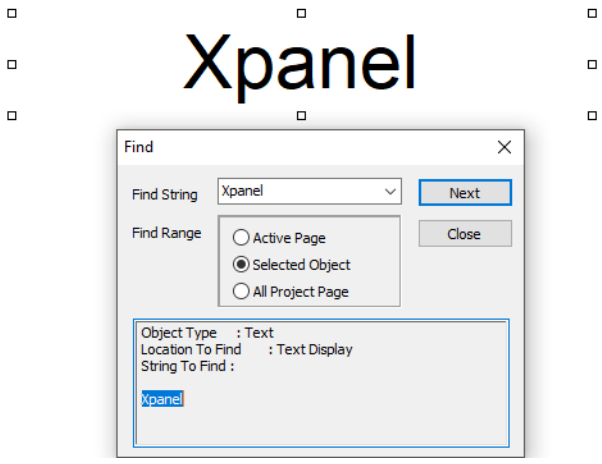
'Select All' command selects all of the objects of current graphic page.

Hotkey: **Ctrl + A, Alt + E + A**

2.4.9 Find

This feature lets you to find certain strings. You may choose: all objects, selected object, or entire project page.

Hotkey: **Ctrl + F, Alt + E + F**

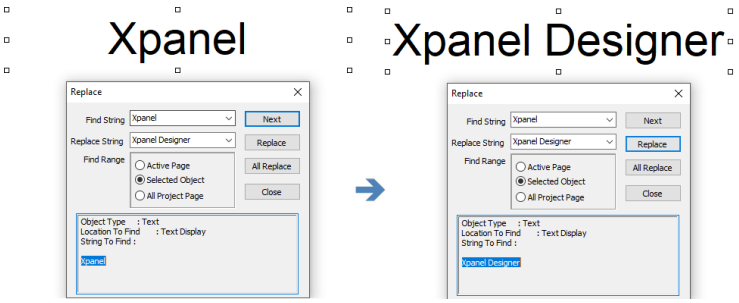


Item	Description	
Find String	Input a string to find. This feature is case sensitive.	
Find Range	Select the search area to find the string.	
	Active Page	Finds the string on the current graphic page.
	Selected Object	This option is enabled when you have selected object(s). Finds the string among the selected objects.
	All Project Page	Finds the string in the entire project.
Next	Finds the same string continuously within the selected range.	
Close	Stops [Find] and return to the graphic page.	

2.4.10 Replace

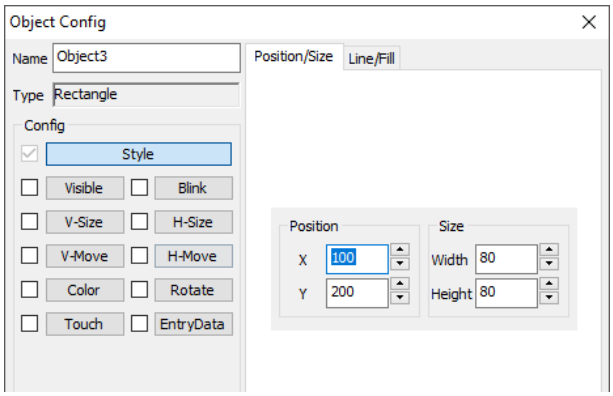
After searching for a specific string, you can change it into another string. This feature is used when there are multiple strings to be replaced.

Hotkey: **Ctrl + H, Alt + E + E**



Item	Description	
Find String	Input a string to find. This feature is case sensitive.	
Replace String	Input a string to replace.	
Find Range	Select the search area to find the string.	
	All Object	Finds the string on the current graphic page.
	Selected Object	This option is enabled when you have selected object(s). Finds the string among the selected objects.
	All Project Page	Finds the string in the entire project.
Next	Finds the same string continuously within the selected range.	
Replace	Replaces the found string into the string entered at 'Replace String'.	
All Replace	Replaces all found strings into the string entered at 'Replace String'.	
Close	Stops [Replace] and return to the graphic page.	

2.4.11 Object Configuration



You can configure an object with basic control features such as 'Visible', 'Blink', 'Touch'. In addition to the basic control features, you can configure the project with various objects' features.

※ Please refer to 'Object Configuration' for more information.

Hotkey: **Alt + E + W**

The following table shows the basic features you can configure when you open the [Object Config.] window. Objects such as trend, alarm summary, key input window, page link, switch/lamp objects have their own configuration windows.

Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

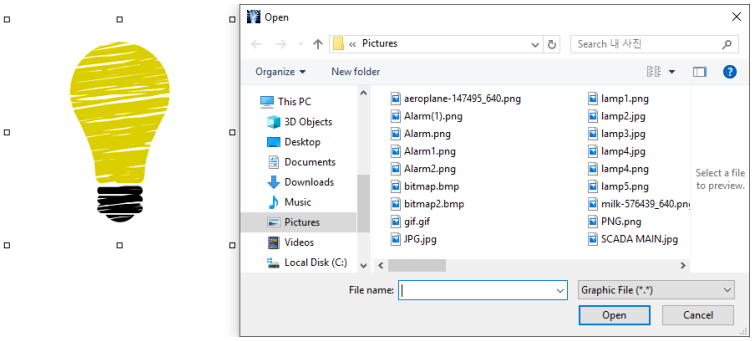
Item	Description
Style	Composed of [Position/Size], [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in certain cycle according to the tag value.
V/H-Size	Changes the size of object vertically/horizontally according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Color	Changes the color of object according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is clicked.

2.4.12 Insert Graphic File

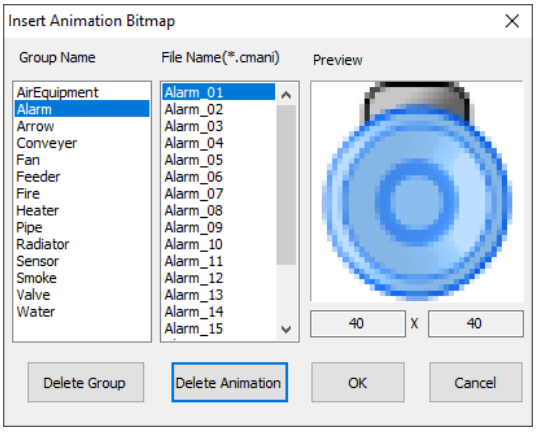
You can insert images created in an external program or downloaded from web to the project. These images can be operated as objects. File formats such as bmp and jpg are supported.

※ Please refer to 'Image Embedding' manual for more information.

Hotkey: **Alt + E + B**



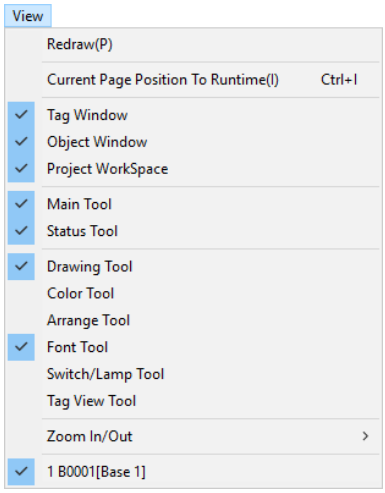
2.4.13 Insert Animation Bitmap



Animation bitmap is a feature to express an animation according to the registered tag value. You can describe the field's situations in detail with animation bitmaps. You can also see the example of object by its preview. The animation bitmap object(*.cmani file format) and its group can be edited in this window.

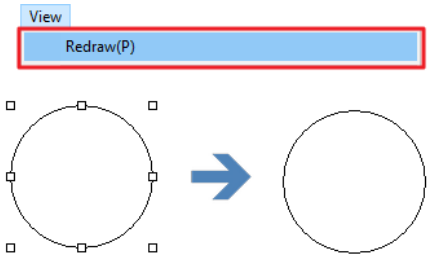
※ Please refer to 'Animation Bitmap' manual for more information.

2.5 View Menu



The [View] menu is grouped with tools used for composing the project. You can show or hide toolboxes in the toolbar by toggling the menu, such as a standard tool or a project workspace. A checkmark indicates that toolbox is displayed in the toolbar. Users can conveniently design a project by setting simple interfaces.

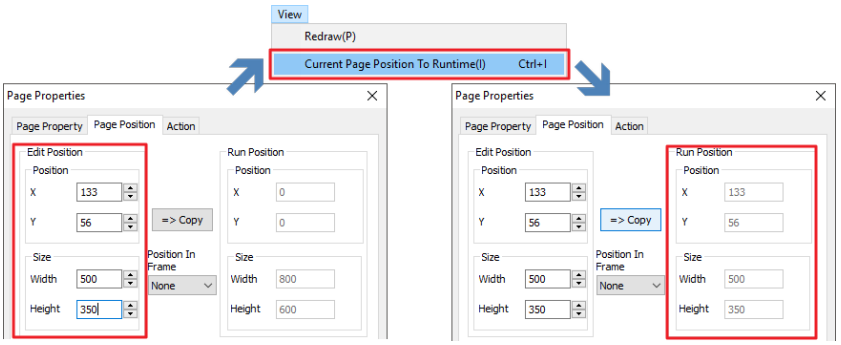
2.5.1 Redraw



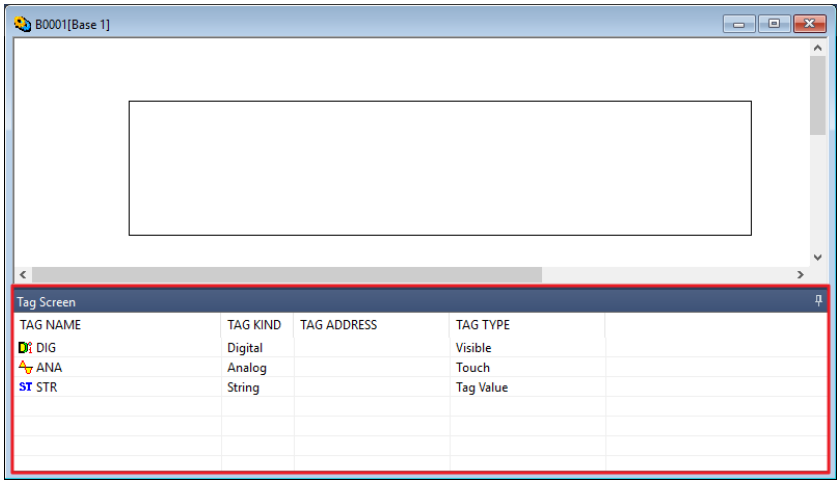
An object selection is initialized when you click the [Redraw] at graphic page the object has been drawn. This functionality can be useful to see objects' placement by refreshing the graphic page. You can check the composition of graphic pages that you are designing.

2.5.2 Current Page Position to Runtime

This feature has a same functionality with [Page Position] in [Page Properties]. Click [View] - [Current Page Position to Runtime] while in the page you are currently designing. The size and position of graphic page in Xpanel Designer will be reflected in Xpanel runtime.



2.5.3 Tag Screen

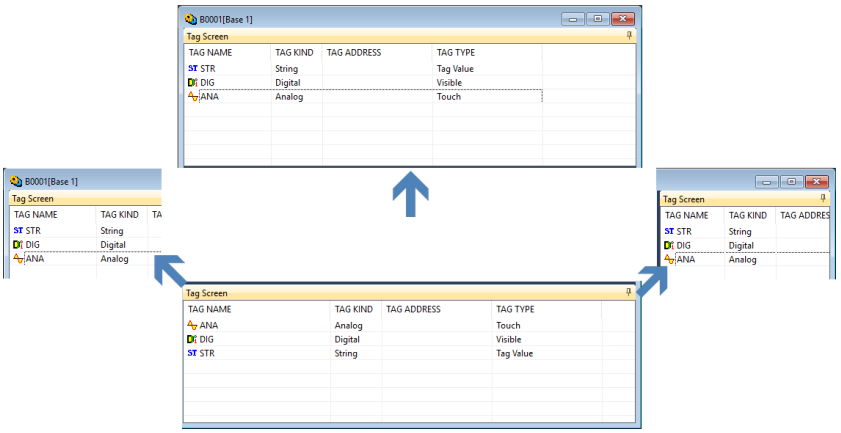


Tags registered in current page are listed at the bottom of page window when you select [View] - [Tag Screen]. The window will be hidden if you click the function again. You can minimizes or open the window as a toolbar by toggling button.

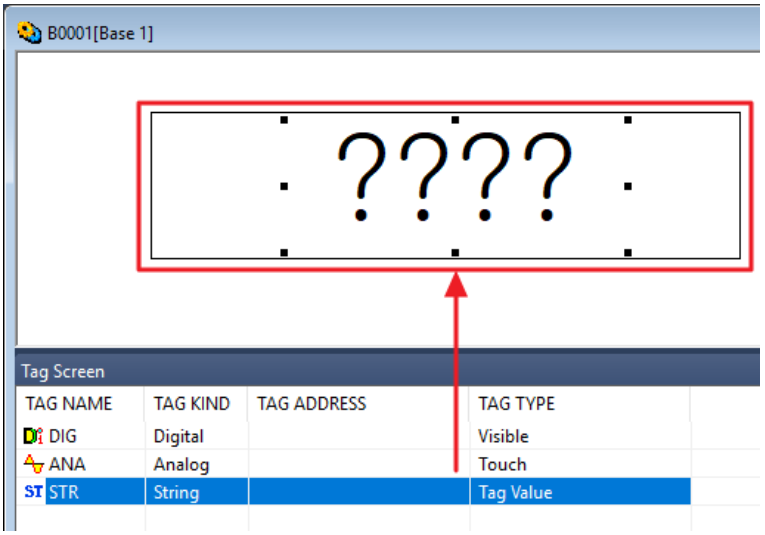
The tag screen shows tag information (e.g. Tag name, tag kind, tag address and tag type).

Item	Description
Tag Name	Tag names registered in the objects are listed in the window. On the left of tag name, an icon which indicates the tag kind is displayed.
Tag Kind	Indicates the kind of tag for each item. Digital, analog and string tags are displayed.
Tag Address	If the tag is used as a real tag, an address will be shown. This item does not show the device.
Tag Type	Indicates the function type of tag from the object. Function is shown as a string such as 'Visible', 'Blink', 'H/V size', 'H/V move', etc.

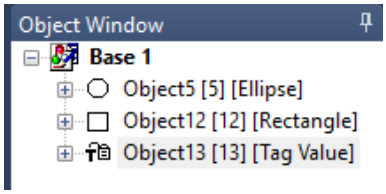
The position of tag screen can be changed according to the users' preference. The screen can be dragged to be docked on the left/right side or top of the page window.



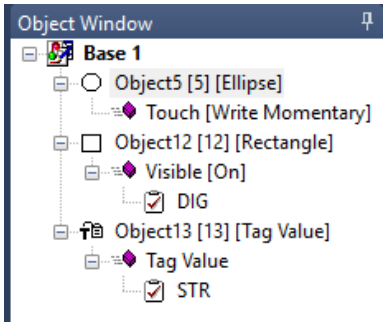
The object will be highlighted when you click the tag name which is registered in the corresponding object. Object configuration dialog box will pop up when you double-click on the item.



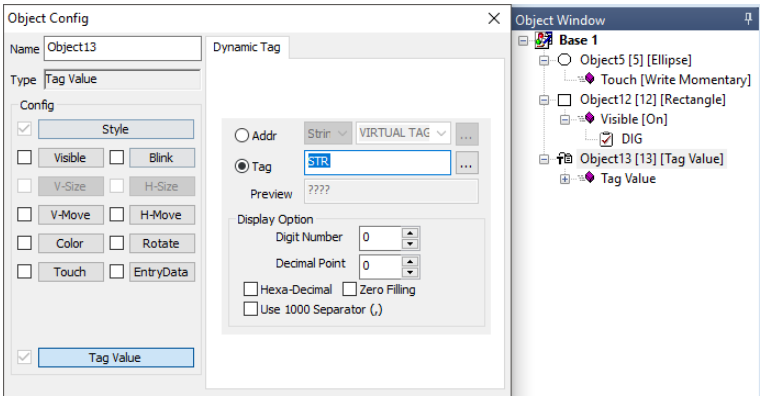
2.5.4 Object Window



Objects are organized into a tree structure in the right side of each graphic page when you select [View] - [Object Window]. The window will be hidden if you click the function again. You can minimizes or open the window as a toolbar by toggling button. You can check objects which are drawn in each graphic page. They are listed in 'Object name', 'Object number' and 'Type'.



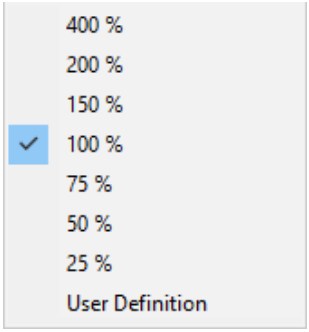
The object tree structure is expanded by buttons or folded by buttons located in each item. The index shows status information (e.g. object functions, registered tags.)



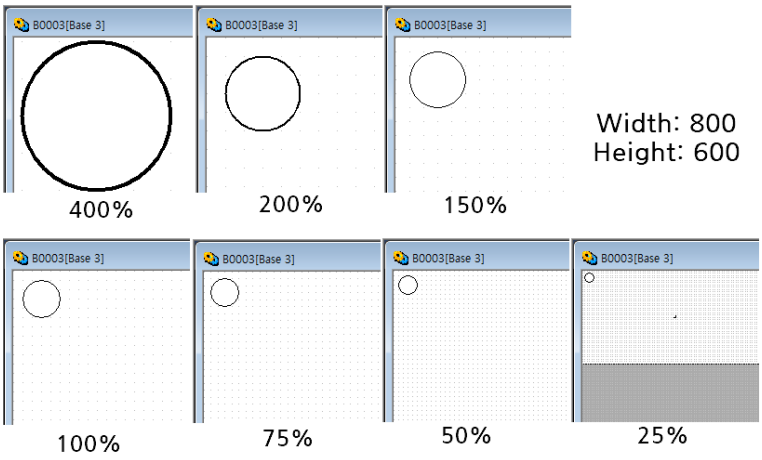
Object configuration dialog box will pop up when you double-click on the item.

2.5.5 Zoom In / Out

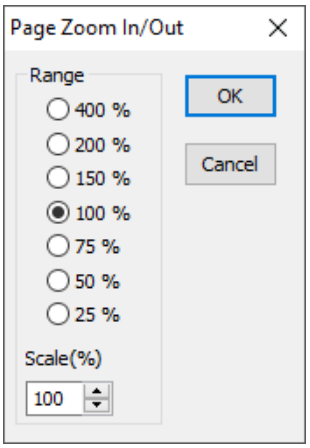
[Zoom In/Out] allows you to enlarge or reduce the magnification in the graphic page. You can select a zoom level in sub menu, or configure directly from [User Definition]. Alternatively, you can hold 'Ctrl' key and scroll the mouse wheel to zoom in or out.



The magnification level is set to 100% by default. There are 7 levels to select from: 400%, 200%, 150%, 100%, 75%, 50% and 25%.



When you select the [User Definition], 'Page Zoom In/Out' dialog box will appear.

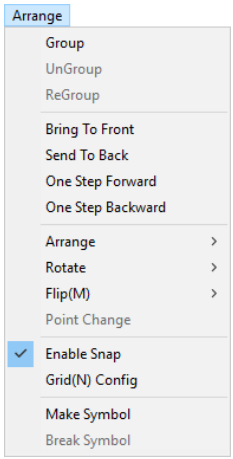


You may select a zoom level by clicking the radio button next to it or by inputting a level in the "Scale(%)" box manually. When inputting manually, the range is from 25% to 800%, integers, no decimal points.

Press [OK] to apply the zoom level. Press [Cancel] to cancel the configuration.

If you zoom the page with 'Ctrl' key and scrolling mouse wheel, the magnification level will be adjusted from 25% to 800% in 25 percent.

2.6 Arrange Menu

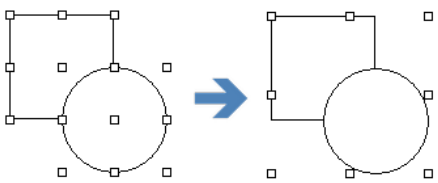


The [Arrange] menu is grouped with tools that execute the object arrangements in the graphic page. Using this menu, multiple units of objects can be grouped into a single unit. You can change an objects placement conveniently by arranging or flipping them. You may also set a background image.

2.6.1 Group

The feature is enabled when you select multiple objects. It executes to combine two or more objects into a single one called 'group object'. Group objects can be grouped again, and operated as an object.
Please note that 'Group' does not apply to the switch/lamp and page link objects.

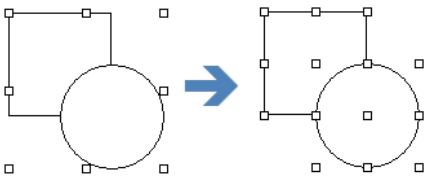
To select a group of objects, click your first selection and then hold down Shift key as you click another. You may also click the blank area of the page and drag the mouse until all of the objects you want to select are surrounded by selection area. In this way, you can group the objects by clicking [Arrange] - [Group], or right-click the objects and select [Group] in pop-up menu.



2.6.2 Ungroup

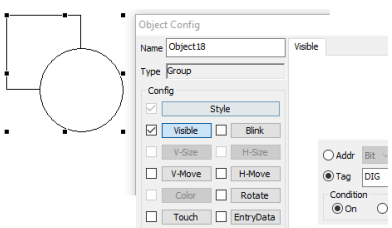
The feature is enabled when you select a group object. It is used to break a selected group object into its individual components.

To ungroup a group object, select the object and click [Arrange] - [Ungroup], or right-click the object and select [Ungroup] in pop-up menu. All objects from the group object will automatically be selected.

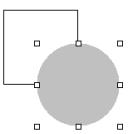


2.6.3 Regroup

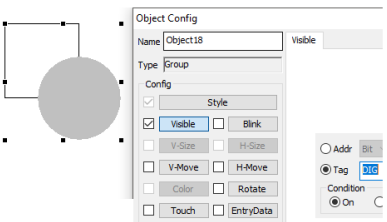
[Regroup] may be used when you want to modify an individual objects' properties and then return it to the group. Ungroup the group object and modify the single unit you wish to change, then combine them again by selecting [Regroup]. In this way, the object configuration of the group can be maintained.
However, [Regroup] does not apply to a group object in which you removed existing objects from. If there is any additional objects upon the existing objects, the added objects are ignored.



1 Ungroup the object that a function has set.



2 Change the settings of the single object.

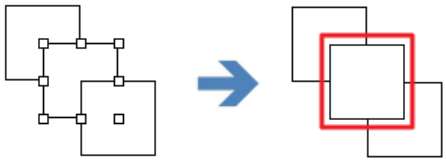


3 You can maintain the object configuration by 'Regroup'.

2.6.4 Bring to Front

This feature operates to place the selected object in front of all other objects. If the object is layered upon other objects, objects which had been previously drawn will be totally or partially hidden by it.

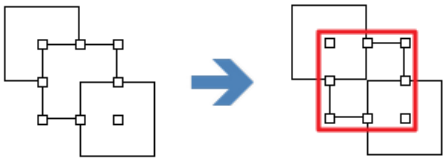
Select the object that you wish to set and click [Arrange] - [Bring to Front], or right-click the object and select [Bring to Front] in pop-up menu. This will place the object to the forefront of the graphic page.



2.6.5 Sent to Back

This feature operates to place the selected object behind all other objects. If the object is layered under other objects, the object will be totally or partially hidden by them.

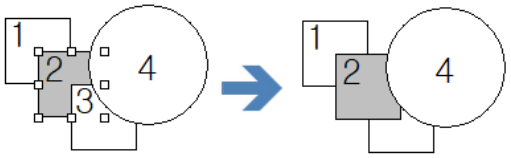
Select the object that you wish to set and click [Arrange] - [Send to Back], or right-click the object and select [Send to Back] in pop-up menu. This will move the object to the back of the graphic page.



2.6.6 One Step Forward

The previously created object is placed behind of the one recently created. This command is used to move the object just one layer forward.

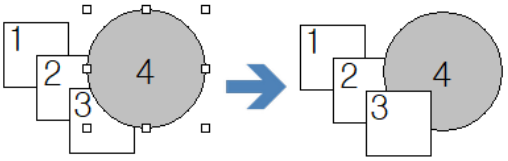
Select the object that you wish to set and click [Arrange] - [One step forward], or right-click the object and select [one step forward] in pop-up menu. This will move the object to a single layer forward of the graphic page.



2.6.7 One Step Backward

This command is used to move the object just one layer backward.

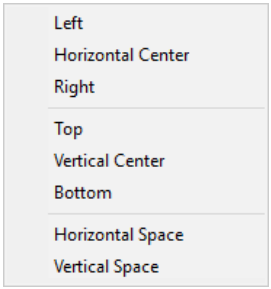
Select the object that you wish to set and click [Arrange] - [One step backward], or right-click the object and select [one step backward] in pop-up menu. This will move the object to a single layer back of the graphic page.

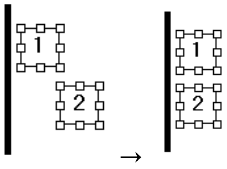
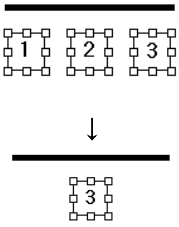
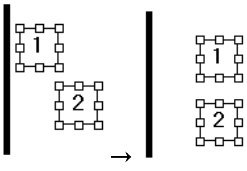


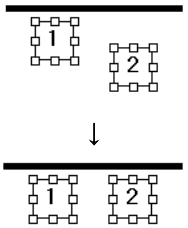
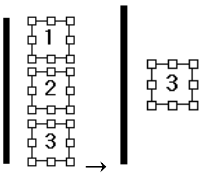
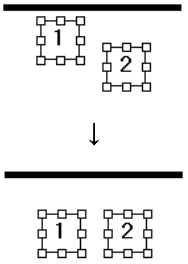
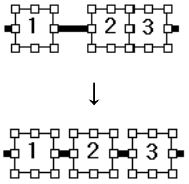
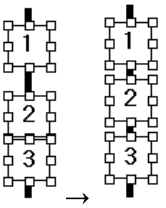
2.6.8 Arrange

This feature is enabled when you select two or more objects. Objects can be aligned at top and bottom, left and right side, or middle in horizontal or vertical direction. When you select three or more objects, you can distribute spaces between selected objects horizontally or vertically.

To select a group of objects, click your first selection and then hold down Shift key as you click another. You may also click on a blank area of the page and drag the mouse over all the objects you wish to select. You may then align the objects by clicking [Arrange] - [Arrange], or right-click the objects and select [Arrange] in sub menu.



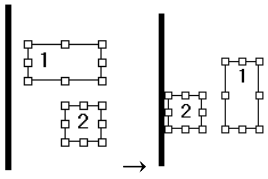
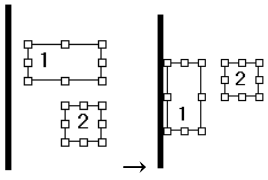
Item	Description	Example
Left	Aligns the left edge of selected objects with the left edge of the object in left side.	
Horizontal Center	Aligns the middle of selected objects in horizontal direction with the centered object. The recently created object will be placed in front of the one previously created.	
Right	Aligns the right edge of selected objects with the right edge of the object in right side.	

Top	Aligns the top edge of selected objects with the top edge of the object at the top.	
Vertical Center	Aligns the middle of selected objects in vertical direction with the centered object. The previously created object will be placed behind of the one recently created.	
Bottom	Aligns the bottom edge of selected objects with the bottom edge of the object at the bottom.	
Horizontal Space	Evenly spaces all selected objects horizontally between the left most and right most selected objects.	
Vertical Space	Evenly spaces all selected objects vertically between the top most and bottom most selected objects.	

2.6.9 Rotate

Objects can be rotated in a clockwise or a counter-clockwise direction. You can rotate multiple objects at once by selecting them together.
However, [Rotate] does not apply to following objects; text object, dynamic tag, date/time, trend, string value, switch/lamp, alarm summary, key input and pagelink.

To execute the rotation, select the object and click [Arrange] - [Rotate] or right-click the objects and select [Rotate] in pop-up menu. You can rotate them in following directions.

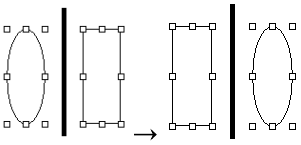
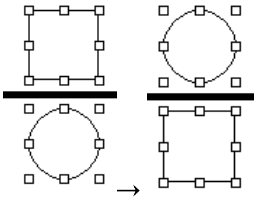
Direction	Description	Example
90° Clockwise	Enabled when a single or more objects are selected. Rotate selected objects clockwise in 90 degrees.	
90° CounterClockwise	Enabled when a single or more objects are selected. Rotate selected objects counter clockwise in 90 degrees.	

When you rotate a group object, individual objects linked together are also being rotated. If you wish to rotate only a single object, ungroup them first and apply the rotation.

2.6.10 Flip

Objects can be flipped horizontally or vertically. Combined objects are flipped together. [Flip] does not apply to following objects; text object, dynamic tag, date/time, trend, string value, switch/lamp, alarm summary, key input and pagelink.

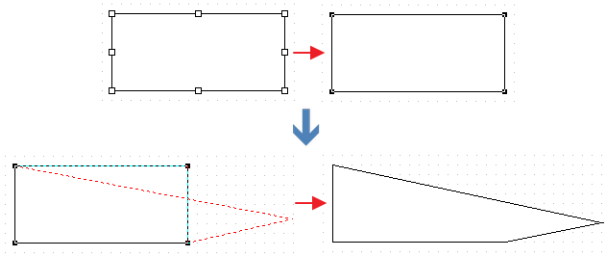
To apply the flip, select the object and click [Arrange] - [Flip] or right-click the objects and select [Flip] in pop-up menu. You can transform the object into its horizontal or vertical mirror image.

Direction	Description	Example
Horizontal	Enabled when a single or more objects are selected. Flips selected objects horizontally based on coordinates in the middle of X-axis.	
Vertical	Enabled when a single or more objects are selected. Flips selected objects vertically based on coordinates in the middle of Y-axis.	

2.6.11 Point Change

This feature is enabled when you select a simple graphic object. You can change the shape of simple graphic objects: Line, rectangle, arc, sector, chord, polyline and polygon.

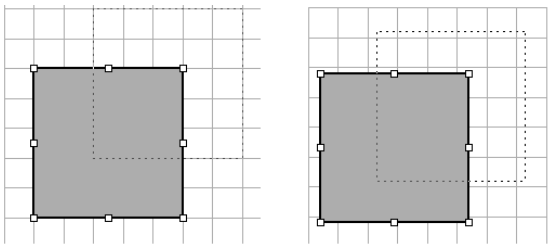
Select a simple graphic object to reshape and click [Arrange] - [Point Change]. Each handle on the object's line is turned to black. You can change the shape of object by dragging its handles.



2.6.12 Enable Snap

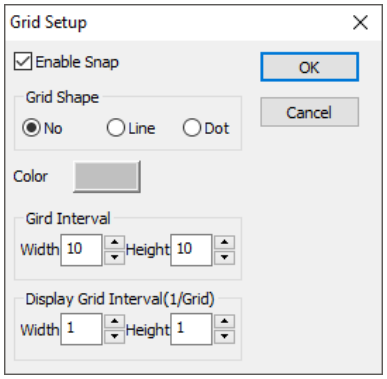
When you are arranging objects on the page, turning on the feature will lead your image to snap on the grid. Objects may be drawn or positioned on the grid. It can be useful when making fine arrangement of an object to disable [Enable Snap]. This will allow control without grid snap.

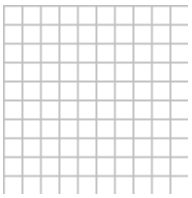
You can enable or disable this feature by toggling its icon:
indicates the functionality is enabled, and means it is disabled.



2.6.13 Grid Configuration

When you use [Enable Snap], you can utilize the grid setup. Click [Arrange] - [Grid Config] and a dialog box is appeared as shown below.



Item	Description	
Enable Snap	Executes the [Enable Snap] on the [Arrange] menu. Sets objects to be positioned according to grids.	
Grid Shape	Selects the shape of grids. Grids are hidden in the page when you choose [No].	
	Line	Dot
		
Color	Selects the color of grids.	
Grid Interval	Adjusts width and height between grids. Grid intervals become wider while values at width and height increase. The value can be assigned from 0 to 100.	
Display Grid Interval[2]	Assigns the interval values for viewing grids. Grid display intervals become wider while values at width and height increase. The value can be assigned from 0 to 100.	

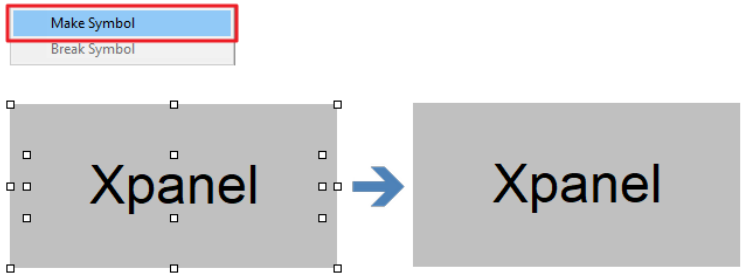
[2] The grids' width and height currently displayed

= 'Width' and 'Height' values at [Grid Interval] X 'Width' and 'Height' values at [Display Grid Interval]

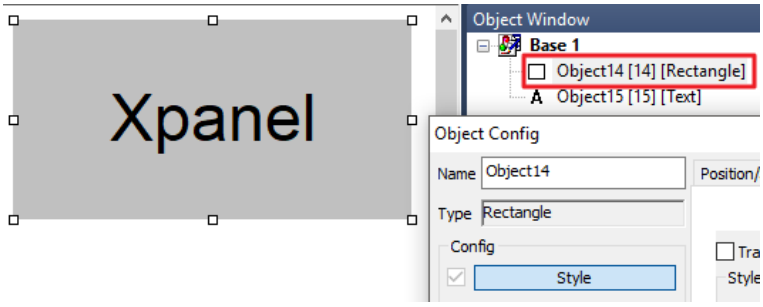
Ex) When you set 'Width/Height' values as each 10 in [Grid Interval] and each 2 in [Display Grid Interval], the grids' width and height values displayed on the page are both 20.

2.6.14 Make Symbol

Selected objects can be set as a background image by selecting [Arrange] - [Make Symbol]. The background image is always at the back of the graphic page and may not be selected as an object.

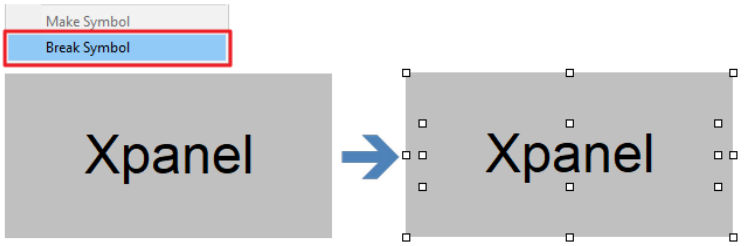


To select the background object, click the item listed in [Object Window].

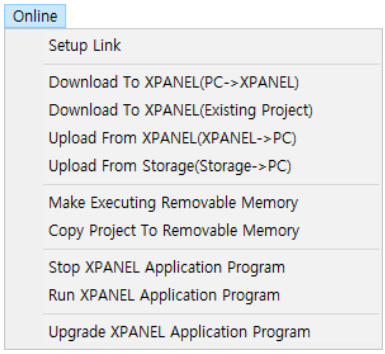


2.6.15 Break Symbol

When you select [Arrange] -[Break Symbol], the background object can be editable. If several objects are set as background images, you can make them all editable simultaneously.

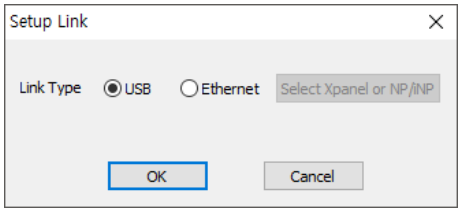


2.7 Online Menu



[Online] menu is located on top menu bar of Xpanel Designer. [Online] menu contains basic options for connection between PC and Xpanel. Based on the connection method, you can establish device access by USB or Ethernet. The project can be downloaded to the Xpanel or uploaded to the Xpanel Designer according to the connection method. Project may also launched or terminated directly by selection from PC during the online status. You can upgrade application version of the Xpanel to solve the malfunction situation.

2.7.1 Setup Link



You can choose a connection method according to the supported interfaces of Xpanel, USB or Ethernet.

USB

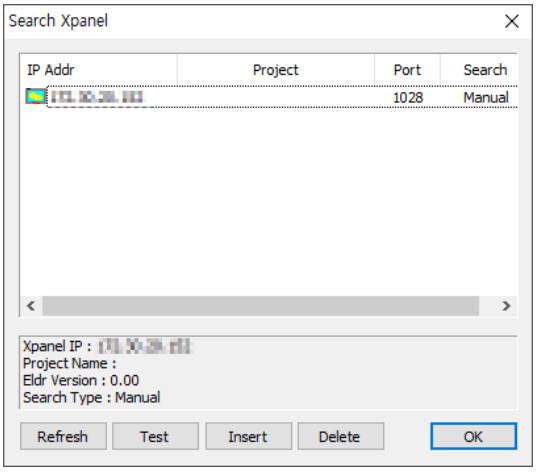
Entire Xpanel model provides USB port allowing users to connect with PC using mini USB cable. To set the connection method as USB, select 'USB' in the [Setup Link] dialog box and press 'OK'.

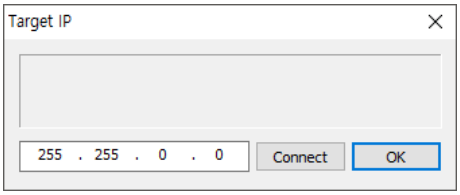
Ethernet

The Ethernet port is used in communication between Xpanel and other external device. It meets standards 10BaseT and 100BaseT. The table below lists supported Xpanel models for Ethernet communication.

Model	Supported	Model	Supported
XT04CD-DN	☐ Not supported	XT12CD-A	■ Supported
XT07CD-AE	■ Supported	XT15CD-A	■ Supported
XT07CD-DE	■ Supported	HP07CD-AER/DER	■ Supported
XT07CD-AN	☐ Not supported	HP07CD-ANR/DNR	☐ Not supported
XT07CD-DN	☐ Not supported	HP07CD-AES/DES	■ Supported
XT10CD	■ Supported	HP07CD-ANS/DNS	☐ Not supported

To set the connection method as Ethernet, select 'Ethernet' in the [Setup Link] dialog box and press [Search Xpanel or NP/iNP] to browse the target Xpanel.



Item	Description
Refresh	Updates the Xpanel in the network. This is used to refresh the IP address and project name of Xpanel in the different network. If Xpanel is searched from the user's network, project name will be listed automatically.
Test	Tests the connection configuration for selected Xpanel. If the connection is successful, a project name will be displayed.
Insert	 Inserts the IP address of Xpanel manually. You may check the connection status by pressing 'Connect' button and add the IP address with 'OK' button.
Delete	Removes the selected Xpanel from the list.
OK	Connect the Xpanel Designer with selected Xpanel.

2.7.2 Download to Xpanel

Projects can be downloaded and transferred via mini USB and Ethernet. Each method is described below.

Download by USB

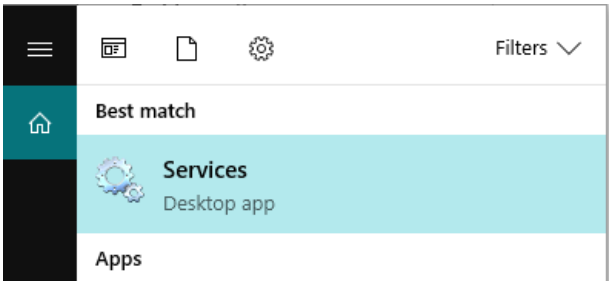
- **Install ActiveSync (Windows XP OS)**

ActiveSync allows the transfer of data between PC and various mobile devices running on Windows CE. You can download it on Microsoft website (www.microsoft.com/en-us).

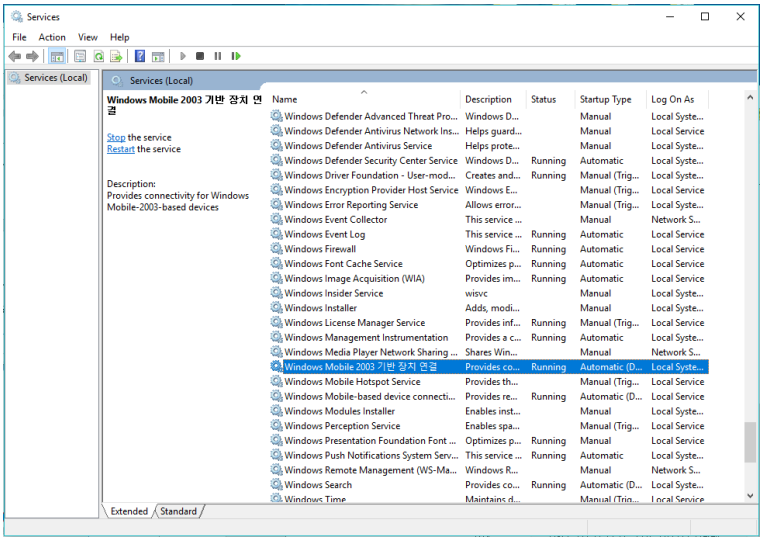
- **Install Windows Mobile Device Center (Windows 7, 8, 10 OS)**

Download Windows Mobile Device Center in Microsoft website. Sometimes the program does not operate correctly in Windows 10 OS. In this case, perform the following procedure.

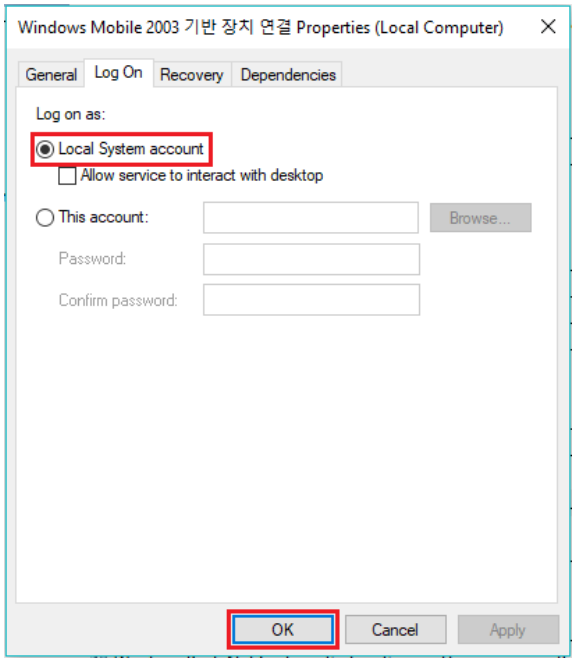
a) Start application [Services] from the start menu of Windows.



b) Select [Windows Mobile - 2003 - based devices] within [Services].



c) Select [Log on as: Local system account] in [Log On] tab.

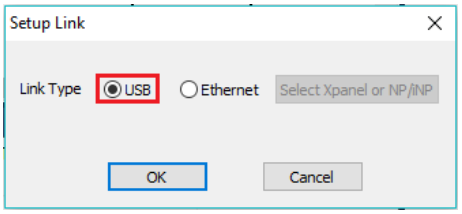


d) Click [OK] and reboot the system. After restarting the PC, the program will operate properly.

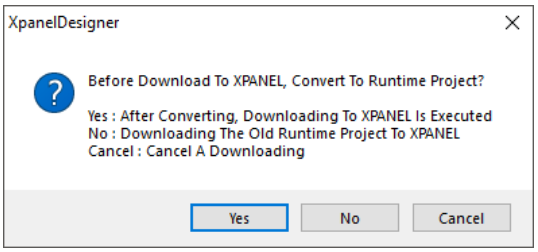
- **Setup for Xpanel Designer**

a) Run Xpanel Designer and retrieve a project to download.

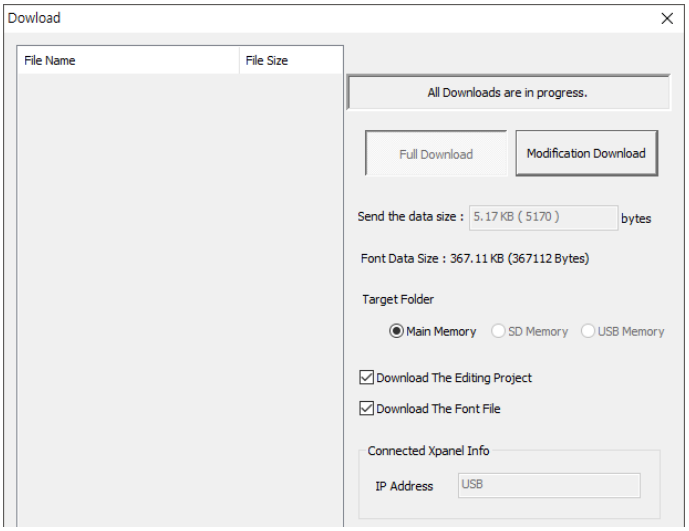
b) Go to [Online] - [Setup Link] and choose [USB].



c) Go to [Online] - [Download to Xpanel] to download the project. You need to convert the project in to the runtime project if there are no files in the project directory.



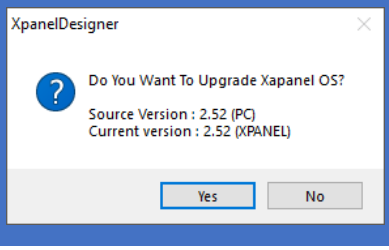
d) After converting into the Xpanel runtime project, you may download the whole project or only modified items.



Item	Description
Full Download	Downloads the project with full configurations.
Modification Download	Downloads only modified configurations of project.
Send the Data Size	Displays the size of runtime project.
Font Data Size	Displays the size of font data in runtime project.
Target Folder	Specify the directory in Xpanel to save the project file.
Download the Editing Project	Select the option to convert the runtime project into editable project.
Download the Font File	Select the option to download the font file with the project.
Connected Xpanel Info	Displays the IP address of target Xpanel.

⚠

- Please note that only one Xpanel can be connected to a PC at a time, even if the PC has two or more unused USB ports.
- The project will not operate correctly if the version of the Xpanel Designer that was used to create the project is different from the version of the Xpanel that is running the project. Update or downgrade the software until both versions are identical.

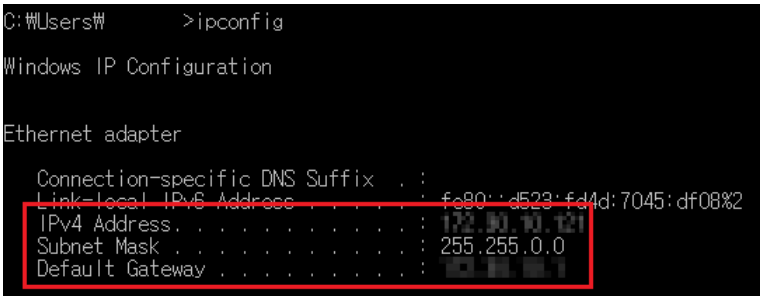


Download by Ethernet

(1) Checking IP address of PC

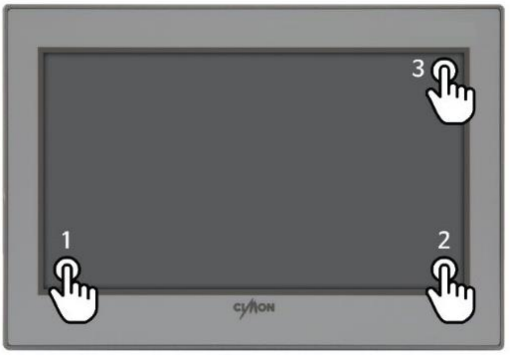
a) Go to [Window] - [Run] and enter 'cmd' on the input screen.

b) Enter 'ipconfig' on the command screen to check the PC's Ethernet setup.

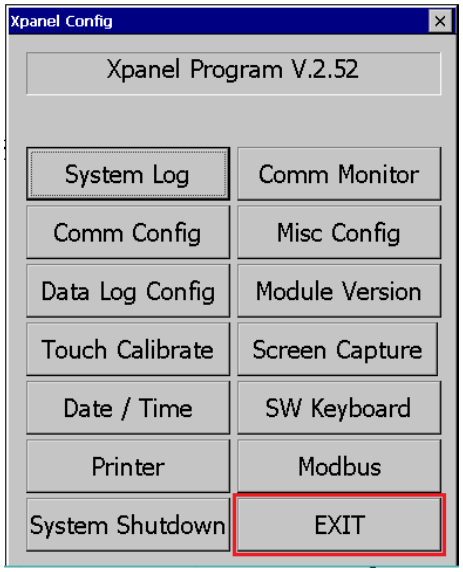


(2) Checking IP address of Xpanel

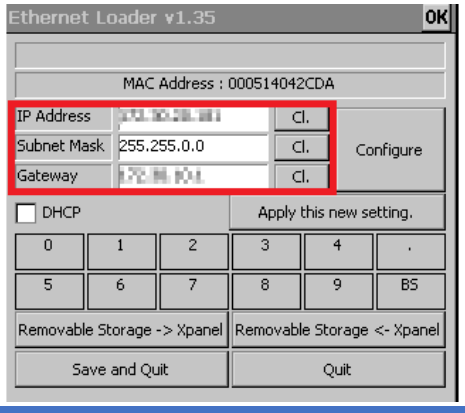
a) Click as numbered sequence. Xpanel Config dialog box appears.



b) Select [Exit].



c) Configure IP address of Xpanel.



- Subnet mask and gateway should be configured to match those of PC.
- Duplicate IP addresses are not allowed.

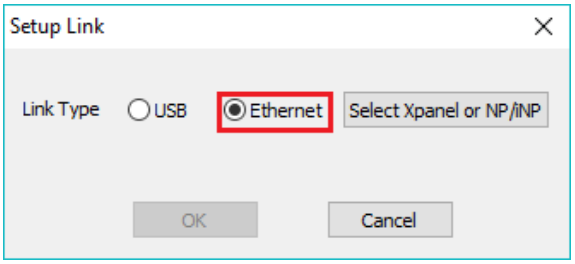
d) Select [Apply this new setting] to save changes. A system reboot is required for changes to be applied.

e) Select [X] button if you want to modify the setting. Select [OK] if you want to go back to configuration. In this case, Xpanel should restart.

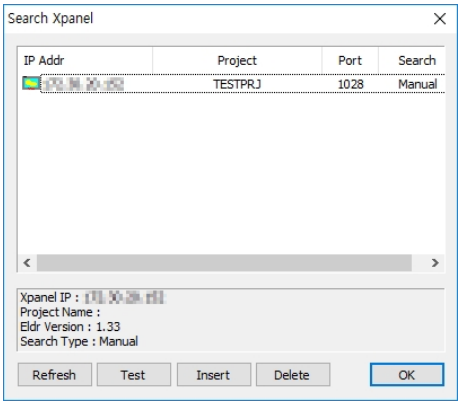
(3) Setting for Xpanel Designer

a) Run Xpanel Designer and open a project to be downloaded.

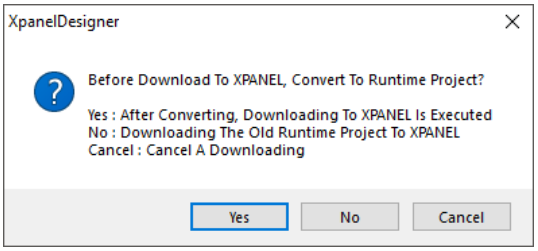
b) Go to [Online] - [Setup Link] and choose 'Ethernet' for connection method.



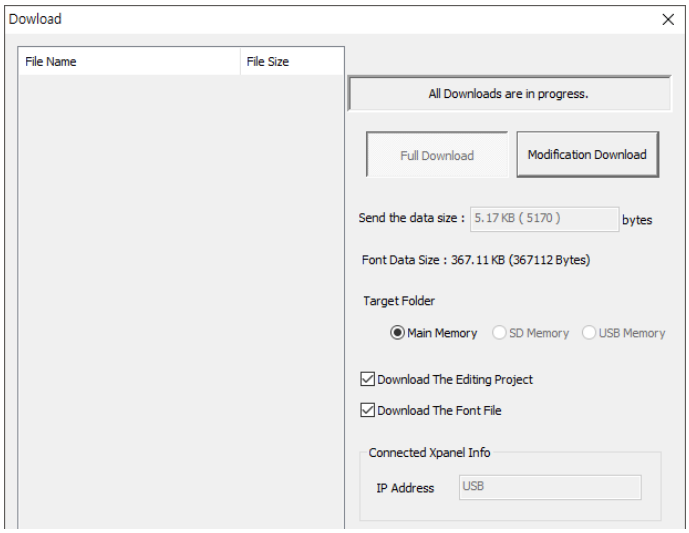
c) Click [Select Xpanel or NP/iNP]. Xpanel will appear on the list as shown below. Select Xpanel to which you wish to download a project. You can see information of the selected Xpanel on a pop-up box.



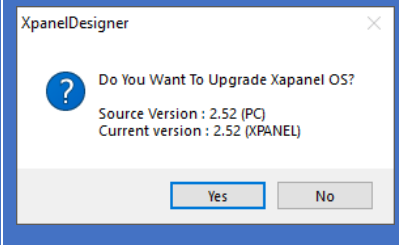
d) Go to [Online] - [Download to Xpanel] to download the project.



e) After converting into the Xpanel runtime project, you may download the whole project or only modified items.



The project will not operate correctly if the version of the Xpanel Designer that was used to create the project is different from the version of the Xpanel that is running the project. Update or downgrade the software until both versions are identical.

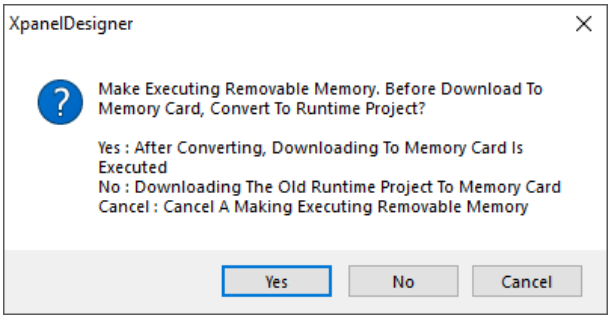


f) Or, if Xpanel runtime project file has already saved in the project folder, you may select [Online] - [Download to Xpane(Existing Project)] to download a project excepting modifications.

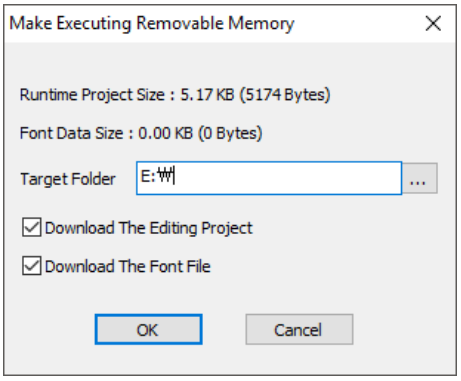
2.7.3 Make Executing Removable Memory

The project is downloaded to USB or SD memory. This feature is useful when the size of project is too large to download to Xpanel. After installing the removable memory into Xpanel, the operator can run the project without downloading it to Xpanel.

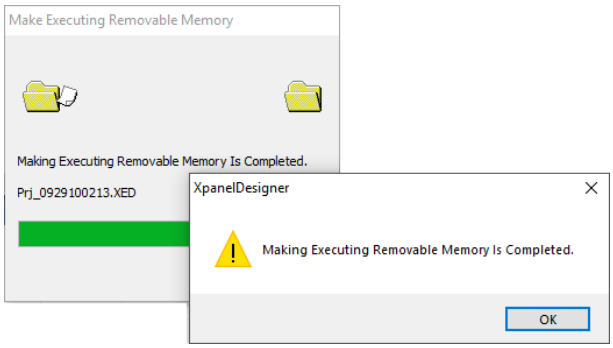
Install the USB or SD memory into the PC and select [Online] - [Make Executing Removable Memory]. The project will be converted into runtime project and saved in the removable memory device.



Press 'Yes' to convert the project if runtime project file does not exist in the removable memory. You can skip the conversion by pressing 'No' if runtime project already exists.



You can specify the directory for runtime project to the removable disk. The size of runtime project and font data will be displayed. To convert the runtime project into the editable project, select the 'Download editing project' option. To download the font file together, select 'Download font file' option.



A complete message will appear when the conversion is finished.

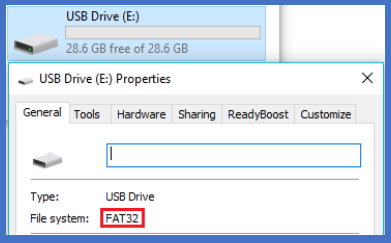
2.7.4 Copy Project to Removable Memory

You can download the project from the PC to USB memory or SD memory. After inserting the memory device into Xpanel, the project can be transmitted to Xpanel through the Ethernet loader. This allows you to update a project in the field using portable memory, rather than a PC.

Download by Removable Disks

(1) Prerequisite

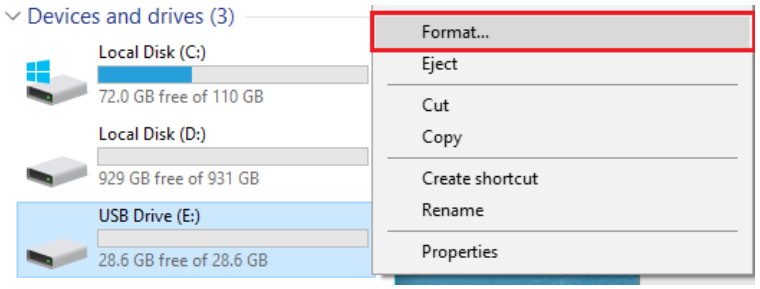
- Make sure to format the USB in FAT32 so that Hybrid Xpanel can recognize the driver. If you are unsure, right click on the USB icon and click 'properties' to check if the USB type is FAT32.



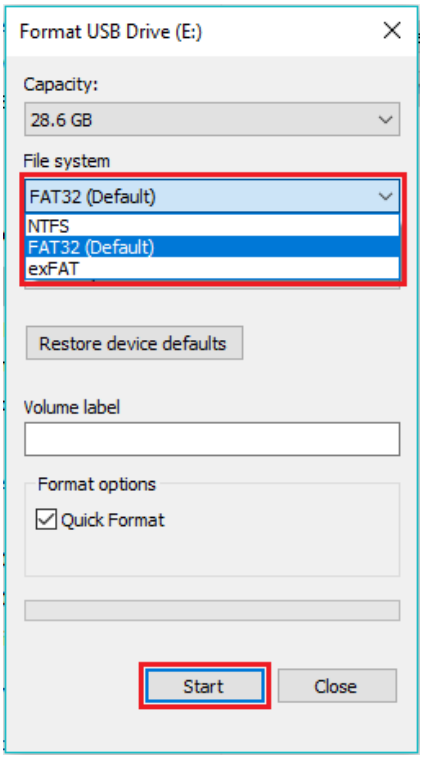
- If the file system is not in FAT32 format, please follow the steps below to format the USB drive. Make sure to back up the contents of the USB before proceeding as all data will be deleted.

Follow the direction to configure the USB format as FAT32.

a) Connect the USB to PC. Right-click on USB drive and select [Format].



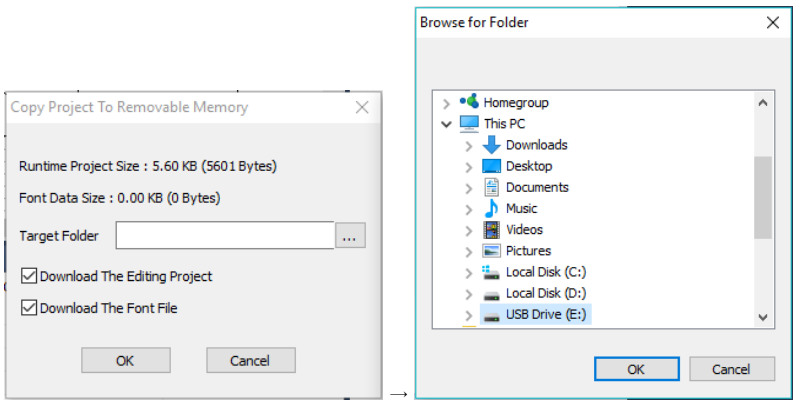
b) Configure the File system as FAT32 (Default) and start formatting the USB.



(2) Download the project from Xpanel to removable disk

a) Connect a removable disk on the PC and run Xpanel Designer.

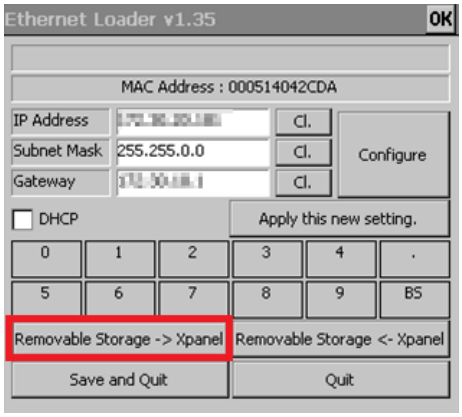
b) Go to [Online] - [Copy project to removable memory], and input or select the path where you want to save the project. If you wish to download the editable project from the device, select [Download the Editing project].



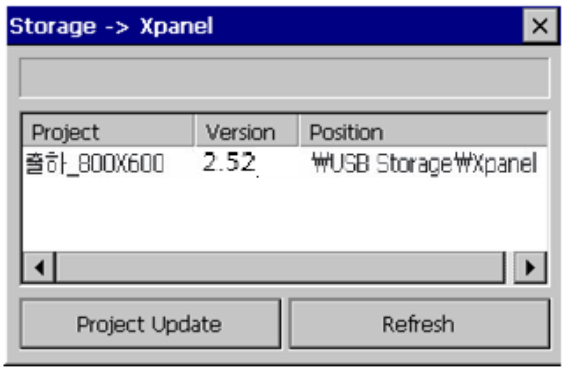
Make sure to specify the disk's root directory when you save the project.

(3) Upload the project from removable disk to Xpanel

a) Connect the removable disk that has the updated project to Xpanel. Select [Removable Storage → Xpanel] in the Ethernet Loader dialog box.



b) Select [Refresh] and you will see projects in removable disk that can be uploaded.



c) Click a project to update on the list and select [Project Update].

- When you select [Project Update], the project and application program in the Hybrid Xpanel will be deleted first.
- [Project Update] button will be deactivated when the procedure starts and reactivated when update is complete. “All file update: OK” message will appear when update is completed.
- Do not touch the panel during update as it could cause incorrect operation.

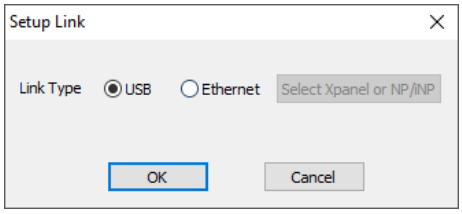
2.7.5 Upload from Xpanel

You can open projects from Xpanel Designer by USB or Ethernet.

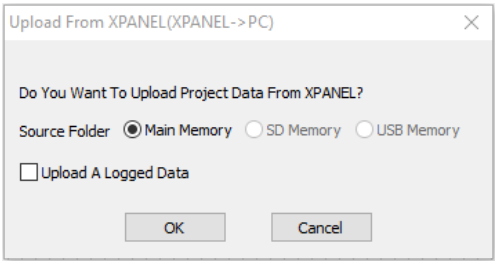
Open with Xpanel Designer

a) Go to [Online] - [Upload from Xpanel] located in the upper right side of the menu bar.

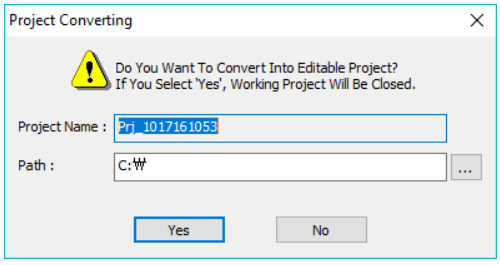
b) Choose a connection method.



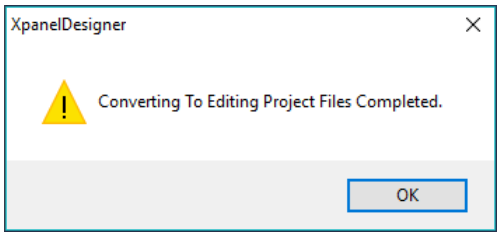
c) Select the project directory from your Hybrid Xpanel. If you want to upload logged data together, check [Upload A Logged Data].



d) Specify where you want to save the project file.



e) Below message will appear when the conversion is completed. Select [OK] and the project file will be opened.

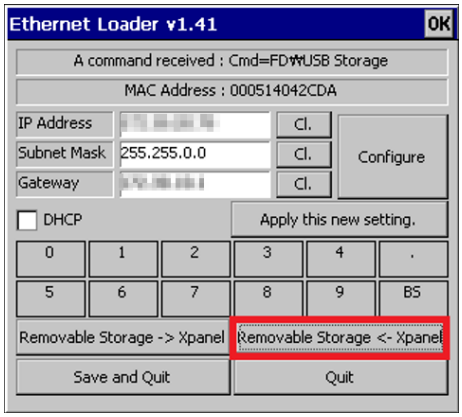


2.7.6 Upload from Storage

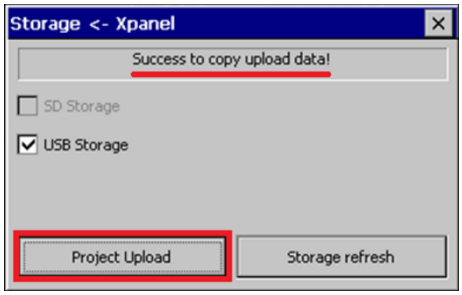
You can transfer the downloaded project from USB memory or SD card to the Xpanel Designer.

Opening with USB memory or SD card

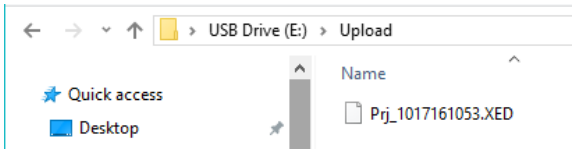
a) Connect USB or SD card to the Xpanel and Select [Removable Storage ← Xpanel] in Ethernet Loader dialog box.



b) A check mark inside the box will indicate the media type that is connected. A Success message will appear when you select [Project Upload] and upload is completed.

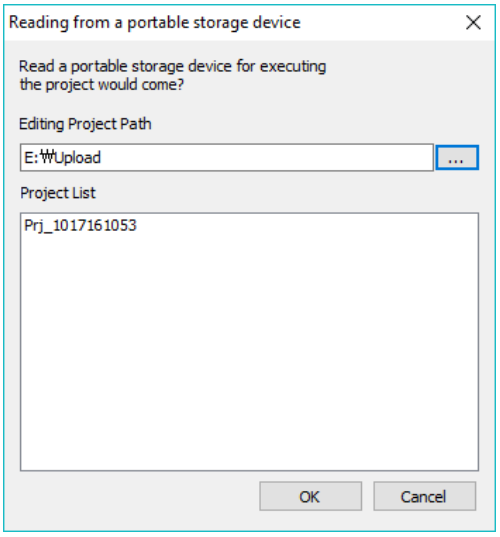


c) Hybrid Xpanel project file is copied to Upload folder located in USB or SD card.

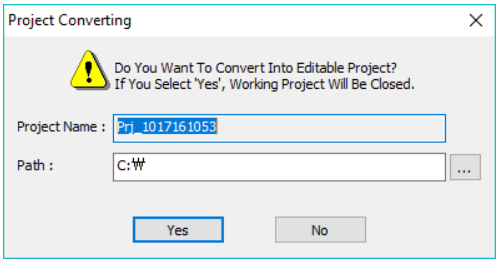


d) Connect USB or SD card to the PC. Go to [Online] - [Upload from Storage] in Xpanel Designer.

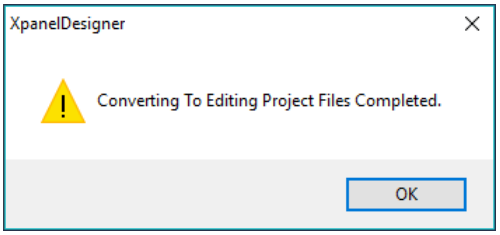
e) Specify the project path of copied project file. Project file located in Xpanel will appear on the list.



f) Specify the path and select [OK] to convert, save, and open editable project.



g) A message will appear when conversion is completed. Click [OK] to open the converted project file.



2.7.7 Stop Xpanel Application Program

When the PC is connected to Xpanel, you can terminate the current project and exit to the Xpanel background screen. This command is equivalent to press [Exit] button in the 'Xpanel Config' dialog box.

2.7.8 Run Xpanel Application Program

When the PC is connected to Xpanel, you can launch the closed project again. This command is equivalent to double-click the 'Xpanel' icon in the Xpanel background screen.

2.7.9 Upgrade Xpanel Application Program

If the application versions used by Xpanel and Xpanel Designer are different each other, you must download the project again to run properly.

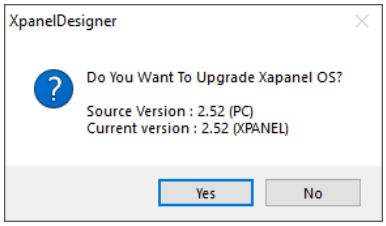
You can solve the problem by upgrading application version when the Xpanel's application program file is damaged or lost.

Upgrading application program

a) If you know the version of application program or project, download the same version of Xpanel Designer in the CIMON website (www.cimon.com). If you don't know the version of application program or project, install recent version of Xpanel Designer.

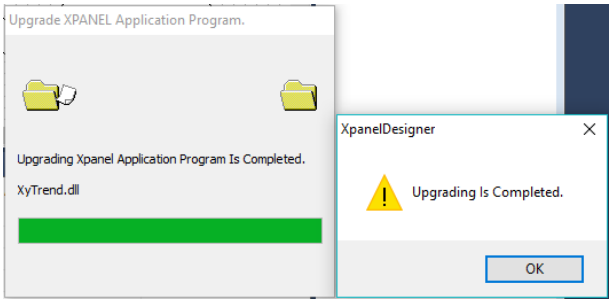
b) Go to [Online] - [Upgrade Xpanel Application Program] and specify the connection method.

c) Confirm the upgrade version and press 'Yes'.



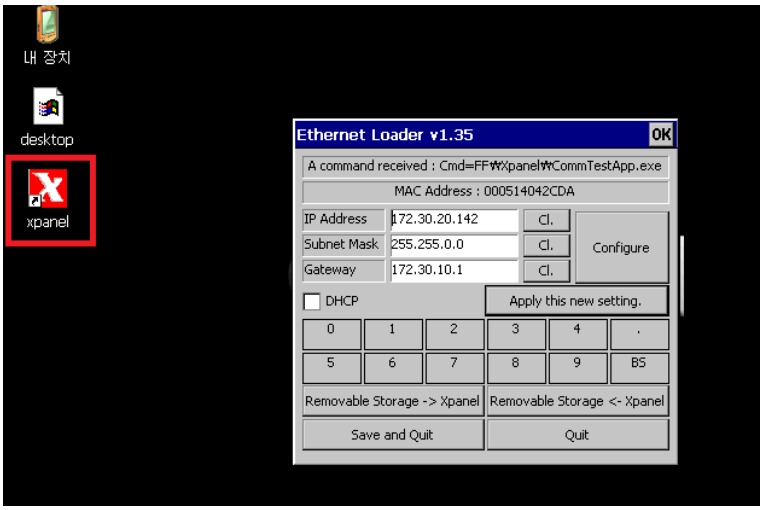
> ⚠ When there is no project backup file, upgrade the application program after uploading the project in the removable disk.

d) A complete message will appear when application program upgrade is finished.



e) Upload the project or backup file from Xpanel Designer and download it to Xpanel.

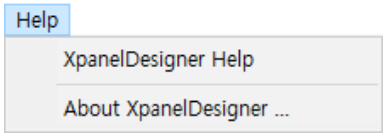
f) Check if the project screen appears properly by double-clicking 'Xpanel' icon.



2.8 Help Menu

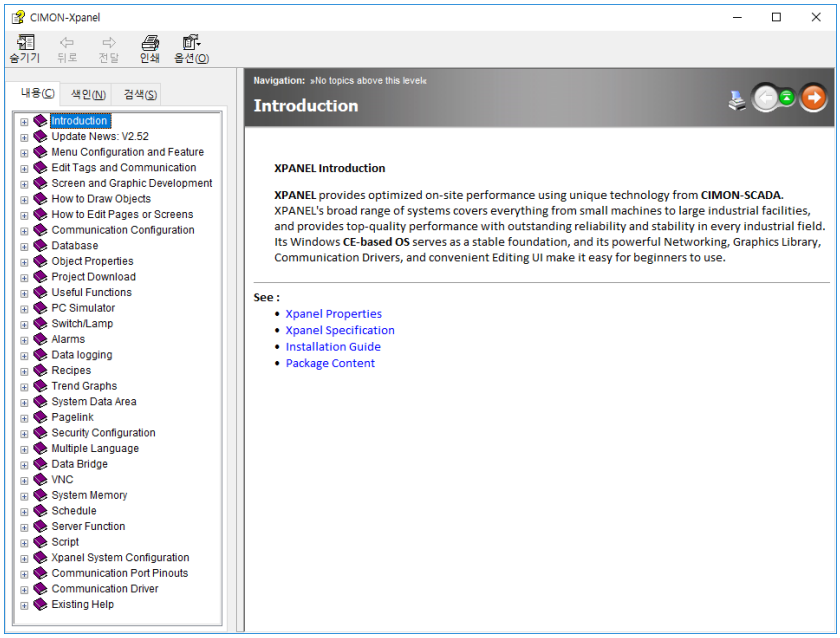
In this section, you can check the application's Help file, Xpanel Designer information and each module's information.

When you click [Help] on the top menu bar, a dropdown menu will appear as shown below.



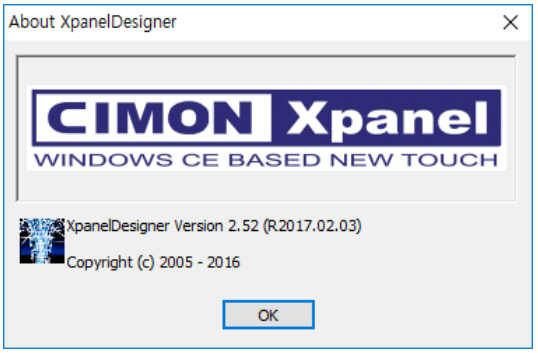
2.8.1 Xpanel Designer Help

Go to [Help] - [CimonD Help] then the application's Help file will appear as shown below. You can search information with a keyword in [Search] tab or lists in [Contents] tab.



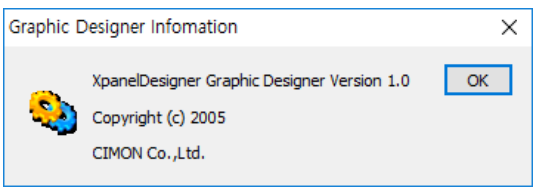
2.8.2 About Xpanel Designer

Go to [Help] - [About XpanelDesigner] then a pop-up will appear on the screen as shown below. On the pop-up, you can see the information such as version of Xpanel Designer and release number.



2.8.3 About Designer

When a module is executed and its window is selected, you can check the information of modules through [Help]. The information includes the version of module and related information.



Following is the list of modules which you can check the information.

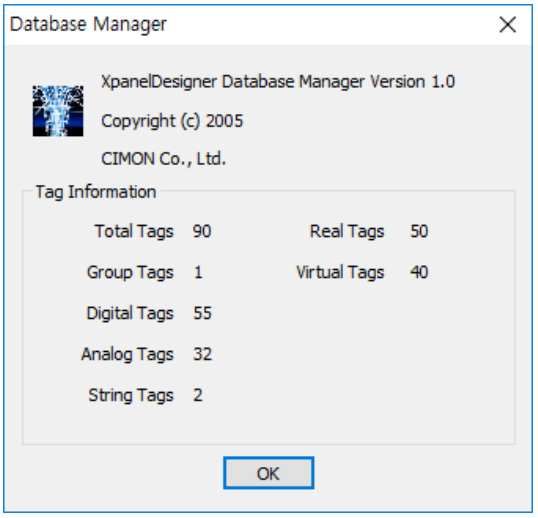
Module	Description
Graphic Designer	Displays information of current graphic designer.
Project	Displays information of project manager.
Database	Displays information of database manager.
Script	Displays information of script editor.

Data Logging	Displays information of data logging manager.
String Editor	Displays information of string editor.
Data Server	Displays information of MODBUS SLAVE editor.
Recipe Editor	Displays information of recipe editor.
Data Bridge	Displays information of data bridge editor.

2.8.4 About Database Manager

You can utilize the database manager to check the number of tags which are used in the current project.

Open [Database] in Xpanel Designer. Here you can find [About Database Manager] menu on [Help] dropdown menu. In the pop-up window, you can check the version of the database manager and the information of registered tags in the project.



- Total tags consist of group tags, digital tags, analog tags and string tags.
  E.g.) Total tags (90) = Group tags (1) + Digital tags (55) + Analog tags (32) + String tags (2)
- Total tags consist of real tags and virtual tags.
  E.g.) Total tags (90) = Real tags (50) + Virtual tags (40)
- Group tag is considered as a virtual tag.

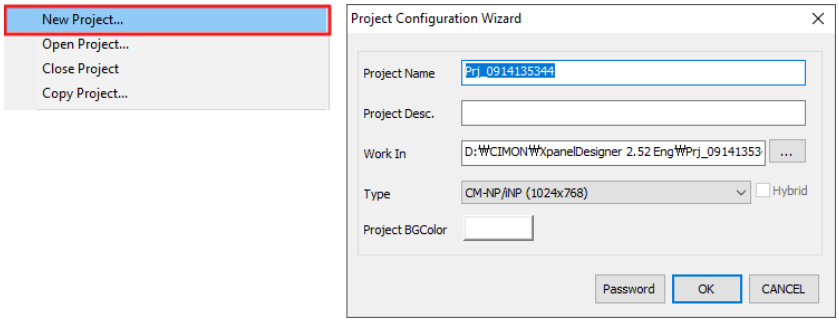
3 Creating a Project

3.1 Project

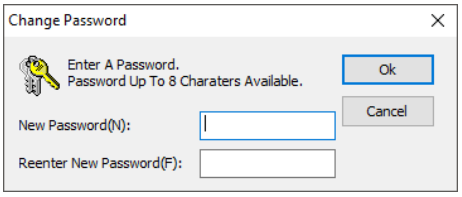
A project file contains series of data files, and these files can be configured in the Xpanel Designer. To construct a system, creating a project and constructing the database with various features is needed. The data files are stored in the user-defined directory and managed conveniently.

3.1.1 New Project

You can create a new project at [File] - [New Project]. You can set properties of the project in [Project Configuration Wizard] window.

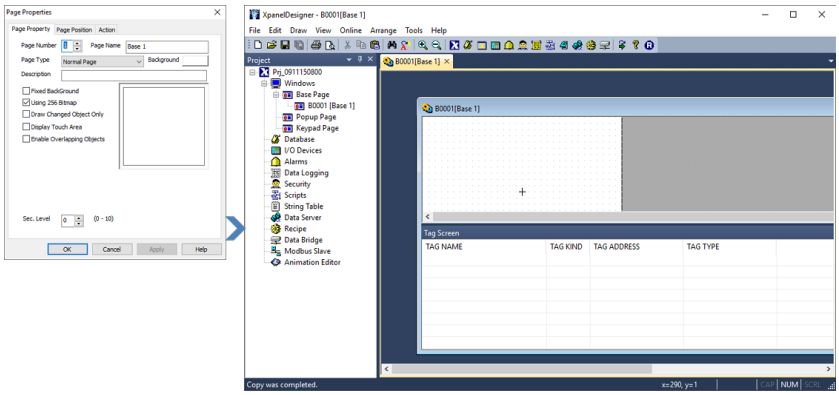


Item	Description
Project Name	Enter the name of the project. The project name will be saved as 'Prj_MMDDhhmmss' format by default. The duplicated name is not allowed. The name can be changed in the [File]-[Copy Project] menu. ※ Refer to the 'Copy project' section.
Project Desc.	Enter the description of the project. It is not compulsory.
Work In	Specify the path where the project will be saved. The default path is "C:₩CIMON₩XpanelDesigner'*Version*' Eng". A folder with project name will be created, and the project file is saved as "*.xprj" format in the folder.

<table>
<tr><td rowspan="8">Type</td><td colspan="3">The type of project file can be decided according to the dimension of each Xpanel model. 'Hybrid Xpanel' model is only compatible with 'XT07C' option, and you must check a 'Hybrid' checkbox. 'XT07C -R' indicates 7" Xpanel for lengthwise rotation.
You can choose a model shown below.</td></tr>
<tr><td colspan="2">XT05S (5.6")</td><td>XT04C (4.3")</td></tr>
<tr><td colspan="2">XT06C (6.4")</td><td>XT07C (7.0")</td></tr>
<tr><td colspan="2">XT08C (8.0")</td><td>XT15C (15.0")</td></tr>
<tr><td colspan="2">XT10C (10.4")</td><td>XT10CC (10.4")</td></tr>
<tr><td colspan="2">XT12C (12.1")</td><td>XT07C -R (7.0")</td></tr>
<tr><td colspan="2">XT05M (5.6") Mono</td><td>CM-NP/iNP (1024 x 768)</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Project BGColor</td><td colspan="3">Assign the background color of the project. White color is set by default. The background color will be applied to the additional pages.</td></tr>
<tr><td rowspan="5">Password</td><td colspan="3">Enter a password for Xpanel project.
 
</td></tr>
<tr><td>Password</td><td colspan="2">Sets up the password for the project. The password has to be entered with following criteria.
1. You can use Alphanumeric. The password is case sensitive.
2. You cannot use special characters and spaces.
3. You can enter the password up to 8 characters.
4. The password is displayed as '****'.</td></tr>
<tr><td>Confirm Password</td><td colspan="2">Enter the same password to confirm.</td></tr>
<tr><td>OK</td><td colspan="2">Saves the password setting.</td></tr>
<tr><td>Cancel</td><td colspan="2">Does not set up the password and goes back to the [New Project] window.</td></tr>
<tr><td>OK</td><td colspan="3">Creates a project with the entered information.</td></tr>
<tr><td>Cancel</td><td colspan="3">Does not create a project and goes back to the start-up screen.</td></tr>
</table>

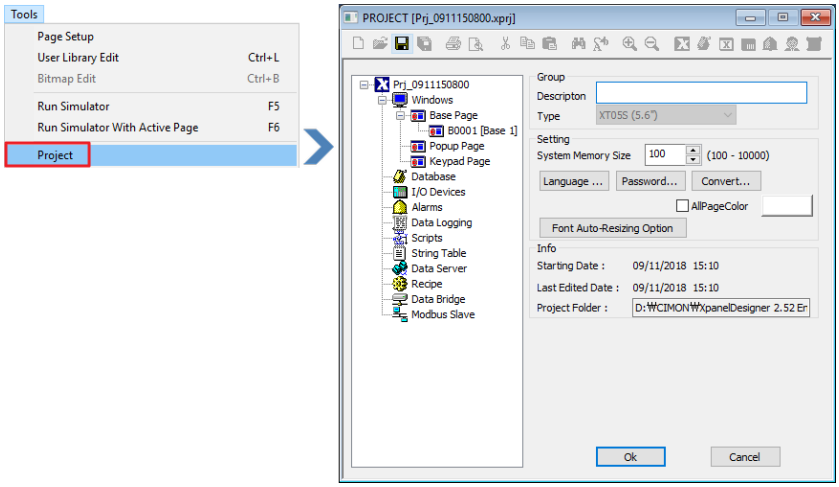
A page setup window will appear as the project is created. You can create a page based on the properties in this window.

※ Please refer to the 'Page Properties' manual for setting page options.



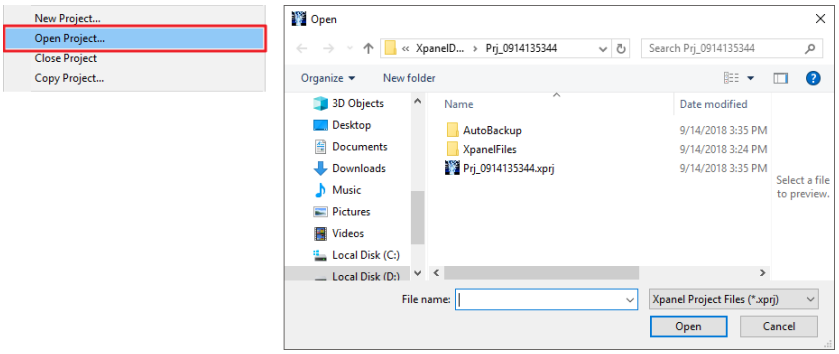
The configured settings in the [Project Configuration Wizard] window can be modified at [Tools] - [Project] menu. You can change the description, background color, and password. You may also change the project type by pressing 'Convert…' button.

※ Refer to the 'Project Conversion' manual for converting the project.



3.1.2 Open Project

You can browse the project file from the desired directory with [File] - [Open Project].

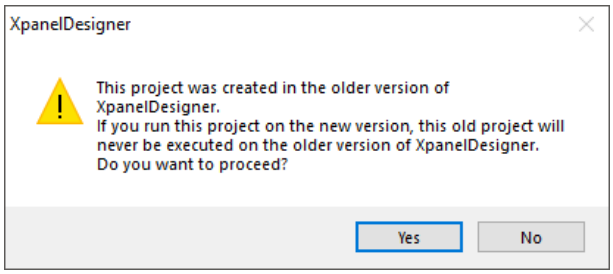


When you select a project file and press [Open] button, the last-edited project will be launched in the Xpanel Designer. If a project has been already opened, the project will be automatically closed.

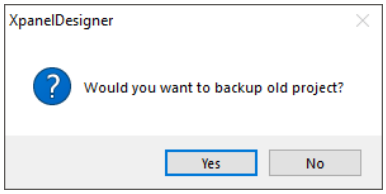
> ⚠ Please be noted that the default project file extension may differ according to the Xpanel Designer version.
> - Below Xpanel Designer V2.40: “*.prj”
> - Xpanel Designer V2.40 and above: “*.xprj”
>
> In the Xpanel Designer V2.40 and above, you may open both “*.prj” and “*.xprj” file format. In the Xpanel Designer below V2.40, you can only open “*.prj” file format.

The project file in version 2.52 cannot be executed in the older version of Xpanel Designer.

When you try to open a lower version of project with the higher version of Xpanel Designer, the following message will appear asking if you wish to continue the project execution.



By clicking [Yes], a message will appear asking you whether to back up the lower version of project file.

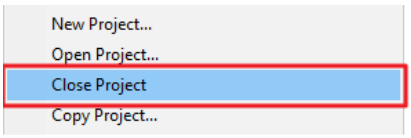


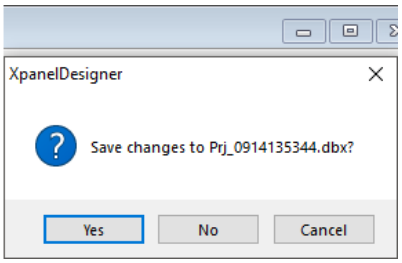
You can back up the project file by clicking [Yes]. A backup path is assigned to the 'backup_YYYYMMDD' folder by default, which location is inside of the original project directory. The project once executed in the higher version cannot be opened in the lower version of software.

Please remind that if you press [No], the project will be directly executed without backup process.

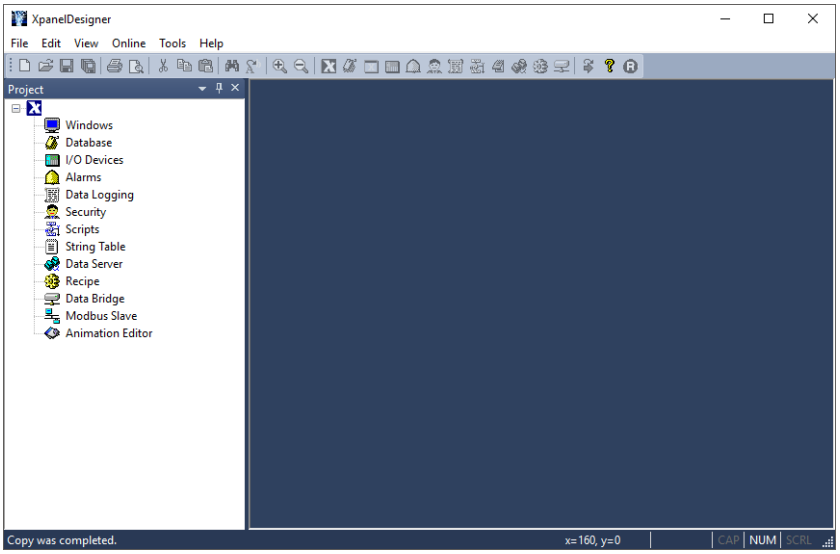
3.1.3 Close Project

You can close the current project in [File]-[Close Project]. If there have been any modifications made in the project, a message box will appear asking if you wish to save changes.



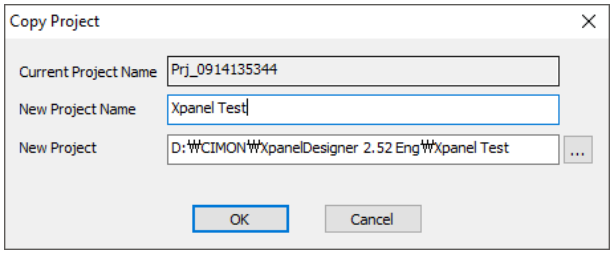


When you close the project, it may take a while according to the system environment or the size of the project. Then the Xpanel Designer goes back to the startup screen, and you can execute another project.



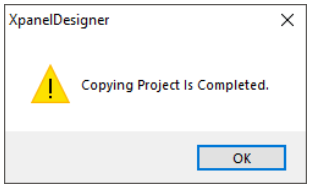
3.1.4 Copy Project

You can change the name of current project and the directory in [File]-[Copy Project]. All configurations in the original project are also moved to the target directory.



Item	Description
Current Project Name	Indicates the name of current project.
New Project Name	Enter the new name of the project you wish to change in the input field. Special characters are not allowed which cannot be used in the file name.
New Project	Specify the path where the project will be saved as new name. The default path is "C:₩CIMON₩XpanelDesigner'*Version*' Eng₩'New project name'". A folder with project name will be created, and the project file is saved as "*.xprj" format in the folder.
OK	Saves the current project as new name in the target directory.
Cancel	Goes back to edit screen without copying project.

A message shown below will appear when you press 'OK' button.

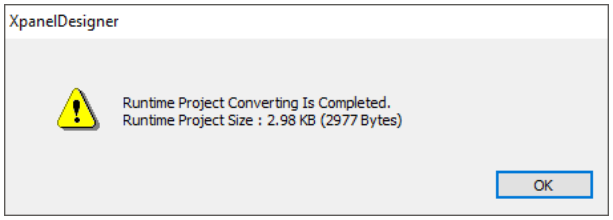


The original project maintains the execution after copying project.

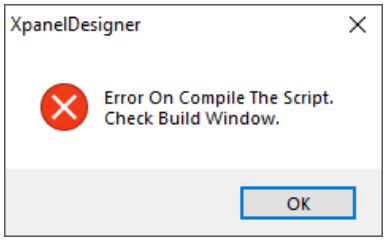
3.1.5 Convert to Runtime Project

You can convert current project to the runtime project file in [File] - [Convert to Runtime Project], without download procedure. This command compiles the project configuration during the conversion.

If the conversion is completed without any error, a message appears showing the conversion result. The conversion time and capacity of runtime project file depend on the capacity of current project files.



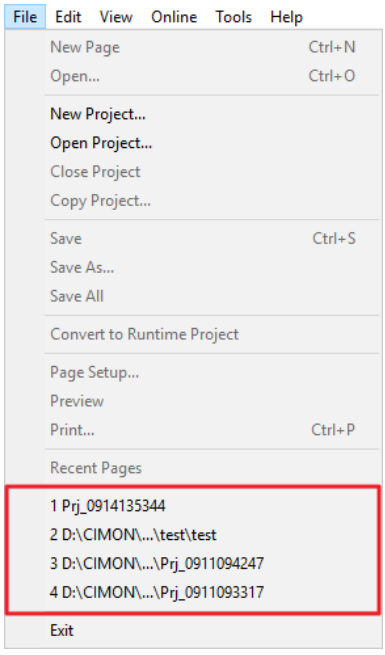
If there are any errors in the compiling phase, the conversion will be stopped and a message will appear informing the wrong configuration. You must properly set the function again to act the 'Convert to Runtime Project'.



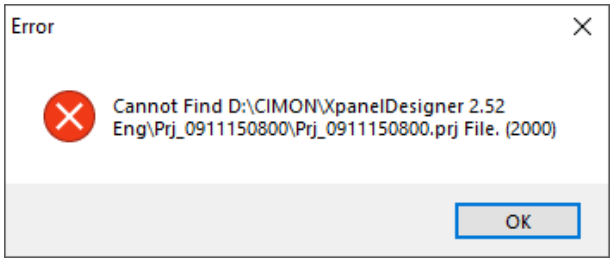
The runtime project files are saved in the 'XpanelFiles' folder of project path. These files can be downloaded to the Xpanel by [Online]-[Download to Xpanel].

3.1.6 Recent Project

At the bottom side of the [File] menu, you will find the list of recent projects. The projects are listed up to 4, and the latest project tops the list of recent projects.



Note that the project which is built in the higher version or the project path has been changed, you cannot execute the project file.



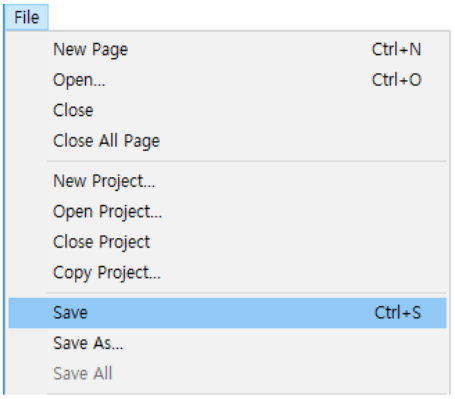
3.2 Save Project

Xpanel Designer stores the edited project in the user's system. The data is stored in page by page. Newly added monitoring page and the control featuers can be added. The user can save the page with different name, in a different path, and continue the editing. The user can also save the all changed before writing the project to Xpanel.

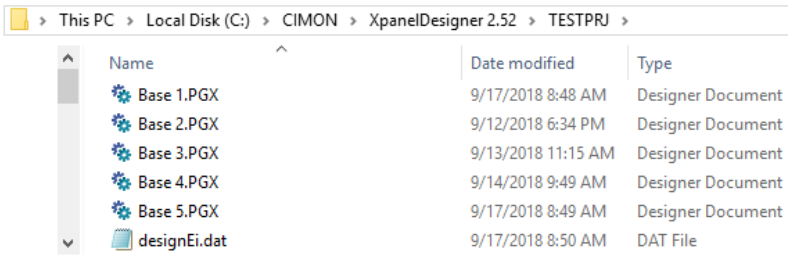
3.2.1 Save

Select [File] - [Save] or click icon to save the current page. If the page to be saved is to be newly saved, it will be saved as "*.pgx" format in the project folder.
When you save the page, it may take a while according to the system's performance or the project's size.

Hotkey: **Ctrl + S, Alt + F + S**



You can find the saved files in the project folder.

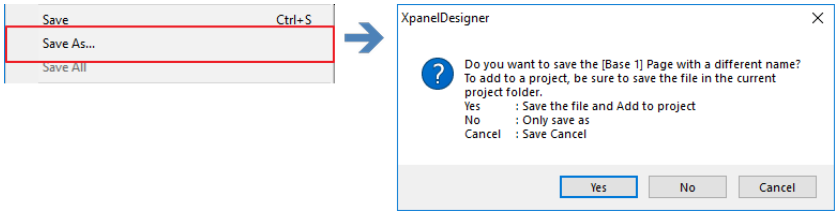


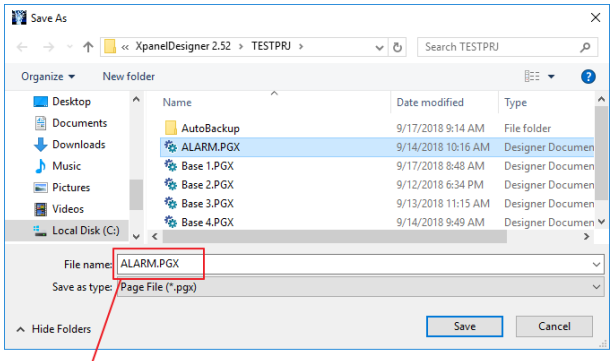
3.2.2 Save As

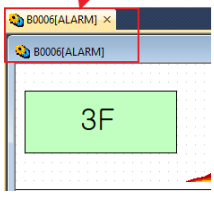
Select [File] - [Save As] and save the page with the different name. The page can also be saved in the different path, and you will be able to continue the work. The file can only be saved as "*.pgx" format, and the name cannot be duplicated with the other page files in the same path.

When you save the page in a different name, you will be asked to add the new page to the project. Press [Yes] to save the file and add it to the project. Press [No] to save the file only.

Hotkey: **Alt + F + A**





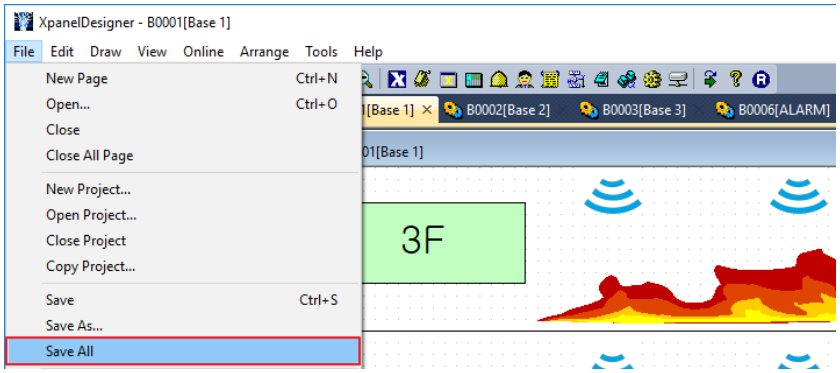


> ⚠ If you are using the Xpanel with English OS version, please do not name the pages with languages other than English and numbers. If the page name contains different characters from alphanumerics, it may cause the malfunction of the project.

3.2.3 Save All

Select [File] - [Save All] or click icon to save the all changes made in the current project. When you save the pages, it may take a while according to the system's performance or the project's size.

Hotkey: **Alt + F + L**



3.3 Project Properties

In this section, you set and check the information of the project. By accepting the password setting, you may enforce the project's security. You can also assign the size of system memory, set up the multi language and convert the project. The options for changing pages' color and font auto-resizing are provided. You can also configure the modules provided in this section.

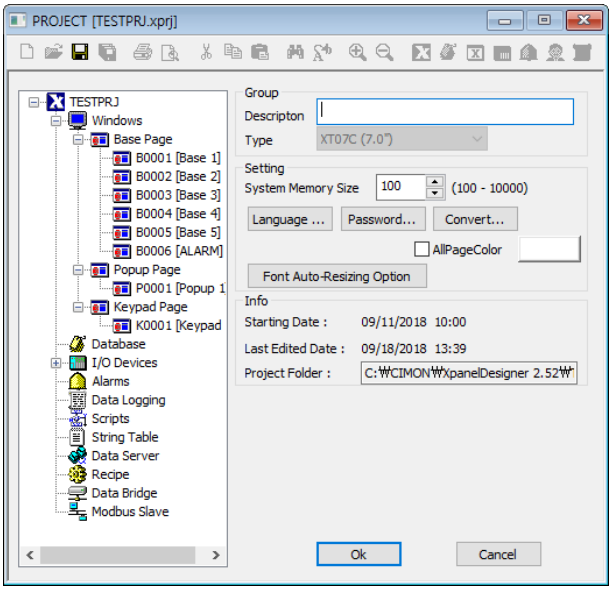
This manual is written based on the Xpanel Designer V2.52. Some features may operate differently or, not be supported according to the Xpanel Designer version.

3.3.1 Features

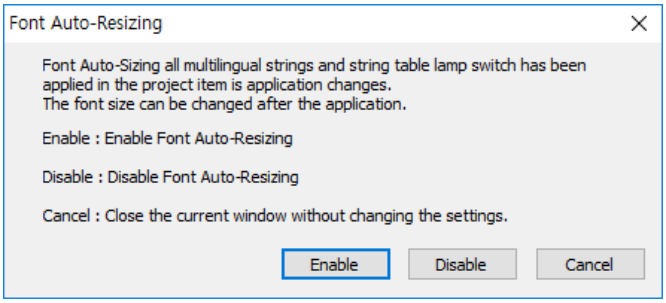
- You can set up the password to the project for the enhanced security.
- You can assign the size of system memory.
- You can set up the multi language and convert the project in the [Project Properties] window.
- You can configure the page colors and font auto-resizing.
- You can check the date when the project is created and edited recently. It is also possible to check the project folder path.
- You can configure the moduels provided in the [Project Properties] window.

3.3.2 Settings

Select [Tools] - [Project] or icon to bring up the [Project Properties] window.



Item	Description
Project Workspace	This is a function similart to the Project Workspace ([View] - [Project Workspace]). You can double click each module to bring up the configuration window. However, you cannot double-click the item to open the page or right-click to delete the page.
Description	Enter the short description of the current project.
Type	Displays the Xpanel type of the current project.
System Memory Size	Assigns the size of virtual system memory size when you need the storage space with consecutive addresses. You may assign from 100 to 10000 addresses.
Language	Configures the multi languages to display them on a single page.
Password	Sets up the password to the current project, which will be applied when you open the project next time.
Convert	Changes the Xpanel type of the current project. You can select the following models: XT05S, XT06C, XT08C, XT10C, XT12C, XT15M mono, XT04C, XT07C, XT15C, XT10CC, XT07C-R, CM-NP/iNP. You cannot select Hybrid Xpanel option.

<table>
<tr><td>All Page Color</td><td>You can select the background color of the pages. When you press the [Ok] button after selecting the 'All Page Color' option, background color of the entire pages in the current project will be changed to the selected color. When you press the [Ok] without selecting the 'All Page Color' option, only the new pages created after the configuration will have the assigned background color. 98 colors are provided.</td></tr>
<tr><td>Font Auto-Resizing Option</td><td>You can activate or deactivate the 'Font Auto-Resizing' option in [Switch/Lamp] - [Label] tab.
 

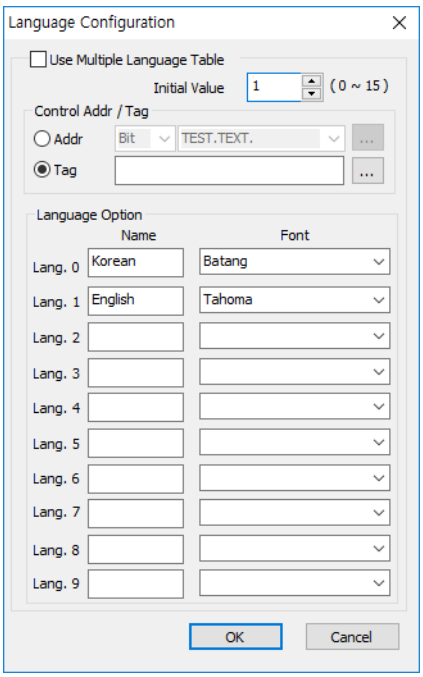
<table>
<tr><td>Enable</td><td>Enable 'Font Auto-Resizing' option.</td></tr>
<tr><td>Disable</td><td>Disable 'Font Auto-Resizing' option.</td></tr>
</table></td></tr>
<tr><td>Starting Date</td><td>Displays the date when the current project is created.</td></tr>
<tr><td>Last Edited Date</td><td>Displays the date when the current project is edited recently.</td></tr>
<tr><td>Project Folder</td><td>Displays the project folder path of the current project.</td></tr>
</table>

Multi Language

Select [Tools] - [Project] - [Language] or [Tools] - [Multi Language Setup] to bring up the [Language Configuration] window as shown below.

Using the multi language option, you can display a single word in different languages. The language setups (Language name, Font) will be utilized in the [String Table] - [Column Property].

※ Please refer to the 'Multi Language' manual for more information.

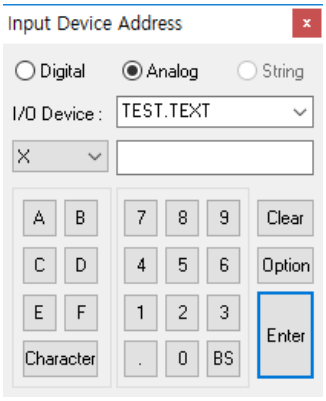


Item	Description
Use Multiple Language Table	Select this option to use the [Multiple Column] in the [String Table]. If the option is deselected, you can only use the contents of 'Column 0', regardless of the String Table configuration.
Initial Value	Configure this option when the 'Use Multiple Language Table' option is selected. The assigned value will display the corresponding column. You can assign the value from 0 to 15.
Control Addr / Tag	Configure this option when the 'Use Multiple Language Table' option is selected. Assign the device address or tag to control the column number.

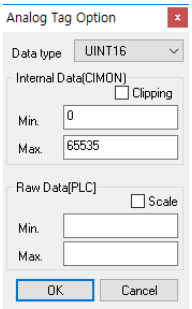
	Addr	Controls the column with the address of the device registered in [I/O Device]. You can decide the unit of the data: BIT or WORD. The detailed configuration can be done by pressing the ... button.
	Tag	Controls the column with the tag registered in the [Database]. You can manually enter the tag name or press ... button to browse the tag.
Language Option (Lang. 0~9)	Name	Enter the name to distinguish the language.
	Font	Select the font type to display the corresponding language. You can use the fonts which you downloaded with the Xpanel Designer.

(1) Control Address

You can configure the details of the assigned device address for the column control by pressing the ... button.



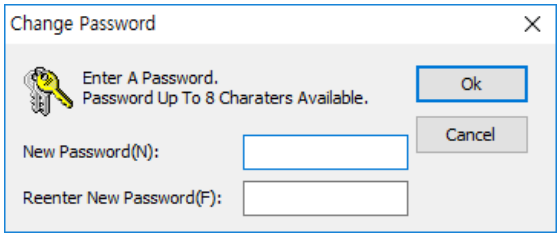
Item	Description
Data Type	Select the data type to be used for the column control. This option is different from the BIT, WORD selection in the [Language Configuration] window. When you select 'Digital', you will control the column with 0 or 1. All values exceeding 1 will be recognized as 1. When you select 'Analog', you will control the column with the value assigned to the device address. The values from 0 to 15 will only be recognized. The values exceeding 15 will be recognized as 15 or will follow the configuration in the [Option] wiondow.
I/O Device	Displays the list of I/O devices registered in the current project.

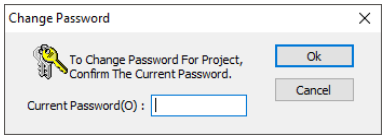
<table>
<tr><td rowspan="3">Device Address</td><td colspan="2">Assign the device and address for the column control.</td></tr>
<tr><td>Device Type</td><td>Displays the list of devices according to the selected I/O device and the data type.</td></tr>
<tr><td>Address</td><td>Enter the starting address of the device. The value you can input may differ according to the data type (BIT/WORD) selection from the [Language Configuration] window, the selected I/O device and the device type.</td></tr>
<tr><td>Device Address Input Keypad</td><td colspan="2">You can use this keypad when you have to input the address without a keyboard.
Enter the address in decimal or hexadecimal according to the device type.
For example, if you assign an address in device X of CIMON-PLC, the address must be assigned in hexadecimal. In case of the device D, the address must be assigned in decimal.</td></tr>
<tr><td rowspan="4">Option</td><td colspan="2">The [Option] is activated when the ‘Analog’ option is selected.
Press the button to bring up the [Analog Tag Option] window as shown below.
 
</td></tr>
<tr><td>Type</td><td>You can select the analog data type from the following list types: UINT8, UINT16, UINT32, INT8, INT16, INT32, UBCD8, UBCD16, UBCD32, BCD8, BCD16, BCD32, Float . UINT16 is the default type.</td></tr>
<tr><td>Internal Data</td><td>Enter the value range to be displayed on the Xpanel. The default range is from 0 to 65535.
When you select ‘Clipping’ option, a warning message will appear when the value exceeds the assigned range, and the exceeded value will not be used.</td></tr>
<tr><td>Raw Data</td><td>Enter the value range which will be actually input to the PLC. For example, if the raw data range is from 0 to 16000 and the internal data range is from 0 to 100, the Xpanel will display 100 when the PLC gets the value 16000.</td></tr>
</table>

	Scale	This option calculates the PLC data and displays the result to the Xpanel. The Scale calculation is as shown below. **Scale = Raw Data x Scale + Offset**

Password Setup

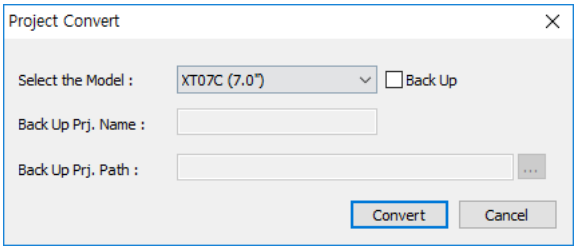
Sets the password to the project which will be asked from the next execution of the project in Xpanel Designer.

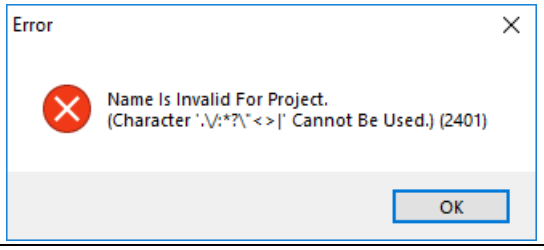
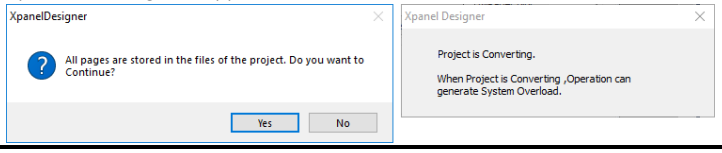


Item	Description
New Password	This is used to setup the password for the project. The password has to be entered with following criteria. **1.** You can use Alphanumeric. The password is case sensitive. **2.** You cannot use special characters and spaces. **3.** You can enter the password up to 8 characters. **4.** The password is displayed as '****'.
Reenter New Password	Enter the password again.
Change Password	When the password is previously configured in the project, a following [Change Password] dialog box appears. You can change the password by entering the current password in the text field. 
OK	Saves the password setting.
Cancel	Does not set up the password and goes back to the [Project Properties] window.

Project Conversion

You can convert the Xpanel type of the current project. When you press the [Convert] button, following window will appear.



Item	Description
Select the Model	Select the target Xpanel model. You can select the following models: XT05S, XT06C, XT08C, XT10C, XT12C, XT15M mono, XT04C, XT07C, XT15C, XT10CC, XT07C-R, CM-NP/iNP. You cannot select Hybrid Xpanel.
Back Up	Select the option to back up the current project before the conversion. When you select the option, the 'Back Up Prj. Name' and 'Back Up Prj. Path' fields are enabled.
Back Up Prj. Name	Enter the name of back up project. You must enter the project name after selecting the back up project path. You cannot use the special characters mentioned in the following message. 
Back Up Prj. Path	Select the path where the back up project will be saved.
Convert	The project will be backed up and converted. Any other operation during the conversion may cause the system overload. If you did not select the 'Back Up' option, a message will appear. 

3.3.3 Exercise

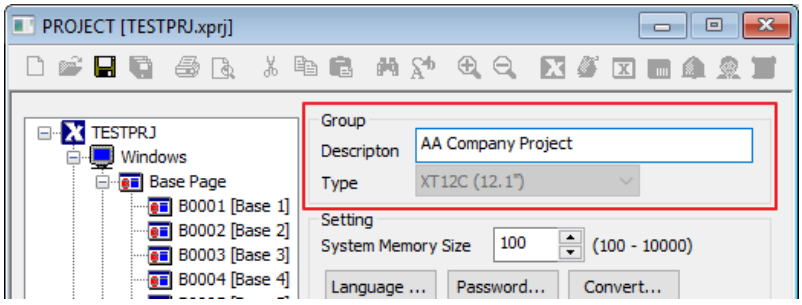
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Setting Project Properties

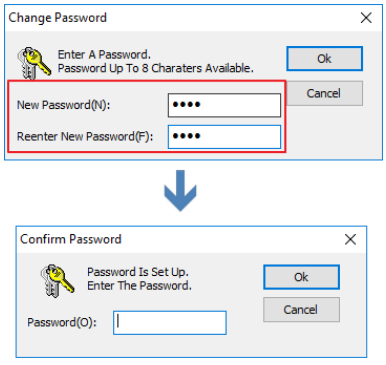
Following is an example of setting project properties after creating a new project.

(1) Setting the Project Password

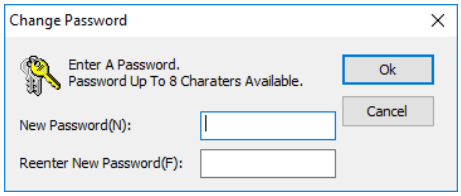
a) Select [Tools] - [Project] or icon to bring up the [Project Properties] window. Enter the description of the project if needed.



b) Press [Password] button and enter the password which will be used to open the project.



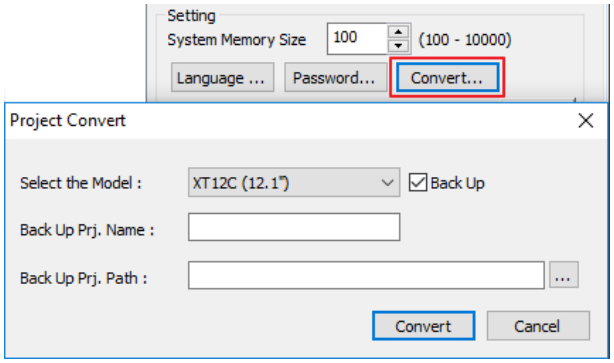
c) If you wish to change the password, press [Password] button again and enter the password you have set in the previous step. Then you can assign the new password.



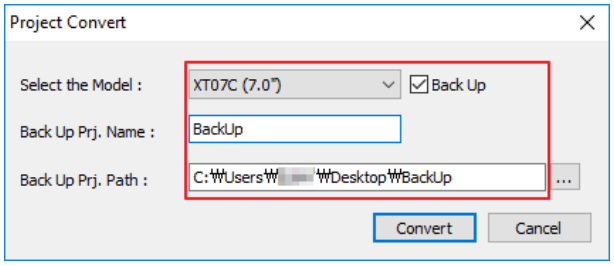
(2) Project Conversion and Back Up

You can back up the current project file while you convert the project's Xpanel type.

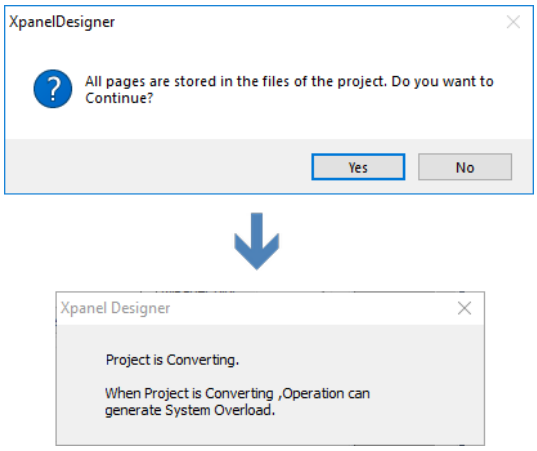
a) Press [Convert] button and select 'Back Up' option in the following window. You can find that the current project is using the XT12C model.



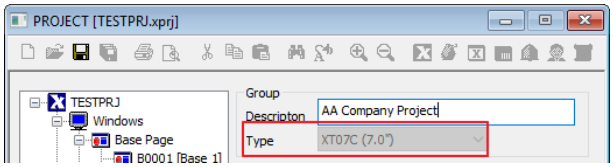
b) Change the model to "XT07C" and assign the back up project path and the name. In this example, the project will be saved in the desktop.



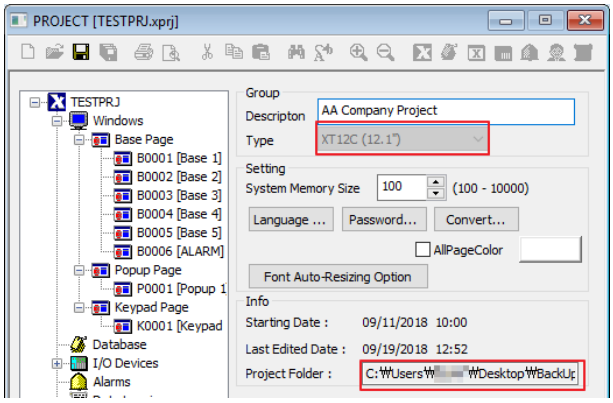
c) Press [Convert] button to start the project conversion and back up.



d) After the conversion, you can find that the Xpanel type in the [Project Properties] window and the page size have been changed.



e) When you open the backup project, you can find that the original project is saved.

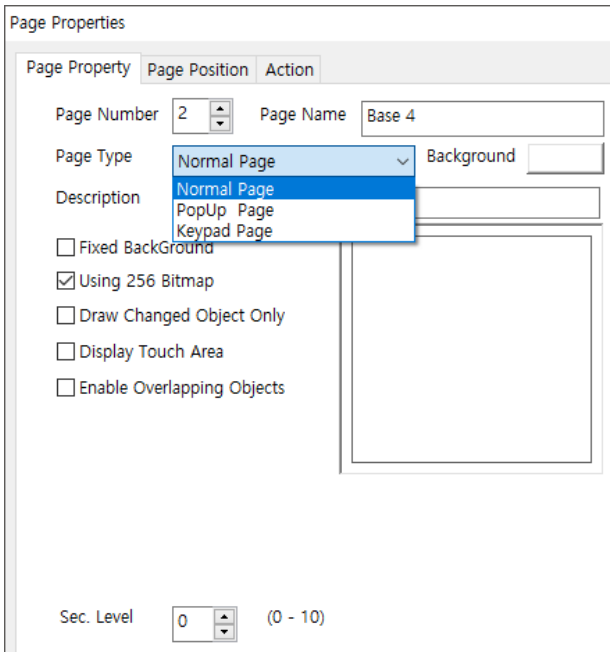


3.4 Page

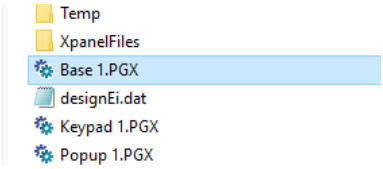
After creating a new project and pages, you can construct monitoring windows by adding various functions. These pages can be saved in the desired path to be simply managed.

3.4.1 Creating a Page

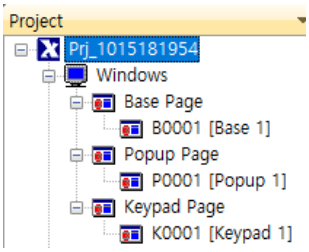
Go to [File]-[New Page] or click icon in the top menu. When you create a project, 'Page Properties' dialog box will appear. You can choose the type of page in the combo box. You can select the normal, popup, or the keypad page.



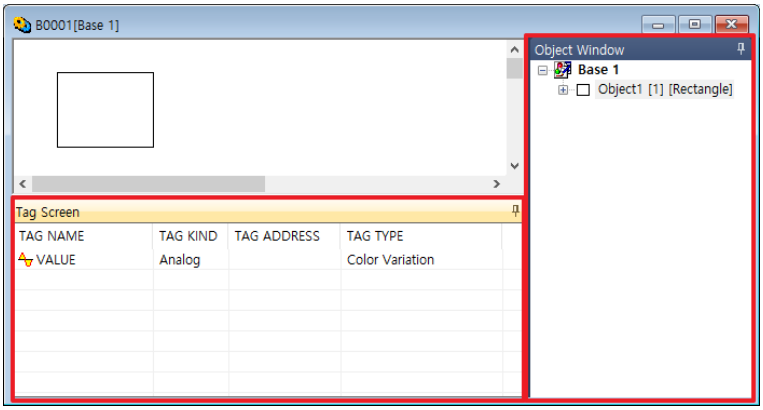
As soon as the page is created, a page file instantly saved as “*.pgx” in the project directory. The page name is made of each page type (Normal page: Base, Popup page: Popup, Keypad page: Keypad) and page number by default.



The page name is added on the page tree according to its page type (Normal page: B, Popup page: P, Keypad page: K) and page number.

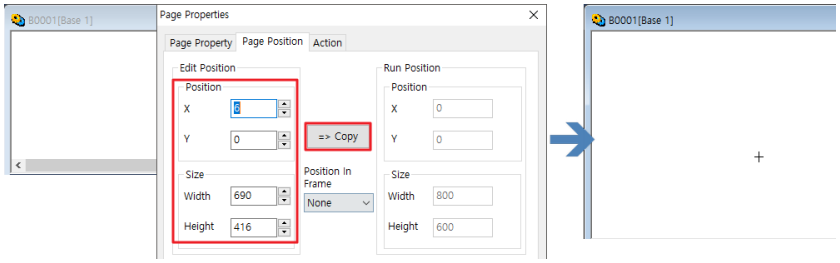


When the page is created, ‘Tag screen’ and ‘Object window’ are visible by default. Tags and object names shown in the page are listed in the each window. You can disable tag screen and object window in the [View] menu.



To save changes made on the page, click [File]-[Save] or icon. You can also save multiple pages at once by selecting [File]-[Save All] or icon.

To change the size or position of the page, you can set values under the [Page Position] of 'Page Properties'.

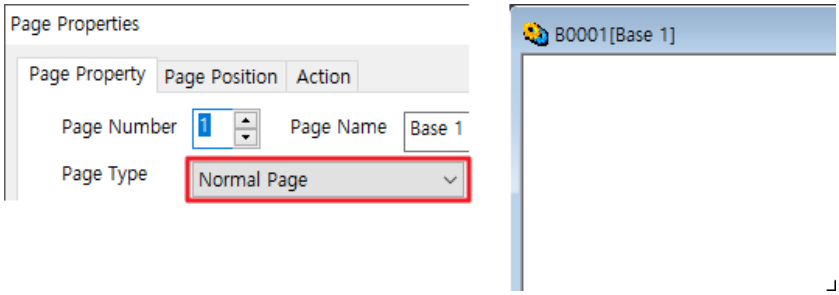


Please note that you can only use pages which sizes are not exceed the model size of project. The table below shows each size of model. See the table as a reference when configuring the position and size of page.

Model	Size
XT04	480 x 272
XT07	800 x 480
XT08	800 x 600
XT10	800 x 600
XT12	800 x 600
XT15	1024 x 768

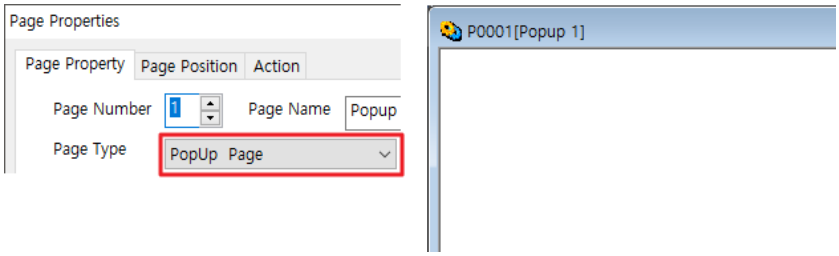
Normal Page

You can add a standard window by selecting 'Normal page' in the [Page Properties]. The default size of page is set the same as size of project model. Page name is specified as 'Base 1'.

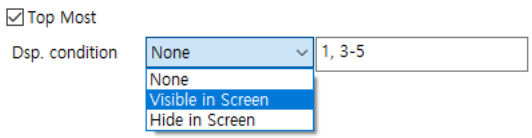


Popup Page

You can add a popup page window by selecting 'Popup page' in the [Page Properties]. The popup page is used to float another window upon the normal page. The default size of page is set the same as size of project model. Page name is specified as 'Popup 1'.



When 'Top Most' is selected for the popup page, you can decide whether or not to display the popup page on the specified screen.



Item	Description
None	Always shows popup page without any display conditions.
Visible in Screen	Shows popup page only on the specified screen. You can specify the screen by a single page like 1, 2. You can specify the first and last numbers such as 3-5 for continuous pages.
Hide in Screen	Hides popup page on the specified screen. You can specify the screen by a single page like 1, 2. You can specify the first and last numbers such as 3-5 for continuous pages.

⚠

- If you use a data logging object along with trend graph, alarm summary and key input window objects on a popup page, the shortcut keys of data logging may not work properly.
- The 'Popup display condition' is a feature that shows or hides a popup page according to the user's need. Just because you do not see a popup page due to the 'Hide in Screen' setting, this does not mean the invisible popup page is closed in the project. In the examples described below, you must choose to close the popup page.

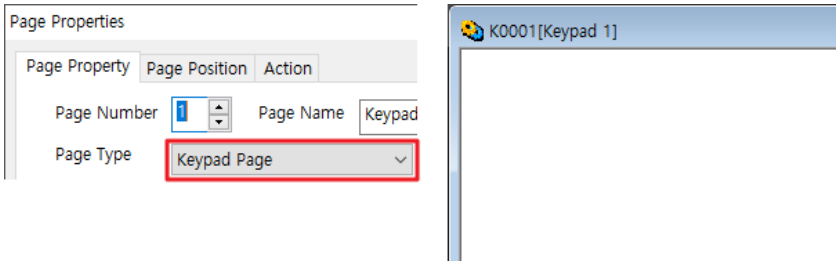
  1. Open the popup page for the alarm operation
  2. Hide the popup page on the currently displayed screen in the 'Display condition.
  3. All cleared alarm by the alarm disabling operation
  4. Move to another page

  → If you do not close the popup page when the alarm is all cleared in step 3, the popup page which opened in step 1 will be displayed again when you go another page in the step 4. Please close the popup page when you 'all clear' the alarms in step 3.

  5. When switching a page using page-related command expressions (e.g., Prepage())

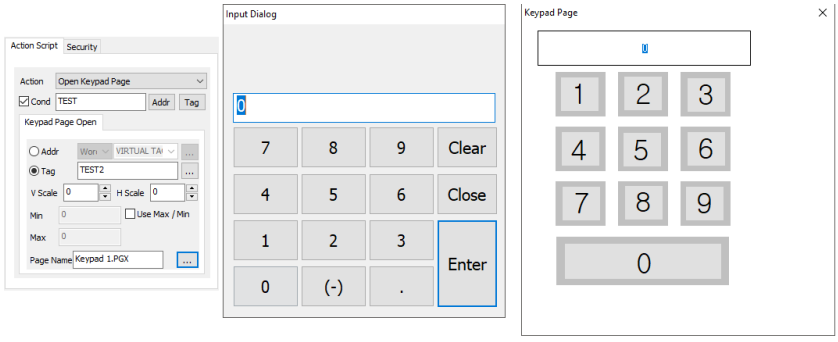
Keypad Page

You can add a keypad window by selecting 'Keypad page' in the [Page Properties]. The default size of page is set the same as size of project model. Page name is specified as 'Keypad 1'. This page is used to utilize the key input object.



The size of keypad page must be smaller than the size of project model. Also, the keypad page must contain one or more key input object.

You can design the data entry screen by using keypad page. To configure the keypad page settings, select 'Open Keypad Page' option under the 'Touch' feature in object configuration.



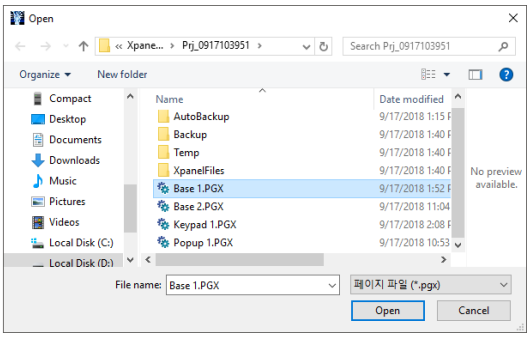
<Original keypad window> **<User-defined keypad window>**

※ Please refer to the 'Key input window' manual for more information about key input object.

> ⚠ If you add the key input object in the popup page, the shortcut keys of data logging may not work properly.

3.4.2 Opening a Page

You can bring up the existing page files by selecting [File] - [Open] or icon. You can also browse the page from other pages. You can either edit the page or copy the contents to the current project's page.



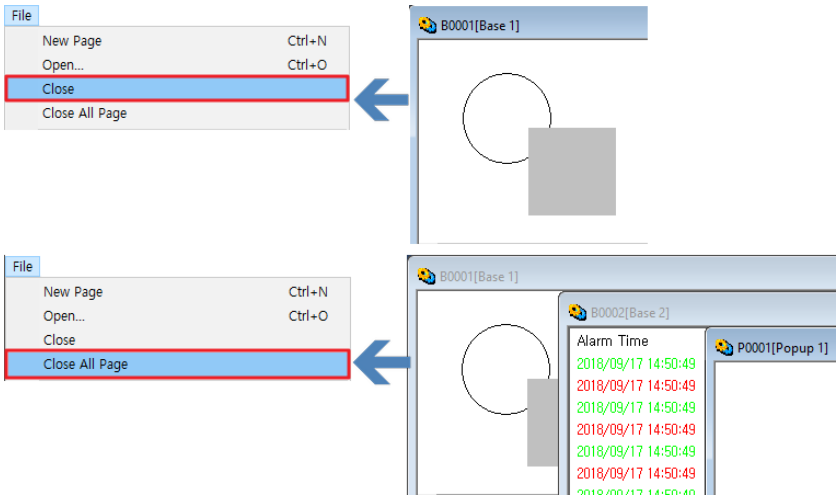
You cannot open the page which is created in the higher version of Xpanel Designer.

3.4.3 Closing a Page

You can close the current page by selecting [File] - [Close]. To close all of the pages, select [File]-[Close All Page].

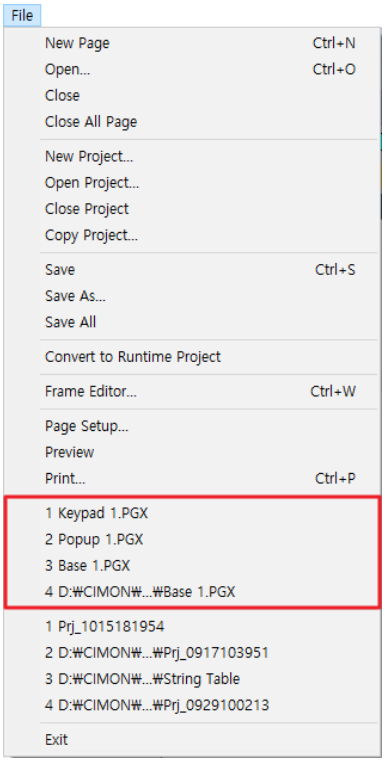
If there are any changes, a message will appear asking if you wish to save the changes.

It is recommended to close pages that do not need more modification, for the better working environment.

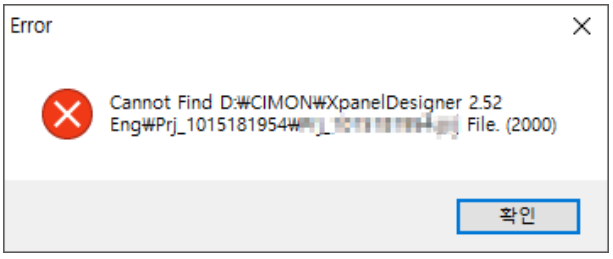


3.4.4 Recent Page

After launching the project, you may bring up a page which you have recently worked on, by selecting each page name. Up to 4 pages are listed in the [File] menu.



If the page file is deleted or its path is changed, you cannot open the page from the [Recent page] list. You cannot also open them if the page is saved in the higher version of Xpanel Designer.



3.5 Page Properties

An operator can customize the monitoring environment by setting page properties. The appearance of page window for the runtime can be determined such as the title, size or the executable position. The user can define an action at opening or closing the window.

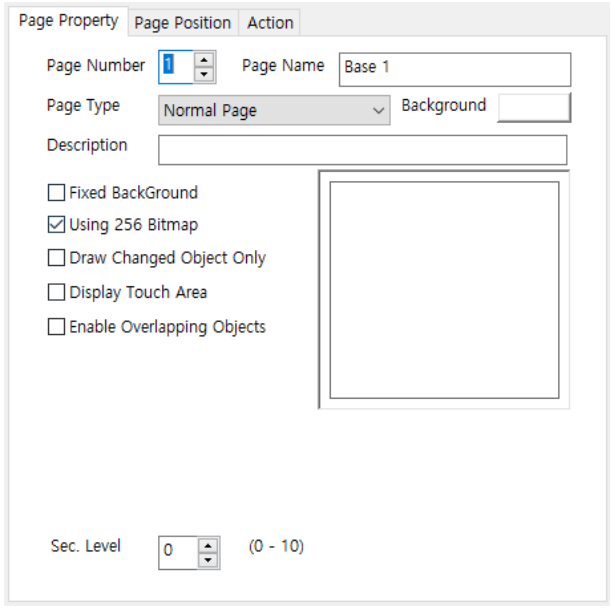
> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

3.5.1 Settings

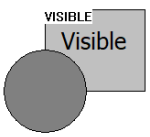
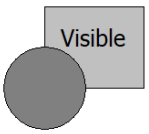
To prompt the 'Page Properties' dialog box, select [Tools] - [Page Setup] or double-click the blank space of the page. The dialog box is categorized into three functions: Page Property, Page Position and Action.

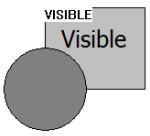
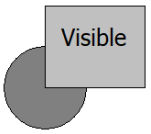
(1) Page Property

You may decide name and type of current page. The options for viewing objects and security grade are under this tab.

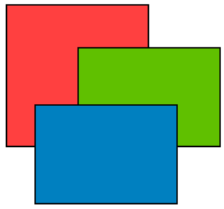


- General

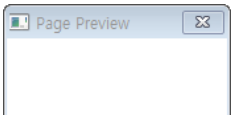
<table>
<tr><th>Item</th><th colspan="3">Description</th></tr>
<tr><td>Page Number</td><td colspan="3">Each page is defined by a unique number, and a header is assigned according to the type of page. (Normal page: B, Popup page: P, Keypad page: K)</td></tr>
<tr><td>Page Name</td><td colspan="3">Enter the unique name of page in the text field. Note that if the file name contains non-alphanumeric characters, the project may cause a malfunction in the English OS of Xpanel.</td></tr>
<tr><td rowspan="4">Page Type</td><td colspan="3">Select the type of page.</td></tr>
<tr><td>Normal Page</td><td colspan="2">Set as default page for the project.</td></tr>
<tr><td>Popup Page</td><td colspan="2">Set as a floating page upon the normal page.</td></tr>
<tr><td>Keypad Page</td><td colspan="2">Set as a user-defined page for keypad.</td></tr>
<tr><td>Background</td><td colspan="3">Specifies the background color of current page. You may select a color from the palette.</td></tr>
<tr><td>Description</td><td colspan="3">Enter the short information of page in the text field.</td></tr>
<tr><td rowspan="3">Fixed Background</td><td colspan="3">Considers the object as a background which does not contains ‘change’ function such as ‘visible’, ‘color’, etc. Graphic processing speed may be increased by this option. The object with ‘change’ function locates upon the background. If objects are overlapped each other, the object with ‘change’ function will be placed upon the other object which has empty function.</td></tr>
<tr><td>Option</td><td>Xpanel Designer</td><td>Xpanel Runtime</td></tr>
<tr><td>Disabled</td><td> 
</td><td> 

When ‘visible’ function is enabled, objects are displayed same as Xpanel Designer screen.</td></tr>
<tr><td>Enabled</td><td> 
</td><td> 

When ‘visible’ function is enabled, the assigned object will be placed forward.</td></tr>
</table>

Draw Changed Object Only	This option is used to increase the update speed of Xpanel screen, by reducing the number of objects to display. By default, all objects are redrawn when an object function is activated. If you selected this option, only changed objects are redrawn as the screen is refreshed. ※ Please verify the following to avoid the malfunction. (1) Avoid the overlapping of objects with 'change' function, which refers: -The object including 'visible', 'blink', 'H/V change', 'H/V move', 'color' or 'rotate' function -Objects that are grouped as a single object with a function -Dynamic tag, date/time, string value, data log, trend graph, alarm summary and pagelink objects  The picture above shows three rectangle objects with 'color' object, which are overlapped each other. The most recent changed object will be placed forward regardless of the position. (2) 'Draw changed object only' option does not activate when the object with 'H/V move' or 'rotate' function is registered in the page. (3) If the objects with 'visible' activated by same tag are overlapped each other, the backward object may be covered by a forward object.
Using 256 Bitmap	Converts the image to a 256-colored bitmap. This option makes image lower quality. You can reduce the speed for replacing page and capacity of the page.
Display Touch Area	Shows the borderline of the button when touching the object.
Enable Overlapping Objects	When the multiple of objects with 'touch' function are overlapped each other, both functions activate by touching the layered area. Note that you cannot use this option to 'Page open' and 'Page close' action.
Security Level	This option is to limit the authority according to the user's security level. You can assign a value from 1 to 10. Higher level indicates the higher authority. ※ Refer to the 'Security' for more information about security level.

- Options for popup page and keypad page

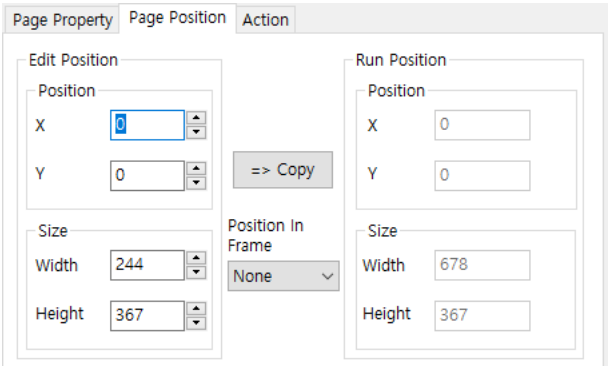
Item	Description	
System Window	Decides the shape of page. When you select the check box, the page is set as a window. When you deselect the checkbox, the page is changed as a normal page.	
	Enabled	Disabled
		
System Menu	Determines whether to use system icons (Minimize, maximize, close).	
Apply to this working page	Applies the 'System Window' or 'System Menu' option to the edit screen in Xpanel Designer.	

- Options for popup page

Item	Description	
Topmost	Determines whether to show or hide the popup page in the assigned screen.	
Display Condition	Shows or hides the popup page according to the display condition.	
	None	Popup page is always visible without any condition.
	Visible in Screen	Popup page is visible in the assigned screen. You can assign a single page. If you wish to assign the continuous page, enter the start and end number as '3-5' in the field.
	Hide in Screen	Popup page is hidden in the assigned screen. You can assign a single page. If you wish to assign the continuous page, enter the start and end number as '3-5' in the field.

(2) Page Position

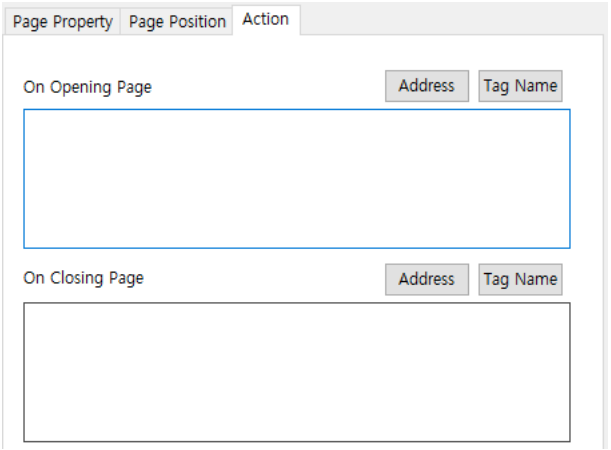
You can specify the position or the size of page in the Xpanel Designer, and reflect them in the Xpanel runtime.



Item		Description
Edit Position	X	Enter the coordinate value that indicates the number of pixels between the left edge of the designing area and the left edge of the window being configured. Current location is set as default.
	Y	Enter the coordinate value that indicates the number of pixels between the top edge of the designing area and the top edge of the window being configured. Current location is set as default.
	Width	Enter the window's width in pixels. Current width is set as default.
	Height	Enter the window's height in pixels. Current height is set as default.
Run Position	X	Represents the X coordinate of page window in the Xpanel runtime.
	Y	Represents the Y coordinate of page window in the Xpanel runtime.
	Width	Represents the width of page window in the Xpanel runtime.
	Height	Represents the height of page window in the Xpanel runtime.
Copy		After adjusting edit location appropriately, press [Copy] to reflect coordinate values into the runtime.
Frame in Position		Assign the frame position of the page configured in [File]-[Frame Editor].

(3) Action

You can define the action for opening or closing the page such as executing the script or changing a tag value.



Item	Description
Address	Enter the real address of device configured in the [I/O Device]. The real I/O address notation is as shown below: [I/O device name.Station name.Device address]
Tag Name	You can browse a tag from the database.
On Opening Page	Enter the command in the field activated by opening page.
On Closing Page	Enter the command in the field activated by closing page.

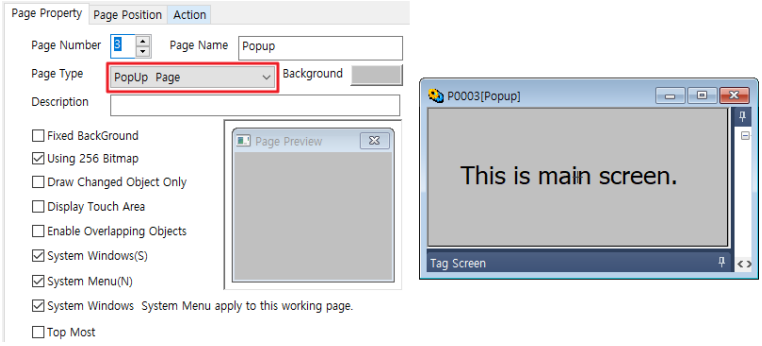
3.5.2 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

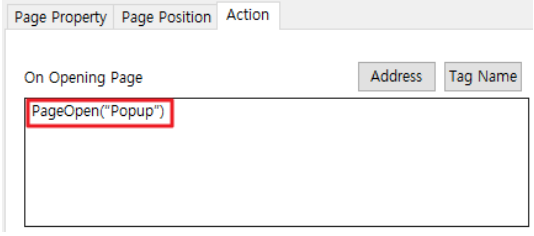
Exercise : Pop-up screen from opening page

By accepting action, you can bring up the pop-up screen when you are opening the page.

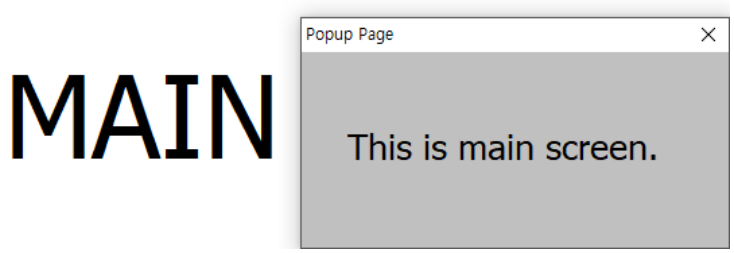
a) Create a normal page and popup page. Specify the name of popup page as 'Popup' and design as shown below.



b) Double-click the background of main screen or click the [Tools]-[Page Setup], and move to the [Action] tab. Enter 'PageOpen("Popup")' in the 'On Opening Page' field.



c) Launch the project in Xpanel. A popup message appears from the main screen.



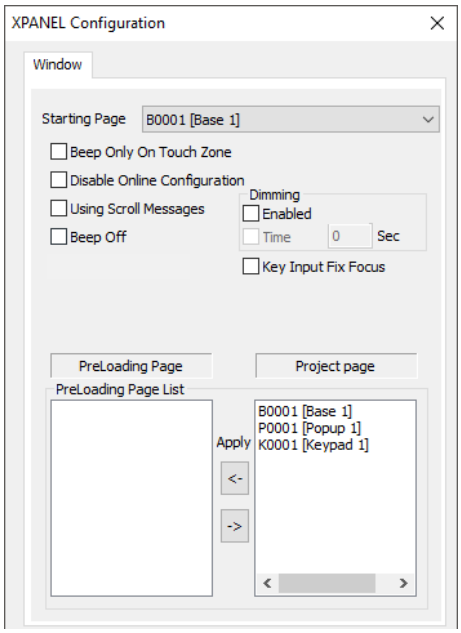
3.6 Xpanel Configuration

You can set project runtime environment through the Xpanel configuration. The main screen can be selected, and a scroll message may be shown by choice. You can enable or disable the beep sound during a touch operation. Also, screen dimming after a certain period of time allows you to save electricity consumption.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

3.6.1 Settings

To bring up the 'Xpanel Configuration' dialog box, press [Tools]-[Xpanel Configuration] or icon.

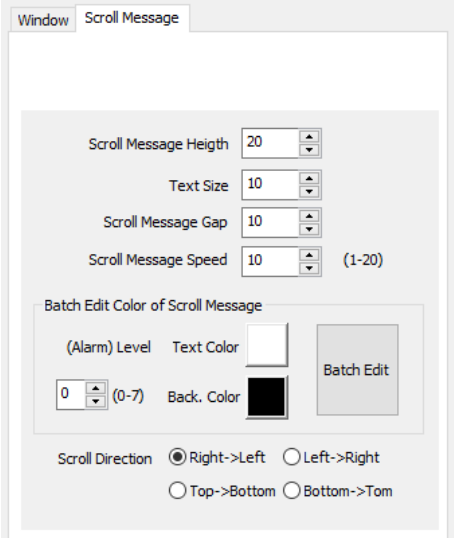


(1) Window

Item	Description
Starting Page	Select a main screen for Xpanel project runtime. You can select the normal page or frame file in the project directory.
Beep Only on Touch Zone	When the option is selected, beep sounds only on the touch zone of the project. The silent will remain on the other area. This option disappears when 'Beep off' option is selected.
Disable Online Configuration	Disables opening the configuration dialog box during Xpanel runtime.
Using Scroll Messages	Shows the description of alarm at the bottom of the screen. [Scroll message] tab will be added to the configuration window.
Beep Off	When the option is selected, there are no beep sound on entire area of screen.
Dimming	If there is no touch operation within the period of specified time, the screen darkens automatically. You can set from 10 to 3600 seconds for dimming time. This option is applied after restarting the Xpanel system. You can configure dimming feature in the [Misc. Config]-[LCD Brightness] as well.
Key Input Fix Focus	Keeps focus on key input field at all times while touching other areas in screen.
Preloading Page	When the page is added in the 'Preloading page' list, Xpanel preloads the page before project execution. This reduces speed for opening the page which has large size.

(2) Scroll Message

Under the [Scroll Message] tab, you may configure the appearance of scroll message. The message starts with an alarm occurred earlier. If the multiple of alarms including scroll message feature are occurred, descriptions are displayed in rotation. Messages are ended after alarm is cleared.



Item	Description
Scroll Message Height	Assigns the height of scroll message in pixels. Scroll message is created at the bottom of the screen, and height must be shorter than the height of screen. You can assign from 0 to 1024 pixels. The value specified by default is 20.
Text Size	Assigns the text size of scroll message. Text size must be less than the height of scroll message. You can assign from 5 to 100 for text size. The value specified by default is 10.
Scroll Message Gap	Assigns the distance between messages. You can assign from 1 to 1280 for distance. The value specified by default is 10.
Scroll Message Speed	Adjusts the speed of scroll message. The smaller the value of speed, the slower the scroll message moves. You can assign from 1 to 20. The value specified by default is 10.

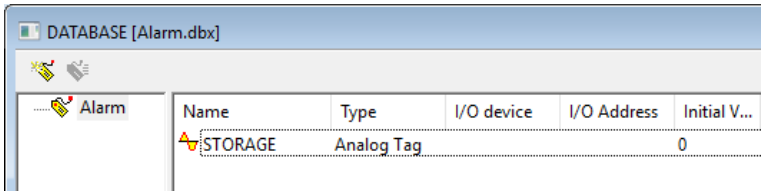
Batch Edit Color of Scroll Message	You may edit the color of scroll message for assigned level of alarm. When you press [Batch Edit] button, you can configure colors for each level of alarm.	
Scroll Direction	Decides the scrolling direction of message.	
	Right → Left	The message appears from right to left side of the screen.
	Left → Right	The message appears from left to right side of the screen.
	Top → Bottom	The message appears from top to bottom of the screen.
	Bottom → Top	The message appears from bottom to top of the screen.

3.6.2 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

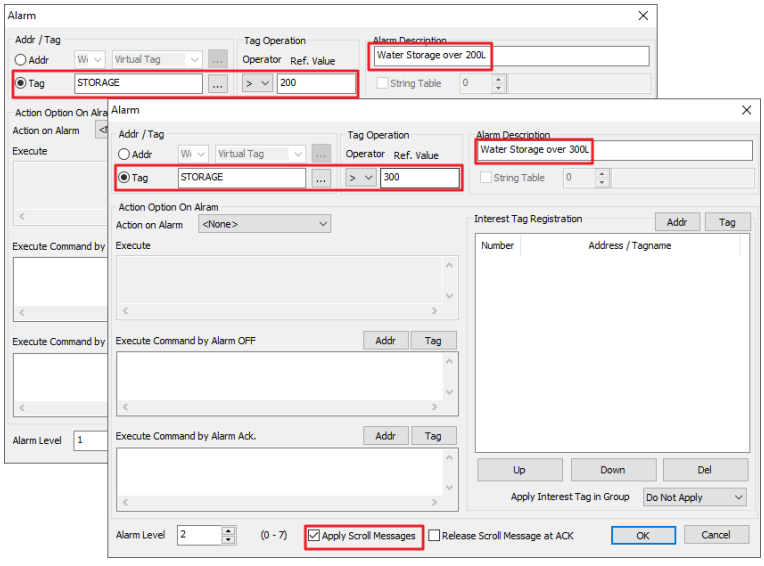
Exercise : Configuring the scroll message for alarm occurrence

a) Create an analog tag named 'STORAGE'.

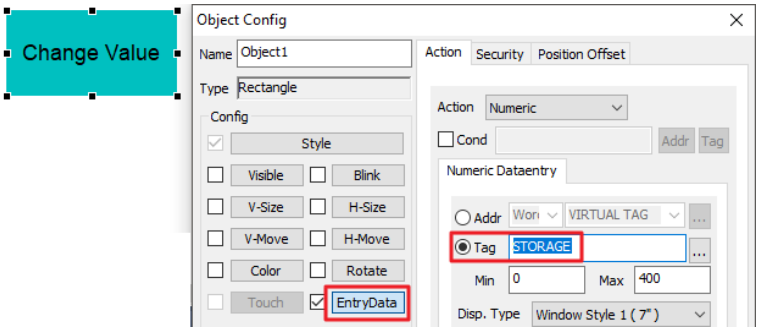


b) Go to [Tools]-[Alarm] and add two alarms in the alarm group 1. Check the 'Apply Scroll Message' option in the alarm configuration window.

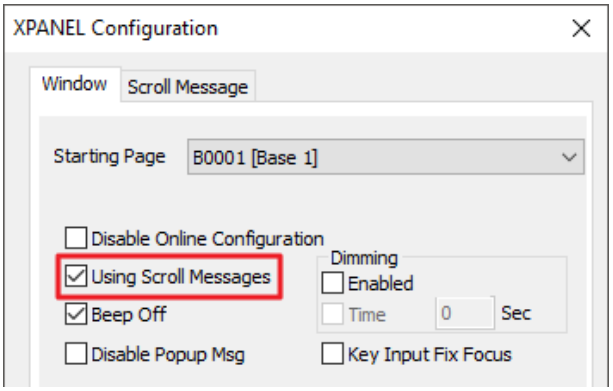
- Configure an alarm level 1 with the condition of 'Greater than 200'. Enter the alarm description as 'Water storage over 200L'.
- Configure an alarm level 2 with the condition of 'Greater than 300'. Enter the alarm description as 'Water storage over 300L'.



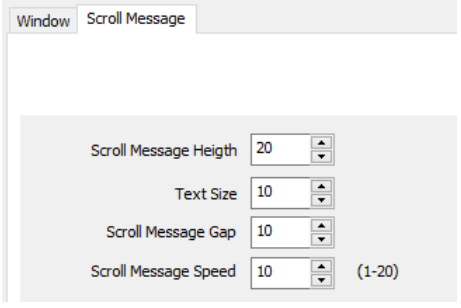
c) Create a touch object for changing value of 'STORAGE' tag. The object includes 'Entry data' feature.



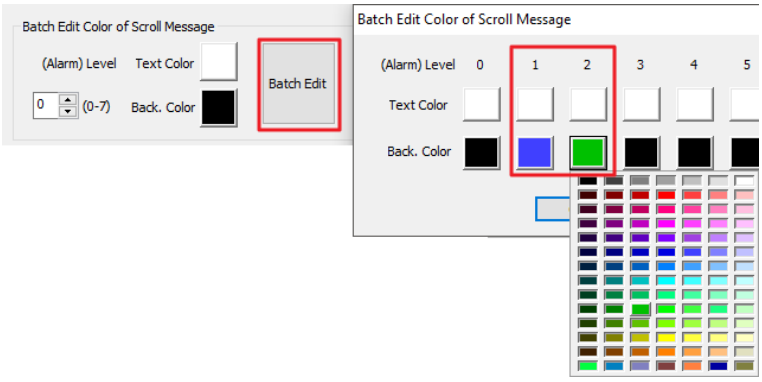
d) Click [Tools]-[Xpanel Configuration] or icon to bring up the Xpanel Configuration window. Check 'Use Scroll Messages' option.



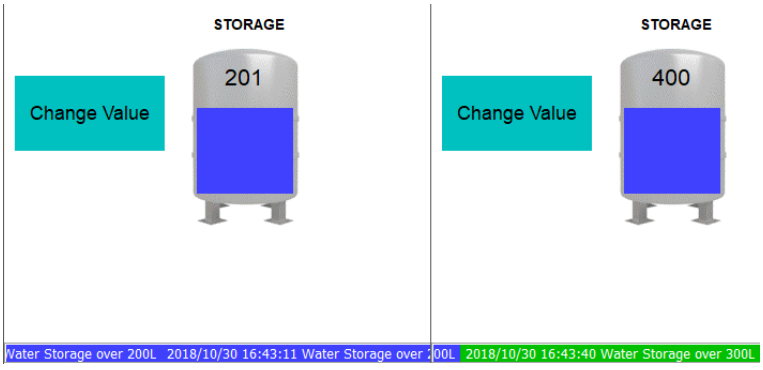
e) Configure the height, text size, distance and speed of scroll message under the [Scroll Message] tab.



f) Configure the color of scroll message for each alarm level. You can choose color for alarm level 1 and level 2 in the 'Batch Edit Color of Scroll Message' dialog box.



g) Launch the project in Xpanel or simulator. As the tag value changes, corresponding alarm description is displayed by scroll messages.

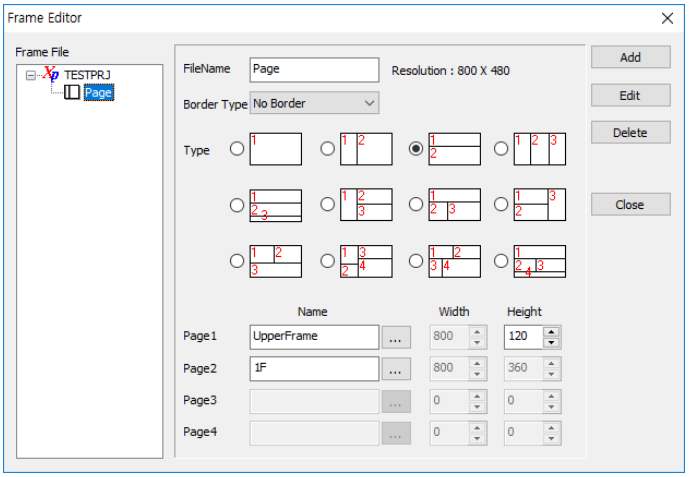


3.7 Frame Editor

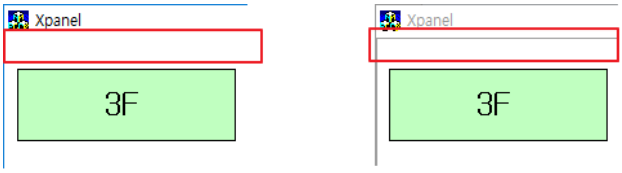
The Frame Editor allows the user to see the several pages on the project at a glance. 4 pages in maximum can be registered as a part of the layout which is provided by Xpanel Designer. The new frame will be saved as an individual file, which can be set as the starting page in Xpanel. When only a part of the frame changes, the Xpanel does not redraw the whole page, which enables the faster operation of the project.

3.7.1 Frame Editor Settings

Select [File] - [Frame Editor] or press hotkey [Ctrl + W] to bring up the [Frame Editor] as shown below.



Item	Description
Frame File	Displays the list of frame files created in the current project. When you select an item, the corresponding configuration will be displayed on the Frame Editor.
File Name	Enter the name of the frame file, which will be saved in *.FRX format. The file name cannot contain special characters such as “₩”. “/”, “ : “, “*”, “?”, “<”, “>”, “	“.
Resolution	Displays the resolution of the current project’s Xpanel model. The width and height of the frame file cannot exceed the resolution.

Border Type	Decides whether to add a border to the selected frame. You can select 'No Border' or 'Windows Default'. 'Windows Default' border type is a single black line, which is shown as below. (Xpanel Designer Simulator) 
Type	You can select the layout type of the frame. There are 12 layouts in total. You can assign from 1 page to 4 pages according to the layout type.
Page 1~4	According to the selected layout type, the number of activated fields are different. The number of activated fields follows the number written on the selected layout type.
Name	You man manually enter the name of the page file or press [···] button to browse the page file. Only one page can be assigned to each field.
Width/Height	Assign the width and height of the corresponding page. The total width and height cannot exceed the resolution. You can manually enter the width and height or click [▲/▼] button to change the value. The size of certain pages cannot be manipulated since it is decided by the other page's size.
Add	Creates a frame file with the current configuration.
Edit	Edits the selected frame file with the current configuration.
Delete	Deletes the selected frame file.
Close	Closes the [Frame Editor] without saving the current configuration.

3.7.2 Page Settings for Frame

To display several pages on a single frame, there are more items to be configured beforehand. For example, the page size and position in the frame must be set up.

Also, you will be guided to set the frame file as the starting page and switching the pages on runtime.

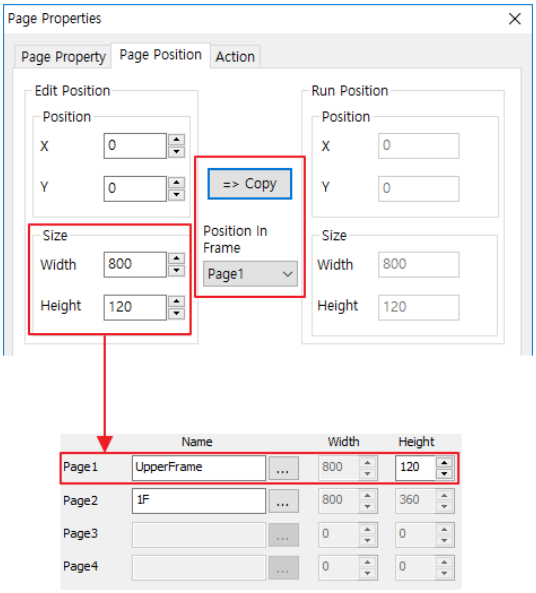
Page Properties

When you configure the frame, the pages to be used in the frame must be configured beforehand. Select [Tools] - [Page Setup] to set the size and position in the frame of each page. The values assigned to size and position in the frame must be equal to the values assigned in the [Frame Editor].

In the [Page Position] tab, assign the value to the 'Size'. The assigned value must be identical to the value assigned in the [Frame Editor].

Select the 'Position in Frame' and press [Copy] button.

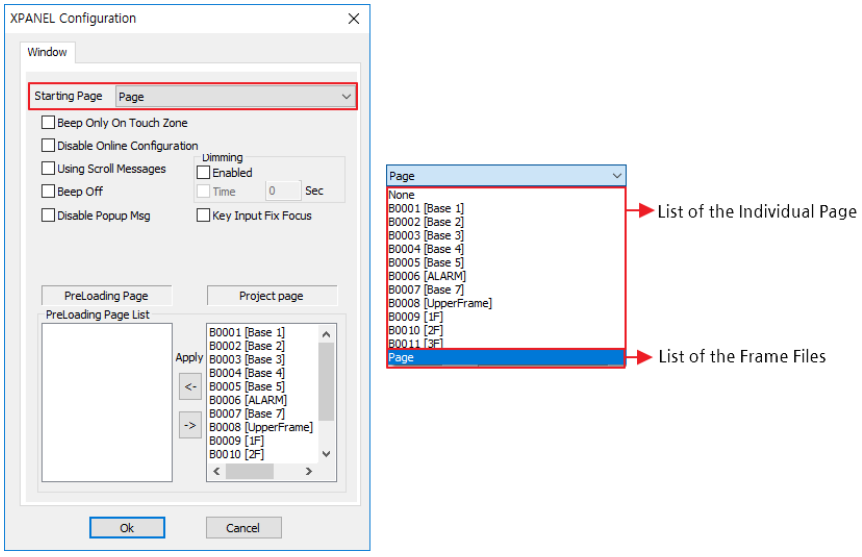
The entire pages to be used in the frame must be configured as mentioned above. If any of the pages are configured incorrectly, the frame may not be displayed properly.



Starting Page Setup

Select [Tools] - [XPANEL Configuration] or icon to bring up the window as shown below. You may assign the frame file to use it as a starting page in the [XPANEL Configuration] window.

The frame files are listed in the dropdown list for starting page selection, after the list of the individual page.



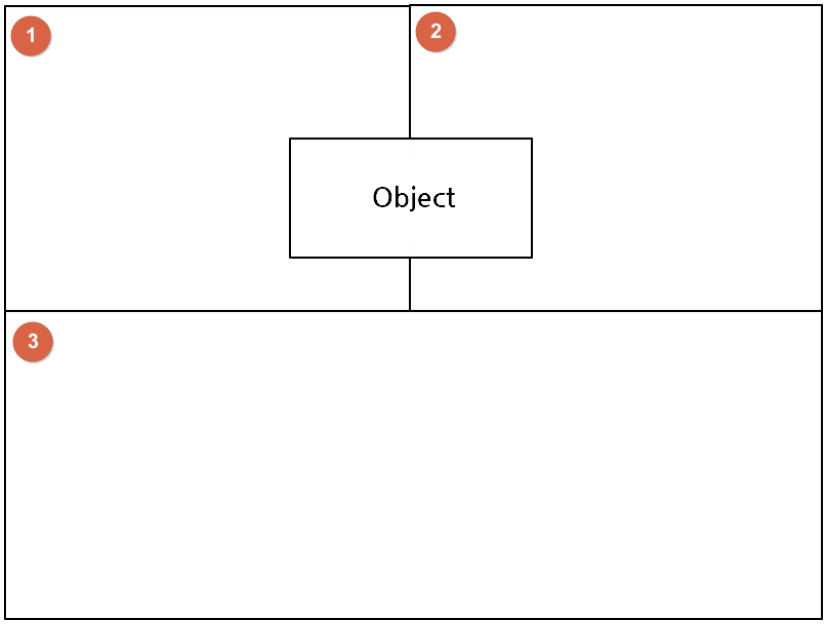
3.7.3 Cautions Before Creating a Frame

In some cases, the frame may not operate correctly or be created in an unintended structure.

(1) In the case of using 'Trend Graph', 'Key Input Window', 'Alarm Summary'

The objects such as 'Trend Graph', 'Key Input Window', 'Alarm Summary' are not cropped automatically when the object is located outside of the page used in the frame. The whole object will be displayed invading the other frame.

If there is an object which exceeds the range of the frame area 1, it will be displayed as shown below.



(2) The Absence of the Normal Page in the Frame

If the types of the pages which configure the frame are popup or keypad, the screen may not be refreshed properly. For the proper operation of the page, you must use at least one normal page in the frame.

3.7.4 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

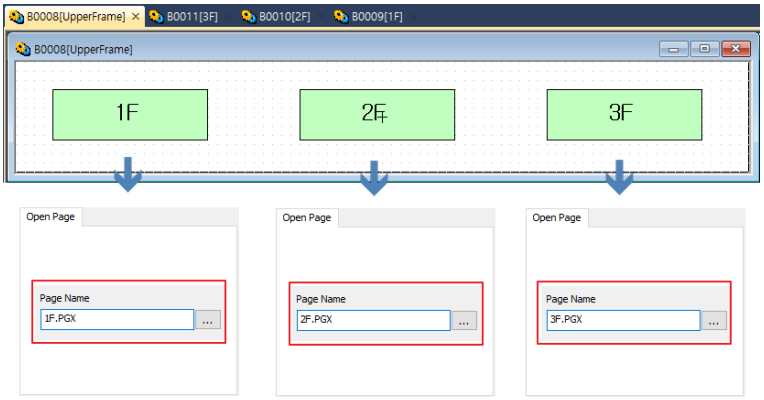
Exercise : Opening a Page in the Frame

Following is an example of opening a different page in a frame.

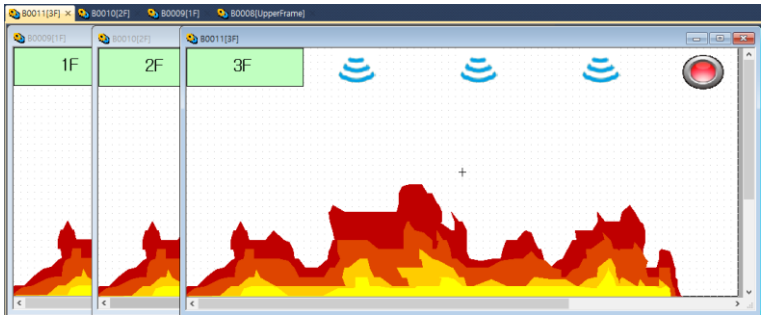
(1) Page Configuration

a) Create the pages to be used for the frame. In the frame, the user will touch the objects in the upper frame to open the different pages in the lower frame. Create 1 normal page for upper frame and 3 normal pages for lower frame.

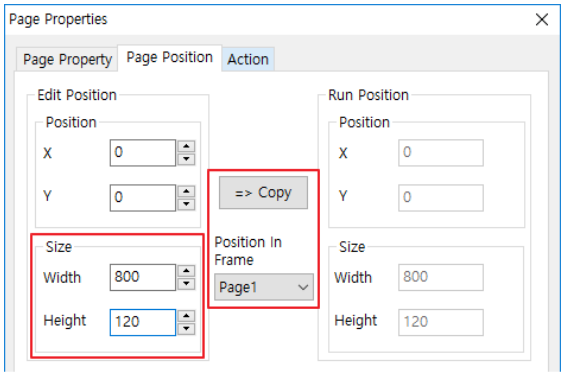
b) Configure the page for the upper frame as shown below. Each object will be configured with the 'Touch' feature to open the corresponding page.



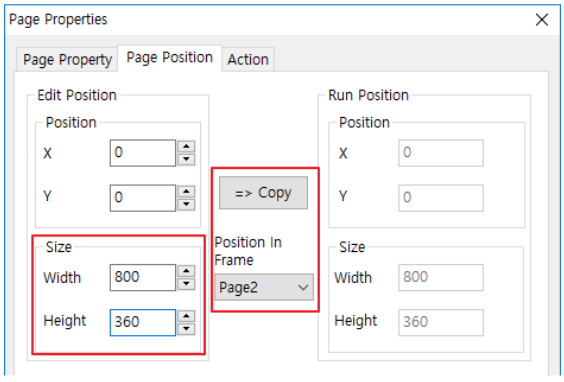
c) Configure the pages for the lower frame as shown below. To distinguish the pages, mark the pages with the floor number on the top left corner.



d) Select each page and go to [Tools] - [Page Setup]. In the [Page Position] tab, enter the size and position in frame as shown below then press [Copy]. The edit position is not applied when you are using the page as a component of the frame. Press [OK] to finish the configuration.



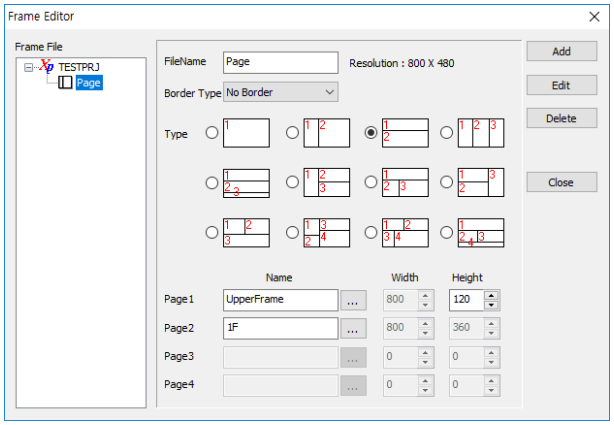
Upper Frame



Lower Frame

(2) Frame Configuration

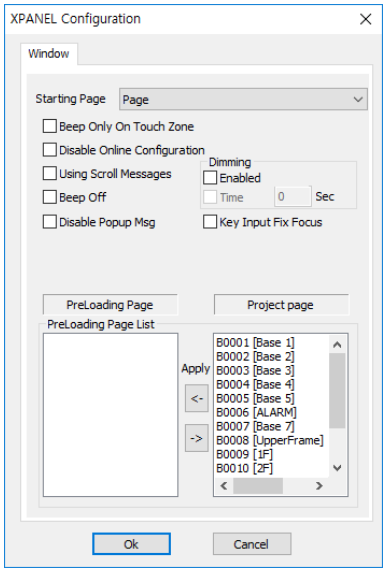
a) Select [File] - [Frame Editor] to configure the frame. In this example, the frame will be configured as shown below. Assign “UpperFrame” page at ‘Page1’. Assign “1F” page to ‘Page2’ to display the page at first when the project is executed.



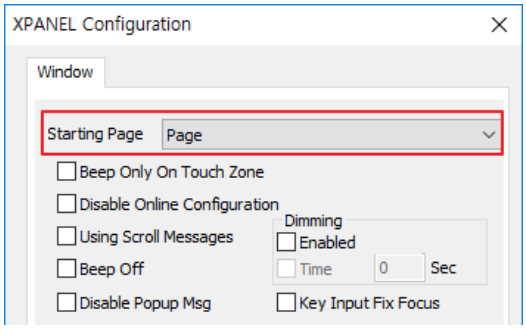
b) Enter the name of the frame file and press [Add] button to finish the configuration.

(3) Setting Starting Page

a) Select [Tools] - [XPANEL Configuration] to bring up the [XPANEL Configuration] window as shown below.

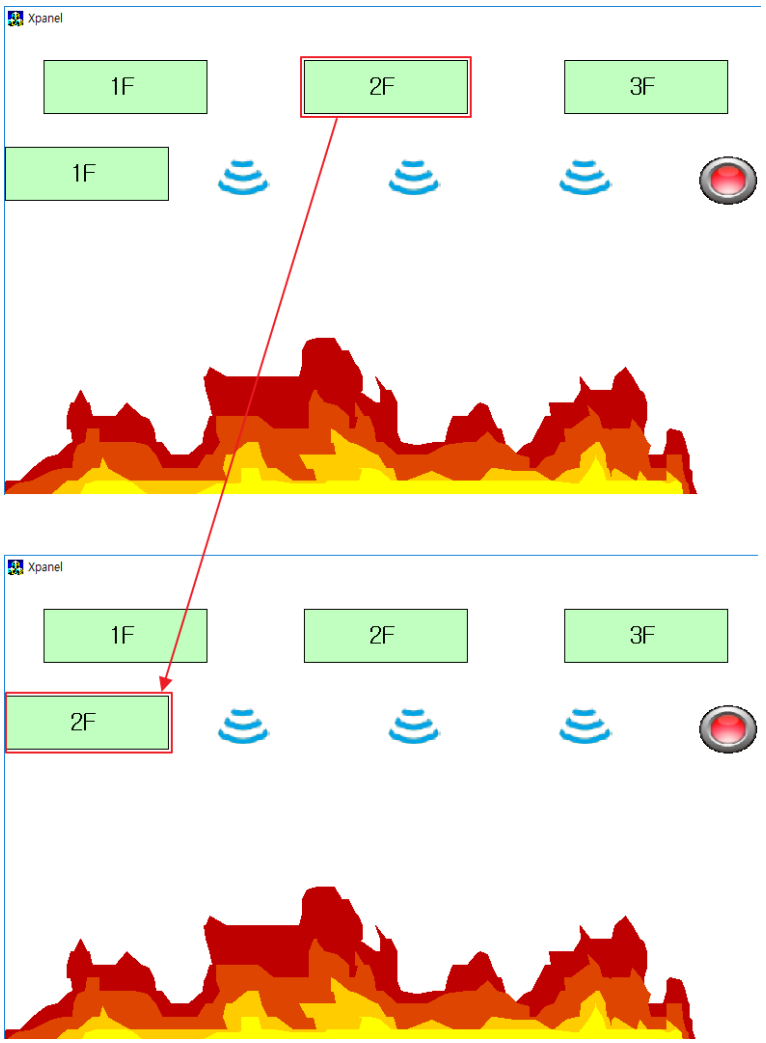


b) Select “Page” frame file from the “Starting Page” list, then press [Ok] button to finish the configuration.



(4) Checking the Operation

a) To check the operation on the PC that you are currently editing the project, select [Tools] - [Run Simulator] or press [F5] key. You can check if the project operates properly by selecting each button in the following window.



4 Database

4.1 Database Management

The database is a core of the CIMON-Xpanel. The database connects the superordinate concepts such as process and the control devices. Connections are established between the process and the control devices so that the system can enhance its efficiency and rationality. Every feature provided by CIMON-Xpanel is based on the tags defined in the database.

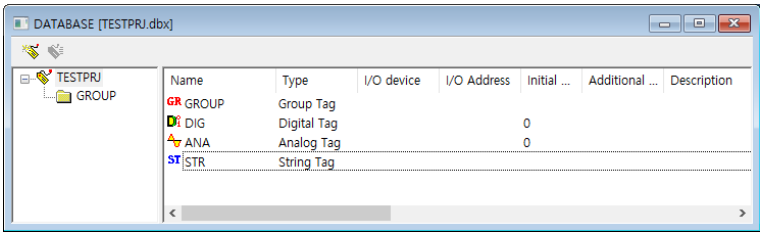
The real tag reads or writes its value to or from the external devices. When the value of the real tag changes, it is immediately written to the CIMON-Xpanel. The virtual tag is used internally within the CIMON-Xpanel. It is used to create the process simulation. You can assign the specific type to each tag: Group tag, Digital tag, Analog tag and String tag. These tags can be defined and edited by using easy interfaces. Since the Excel program allows the users to export and import the database, you can manage and print data from the database at ease.

4.1.1 Features

- Supports the real tag which connects to the PLC and the virtual tag which is used internally.
- Provides Group tag, Digital tag, Analog tag and String tag.
- The operater can continue the work by maintaining the previous status of the project, the user can continue the work.
- Supports various editing features for quick and easy modification of database.
- Through the mutual transfer of database and Microsoft Excel, it is possible to manage the project's data with ease.

4.1.2 Settings

Select [Tools] - [Database] or icon to bring up the window as shown below.



Database Editor

Item	Description
New Tag	1. Select [Edit] - [New Tag] when the 'Database' editor window is activated. 2. Click icon in the 'Database' editor window. 3. Press 'Insert' key. 4. Double-click the blank area of tag list. 5. Right-click on the tag list and select [New Tag] on the submenu. 6. Press [Next Tag] in the 'Edit Tag' window.
Edit Tag	1. Double-click the tag to edit on the tag list. 2. Select the tag to edit and click [Edit] - [Edit Tag]. 3. Select the tag to edit and click icon in the 'Database' editor window. 4. Right-click on the tag to edit and select [Edit Tag] on the submenu.
Delete Tag	1. Select the tag to delete and press 'Delete' key. 2. Select the tag to delete and click [Edit] - [Delete] or [Cut]. 3. Right-click on the tag to delete and select [Delete] or [Cut] on the submenu.
Copy Tag	1. Select the tag to copy on the tag list. 2. Cut or copy the tag with the methods shown below. - Select [Edit] - [Cut] or [Copy] - Press Ctrl + X or Ctrl + C key. - Drag and drop the tag. - Right-click on the tag and select [Cut] or [Copy] on the submenu. 3. Move to the destination and select [Edit] - [Paste] or press Ctrl + V key.

Drag & Drop	With Drag & Drop action, you can copy or move the selected tag to the other location. 1. When you drag and drop the tag in the same tag list, the selected tag moves. 2. When you drag and drop the group tag, it is copied with the included tags. 3. When you drag and drop the tag to the tag tree, the tag is copied into the corresponding group tag. 4. When you drag and drop the group tag to the tag tree, the group tag is copied into the corresponding group tag.

When you create the tag, use the name which follows the criteria listed below.

1. No special characters

E.g.) Space, Tab, @, *, /, +, -

2. Cannot use the number as the first character of tag name.

E.g.) DIG1: Valid, 1DIG: Invalid

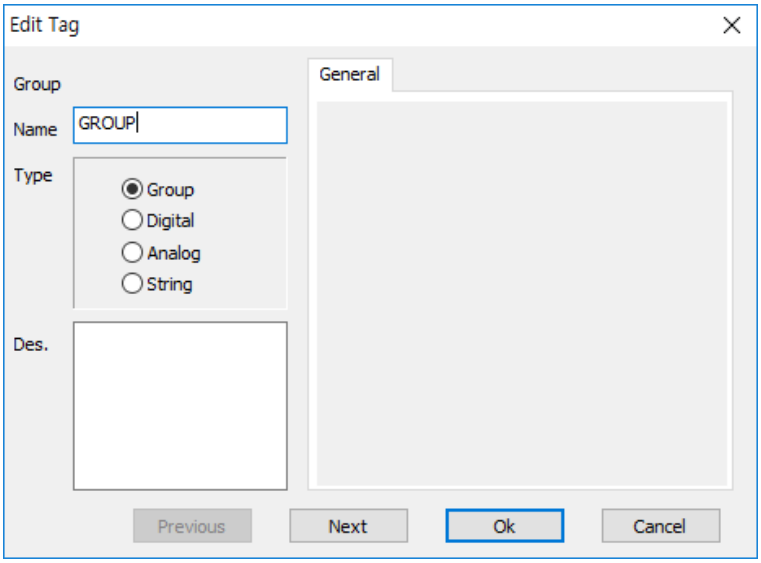
3. Not case-sensitive.

4. Cannot use duplicated tag name in a group.

Group Tag

If you have created a large number of tags in a single window, it may cause inefficiency for editing and managing tags. The group tag allows you to categorize all tags into the user's definition, and subordinate tags are organized into tree structures. The grouped tags are displayed and managed in the tag tree.

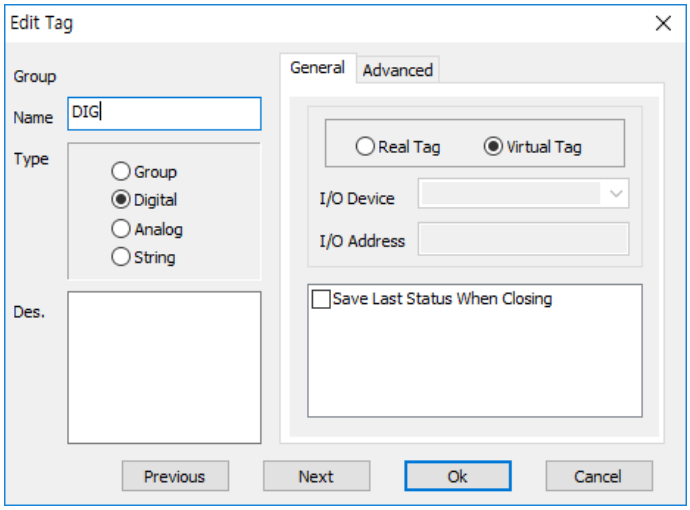
To create a group tag, select [Group] in the 'Type' field.



Item	Description
Name	Enter the tag name.
Desc.	Enter the description of the tag.
Previous	Moves to the previous tag's 'Edit Tag' window.
Next	Moves to the next tag's 'Edit Tag' window.
Ok	Registers the tag in the database.
Cancel	Cancels the tag registration and goes back to the database window.

Digital Tag

The digital tag is one of the system-managing tags. The digital tag is used to represent ON/OFF status or the values that are divided into True or False.

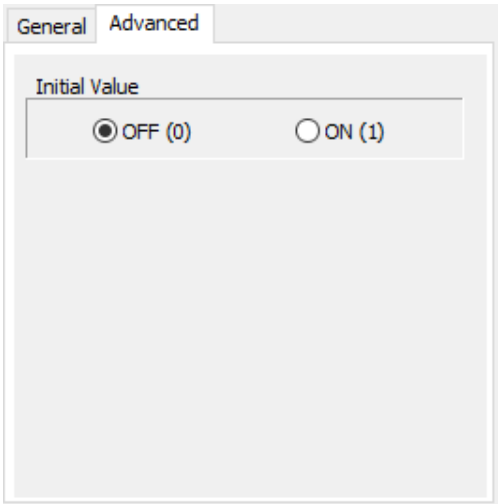


Item	Description
Name	Enter the tag name.
Desc.	Enter the description of the tag.
Previous	Moves to the previous tag's 'Edit Tag' window.
Next	Moves to the next tag's 'Edit Tag' window.
Ok	Registers the tag in the database.
Cancel	Cancels the tag registration and goes back to the database window.

(1) General

Item	Description	
Tag Type	Select the tag type between virtual and real tag.	
	Real Tag	Links to the external device which is connected to CIMON-Xpanel. The value changes according to the status of the device.
	Virtual Tag	The virtual tag is used when the user requires to check the internal value changes.
I/O Device	Enter or select the external device where the digital tag belongs to. You can check the name of the external device at [Tools] - [I/O Device]. This field is enabled only when the 'Real tag' is selected.	
I/O Address	Enter the address according to the external device's address assignment. You must enter the address in the device's addressing method. This field is enabled only when the 'Real tag' is selected.	
Save last status when closing	When you select this option, the last status of the tag is stored when project is closed. When you execute the project again, the tag values will be maintained.	

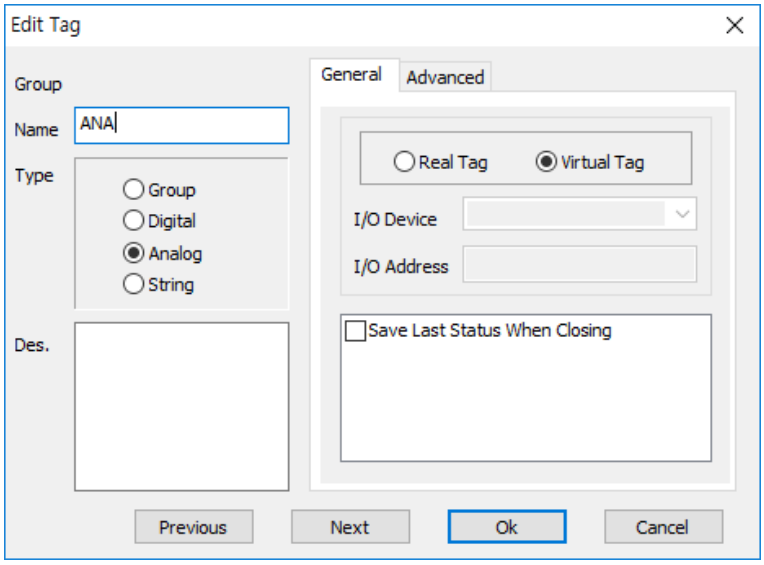
(2) Advanced



Item	Description
Initial Value	Assign the initial tag value when the project is executed.

Analog Tag

The analog tag is one of the system-managing tags. The analog tag is used to represent values measure by external devices such as point's temperature and pressure value.

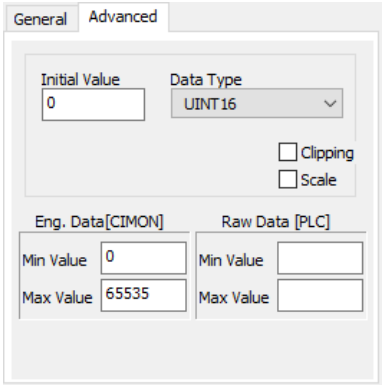


Item	Description
Name	Enter the tag name.
Desc.	Enter the description of the tag.
Previous	Moves to the previous tag's 'Edit Tag' window.
Next	Moves to the next tag's 'Edit Tag' window.
Ok	Registers the tag in the database.
Cancel	Cancels the tag registration and goes back to the database window.

(1) General

Item	Description	
Tag Type	Select the tag type between virtual and real tag.	
	Real Tag	Links to the external device which is connected to CIMON-Xpanel. The value changes according to the status of the device.
	Virtual Tag	The virtual tag is used when the user requires to check the internal value changes.
I/O Device	Enter or select the external device where the analog tag belongs to. You can check the name of the external device at [Tools] - [I/O Device]. This field is enabled only when the 'Real tag' is selected.	
I/O Address	Enter the address according to the external device's address assignment. You must enter the address in the device's addressing method. This field is enabled only when the 'Real tag' is selected.	
Save last status when closing	When you select this option, the last status of the tag is stored when project is closed. When you execute the project again, the tag values will be maintained.	

(2) Advanced



Item	Description
Initial Value	Assign the initial tag value when CimonX is executed.
Data Type	Select the data type of the tag value. This option is to convert the data precisely from PLC to the CIMON-SCADA. Refer to the table below for the description of each data type.
Clipping	When the analog value exceeds the range, an alarm will appear and the value will not be recognized.

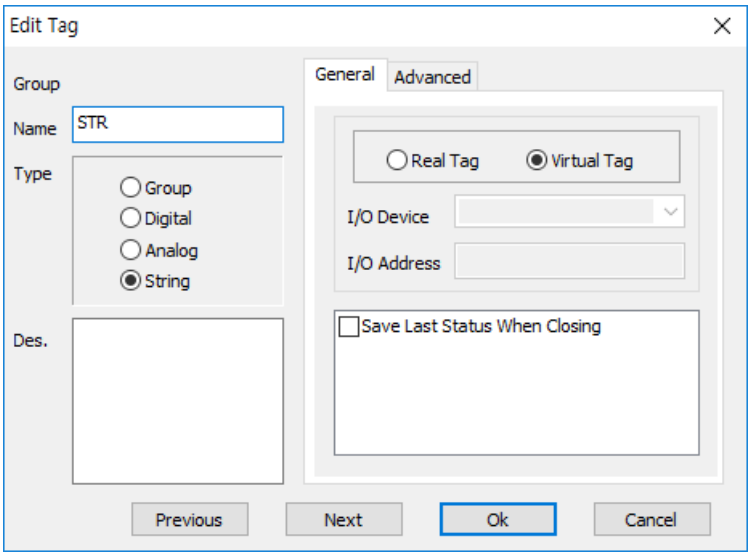
<table>
<tr><td rowspan="3">Scale</td><td colspan="2">You can convert the device's data into the site value through Scale/Offset or Max,/Min. method. When you select this option, the system will operate with Scale/Offset method. Enter scale and offset value at 'Raw Data' field. If you wish to operate the project with Max/Min method, enter maximum and minimum value at 'Raw Data' field.</td></tr>
<tr><td>Scale/Offset</td><td>If you use this option, the tag value will be calculated by the formula below.
Result = (Tag Value X Scale) + Offset
E.g.) Select an analog tag in UINT16. When scale is 0.1 and offset is 10:
Minimum value: (0 X 0.1) + 10 = 10,
Maximum value: (65535 X 0.1) + 10 = 6563.5
The value you have input is calculated by the formula below and reflected to tag value.
Input value = (Input Data - 10) + 10</td></tr>
<tr><td>Min./Max.</td><td>Enter the min/max value of the raw data and compare it to the min/max value of the Eng. data. The ratio will be the result.
E.g.) Condition: The min/max value of the raw data is 0/4000 and the min/max value of the eng. data is 0/100.
If the actual data is 2000, the field value becomes 50.</td></tr>
</table>

Data Type	Description	Range
INT8	Integers which can be displayed in 8bit.	-128 ~ 127
INT16	Integers which can be displayed in 16bit.	-32768 ~ 32767
INT32	Integers which can be displayed in 32bit.	-2147483648 ~ 2147483647
UINT8	Positive integers which can be displayed in 8bit.	0 ~ 255
UINT16	Positive integers which can be displayed in 16bit.	0 ~ 65535
UINT32	Positive integers which can be displayed in 32bit.	0 ~ 4294967295
BCD8	BCD data which can be displayed in 8bit.	-79 ~ 79
BCD16	BCD data which can be displayed in 16bit.	-7999 ~ 7999
BCD32	BCD data which can be displayed in 32bit.	-79999999 ~ 79999999
UBCD8	Positive BCD data which can be displayed in 8bit.	0 ~ 99
UBCD16	Positive BCD data which can be displayed in 16bit.	0 ~ 9999
UBCD32	Positive BCD data which can be displayed in 32bit.	0 ~ 99999999

Float	Floating-point number	-3.40282e + 038 ~ 3.40282e + 038

String Tag

This tag stores the string value.

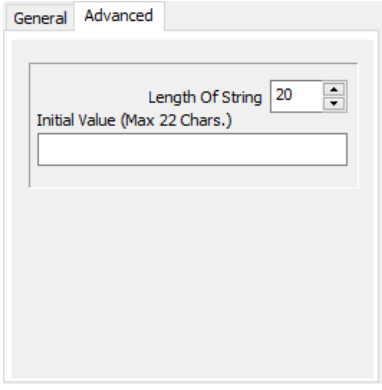


Item	Description
Name	Enter the tag name.
Desc.	Enter the description of the tag.
Previous	Moves to the previous tag's 'Edit Tag' window.
Next	Moves to the next tag's 'Edit Tag' window.
Ok	Registers the tag in the database.
Cancel	Cancels the tag registration and goes back to the database window.

(1) General

Item	Description	
Tag Type	Select the tag type between virtual and real tag.	
	Real Tag	Links to the external device which is connected to CIMON-Xpanel. The value changes according to the status of the device.
	Virtual Tag	The virtual tag is used when the user requires to check the internal value changes.
I/O Device	Enter or select the external device where the string tag belongs to. You can check the name of the external device at [Tools] - [I/O Device]. This field is enabled only when the 'Real tag' is selected.	
I/O Address	Enter the address according to the external device's address assignment. You must enter the address in the device's addressing method. This field is enabled only when the 'Real tag' is selected.	
Save last status when closing	When you select this option, the last status of the tag is stored when project is closed. When you execute the project again, the tag values will be maintained.	

(2) Advanced



Item	Description
Length of String	Assign the maximum length of string to write on the tag. If the tag is the virtual tag, you can assign from 1 to 22.
Initial Value	Assign the initial value of the tag on CimonX runtime.

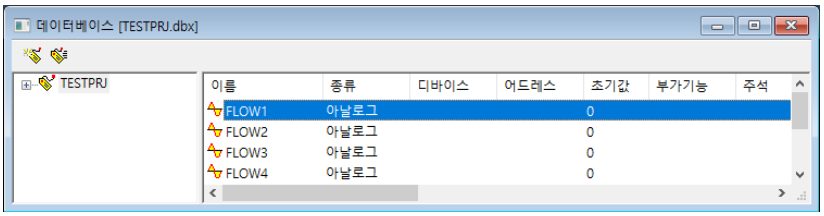
4.1.3 Editing Database with Excel

You can manage the database with Microsoft Excel file.

Editing Database with Excel

(1) Copying database into EXCEL

a) Select the tag to be copied to Excel. You can select multiple tags by [Shift + Left-click] or [Ctrl + Left-click]. When you select a group tag, the subordinate tags are selected.



b) Copy (Ctrl + C) the selected tags to the clipboard.

c) Paste(Ctrl + V) the contents to the Excel. Each column has different contents. Please refer to the table in the next section.

	A	B	C	D	E	F	G	H	I	J
1	FLOW1	2		0			0		4	0
2										

d) Edit the database in Excel. You can create the consecutive tags with increment/decrement feature of Excel.

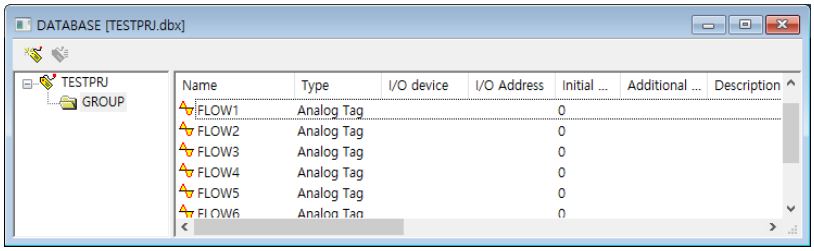
	A	B	C	D	E	F	G	H	I	J
1	FLOW1	2		0			0		4	0
2	FLOW2	2		0			0		4	0
3	FLOW3	2		0			0		4	0
4	FLOW4	2		0			0		4	0
5	FLOW5	2		0			0		4	0
6	FLOW6	2		0			0		4	0

(2) Pasting the data from EXCEL to the database

a) Select the rows to copy. You must select from the first row.

	A	B	C	D	E	F	G	H	I	J
1	FLOW1	2		0			0		4	0
2	FLOW2	2		0			0		4	0
3	FLOW3	2		0			0		4	0
4	FLOW4	2		0			0		4	0
5	FLOW5	2		0			0		4	0
6	FLOW6	2		0			0		4	0

b) Copy (Ctrl + C) them to the clipboard and paste (Ctrl + V) to the database manager. The tags with the same name will be replaced with the pasted contents.



Excel Data Types of each Tag Types

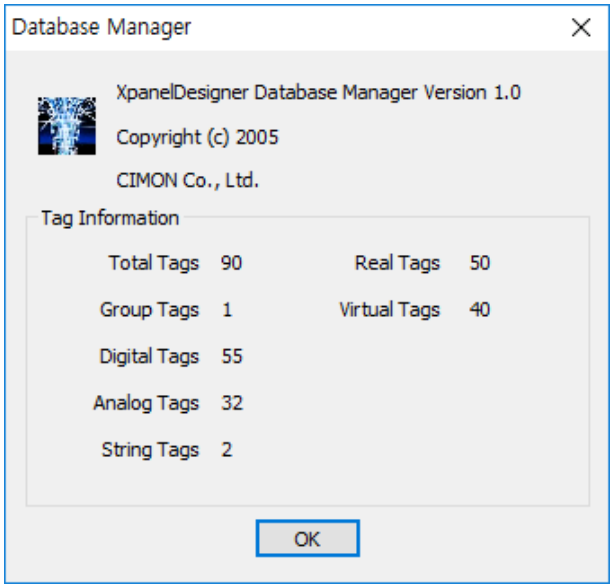
Cell No.	Digital Tag	Analog Tag	String Tag	Note
A	Tag Name	Tag Name	Tag Name	
B	Tag Type (1)	Tag Type (2)	Tag Type (3)	
C	Description	Description	Description	
D	Real/Virtual Tag	Real/Virtual Tag	Real/Virtual Tag	Real Tag = 1 Virtual Tag = 0
E	I/O Device	I/O Device	I/O Device	
F	I/O Address	I/O Address	I/O Address	
G	Initial Value	Initial Value	Initial Value	
H				
I		Data Type 0 : INT8 1 : INT16 2 : INT32 3 : UINT8 4 : UINT16 5 : UINT32 6 : BCD8 7 : BCD16 8 : BCD32 9 : UBCD8 10 : UBCD16 11 : UBCD32 12 : Float	String Length	
J				
K				
L				
M		Scale		Scale/Offset=1 Min./Max. = 0
N		Eng. Data Min. Value		
O		Eng. Data Max. Value		

P		Raw data Min. Value		SCALE value if SCALE/OFFSET is applied
Q		Raw data Max. Value		OFFSET value if SCALE/OFFSET is applied

4.1.4 About Database Manager

You can utilize the database manager to check the number of tags which are used in the current project.

Open [Database] in Xpanel Designer. Here you can find [About Database Manager] menu on [Help] dropdown menu. In the pop-up window, you can check the version of the database manager and the information of registered tags in the project.



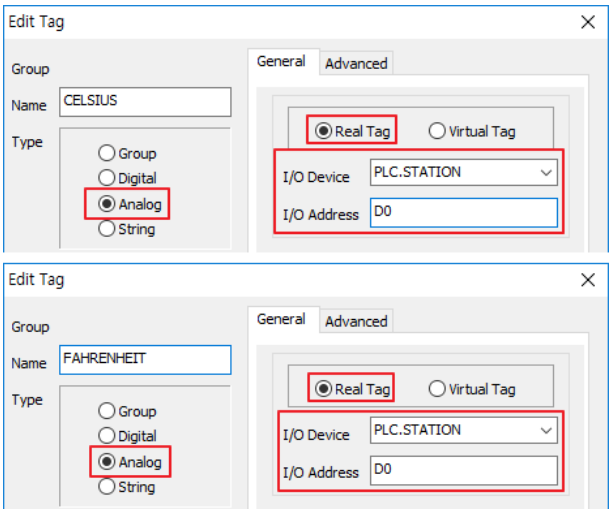
- Total tags consist of group tags, digital tags, analog tags and string tags.
  E.g.) Total tags (90) = Group tags (1) + Digital tags (55) + Analog tags (32) + String tags (2)
- Total tags consist of real tags and virtual tags.
  E.g.) Total tags (90) = Real tags (50) + Virtual tags (40)
- Group tag is considered as a virtual tag.

4.1.5 Exercise

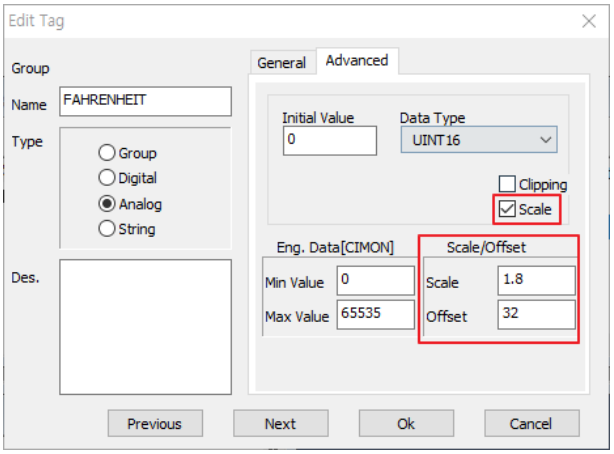
Exercise : Using Scale/Offset feature with real tag

In this example, Celsius temperature acquired from the real tag will be changed into Fahrenheit temperature by using Scale/Offset feature.

a) Create 'Celsius' and 'Fahrenheit' analog tag. Define the tags as real tag and enter the I/O Device and the address as shown below.



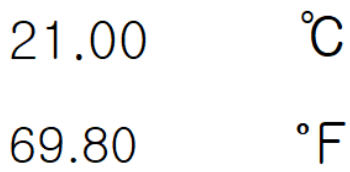
b) Go to [Advanced] tab of 'FAHRENHEIT' tag. Check at the [Scale] option, then enter "1.8" at Scale and "32" at Offset.



c) Go to [Draw] - [Dynamic Tag] and add tag value objects to display the temperatures. When you configure the dynamic tag object, assign the 'Digit Number' and 'Decimal Point' option. Otherwise the rounded value will be displayed.

###.## ℃	Tag Name	CELSIUS
	Display Format	###.##
###.## °F	Tag Name	FAHRENHEIT
	Display Format	###.##

d) To check the operation, download the project to Xpanel. You can find that the value acquired from PLC is transferred to real tag. The tag value is converted from Celsius to Fahrenheit.



4.2 Cross Reference

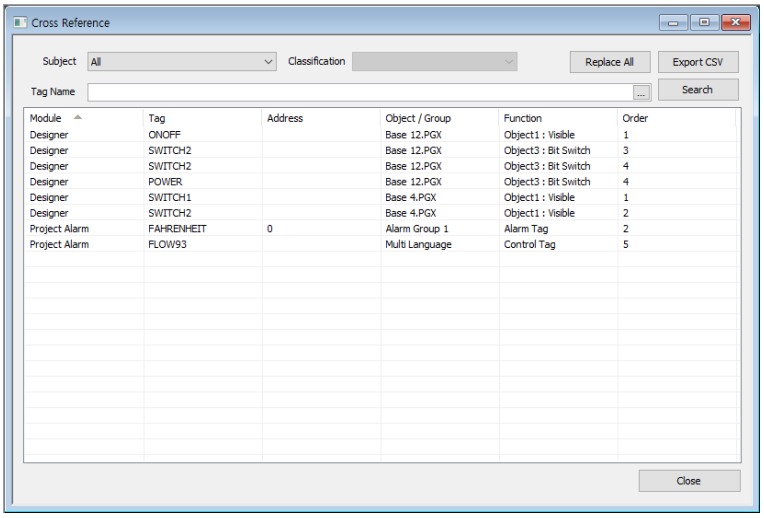
Cross Reference is a feature to check, manage and modify the tags in the project with ease. You can categorize the tag list with modules or pages. You can also check the location, feature, and settings of the tags on the Cross Reference window.

4.2.1 Features

- You can check the tag information on a single window, categorized by module and/or page.
- You can check and modify the tag settings on the window.
- You can convert the the tag, which is registered to an object, to the other tag at once.

4.2.2 Settings

You can open Cross Reference window by clicking [Tools] - [Cross Reference].



The functions of tags registered to the objects are displayed on the Cross Reference window individually.

If numerous tags are used in the project, the response time of the program may be delayed on the execution of Cross Reference.

(1) Object

You can display the tag information according to the category which you have selected.

Object	Description
All	Displays all tags used in the current project.
Module	Displays the tags used in the selected module. You can only select the modules used in the project.
Page	Displays the tags used in the selected page. You can only select the pages which are saved as a file.

(2) Classification

You can display the tag information with a specific category. If the 'Object' is set as 'All', this dropdown list is disabled. When the 'Object' is set as 'Page', you can select the saved pages in the current project. When the 'Object' is set as 'Module', you can select the items shown below.

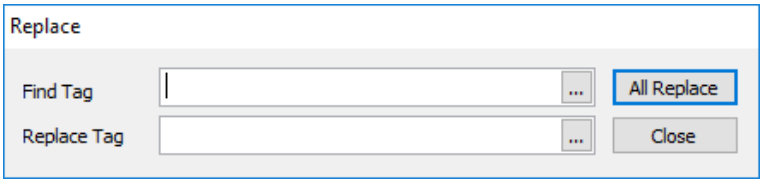
Classification	Description
Data Bridge	Searches all tags which are used for the Data Bridge.
Data Server	Searches all tags which are used for the Data Server.
DataLogger	Searches all tags which are used for the Data Logger.
Designer	Searches all tags which are used for the Designer.
Modbus Slave	Searches all tags which are used for the Modbus Slave.
Project Alarm	Searches all tags which are used for the Project Alarm.
Recipe	Searches all tags which are used for the Recipe Editor.

Script	Searches all tags which are used for the Script Editor.

> ⚠ You can only apply the features such as Searching, Replace All and checking the tag to the listed tags.

(3) Replace All

Replace All feature replaces the searched tags into the assigned tag at once. If the 'Object' is set as 'All', you can replace all tags. If the 'Object' is set as 'Module', you can only replace the tags which are used for the modules. If the 'Object' is set as 'Page', you can replace the tags which are used for the pages.



Item	Description
Find Tag	You can manually enter the name of the tag to be replaced or click ... button to find the tag in the browser.
Replace Tag	You can manually enter the name of the tag to replace the 'Find Tag' or click ... button to select the tag in the browser.
All Replace	Replaces the 'Find Tag' into 'Replace Tag'. The number of the converted tags will pop up as a message.
Close	Closes the [Replace] window.

(4) CSV Convert

You can save the information on the current list as an Excel file in '*.csv' format. The form of the Excel file is as shown below.

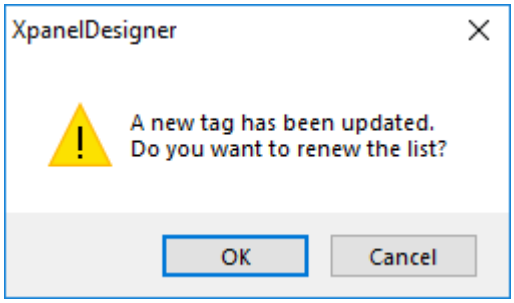
	A	B	C	D	E	F
1	Module	Tag	Address	Object/Group	Function	Order
2						

(5) Tag Name / Search

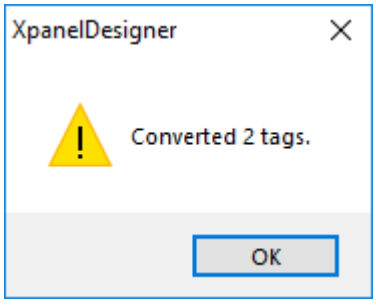
You can enter the tag name and press [Search] button to find a specific tag. The tag name you have entered must exactly match the tag to be found. If you press ... button, you can manually select the tag from the database.

(6) Pop-up

When you add, change or delete the tags registered to the object while Cross Reference is running, the pop-up message will appear as shown below. You can update the tag list when you press [OK]. If you press [Cancel], the change in the tag list will not be updated.



When you use 'Replace All' feature, the pop-up message will appear as shown below.



(7) Tag List

The tags list is categorized by module, tag name, address, object/group, function, and order. You can arrange the list in ascending/descending order by clicking the category.

Item	Description
Module	Displays the module where the tag is used.
Tag Name	Displays the tag names used in the functions. When you double-click the tag name, [Object Config.] window will appear. Objects such as Trend, Alarm Summary, Page Embedding, Switch/Lamp, will appear.
Address	Displays the I/O address which is assigned to the tag.
Object/Group	Displays the object/group where the tag is used.
Function	Displays the function of the tag.
Order	Arranges the tags in order of the registration to the object. If several tags are used in a single object, they are classified as the same number. Even if you delete the object, the number does not change.

(8) Close

Closes the Cross Reference window.

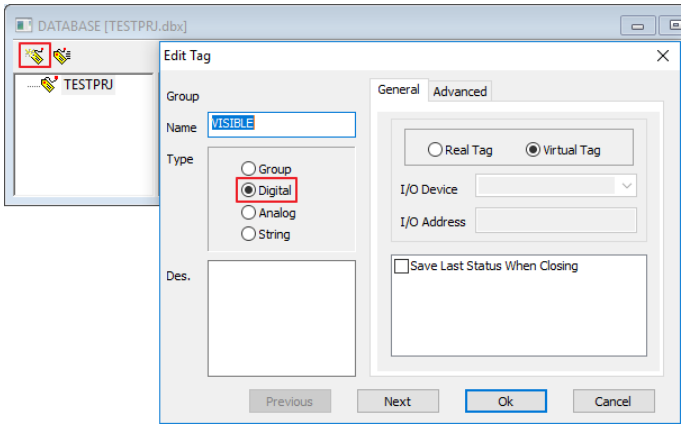
4.2.3 Exercise

> This section explains the basics of the feature. Please utilize the feature according to your site environment.

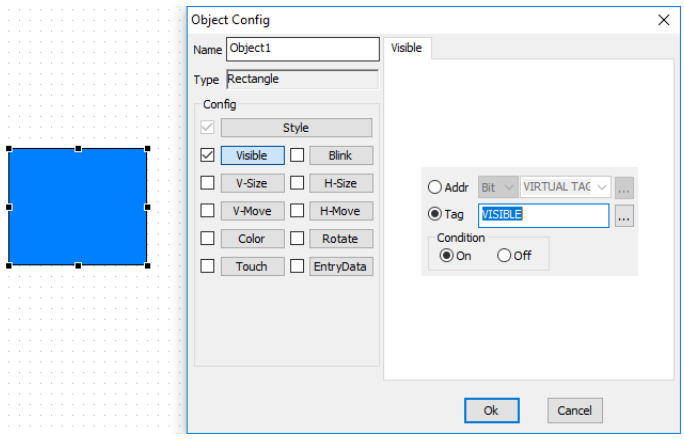
Exercise : Using Cross Reference

(1) Adding a Tag and Checking

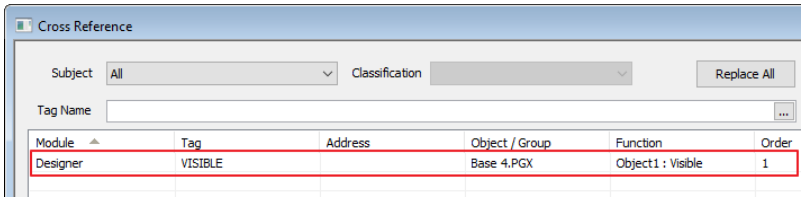
a) Press icon in the database to add a digital tag. Designate the tag name as 'VISIBLE'.



b) Add an object to the graphic page and registser 'VISIBLE' tag at 'Visible' feature as shown below.

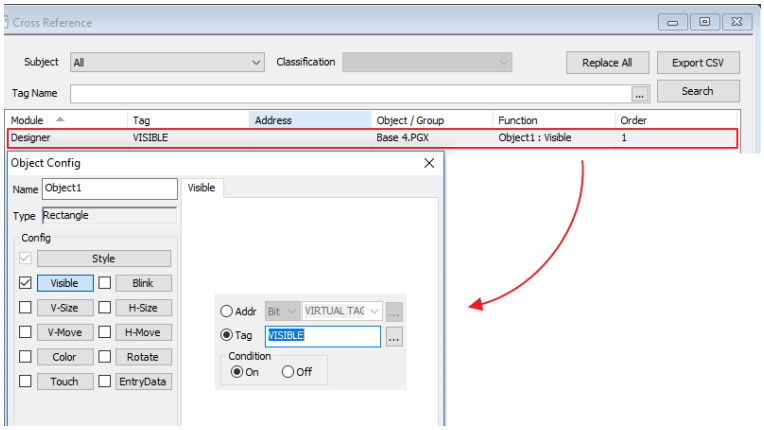


c) Go to [Tools] - [Cross Reference] to check the tag information.



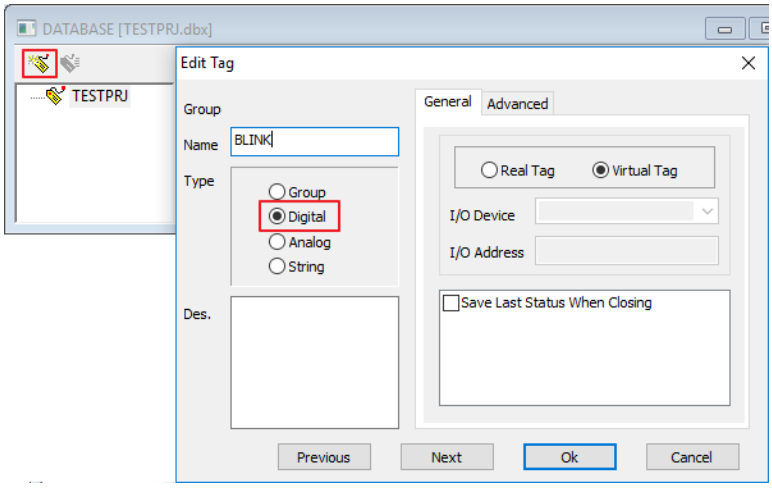
(2) Changing Tag Configuration

Double-click the item to change. Here, the [Object Config] window will appear as shown below. You can change the configuration in this window.

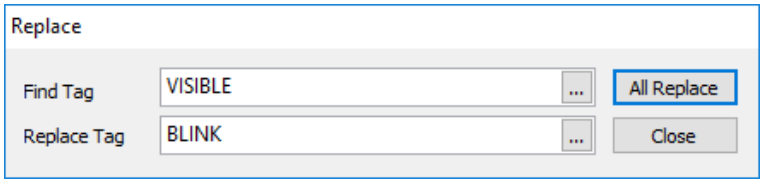


(3) Replace All

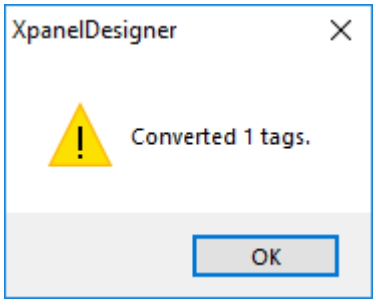
a) Create another tag in the database. Designate the tag name as 'BLINK'.



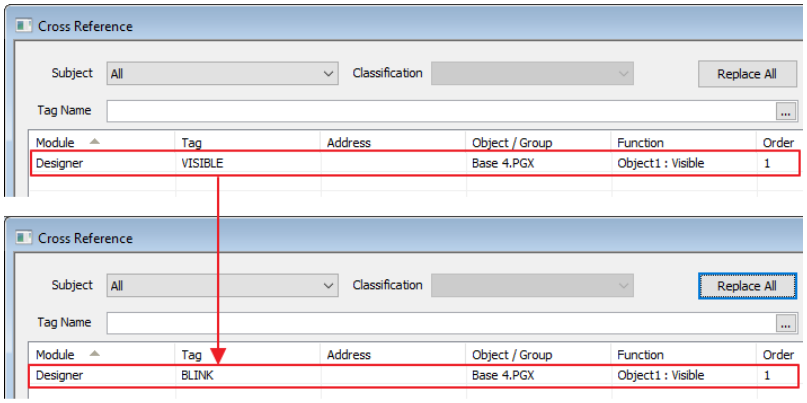
b) Go to [Tools] - [Cross Reference] - [Replace All] and enter the 'VISIBLE' tag and 'BLINK' tag as shown below. Press [All Replace] to convert the tag.



c) After the tag replacement, a message will pop up as shown below.

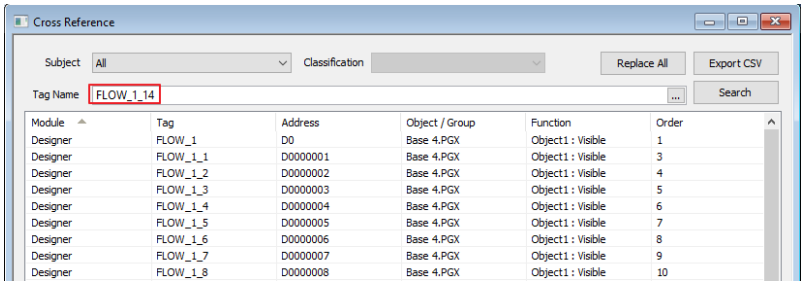


d) You can check the replaced tag in the Cross Reference window.

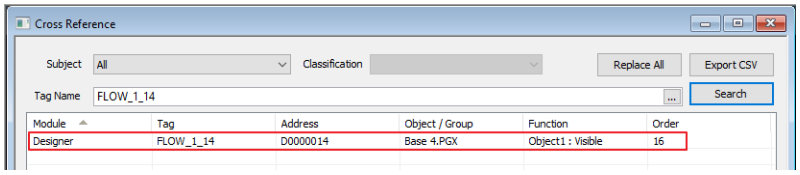


(4) Tag Searching

e) In the Tag Name text field, enter the tag name to look up for.



f) Press [Search] button to show the result.



⚠ You have to enter the exact tag name to show the result.

5 Graphic Tools

5.1 Standard Tool

The [Standard Tool] consists of commands that execute the most frequently used in Xpanel Designer. Go to [View] - [Standard Tool] to show or hide the toolbar on the top menu. The standard toolbar shows up on the top menu as default. This toolbar consists of 'Edit tools' and 'Execution tools'.

5.1.1 Edit tools

You can use features for editing a graphic page such as [New Page], [Open], [Save], [Copy], etc. Refer to the table below for features and their descriptions.

Item	Description
New Page	Creates a new graphic page in the project.
Open	Opens an existing graphic page.
Save	Saves the currently designing graphic page.
Save All	Saves all pages.
Print	Shows the [Print] dialog box.
Preview	Shows the [Print Setup] dialog box.
Cut	Cuts the selected object.
Copy	Copies the selected object
Paste	Pastes the cut or copied object.
Find	Shows a dialog box to find a string.
Replace	Shows a dialog box to find a string and replace it.
Zoom In	Zooms in to a page for 25% scale.
Zoom Out	Zooms out from a page for 25% scale.

※ For more information about each feature, please refer to the corresponding manual.

5.1.2 Execution Tools

Execution tools consist of commands for executing the project. Refer to the table below for features and their descriptions.

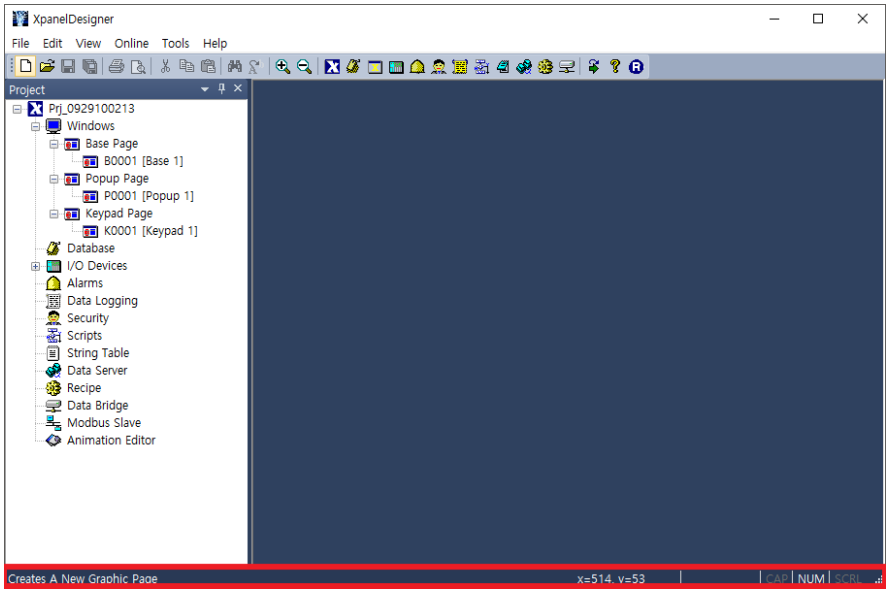
Item	Description
Project	Shows the dialog box about information or configuration of the current project.
Database	Shows the [Database] configuration dialog box.
XPANEL Setup	Shows [XPANEL Configuration] dialog box.
I/O Devices	Shows [I/O Devices] configuration dialog box.
Alarms	Shows [Alarms Configuration] dialog box.
Security	Shows [Security] configuration dialog box.
Data Logging	Shows [Data Logging} configuration dialog box.
Script	Shows [Script] configuration dialog box.
String Editor	Shows [String] configuration dialog box.
Data Server	Shows [Data Server] configuration dialog box.
Recipe	Shows [Recipe] configuration dialog box.
Data Bridge	Shows [Data Bridge] configuration dialog box.
Download to XPANEL	Download the project according to the connection method.
Help	Shows [CIMON-XPANEL Help] window.
PC Runtime	Launch the project in the Touch PC environment.

※ For more information about each feature, please refer to the corresponding manual.

5.2 Status Tool

[Status Tool] shows the current selection state in Xpanel Designer. You can find a short description of your selection, the location of the cursor and the lock status of your keyboard.

You can show or hide the status toolbar through [View] - [Status Tool]. The Status tool is shown at the bottom of the application as the default setting.



(1) Edits The Current Project	(2) x=232, y=0	(3) CAP NUM SCRL

No.	Description
(1)	Shows a short description of the menu which is currently selected.
(2)	Shows the cursor's coordinate on the current graphic page. The coordinate is expressed in x and y, in pixel units. If there are objects on the graphic page, you can acquire the exact coordinate of the object by selecting it.
(3)	Shows the lock status of your keyboard. According to your locks such as Caps Lock, Num Lock, and Scroll Lock, corresponding string lights up.

5.3 Drawing Tool

The drawing tool is grouped with commands used to drawing basic and advanced objects, which are frequently used in project editing. You can register the toolbar on the menu by selecting [View] - [Drawing Tool].

5.3.1 Basic Object

You can select and draw the basic graphic objects (line, rectangle, circle, arc, etc.) on the graphic page. Features are listed in the following table.

Item	Description
Select	Selector mode used to select, move and resize objects. You can move around in the graphic page by following steps: 1. Right-click the blank space of graphic page. 2. Drag the mouse to opposite from location you want to move.
Line	Line tool used to draw lines.
Rectangle	Rectangle tool used to draw rectangles or squares.
Ellipse	Circle tool used to draw circle or ellipses.
Arc	Arc tool used to draw arcs.
Sector	Circular sector tool used to draw circular sector.
Chord	Chord tool used to draw chords.
Polyline	Line tool used to draw polylines. Vertexes are added whenever clicking blank space of the graphic page. To exit drawing mode, double-click the blank space of the graphic page.
Polygon	Line tool used to draw polygons. Vertexes are added whenever clicking space of the graphic page. To exit drawing mode, double-click the blank space of the graphic page. At this moment, each location clicked the beginning and the end is connected.
Text	Text tool used to enter text tool. Click the blank space of graphic page when you finish with editing text. You can add a new line with pressing Enter key.

※ For more information about each basic object, please refer to the basic object manual.

5.3.2 Advanced Object

You can select and draw the advanced objects (Dynamic tag, alarm summary, trend graph, etc.) on the graphic page. Functions are listed in the following table.

Item	Description
Dynamic Tag	Brings up Dynamic Tag configuration dialog box. This is used to display a current tag value or variable in runtime.
Date/Time	Brings up Date/time configuration dialog box. This is used to display the time from PC setting.
String Value	Brings up String configuration dialog box. This is used to utilize settings in the string table.
Multi String	Brings up multi string value configuration box. This is used to utilize settings in the multi-language table.
Datalog	Brings up Datalog object. This is used to display logged data values on the grid.
Trend Graph	Brings up Trend configuration dialog box. This is used to display currently logging data as trends. YT, LOG, SPC, Scope, XY, ST trends are provided.
Alarm Summary	Brings up Alarm Summary configuration dialog box. This is used to display summaries of alarm, such as alarm history or alarm status.
Key Input	Brings up key input configuration dialog box. This is used to receive the analogic or string value from keyboard input.
Library	Brings up Library selection dialog box. Library provides numerous graphic images such as engine, gauge, flowmeter, etc.
Pagelink	Brings up Pagelink dialog box. This is used to insert the other graphic page objects in current page.

※ For more information about each advanced object, please refer to each object manual.

5.4 Font Tool

The Font Toolbar contains commands about font type, size, style and alignments. You can add this toolbar to the top menu at [View] - [Font Tool].

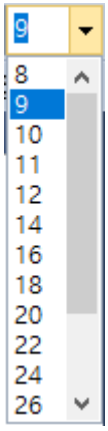
You can change the properties of an object's strings with this toolbar. Font properties are applied to any objects' strings according to the font setup. To apply the settings, strings have to exist in the object.

5.4.1 Font Type

You can check the entire list of font types installed in Xpanel Designer. These font types can be applied to the objects' strings. The default font type is Gulim. To change the font type, you can either select one from the list or enter the font type manually in the combo box.

- The use of illegally downloaded fonts can be subject to legal action, and Cimon will not be held liable in such cases. Please make sure to look up the license of any font you wish to use in the Xpanel project.
- If you have mistyped the font type or the font has not been installed in Xpanel Designer, the font type does not change. The last font type selected will be applied to the string.

5.4.2 Font Size



You can select or enter the font size. You can also change the font size by enlarging or reducing the object's size.

5.4.3 Font Style

There are three types of font styles which can be applied to the strings. Multiple styles may be applied to a single string.

Item	Description	Example
Bold	Makes the string bold or unbold.	**Xpanel**
Underline	Underlines the string or deletes the underline.	Xpanel
Italic	Slants the string or makes the string upright.	*Xpanel*

5.4.4 Font Alignment

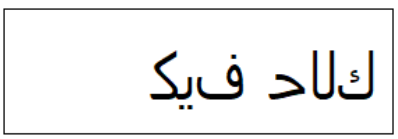
You can align the string within the object. Refer to the table below for the types of alignment and the examples.

Item	Description	Example
Left Alignment	Aligns the string to the left side of the object.	Xpanel
Center Alignment	Aligns the string to the center of the object.	Xpanel
Right Alignment	Aligns the string to the right side of the object.	Xpanel

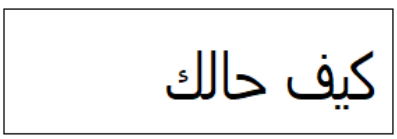
5.4.5 RTL

RTL (Right-to-Left) Language means the character writing starts from the right of the text field and continues to left. Arabic or Hebrew are the most widely used RTL writing systems.

When you set the 'RTL' option to the object, the text in the object will be written from right to left side.



<RTL Enable>

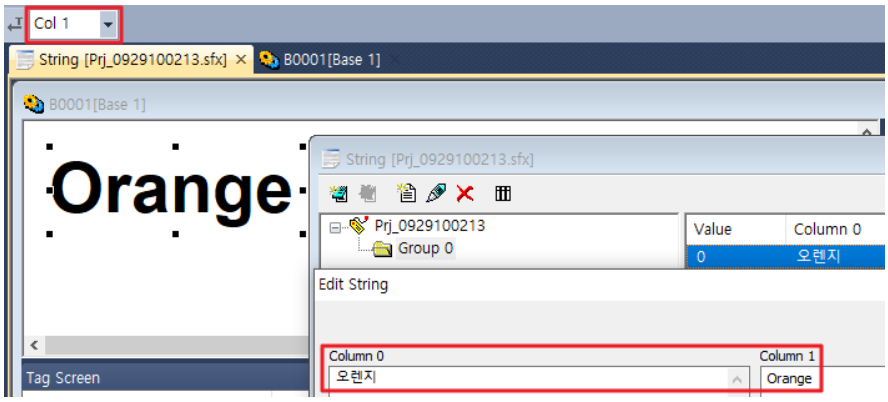


<RTL Disable>

5.4.6 Column Selection

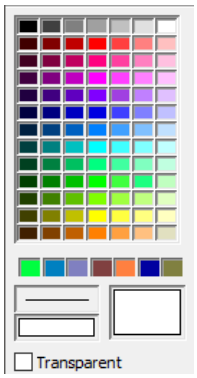
When the multi-language table is configured in the project, you may display the multi-string values by selecting columns in the combo box.

If you select 'Col 1', a multi-string value object in the current page shows the string of 'Column 1'.



※ Refer to the 'Multiple-language setup' manual for more information of multi-language table.

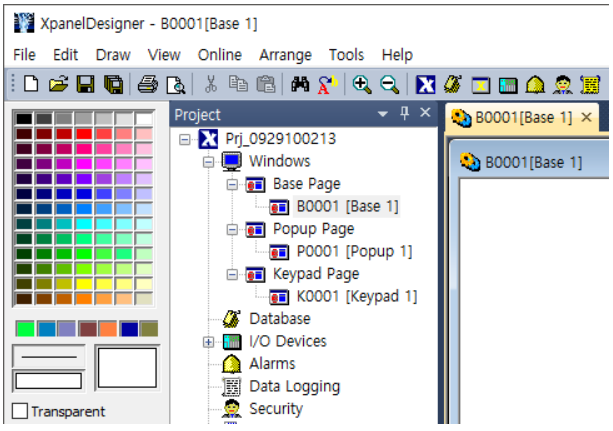
5.5 Color Tool



The color tool contains features used to select line style, access the color palettes and transparent object color.

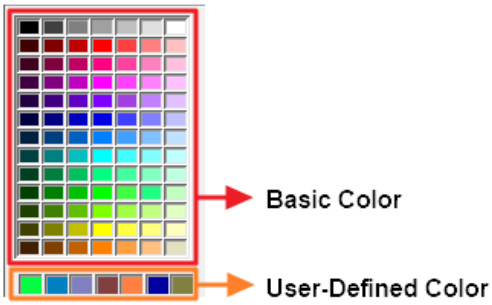
5.5.1 Settings

Color tool is enabled when the page have focused, and the tool window appears when you select [Color Tool] on the [View] menu. You can choose line color and line styles of the selected basic objects. The settings on the color tool are assigned to newly created basic objects by default.



Text color is changed when color is applied to the text object from the color tool. Note that line style is not applied to the text.

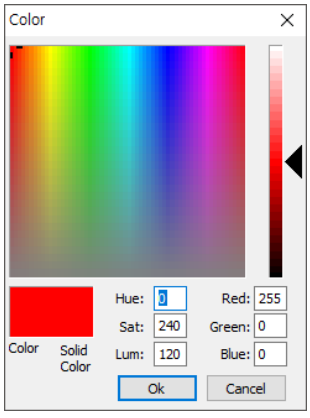
Palette



You can change the basic object's line color. Followings are the features that can be utilized in the color palette.

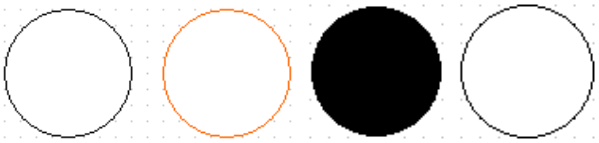
Item	Description
Basic Color	Provides 91 standard colors. It applies user's selection on the line color. A color palette dialog box appears when the cell has been selected. User can define the color through the color palette.
User Defined Color	Color tool allows you to define custom colors and add them to your palette. A color palette dialog box appears when the cell has been selected. User can define the color through the color palette.

Following 'Color' dialog box appears when you double-click each cell.



Based on RGB color, HSV (Hue, Saturation, Brightness Value) values can be accurately configured in the color window.

Following table explains about instructions and examples.

Instruction	Click the object, and select a color on the palette you wish to change. When you select a color and create an object, the color is applied on the object by default. Text color is changed when color is applied to the text object. When you draw the object with a right mouse click, the color is reversed from the default.
Example	

Line Style

You can change the basic object's line style, such as solid line, dotted line, etc. The following table demonstrates with instructions and examples.

Instruction	Click the object, and select a line style on the list what you want to change. When you select a line and create an object, the style is applied on the object by default. When you draw the object with right-click, the color is reversed from the default.
Example	

Preview

The preview area shows an example of the basic object with currently selected color and line style.

Transparent

This feature allows a basic object to display line style. The background color is transparent. The following table demonstrates with instructions and examples.

Instruction	Select the object, and click the [Transparent] option to make the object transparent. When you select the option and create an object, the transparency is applied on the object by default. The background color will be returned when you make the object transparent and deselect the option.
Example	

5.6 Arrange Tool

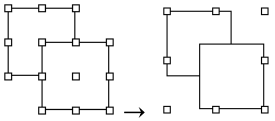
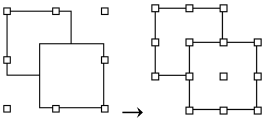
The toolbar consists of commands such as object groupage, object ordering, etc. You can add this toolbar to the top menu at [View] - [Arrange Tool].

You can only utilize the toolbar when there are multiple objects on the graphic page. Please refer to the following section for more information about the arrange tool.

	To select multiple objects, click your first selection and then hold down the “SHIFT” key as you click the next. You may also click on a blank area on the page and drag the mouse over all the objects you wish to select. You can arrange selected objects with the popup menu when you right click the objects.

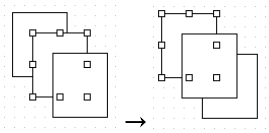
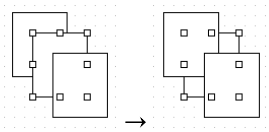
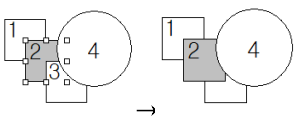
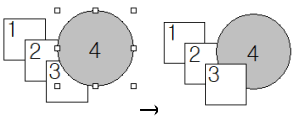
5.6.1 Groupage

You can group multiple objects or change the placement order on the graphic page. Refer to the table below for commands and the examples

Item	Description	Example
Group	This feature is enabled when more than two objects are selected. Selected objects will be grouped and operate as a single object.	
Ungroup	This feature is enabled when you select a group object. The selected group object will be broken into the individual objects it was made from.	

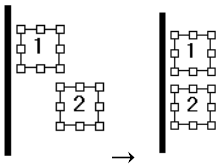
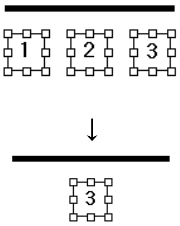
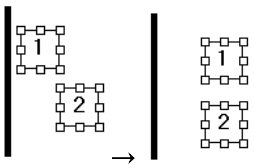
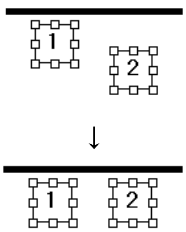
5.6.2 Ordering

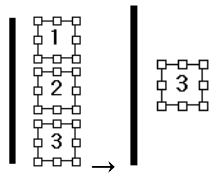
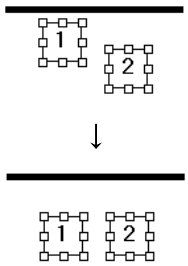
You can change the placement order of multiple objects on the graphic page. Refer to the table below for commands and the examples.

Item	Description	Example
Bring to Front	This feature operates by placing the selected object in front of all other objects. If the object is layered upon other objects, the selected object may partially cover the other objects.	
Send to Back	This feature operates by placing the selected object behind of all other objects. If the object is layered under other objects, the selected object may be partially covered by the other objects.	
One Step Forward	This command is used to move the object just one layer forward. If the object is layered upon other objects, the selected object may partially cover the other objects.	
One Step Backward	This command is used to move the object just one layer backward. If the object is layered under other objects, the selected object may be partially covered by the other objects.	

5.6.3 Arrange

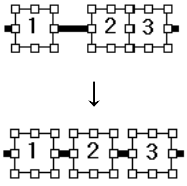
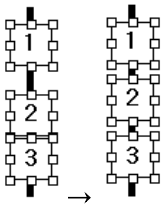
This feature is enabled when you select two or more objects. Objects may be aligned to the top or bottom, the left or right sides, and in the middle, horizontal, or vertical directions. Refer to the table below for the commands and examples.

Item	Description	Example
Left	Aligns the left edge of selected objects with the left edge of the object in left side.	
Horizontal Center	Aligns the middle of selected objects in horizontal direction with the centered object. The recently created object will be placed in front of the one previously created.	
Right	Aligns the right edge of selected objects with the right edge of the object in right side.	
Top	Aligns the top edge of selected objects with the top edge of the object at the top.	

Vertical Center	Aligns the middle of selected objects in vertical direction with the centered object. The previously created object will be placed behind of the one recently created.	
Bottom	Aligns the bottom edge of selected objects with the bottom edge of the object at the bottom	

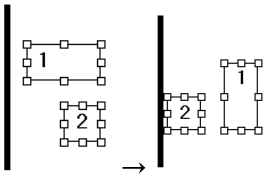
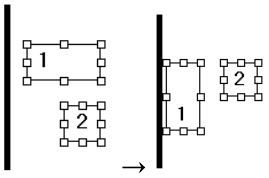
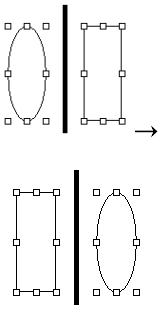
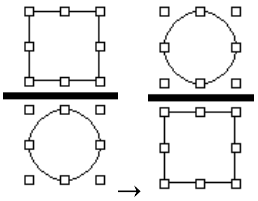
5.6.4 Spacing

This feature is enabled when you select three or more objects. You can distribute spaces between selected objects horizontally or vertically. Refer to the table below for commands and the examples.

Item	Description	Example
Space horizontal	This feature is enabled when you select three or more objects. Evenly spaces all selected objects horizontally between the left most and right most selected objects.	
Space Vertical	This feature is enabled when you select three or more objects. Evenly spaces all selected objects vertically between the top most and bottom most selected objects.	

5.6.5 Rotation/Flip

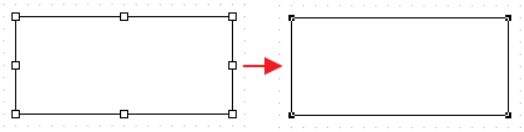
This feature is enabled when you select one or more objects. You can rotate or flip the selected objects. Refer to the table below for commands and the examples.

Item	Description	Example
90' Clockwise	It rotates the selected objects 90 degrees clockwise based on the center point.	
90' CounterClockwise	It rotates the selected objects 90 degrees counter clockwise based on the center point.	
Horizontal	It flips the selected objects horizontally based on the center point of the X axis.	
Vertical	It flips the selected objects vertically based on the center point of Y axis.	

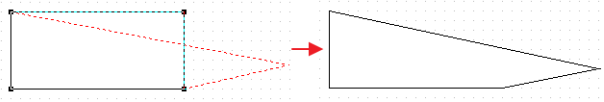
5.6.6 Reshape

This feature is enabled when you select a simple object. You can change the shape of simple graphic objects: Line, rectangle, arc, circular sector, chord, polyline, polygon. When you select an object, icon is enabled and you can change the shape of object by dragging its handles.

a) Select a simple graphic object to reshape. Click the [Reshape] icon ( ). Each handle on the object's line is turned to black.



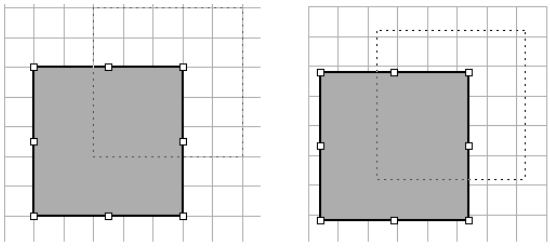
b) You can change the shape of object by dragging its handles.



5.6.7 Snap to Grid

When you are arranging objects on the page, turning on the feature will lead your image to snap on the grid. Objects may be drawn or positioned on the grid. It can be useful when making fine arrangement of an object to disable [Enable Snap]. This will allow control without grid snap.

You can enable or disable this feature by toggling its icon:
indicates the functionality is enabled, and means it is disabled.



5.7 Tag View Tool

Using the tag view tool, you can display tag names or addresses as label, which are registered on the object. You can add the tool bar on the menu by selecting [View]-[Tag View Tool].

Tag labels are visible with objects in current page. You may choose font color or background color. The font style is fixed at 'Gulim' and cannot be changed.

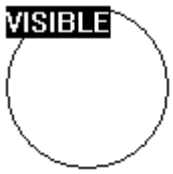
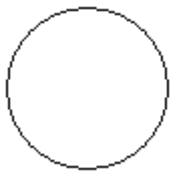
- Tag labels are only shown in the work space of Xpanel Designer, and they are invisible in Xpanel runtime.
- Please note that characters may corrupted if 'Gulim' font does not exist in the PC.

5.7.1 Color

You can assign the font color or background color by selecting items in combo box. Tag label color in current page will changed at once by selection.

5.7.2 Label

You can show tag names and addresses or hide them with each icon, which are described in the table below.

Item	Description	Example
Tag Name	Shows the tag name which is set in the object. If multiple of tags are assigned at the object, all tag names will be displayed.	
Address	Shows the address which is set in the object. If multiple of addresses are assigned at the object, all addresses will be displayed.	
Hide	Hides labels from the object.	

6 Graphic Utilization I

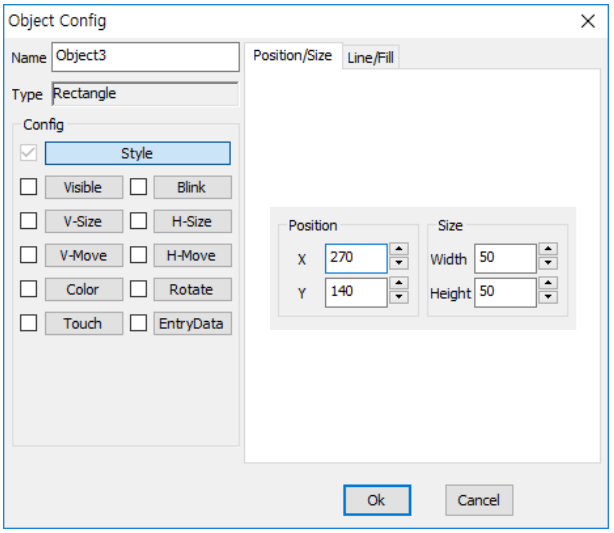
6.1 Object Configuration

You can configure the object with basic control features such as [Visible], [Blink], [Touch]. In addition, you can customize your project with various objects and features.

How to pop up the [Object Configuration] window

- Double click the object.
- Right-click the object and select [Object Config] on the pop up menu.
- Select the object, then go to [Edit] - [Object Config].
- When you select another object on the graphic page while [Object Config] window is visible, any changes made to the old objects are applied and the [Object Config] window points to the new object.
- Go to [View] - [Object Window] or [Selected Object Window]. You can check the list of registered objects. Double click the item.

Any of the methods mentioned above will bring up the [Object Config] window.

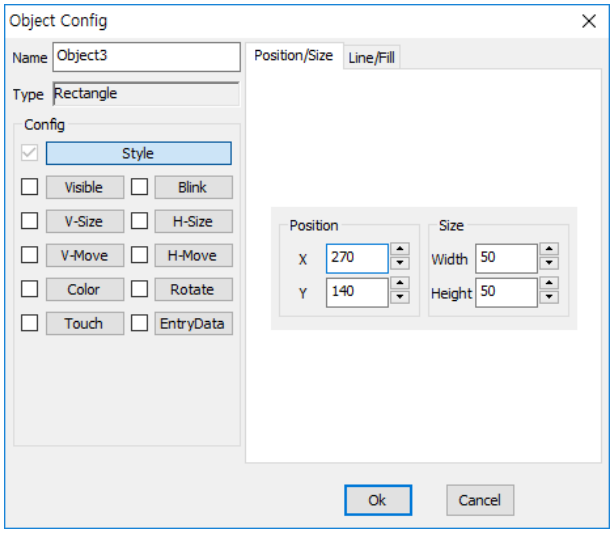


Composition of [Object Configuration] window

Item	Description
Name	Designate a name for the object, spaces are not allowed.
Type	Indicates the type of object.
Config	Select the style or control features for the object. Selecting an option will change the taps shown on the right.

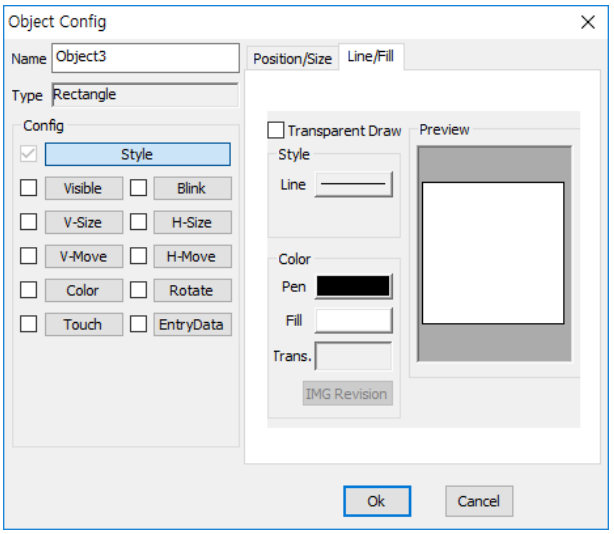
6.1.1 Style

(1) Position/Size

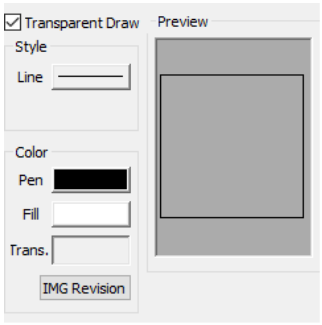


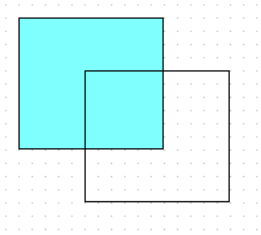
Item	Description
Position	The value assigned to position indicates the coordinate of the object's top left vertex. Default value is the coordinate of currently selected object. When you change the value and save it, the object will change the location accordingly.
Size	The size is measured from the top left of the object. The absolute value is assigned in pixel unit. Default value is the width and height of currently selected object. When you change the value and save it, the object's size changes. You can assign the value from 1 to 32767. For the rectangles, polylines and polygons, the minimum is 2 pixels.

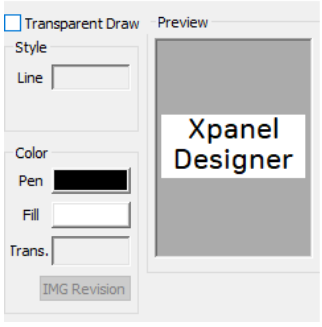
(2) Line/Fill

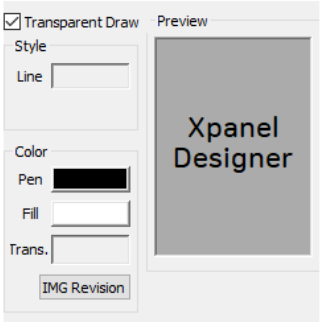


Item	Description
Transparent Draw	The selected object will become a “No Fill”, or a line-only object. You can check the changes made on the object at preview. The transparent object is selected by clicking its line. When the transparency is applied to the text object, the background color will disappear.
IMG Correction	Enabled when [Transparent Draw] is checked. You can utilize this feature when a bitmap image is used and [Transparent Draw] is checked.









Item		Description
Style	Line	Selects the style of object's outline. 7 types of lines are supported. Default is a solid line.
Color	Pen	Selects the color of object's outline. Color palette appears when you click the button next to 'Pen'. Default color is black.
	Fill	Selects the color to fill in the object. Color palette appears when you click the button next to 'Fill'. Default color is white.
	Trans.	You cannot configure this area. This item indicates the tranparent area of the preview.
IMG Revision		Enabled when [Transparent Draw] is checked. You can utilize this feature when bitmap image is used and [Transparent Draw] is checked.

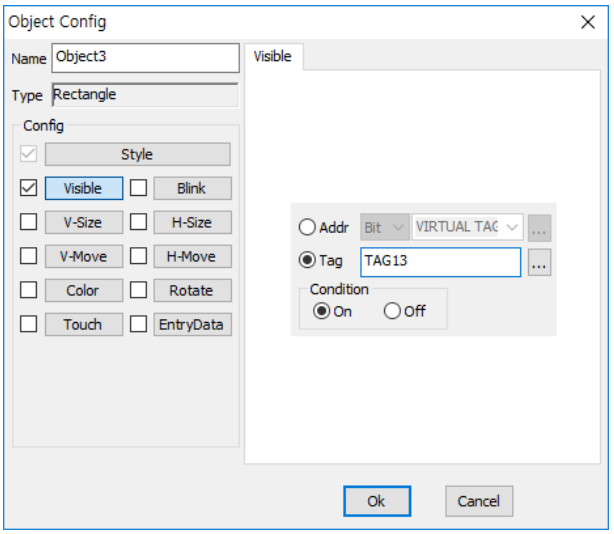
⚠ Line-only objects such as line and arc do not support 'Fill' option.

6.1.2 Control Feature Configuration

(1) Visible

Shows or hides the object according to the tag value.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.

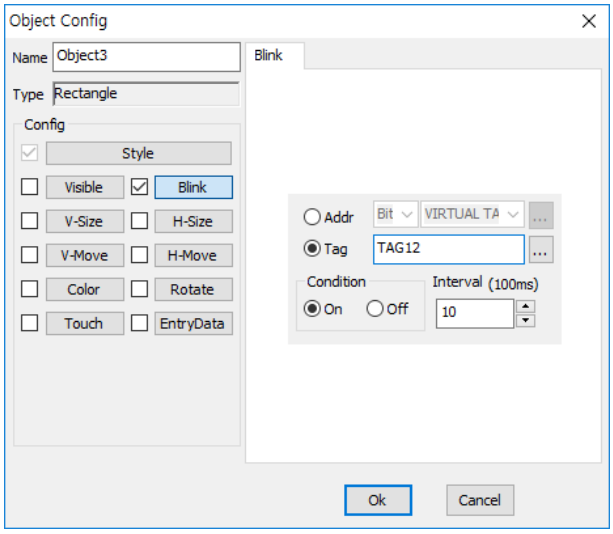


Item		Description
Addr		Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press … button to configure the detailed address.
Tag		You have to enter the tag name which will become the standard for the 'Visible' feature. You can find the tag with … button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Condition	ON	The object appears when the tag value is ON (Digital: ON, Analog: Values other than 0).
	OFF	The object appears when the tag value is OFF (Digital: OFF, Analog: 0).

(2) Blink

Blinks in certain cycles according to the tag value.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.

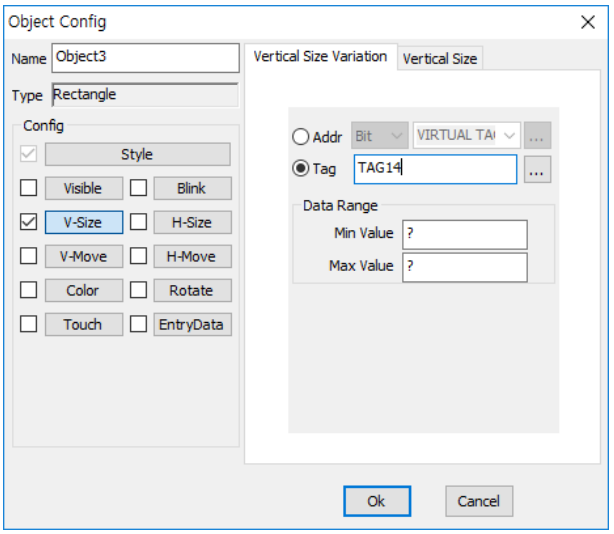


Item		Description
Addr		Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press … button to configure the detailed address.
Tag		You have to enter the tag name which will become the standard for the 'Blink' feature. You can find the tag with … button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Condition	ON	The object appears when the tag value is ON (Digital: ON, Analog: Values other than 0).
	OFF	The object appears when the tag value is OFF (Digital: OFF, Analog: 0).
Interval		You can assign the interval value in 100msec units. The values from 1 to 999 can be assigned. If the value exceeds the range, a warning message pops up. e.g.) When you input 10, the object blinks every second. (1000msec)

(3) V-Size

Changes the size of object vertically according to the tag value.

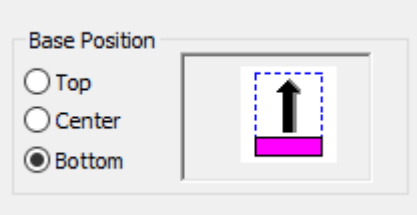
This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



[Vertical Size Variation]

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press … button to configure the detailed address.
Tag	You have to enter the tag name which will become the standard for the 'V-Size' feature. You can find the tag with … button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Data Range	Assign the range of object's transformation by minimum and maximum value. When the tag value is equal to or less than the minimum value, the object is hidden. When the tag value becomes greater, the object becomes closer to the original shape. If you enter '?', the minimum and the maximum value is same as those of the tag's.

[Vertical Size]

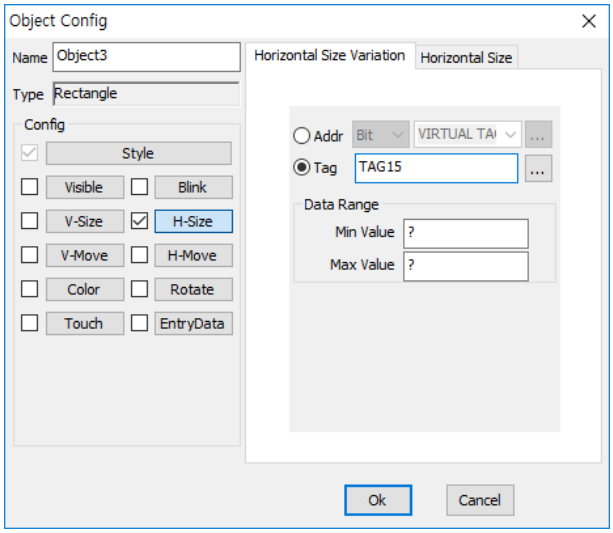


Item	Description
Top	The object's size changes starting from top to bottom.
Center	The object's size changes starting from center to both sides.
Bottom	The object's size changes starting from bottom to top.

(4) H-Size

Changes the size of object horizontally according to the tag value.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.

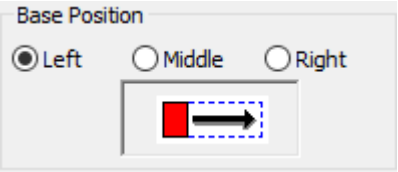


[Horizontal Size Variation]

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press … button to configure the detailed address.

Tag	You have to enter the tag name which will become the standard for the 'H-Size' feature. You can find the tag with ... button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Data Range	Assign the range of object's transformation by minimum and maximum value. When the tag value is equal to or less than the minimum value, the object is hidden. When the tag value becomes greater, the object becomes closer to the original shape. If you enter '?', the minimum and the maximum value is same as those of the tag's.

[Horizontal Size]

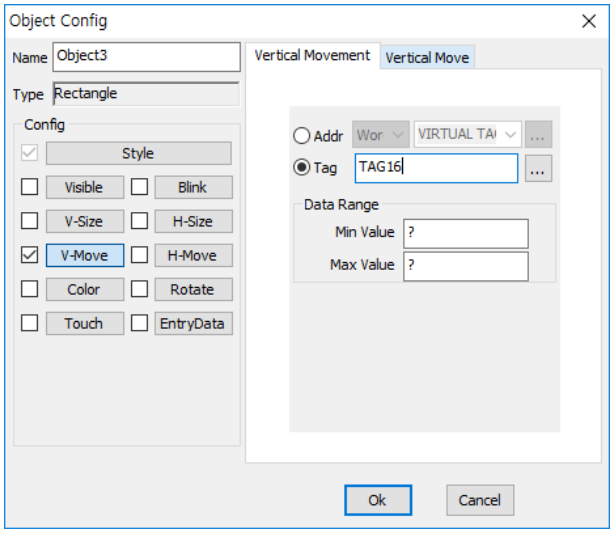


Item	Description
Left	The object's size changes starting from left to right.
Middle	The object's size changes starting from middle to both sides.
Right	The object's size changes starting from right to left.

(5) V-Move

Moves the object vertically according to the tag value.

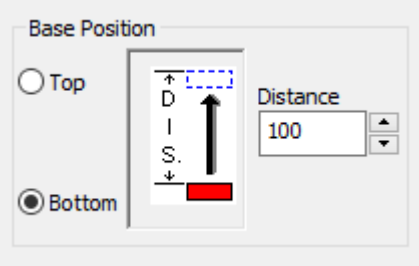
This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



[Vertical Movement]

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [...] button to configure the detailed address.
Tag	You have to enter the tag name which will become the standard for the 'V-Move' feature. You can find the tag with [...] button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Data Range	Assign the range of object's movement by minimum and maximum value. When the tag value is equal to or less than the minimum value, the object is at the starting point. When the tag value becomes greater, the object moves further from the starting point. If you enter '?', the minimum and the maximum value is same as those of the tag's.

[Vertical Move]

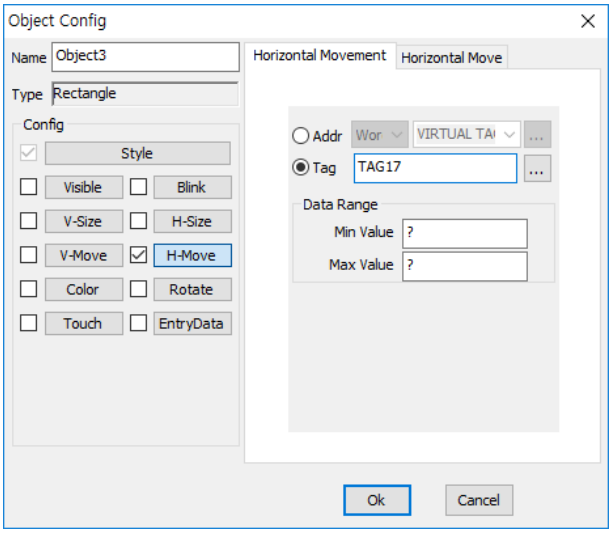


Item	Description
Top	The object moves from top to bottom.
Bottom	The object moves from bottom to top.
Move	Assign the maximum distance of movement. The distance is assigned in pixel unit, from 1 to 1024.

(6) H-Move

Moves the object horizontally according to the tag value.

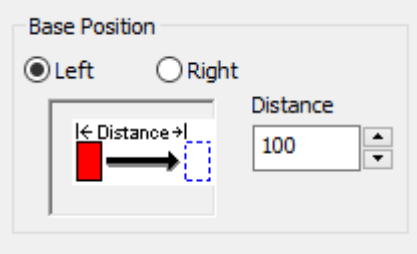
This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



[Horizontal Movement]

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press ... button to configure the detailed address.
Tag	You have to enter the tag name which will become the standard for the 'H-Move' feature. You can find the tag with ... button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Data Range	Assign the range of object's movement by minimum and maximum value. When the tag value is equal to or less than the minimum value, the object is at the starting point. When the tag value becomes greater, the object moves further from the starting point. If you enter '?', the minimum and the maximum value is same as those of the tag's.

[Horizontal Move]

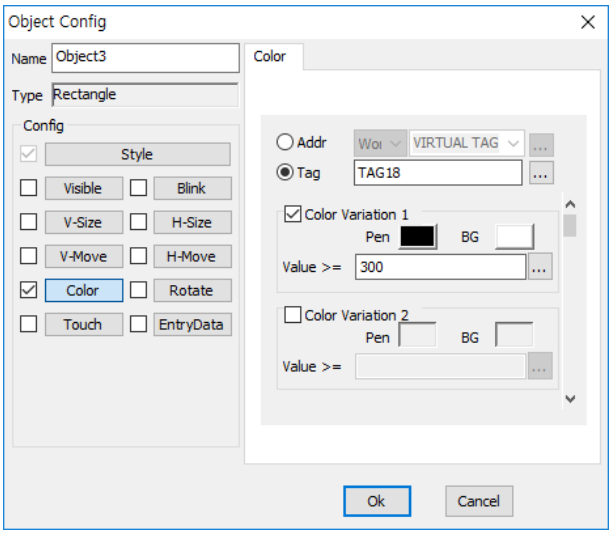


Item	Description
Left	The object moves from left to right.
Right	The object moves from right to left.
Move	Assign the maximum distance of movement. The distance is assigned in pixel unit, from 1 to 1024.

(7) Color

Changes the color of object according to the tag value.

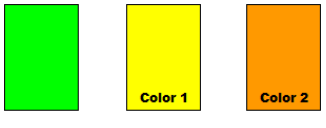
This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



[Color]: You can configure the conditions of [Color]. You can set maximum 8 conditions.

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [...] button to configure the detailed address.
Tag	You have to enter the tag name which will become the standard for the 'Color' feature. You can find the tag with [...] button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Pen	Selects the color of object's outline when color changes.
Fill	Selects the color to fill in the object when color changes.

Value: The color changed according to the value assigned to the tag.

Item	Description	Example
>=	The color changes when the tag value is equal to or greater than the assigned value.	

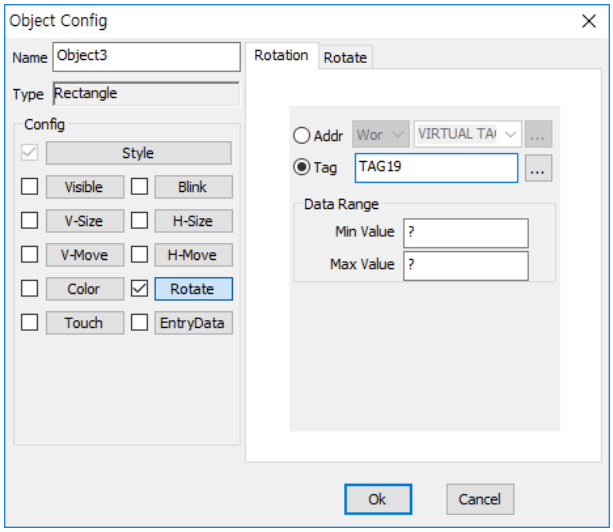
Priority of [Color]: The 'Color Variation' with bigger number has higher priority.

E.g.) Color Vari.1 < Color Vari.2

(8) Rotate

Rotates the object with assigned angle according to the tag value.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.

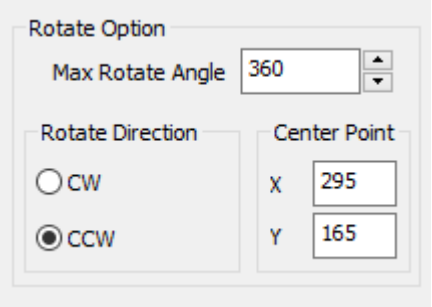


[Rotation]

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [...] button to configure the detailed address.

Tag	You have to enter the tag name which will become the standard for the 'Rotate' feature. You can find the tag with ... button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Data Range	Assign the range of object's rotation by minimum and maximum value. When the tag value is equal to or less than the minimum value, the object does not rotate. When the tag value becomes greater, the object rotates. If you enter '?', the minimum and the maximum value is same as those of the tag's.

[Rotate]



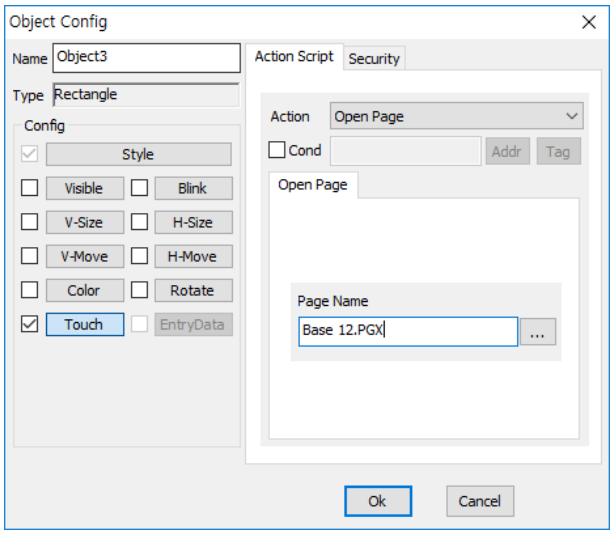
Item		Description
Max Rotate Angle		You can assign maximum rotation angle. A value from 0 to 360 can be assigned.
Rotate Direction	90 Rotate Left	The object rotates counter clockwise.
	90 Rotate Right	The object rotates clockwise.
Center Point		Assign center point's coordinate of the rotation. The absolute coordinate has to be assigned in pixel unit It is recommended to assign the coordinate in range of the graphic page.

⚠ Objects such as Circle, Text, Tag Value do not rotate with the default center point. You have to change the value assigned to center point.

(9) Touch

Executes a defined operation when the object is pressed or released. You cannot use this feature with EntryData.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



[Action Script]: You can define the operation when you touch the object.

Item	Description
Open Page	Opens a graphic page. You can input the page's name manually or press ... to select a graphic page through file browser.
Close Page	Closes a graphic page. You can input the page's name manually or press ... to select a graphic page through file browser.
Cond	Assign a condition to perform the touch feature. The condition must be in format of logical and/or comparison calculation. Refer to the table below for more information.
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press ... button to configure the detailed address.

Tag			You have to enter the tag name which will become the standard for the 'Touch' feature. You can find the tag with … button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.
Write Tag Value	Writes the assigned value to the registered tag.		
	Write Value		You can assign a value to write at the selected tag. Write 0 or 1 for Digital Tag. For Analog Tag, write integer or floating-point number. If you wrote a value greater than 1 for the digital tag, the tag recognizes it as 1.
Write Digital Value	Configures the operation on digital tag when you touch the object.		
	Write Value Set		Sets the digital tag value as "1".
	Write Value Reset		Sets the digital tag value as "0".
	Write value Toggle		Reverses the digital tag value. (0→1 or 1→0)
Command Expression	You can write a command expression to execute.		
	Command Down		Inputs a command expression when you touch the object.
	Command Up		Inputs a command expression when you release the object.
Write Momentary	Writes an instant value when you touch or release the object.		
	Down - Written Value		Inputs a value when you touch the object.
	Up - Written Value		Inputs a value when you release the object.
Key Input	Operates as a key of keyboard. Supports 83 keys in total, such as Arrow keys, HOME, END, PAGE UP/DOWN, INSERT, DELETE, LOCK Keys, Alphabets, Numbers, ENTER, SPACE, ESC, PRINT SCREEN, PAUSE, F1~F12, TAB, "/", "*", "-", "+", ".", CLEAR.		
Open Keypad Page	Opens a keypad page. Assign the location where the keypad page will be opened at 'V Scale' and 'H Scale'. It is recommended to enter the value less than the Xpanel's resolution. You can select the 'Use Max/Min' option to assign the range of value. If the option is deselected, the minimum and the maximum value is same as those of the tag's. You can input the page's name manually or press … to select a graphic page through file browser.		

Condition

Assign a condition to perform the touch feature. The condition must be in format of logical and/or comparison calculation.

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [Addr] button to configure the detailed address.
Tag	Sets condotion with the tags from the database. Press [Tag] button or manually input the tag name.

Enter the comparison calculation in the format as shown below.

[Tag Name or Device Address] [Comparison Operator] [Value]

Following table shows the list of comparison operators you can use.

Comparison Operator	Description	Example
==	Is equal to	A == B
>= or =>	Is greater than or equal to	A >= B
>	Is greater than	A > B
<= or =<	Is less than or equal to	A <= B
<	Is less than	A < B
!=	Is not equal to	A != B

You can also use comparison calculation and logical calculation together. Use logical operator between two comparison calculations as shown below..

[Comparison Calculation] [Logical Operator] [Comparison Calculation]

Following table shows the list of logical operators you can use.

Logical Operator	Description	Example
&&	Logical AND	A && B
||	Logical OR	A || B
!	Logical NOT	!A

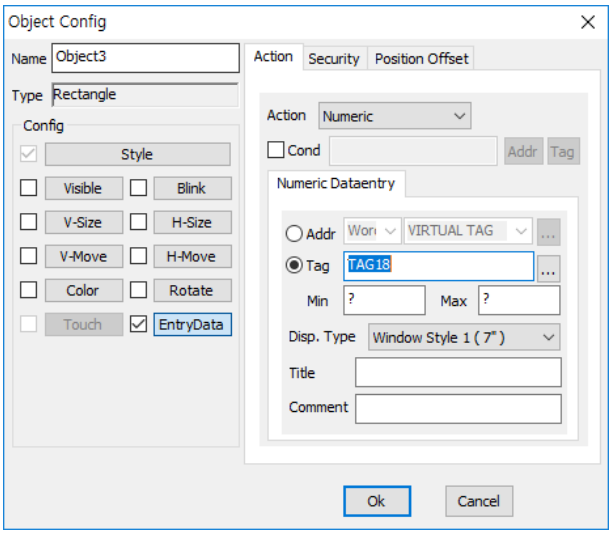
[Security]: This feature is to put a limit on users when using the object.

※ Please refer to 'Security' manual for more information.

(10) EntryData

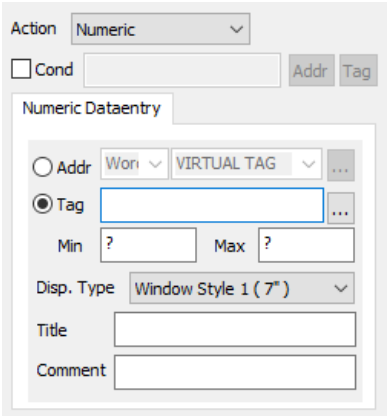
Inputs data with data entry window when the object is clicked. You cannot use this feature with Touch.

This feature does not support the following objects: Trend, Data Logging, Key Input Window, Alarm Summary, Page Link.



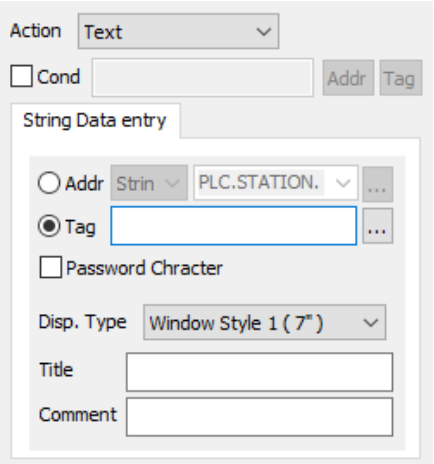
[Action]: You can select one of data entry type between numeric and text.

a) Numeric



Item	Description	
Cond	Assign a condition to perform the touch feature. The condition must be in format of logical and/or comparison calculation. Refer to the table below for more information.	
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press ... button to configure the detailed address.	
Tag	You have to enter the tag name which will become the standard for the 'EntryData' feature. You can find the tag with ... button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.	
Min/Max Value	Assign an input range. If you enter '?', the minimum and the maximum value is same as those of the tag's.	
Style	You can select a window type when you use data entry feature. Through [Preview], you can check the 3 supported window types.	
	Title	Designates the title of data entry window.
	Comment	Inputs the comment of data entry window.

b) Text



Item	Description	
Cond	Assign a condition to perform the touch feature. The condition must be in format of logical and/or comparison calculation. Refer to the table below for more information.	
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [...] button to configure the detailed address.	
Tag	You have to enter the tag name which will become the standard for the 'EntryData' feature. You can find the tag with [...] button or manually input the tag name. If the corresponding tag does not exist in database, a message pops up asking the user if they wish to add a new tag.	
Password	When you write text on the data entry window, it is expressed as "*****".	
Style	You can select a window type when you use data entry feature. Through [Preview], you can check the 3 supported window types.	
	Title	Designates the title of data entry window.
	Comment	Inputs the comment of data entry window.

Condition

Assign a condition to perform the entrydata feature. The condition must be in format of logical and/or comparison calculation.

Item	Description
Addr	Controls the object with the address of I/O device which is registered in the [I/O Device]. You can select the data unit (BIT/WORD). Press [Addr] button to configure the detailed address.
Tag	Sets condotion with the tags from the database. Press [Tag] button or manually input the tag name.

Enter the comparison calculation in the format as shown below.

[Tag Name or Device Address] [Comparison Operator] [Value]

Following table shows the list of comparison operators you can use.

Comparison Operator	Description	Example
==	Is equal to	A == B
>= or =>	Is greater than or equal to	A >= B
>	Is greater than	A > B
<= or =<	Is less than or equal to	A <= B
<	Is less than	A < B
!=	Is not equal to	A != B

You can also use comparison calculation and logical calculation together. Use logical operator between two comparison calculations as shown below..

[Comparison Calculation] [Logical Operator] [Comparison Calculation]

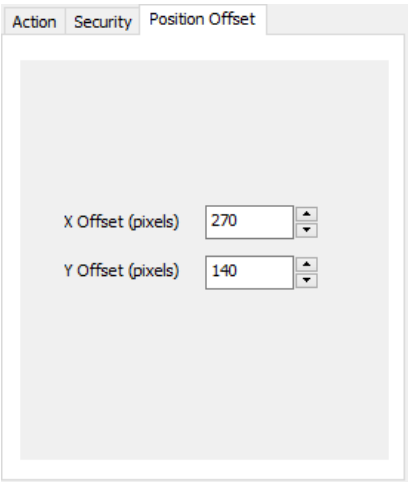
Following table shows the list of logical operators you can use.

Logical Operator	Description	Example
&&	Logical AND	A && B
||	Logical OR	A || B
!	Logical NOT	!A

[Security]: This feature is to put a limit on users when using the object.

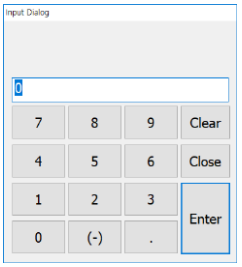
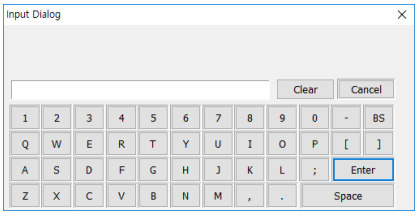
※ Please refer to 'Security' manual for more information.

[Position Offset]



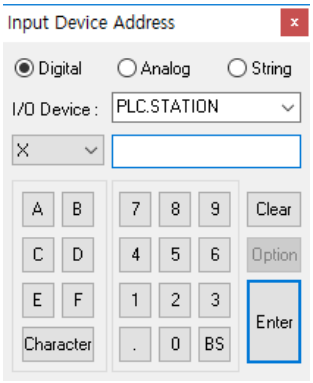
Item	Description
X Offset (pixels)	Assign a coordinate of X axis for data entry window. You can assign value from -32768 to 32767. If the coordinate exceeds the graphic page, the window appears on the nearest border.
Y Offset (pixels)	Assign a coordinate of Y axis for data entry window. You can assign value from -32768 to 32767. If the coordinate exceeds the graphic page, the window appears on the nearest border.

Following table shows the examples of each action's window style 1.

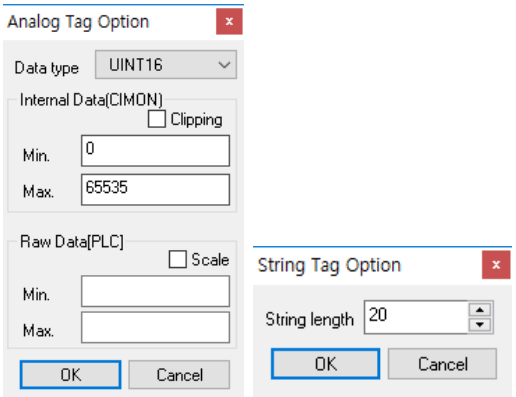
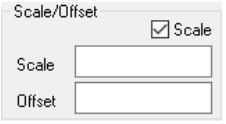
Item	Example
Numeric	
Text	

6.1.3 Input Device Address

You can configure the detailed device address in the following window, to control or store the data through the object.



Item	Description	
Data Type	Select Digital/Analog,String. The option window changed according to the selection.	
I/O Device	Displays the list of I/O devices registered in the current project.	
Device Address	Assign the device and address for the object control.	
	Device Type	Displays the list of devices according to the selected I/O device and the data type.
	Address	Enter the starting address of the device. The value you can input may differ according to the selected I/O device and the device type.
Device Address Input Keypad	You can use this keypad when you have to input the address without a keyboard. Enter the address in decimal or hexadecimal according to the device type. For example, if you assign an address in device X of CIMON-PLC, the address must be assigned in hexadecimal. In case of the device D, the address must be assigned in decimal.	

<table>
<tr><td rowspan="5">Option</td><td colspan="2">The [Option] is activated when the 'Analog' or 'String' option is selected.
Press the button to bring up the [Analog Tag Option] or [String Tag Option] window as shown below.
 
</td></tr>
<tr><td>Type</td><td>You can select the analog data type from the following list types: UINT8, UINT16, UINT32, INT8, INT16, INT32, UBCD8, UBCD16, UBCD32, BCD8, BCD16, BCD32, Float . UINT16 is the default type.</td></tr>
<tr><td>Internal Data</td><td>Enter the value range to be displayed on the Xpanel. The default range is from 0 to 65535.
When you select 'Clipping' option, a warning message will appear when the value exceeds the assigned range, and the exceeded value will not be used.</td></tr>
<tr><td>Raw Data</td><td>Enter the value range which will be actually input to the PLC.
For example, if the raw data range is from 0 to 16000 and the internal data range is from 0 to 100, the Xpanel will display 100 when the PLC gets the value 16000.</td></tr>
<tr><td>Scale</td><td>This option calculates the PLC data and displays the result to the Xpanel.
 

The Scale calculation is as shown below.
Scale = Raw Data x Scale + Offset</td></tr>
<tr><td>String Length</td><td>Assign the maximum length of the string data. You can assign the value from 1 to 80.</td></tr>
</table>

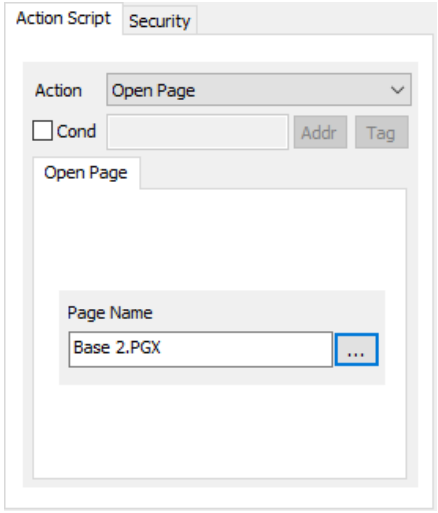
6.1.4 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Open page with [Touch]

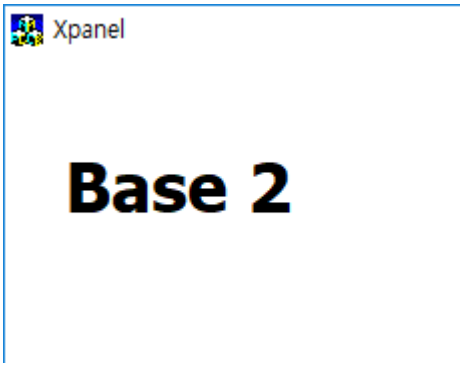
(1) Opening the page with [Open Page] action

a) Select [Open Page] action and enter the page to open. In this example, 'Base 2' will be opened. Enter the page name and press [OK].



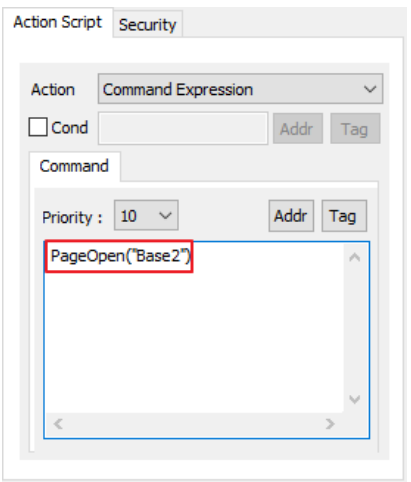
b) The touch feature is used in the text object as shown below. Write the project to Xpanel or run the simulator. Touch the object.

c) You will see that Base 2 is opened.



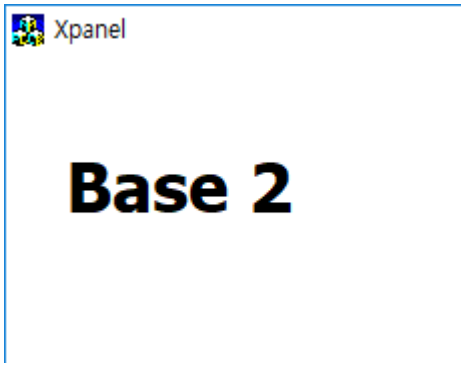
(2) Opening the page with [Command Expression] action

a) Select [Command Expression] action and enter the command expression as shown below. In this example, 'Base 2' will be opened. Enter the command expression and press [OK].



b) The touch feature is used in the text object as shown below. Write the project to Xpanel or run the simulator. Touch the object.

c) You will see that Base 2 is opened.



6.2 Basic Object

Simple graphic objects are used to operate commands as buttons in Xpanel runtime. You can draw lines, rectangles, circles, etc. These objects can be also used for displaying operating conditions of Xpanel and external devices.

This section explains how to draw and create basic objects.

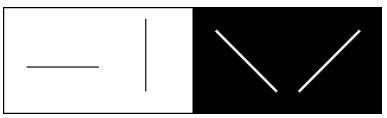
6.2.1 Drawing the Objects

A graphic page should be opened when the object has been created. Select the object you wish to draw. The following methods can be made to an object:

- Click [View]-[Drawing Tool] in the top menu of Xpanel Designer. You can select the object on the drawing toolbar.
- Click [Draw] menu in the top menu of Xpanel Designer. You can select the object on the sub menu.

Line

This tool is used to draw lines.

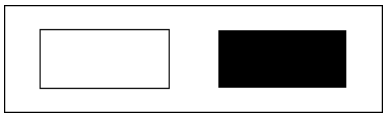
Instruction	Click the left mouse button and drag the mouse to the line direction.
Example	

You can put to use following methods when drawing line objects.

- You can draw horizontal/vertical lines during holding down the “Ctrl” key.
- When you draw the object with right-click, the color is reversed from the default.

Rectangle

This tool is used to draw rectangles or squares.

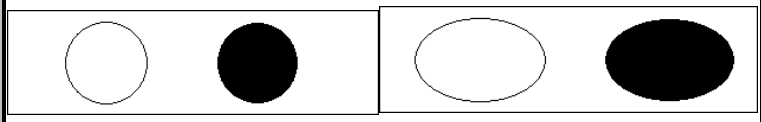
Instruction	Click the left mouse button and drag it down to the right or left.
Example	

You can put to use following methods when drawing rectangle objects.

- You can draw squares during holding down the “Ctrl” key.
- When you draw the object with right-click, the color is reversed from the default.

Ellipse

This tool is used to draw circles or ellipses.

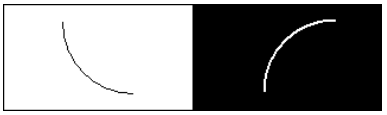
Instruction	Click the left mouse button and drag it down to the right or left.
Example	

You can put to use following methods when drawing circle objects.

- You can draw circles during holding down the “Ctrl” key.
- When you draw the object with right-click, the color is reversed from the default.

Arc

This tool is used to draw arcs.

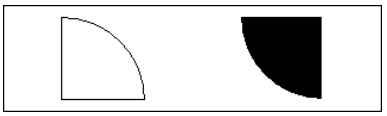
Instruction	Click the left mouse button and drag it to make the arc.
Example	

You can put to use following methods when drawing arc objects.

- You can draw arcs in 90 degrees during holding down the “Ctrl” key.
- When you draw the object with right-click, the color is reversed from the default.

Sector

This tool is used to draw sectors.

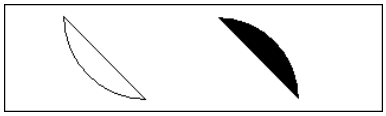
Instruction	Click the left mouse button and drag it to the right or left to make the sector.
Example	

You can put to use following methods when drawing sector objects.

- You can draw circular sectors in 90 degrees during holding down the “Ctrl” key.
- When you draw the object with right-click, the color is reversed from the default.

Chord

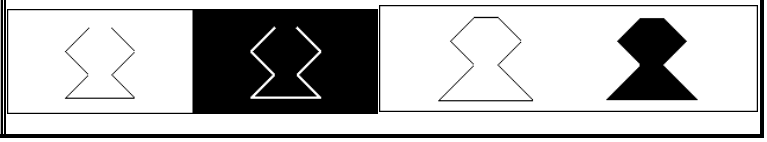
This tool is used to draw chords.

Instruction	Click the left mouse button and drag it to the right or left to make the chord.
Example	

	You can put to use following methods when drawing chord objects. • You can draw sines during holding down the “Ctrl” key. • When you draw the object with right-click, the color is reversed from the default.

Polyline, Polygon

These line tools are used to draw polylines and polygons.

Instruction	1. Click the left mouse button and create a starting point of a line. 2. Move the cursor to draw an imaginary line. 3. If you click the left mouse button once more when a desired line is completed, an imaginary line will be drawn. 4. Double-click the blank space where you want to finish the line. 5. In case of a polygon, the first vertex and the last vertex are linked automatically.
Example	

	You can put to use following methods when drawing polyline and polygon objects. • When you draw the object with right-click, the color is reversed from the default.

Text

This tool is used to enter texts.

Instruction	1. Click the left mouse button on a desired position. 2. Enter a text. If you press the Enter key, you can add a new line in the text. 3. Click the blank space after you finished entering the text. 4. You can edit the text in the [Object Config] - [Text Editing].
Example	

	If the size of text object is smaller than text, the font size will be automatically adjusted to the object size. When you resize the text object, font size will be changed together.

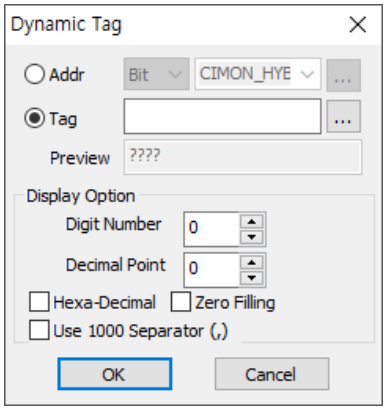
6.3 Dynamic Tag

Point values from the external device or internal data values can be displayed in the 'Dynamic tag' object. The operator may assign the digit number or decimal point number. Also, decimal numbers can be converted into hexadecimal numbers.

- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- If an object's size is not large enough, the tag value displayed may not be shown fully. Please set the size adequately until the entire tag value can be displayed.

6.3.1 Settings

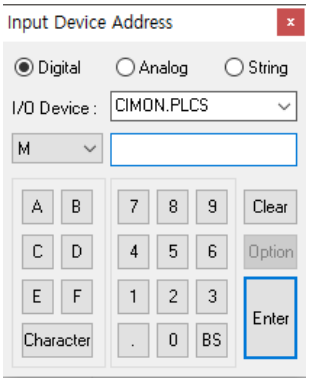
You can decide the format of tag value displayed in the graphic page. To bring up the dynamic tag dialog box, select [Draw] - [Dynamic Tag] or icon and click the background of page. You may reenter in the configuration by double-clicking a dynamic tag object.

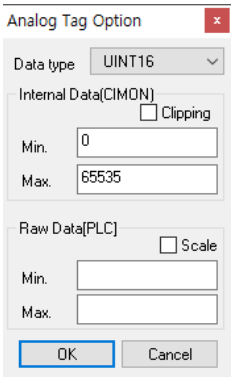


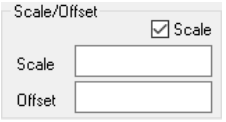
Item	Description	
Address	The tag value will be displayed by using its real address with BIT or WORD data. You can input the device address in the 'Input Device Address' dialog box.	
Tag Name	Enter the tag name which will be displayed in the object. You can browse the tag with ... button or manually input the tag name in the text field.	
Preview	Displays an example of the tag value as currently selected tag name and display option.	
Display Option	You can select a dynamic tag format to display on the screen.	
	Digit Number	Displays the tag value with specified number of digits. You can assign the number from 0 to 255. If the 'Decimal Point' option has been selected, digit number must be bigger than the number of decimal point number for 2.
	Decimal Point	Displays the tag value with specified number of decimals.
	Hexa-Decimal	Displays the tag value with hexadecimal number.
	Zero Filling	Displays the first number of tag value as 0.
	Use 1000 Separator (,)	Use a comma to mark every three digits in a tag value.

(1) Address

You can display the tag value with assigned real address. The following dialog box will appear when you press ... button.

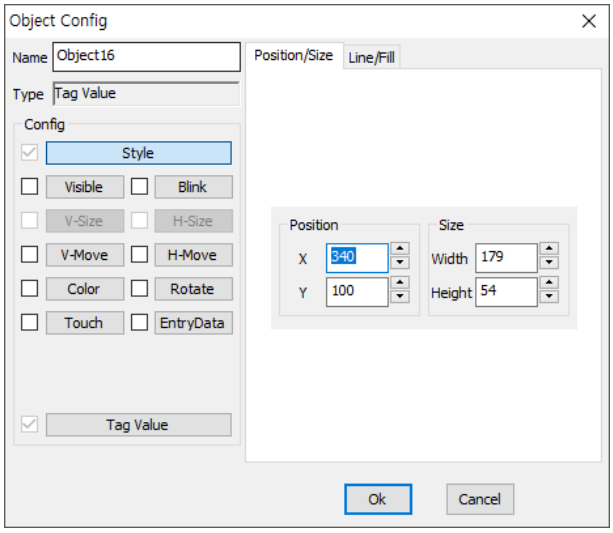


<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Data Type</td><td colspan="2">Select the data type to be displayed in the tag value. This option is different from the BIT/WORD selection in the previous step.
'Digital' option displays a tag value as 0 or 1.
'Analog' option displays a tag value with analogic data assigned to the device address. Values will follow the configuration in the 'Analog Tag Option' dialog box.
'String' option displays a tag value with string data assigned to the device address.</td></tr>
<tr><td>I/O Device</td><td colspan="2">Shows the list of I/O devices registered in the current project.</td></tr>
<tr><td rowspan="3">Device Address</td><td colspan="2">You can assign the device and address for the tag value.</td></tr>
<tr><td>Device Type</td><td>Shows the list of usable devices according to the selected I/O device and the data type.</td></tr>
<tr><td>Address</td><td>Enter the starting address of the device. The value you can input may differ according to the data type (BIT/WORD), I/O device and the device type.</td></tr>
<tr><td>Device Address Input Keypad</td><td colspan="2">You can use this keypad when you have to input the address without a keyboard.
Enter the address in decimal or hexadecimal according to the device type.
For example, if you assign an address in device X of CIMON-PLC, the address must be assigned in hexadecimal. In case of the device D, the address must be assigned in decimal.</td></tr>
<tr><td>Option</td><td colspan="2">This button will be enabled when the data type is selected as 'Analog'.
Pressing the button will prompt a [Analog Tag Option].
 
</td></tr>
</table>

	Type	You can select the analog data type from the following list types: UINT8, UINT16, UINT32, INT8, INT16, INT32, UBCD8, UBCD16, UBCD32, BCD8, BCD16, BCD32, Float . UINT16 is the default type.
	Internal Data	Enter the value range to be displayed on the Xpanel. The default range is from 0 to 65535. When you select 'Clipping' option, a warning message will appear when the value exceeds the assigned range, and the exceeded value will not be used.
	Raw Data	Enter the value range which will be actually input to the PLC. For example, if the raw data range is from 0 to 16000 and the internal data range is from 0 to 100, the Xpanel will display 100 when the PLC gets the value 16000.
	Scale	This option calculates the PLC data and displays the result to the Xpanel.  The Scale calculation is as shown below. **Scale = Raw Data x Scale + Offset**

6.3.2 Object Configuration

You can configure the Dynamic Tag object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click the object or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in a certain cycle according to the tag value.
V/H-Size	Changes the size of object vertically/horizontally according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Color	Changes the color of the object according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is pressed.
Tag Value	Show the configuration window of the Dynamic Tag object.

※ Please refer to the 'Object Configuration' manual for more information.

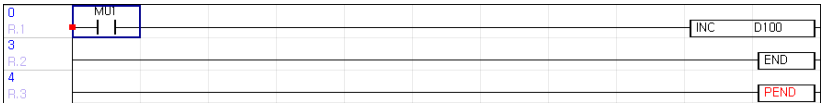
6.3.3 Exercise

> This section explains the basics of the feature. Please utilize the feature according to your site environment.

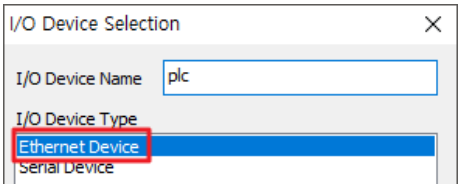
Exercise : Displaying the tag value

In this exercise, you will establish a connection between CICON PLC simulator and Xpanel. The point value will be displayed in the dynamic tag object.

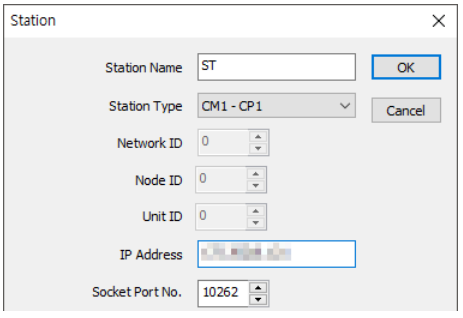
a) Create a PLC project in the CICON software and add a scan program as shown below. When M01 turns on, the value in D100 will increase.



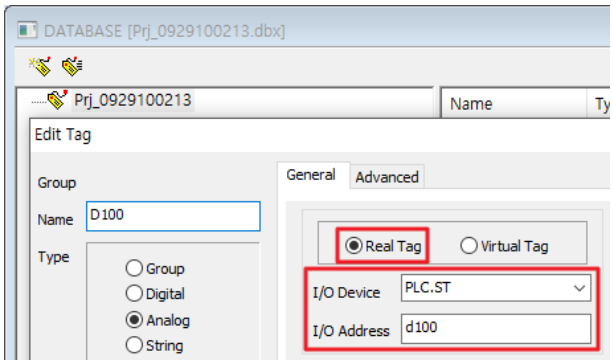
b) In the Xpanel Designer, select [Tools]-[I/O Device] to bring up the 'I/O device configuration' dialog box. Add a I/O device with Ethernet communication.



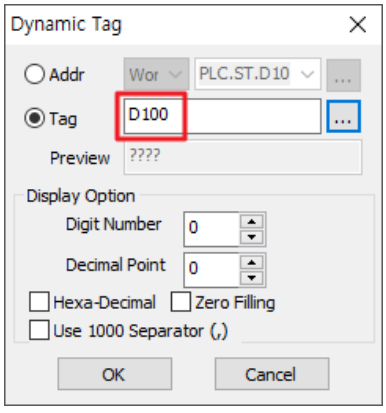
c) Select a device type for CIMON-PLC. In the station configuration, enter the IP address of PC which Xpanel Designer has installed. The socket port number is fixed at 10262.



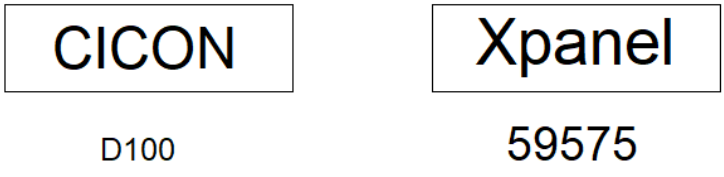
d) Create an analog tag 'D100' and assign the tag type as a real tag. Select the I/O device and input 'D100' in the I/O address.



e) Select [Draw]-[Dynamic Tag] or icon to add a dynamic tag object. Enter the tag name as 'D100'.



f) Download a scan program from the CICON software, and launch a Xpanel Designer project in the Xpanel. You may see the value increases.

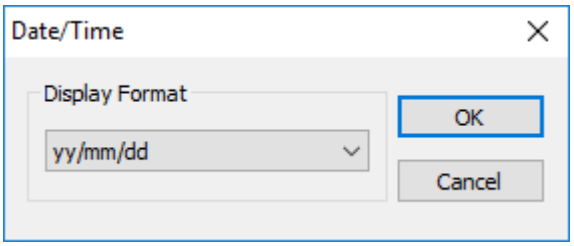


6.4 Date/Time

Date/Time object is used to check the system's date and time during the project operation. This object displays the time set in the device where the project is executed.

6.4.1 Settings

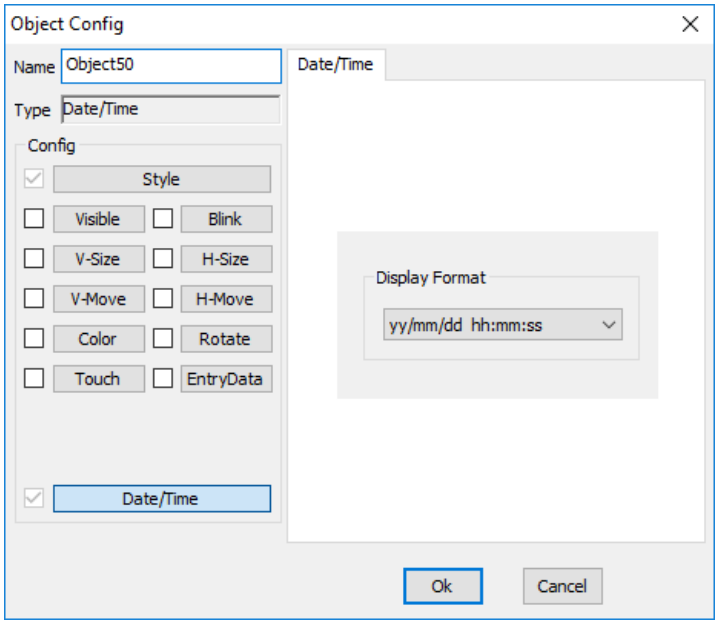
Select [Draw] - [Date/Time] or press icon then click on the page to bring up the window as shown below.



Item	Description
Display Format	Configures the display format of the date/time object. You can select one from the following options: yy/mm/dd, hh:mm:ss and yy/mm/dd hh:mm:ss.
OK	Saves the setting and adds the object to the page.
Cancel	Cancels the object configuration.

6.4.2 Object Configuration

You can configure the date/time object with basic control features such as [Visible], [Blink], etc. .To open the [Object Configuration] window, double-click the object or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot leave the object's name blank.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size], [Declutter], [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in certain cycle according to the tag value.
V/H-Size	Changes the size of object vertically/horizontally according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Color	Changes the color of object according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is clicked.
Date/Time	Show the configuration window of the Date/Time object.

※ Please refer to the 'Object Configuration' manual for more information.

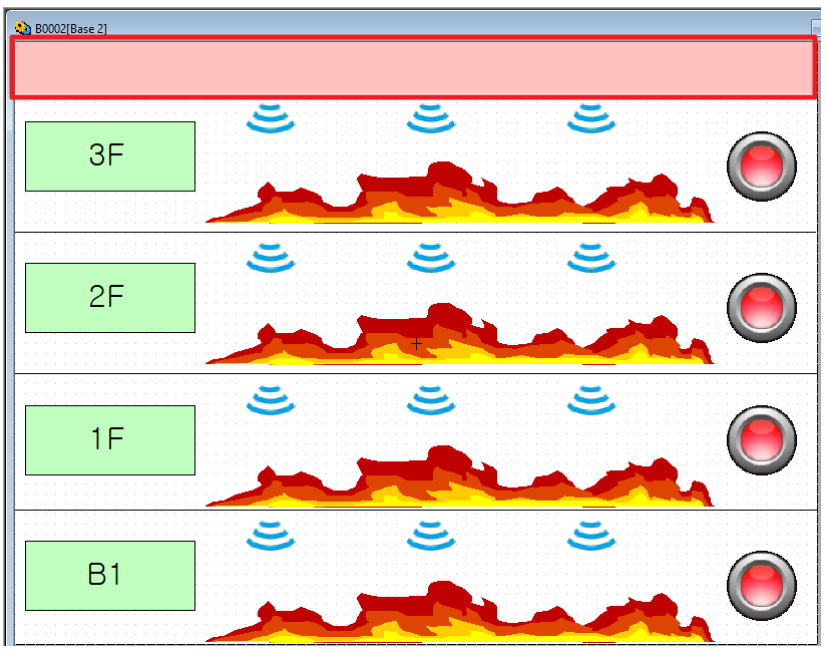
6.4.3 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

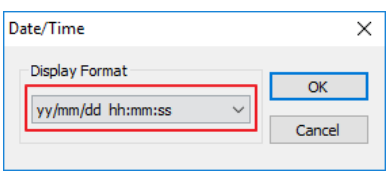
Exercise : Displaying the Time in Project

(1) Page Configuration

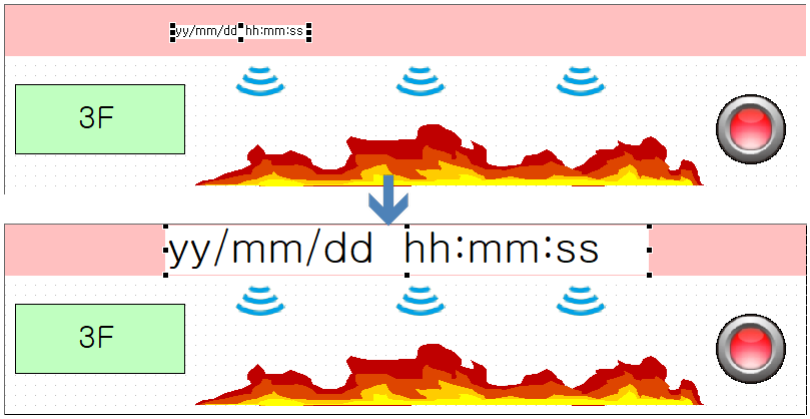
a) Adds a date/time object on the following page. Select [Draw] - [Date/Time] then click on the marked area on the page as shown below.



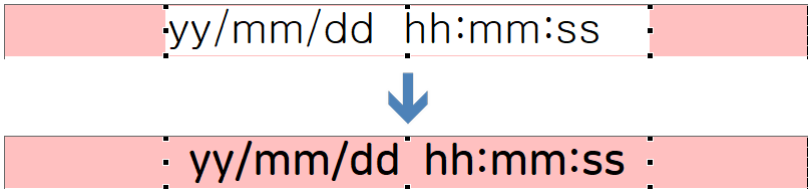
b) To display entire date and time, select yy/mm/dd hh:mm:ss option. Press [OK] button to finish the configuration.



c) Drag the object to adjust the location. Then drag the handles of the object to change the size.

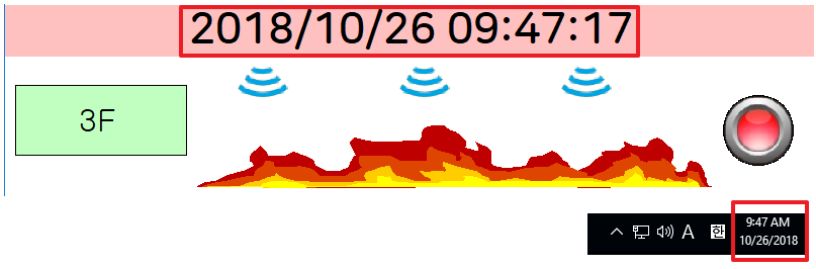


d) Double-click the object to bring up the [Object Configuration] window. You may configure the transparency of the object. You can also change the appearance of the object by using the font tool, etc.



(2) Checking the Operation

a) Write the project to Xpanel or execute simulator to check the operation. You will find that the device's system time is displayed on the project.



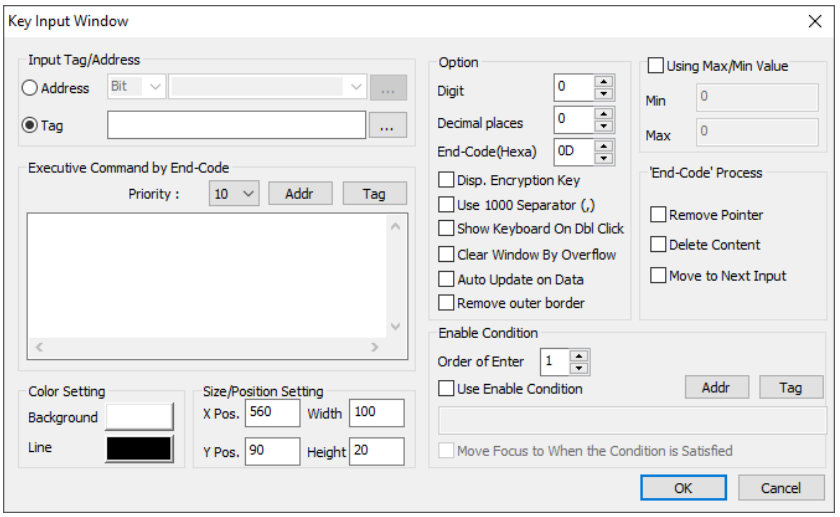
6.5 Key Input Window

The key input window is used to get a numeric or string value by using keyboard. The operator can determine the displayed digit number. Also, the object can be enabled when meets the input condition. The user can make self-defined data input window by locating the object in the keypad page.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

6.5.1 Settings

To bring up the 'Key input window' dialog box, click [Draw]-[Key Input] or icon and click the background of page.

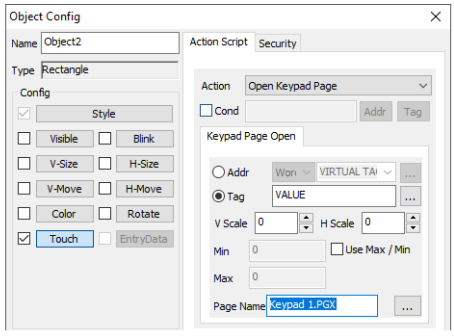


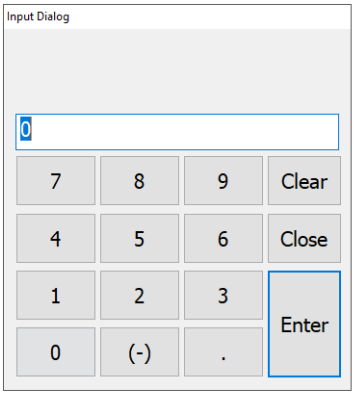
Item	Description	
Input Tag / Address	Assign the address or tag name to get values from key input window object.	
	Address	The object will be input by using its real address with BIT or WORD data. You can input the device address in the 'Input Device Address' dialog box.
	Tag	Enter the tag name to input the value via object. You can assign an analog tag, digital tag, and string tag.
Executive Command by End-Code	Executes the command in the text field when end-code has input. You can browse the address or tag name.	
	Priority	You can assign a priority of the command expression used for the key input. The priority can be assigned from 0 (the lowest priority) to 10 (the highest priority).
Color Setting	You may assign the background and line color. You can choose the color from 90 colors.	
Size / Position Setting	You may assign the position and size of the object.	
Digit Number	Displays the value with specified number of digits. You can assign the number from 0 to 255. '0' indicates no limitation for the digit number.	
Decimal Point	Displays the value with specified number of decimals.	
End-Code	Enter the hexadecimal code for ending key input. '0D' means the 'Enter' key and is specified by default. The end-code follows the virtual key code.	
Display Encryption	The data is displayed as '****'.	
Use 1000 Separator (,)	Use a comma to mark every three digits in a tag value.	
Show Keyboard on Dbl Click	Displays the virtual keyboard when double-clicking the object. This option can be used when the keyboard device is missing.	
Clear Window by Overflow	If the data input exceeds the maximum digit length, earlier input will be deleted and the new value is entered.	
Auto Update on Data	Updates continuously for the current value of the tag.	
Remove Outer Border	Selects whether or not to show border line of the key input window object.	
Using Max / Min Value	Assigns the maximum and minimum values for the analog tag.	

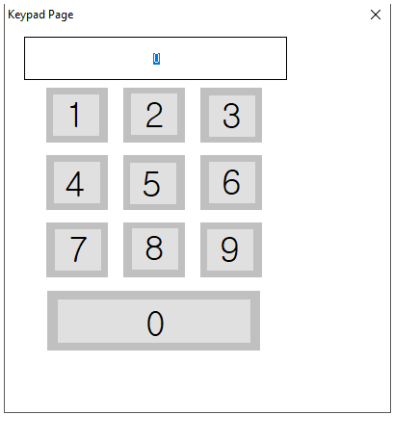
'End-Code' Process	Assign the action when the end-code has been entered.	
	Remove Pointer	The cursor may disappear from the key input window. To reenter the value, you must click the object.
	Delete Content	When the value is entered, the previous content will be erased.
	Move to Next Input	When using multiple of key input objects, this option allows you to move to the next key input window object according to the input order. If same input order has assigned, the focus will move into the oldest object.
Enable Condition	Assign the input condition of key input window object.	
	Order of Enter	Sets the input order for each key input window. You can assign the order from 1 to 100.
	Use Enable Condition	Enter the tag name or operation to enable the key input. If the condition is not satisfied, you cannot enter the data in the object.
	Move Focus to When the Condition is Satisfied	The focus will move to the object when the condition is satisfied.

6.5.2 Related Feature

You can design the data entry screen by using keypad page. To configure the keypad page settings, select 'Open Keypad Page' option under the 'Touch' feature in object configuration.







<Original keypad window> **<User-defined keypad window>**

- When using the 'Open Keypad Page' action, the target keypad page must contain one or more key input object.
- In the tag registration of the keypad input window, the tag is ignored when it is operated by the keypad. Note that the tag assigned in the touch object for 'Open keypad page' action gets input value.
- If you add the key input object in the popup page, the shortcut keys of data logging may not work properly.

※ Please refer to the 'Object Configuration' manual for more information about 'Open Keypad Page' action.

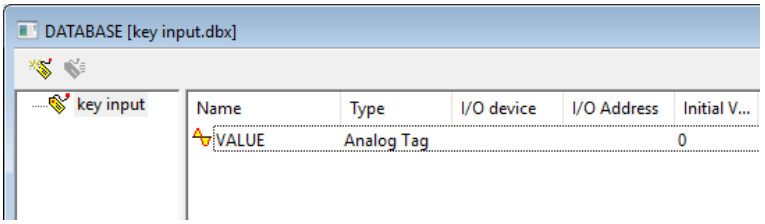
6.5.3 Exercise

> This section explains the basics of the feature. Please utilize the feature according to your site environment.

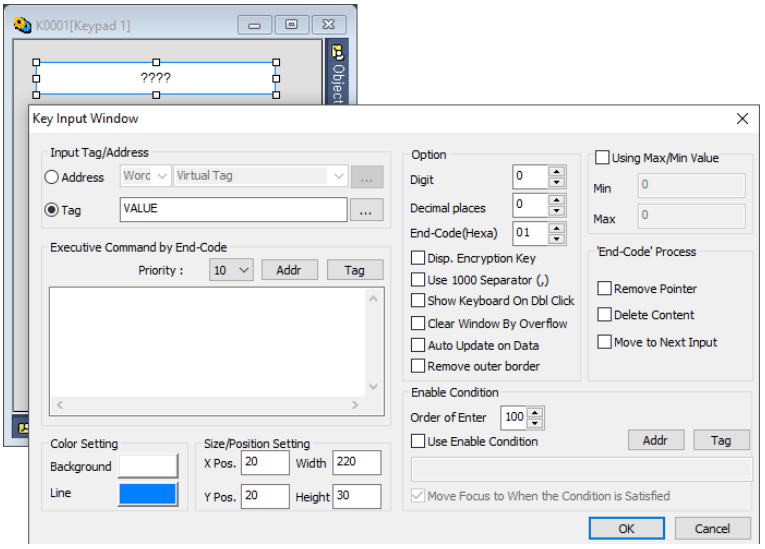
Exercise: Making a keypad by using key input window object

In this exercise, you will register a key input object in the keypad page and design a keypad yourself.

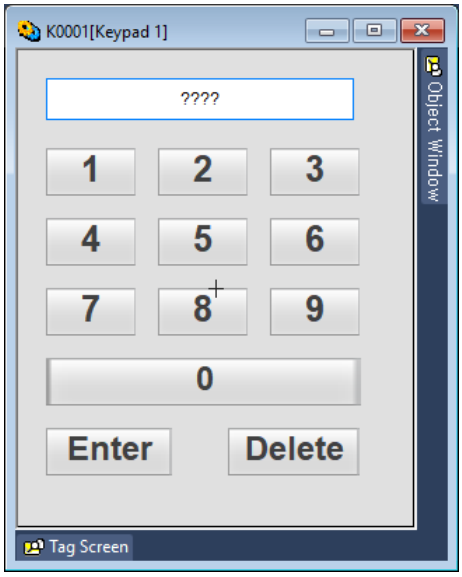
a) Create an analog tag 'VALUE' in the database.



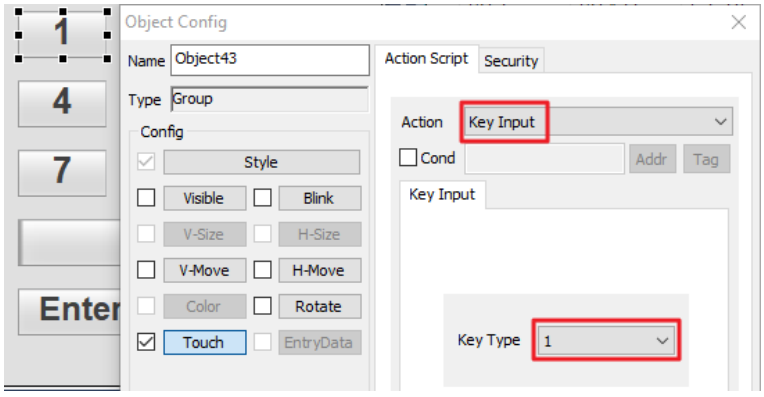
b) Create a keypad page. Select [Draw]-[Key Input Window] or icon and insert the object in the keypad page.



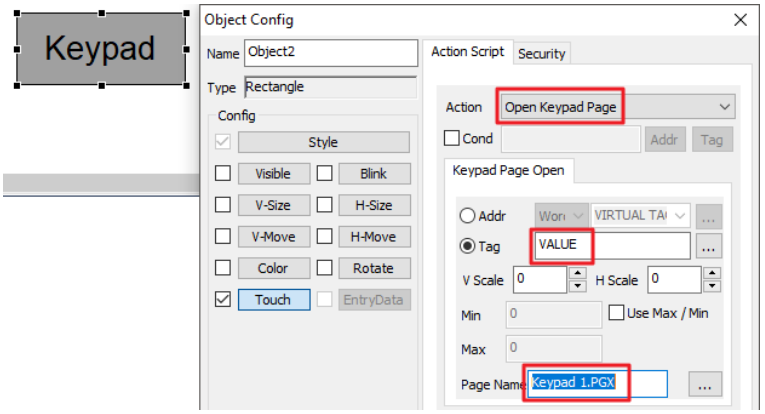
c) Draw touch objects in the keypad object as shown below.



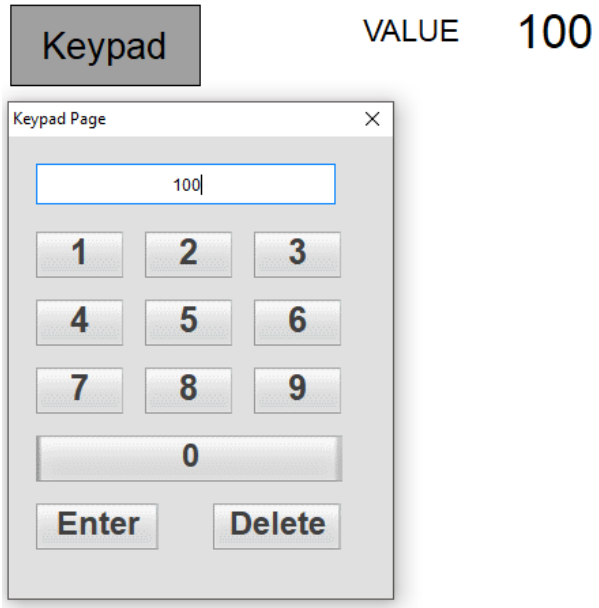
d) Select the action as 'Key Input' and specify key types for each object.



e) Create a touch object that opens the keypad page. Select the action as 'Open Keypad Page' and enter the tag name 'VALUE' in the text field.



f) Launch the project in the Xpanel or Simulator. Open the keypad page by clicking touch object in the main page. You may input the numeric data to change the tag value.



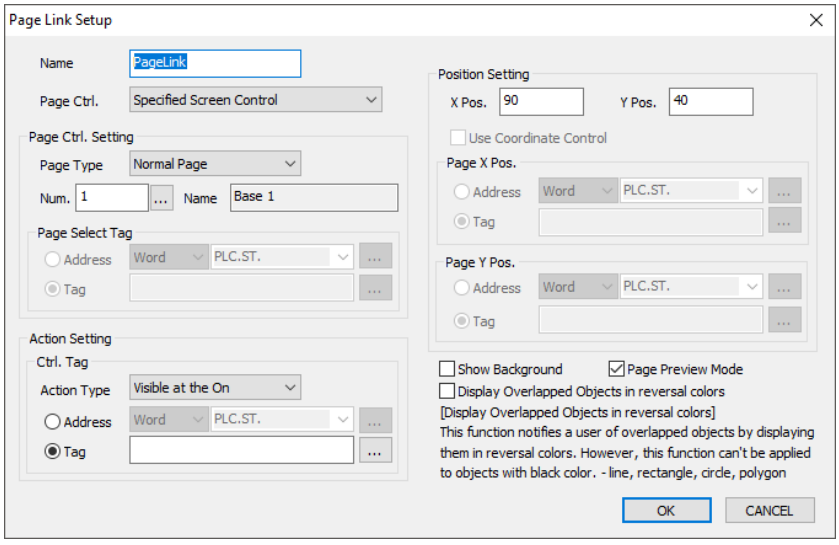
6.6 Page Link

The function or touch objects commonly used in several screens can be called out on the particular screen. This screen can be displayed on another screen with 'Page link' object. The operator can show or hide the object's appearance by changing tag value. The location of object can be moved by manipulating its coordinates.

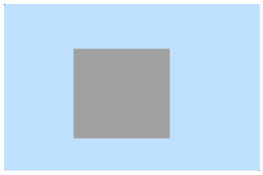
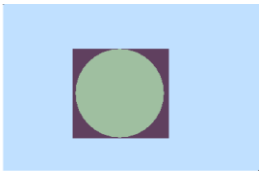
- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- Large amount of page link objects can cause a delay in the performance. Please avoid inserting amount of objects in the graphic page for smooth operation.

6.6.1 Settings

To open the object configuration window, press [Draw]-[Pagelink] or icon and click the background of graphic page.



Item	Description	
Name	Enter the name of object. The name is designated as 'PageLink' by default.	
Page Ctrl	Displays the page link object according to the 'Page Control' settings.	
	Specified Screen Control	Controls On/Off for the screen specified in the number and name of the 'Page control setting'. 'Action Setting' configuration is enabled.
	Specify by Tag Values	Depending on the value of the analog tag or address specified in the 'Page select tag', you can dynamically change the screen to be displayed in the runtime.
	Always Display Specified Screen	Always displays the screen specified in the number and name of the 'Page control setting'.
Page Ctrl. Setting	Displays the page link object set in the 'Page Control' according to the configuration.	
	Page Type	Select the page type to display in the page link object. You may choose normal page or popup page.
	Number	It indicates the page number to be displayed. When selected as 'Specified Screen Control' or 'Always Display Specified Screen', it shows the screen on Xpanel runtime. Note that you cannot call out (creating a page link object) the same screen with the current screen.
	Name	Shows the name of page assigned by the 'Number'.
	Page Select Tag	When selected as 'Specify by Tag Values', it specifies the analog tag or address to control the number to be displayed on the page link object.
Action Setting	When selected as 'Specified Screen Control', the page link object shows or hides the page screen according to the tag value.	
	Action Type	Depending on the control tag value, the object will be shown or hidden.
	Control Tag	Decides to control On/Off of the page link object. You may enter the digital or analog tag.

<table>
<tr><td rowspan="4">Position Setting</td><td colspan="2">These are the coordinates of the upper left corner of page link object displayed in the graphic page.</td></tr>
<tr><td>'Specified Screen Control', 'Always Display Specified Screen'</td><td>The page link object will be displayed in the assigned coordinates.</td></tr>
<tr><td>'Specify by Tag Values'</td><td>When you are not using 'Use coordinate control' option, the position will be decided by coordinates. Otherwise, the position will be decided by tag values of 'Page X/Y Pos.'</td></tr>
<tr><td>Page X/Y Pos.</td><td>This option will be enabled when using 'Use coordinate control' option. You can only use the analog tag.</td></tr>
<tr><td>Show Background</td><td colspan="2">Determines whether to display the background of target page screen during the runtime. If you deselect the 'Show background' option, the background is transparent and only the shapes and objects of the target page will be shown. This option cannot be used with 'Display Overlapped Objects in Reversal Colors' option.</td></tr>
<tr><td>Page Preview Mode</td><td colspan="2">This option enables to preview what the page link screen actually looks like before it is called out to the current page.</td></tr>
<tr><td>Display Overlapped Objects in Reversal Colors</td><td colspan="2">When two page link objects are located in the same position on a screen, the upper page link screen (Base 3) blocks and covers the lower page link screen (Base 2). If there is a need to differentiate two page link screens even when they are overlapped, you can use this option to indicate the overlapping area with reversal colors.
 
<Hiding overlapped area>
 
<Showing overlapped area></td></tr>
</table>

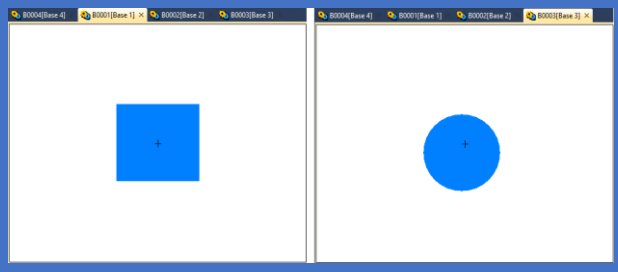
	• You may bring up the linked page by clicking icon in upper left side of page link object. • You can call out a page link screen on another page link screen up to 5 layers (levels) in Xpanel Designer and Xpanel runtime. For instance, Base 1 calls out Base 2, Base 2 calls out Base 3 and so on. E.g.) when the configuration is set as Base 1 - Base 2 - Base 3 - Base 4 - Base 5 - Base 6 - Base 7, with respect to Base 1 being the basis, Base 2 becomes Level 1, Base 3 becomes Level 2 … Base 6 becomes Level 5. The page link screen beyond Level 5 will not be displayed in Xpanel Designer and Xpanel runtime. Base 7 can be configured on the 'Page Link' setting but will not be displayed. • You are recommended to use 'Save All' command ( ) when you save page link objects in multiple layers.

- If the security level is set on the target page, page link object will be operated only when the security condition is satisfied.
- You cannot use page link object in the screen where frame has been configured.
- Be sure to note below points as using 'Display Overlapped Objects in Reversal Colors' option.

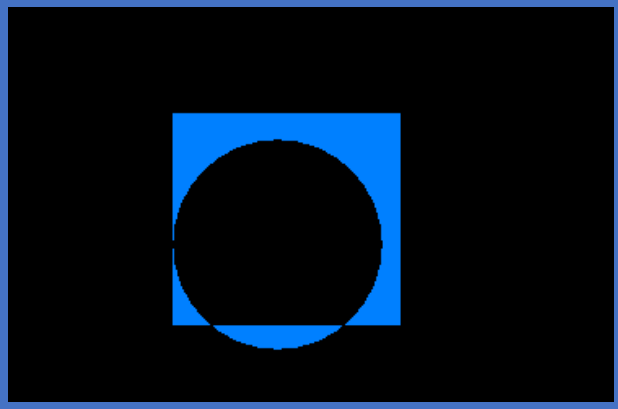
  1. The original color of object in the page link will be shown upon black background. The color will be reversed on the background with other colors.

  2. Black color in basic objects (Line, rectangle, ellipse, etc.) will not be shown.

  3. If same colors are overlapped, the overlapped section will be transparent.



When two objects are called out on the same position, the page link screen will be displayed as shown below;



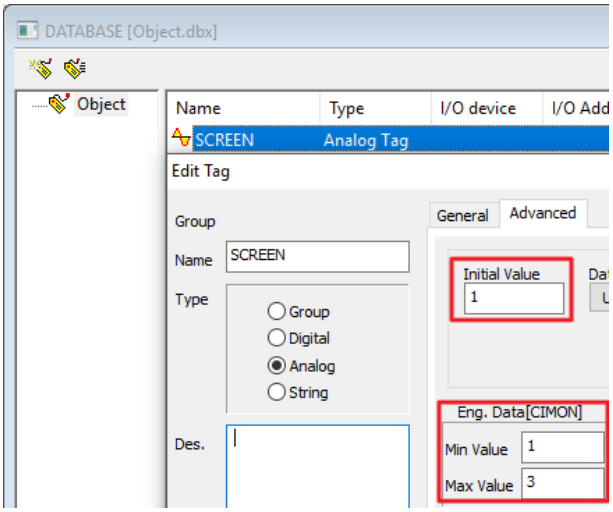
4. When there's need to create a basic object without border line, you are recommended to set as 'No Line' rather than filling the object as line color.

6.6.2 Exercise

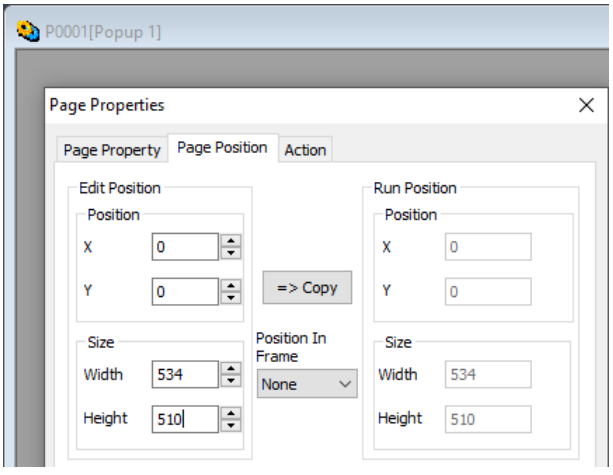
> This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Changing the screen with page link object

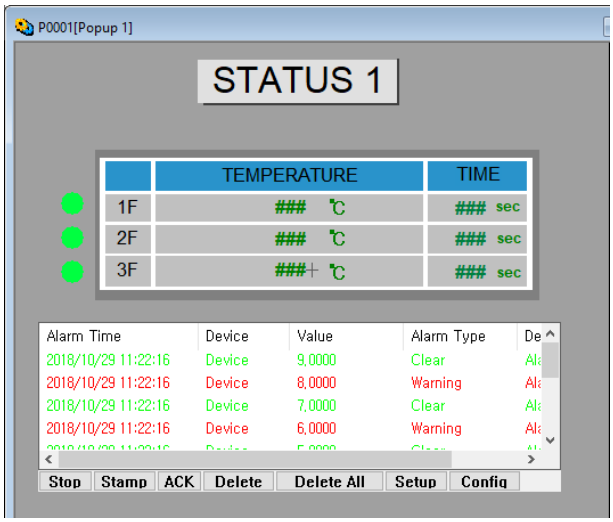
a) Create an analog tag 'SCREEN', and specify the initial value as 1. The minimum and maximum value may assigned from 1 to 3.



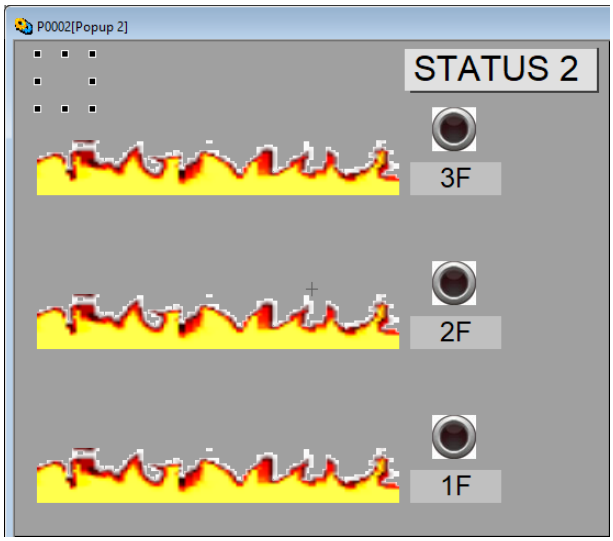
b) Create three popup pages and adjust their sizes for using page link object.



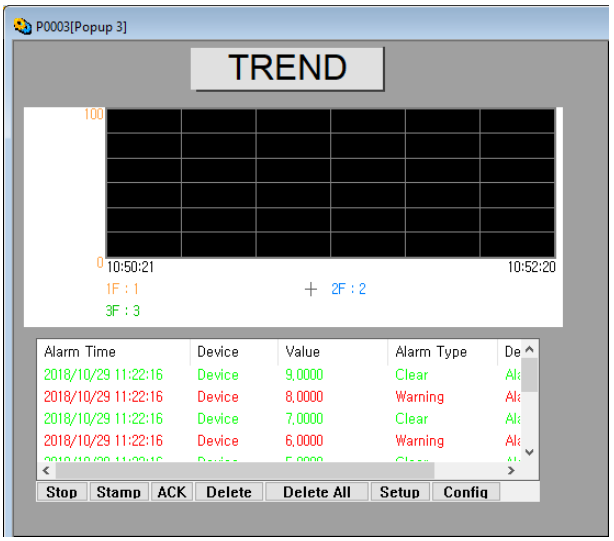
c) In popup page 1, you may see temperatures and fire elapsed time of each floor. Alarms are displayed in the alarm summary object.



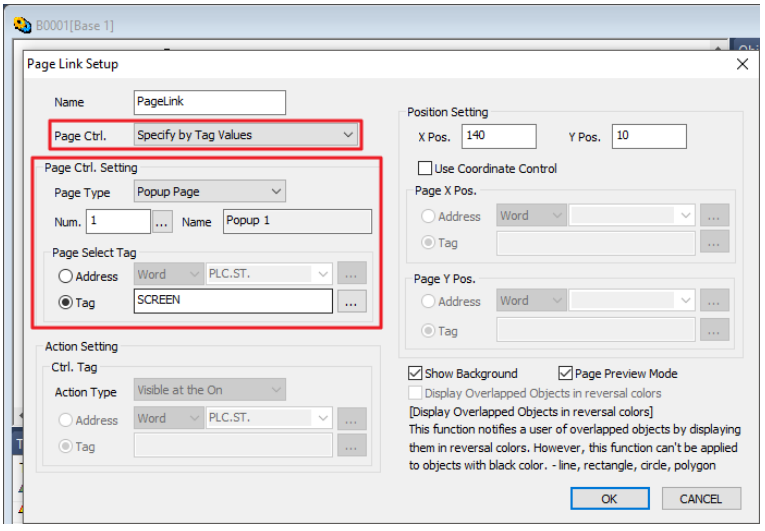
d) In popup page 2, you may check actions of fire and sprinklers.



e) In popup page 3, temperatures of each floor will be shown in the trend. You may check occurred alarms in the alarm summary object.



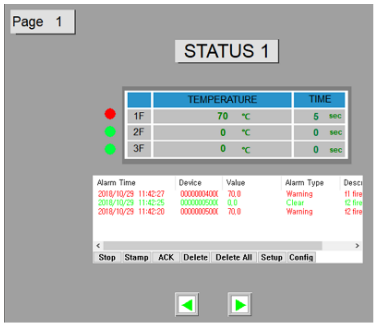
f) Click [Draw] - [Pagelink] to configure a page link object in the main screen. Select 'Specify by Tag Values' for page control and choose page type as 'popup page'. Assign the page select tag as 'SCREEN'.

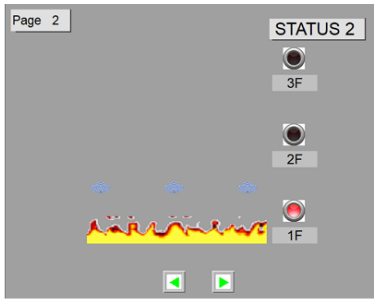


g) Create touch objects which change value of 'SCREEN' tag.

	Function	Touch
	Action	Command expression
	Command	SCREEN = SCREEN - 1
	Function	Touch
	Action	Command expression
	Command	SCREEN = SCREEN + 1

h) Launch the project in the Xpanel or simulator. When you click touch objects, the page link screen will be displayed according to the tag value.





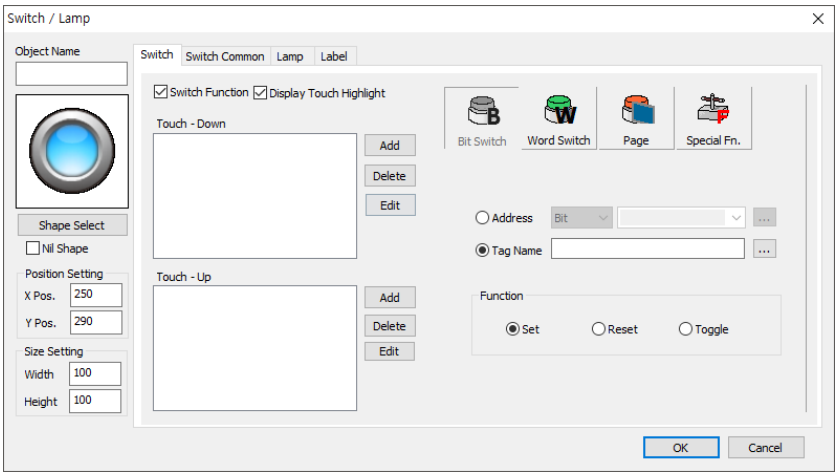
6.7 Switch/Lamp

Xpanel Desinger offers various shaped switches and lamps. The On/Off state can be described by a single object. You can also decide the operation of switch/lamp object under a certain condition. Lamp object allows the configuration of up to 265 operations in a single object. Different contents are displayed on the object according to the state of the tag. These contents can be manually entered or brought up from the string table.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

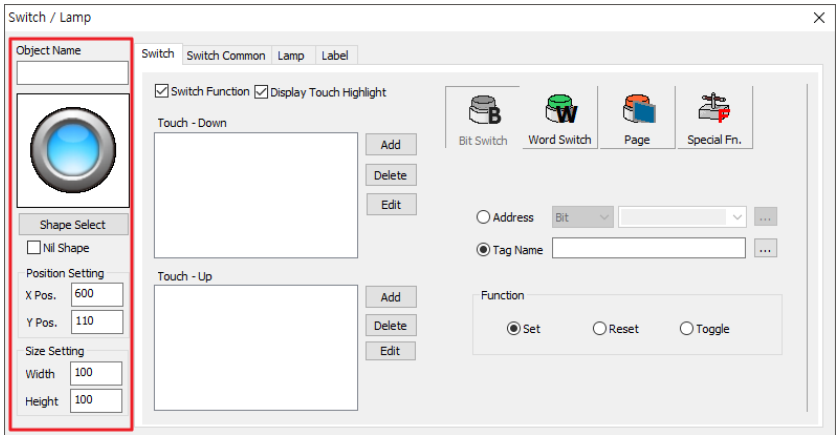
6.7.1 Settings

To open the 'Switch/Lamp' dialog box, press [Draw]-[Switch/Lamp] or icon and click the background of page.



Shape Configuration

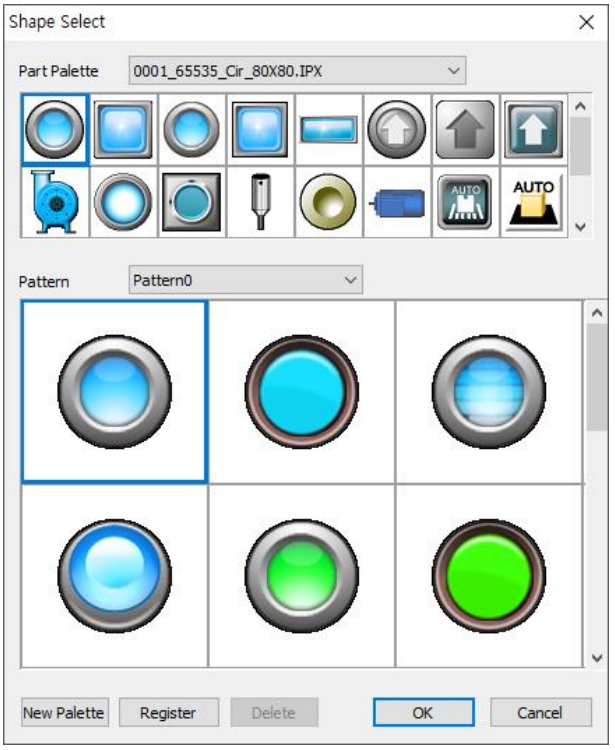
On the left side of the configuration window, you can setup the appearance and position of the switch/lamp object. You can choose the shape of the switch/lamp object and configure its size and position.



Item	Description
Shape Select	You may decide a shape of the Switch/Lamp object.
No Shape	Hides the shape of the object. It is marked with dotted lines in the editor but the lines are not shown in the project runtime.
Position Setting	Decides the position of the object. You can assign values from 0 to 32767. X/Y Position indicates the coordinate of the graphic page. When you manually setup the position, be cautious that the object does not exceed the page.
Size Setting	Decides the size of the object. You can assign values from 0 to 32767. The size is based on the default size of the shape you have selected. When you manually setup the size, be cautious that the object does not exceed the page.

(1) Shape Select

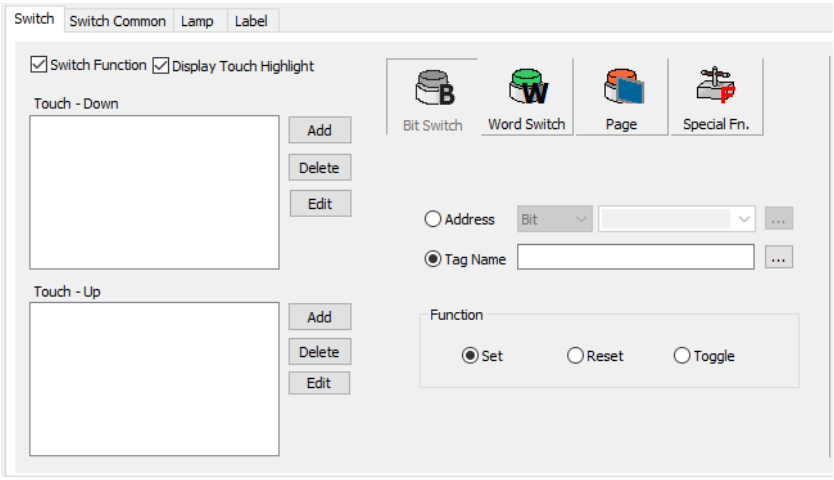
When the lamp feature is disabled, only the switch shape will be selected. When the lamp feature is enabled, you can select images to indicate each status.



Item	Description
Part Palette	Images provided by Xpanel Designer are listed here. You can select the categories from the combo box.
Pattern	Displays each pattern of switch/lamp operation. You can apply the shape by double-clicking the item.
New Palette	You can create a new switch/lamp image. Enter the file name(*.ipx) and press 'Save' button to create a part file.
Register	Registers each pattern of switch/lamp operation. You can use bmp, jpg and png file format, from state 0 to state 16.
Delete	Deletes the selected switch/lamp image from the list. Note that you cannot delete the default images which provided by Xpanel Designer.
OK	Applies the switch/lamp image with settings.
Cancel	Closes the 'Shape Select' dialog box without configuration.

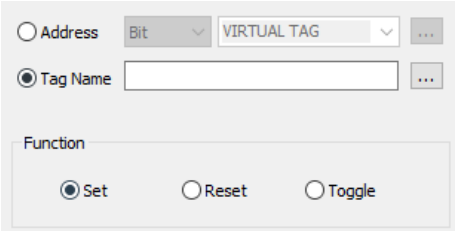
Switch Feature

In this section, you can configure function when the object is pressed in project runtime. The Switch functionality has operations such as bit switch, word switch, page switch and switch with special functions. You may check the operation order from the list.



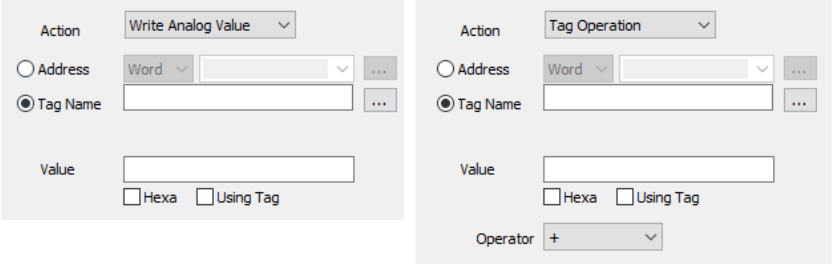
Item	Description
Switch Function	Decides to use the object as switch function. When the option is deselected, the object can only be used as lamp function.
Display Touch Highlight	If the option is selected, the object will be displayed with its reversed color when touched.
Touch Down	Add the operation you wish to execute when pressing the button.
Touch Up	Add the operation you wish to execute when releasing the button.
Bit Switch	Defines a digital tag operation.
Word Switch	Defines an analog tag operation.
Page	Assigns the page to open by using the object.
Special Function	Assigns the command, key input, or writing momentary value function to the object.
Edit	Edits the selected operation of the switch.
Delete	Removes the selected operation from the switch.

(1) Bit Switch



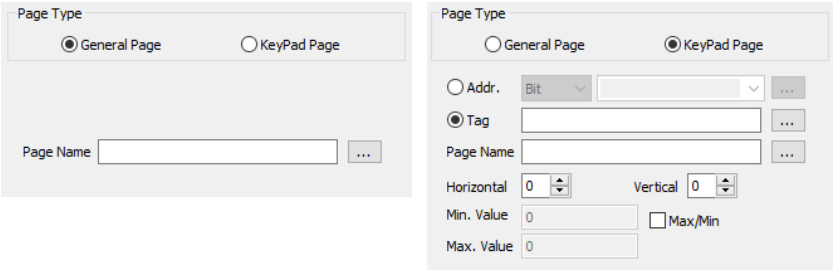
Item	Description	
Address	Controls the object with the address of the device registered in I/O Device. You can decide the unit of the data: BIT or WORD. The detailed configuration can be done by pressing the ... button.	
Tag Name	Enter the tag name to change the value when the switch is pressed. You can manually enter the tag name or press ... button to browse the tag. Do not enter the analog or string tag name.	
Function	Defines the action when the switch is pressed.	
	Set	Sets the digital tag value as ON(1).
	Reset	Sets the digital tag value as OFF(0).
	Toggle	Reverses the state of the digital tag when it is pressed. (OFF(0) → ON(1) or ON(1) → OFF(0))

(2) Word Switch



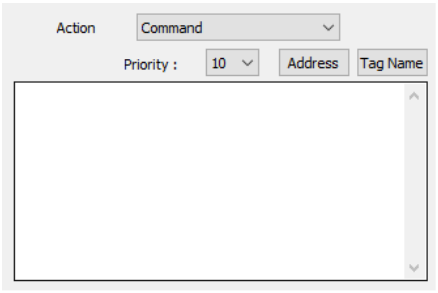
Item	Description	
Action	Defines an analog tag operation.	
	Write Analog Value	Writes the assigned value to the corresponding tag.
	Tag Operation	The tag value will be calculated based on the set value and operator.
Address	Controls the object with the address of the device registered in I/O Device. You can decide the unit of the data: BIT or WORD. The detailed configuration can be done by pressing the ... button.	
Tag Name	Enter the tag name to change the value when the switch is pressed. You can manually enter the tag name or press ... button to browse the tag. Do not enter the digital or string tag name.	
Value	Assign a tag value to write when the switch is pressed.	
	Hexa	Writes the value in hexadecimal in the input field.
	Using Tag	When you select the option, the input field is changed into the tag registering field. You can manually enter the tag name or browse the tag by clicking ... icon. You can add a digital or an analog tag. When switch/lamp object operates, the tag value assigned to [Tag Name] becomes the value assigned to [Use Tag].
Operator	This item appears when you have selected Tag Operation. The operators you can use are [+, -, AND, OR, XOR].	

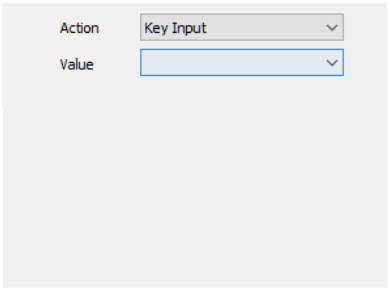
(3) Page Switch

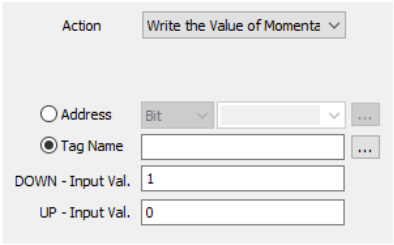


Item	Description	
Page Type	Assign the page to open when pressing the switch.	
	General Page	Enter the page file name in the text field to open. You may browse the page file by pressing ... button.
	Keypad Page	Enter the keypad page file name in the text field to open. You may browse the keypad page file by pressing ... button.
Open Keypad Page	Assign the keypad page to open when pressing the switch.	
	Address	Gets the value with the address of the device registered in I/O Device. You can decide the unit of the data: BIT or WORD. The detailed configuration can be done by pressing the ... button.
	Tag Name	Enter the tag name to get the value when the switch is pressed. You can manually enter the tag name or press ... button to browse the tag.
	Horizontal / Vertical	Assign the location where the keypad page will be opened at 'V Scale' and 'H Scale'. It is recommended to enter the value less than the Xpanel's resolution.
	Max / Min	You can select the 'Use Max/Min' option to assign the range of value. If the option is deselected, the minimum and the maximum value is same as those of the tag's.

(4) Special Function



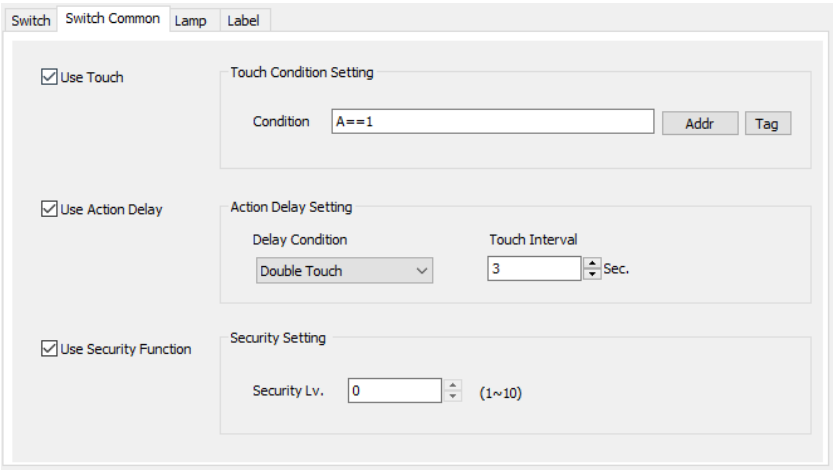




Item	Description	
Command	You can write a command expression to execute.	
Key Input	Operates as a key of keyboard. Supports 83 keys in total, such as Arrow keys, HOME, END, PAGE UP/DOWN, INSERT, DELETE, LOCK Keys, Alphabets, Numbers, ENTER, SPACE, ESC, PRINT SCREEN, PAUSE, F1~F12, TAB, "/", "*", "-", "+", ".", CLEAR.	
Write Momentary	Writes an instant value when you touch or release the object.	
	Down - Written Value	Inputs a value when you touch the object.
	Up - Written Value	Inputs a value when you release the object.

Switch Common

This section explains about the conditions when the user touches the switch/lamp object. You can also set the security level on the object.

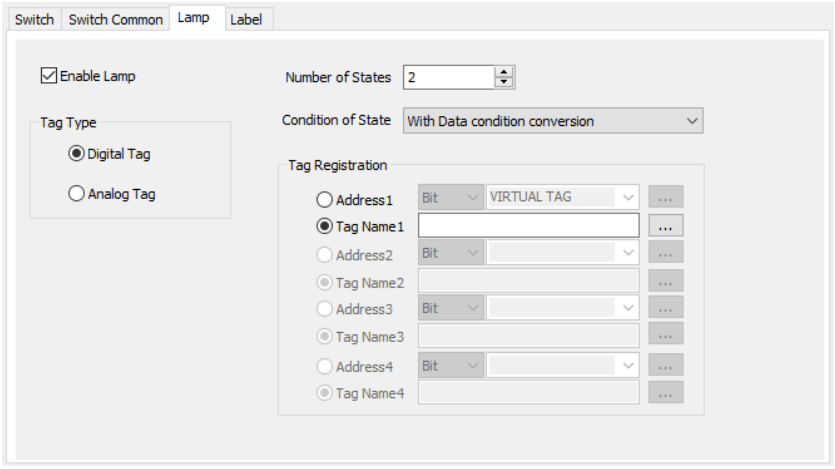


Item	Description	
Touch Condition Setting	Logical operations can be used to control touch features. When the result of a logical operation is True, the touch feature operates; otherwise it doesn't.	
Action Delay Setting	Sets an delay option that executes by a second. This option will be executed only when the button is pressed and held down for assigned value. The value you can assign is from 1 to 30 seconds.	
	On Delay	When touching the object in set amount of time, the assigned action set in 'Touch down' would run. If untouched before reach the amount time, the object would not operate. 'On Delay' is usable for 'Touch down' action. 'Touch up' action operates with no relation to On delay.
	Off Delay	The assigned action would operate when releasing the object after amount time(Delay time). 'Off Delay' is usable for 'Touch down' or 'Touch up' action.
	Double Touch	The assigned action would operate when touching the object and retouch in intervals. 'Double Touch' is usable for 'Touch down' or 'Touch up' action.

Security Setting	Sets a security level on the object. (1-10) ※ Please refer to the 'Security' manual for more information about security level.

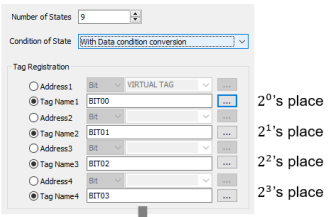
Lamp Feature

Lamp feature shows the appearance of object based on a condition. If lamp feature is disabled, the object will only display switch image.

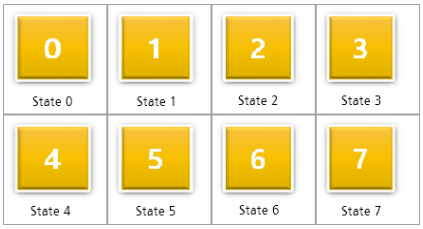


Item	Description	
Enable Lamp	Decides the enablement of the lamp feature and type of the lamp.	
	Digital Tag	Operates by combination of digital tags. Lamp state is changed according to data value or bit combination.
	Analog Tag	Changes the lamp state by tag value or bit combinations.
Number of States	Assigns the number of states to display lamp object.	
Condition of State	Changes the lamp state with two methods.	

(1) Changing states with bit lamp

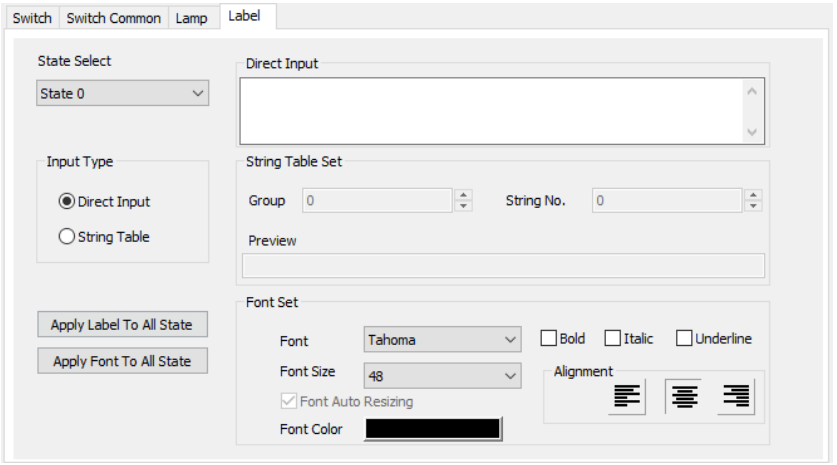
Item	Description
With Data Condition Conversion	Each digital tag composes each digit of the binary number. The state of data is defined according to the combination of each digit.  **State Condition Value** Binary 0 0 0 0 Matched Tag Tag Name 4 Tag Name 3 Tag Name 2 Tag Name 1 E.g.) If DIGITAL1 = 0, DIGITAL2 = 1, DIGITAL3 = 1 and DIGITAL4 = 0, they indicate 0110 in binary. Since it is equal to "6" in decimal, the 'State 6" is displayed. You can use maximum 16 states with this option.
At Each Bit Conversion	Each digital tag represents a single state. If all digital tags' values are "0", "State 0" will be displayed. If the DIGITAL4 = 1, the "State 4" will be displayed. When multiple tags are set as "1", the priority goes to the state with the lower number. E.g.) If DIGITAL1 = 1, DIGITAL3 = 1, "State 1" will be displayed. You can use maximum 5 states with this option.

(2) Changing states with word lamp

Item	Description
With Data Condition Conversion	Displays the state with a single analog tag. Maximum 256 states can be displayed.
At Each Bit Conversion	Since an analog is composed of a word, it is possible to display the states with 16 bits. It indicates that a word can display 17 states. Only one bit has to be turned ON at a time. If any other bit is ON simultaneously, the priority goes to the less significant bit. WORD = 16bit = 0000 0000 0000 0000  E.g.) If the value of an analog tag is 3(0000 0000 0000 0011), State 1 and 2 are supposed to be ON. However, since State 1 has higher priority, the State 1 is ON.

Label

You can display a text on the object. The text may differ according to the tag's state. User can enter the text manually or retrieve the contents from the string table.



Item	Description		
State Select	Select a state of the tag (OFF or ON) when the label is displayed. If you have configured multiple states on [Lamp Feature] tab, you can select a state in the range as shown below.		
	Bit Lamp	With Data Condition Conversion	Max 16 states (0 ~ 15)
		At Each Bit Conversion	Max 5 states (0 ~ 4)
	Word Lamp	With Data Condition Conversion	Max 256 states (0 ~ 255)
		At Each Bit Conversion	Max 17 states (0 ~ 16)
Input Type	Direct Input	The operator manually enters the text to be displayed on the object. You can enter up to 30,000 characters.	
	String Table	Retrieve the string you have entered in the string table. You can set group and string No. ※ Please refer to the 'String table' manual for more information about string table.	
	Font Set	Configure the manually entered text's properties, such as font type, font size, alignment and the slant.	

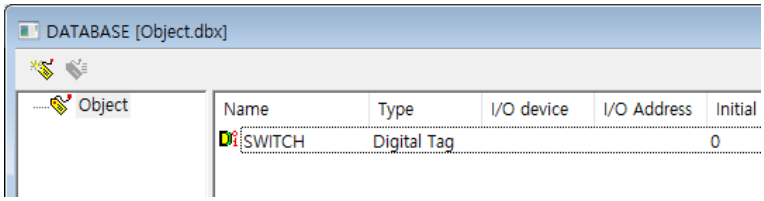
Apply Label to All State	The current label setting will be applied to all states.
Apply Font to All state	The current font setting will be applied to all states.

6.7.2 Exercise

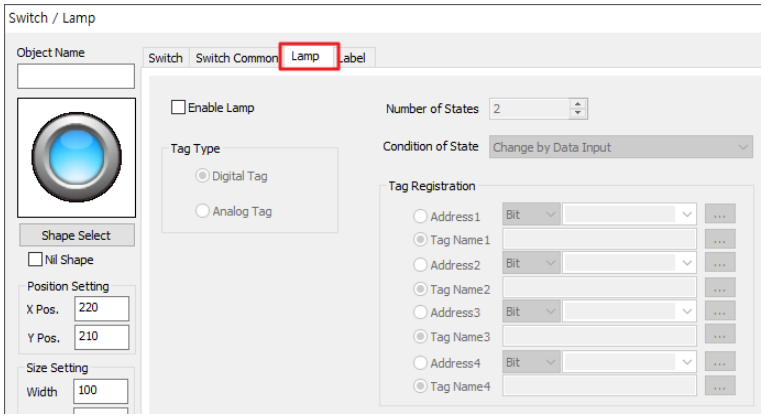
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Using Switch/Lamp object as ON/OFF button

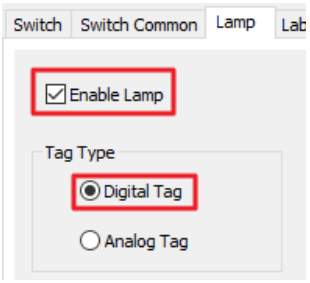
a) Create a digital tag 'SWITCH' in the database.



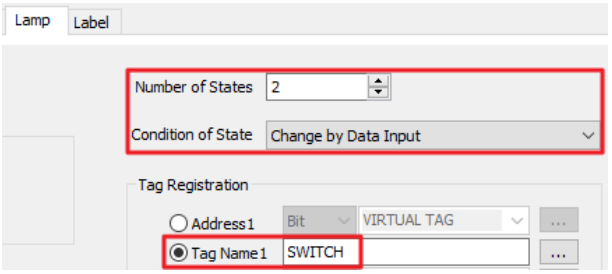
b) Click [Draw]-[Switch/Lamp] or icon. Go to [Lamp] tab in the switch/lamp configuration window.



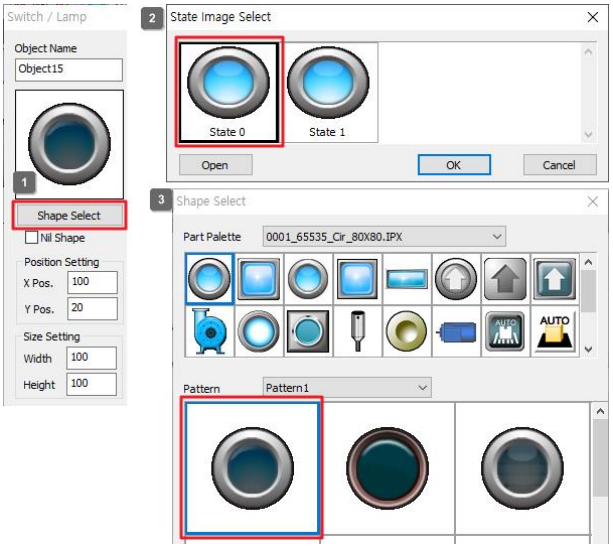
c) Check 'Enable Lamp' option and select the tag type as digital tag.



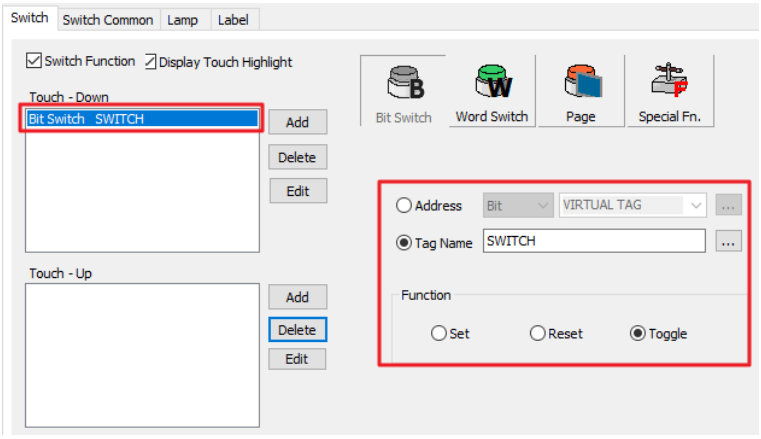
d) Assign the number of state as 2 and select the condition for 'Change by Data Input'. Enter the 'SWITCH' in the tag name 1.



e) Press [Shape Select] to assign the different images for each state of the switch object.



f) Go to [Switch] tab. Select 'Bit Switch' function and enter the tag name 'SWITCH' in the field. Add the toggle function as 'Touch down' action.



g) Launch the project in the Xpanel or simulator. When you press the switch/lamp object, the image is reversed while SWITCH tag is toggled.

6.8 String Editor

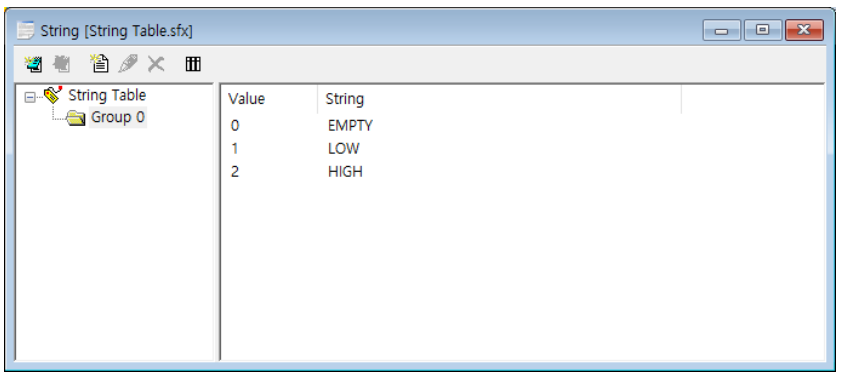
String editor constructs a number of string groups, and these are managed like tables. Each group can be distinguished by group number. The strings defined in a group can be referenced by index number. To display strings configured in the index group, you may use the 'String value' object.

※ Please refer to the 'String value manual' for more information about string value object.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

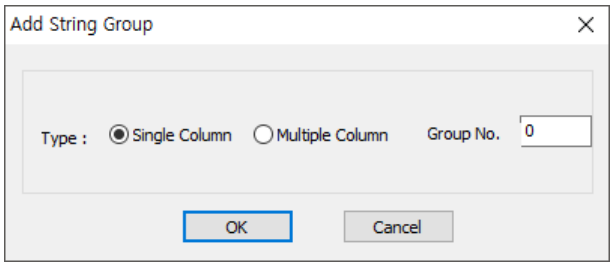
6.8.1 Settings

To bring up the string editor window, select [Tools]-[String Editor] or icon.



(1) Add String Group

Creates a new string group. When you click icon, a dialog box will appear as shown below.



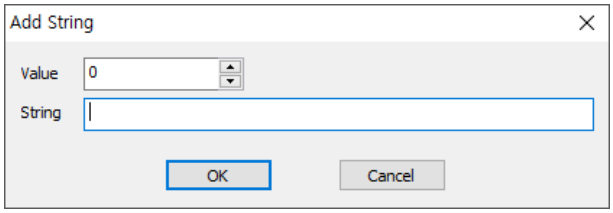
Item	Description
Single Column	Set a single column in an index. A single tag value can store an one string.
Multiple Column	Set the multiple columns in an index. A single tag value can store up to 16 strings. This type is used to construct a multi-language table. ※ Please refer to the 'Multi-language Setup' manual for more information about multi-language table.
Group No.	Assign a group number. The group number cannot be duplicated. You can assign from 0 to 32767.

(2) Delete String Group

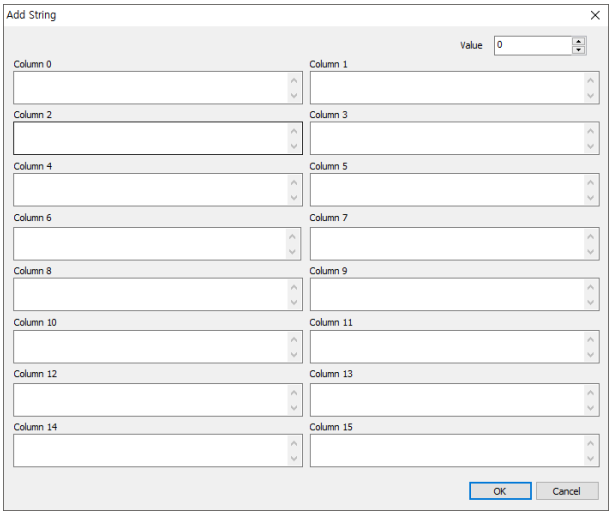
Press icon to delete the string group. Strings stored in the group will be deleted together.

(3) Add String

Press to add a string in the column. You may register a digital tag or an analog tag to the group.



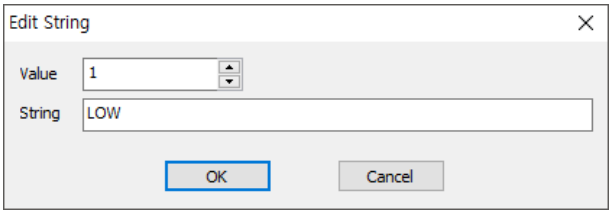
When the column is selected as 'Single Column', you can assign a single string to an each tag value. When you use a digital tag, you can only assign 0 and 1. When you use an analog tag, you can assign from -32768 to 32767. Strings in the single column can be shown in the string value object.



When the column is selected as 'Multiple Column', you can assign up to 16 columns (0~15) to an each tag value. When the tag value changes, the corresponding column number will be displayed. Strings in the multiple column can be shown in the multi string object.

(4) Edit String

Edits the selected string by pressing icon or double-clicking the item. You may change the value or string in the [Edit String] dialog box.



(5) Delete String

Deletes the selected string by pressing icon. You can select items by dragging with the mouse at once.

(6) Column Property

This is used to assign different language and font type to each column. You can use this command when 'Use Multiple Language Table' option has been selected in the 'Multi-language Setup'.

※ Please refer to the 'Multi-language Setup' manual for more information.

6.8.2 Related Features

In this section, you will find a function frequently used for string editor. Please refer to the table below for applicable function.

Command			Description
String Editor	Function	StringTable	Gets a string data from string table.

StringTable	Gets a string data from string table.
Function	n = StringTable (*"Group Number", "String number in a group"*)
Description	Returns a string data from specified string group. A string tag must be used for the string data.
Example	Returns the first string data in group number 1. StrTag = StringTable (1, 1)

6.8.3 Exercise

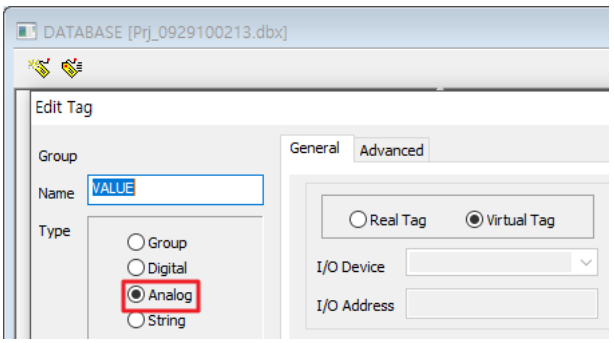
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Showing string value according to analog value

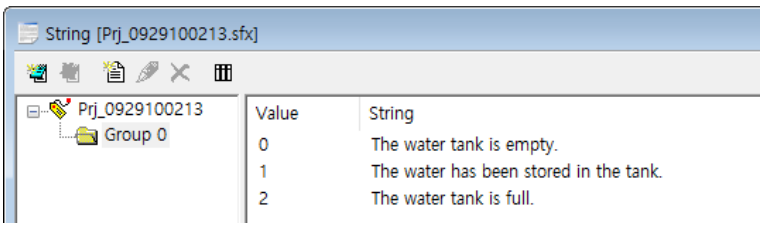
Each water tank will display its status with the change of analog value. Strings may be configured in the 'String table'.

※ Please refer to the 'String table' manual for more information.

a) Create a new analoga tag and name it as 'VALUE'.

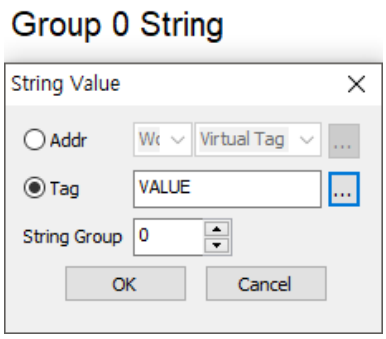


b) Go to [Tools] - [String table] to configure the contents of string table. Add the strings in the group 0.

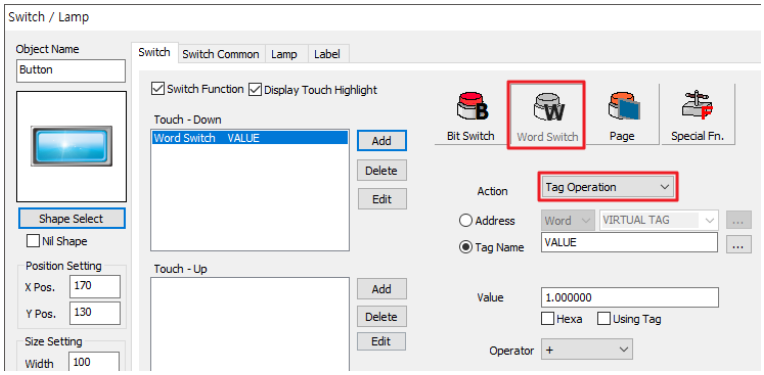


- When 'VALUE' tag is equal to 0, 'The water tank is empty.' will be displayed.
- When 'VALUE' tag is equal to 1, 'The water has been stored in the tank.' will be displayed.
- When 'VALUE' tag is equal to 2, 'The water tank is full.' will be displayed.

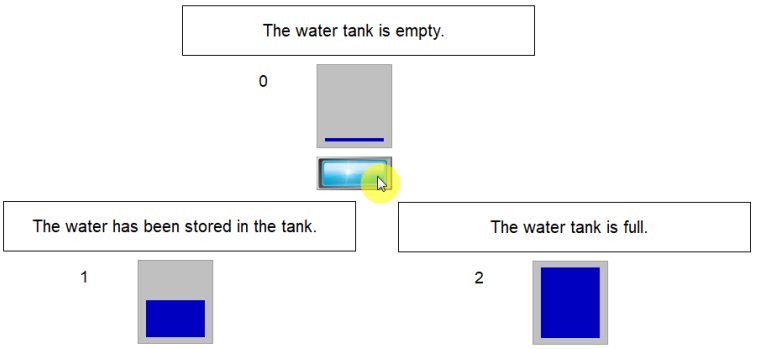
c) Select [Draw] - [String Value] and enter the tag name 'VALUE' in the text field. Specify the string group as 0.



d) Select [Draw] - [Switch/Lamp] to create a word switch. Define the action as 'Tag operation' to add 1 value to the 'VALUE' tag for every clicking.



e) Launch the project in the Xpanel or simulator. You may see strings from string table are switched as the value of tag is changed.

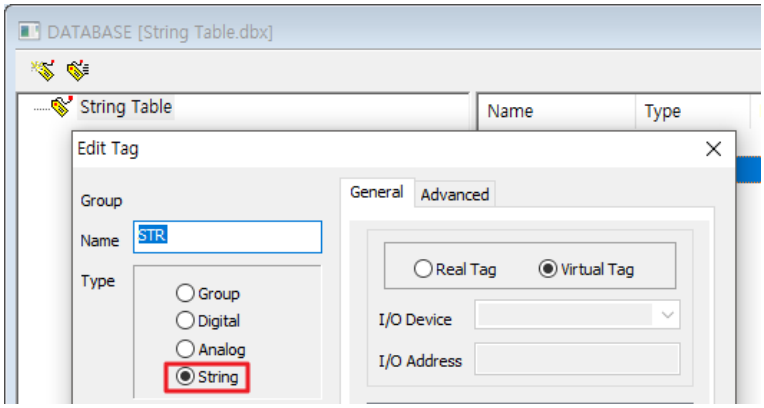


The string will not be displayed when there is no string configured in the value of analog tag.

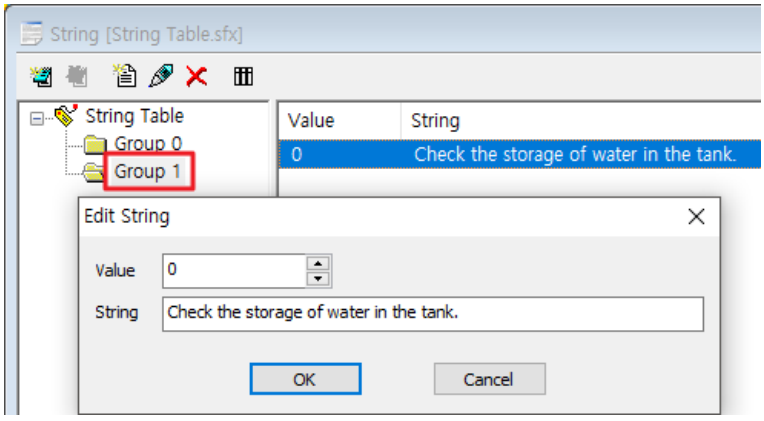
Exercise : Showing string value by using a string tag

Following is an example of displaying the data from string table by using a string tag.

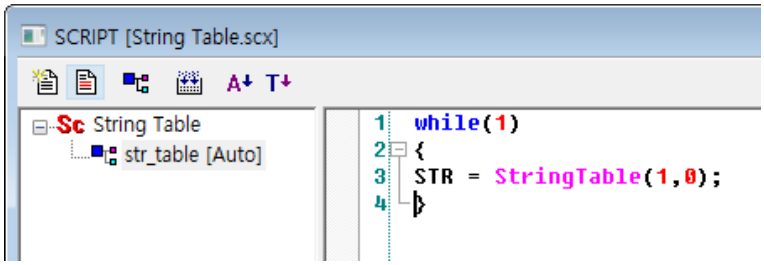
a) Create a string tag 'STR' in the database.



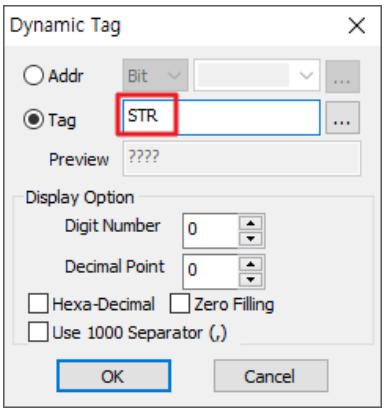
b) Go to [Tools]-[String Editor] to configure the string table. Add a string in the first index of group number 1.



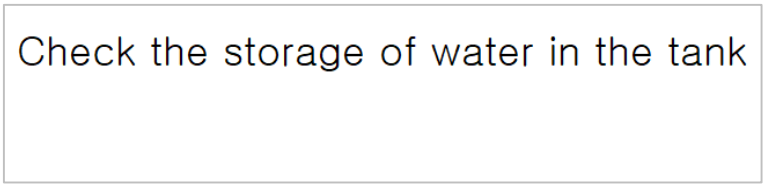
c) Go to [Tools]-[Script] and write the script as shown below.



d) Select [Draw] - [Dynamic Tag] and enter the tag name 'STR' in the text field.



e) Launch the project in the Xpanel or simulator. You may see a data of string table via string tag value.



Data in the string tag can be stored up to 80 characters. You can set the length of the string under the [Advanced] tab.

6.9 String Value

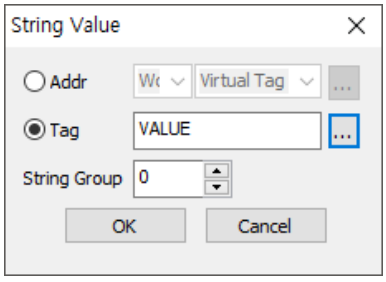
Strings configured in the 'String Table' can be displayed in the string value object. The multiple of predefined strings are shown in a single object, and the contents will be switched by digital or analog value.

※ Please refer to the 'String table' manual for more information.

- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- If an object's size is not large enough, the string value displayed may not be shown fully. Please set the size adequately until the entire string can be displayed.

6.9.1 Settings

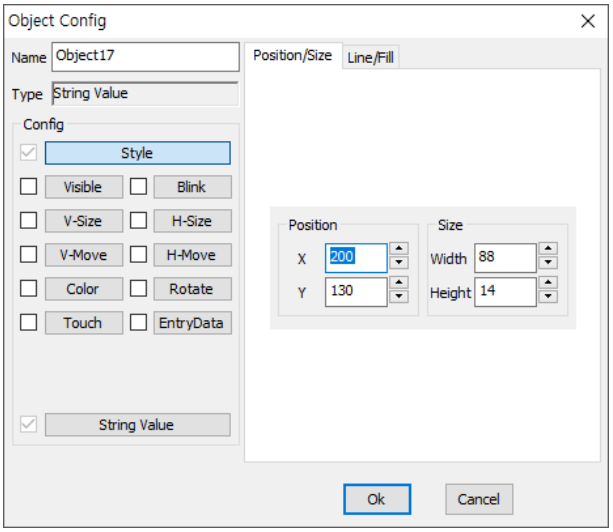
To bring up the 'string value' dialog box, select [Draw]-[String value] or icon and click the background of graphic page. You may reenter in the configuration by double-clicking a string value object.



Item	Description
Address	The string value will be displayed by using its real address with BIT or WORD data. You can input the device address in the 'Input Device Address' dialog box.
Tag Name	Enter the tag name which will be displayed in the object. You can browse the tag with button or manually input the tag name in the text field.
String Group	Specify the group number where string value is defined. You can assign the string group up to 32767. When the tag value is changed, a string in the object will be switched according to the tag value.

6.9.2 Object Configuration

You can configure the String Value object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click the object or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in a certain cycle according to the tag value.
V/H-Size	Changes the size of object vertically/horizontally according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Color	Changes the color of the object according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is pressed.
String Value	Show the configuration window of the String value object.

※ Please refer to the 'Object Configuration' manual for more information.

6.9.3 Exercise

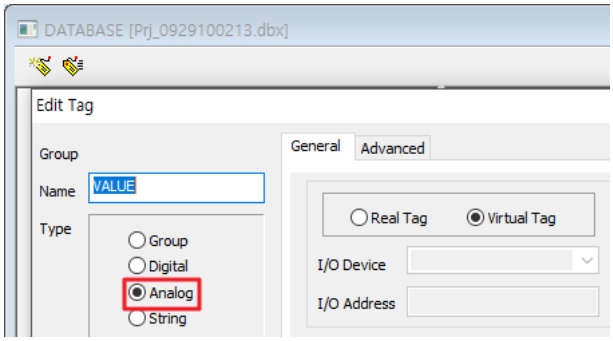
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Showing string value according to analog value

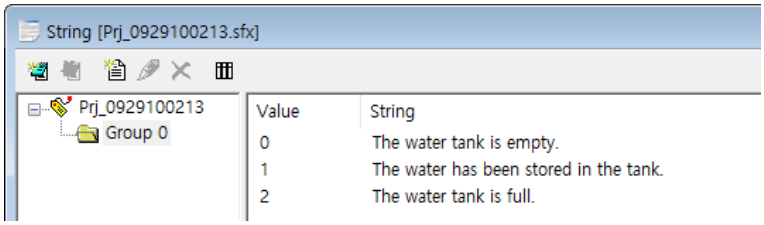
Each water tank will display its status with the change of analog value. Strings may be configured in the 'String table'.

※ Please refer to the 'String table' manual for more information.

a) Create a new analoga tag and name it as 'VALUE'.

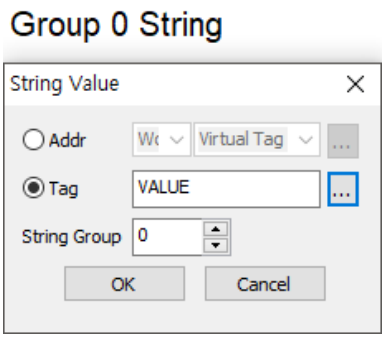


b) Go to [Tools] - [String table] to configure the contents of string table. Add the strings in the group 0.

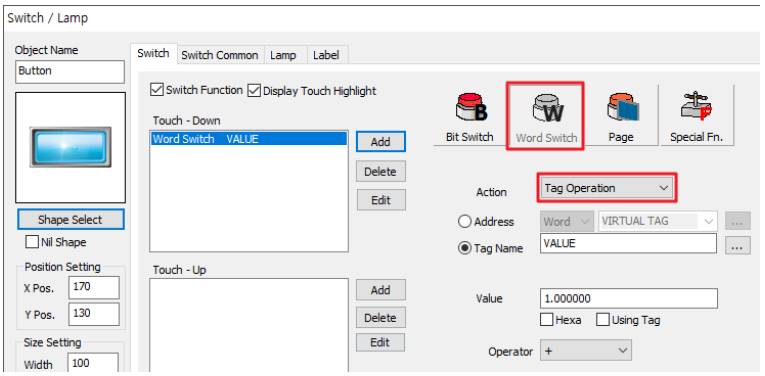


- When 'VALUE' tag is equal to 0, 'The water tank is empty.' will be displayed.
- When 'VALUE' tag is equal to 1, 'The water has been stored in the tank.' will be displayed.
- When 'VALUE' tag is equal to 2, 'The water tank is full.' will be displayed.

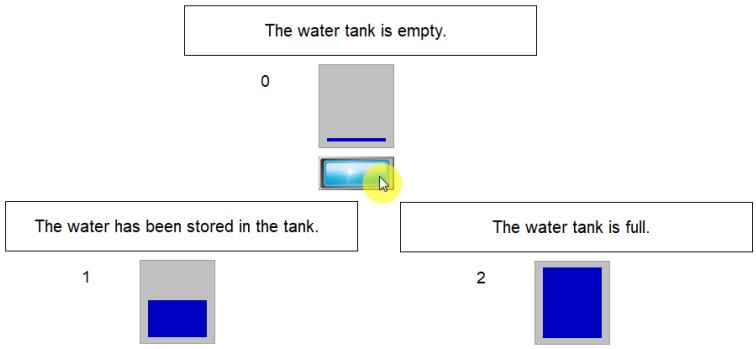
c) Select [Draw] - [String Value] and enter the tag name 'VALUE' in the text field. Specify the string group as 0.



d) Select [Draw] - [Switch/Lamp] to create a word switch. Define the action as 'Tag operation' to add 1 value to the 'VALUE' tag for every clicking.



e) Launch the project in the Xpanel or simulator. You may see strings from string table are switched as the value of tag is changed.



The string will not be displayed when there is no string configured in the value of analog tag.

6.10 Multi-language Setup

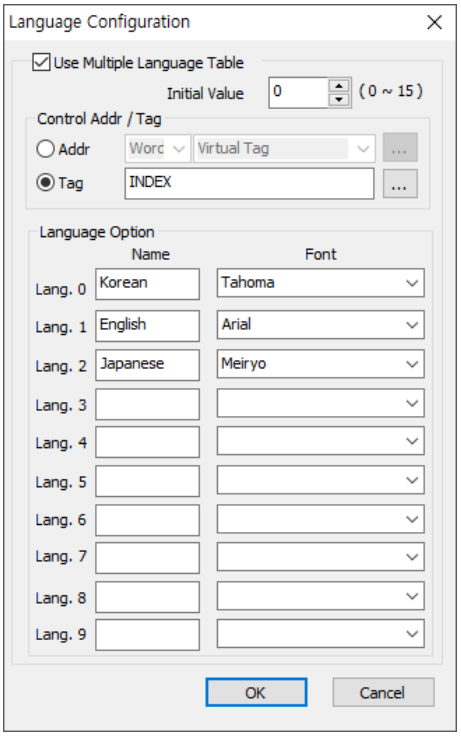
Using the multi-language table, multilingual feature supports virtually every language to be displayed on the screen. Strings defined in the table can be referenced by index number. Also, all the fonts provided by Windows can be used.

※ Please refer to the 'String Editor' manual for more information about string table.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

6.10.1 Settings

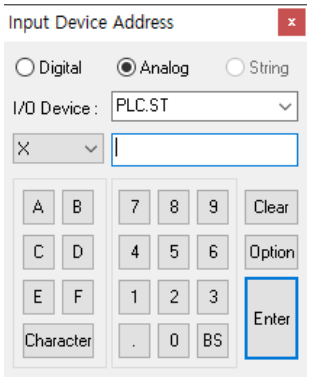
To bring up the 'Language Configuration' dialog box, go to [Tools] - [Multi-language Setup] or press 'Language…' button in the [Tools]-[Project].

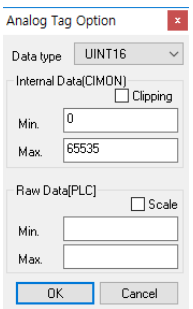


Item	Description	
Use Multiple Language Table	Select this option to use the 'Multiple Column' in the string editor. If the option is deselected, you can only use the contents of 'Column 0', regardless of the string table configuration.	
Initial Value	Configure this option when the 'Use Multiple Language Table' option is selected. The assigned value will display the corresponding column. You can assign the value from 0 to 15.	
Control Addr / Tag	Configure this option when the 'Use Multiple Language Table' option is selected. Assign the device address or tag to control the column number.	
	Address	Controls the column with the address of the device registered in I/O Device. You can decide the unit of the data: BIT or WORD. The detailed configuration can be done by pressing the ... button.
	Tag	Controls the column with the tag registered in the database. You can manually enter the tag name or press ... button to browse the tag.
Language Option (Lang. 0 ~ 9)	Specify properties used in the 'Column Property' of string editor.	
	Name	Enter the name to distinguish the language.
	Font	Select the font type to display the corresponding language. You can use the fonts which you downloaded in the Xpanel Designer.

(1) Control Address

You can configure the details of the assigned device address for controlling column by pressing the ... button.



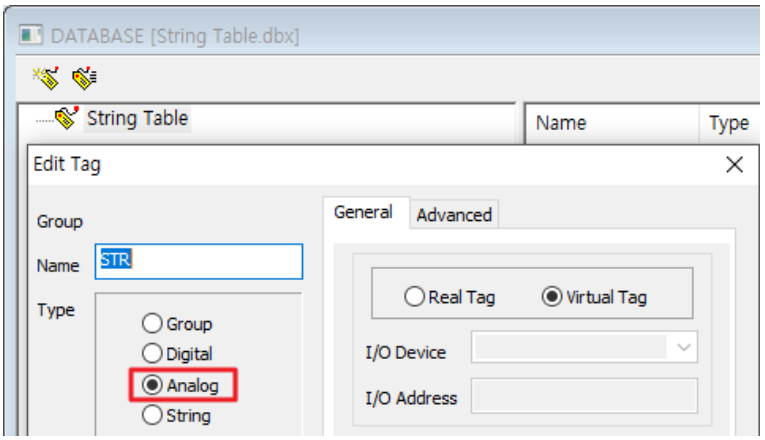
<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Data Type</td><td colspan="2">Select the data type to be used for the column control. This option is different from the BIT, WORD selection in the [Language Configuration] window.
When you select 'Digital', you will control the column with 0 or 1. All values exceeding 1 will be recognized as 1.
When you select 'Analog', you will control the column with the value assigned to the device address. The values from 0 to 15 will only be recognized. The values exceeding 15 will be recognized as 15 or will follow the configuration in the [Option] window.</td></tr>
<tr><td>I/O Device</td><td colspan="2">Displays the list of I/O devices registered in the current project.</td></tr>
<tr><td rowspan="3">Device Address</td><td colspan="2">Assign the device and address for the column control.</td></tr>
<tr><td>Device Type</td><td>Displays the list of devices according to the selected I/O device and the data type.</td></tr>
<tr><td>Address</td><td>Enter the starting address of the device. The value you can input may differ according to the data type (BIT/WORD) selection from the [Language Configuration] window, the selected I/O device and the device type.</td></tr>
<tr><td>Device Address Input Keypad</td><td colspan="2">You can use this keypad when you have to input the address without a keyboard.
Enter the address in decimal or hexadecimal according to the device type.
For example, if you assign an address in device X of CIMON-PLC, the address must be assigned in hexadecimal. In case of the device D, the address must be assigned in decimal.</td></tr>
<tr><td>Option</td><td colspan="2">The [Option] is activated when the 'Analog' option is selected.
Press the button to bring up the [Analog Tag Option] window as shown below.
 
</td></tr>
</table>

	Type	You can select the analog data type from the following list types: UINT8, UINT16, UINT32, INT8, INT16, INT32, UBCD8, UBCD16, UBCD32, BCD8, BCD16, BCD32, Float . UINT16 is the default type.
	Internal Data	Enter the value range to be displayed on the Xpanel. The default range is from 0 to 65535. When you select 'Clipping' option, a warning message will appear when the value exceeds the assigned range, and the exceeded value will not be used.
	Raw Data	Enter the value range which will be actually input to the PLC. For example, if the raw data range is from 0 to 16000 and the internal data range is from 0 to 100, the Xpanel will display 100 when the PLC gets the value 16000.
	Scale	This option calculates the PLC data and displays the result to the Xpanel. The Scale calculation is as shown below. **Scale = Raw Data x Scale + Offset**

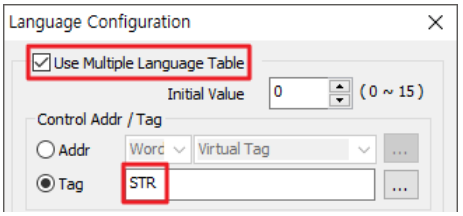
6.10.2 Setting Up the Multi-Language Table

(1) Multi-language Setup

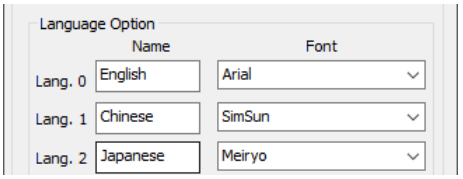
a) Create an analog tag to control the column.



b) Go to [Tools]-[Multi-language Setup]. Check 'Use Multi-language Table' option and assign the initial value as 0.

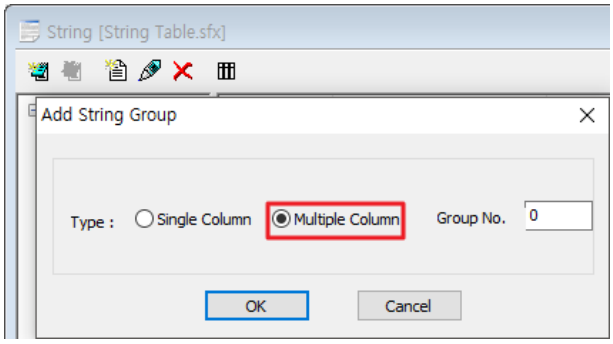


c) Enter the language name and select the font for each language installed in Xpanel Designer.

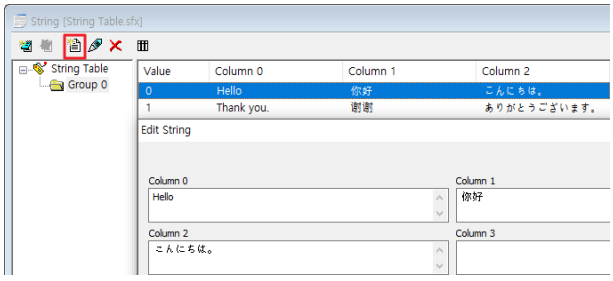


(2) Setting the multi-language table

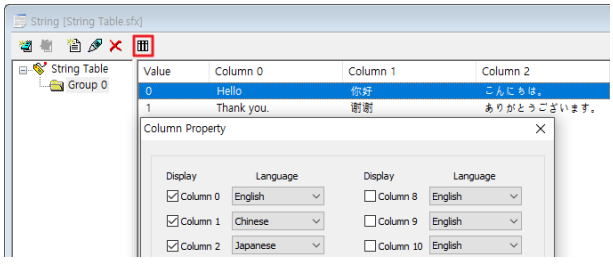
a) Go to [Tools] - [String Editor] and select 'Multiple Column' for adding a group.



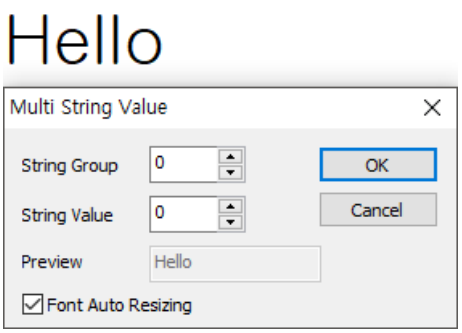
b) Press 'Add string' and enter the each string at column fields in different languages. Enter the same contents in a different language in the same string value.



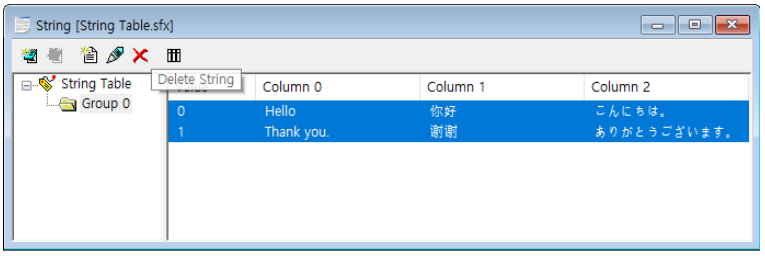
c) Press 'Column Properties' and specify languages and fonts to each columns, which are configured in step (1)-c).

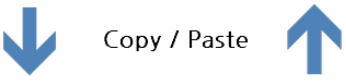


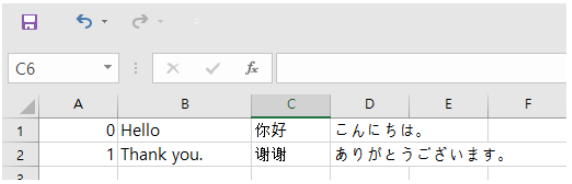
d) To use a multiple language table, select [Draw]-[Multi string]. Select a string group then choose the appropriate string value.



e) You can edit the contents of multi-language table by using Excel with copy and paste commands.







⚠ If a column value contains the string beginning with operation symbols such as “=+ABC”, Excel recognizes the string as a formula and cause a formula error, displaying the value as “#NAME?”. When the value “#NAME?” is pasted in Xpanel Designer, the column value will be written as “#NAME?”.
If you edit the column using Excel, please beware of the column values that start with arithmetic symbols.

6.10.3 Exercise

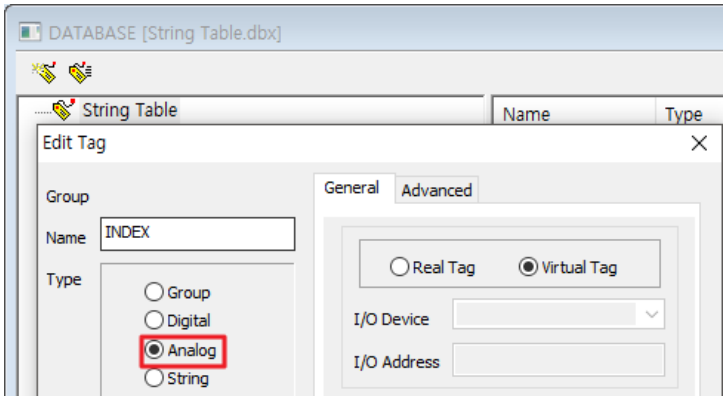
> This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise: Expressing contents of the page in different languages

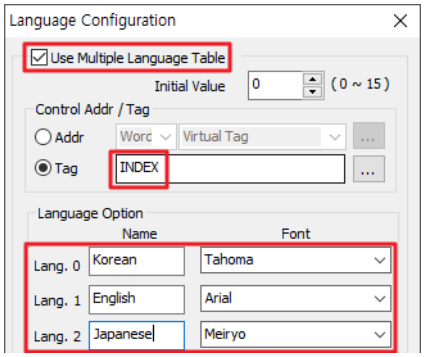
You can use the multi-language table to express various elements of the page in different languages. In this example the multi string object is used to express the simple explanation for a flowmeter in Korean, English and Japanese.

※ Please refer to the 'Multi String Object' manual for more information about the multi string object.

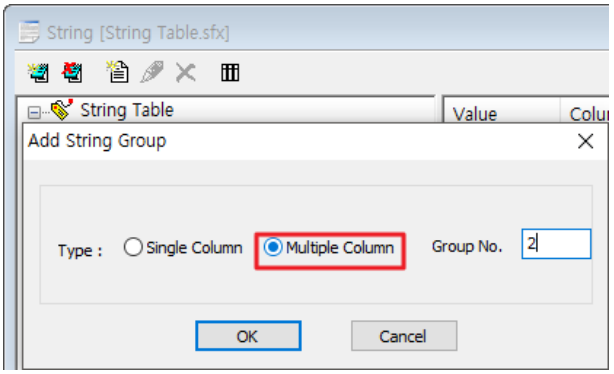
a) Create an analog tag 'INDEX' to assign the string index.



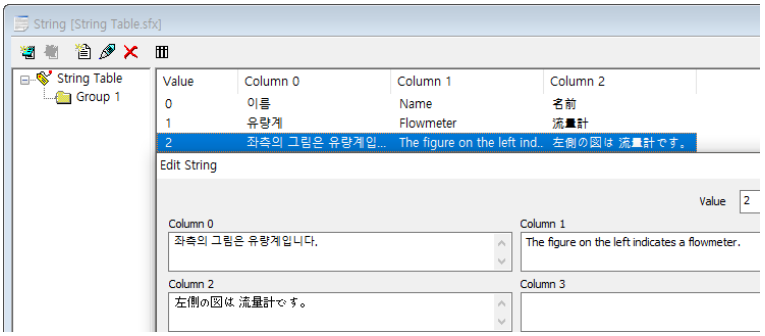
b) Go to [Tools]-[Multi-language Setup] and select 'Use Multiple Language Table' option. Enter the control tag name 'INDEX' in the text field, and assign the language and font to display.



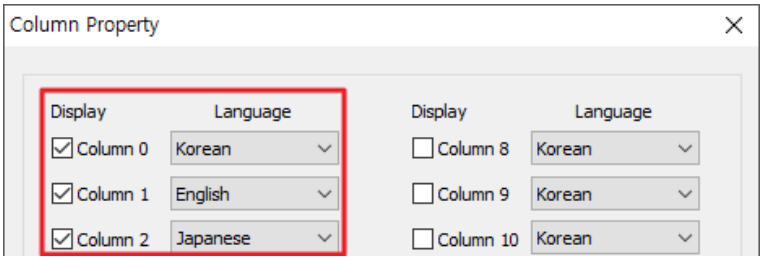
c) Go to [Tools]-[String Table] and select the group type as 'Multiple Column'.



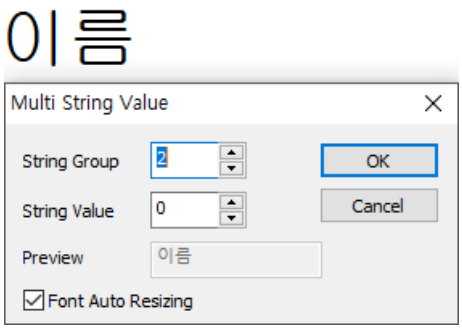
d) Press 'Add String' and enter the strings in the each column to display in the multi string object. Write the same contents in a different language in the same index. Korean, English and Japanese will be displayed according to the 'INDEX' value.



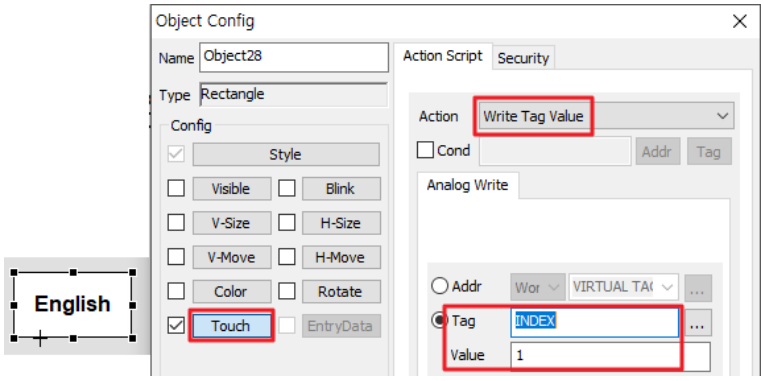
e) Press 'Column Property' and assign languages and fonts configured in the step c).



f) Press [Draw]-[Multi String] to create a multi string object. Specify the group number and string value.

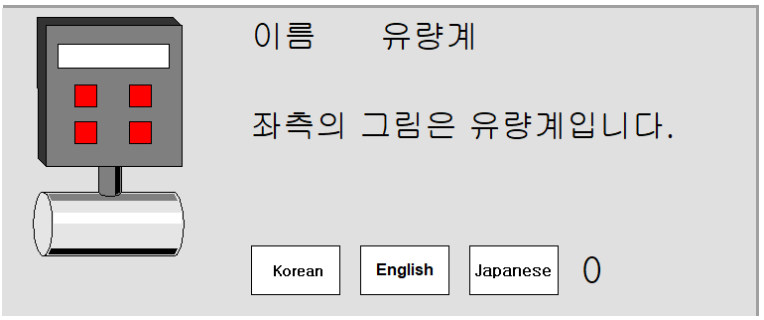


g) Create three touch objects to change the value of 'INDEX' tag.

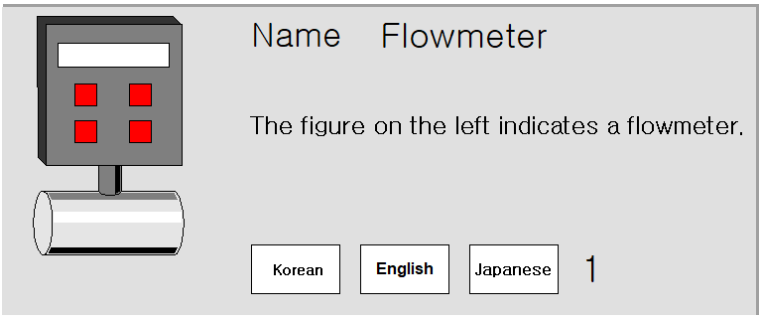


h) Launch the project in Xpanel or simulator. When you press each button, you will find that different strings are displayed.

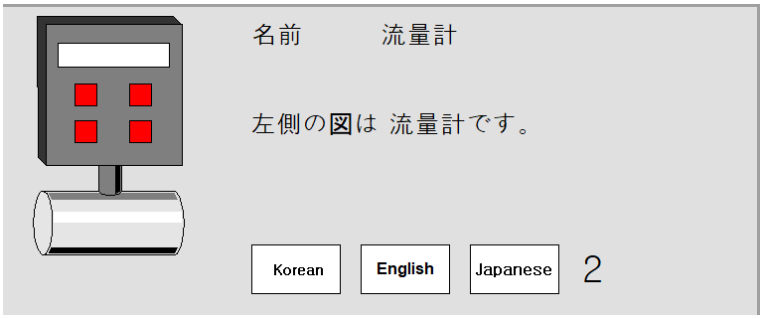
- When you press [KOR] button, the texts will be displayed in Korean.



- When you press [English] button, the texts will be displayed in English.



- When you press [Japanese] button, the texts will be displayed in Japanese.



6.11 Multi String

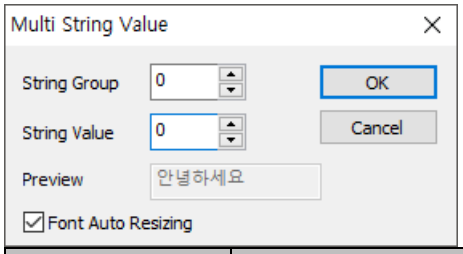
Strings configured in the multi-language table can be displayed in the multi string object. The multiple of predefined strings are specified in a single object, and the contents will be switched by digital or analog value.

※ Please refer to the 'Multi-language Setup' and 'String Editor' manual for more information about multi-language editor.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

6.11.1 Settings

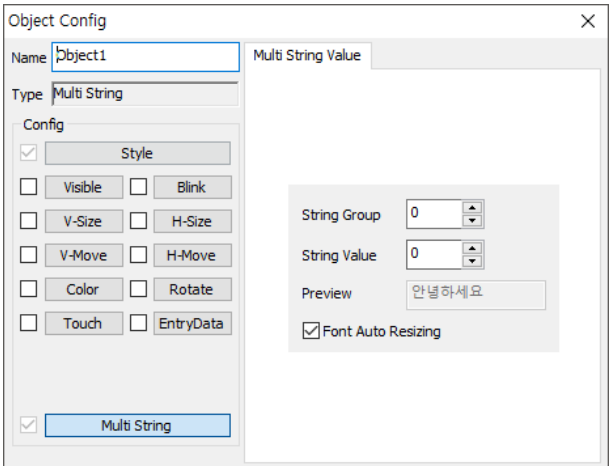
To bring up the 'Multi string' dialog box, select [Draw]-[Multi String] or icon and click the background of graphic page. You may reenter in the configuration by double-clicking a multi string object.



Item	Description
String Group	Specify the number of string's group.
String Value	Specify the number of string's index.
Preview	Displays an example of the string which is currently figured by the string group and string value.
Font Auto Resizing	When the option has enabled, the font size changes automatically to fit the object size. If the option has deselected, only font size will change yet retain the object size.

6.11.2 Object Configuration

You can configure the multi string object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click the object or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in a certain cycle according to the tag value.
V/H-Size	Changes the size of object vertically/horizontally according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Color	Changes the color of the object according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is pressed.
Multi String	Show the configuration window of the multi string object.

※ Please refer to the 'Object Configuration' manual for more information.

6.11.3 Exercise

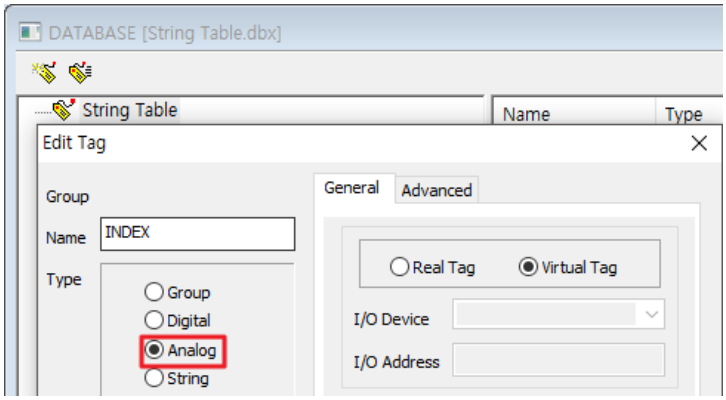
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise: Expressing contents of the page in different languages

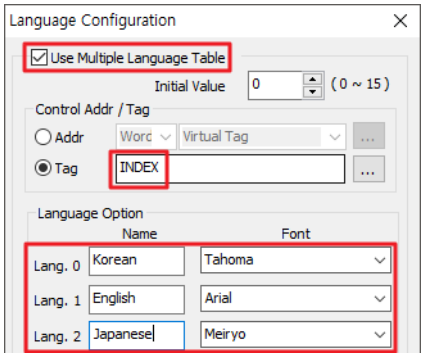
You can use the multi-language table to express various elements of the page in different languages. In this example the multi string object is used to express the simple explanation for a flowmeter in Korean, English and Japanese.

※ Please refer to the 'Multi-language Setup' and 'String Editor' manual for more information about multi-language table.

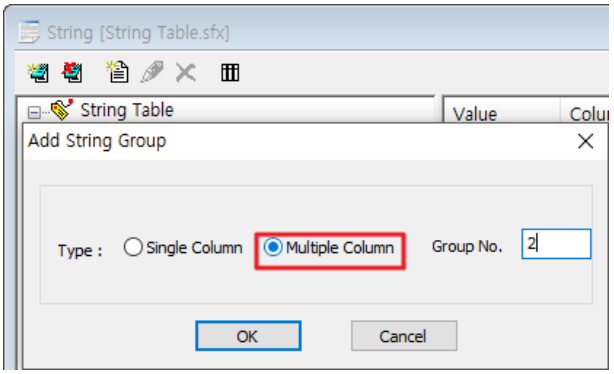
a) Create an analog tag 'INDEX' to assign the string index.



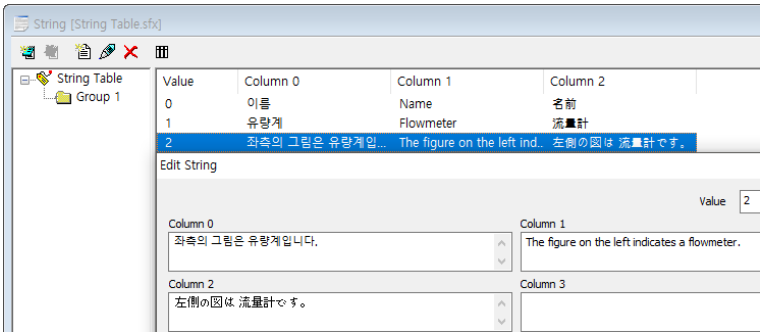
b) Go to [Tools]-[Multi-language Setup] and select 'Use Multiple Language Table' option. Enter the control tag name 'INDEX' in the text field, and assign the language and font to display.



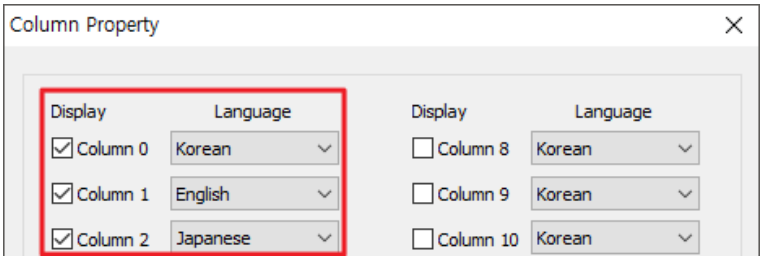
c) Go to [Tools]-[String Table] and select the group type as 'Multiple Column'.



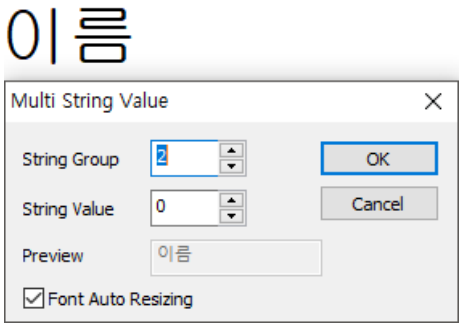
d) Press 'Add String' and enter the strings in the each column to display in the multi string object. Write the same contents in a different language in the same index. Korean, English and Japanese will be displayed according to the 'INDEX' value.



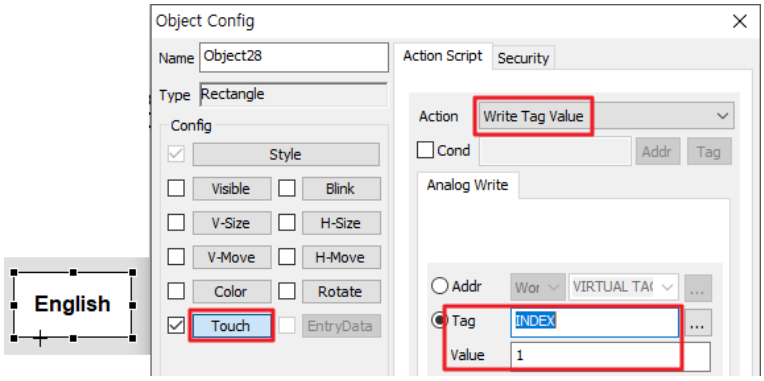
e) Press 'Column Property' and assign languages and fonts configured in the step c).



f) Press [Draw]-[Multi String] to create a multi string object. Specify the group number and string value.

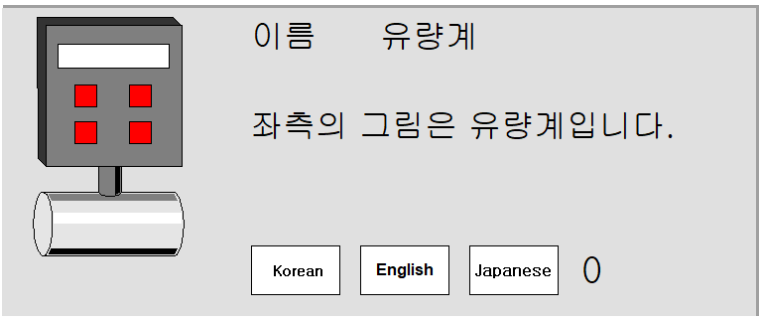


g) Create three touch objects to change the value of 'INDEX' tag.

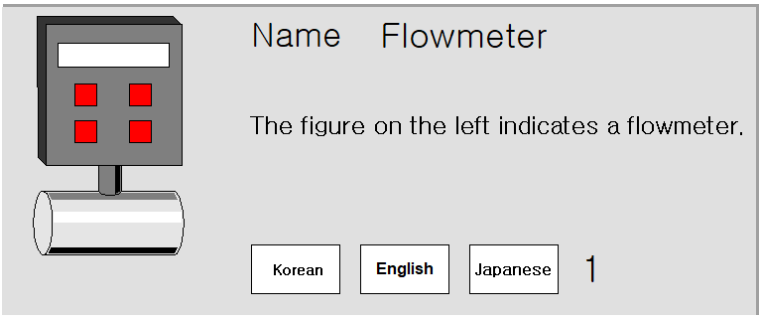


h) Launch the project in Xpanel or simulator. When you press each button, you will find that different strings are displayed.

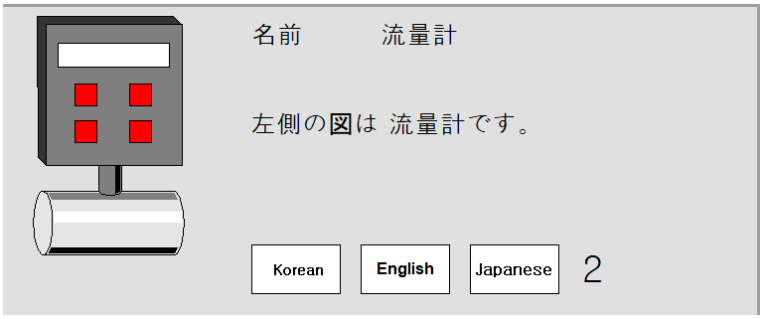
- When you press [KOR] button, the texts will be displayed in Korean.



- When you press [English] button, the texts will be displayed in English.



- When you press [Japanese] button, the texts will be displayed in Japanese.



7 Graphic Utilization II

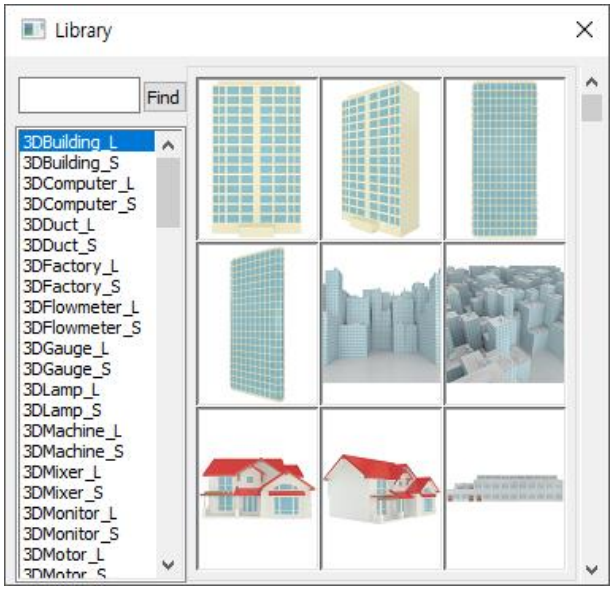
7.1 Library

Xpanel Designer provides prebuilt images by category, and it allows you to quickly and easily design the graphic page. Images are sorted into several groups which are categorized by product or field works. Numerous images such as valves, water tanks or pipes are described as 3D style. You can also add unique libraries of your choice.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

7.1.1 Settings

To bring up the library window, select [Draw]-[Library] or icon.

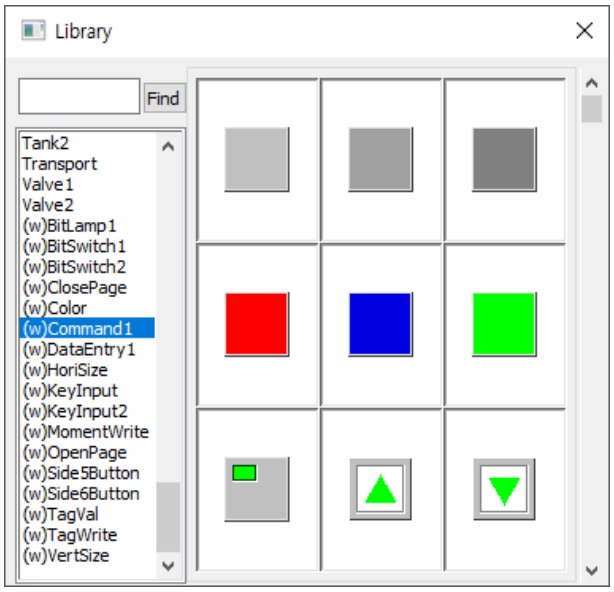


The categories are listed at the left side of the window. Each category contains series of images, and they are listed at the right side of the window by group selection. You may create a new group in the 'Library Editor'.

You may choose images directly from the library window and insert them into the graphic page by double-clicking or drag-and-drop. You can also add an user-defined object to the library by using 'Library Editor'.

There are two different types of objects in the library. The 'Library object' does not have any object properties.

The 'Wizard object' contains a single function for controlling project such as bit switch, key input, data entry, etc. The wizard objects are marked with '(w)' string in front of their names as shown in the picture below.

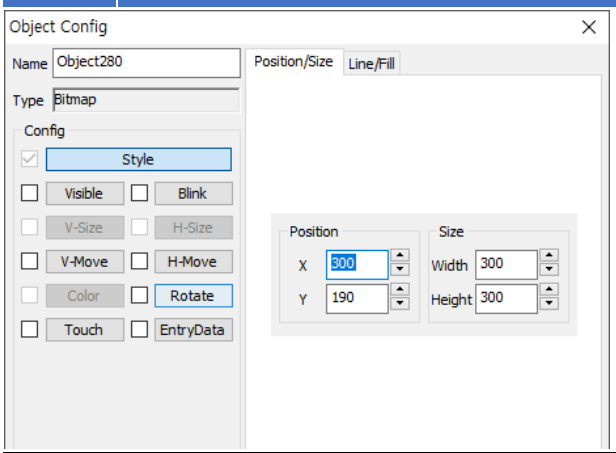


※ Please refer to the 'Library Editor' for more information about library editor.

7.1.2 Object Configuration

You can configure the library object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click or right-click the object and select [Object Config] in the pop-up menu.

> ⚠ This section only explains about image object configuration of library object. Please note that wizard objects have different configuration. For information about this, refer to manuals explaining each function.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in a certain cycle according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is pressed.

※ Please refer to the 'Object Configuration' manual for more information.

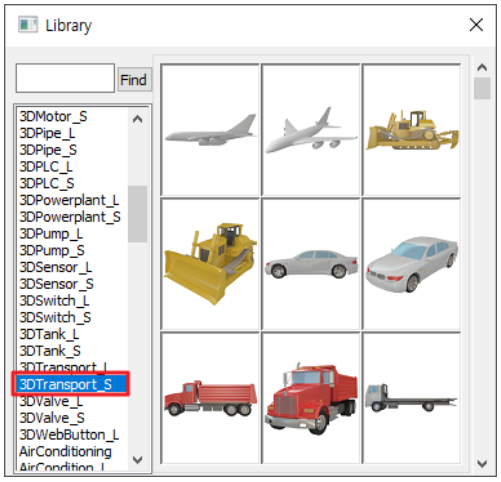
7.1.3 Exercise

> This section explains the basics of the feature. Please utilize the feature according to your site environment.

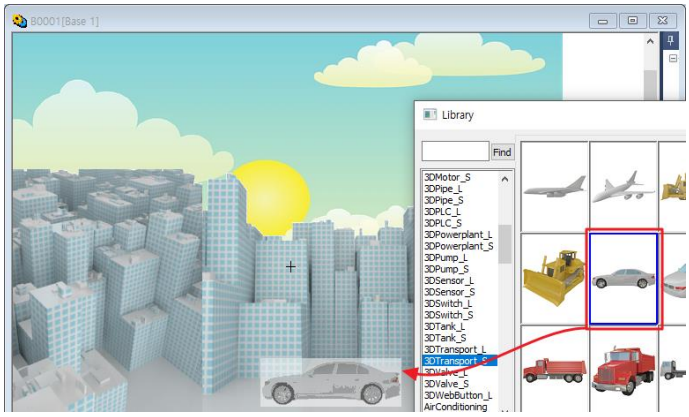
Exercise : Inserting library objects into the page window

In this exercise, you will design the graphic page by adding library objects.

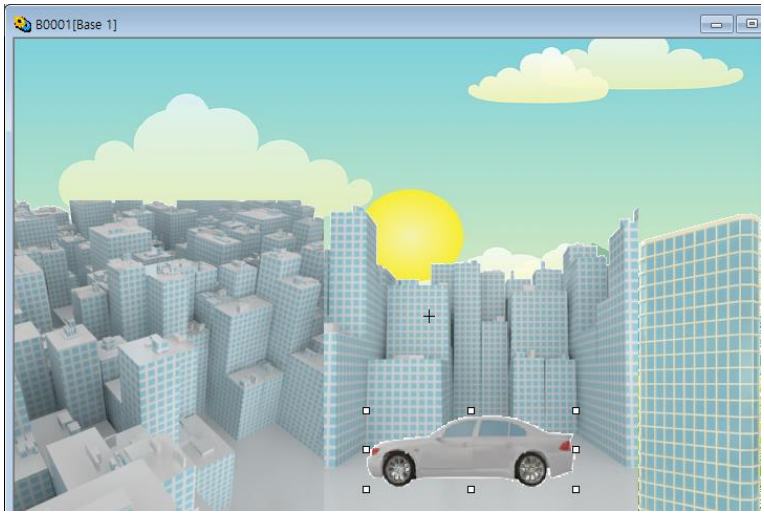
a) Click [Draw] - [Library] or icon to bring up the library window. Select the group which contains images you wish to use.



b) Select an image on the right side of the window, and add the image into the graphic page by double-clicking or drag-and-drop.



c) Adjust the image's size or location appropriately.



- Large amount or size of images can cause a delay in the performance. Please avoid inserting amount of images in the graphic page for smooth operation.
- When downloading project to the Xpanel, 'Using 256 Bitmap' option in 'Page properties' lowers the quality of images and reduces page size helping smooth operation.

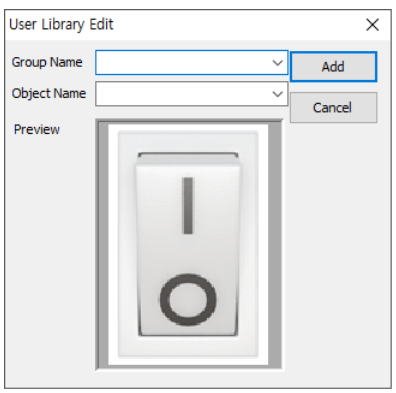
7.2 Library Editor

'Library Editor' feature allows you to create a library object, by using graphic objects or image objects. Once the object is added to the library, you can pick the object from the library whenever necessary. With this feature, the user does not have to build additional object again which contains same function. It is possible to remove the object which isn't used anymore.

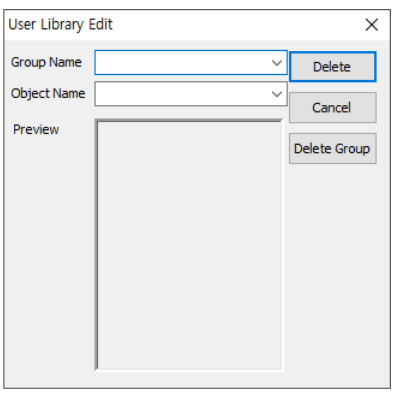
> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

7.2.1 Settings

To bring up the 'User library editor' window, select [Tools]-[User Library Edit]. Each window will appear according to the object selection as shown below.



<Adding the object>



<Deleting the object>

Item	Description
Group Name	Enter the group name to add to the library. Alternatively, you may select the group name to delete from the library. You must assign a group name to add the library object. If you wish to create a group, enter the unique name for the new group in the field. If you wish to add a library object to the existing group, select the group name in the drop-down list. Then enter the object name in the text field.

Object Name	Enter the object name to add to the library. Alternatively, you may select the object name to delete from the library. You must assign a group name. Duplicate object names are not allowed in the same group.
Preview	Displays an example of the library object as a thumbnail image.
Add	Adds the object which the operator made in the graphic page. A single object can be added to the library at a time. If you add the object which contains functionality, the configuration is also applied to the library object. The library object file is automatically named 'GroupName.DAT', and saved to the following directory; C:₩CIMON₩"Xpanel Designer *Version* ENG"₩UserLib
Delete	Removes the selected user library object from the library. There must not be any selection in the graphic page. Since the object file in the directory is also deleted, you are recommended to back up the file before deletion of the library object.
Delete Group	Deletes the selected group from the library. Deleting the group will delete all of the objects it contains.
Cancel	Exit the 'User library editor' window.

7.2.2 Exercise

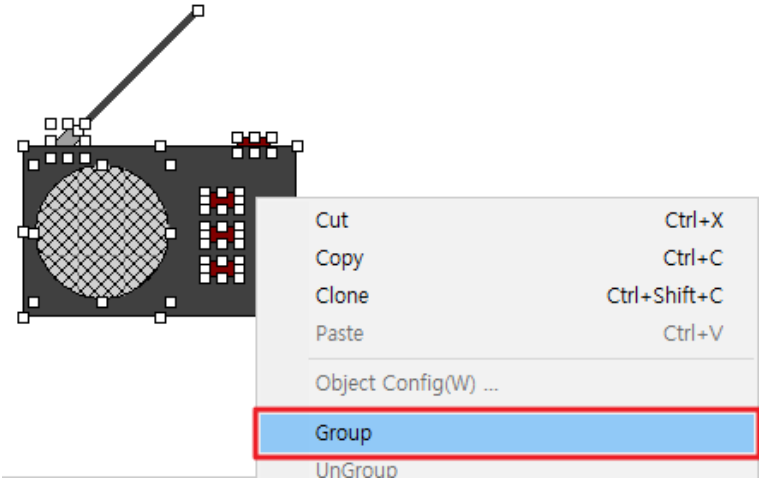
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Adding or deleting the User Library Object

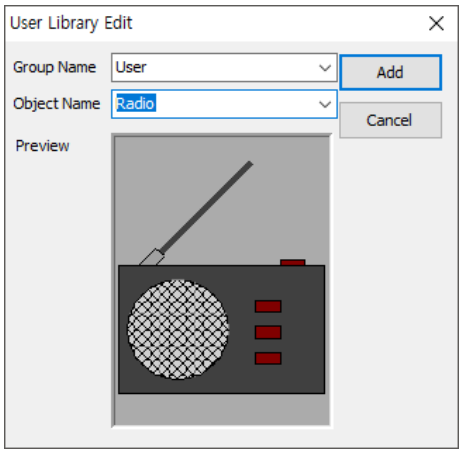
In this exercise, you will draw a graphic object and add or delete it on or from the library.

(1) Adding the library object

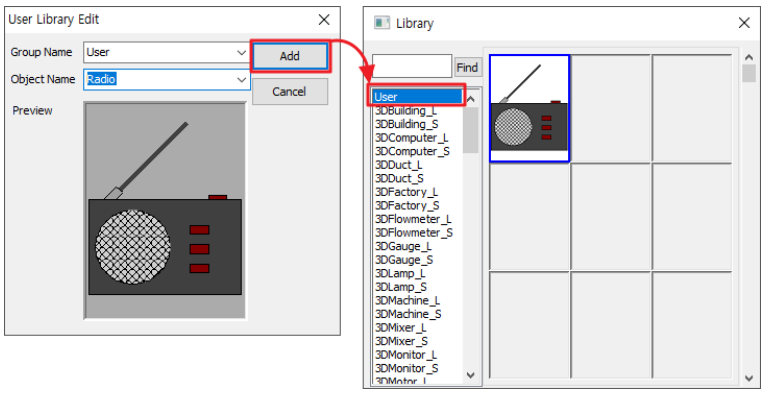
a) Draw a radio object by using graphic objects. Then group the objects to treat them as a single object.



b) Select the radio and click [Tools] - [User Library Edit]. When the 'Make Library' window pops up, enter the group name and object name for radio.



c) Press [Add] button to add the radio object to the library. You may check the library object in the 'Library' window.



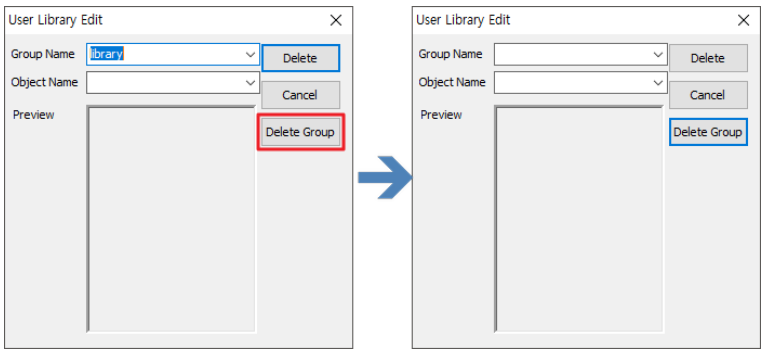
(2) Deleting the library object

a) To delete the User Library object, click [Tools] - [User Library Edit] without selecting the object.

b) You may delete the library object in two ways.

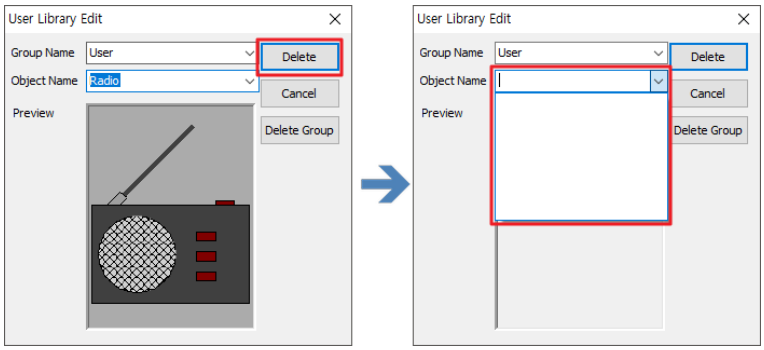
- Group Delete

When you delete a group, you will also delete the library objects stored in the group. To delete a group and its objects, select the group from the drop-list then press [Delete Group] button.



- Object Delete

You may delete the object which corresponds to 'Object Name'. To delete a library object, select the group from drop-down list and object name, then press [Delete] button.



7.3 Animation Bitmap

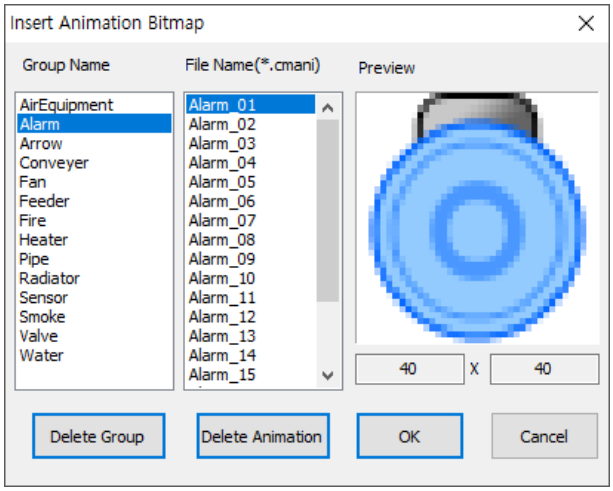
Animation bitmap displays the movement of images according to tag value. Xpanel Designer provides various animation objects, and this helps user to display the process more efficiently.

※ Please refer to the 'Animation Bitmap Editor' manual for information about editing an animation bitmap object.

- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- Large amount or size of animation objects can cause a delay in the performance. Please avoid inserting amount of objects in the graphic page for smooth operation.

7.3.1 Settings

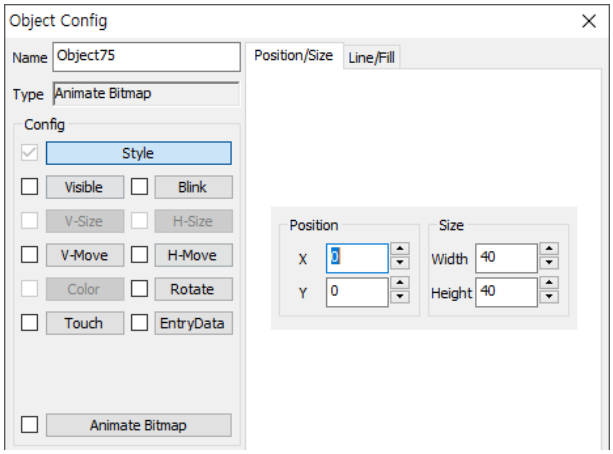
To bring up the 'Insert Animation Bitmap', select [Edit] - [Insert Animation Bitmap].



Item	Description
Group Name	Groups which containing animation objects are listed in the left side of the window. If you select the group name, animation objects are listed in the 'File Name'.
File Name (*.cmani)	Animation objects which included in the selected group are listed on the right side of the window. Each animation bitmap is saved as '*.cmani' file format, and stored in the following directory; "C:₩CIMON₩"Xpanel Designer *Version* ENG"₩AniLib".
Preview	Displays an example of the library object as a thumbnail image. Object size is shown under the preview image.
Delete Group	Removes the selected group from the library. Deleting the group will delete all of the objects it contains. Since the group folder in the directory is also deleted, you are recommended to back up the file before deletion of the animation group.
Delete Animation	Removes the selected object from the library. Since the object file in the directory is also deleted, you are recommended to back up the file before deletion of the animation object.
OK	Adds the selected animation bitmap to the graphic page.
Cancel	Exits the window without inserting the animation bitmap.

7.3.2 Object Configuration

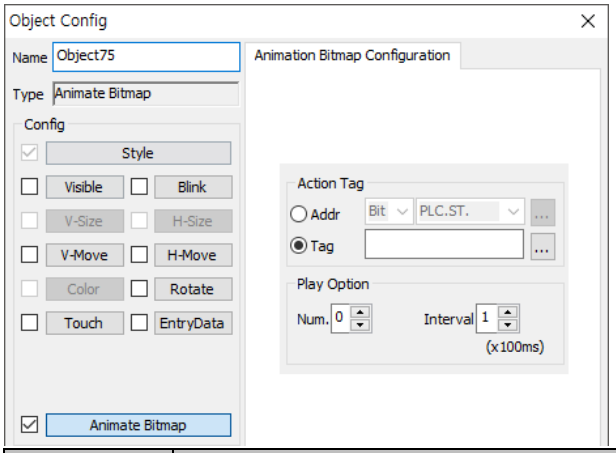
You can configure the animation bitmap object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in the certain cycle according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is clicked.
Animate Bitmap	Shows the configuration window of the animation bitmap object.

※ Please refer to 'Object Configuration' for more information.



Item	Description	
Action Tag	You can assign an address or tag for controlling animation bitmap object	
	Address	The animation object will be displayed by using its real address with BIT or WORD data. You can input the device address in the 'Input Device Address' dialog box.
	Tag	Enter the tag name to control the performance of animation bitmap object. You can assign an analog tag or a digital tag. If the tag value equals to '0', the object is paused. If the tag value exceeds '0', the object operates according to the conditions of 'Play Count'.
Play Number	Determines the number of play counts of the animation bitmap. The value can be assigned from 0 to 32767.	
	0	The animation bitmap operates continuously.
	1	The animation bitmap operates once. When you assign the count number greater '1', the animation bitmap operates as much as assigned number.
Play Interval	Determines the playing time for each frame in the animation bitmap. The value can be assigned from 1 (100msec) to 32767 (3276700msec).	

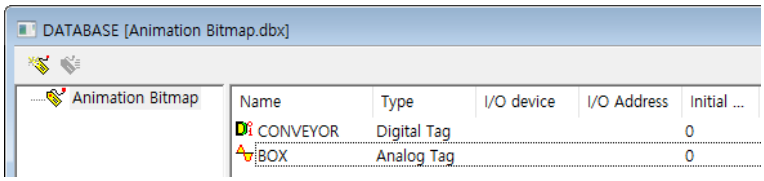
7.3.3 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

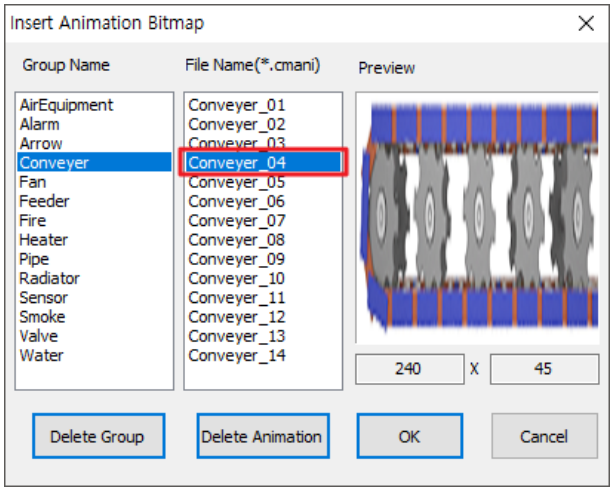
Exercise : Playing animation bitmap object

Following example shows the conveyor which carries a box. The animation bitmap object operates when the condition has been satisfied.

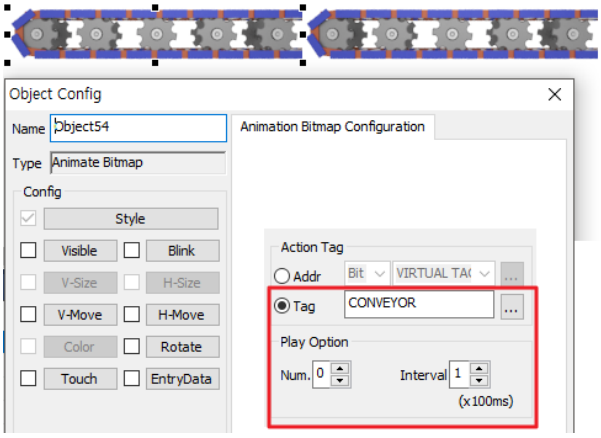
a) Create two tags, one for the digital tag and another for the analog tag.



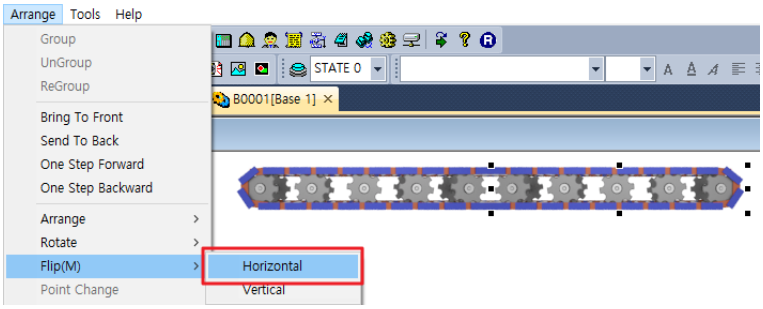
b) Go to [Edit]-[Insert Animation Bitmap] and select the conveyor object. Insert 2 objects in the graphic page.



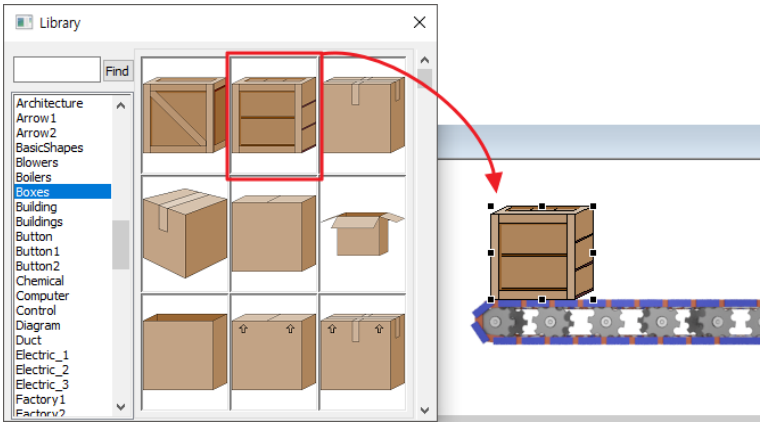
c) Define each object configuration of conveyor objects as shown below.



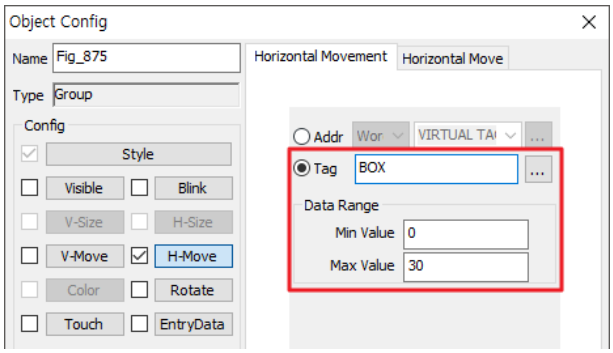
d) Click [Arrange]-[Horizontal Flip] to connect conveyors as a single object.



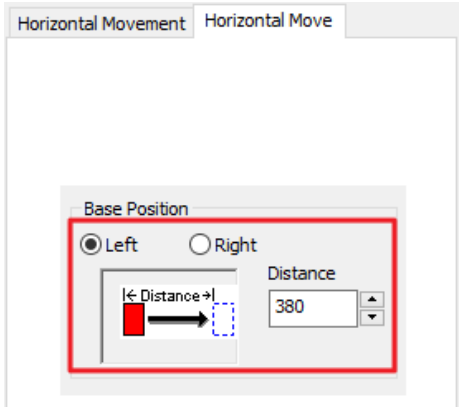
e) Go to [Draw]-[Library] and insert a box object in the graphic page. Set the object size as 60 x 60.



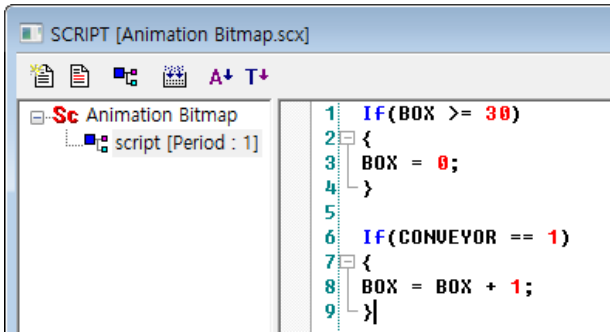
f) Set the 'Horizontal move' function in the [Object Configuration]. Enter the tag name 'BOX' in the field, and assign the data range from 0 to 30.



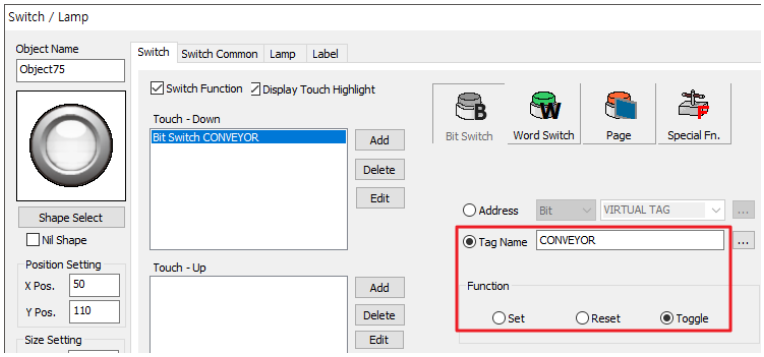
g) Set the base position as 'Left' under the [Horizontal Move] tab. Assign the distance as 380.



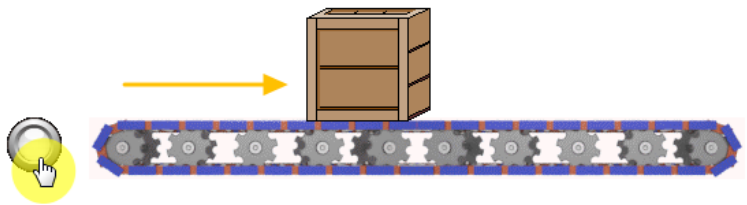
h) Create a period script in the [Tools]-[Script]. Write a script like "script" as shown below.



i) Go to [Draw]-[Switch/Lamp] and create a bit switch.



j) Launch the project in the Xpanel or simulator. When the digital tag has been turned ON, the conveyor object operates. The box object moves from left to right side for 30 seconds. When 'BOX' tag value became 30, the analog value will be reset to the 0.



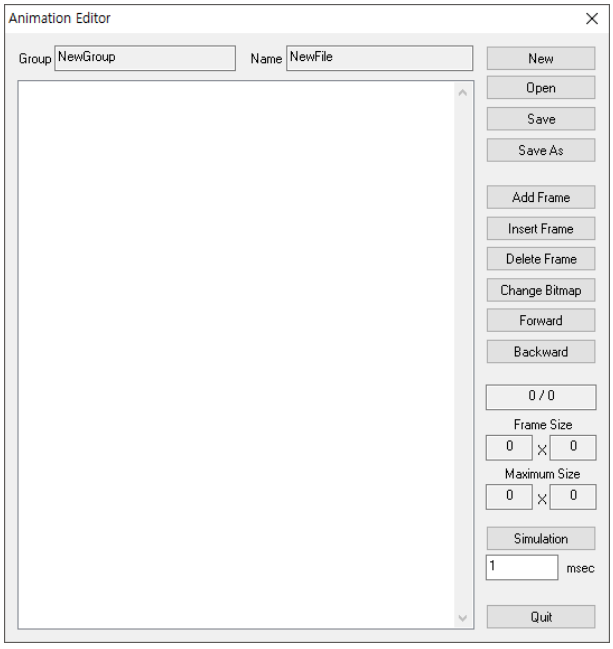
7.4 Animation Editor

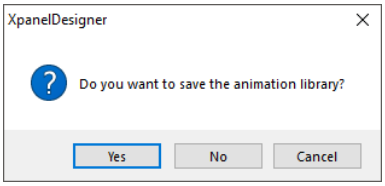
Xpanel Designer provides the editor which allows the operator to create or modify an animation bitmap object. External images such as BMP, JPG, and PNG files can be customized as an animation bitmap. The editor includes the preview in a small display, and this helps the user to generate an animation bitmap as desired appearance.

This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

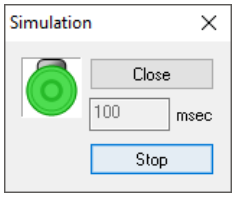
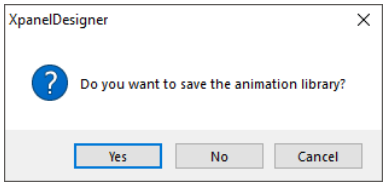
7.4.1 Settings

To bring up the animation editor window, double-click the 'Animation Editor' in the project workspace or click the [Tools]-[Animation Editor].



<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Group</td><td colspan="2">Represents the group name of current animation bitmap.</td></tr>
<tr><td>Name</td><td colspan="2">Represents the name of current animation bitmap.</td></tr>
<tr><td rowspan="4">New</td><td colspan="2">Initializes the change to create a new animation bitmap. When there is a change, a message box asking you to confirm the save will appear.
 

Animation bitmap object is automatically saved in the following path;
“C:₩CIMON₩”Xpanel Designer Version ENG”₩AniLib”.</td></tr>
<tr><td>Yes</td><td>Saves the changes and initialize the editor.</td></tr>
<tr><td>No</td><td>Initializes the editor without saving modifications.</td></tr>
<tr><td>Cancel</td><td>Goes back to the editor window without initializing.</td></tr>
<tr><td rowspan="5">Open</td><td colspan="2">You may select and open an animation bitmap for editing. Each animation bitmap is saved as ‘*.cmani’ file format, and stored in the following directory;
“C:₩CIMON₩”Xpanel Designer Version ENG”₩AniLib”</td></tr>
<tr><td>Group</td><td>Represents the group name of animation bitmap.</td></tr>
<tr><td>File Name</td><td>Represents the name of animation bitmap.</td></tr>
<tr><td>Enter a Group name</td><td>Enter the group name of animation bitmap to modify.
Alternatively, you may select the group name.</td></tr>
<tr><td>Enter a File name</td><td>Enter the file name of animation bitmap to modify.
Alternatively, you may select the file name.</td></tr>
<tr><td>Save</td><td colspan="2">Saves the currently editing file.
If you enter the same name with an existing file, the file will be overwritten by new animation bitmap.</td></tr>
<tr><td>Save as</td><td colspan="2">You can save the animation bitmap with a new group and file name. The animation bitmap is saved as ‘*.cmani’ file format, and stored in the following directory; “C:₩CIMON₩”Xpanel Designer Version ENG”₩AniLib”.</td></tr>
<tr><td>Add Frame</td><td colspan="2">You can add a new image to the animation bitmap. The image is added at the end of the frame. The editor supports the BMP, JPG, and PNG file formats.</td></tr>
<tr><td>Insert Frame</td><td colspan="2">Inserts a new frame in front of the selected image of animation bitmap.</td></tr>
<tr><td>Delete Frame</td><td colspan="2">Deletes the selected frame from the images of animation bitmap.</td></tr>
</table>

<table>
<tr><td>Change Bitmap</td><td colspan="2">Replaces the selected image with a new image. You may import the image from the desired path.</td></tr>
<tr><td>Forward</td><td colspan="2">Moves the selected frame to the forward sequence.</td></tr>
<tr><td>Backward</td><td colspan="2">Moves the selected frame to the backward sequence.</td></tr>
<tr><td rowspan="4">Simulation</td><td colspan="2">You can simulate the current editing animation bitmap by assigning frame display time. A ‘Simulation’ dialog box appears when you press the button. The simulation operates when picture is inserted more than 2 frames. The actual speed of the animation bitmap is 100msec.
 
</td></tr>
<tr><td>Close</td><td>Closes the ‘Simulation’ dialog box.</td></tr>
<tr><td>Stop</td><td>Pauses the simulation. You can enter the value to change the play interval. The value can be assigned from 1msec to 32767 msec.</td></tr>
<tr><td>Run</td><td>Starts the simulation.</td></tr>
<tr><td rowspan="4">Quit</td><td colspan="2">Closes the editor window. When there is a change, a message box asking you to confirm the save will appear.
 
</td></tr>
<tr><td>Yes</td><td>Saves the changes and closes the editor.</td></tr>
<tr><td>No</td><td>Closes the editor without saving modifications.</td></tr>
<tr><td>Cancel</td><td>Goes back to the page window without saving.</td></tr>
</table>

7.4.2 Exercise

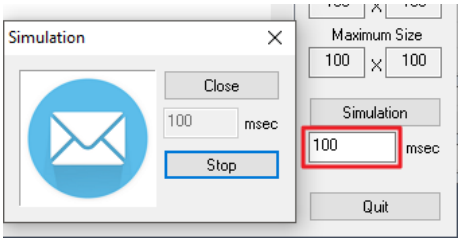
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Generating an animation bitmap object

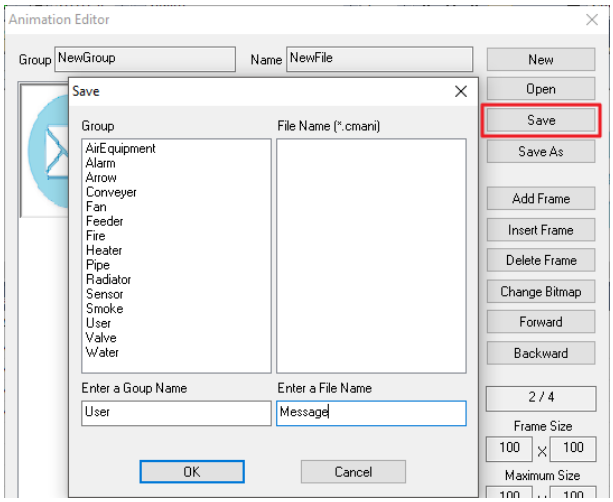
In this section, you will create a new animation bitmap object through the animation editor.

a) Click [Tools] - [Animation Editor] to bring up the 'Animation editor' window. Press [Add frame] button and insert images to make an animation bitmap.

b) Press [Simulation] to confirm the operation of animation bitmap. You can assign the play interval time from 1msec to 32767msec. Note that the actual speed of animation bitmap object is configured as 100msec in default.



c) Press [Save] to store the animation bitmap file in the desired path. If you wish to add the object to the existing group, select the group name from the group list. If you wish to add the object to the new group, Enter the group name in the field.



d) You can insert the animation bitmap in the project by using 'Insert Animation Bitmap'.

※ Please refer to the 'Animation Bitmap' manual for more information about animation bitmap object.

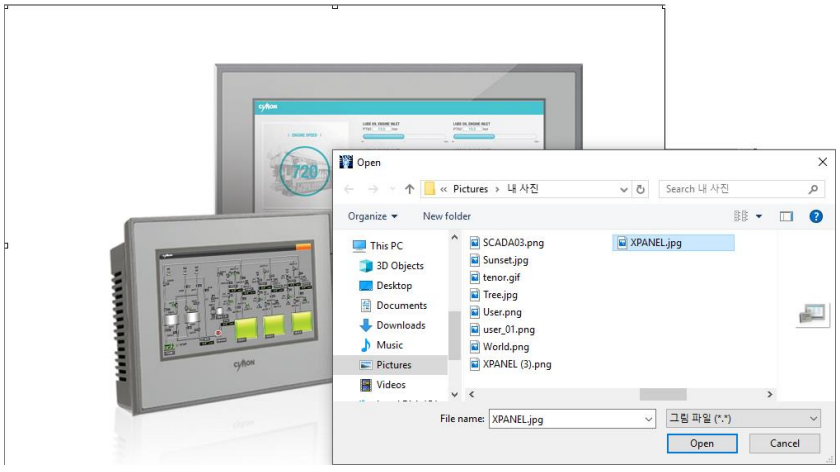
7.5 Image Embedding

In the Xpanel Designer, the user can import the image from external folder and treat it as an object. Multiple of image formats such as BMP and JPG file types can be used in the project.

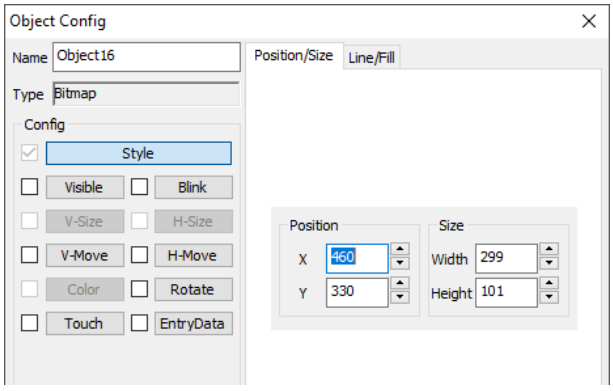
- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- BMP files have a relatively large file size. Please notice that overusing of BMP files can cause a delay in the process. When you insert the image, you are recommended to use JPG file types rather than a BMP file.
- Large amount or size of images can cause a delay in the performance. Please avoid inserting amount of images in the graphic page for smooth operation.

7.5.1 Settings

To insert an image file into the graphic page, select [Edit] - [Insert Graphic File]. You can select the image file in the file browser window.



You can configure the image object with basic control features such as [Visible], [Blink], etc. To open the [Object Configuration] window, double-click or right-click the object and select [Object Config] in the pop-up menu.



Item	Description
Name	Designate a name to the object. You cannot use space as object's name.
Type	Indicates the type of object.

Item	Description
Style	Composed of [Position/Size] and [Line/Fill] tabs.
Visible	Shows or hides the object according to the tag value.
Blink	Blinks in the certain cycle according to the tag value.
V/H-Move	Moves the object vertically/horizontally according to the tag value.
Rotate	Rotates the object with assigned angle according to the tag value.
Touch	Executes a defined operation when the object is pressed or released.
EntryData	Inputs data with data entry window when the object is clicked.

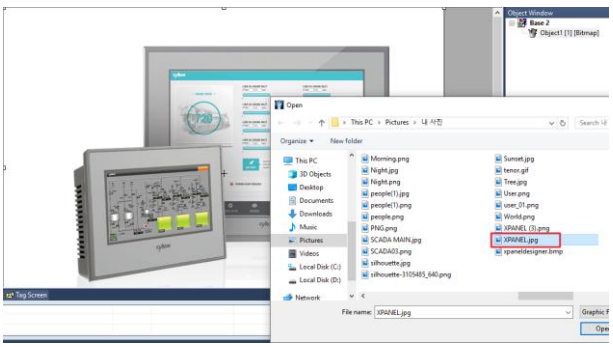
7.5.2 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise 1 : Setting the background image by using Image Embedding

Following is an example of setting the background image of the project. You will import an image from the external directory.

a) Select [Edit] - [Insert Graphic File] and the file browser will appear. Select an image you wish to insert and press [Open] button. The image will be placed on the graphic page.



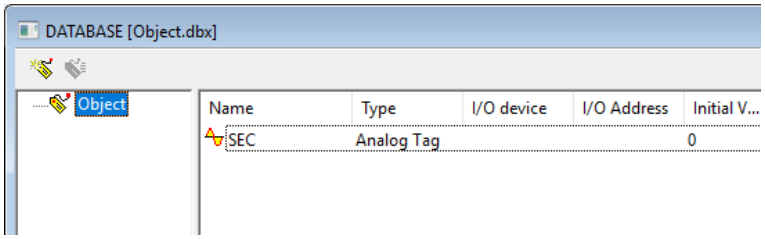
b) Resize the image and page appropriately, then select [Arrange] - [Make Symbol]. The image is set as a background of the page.

c) To replace or edit the background image, select [Arrange] - [Break Symbol]. The handles will appear around the image. You may resize or replace the image object.

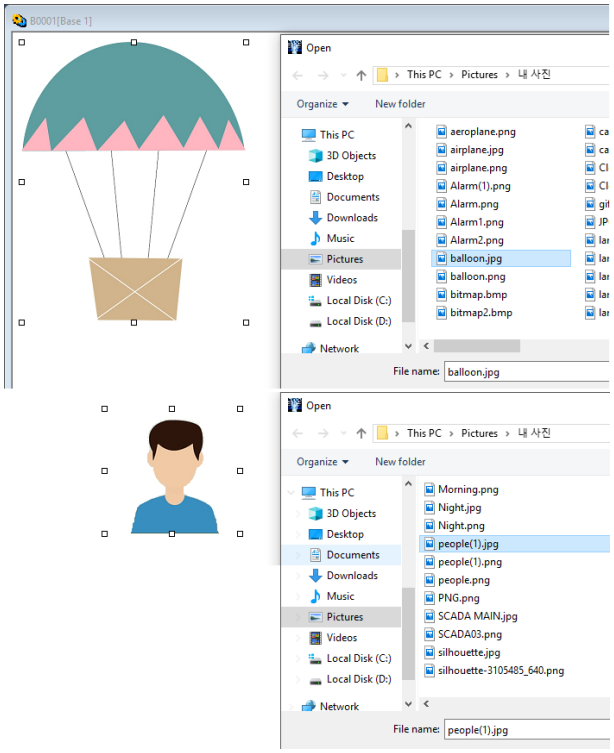
Exercise 2 : Grouping multiple image objects

In this section, you will add multiple images to the page and attribute a 'Vertical Move' function.

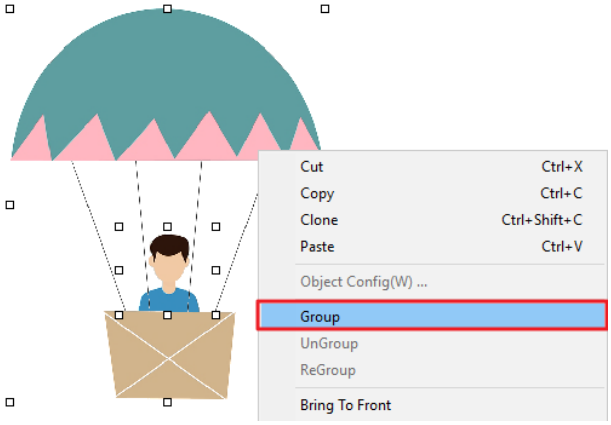
a) Create an analog tag in the database. Enter the tag name as 'SEC'.



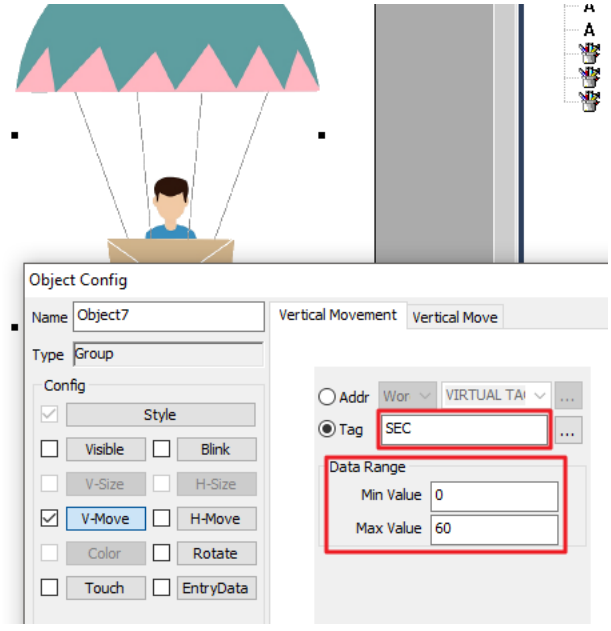
b) Select [Edit] - [Insert Graphic File] to import images from the desired folder. In this example, each of embedded images represents the air balloon and a human.



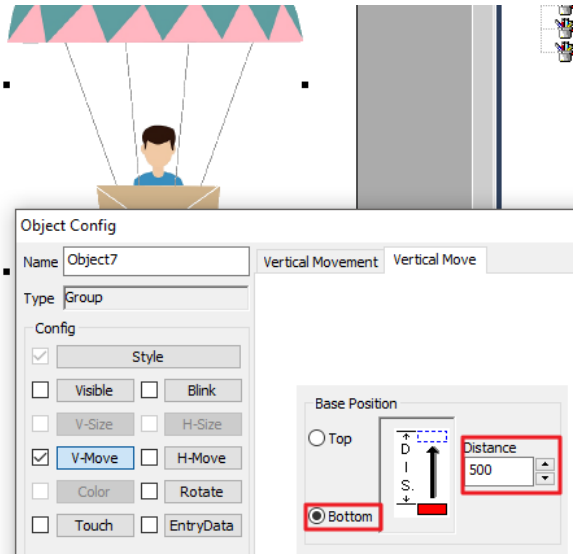
c) Resize both images appropriately and drag the cursor over them. Group two images into a single object.



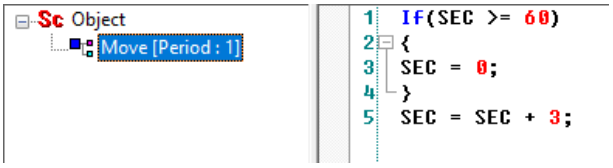
d) Go to [Object Config] window and click [V-Move] feature. Enter the tag name as 'SEC' in the field and assign the data range from 0 to 60.



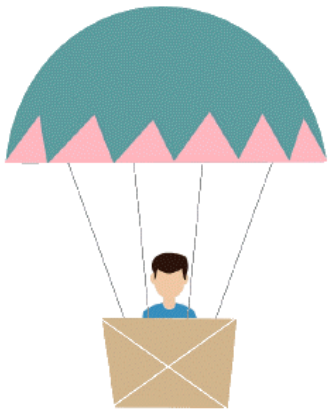
e) Under the [Vertical Move] tab, select the base position as bottom and assign the distance as 500.



f) Create a period script in the [Tools]-[Script]. Write a script like “Move” as shown below. The value of ‘SEC’ increases 3 every second. When ‘SEC’ tag became 60, the value will be reset to the 0.



g) Launch the project in the Xpanel or simulator. The air balloon object will rise for 20 seconds.



SEC **9**

8 Security

The Security feature distributes the authority to users. Securing the system means that the administrator gives different authority to different people. To accommodate the different needs, Xpanel Designer includes various security options.

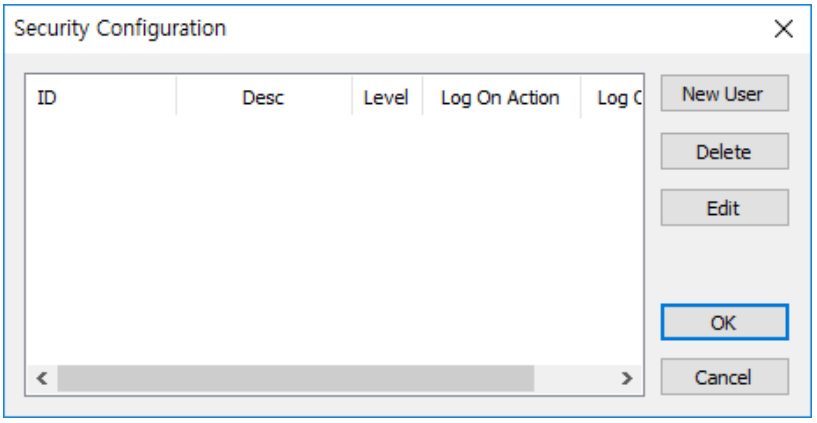
The first step to the Security configuration is registration of a user account and the password. The next step is to assign security level to each account. These configurations let only verified users to control the specific functions.

8.1 Features

- The security level allows the detailed discrimination in authority.
- You can configure a script action when a user logs in or out.

8.2 Settings

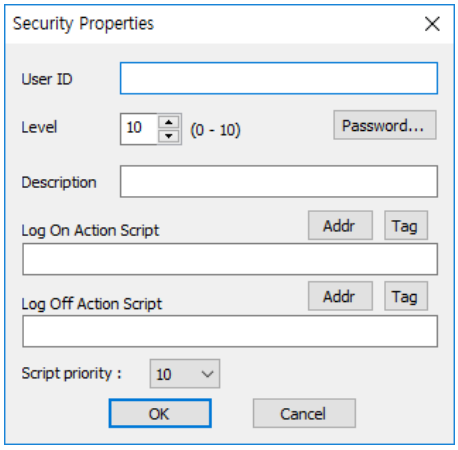
You can bring up the [Security Configuration] window by selecting [Tools] - [Security] or double-clicking the 'Security' on the project workspace.

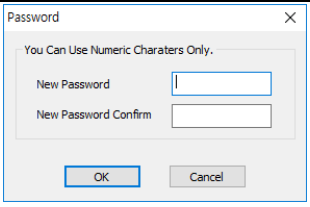


(1) Security Configuration

Item	Description
ID	Displays the user's ID.
Desc	Displays the description of the corresponding user.
Level	Displays the user's security level.
Log On Action	Displays the log on action of the corresponding user.
Log Off Action	Displays the log off action of the corresponding user.
New User	Adds a new user to the list.
Delete	Deletes the selected user from the list.
Edit	Edits the selected user.

(2) New User



Item	Description
User ID	Enter an ID to distinguish the user. You can enter up to 15 characters.
Level	Assign a security level for the current user. You can assign from 0 (the lowest level) to 10 (the highest level).
Password	 Enter a password for the current user. You can only enter the numeric characters.
Description	Enter a description of the user.

Log On Action	Enter a command expression which will be executed when the user logs on. You can use address or tags by pressing the [Addr] or [Tag] button.
Log Off Action	Enter a command expression which will be executed when the user logs off. You can use address or tags by pressing the [Addr] or [Tag] button.
Script priority	You can assign a priroty of the command expression used for the Log On/Off Action. The priority can be assigned from 0 (the lowest priority) to 10 (the highest priority).

When there are several user IDs in the project, only one account can log in to the system. If another user logs in to the project, the current user ID automatically logs out.

8.3 Related Features

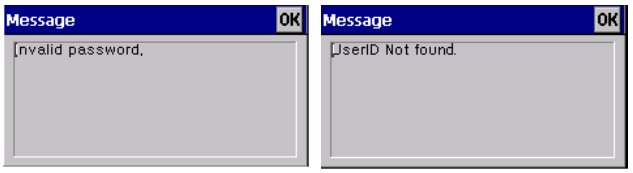
In this section, you can find functions and subroutines[3] frequently user for 'Security' feature. Please refer to the table below for applicble functions/subroutines.

All commands must be used with brackets.

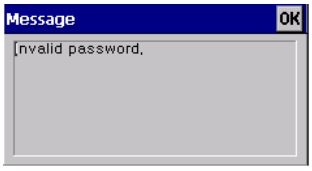
Command			Description
Security	Subroutine	LogOn	Logs on with the user information.
	Subroutine	LogOff	Logs out the current user.
	Subroutine	LogOnWin	Brings up the User Log On window.
	Function	GetSecurity	Returns the current security level.

[3] Subroutine operates a certain action without any value returned, unlike the functions have return value.

8.3.1 Functions for Security

LogOn	Logs on with the user information.
Subroutine	LogOn("*UserID*","*Password*")
Description	Logs on with the user ID and password which is registered in the 'Security'. If the wrong information is used, the message will pop up as shown below. 
Example	Logs on with the user ID "CIMON", password "0000". LogOn("CIMON","0000")

LogOff	Logs out the current user.
Subroutine	LogOff()
Description	Logs out the current user.
Example	Logs out the current user. LogOff()

LogOnWin	Brings up the User Log On window.
Subroutine	LogOnWin()
Description	Brings up the User Log On window on Xpanel. If there is no registered user in the project, the window will not appear. Select a user and enter the password. If you enter a wrong password, the message will pop up as shown below. 
Example	Brings up the User Log On window. LogOnWin()

GetSecurity	Returns the current security level.
Function	n=GetSecurity()
Description	Returns the current security level and store the value to the variable.
Example	Stores the current security level to the variable “Slevel”. Var Slevel;; …… Slevel = GetSecurity();

8.4 Exercise

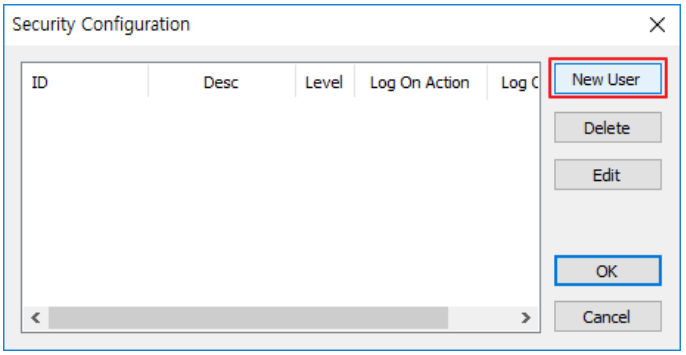
> This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : User Login and Access to the Object

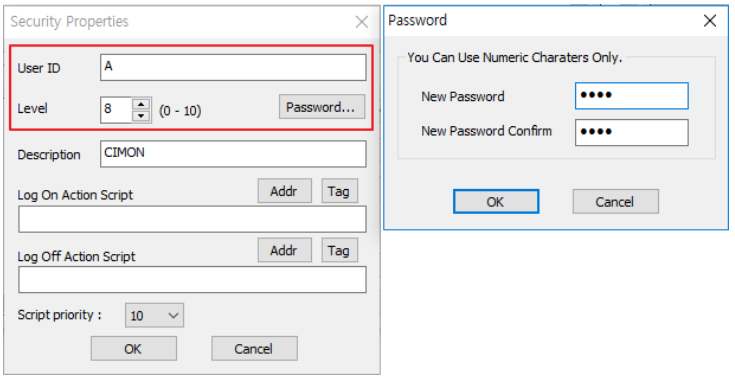
In this example, you will add a user to the project and assign a security level. Then, you will configure the accessibility of the control functions in Xpanel project.

(1) Adding a user

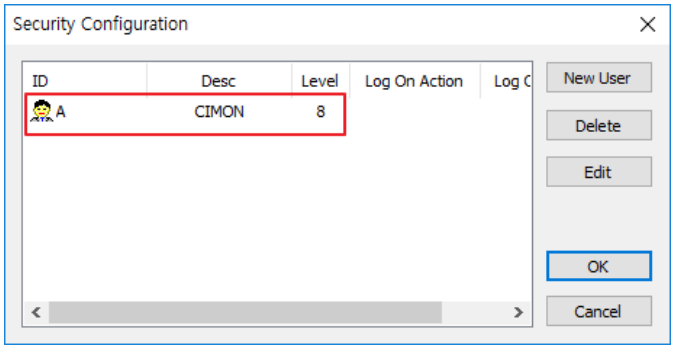
a) [Go to [Tools] - [Security] and select the [New User] button to bring up the [Security Properties] window.



b) Set the user ID as 'A' and the password as '1234'. Set the user's security level as 8.

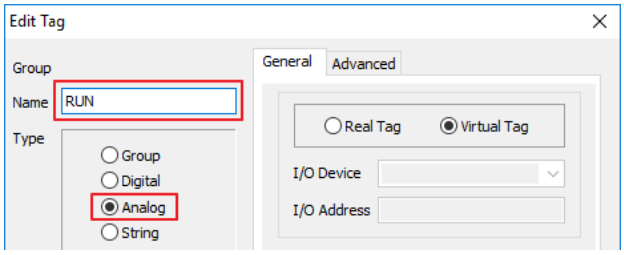


c) Press [OK] then you will find that the new user is added to the list.

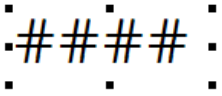


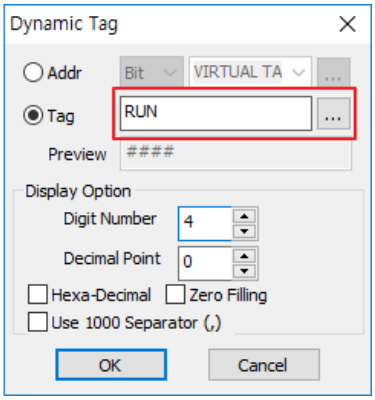
(2) Configuring Objects with Security Level

a) Create an analog tag named “RUN” in the database.

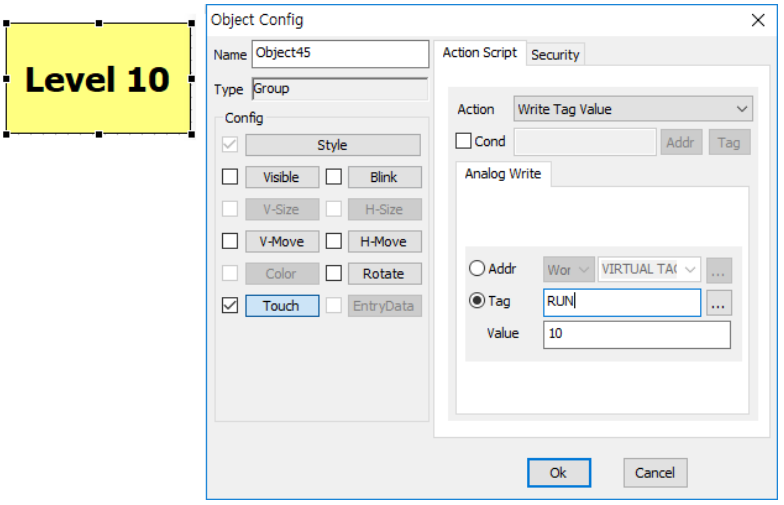


b) Select [Draw] - [Tag Value] and add the object to the graphic page. Then assign ‘RUN’ tag to the object as shown below.



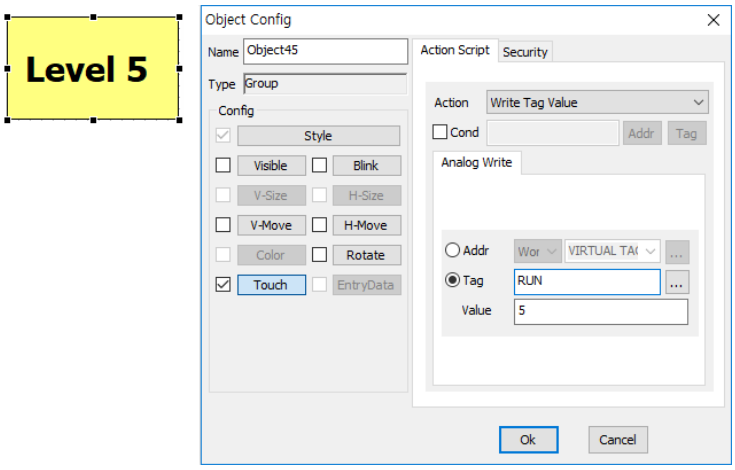


c) Create an object to write value at 'RUN' tag. Label the object with text object "Level 10" and set the action as "Write Tag Value". Enter 10 at the "Write Value" field.



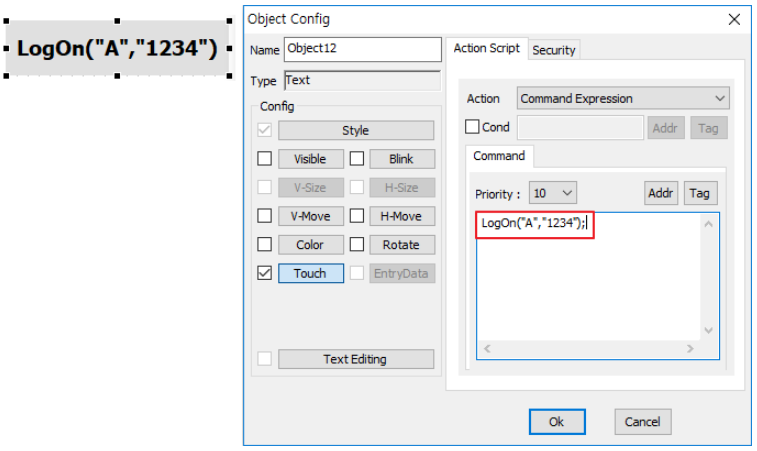
d) Go to [Security] tab and set the Security Level as 10.

e) Create another object to write value at 'RUN' tag. Label the object with text object "Level 5" and set the action as "Write Tag Value". Enter 5 at the "Write Value" field.



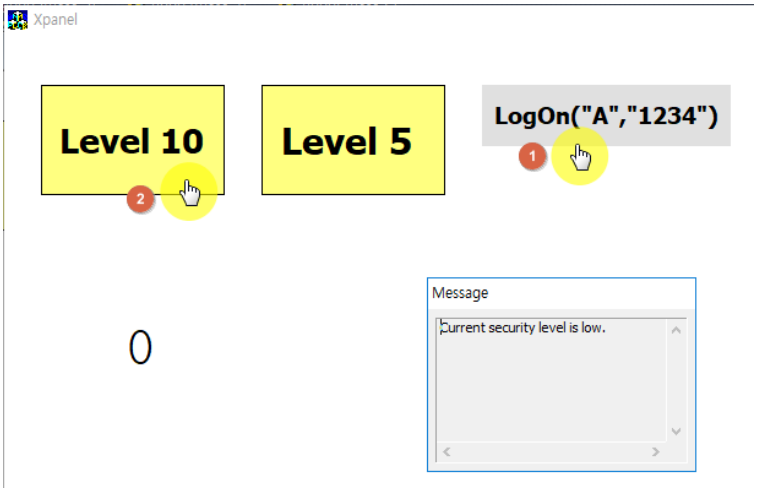
f) Go to [Security] tab and set the Security Level as 5.

g) Create an object as shown below to log on after the project execution.

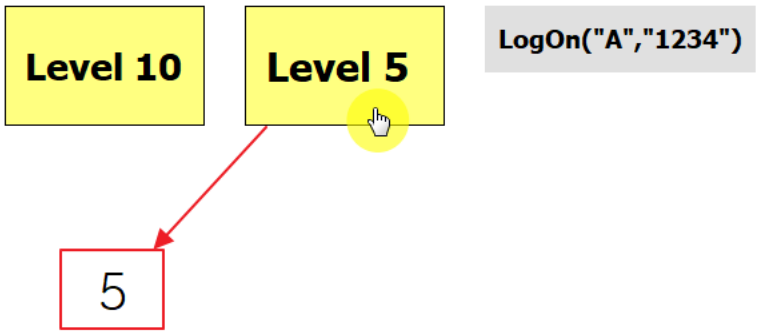


(3) Checking the Operation

a) Execute the project with Xpanel or run the simulator. Press the 'LogOn' object and then press 'Level 10' object. Since the user's security level is 8, you cannot operate the object and the following message will appear.



b) When you press the 'level 5' object, the value will be written to the tag value object since the user's security level is higher than the object's.



9 Data Logging

Data Logging is a feature which saves the historical data as a file. This functionality may collect the data from analog and digital tags in the internal storage of Xpanel which is called 'Block'. The log file can be converted into csv file and used as the data for Scope Trend object.

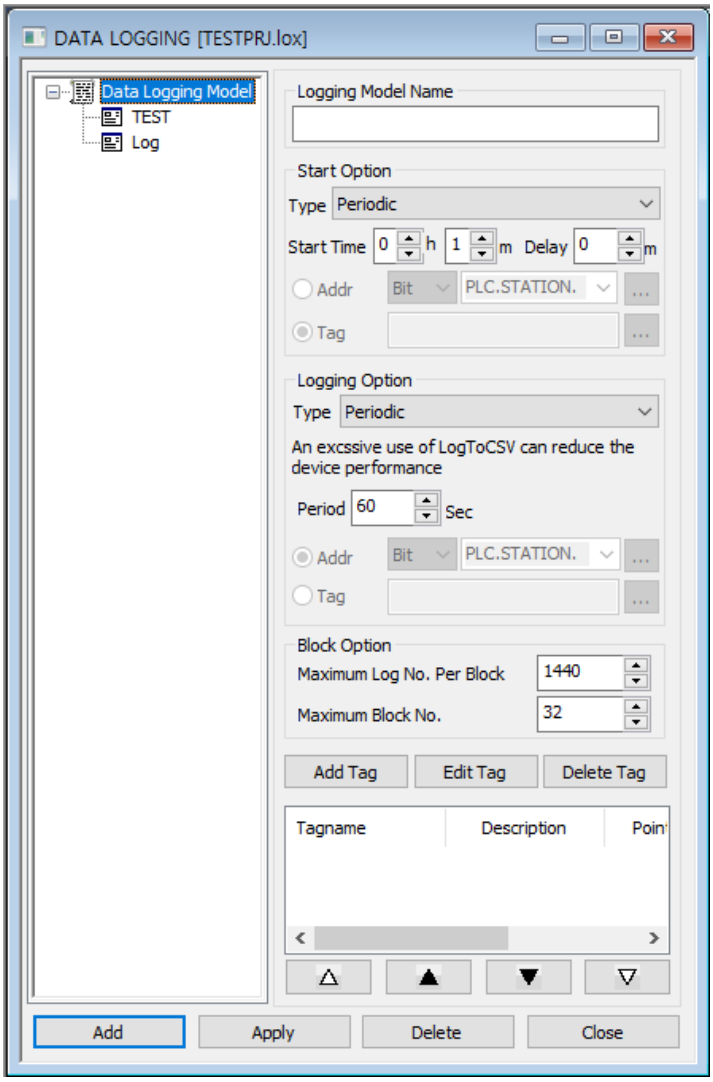
> ⚠ To use Data Logging functionality, there must be data logging model and the registered tags in the model.

9.1 Features

- Creates the blocks according to the user's configuration.
- The tag value can be collected in real-time according to the interval, and can be saved as a file or displayed on the object.
- You can efficiently manage the storage space by collecting the data only when the tag value changes.
- The collected data can be stored in the internal storage of Xpanel according to the block configuration.
- You can use command expressions to save the data blocks as a CSV file or edit the data.

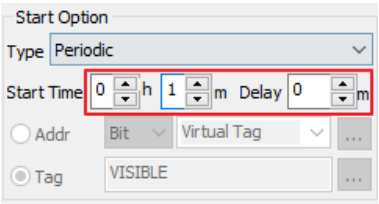
9.2 Model Configuration

Double-click the [Data Logging] on the Project Workspace or select [Tools] - [Data Logging] to bring up the configuration window as shown below. You can add or edit the model after the configuration by pressing [Add] or [Edit] button. You can delete the selected model.



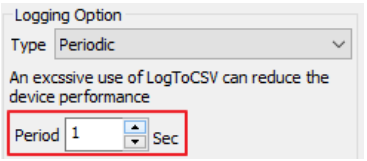
(1) Start Option

Idtem	Description	
Logging Model Name	Enter the name of the Data Logging model. You may use alphanumeric characters, Korean alphabets and special characters as the model name. You cannot use the duplicated model name.	
Type	Periodic	Assign an interval of creating a new data block. The block will be created according to the assigned period, starting from 00:00 daily. The actual data will be logged to the block after the delay time. E.g.) When the start time is set as 4 minutes and the delay is 2 minutes, the block will be created every 4 minutes and the data will be stored 2 minutes after when the new block is created.
	Called	Select this option to create a new block by using a command expression “DataLog()”.
	Trigger ON	Creates a new block when the assigned tag or address value becomes ON. The data will be logged even the status becomes OFF.
	Trigger OFF	Creates a new block when the assigned tag or address value becomes OFF. The data will be logged even the status becomes ON.
	Trigger Change	Creates a new block when the assigned tag or address value becomes OFF to ON or ON to OFF.
	Enable Tag	Controls the block creation according to the assigned tag’s ON/OFF state. The block will be created when the tag is ON. The block will not be created when the tag is OFF.
	On Time (Once a Day)	Creates a block once a day at the assigned time. If the block is full, the data will no longer be logged to the block. When you select this option, any other method to create a block (such as Xpanel Reset) will not operate.

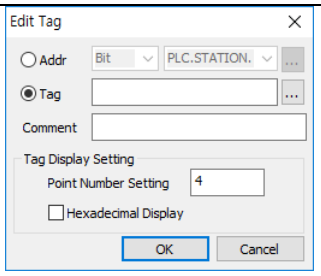
Start Time	Periodic On Time	Creates a block according to the time. **Periodic**: Assign the creation interval and the delay. **On Time**: Assign the time of the day to create the block. You can assign the time from 00:00 to 23:59. In case of the delay, you can assign the value up to 1439. 
	Trigger Tag On/Off/Change Enable Tag	Creates the block when the assigned address or tag's value changes from 0 to the other value. You can assign the device address or tag by pressing the ... button. In case of the address, you can assign the data type (Bit/Word).

(2) Logging Option

Item		Description
Type	Periodic	The data is logged according to the assigned interval. You can assign the interval from 1 to 30,000 seconds. (500min). This option operates when the block is created.
	Tag Value	Logs the data when the assigned address or tag's value changes from 0 to the other value. You can assign the device address or tag by pressing the ... button. In case of the address, you can assign the data type (Bit/Word).
	Log To CSV (Periodic/Tag Value, Daily)	Logs data according to the interval or the tag value. When you select this option, a CSV file will be created once a day, with the file name as '*YearMonthDay*.csv". The log data of a single data logging model will be saved in the same csv file.
	Log To CSV (Periodic/Tag Value, Monthly)	Logs data according to the interval or the tag value. When you select this option, a CSV file will be created once a month, with the file name as '*YearMonth*.csv". The log data of a single data logging model will be saved in the same csv file.

Standard	Period	Stores the data to the block according to the assigned interval. You can assign from 1 to 30000 seconds. 
	Addr/Tag	Logs the data when the assigned address or tag's value changes from 0 to the other value. You can assign the device address or tag by pressing the … button. In case of the address, you can assign the data type (Bit/Word).

(3) Block Option

Item	Description
Maximum Log No. Per Block	Assign the maximum number of the data to be stored in each block. You can assign the number of data from 1 to 2048. It means that the individual tag can log as much as the assigned value. E.g.) If there are four registered tags and the maximum log no. per block is set as 20, Each tag can log 20 data.
Maximum Block No.	Assign the maximum number of blocks. You can assign the value from 1 to 32.
Add Tag	 Adds a tag or an address to log data. You can assign the device address or tag by pressing the … button. You can also configure the tag display setting. You can enter the value from 0 to 4 to the 'Point Number Setting' field. To display the value in hexadecimal, select the 'Hexadecimal Display' option.
Edit Tag	Edits the selected tag.
Delete Tag	Deletes the selected tag.

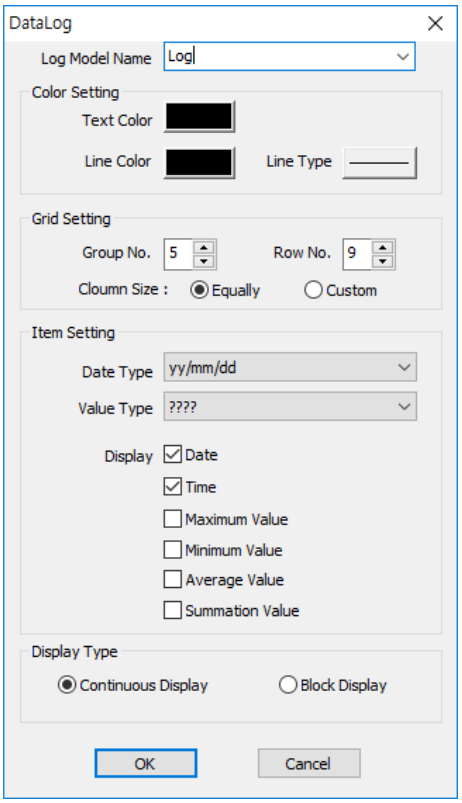
▲/▼/△/▽	Moves the selected tag's location upward or downward. The white arrow button moves the tag to the topmost or bottommost location. The black arrow moves the tag 1 step upward or downward.

⚠

- Since the data is logged in block unit, the block must be created in advance.
- If a block is full, you must create a new block to continue the data logging.
- If the number of blocks reached the maximum, the next block will be created after the deletion of the oldest block.
- Before saving the CSV file, check the volume of the storage. It is recommended to save the files in USB or SD memory.
- If the configuration of the data logging model has changed and the project is written to the Xpanel, the former project's entire blocks will be deleted. (CSV files are not deleted.) Thus, back-up is needed if necessary.
- The location where the data log file is stored in the Xpanel is as follows:
  ₩ Xpanel₩Log₩"LogModelName"

9.3 Object Configuration

Select [Draw] - [Data Logging] or press icon on the drawing tool. Then click on the graphic page to bring up the window as shown below.



Item	Description
Log Model Name	Displays the currently existing data logging model in the project. Select the model from the list to display the data on the object.
Text Color	Sets the text color. You can select one from the 98 colors.
Line Color	Sets the line color. You can select one from the 98 colors.
Line Type	Sets the line type. You can select one from the 7 types.
Group/Row No.	Assign the number of columns and rows to be displayed on the object. You can assign from 2 to 100.

Column Size.	Configures the size of column. You can select the option between 'Equally' and 'Custom'. If you select the 'Custom' option, the number of the column is automatically set as the number of tags in the data logging model. You cannot select the 'Custom' option if the number of the tags in the data logging model exceeds 20. The column size can be customized according to the number of columns.
Date Type	Select the date display type. You can select the type from the following options: yy/mm/dd, dd/mm/yy, mm/dd, dd/mm
Value Type	Select the value display type. "????" indicates that the tag value will be displayed as its configuration in the database. "####", "####.0", "####.00", "####.000", "####.0000" indicates that the tag value will be displayed with 4 integers and the decimal points. If you select 'Use Log Model's Tag Setting' option, the value will be displayed according to the configuration in the data logging model.
Display	Select the other items to be displayed on the object. You can select Date, Time, Max/Min. Value, Average Value and Summation Value.
Display Type	Select the display type of the data logging object. When you select the 'Continuous Display' option, the log data will be displayed on the object regardless of the block, in real-time. When you select the 'Block Display' option, the log data will be displayed on the object only after the manual object refresh, such as Xpanel reboot. The latest data before the object refresh will be displayed.

- Since XpanelDesigner V2.40, the log data is displayed in descending order. (Under XpanelDesigner V2.34: Ascending order)
  To change the display order, go to Xpanel Config window → Log Configuration and set the 'Log Data Sort Type' as 'Time Ascending Sort'.
- 'Block Display' does not support the object auto-refresh. To display the block data, update the object by Xpanel reboot.

9.4 Related Features

In this section, you can find subroutines[4] frequently used for Data Logging. Please refer to the table below for applicable subroutines.

> ⚠ All commands must be used with brackets.

Command			Description
Data Logging	Subroutine	DataLog	Creates or stops the data logging block.
	Subroutine	MakeCsv	Saves the data block to the SD/MMC memory in CSV file format.
	Subroutine	MakeLogCsv	Saves the data block to the assigned location in CSV file format.
	Subroutine	MakeLogCsvEx	Saves the data block in CSV file format and stores the header name at cell A1.

[4] Subroutine operates a certain action without any value returned, unlike the functions have return value.

9.4.1 Functions for Data Logging

DataLog	Creates or stops the data logging block.
Subroutine	DataLog("*LogModelName*",*BlockControl*)
Description	Creates or stops the data logging block. Enter 0 at *BlockControl* to stop the block. Enter 1 to create a new block.
Example	Creates a new block for the data logging model "LOG" and start logging. DataLog("LOG",1)

MakeCsv	Saves the data block to the SD/MMC memory in CSV file format.
Subroutine	MakeCsv(*"LogModelName", BlockNumber*)
Description	Saves the assigned *LogModelName*'s data block to the SD/MMC memory in CSV file format. You can assign the value from 0 to 31 at *BlockNumber*.
Example	Saves the 10th data block in data logging model "LOG" to SD/MMC memory in CSV file format. MakeCsv("LOG",10)

MakeLogCsv	Saves the data block to the assigned location in CSV file format.
Subroutine	MakeLogCsv(*"LogModelName", BlockNumber, Location*)
Description	Saves the assigned *LogModelName*'s data block to the assigned *location* in CSV file format. You can assign the value from 0 to 31 at *BlockNumber*. When you assign 0 at *Location*, it means the local. The value 1 means the SD/MMC and the value 2 means the USB.
Example	Saves the 10th data block in data logging model "LOG" to USB in CSV file format. MakeLogCsv("LOG",10,2)

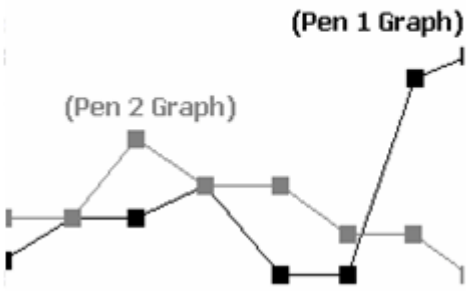
MakeLogCsvEx	Saves the data block in CSV file format and stores the header name at cell A1.
Subroutine	MakeLogCsvEx(*"Header", "LogModelName", BlockNumber, Location)*
Description	Saves the assigned ***LogModelName***'s data block in CSV file format and stores the header name at cell A1. You can assign the value from 0 to 31 at ***BlockNumber.*** When you assign 0 at ***Location***, it means the local. The value 1 means the SD/MMC and the value 2 means the USB.
Example	Saves the 10th data block in data logging model "LOG" to USB in CSV file format. Sets the header name "Header" at cell A1. MakeLogCsvEx("Header","LOG",10,2)

9.5 Advanced Features

You can utilize the logged data with trend object. You can use Scope trend to display the data logging model's data.

Xpanel

Pen 1	Pen 2
10	20
20	20
20	40
30	30
5	30
5	15
60	15
65	5



The tags registered in the model are automatically set as the pens (max. 8 pens). The trend object reads the block data when the screen is updated. The X-axis indicates the number of data stored in the block. The object is updated when the control tag's value changes.

Control Tag Value 2	Deletes the current graph.
Control Tag Value 3	Deletes the current graph and updates with the new data.

※ Please refer to 'Trend' manual for more information.

9.6 Exercise

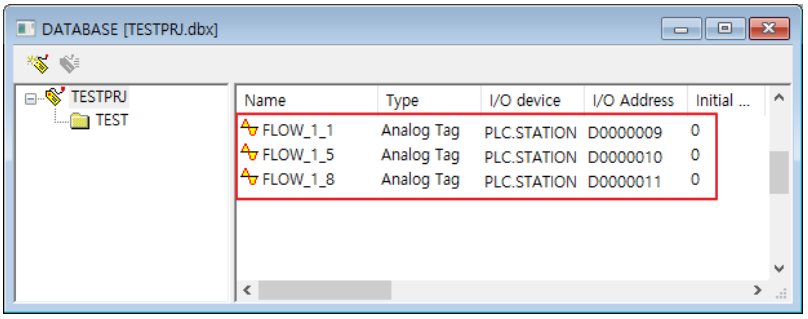
> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Monitoring the Change in Flow Through Data Logging Object

In this example, you will collect and monitor the flowmeter data at every second.

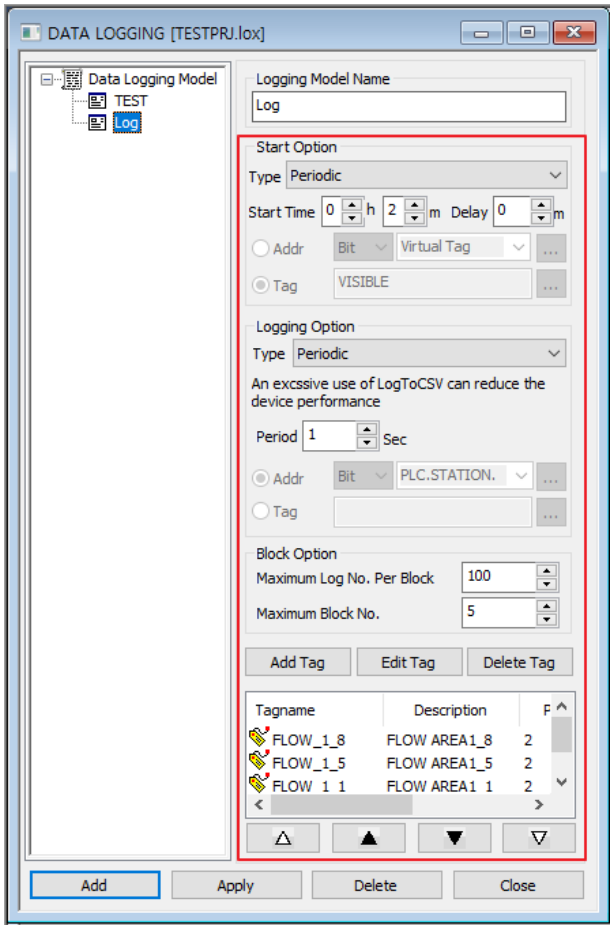
(1) Creating Tags

a) Select [Tools] - [Database] to bring up the database manager. Create the tags to collect the data.

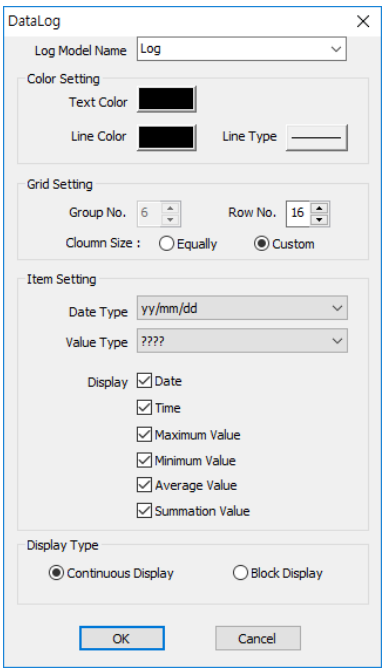


(2) Data Logging Model/Object Configuration

a) Select [Tools] - [Data Logging] to bring up the configuration window. Name the model as “Log” and configure the model as shown below.



b) Select [Draw] - [Data Logging] and click on the page to add the object. In the configuration window, select the model and configure the object as shown below. Press [OK] to finish the configuration.



Log	Date	Time	FLOW ARE	FLOW ARE	FLOW ARE
1	yyyy/mm/	hh:mm:ss	????	????	????
Max					
Min					
Average					
Sum					

(3) Checking the Operation

Run simulator or write the project to Xpanel to check the operation.

No, 1	Date	Time	FLOW AREA1_8	FLOW AREA1_5	FLOW AREA1_1
1	2018/10/17	16:52:15	3188	8583	321
2	2018/10/17	16:52:14	3188	93	2462
3	2018/10/17	16:52:13	3188	8583	41593
4	2018/10/17	16:52:12	3188	8583	321
5	2018/10/17	16:52:11	3188	5426	2462
6	2018/10/17	16:52:10	3188	93	41593
7	2018/10/17	16:52:09	3188	8583	321
8	2018/10/17	16:52:08	3188	5426	2462
9	2018/10/17	16:52:07	3188	8583	41593
10	2018/10/17	16:52:06	3188	8583	321
11	2018/10/17	16:52:05	3188	5426	2462
Max			3188	8583	41593
Min			3188	91	321
Average			3188	4807,0625	11321,8125
Sum			51008	76913	181149

10 Trend Utilization

Xpanel Designer provides a real-time Trend and a historical Trend. A real-time Trend monitors the tendency of the measured data in real-time. A historical Trend is for the analysis of the collected data, based on the time interval. Also, you can analyze the maximum 16 data in a single Trend object. The analyzed data can be saved as a CSV file. The Trend object includes six interfaces. The user can choose one of the types from the following suggestions; YT, Scope, SPC, XY, Log and ST Trend.

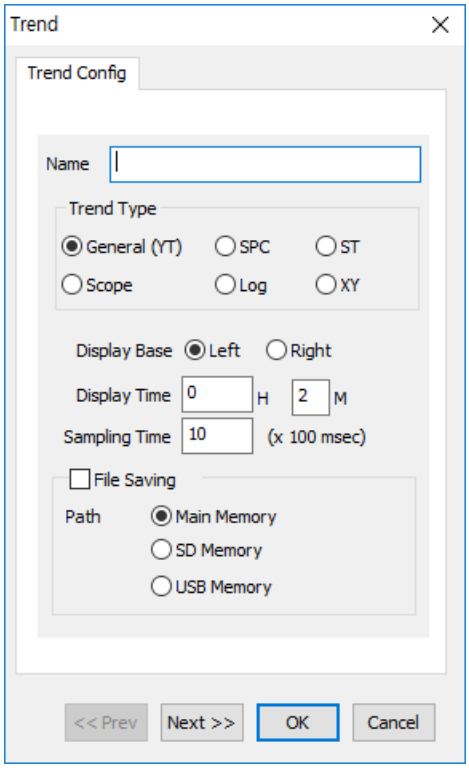
10.1 Features

- It is possible to register maximum 16 tags to a single Trend and analyze the data.
- You can expand or reduce the monitoring time interval.
- You can easily monitor the Trend with the toolbar which includes the functionalities such as searching in a specific time zone, moving in a frames, etc.
- You can select one of the Trend types (YT Trend, Scope Trend, SPC Trend, ST Trend, Log Trend, XY Trend) to monitor the data in the desired format.

- Using multiple Trend objects in a single graphic page can slow system performance.
- The Trend value between the moment of project's termination and the restart is not maintained.

10.2 Settings

Select [Draw] - [Trend Graph] or press icon to bring up the configuration window as shown below.

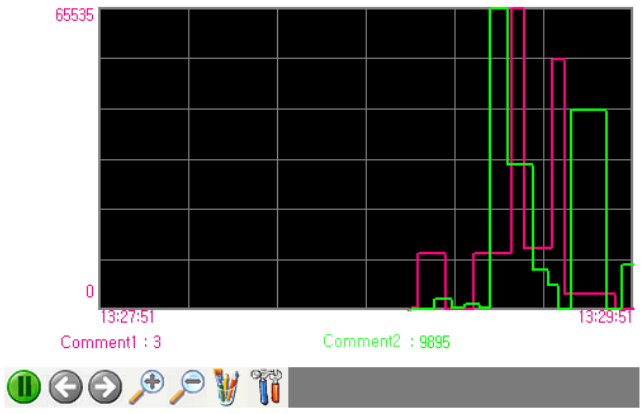


Item	Description	
Name	Assign a unique name of the Trend object. You can use the alphanumeric characters, the Korean alphabet, and the special characters. If the name is duplicated with the other trend graph, the project will not be downloaded to the Xpanel.	
Trend Type	Select a type of the trend.	
	General (YT)	A Trend which monitors the tag values based on the time interval.
	SPC	A Trend which assigns x-coordinates to the data stored in PLC to monitor them at once.
	ST	A Trend which displays the user-defined step trend and monitors the logged data according to the existing step trend.

	Scope	A Trend which displays the data which is logged by the data logging or PLC memory.
	Log	A Trend which displays the logged data in real-time. You can use multi-channel and log the data in an interval or a trigger.
	XY	A Trend which displays the logged data in real-time. The difference from the Log Trend is that you can assign the x-coordinate.
Display Base	Configures the direction of the Trend's data. If you select 'Left', the Trend will be drawn from the left to the right. If you select' Right', the Trend will be drawn from the right to the left.	
Display Time	Displays the time range of the Trend's x-axis. The display time may be changed according to the sampling time. (YT Trend) In this case, you cannot assign the display time less than or 5000 times greater than the sampling time.	
Sampling Time	Configures the interval of data display. The smaller sampling time will increase the accuracy of the Trend graph. You can assign the value in the range of 1 ~ display time.	
File Saving	Select this option to preserve the data displayed on the Trend graph. You can use the file to display the Trend graph which is drawn before the project restart. Regardless of the memory type, you can store the data: **YT Trend**: 5000 **Log Trend**: 30000 **XY Trend**: 10000 in maximum. If the number of data has exceeded the maximum, the system will delete the old data and save the new data. SPC Trend, ST Trend, Scope Trend do not support this feature.	
	Main Memory	Saves the file in the Xpanel device. The default path is ₩₩Xpanel₩.
	SD Memory	Saves the file in the root path of SD memory.
	USB Memory	Saves the file in the root path of USB memory.
Prev	Moves to the previous Trend configuration tab.	
Next	Moves to the next Trend configuration tab.	
OK	Adds the Trend graph to the page with the current configuration.	
Cancel	Cancels the configuration and closes the configuration window.	

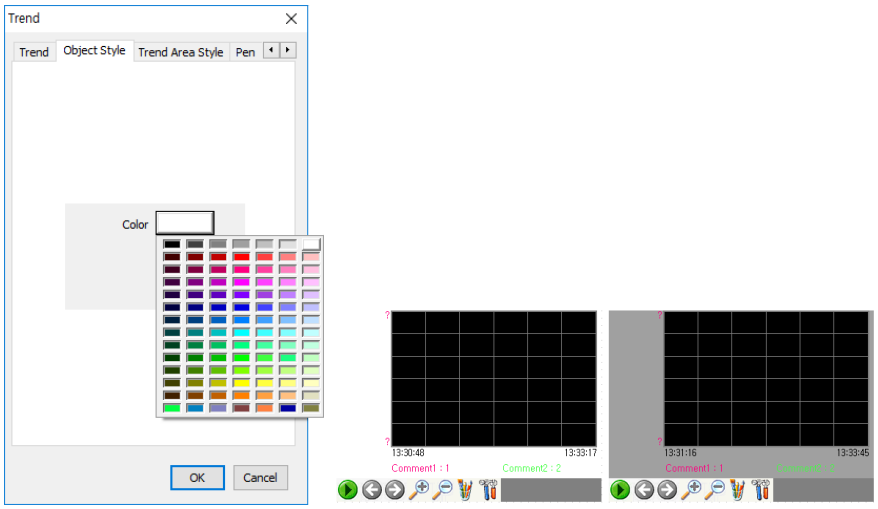
10.2.1 YT Trend

YT Trend is the most basic shaped trend object. You can monitor the tag value (Y-axis) based on the time interval (X-axis).



(1) Object Style

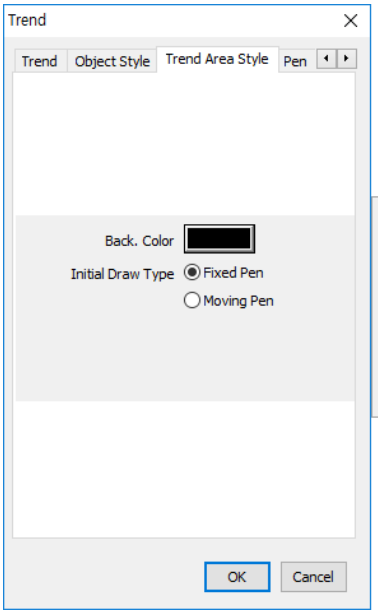
Configures the background color of the Trend object. The background indicates the object area except the data display.

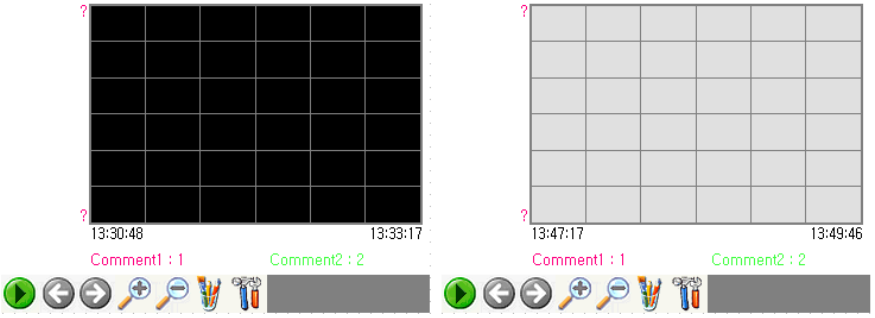


Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Trend Area Style

Configures the graph's background color and the initial draw type.

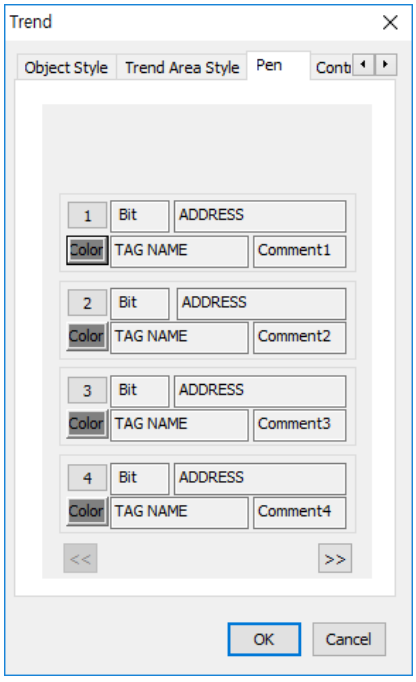


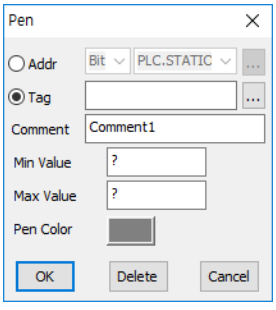


Item	Description
Back. Color	Selects the graph's background color. You can select one from the 98 colors.
Initial Draw Type	Selects the method of drawing a graph at the beginning. If you select the 'Fixed Pen' option, the new data will be updated on the side of the display base (right or left). If you select the 'Moving Pen' option, the new data will be updated at the end of the latest pen's location. Both options will draw the same graph.

(3) Pen

In this tab, you can assign the tags to monitor in the Trend object. You can assign maximum 8 tags.

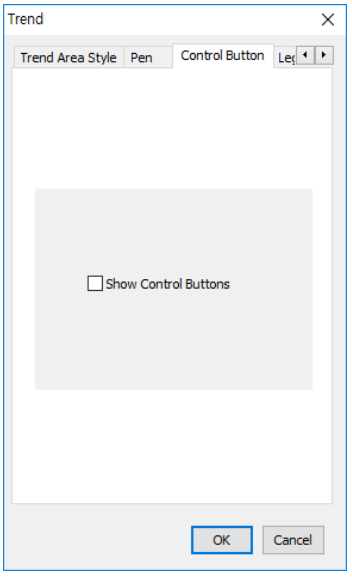


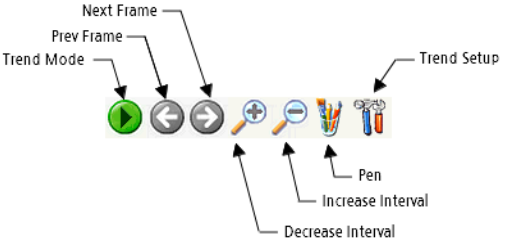
<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td rowspan="3">Tag Name</td><td colspan="2">Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window.
  </td></tr>
<tr><td>Addr</td><td>Assign the device address to be monitored. Select the data type and I/O device then press ... button to configure the detailed address.</td></tr>
<tr><td>Tag</td><td>Assign the tag to be monitored. You can manually enter the tag name or press ... button to select the tag.</td></tr>
</table>

	Comment	Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.
	Min Value	Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.
	Max Value	Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.
	Pen Color	You can set a pen color. You can choose one from the 98 colors.
Color	You can set a pen color. You can choose one from the 98 colors.	

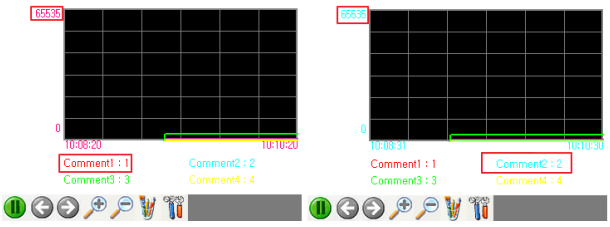
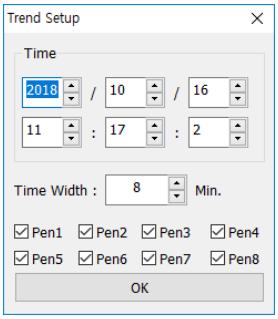
(4) Control Button

You can use the control button to switch the Trend mode between real-time and historical trend. You can also analyze the past data by changing the time zone.

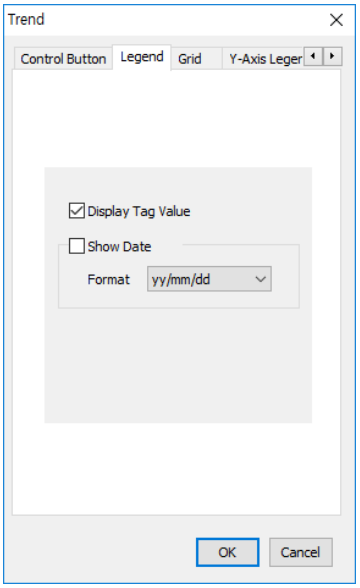




Item	Description
Trend Mode	Switches the Trend mode between real-time Trend and historical Trend.
Prev Frame	Displays the previous frame. E.g.) A trend with 2 minutes of 'Display time' and the present time is 12:00:00 - 12:02:00. If you press the 'Prev Frame' button, the Trend displays the data of 11:58:00 - 12:00:00.

Next Frame	Displays the next frame. E.g.) A trend with 2 minutes of 'Display time' and the present time is 12:00:00 - 12:02:00. If you press the 'Next Frame' button, the Trend displays the data of 12:02:00 - 12:04:00.
Decrease Interval	When you press the button, the monitoring interval is cut into the half. In other words, this button is to monitor the data in detail. E.g.) A trend with 2 minutes of 'Display time' and the present time is 12:00:00 - 12:02:00. If you press the 'Decrease Interval' button, the Trend Time becomes 12:01:00 - 12:02:00.
Increase Interval	When you press the button, the monitoring interval is doubled. In other words, this button is to monitor the data in a broader range. E.g.) A trend with 2 minutes of 'Display time' and the present time is 12:00:00 - 12:02:00. If you press the 'Increase Interval' button, the Trend Time becomes 11:58:00 - 12:02:00.
Pen	Changes the pen to display the different minimum/maximum value. When you press the button, the min/max. value will change according to the order of the assigned pens. 
Trend Setup	 You can configure the base time, time width and the pen display. The base time indicates the time to be displayed in the historical mode. The time width can be configured in minute units, from 1 to 65535. However, the actual time width cannot be less than or 5000 times greater than the sampling time.

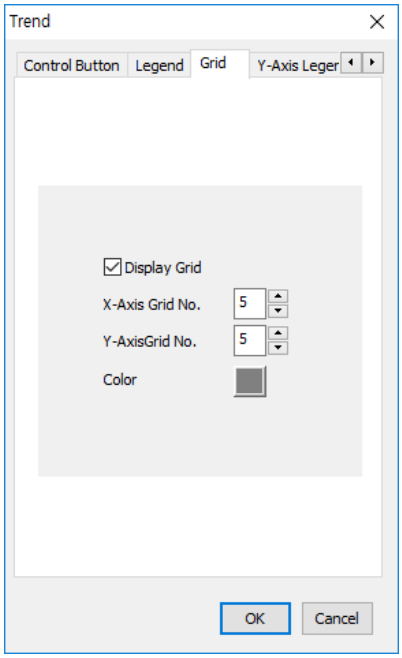
(5) Legend



Item	Description
Display Tag Value	Select this option to display the current tag value.
Show Date	Select this option to display the system's date on the middle-top of the object. You can select one from the four formats: yy/mm/dd, dd/mm/yy, mm/dd, dd/mm.

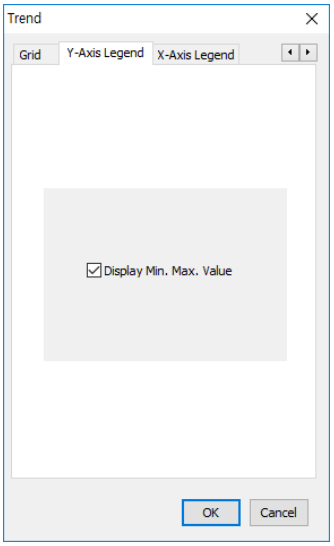
(6) Grid

You can use grids on the Trend area to analyze the data quickly and easily.



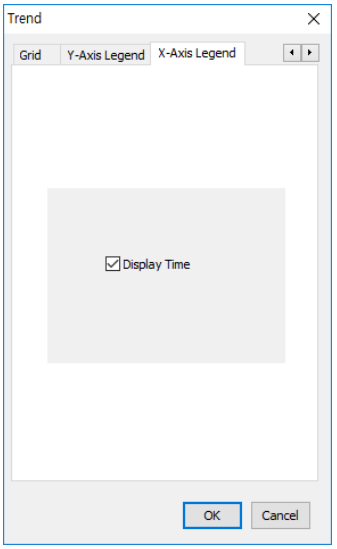
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(7) Y-Axis Legend



Item	Description
Display Min. Max. Value	Shows or hides the min/max value on the Y-Axis.

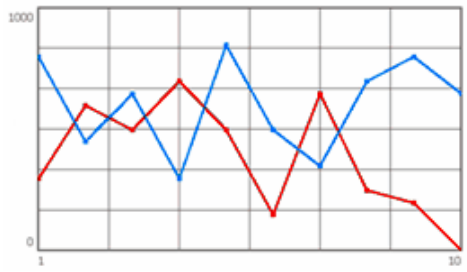
(8) X-Axis Legend



Item	Description
Display Time	Shows or hides the time on the X-Axis.

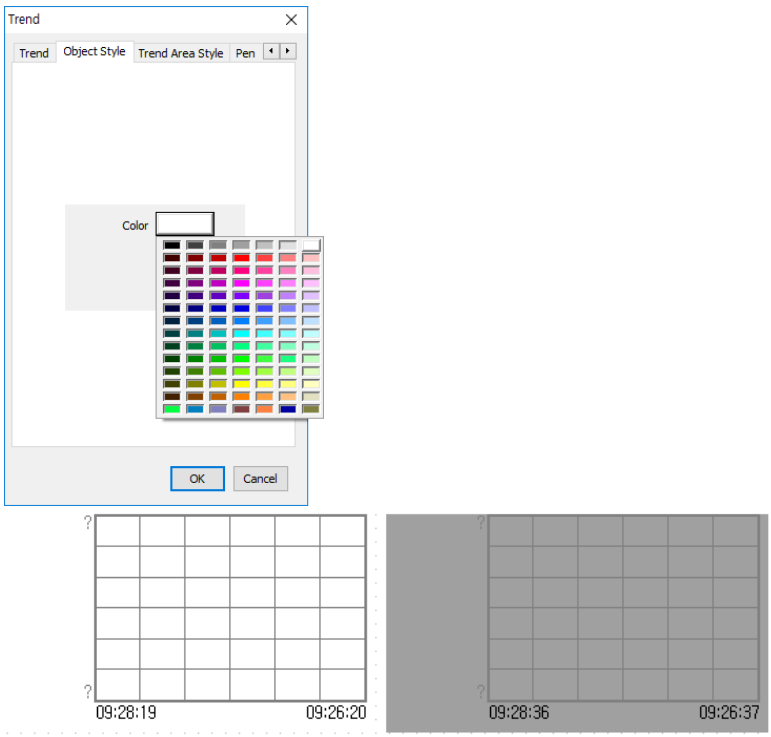
10.2.2 Scope Trend

Scope Trend displays the data stored in the device or by the data logging feature. The Scope Trend draws the graph with the existing data at once as shown below.



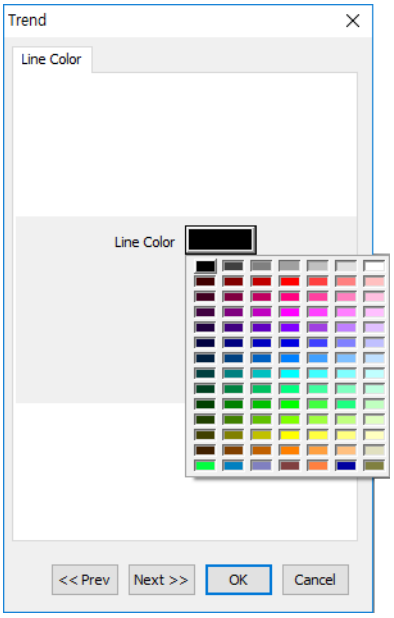
(1) Object Style

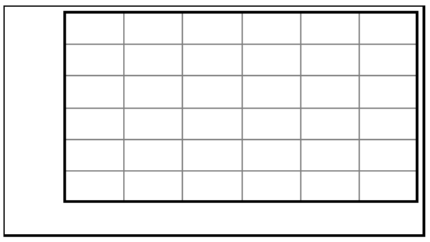
Configures the background color of the Trend object. The background indicates the object area except the data display.

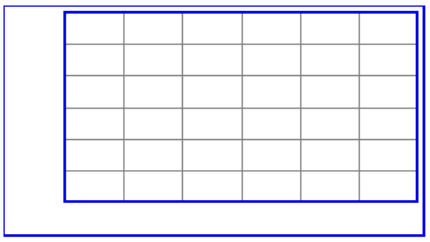


Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Line Color



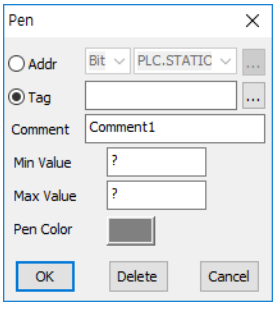




Item	Description
Line Color	Changes the line color of the object. You can select one from 98 colors.

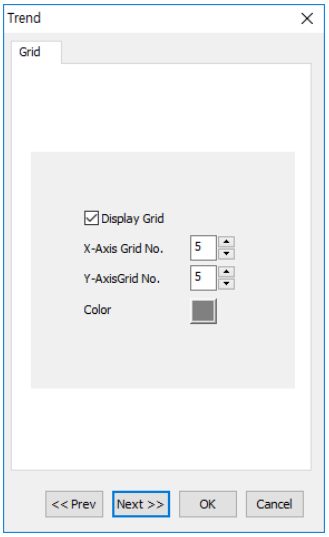
(3) Pen

In this tab, you can assign the tags to monitor in the Trend object . In case of the Scope Trend, you can configure up to 8 pens. Each pen can display up to 2048 data points.

Item	Description	
Using Data Logging	Draws the Scope Trend based on the Xpanel's Data Logging model. You can only display 8 pens regardless of the actual number of tags or addresses registered in the data logging model.	
Tag Name	Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window. 	
	Addr	Assign the device address to be monitored. Select the data type and I/O device then press ... button to configure the detailed address.

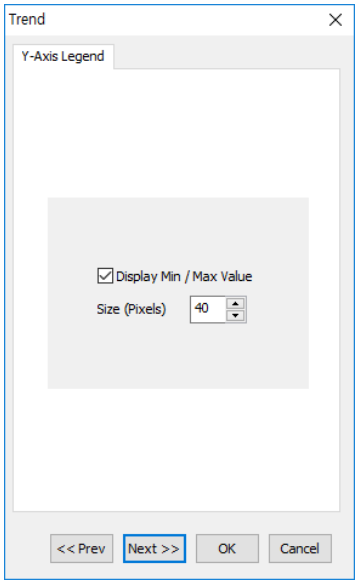
	Tag	Assign the tag to be monitored. You can manually enter the tag name or press … button to select the tag.
	Comment	Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.
	Min Value	Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.
	Max Value	Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.
	Pen Color	You can set a pen color. You can choose one from the 98 colors.
Color	You can set a pen color. You can choose one from the 98 colors.	

(4) Grid



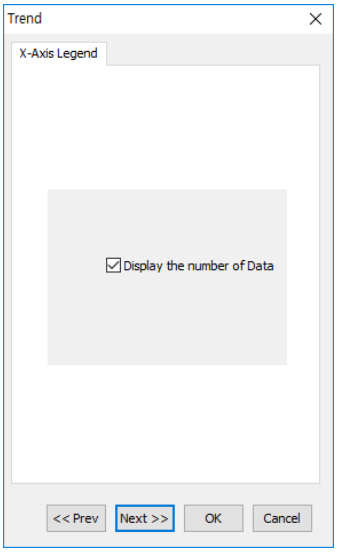
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(5) Y-Axis Legend



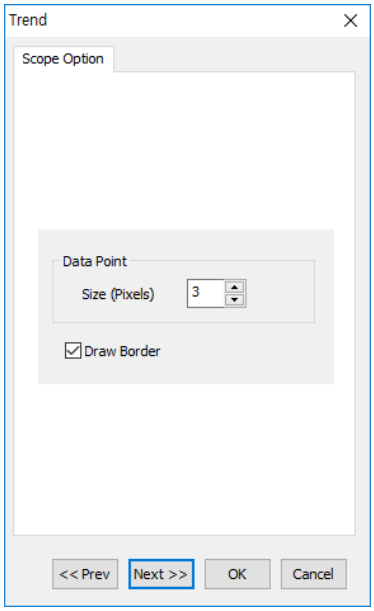
Item	Description
Display Min/Max Value	Shows or hides the min/max value of the pen on Y-Axis.
Size (Pixels)	Configures the size of the text displayed on the Y-Axis. You can assign the value from 0 to 1024.

(6) X-Axis Legend



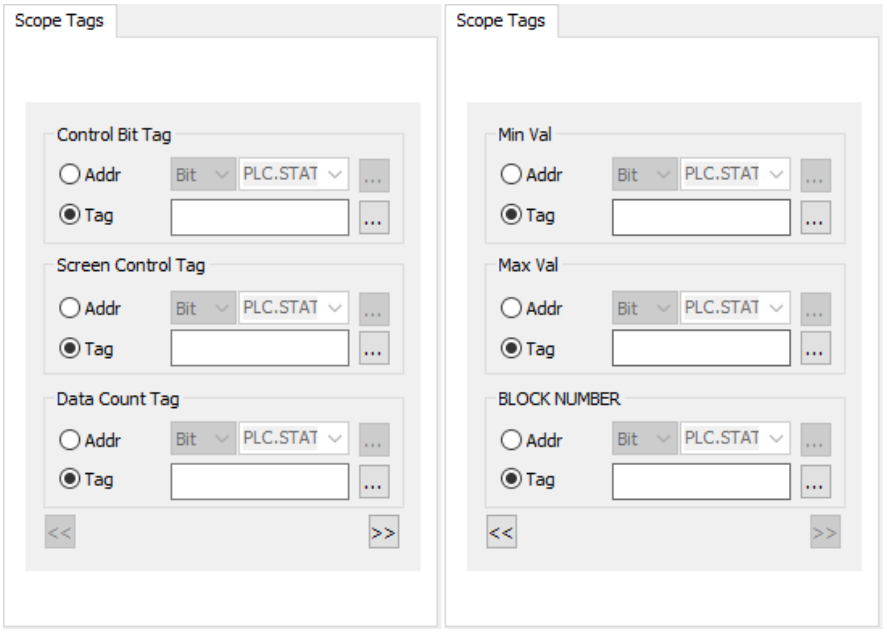
Item	Description
Display the number of Data	Shows or hides the number of data on the X-Axis. When you select the option, the data number from 1 to the maximum will be displayed.

(7) Scope Option



Item	Description
Data Point Size (Pixels)	Configures the size of the data point. You can assign the value from 0 to 1024.
Draw Border	Shows or hides the border of the Trend object.

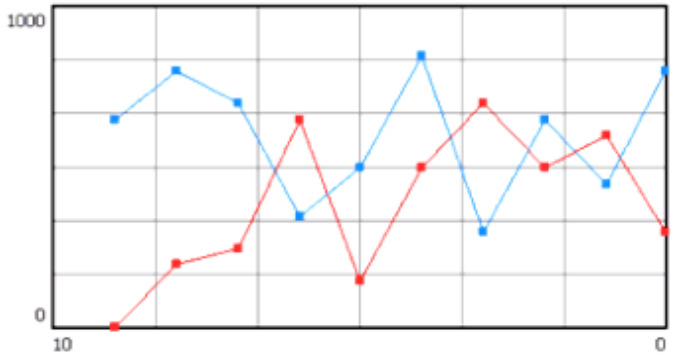
(8) Scope Tags



Item	Description
Control Bit Tag	The assigned digital tag will display the state of data reception when the graph is updated. In case of the ongoing data reception, the assigned tag will be set (1). When the process is completed, the tag will be cleared (0).
Screen Control Tag	Assign a tag to control the graph update of the Scope Trend. The object will be updated according to the value assigned to the 'Screen Control Tag'. 2: Clears the current graph. 3: Clears and redraws the current graph.
Data Count Tag	Assigns the number of each pen's data to be drawn on the graph. The maximum value of the assigned tag is 2048. If you are using the data logging option, this option is ignored.
Min Val	Assign a tag or an address to define the minimum value of the Y-Axis. If the minimum value is greater than the maximum value, the graph will not be updated.
Max Val	Assign a tag or an address to define the maximum value of the Y-Axis. If the maximum value is smaller than the minimum value, the graph will not be updated.
Block Number	Assigns the block number to be read when you are using the data logging model. This option is ignored if you are reading the data from PLC.

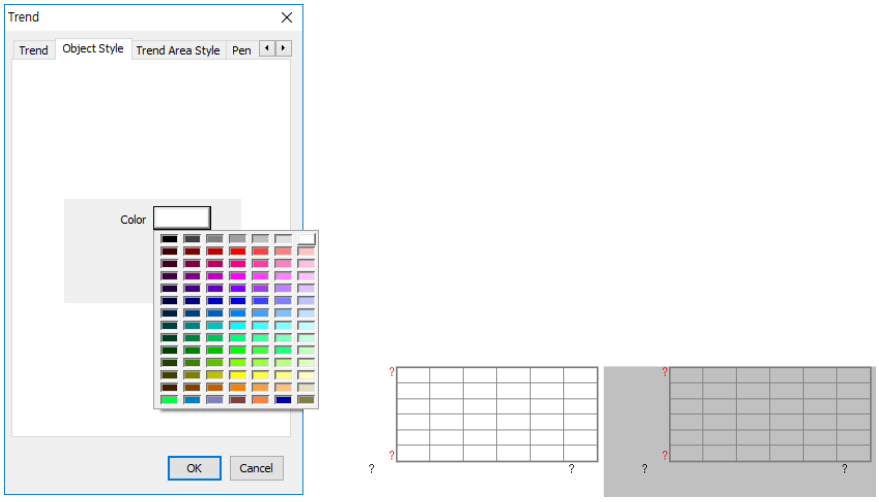
10.2.3 SPC Trend

SPC Trend is used to display the data stored in the PLC at once, in a graph. It is similar to the Scope Trend but the difference is that the SPC Trend can designate the data on the X-Axis. In other words, each point is assigned with X and Y coordinates. Thus the graph is not drawn according to the time flow.



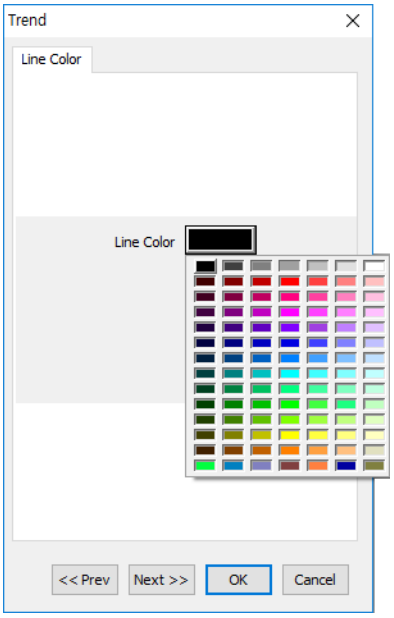
(1) Object Style

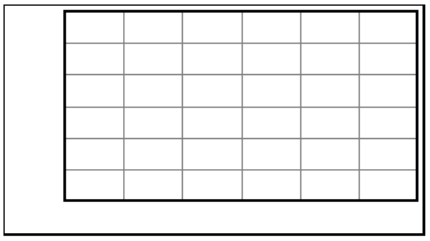
Configures the background color of the Trend object. The background indicates the object area except the data display.

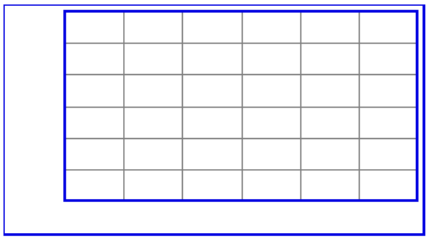


Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Line Color



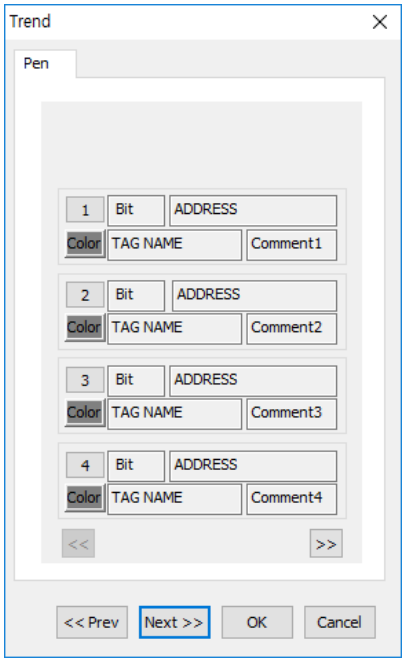


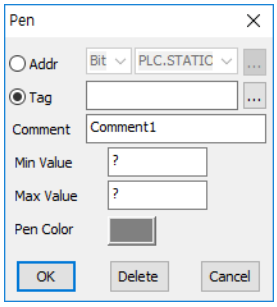


Item	Description
Line Color	Changes the line color of the object. You can select one from 98 colors.

(3) Pen

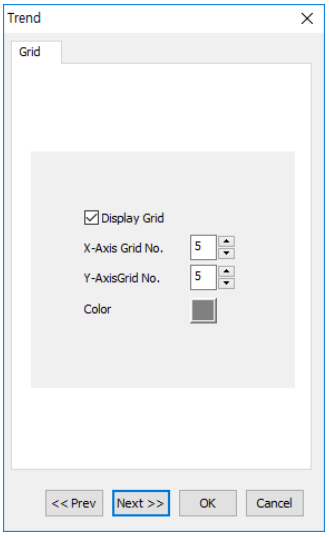
In this tab, you can assign the tags to monitor in the Trend object . In case of the SPC Trend, you can configure up to 8 pens. Each pen can display up to 2048 data points.



Item	Description	
Tag Name	Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window. 	
	Addr	Assign the device address to be monitored. Select the data type and I/O device then press ... button to configure the detailed address.
	Tag	Assign the tag to be monitored. You can manually enter the tag name or press ... button to select the tag.

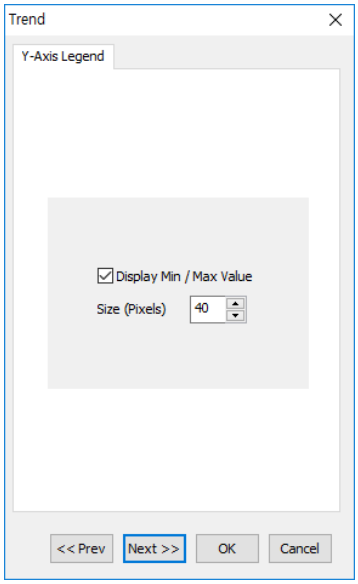
	Comment	Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.
	Min Value	Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.
	Max Value	Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.
	Pen Color	You can set a pen color. You can choose one from the 98 colors.
Color	You can set a pen color. You can choose one from the 98 colors.	

(4) Grid



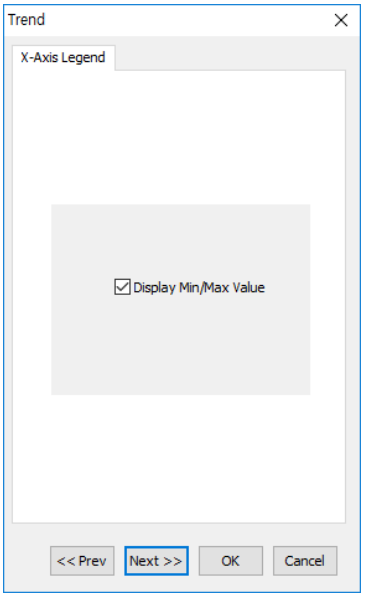
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(5) Y-Axis Legend



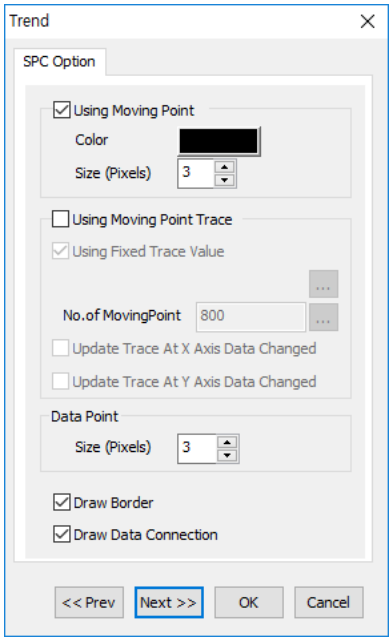
Item	Description
Display Min/Max Value	Shows or hides the min/max value of the pen on Y-Axis.
Size (Pixels)	Configures the size of the text displayed on the Y-Axis. You can assign the value from 0 to 1024.

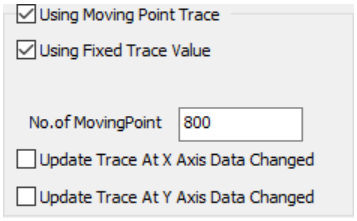
(6) X-Axis Legend

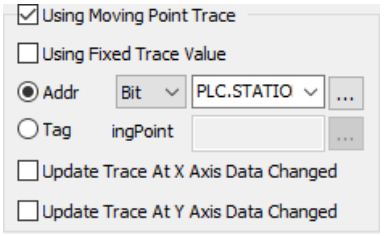


Item	Description
Display Min/Max Value	Shows or hides the min/max value on the X-Axis.

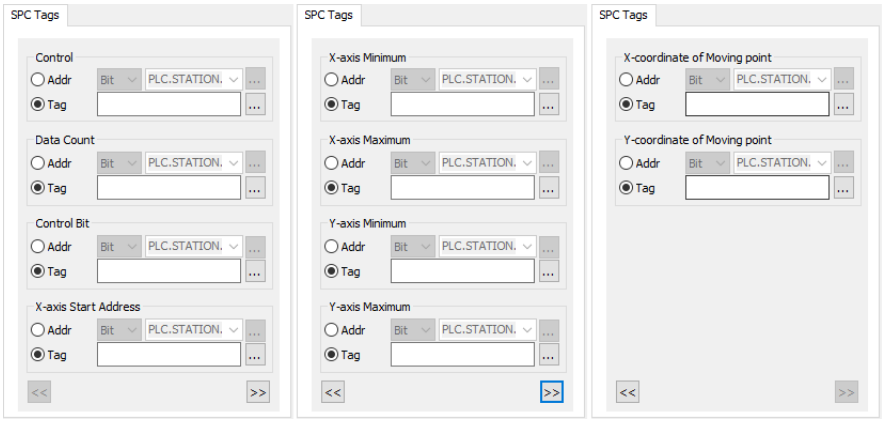
(7) SPC Option



Item	Description
Using Moving Point	Moving point represents the real-time point which is displayed on the graph according to the data of X and Y-Axis tag. You can check the difference between the graph and the measured data.
Color	You can set a moving point color. You can choose one from the 98 colors.
Size (Pixels)	Configures the size of the moving point. You can assign the value from 0 to 1024.
Using Moving Point Trace	You can trace the moving point with this option. When the tracing amount reaches the value that you have assigned to the 'Trace Size', the trace graph will not be updated. To update the new traces, use control tags to stop and restart the trace operation.
Using Fixed Trace Value	When you check the option, the path of the moving point will be displayed as much as the assigned value. You can assign the value from 1 to 800. 

	If you deselect the option, you have to use a tag or an address to assign the value. You can assign the detailed address or browse the tag by pressing the ... button. 
Update Trace At X/Y Axis Data Changed.	When you select the option, the moving point's path will increase every time the corresponding axis data changes.
Data Point Size (Pixels)	Configures the size of the data point. You can assign the value from 0 to 1024.
Draw Border	Shows or hides the border of the graph.
Draw Data Connection	Select this option to connect the data points with a line.

(8) SPC Tag



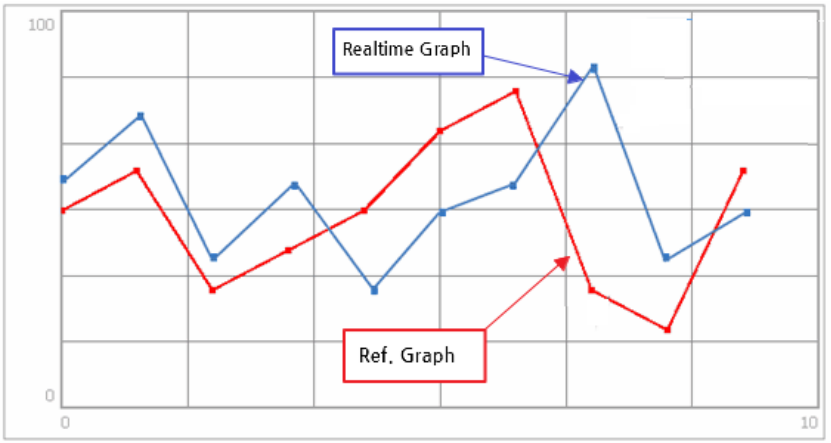
Item	Description
Control	Assign a tag to control the graph update of the SPC Trend. The object will be updated according to the value assigned to the 'Control'. 1: Overwrites a new graph on the existing graph. 2: Clears the current graph. 3: Clears and redraws the graph. 4: Starts 'Moving Point Trace' (Only when the option is selected)

	5: Pauses 'Moving Point Trace' (Only when the option is selected) 6: Stops 'Moving Point Trace' (Only when the option is selected)
Data Count	Assigns the number of each pen's data to be drawn on the graph. The maximum value of the assigned tag is 2048. This option is referred only when the control tag's value is 1 or 3. If you are using the PLC address, secure the word devices as much as the data count.
Control Bit	The assigned digital tag will display the state of data reception when the graph is updated. In case of the ongoing data reception, the assigned tag will be set (1). When the process is completed, the tag will be cleared (0).
X-Axis Start Address	Assign a tag or an address to set the X-Axis coordinate. The number of allocated coordinates refers the value of 'Data Count'. If you are using the PLC address, secure the bit or word devices as much as the data count
X-Axis Minimum	Assign a tag or an address to define the minimum value of the X-Axis. If the minimum value is greater than the maximum value, the graph will not be updated. This option is referred only when the control tag's value is 1 or 3.
X-Axis Maximum	Assign a tag or an address to define the maximum value of the X-Axis. If the maximum value is smaller than the minimum value, the graph will not be updated. This option is referred only when the control tag's value is 1 or 3.
Y-Axis Minimum	Assign a tag or an address to define the minimum value of the Y-Axis. If the minimum value is greater than the maximum value, the graph will not be updated. This option is referred only when the control tag's value is 1 or 3.
Y-Axis Maximum	Assign a tag or an address to define the maximum value of the Y-Axis. If the maximum value is smaller than the minimum value, the graph will not be updated. This option is referred only when the control tag's value is 1 or 3.
X-Coordinate of Moving Point	Assign a tag which corresponds to the moving point's X-coordinate. The moving point's X-Axis value is calculated according to the current graph's X-Axis Min/Max value and the corresponding tag value.
Y-Coordinate of Moving Point	Assign a tag which corresponds to the moving point's Y-coordinate. The moving point's Y-Axis value is calculated according to the current graph's Y-Axis Min/Max value and the corresponding tag value.

⚠ When the control tag's value becomes 1 or 3 and the update starts, the system concentrates on the data reading. This may cause the delay to the other operations (opening a page, writing tag value, etc.). It is recommended to operate the project after the graph update.

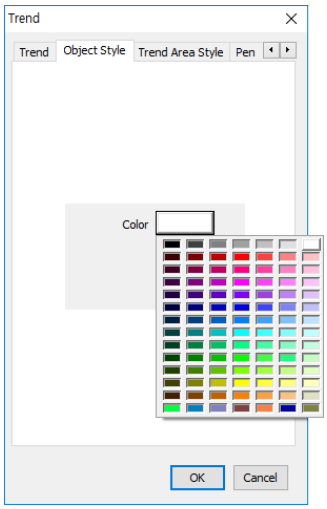
10.2.4 ST Trend

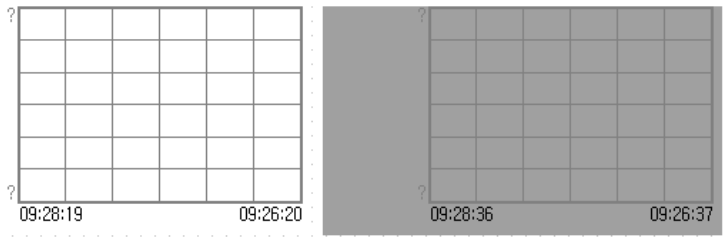
ST Trend is used to compare the reference graph and the real-time graph.



(1) Object Style

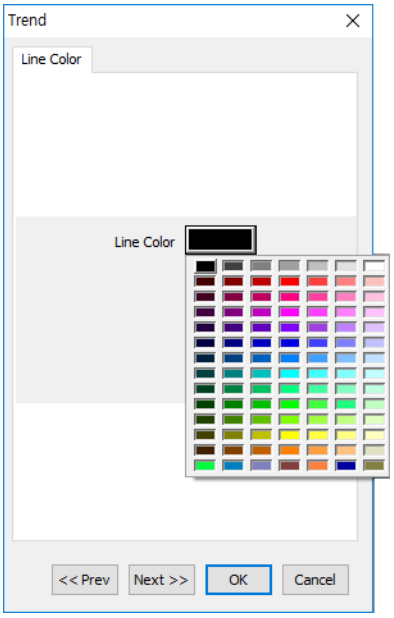
Configures the background color of the Trend object. The background indicates the object area except the data display.

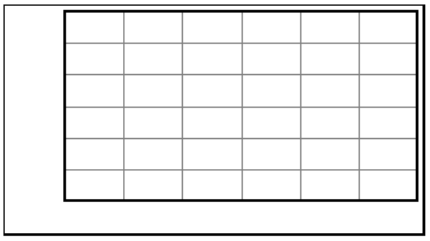


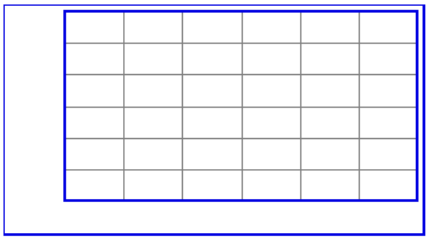


Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Line Color



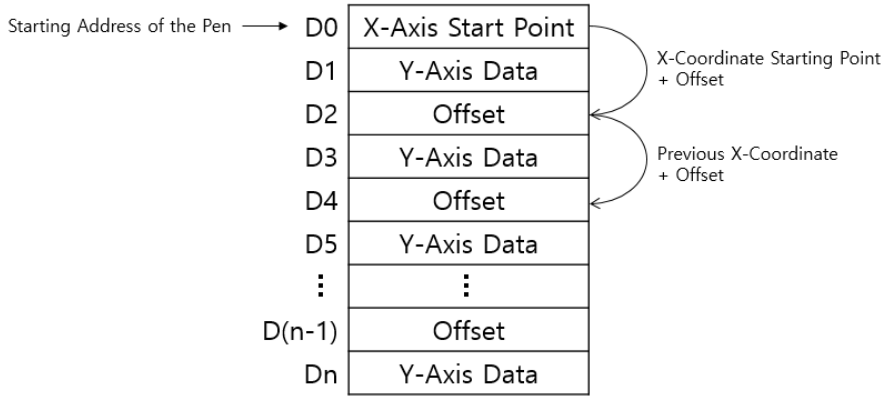




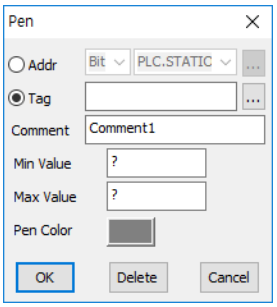
Item	Description
Line Color	Changes the line color of the object. You can select one from 98 colors.

(3) Pen

Assign the tags to draw the reference graph. You must assign the real tags. A series of addresses according to the data count will be allocated starting from the assigned pen's address. Since the reference graph needs X and Y coordinates, a single point requires two word addresses. Therefore the address will be assigned as shown below.

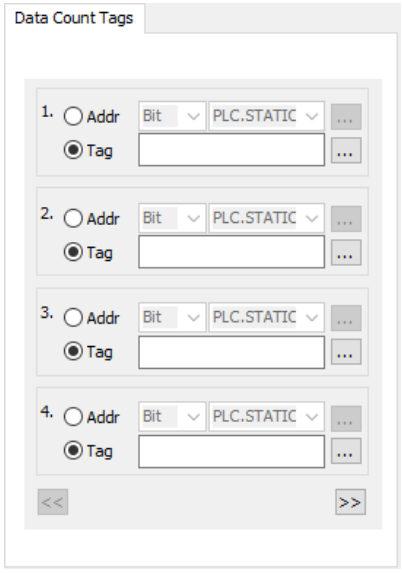


In this tab, you can assign the tags to monitor in the Trend object . In case of the ST Trend, you can configure up to 8 pens. Each pen can display up to 2048 data points.

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td rowspan="6">Tag Name</td><td colspan="2">Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window.
 
</td></tr>
<tr><td>Addr</td><td>Assign the device address to be monitored. Select the data type and I/O device then press … button to configure the detailed address.</td></tr>
<tr><td>Tag</td><td>Assign the tag to be monitored. You can manually enter the tag name or press … button to select the tag.</td></tr>
<tr><td>Comment</td><td>Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.</td></tr>
<tr><td>Min Value</td><td>Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.</td></tr>
<tr><td>Max Value</td><td>Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.</td></tr>
<tr><td>Pen Color</td><td>You can set a pen color. You can choose one from the 98 colors.</td></tr>
<tr><td>Color</td><td colspan="2">You can set a pen color. You can choose one from the 98 colors.</td></tr>
</table>

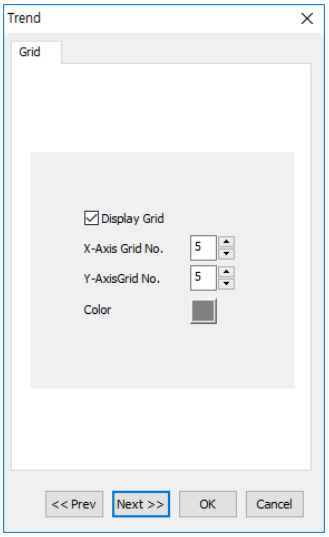
(4) Data Count Tags

The data count tags are used to decide the number of consecutive addresses starting from the assigned pen. In other words, the number of data count tags must be equal to the number of the pens. The data count tags' values must be in even number. If an odd number is assigned, 1 will be subtracted from the value and applied to the graph.



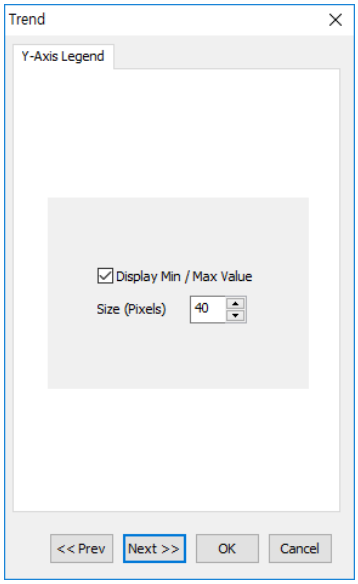
Item	Description
Addr	Assign the device address to be referred. Select the data type and I/O device then press ... button to configure the detailed address.
Tag	Assign the tag to be referred. You can manually enter the tag name or press ... button to select the tag.

(5) Grid



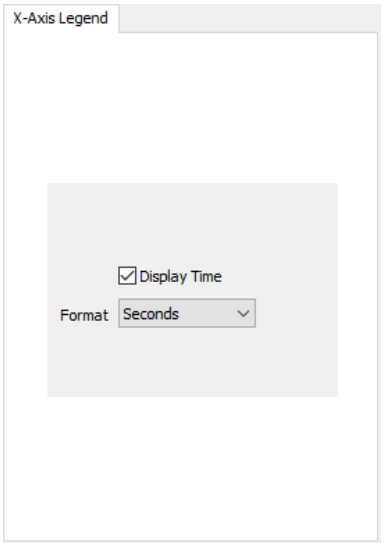
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(6) Y-Axis Legend



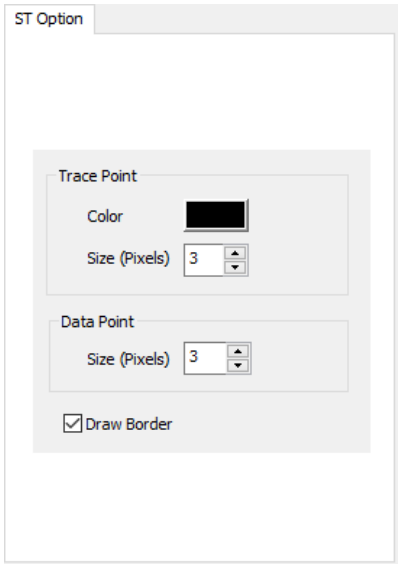
Item	Description
Display Min/Max Value	Shows or hides the min/max value of the pen on Y-Axis.
Size (Pixels)	Configures the size of the text displayed on the Y-Axis. You can assign the value from 0 to 1024.

(7) X-Axis Legend



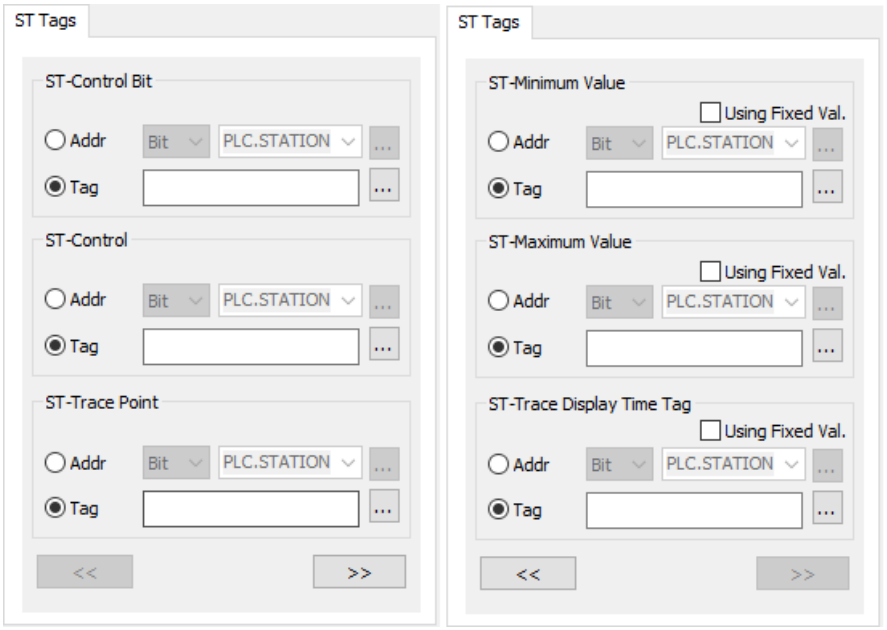
Item	Description
Display Time	Shows or hides the time on the X-Axis.
Format	Select the time display format. You can select one from the following options; seconds, HH:MM:SS, HH:MM, HH

(8) ST Option



Item	Description
Trace Point Color	You can set a trace point color. You can choose one from the 98 colors.
Size (Pixels)	Configures the size of the trace point. You can assign the value from 0 to 1024.
Data Point Size (Pixels)	Configures the size of the data point. You can assign the value from 0 to 1024.
Draw Border	Shows or hides the border of the graph.

(9) ST Tag



Item	Description
ST-Control Bit	The assigned digital tag will display the state of data reception when the graph is updated. In case of the ongoing data reception, the assigned tag will be set (1). When the process is completed, the tag will be cleared (0).
ST-Control	Assign a tag to control the graph update of the ST Trend. The object will be updated according to the value assigned to the 'ST-Control'. 1: Overwrites a new graph on the existing graph. 2: Clears the current graph. 3: Clears and redraws the graph. 4: Starts 'Trace' operation (Does not operate if there is no reference graph.) 5: Pauses 'Trace' operation (Maintains the accumulated data) 6: Stops 'Trace' operation (Does not maintain the accumulated data)
ST-Trace Point	Assign a tag or an address to draw the Trace graph. When the tracing operation starts, up to 2048 tag values will be stored in the buffer and displayed on the graph.
ST-Minimum Value	Assign a tag or an address to define the minimum value of the graph. If the minimum value is greater than the maximum value, the graph will not be updated. This option is referred only when the graph is updated.

ST-Maximum Value	Assign a tag or an address to define the maximum value of the graph. If the maximum value is smaller than the minimum value, the graph will not be updated. This option is referred only when the graph is updated.
ST-Trace Display Time Tag	Assign a tag to use as the X-Axis time display. The value will be applied when the reference graph is updated. Only the real part of the value is used. You can also select the 'Using fixed value' option to manually enter the value. If the value is smaller than 0, the graph will not be drawn.

When the control tag's value becomes 1 or 3 and the update starts, the system concentrates on the data reading. This may cause the delay to the other operations (opening a page, writing tag value, etc.). It is recommended to operate the project after the graph update.

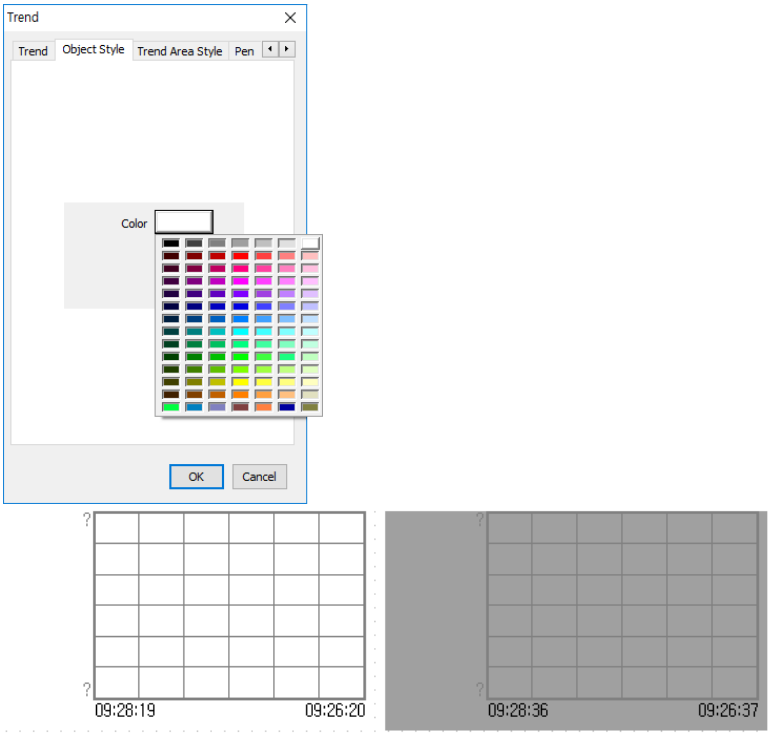
10.2.5 Log Trend

Log Trend logs data and displays it as a graph. You can display the pen individually. It is also possible to save the data in a CSV file.

Historical mode is not supported.

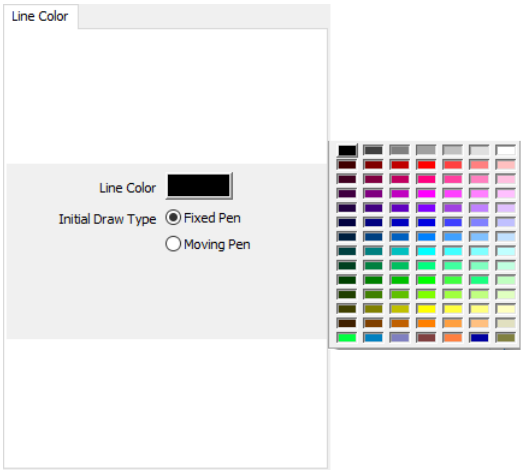
(1) Object Style

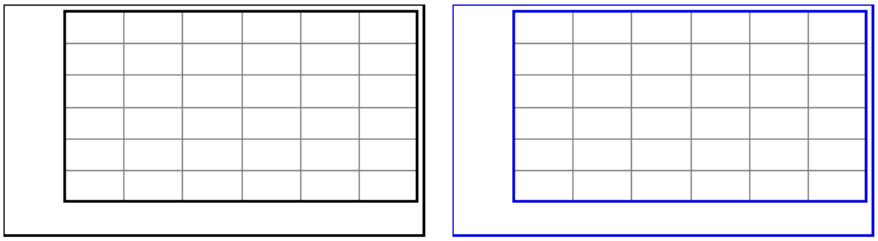
Configures the background color of the Trend object. The background indicates the object area except the data display.



Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Line Color

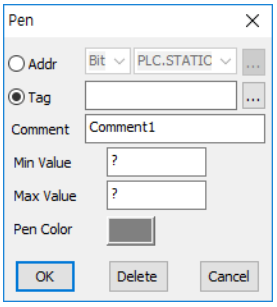




Item	Description
Line Color	Changes the line color of the object. You can select one from 98 colors.
Initial Draw Type	Selects the method of drawing a graph at the beginning. If you select the 'Fixed Pen' option, the new data will be updated on the side of the display base (right or left). If you select the 'Moving Pen' option, the new data will be updated at the end of the latest pen's location. Both options will draw the same graph.

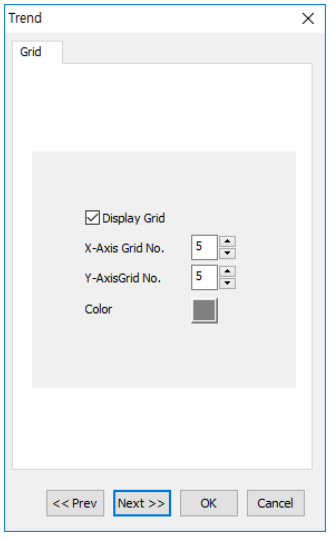
(3) Pen

In this tab, you can assign the tags to monitor in the Trend object. You can assign maximum 16 tags.

Item	Description	
Tag Name	Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window. 	
	Addr	Assign the device address to be monitored. Select the data type and I/O device then press ... button to configure the detailed address.
	Tag	Assign the tag to be monitored. You can manually enter the tag name or press ... button to select the tag.

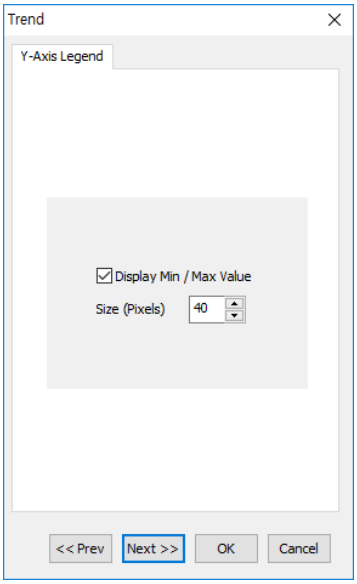
	Comment	Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.
	Min Value	Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.
	Max Value	Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.
	Pen Color	You can set a pen color. You can choose one from the 98 colors.
Color	You can set a pen color. You can choose one from the 98 colors.	

(4) Grid



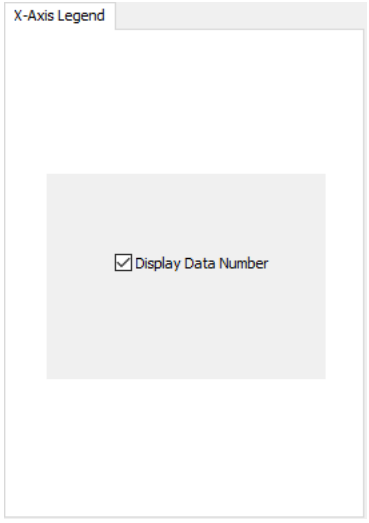
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(5) Y-Axis Legend



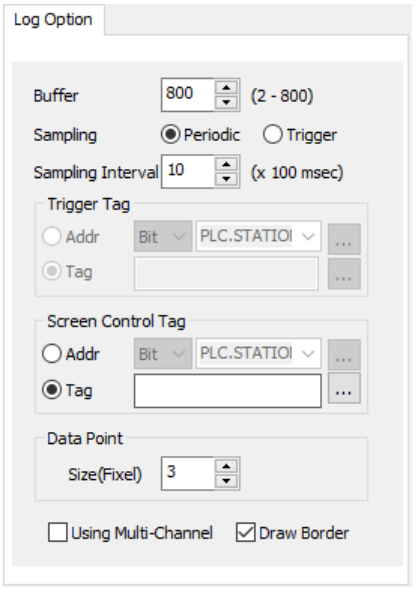
Item	Description
Display Min/Max Value	Shows or hides the min/max value of the pen on Y-Axis.
Size (Pixels)	Configures the size of the text displayed on the Y-Axis. You can assign the value from 0 to 1024.

(6) X-Axis Legend

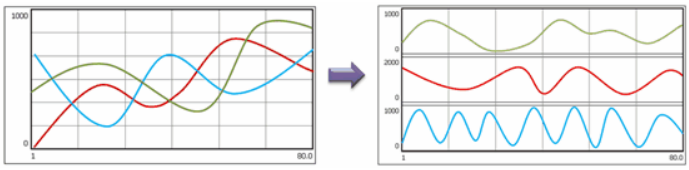


Item	Description
Display Data Number	Shows or hides the number of data on the X-Axis. Data number 1 and the maximum data number will be displayed on each side of the X-Axis.

(7) Log Option



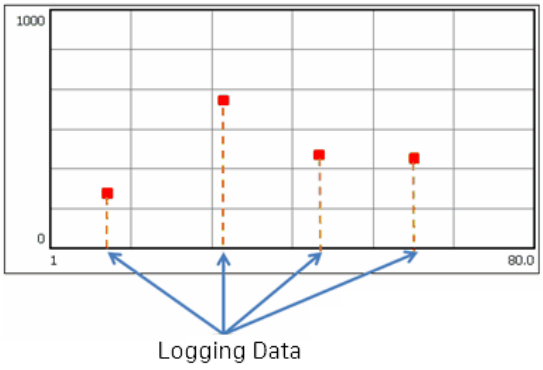
Item	Description
Buffer	Assign the number of data to be displayed on the object. Each pen's data will be displayed according to the value assigned in this field. You can assign the value from 2 to 800.
Sampling	Decides the sampling method. If you select the period, the data will be updated according to the assigned sampling interval. If you select the trigger, the data will be updated when the assigned tag value changed from 0 to not-0 value.
Sampling Interval	This field will be enabled when you select the 'Period' option. The interval unit is 100mSec and you can assign the value from 1m to 65535.
Trigger Tag	This field will be enabled when you select the 'Trigger' option. You can assign a tag or an address which will be the standard of trigger operation. Press ... button to configure the detailed address or browse the tag.
Screen Control Tag	Assign a tag to control the Log Trend. 0: Allows data logging and starts drawing the graph. 1: Stops data logging and the graph drawing. 2: Initializes the data logging and the graph drawing. The data logging and the graph drawing will be stopped after the initialization.
Data Point	Configures the size of the data point. You can assign the value from 0 to 1024.

Using Multi-Channel	Select this option to individualize the graph pen by pen. The topmost graph displays the data of pen 1. 
Draw Border	Shows or hides the border of the graph.

10.2.6 XY Trend

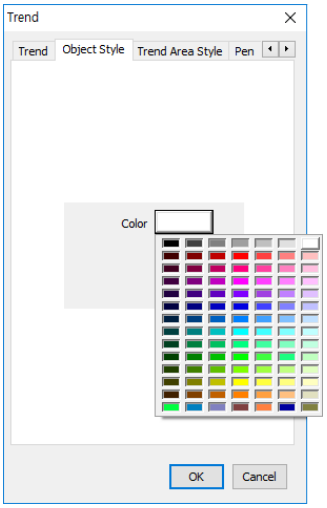
XY Trend logs data and displays it as a graph. Unlike the Log Trend, you can manually assign the data points' X-coordinate. Also, XY Trend supports historical mode.

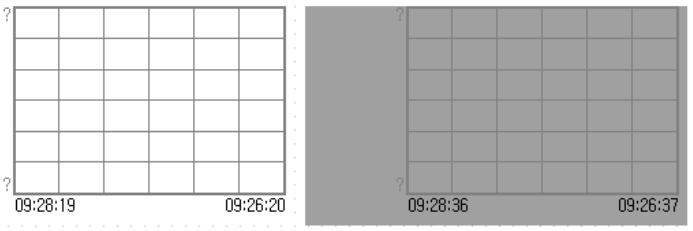
You cannot use the multi-channel option and save the data as CSV file.



(1) Object Style

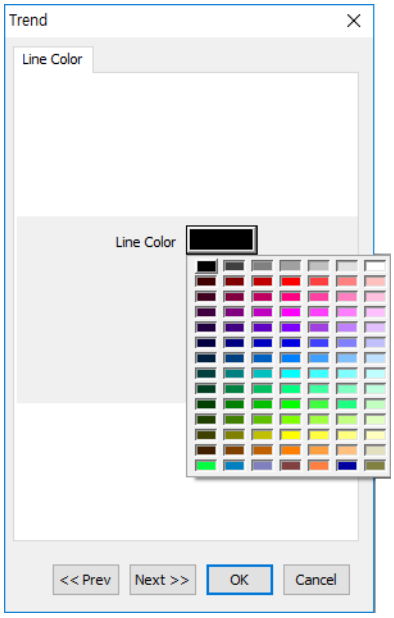
Configures the background color of the Trend object. The background indicates the object area except the data display.

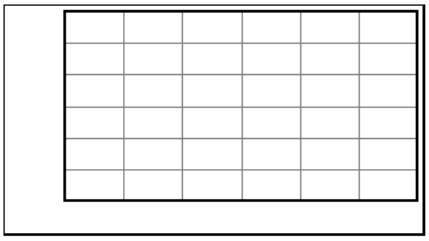


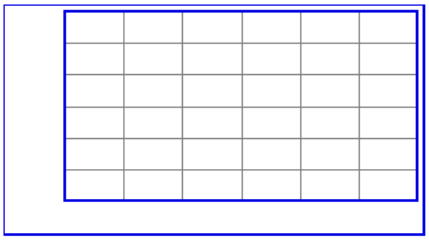


Item	Description
Color	Selects the object's background color. You can select one from the 98 colors.

(2) Line Color



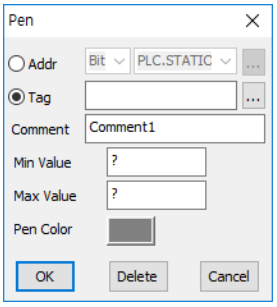




Item	Description
Line Color	Changes the line color of the object. You can select one from 98 colors.

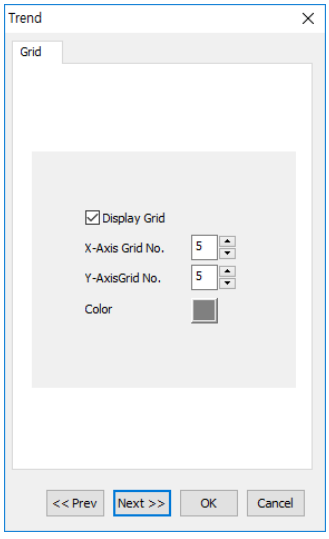
(3) Pen

In this tab, you can assign the tags to monitor in the Trend object . In case of the XY Trend, you can configure up to 16 pens. Each pen can display up to 2048 data points.

Item	Description	
Tag Name	Assign a tag name to monitor. You can manually enter the tag name in the field or select the number button on the left to bring up the [Pen] window. 	
	Addr	Assign the device address to be monitored. Select the data type and I/O device then press ... button to configure the detailed address.
	Tag	Assign the tag to be monitored. You can manually enter the tag name or press ... button to select the tag.

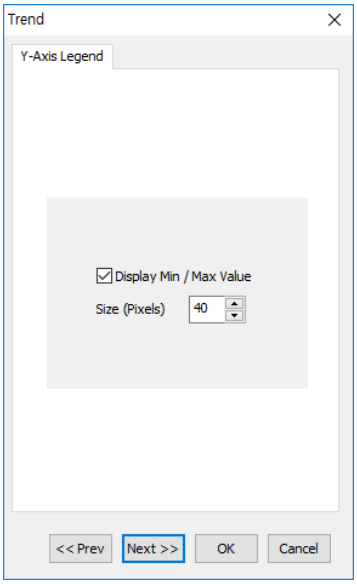
	Comment	Enter the detailed comment of the pen. This field must be filled in. The comment will be used instead of the tag name in the graph.
	Min Value	Enter the minimum value which will be displayed on the graph. If you do not enter a value, this field will be set as the minimum value of the tag.
	Max Value	Enter the maximum value which will be displayed on the graph. If you do not enter a value, this field will be set as the maximum value of the tag.
	Pen Color	You can set a pen color. You can choose one from the 98 colors.
Color	You can set a pen color. You can choose one from the 98 colors.	

(4) Grid



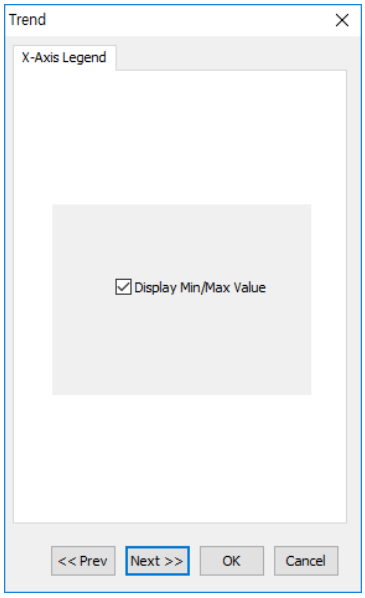
Item	Description
Display Grid	Shows or hides the grid.
X-Axis Grid No.	Assign the number of grids on X-axis. You can assign from 0 to 99 grids.
Y-Axis Grid No.	Assign the number of grids on Y-axis. You can assign from 0 to 99 grids.
Color	You can set a grid color. You can choose one from the 98 colors.

(5) Y-Axis Legend



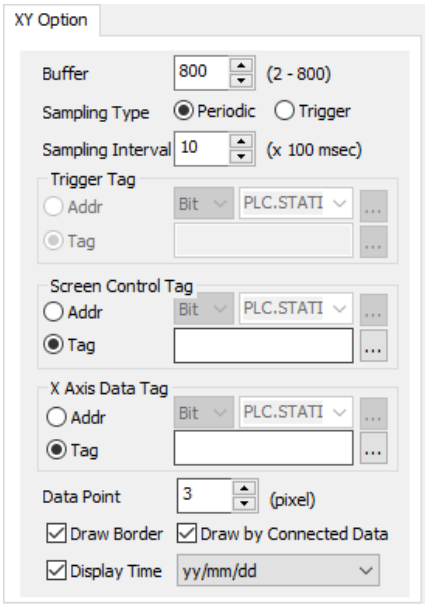
Item	Description
Display Min/Max Value	Shows or hides the min/max value of the pen on Y-Axis.
Size (Pixels)	Configures the size of the text displayed on the Y-Axis. You can assign the value from 0 to 1024.

(6) X-Axis Legend



Item	Description
Display Min/Max Value	Shows or hides the min/max value on the X-Axis.

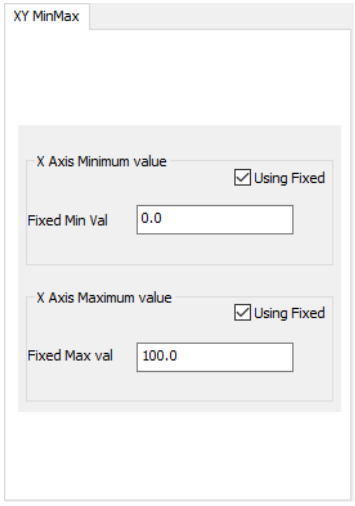
(7) XY Option



Item	Description
Buffer	Assign the number of data to be displayed on the object. Each pen's data will be displayed according to the value assigned in this field. You can assign the value from 2 to 800.
Sampling	Decides the sampling method. If you select the period, the data will be updated according to the assigned sampling interval. If you select the trigger, the data will be updated when the assigned tag value changed from 0 to not-0 value.
Sampling Interval	This field will be enabled when you select the 'Period' option. The interval unit is 100mSec and you can assign the value from 1m to 65535.
Trigger Tag	This field will be enabled when you select the 'Trigger' option. You can assign a tag or an address which will be the standard of trigger operation. Press ... button to configure the detailed address or browse the tag.
Screen Control Tag	Assign a tag to control the Log Trend. 0: Allows data logging and starts drawing the graph. 1: Stops data logging and the graph drawing. 2: Initializes the data logging and the graph drawing. The data logging and the graph drawing will be stopped after the initialization.
X Axis Data Tag	Assign a tag or an address to log the X-coordinate of the current point.
Data Point	Configures the size of the data point. You can assign the value from 0 to 1024.

Draw by Connected Data	Select this option to connect the data points with a line.
Display Time	Displays the time on the top-middle of the objet. You can select a format from the following options; yy/mm/dd, hh:mm:ss, yy/mm/dd hh:mm:ss
Draw Border	Shows or hides the border of the graph

(8) XY MinMax



Item	Description
X Axis Minimum value	You can assign the fixed minimum value. You can also assign a tag or an address to define the minimum value of the X-Axis. If the minimum value is greater than the maximum value, the graph will not be updated.
X Axis Maximum value	You can assign the fixed minimum value. You can also assign a tag or an address to define the maximum value of the X-Axis. If the maximum value is smaller than the minimum value, the graph will not be updated.

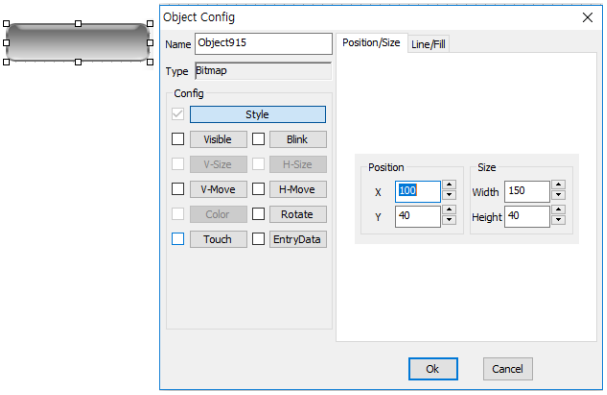
10.3 Related Features

10.3.1 Trend Control Buttons

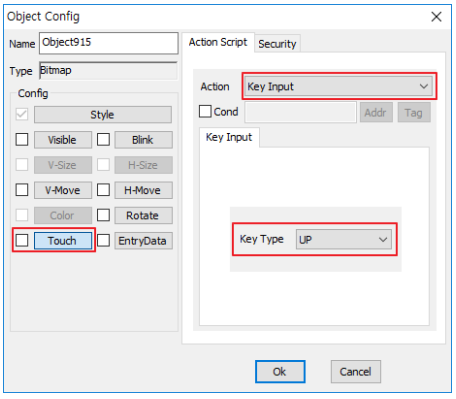
You can manually create the buttons to control the trend objects. Only YT, ST, Scope, XY Trends support the control buttons.

Control Button Configuration

a) Add an object to the page and double-click it to bring up the configuration window as shown below.



b) Select 'Touch' feature and set the action as 'Key Input'. Then set the key type which is supported by the trend object.



c) Press [OK] button to finish the configuration. You can control the trend object with this button.

Following is the supported key types of each trend.

(1) YT Trend

Key Type	Description
Tab	Switches the trend mode.
Right	Moves to the previous frame.
Left	Moves to the next frame.
Up	Zooms in on the time interval.
Down	Zooms out from the time interval.
Space	Changes the pen which displays the min/max value.
Home	Opens the Trend Setup window.

※ These buttons will function exactly same as the default control buttons.

(2) ST Trend

Key Type	Description
Right	Moves to the previous frame.
Left	Moves to the next frame.
Up	Zooms in on the time interval.
Down	Zooms out from the time interval.
Home	Initializes the current graph. (No Zoom In/Out)

(3) Scope Trend

Key Type	Description
Right	Moves to the previous frame.
Left	Moves to the next frame.
Up	Zooms in on the time interval.
Down	Zooms out from the time interval.
Home	Initializes the current graph. (No Zoom In/Out)

(4) XY Trend

Key Type	Description
Tab	Switches the trend mode.
Right	Moves to the previous frame.
Left	Moves to the next frame.

- To control the trend object with the button objects, you must select the trend to be controlled.
- If there are multiple trend objects, you can only control the trend with the focus.

10.3.2 Functions for Trend

In this section, you can find subroutines[5] frequently used for Trend object. For more detailed information, please refer to the next section.

All functions must be used with brackets.

Command			Description
Trend	Subroutine	TrendCsvWr	Saves the trend data as CSV file.

TrendCsvWr	Saves the trend data as CSV file.
Subroutine	TrendCsvWr(*"TrendName", Location*)
Description	Saves the assigned *TrendName* to the assigned *location* in CSV file format. When you assign 0 at *Location*, it means the local. The value 1 means the SD/MMC and the value 2 means the USB. You can also assign the *Location* as shown below. 0: _LOCAL_ 1: _SDMEM_ 2: _USBMEM_ The file is saved as "Trendname_MMDDHHmmss.CSV".
Example	Saves the trend object named "Trend" as CSV file in USB memory. TrendCsvWr("Trend",2)

[5] Subroutine operates a certain action without any value returned, unlike the functions have return value.

10.4 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

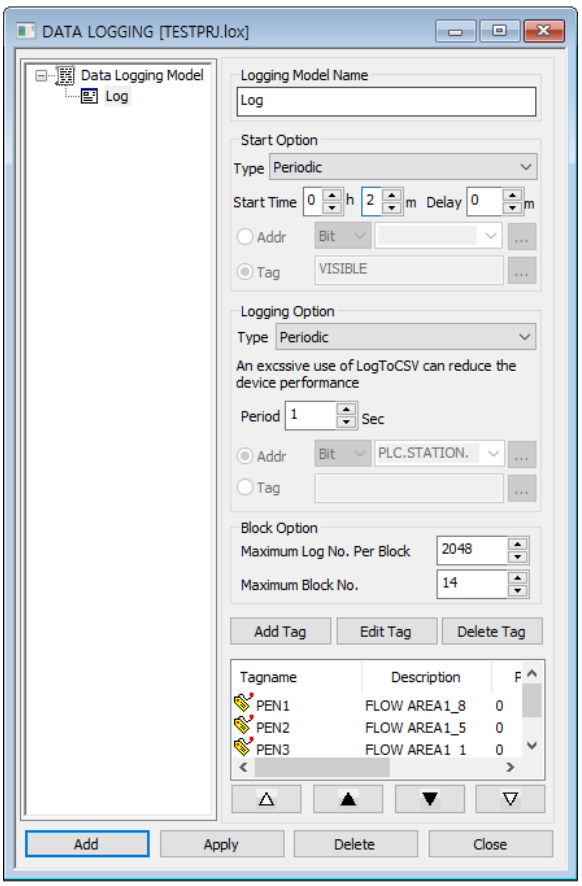
Exercise : Displaying the Logged Data with Trend

In this example, you will collect data and monitor the logged data with the Trend object.

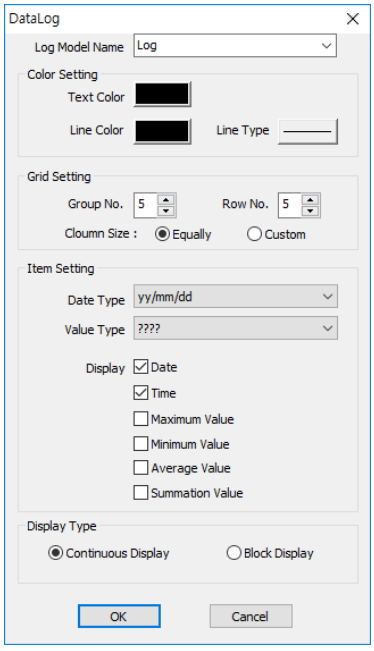
(1) Data Logging

a) Select [Tools] - [Data Logging] to configure the data logging model as shown below.

※ Refer to the 'Data Logging' for more information.

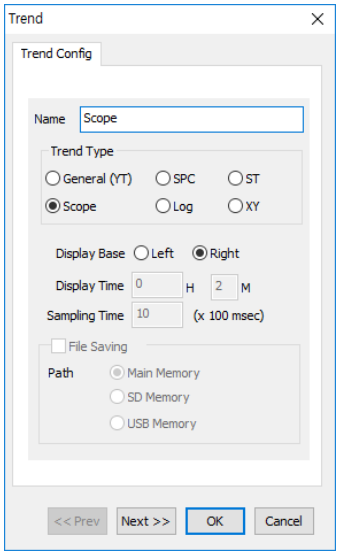


b) If you wish to check the logged data, go to [Draw] - [Data Logging] to configure the data logging object.

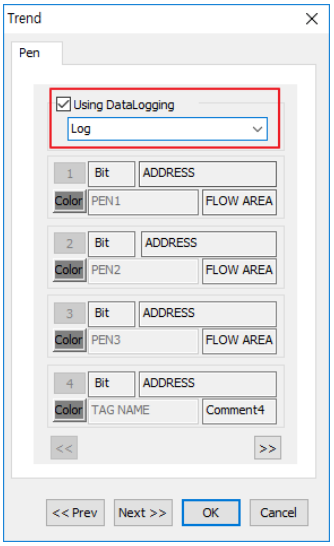


(2) Trend Configuration

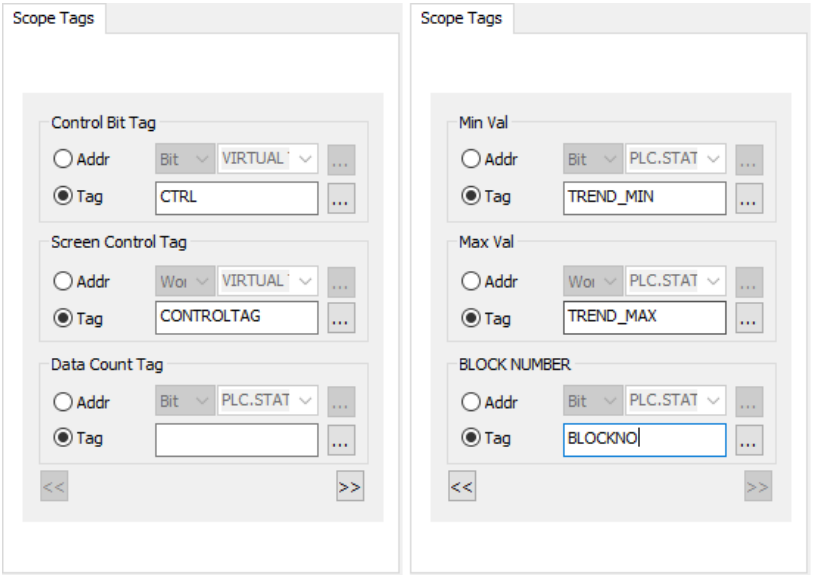
a) Select [Draw] - [Trend] to bring up the configuration window as shown below. Select the trend type as 'Scope' and configure the object as shown below.



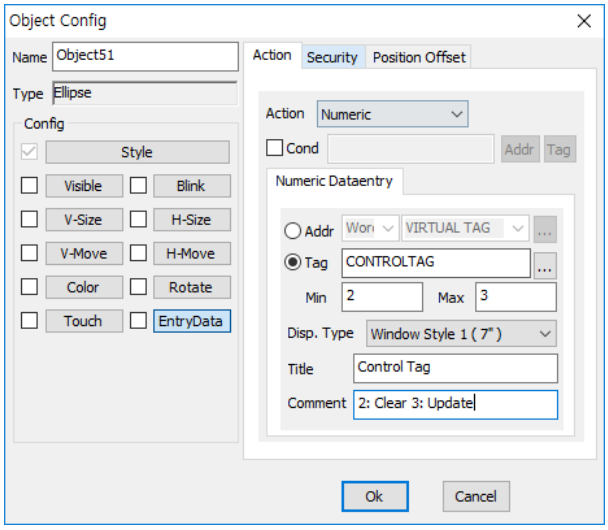
b) In the [Pen] tab, check at the 'Using Data Logging' option and select the data logging model. The tags will be automatically registered as pens.



c) In the [Scope Tag] tab, assign the tags as shown below. You must assign tags for the Screen Control Tag, Min/Max Val, Block Number. Since this trend object refers the data logging model, Data Count Tag is not necessary. Press [OK] to finish the configuration.



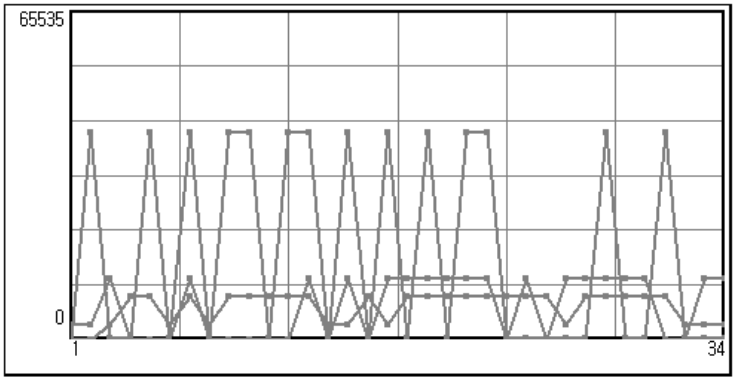
d) To change the value of the screen control tag, create an object with 'Entry Data' feature as shown below. Make another object to change the value of block number tag.



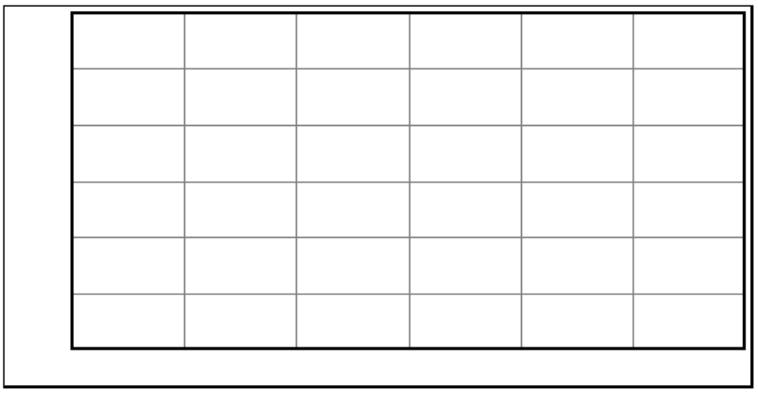
(3) Checking the Operation

a) Check the logged data with the data logging object. To display the logged data with the Trend object, set the block number tag's value as the desired value. Then change the screen control tag's value as 3.

b) The trend object will draw the graph as shown below.



c) Set the screen control tag's value as 2 to clear the object as shown below.



11 Alarm Utilization

11.1 Alarm Configuration

Alarm is a function which transfers the abnormal operation situations to the operator with its description and the time it occurred. The user can configure the processing method of the alarms occurred during the Xpanel operation. The alarm contents may be printed out by the printer, and saved in the user's PC as a CSV file. Also, an action may be assigned to each alarm. The alarm group and level may be displayed on the Alarm Summary object for the more concrete display.

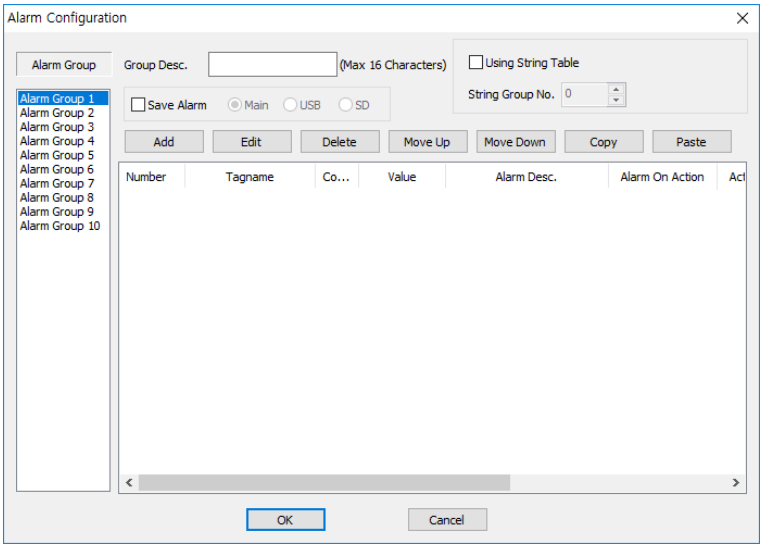
11.1.1 Feature

- The contents of alarm may be printed out by the printer or saved as CSV file.
- An action can be assigned to each alarm level.
- An audio file can be played by using the command expression to the alarm action.
- You may use string table to display the contents of alarm.

This manual is written based on the XpanelDesigner V2.52

11.1.2 Settings

Select [Tools] - [Alarm] or press icon to bring up the configuration window as shown below.

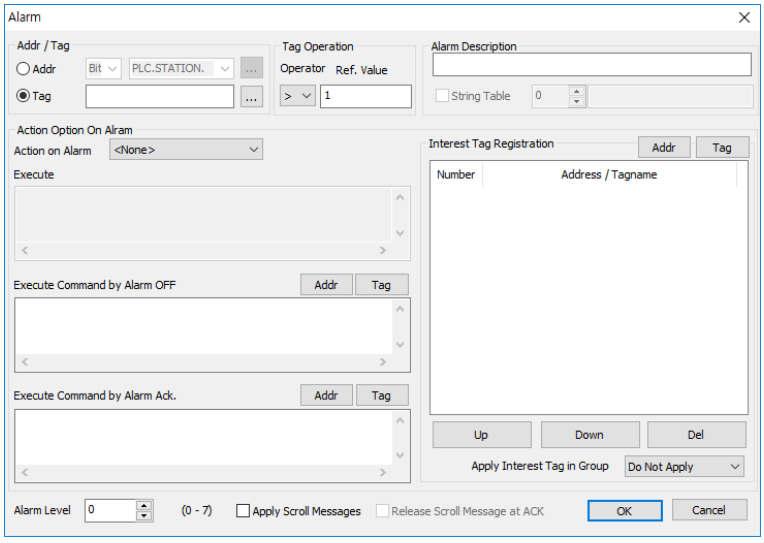


Item	Description
Alarm Group	Select a group to add an alarm. The Xpanel Designer provides 10 alarm groups, which cannot be deleted or added. There is no limit to the alarms that can be added to each group.
Group Desc.	Enter a description for the selected alarm group. You can enter the description up to 16 characters.
Save Alarm	Select this option to save the alarm history on Xpanel power On/Off. You can save up to 200 alarm histories in Main/USB/SD memory.
Using String Table	You can decide whether to use string table for the alarm contents. Using string table may increase the convenience on the displaying alarm contents.
String Group No.	Assign a group number of the string table to be used.
Add	Adds an alarm to the selected group.
Edit	Edits the selected alarm.
Delete	Deletes the selected alarm.
Move Up	Moves the selected alarm one step upward.
Move Down	Moves the selected alarm one step downward.
Copy	Saves the selected alarm's contents in the clipboard.

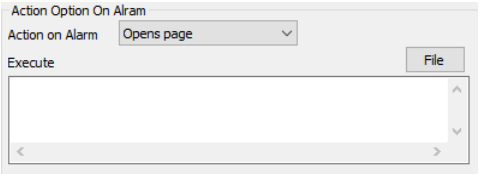
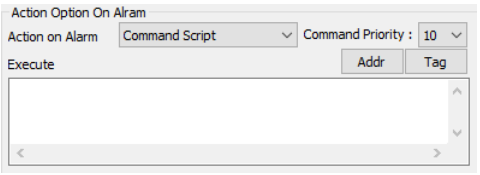
Paste	Pastes the alarm contents to the other alarm groups, Microsoft Excel or Notepad.
Alarm List	Displays the alarms in the selected group. The alarm number, tag name, condition, value, alarm Description, alarm on action, action parameter, alarm off action, alarm acknowledge action, alarm level are displayed in this section.

11.1.3 Alarm Configuration

In the [Alarm Configuration] window, press [Add] button to bring up the [Alarm] window as shown below.



Item	Description
Addr / Tag	Assign a tag or an address for the alarm. Press [...] button to assign the detailed device address or browse the tags.
Tag Operation	Configure the alarm condition and its reference value. There are 3 operators to be utilized as a condition: >, =, < . The tag value compared to the 'Ref. Value' will cause an alarm according to the condition.
Alarm Description	Enter the alarm description which will be displayed at alarm On. If 'Using String Table' option is selected in the [Alarm Configuration] window, You may assign the value in the String Table group.
Action Option On Alarm	Assign an action when the alarm occurs. You may select 'Opens Page' or 'Command Script'.

	Opens Page	 When an alarm occurs, a page added to the 'Execute' field will be opened. It is not necessary to use command such as PageOpen(). You may manually enter the page name (with or without the file extension) or press [File] button to select the page file. Only one page can be registered in this field.
	Command Script	 When an alarm occurs, a command script used in the 'Execute' field will be executed. You can assign the priority of the command (1 (Low) - 10 (High)). Press [Addr] or [Tag] button to use the address or tag as the command's parameter. If you are editing the multiple lines of command script in Microsoft Excel, an error may be caused by the line alignment process. It is recommended to use simple command scripts.
Execute Command by Alarm Off	Enter the command to be executed on the Alarm Off. If you are editing the multiple lines of command script in Microsoft Excel, an error may be caused by the line alignment process. It is recommended to use simple command scripts.	
Execute Command by Alarm Ack.	Enter the command to be executed on the Alarm Acknowledgment. If you are editing the multiple lines of command script in Microsoft Excel, an error may be caused by the line alignment	
Interest Tag Registration	You can check the values of the tags registered as an 'Interest Tag'. This feature operates with the alarm summary object. You may register maximum 20 tags. You can add the tag or address by pressing the [Tag] or [Addr] button.	
Up/Down/Del	Moves the selected interest tag one step upward/downward. Or you can delete the selected interest tag from the list.	

Apply Interest Tag in Group	Decides whether to apply the interest tag list to the other alarms in the current alarm group or not. There are options such as 'Do Not Apply', 'Overwrite', 'Add Interest Tag'. 'Do Not Apply' option only applies the interest tags to the current alarm. 'Overwrite' option erases the other alarms' interest tags and applies the current alarm's interest tags in the same alarm group. 'Add Interest Tag' option adds the current alarm's interest tag list to the other alarms in the same alarm group.
Alarm Level	Sets the alarm level of the current alarm. You can set the level from 0 to 7. Each level can be assigned with different colors for the alarm summary and the scroll message.
Apply Scroll Messages	Displays the scroll message when an alarm occurs. Since this feature is applied to the entire pages in the project, it is not necessary to check the alarm summary for the contents. ※ Please refer to the "Xpanel Configuration" manual for more information.
Release Scroll Message at ACK	When you select this option, the scroll message will be removed when the corresponding alarm is acknowledged.

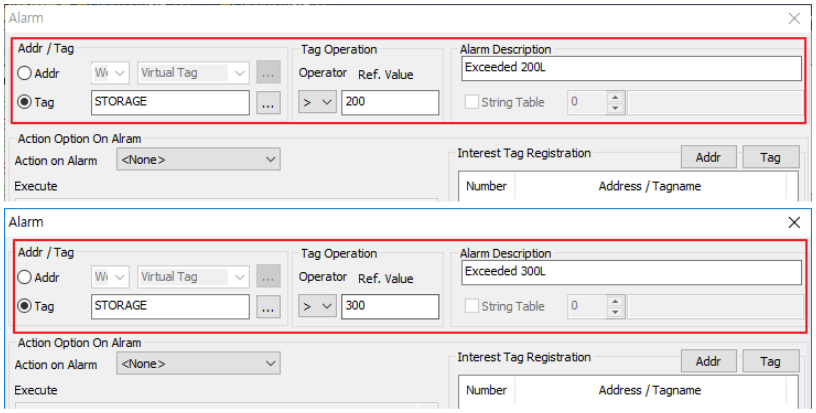
11.1.4 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

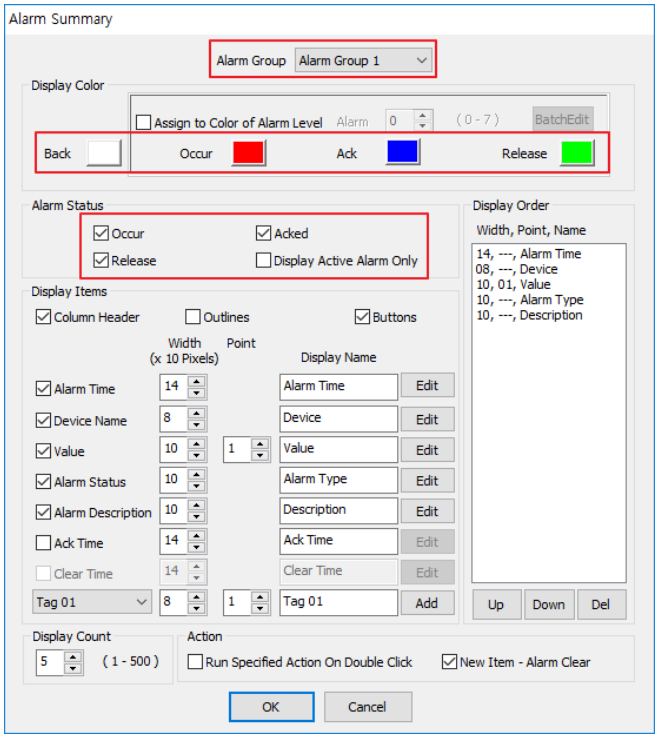
Exercise 1 : Checking the Alarm Contents with Alarm Summary

(1) Alarm Configuration

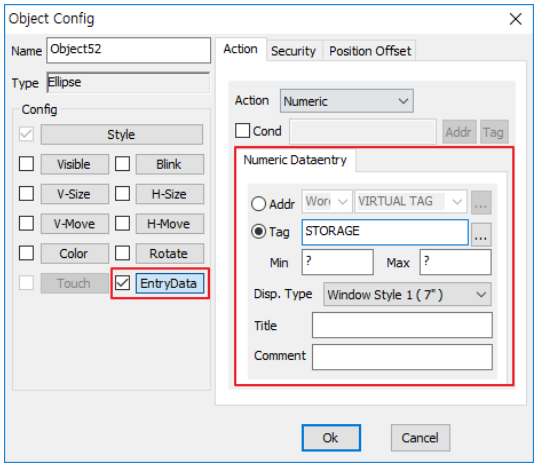
a) Select [Tools] - [Alarm] to bring up the [Alarm Configuration] window. Add 2 alarms to the alarm group 1. Configure an alarm with the condition of “Greater than 200”, and configure another alarm with the condition of “Greater than 300”. Enter the Alarm Description as “Exceeded 200L” and “Exceeded 300L”.



b) Select [Draw] - [Alarm Summary] and click the page to add the alarm summary object. Double-click the object to configure the details such as alarm group to be displayed.

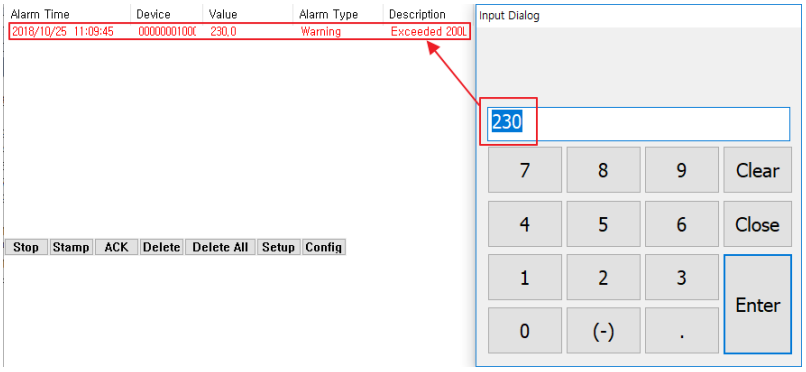


c) Since the operation will be checked by manually changing the tag value, add an object to the page and use 'EntryData' feature as shown below.

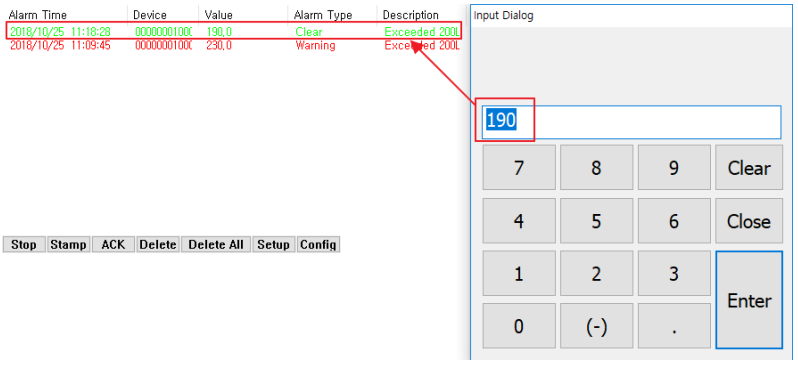


(2) Checking the Operation

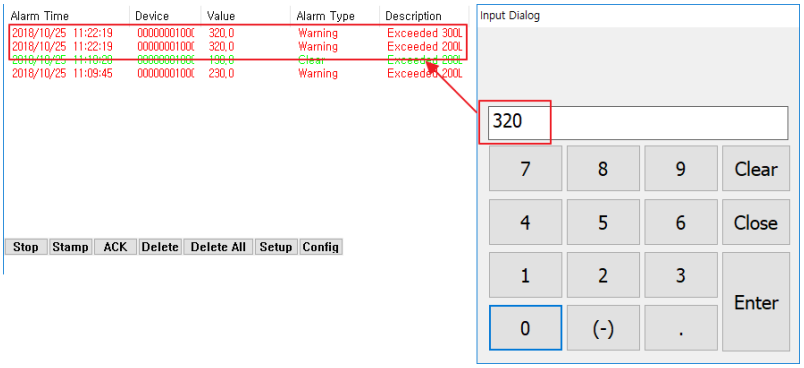
a) Write the project to Xpanel or execute simulator to check the operation. Input the value “230” to the ‘STORAGE’ tag. An alarm will occur and you can check the contents of the alarm.



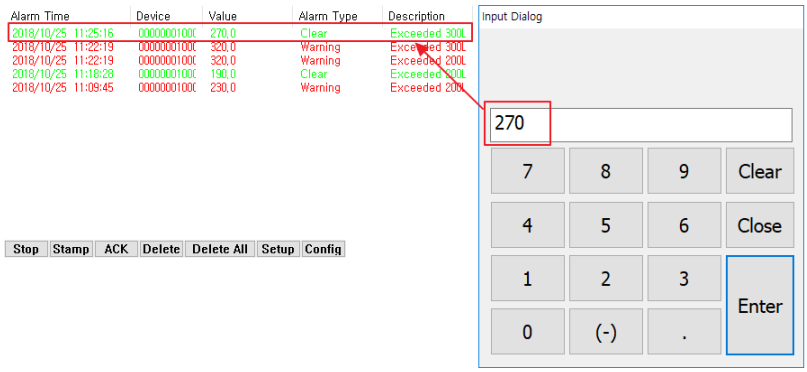
b) Input the value “190” to the tag. The existing alarm will be cleared.



c) Input the value “320” to the tag. Two alarms will occur simultaneously.



d) Input the value “270” to the tag. Only one alarm (Exceeded 300L) will be cleared.

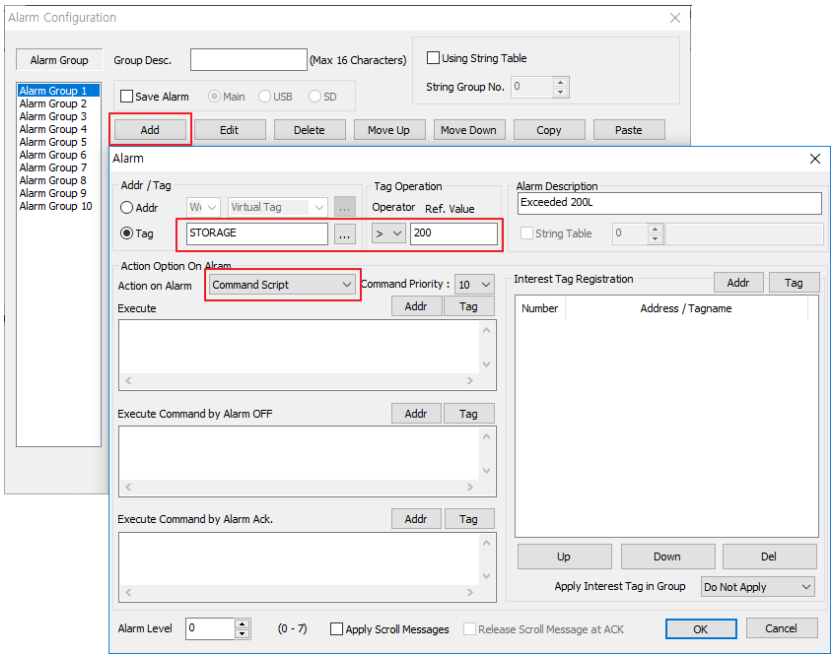


Exercise 2 : Playing the Audio File when an Alarm Occurs

- An audio file must exist in the Xpanel or USB/SD memory.
- A command PlayWave() requires AUX socket in the Xpanel device.
- This example is only applicable in the XpanelDesigner V2.50 or above.

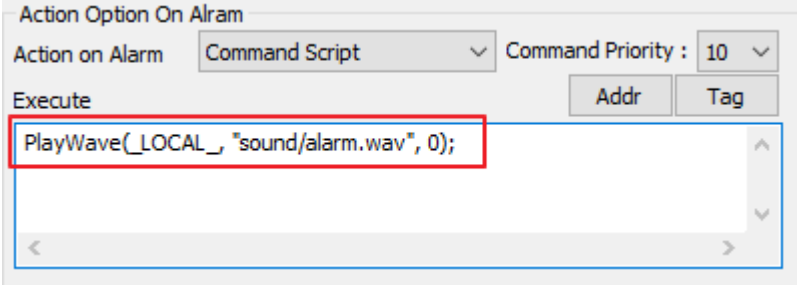
(1) Alarm Configuration

a) Select [Tools] - [Alarm] to bring up the [Alarm Configuration] window. Press [Add] button to bring up the window as shown below. Following figure is a configuration window used in the Exercise 1.



b) Set the 'Action on Alarm' as 'Command Script'p and enter the PlayWave() command in the 'Execute' field. Refer to the table below for the detailed information.

PlayWave	Executes the wav file in the assigned path.
Subroutine	PlayWave(*WavFileLocation, Path, Sync/Async*)
Description	Executes the *.wav file from the *Path* in the *WavFileLocation* *WavFileLocation* can be expressed with the following strings 0: _LOCAL_ (₩₩Xpanel₩) 1: _SDMEM_ (SD Memory Root Path) 2: _USBMEM_ (USB Memory Root Path) *Path* must include the file's name and extension. Enter 0 at *Sync/Async*, which indicates the 'Sync', to stop the next script's execution until the end of the audio file. Enter 1 to continue the script execution while the audio file is operating.
Exercise	Execute 'alarm.wav' file in the sound folder in the Xpanel. The next script will not be executed until the audio file ends. PlayWave(_LOCAL_, "sound/alarm.wav", 0);



(2) Checking the Operation

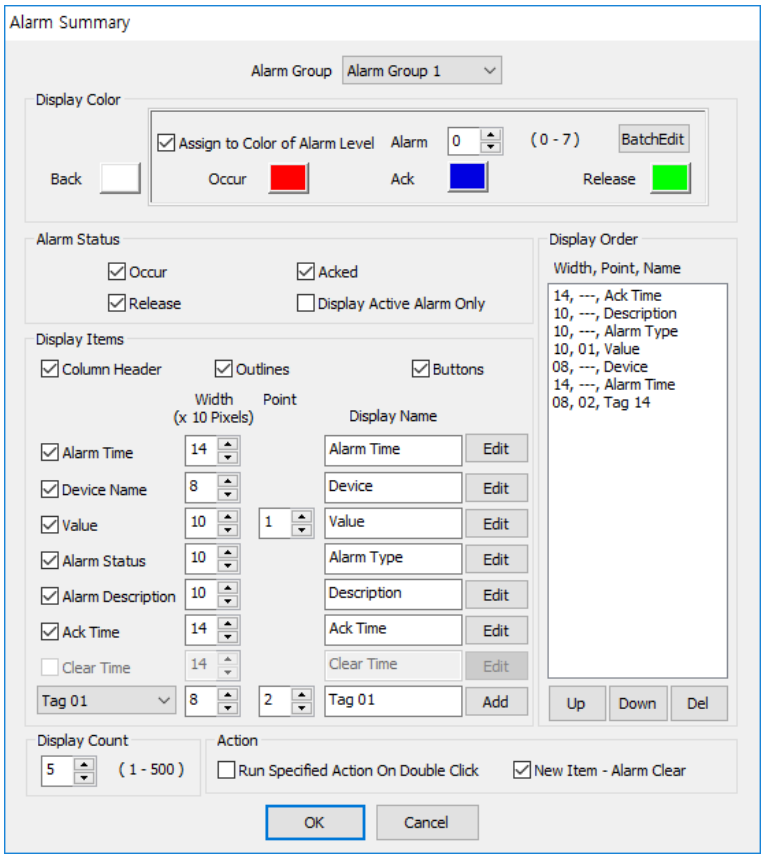
a) Write the project to the Xpanel and execute the project. When the alarm occurs, you will find that the audio file is executed.

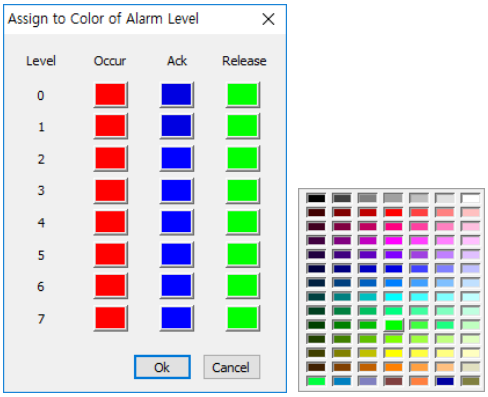
11.2 Alarm Summary

Alarm summary object allows the user to monitor the desired alarms in a single object. The object displays the detailed information about the alarm, displaying up to 500 alarm messages.

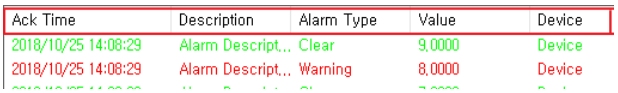
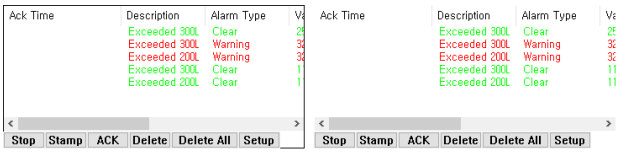
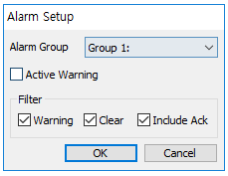
11.2.1 Settings

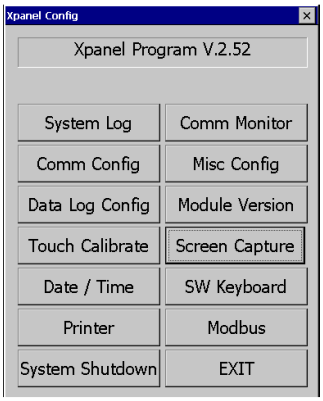
Select [Draw] - [Alarm Summary] or press icon then click on the page to bring up the configuration window as shown below.



Item	Description
Alarm Group	Select an alarm group to display on the object.
Display Color	Configures the color of items displayed on the object. You can configure the colors of object's background, alarm Occur, Acknowledgement and Release. You can also distinguish the alarm levels by color. Press [BatchEdit] button to configure the colors for each alarm level. 
Alarm Status	Select the type of alarm statuses to display on the object. You can select 'Occur', 'Acked', 'Release' and 'Display Active Alarm Only'. If you select 'Display Active Alarm Only' option, other options are disabled. The object will only display the alarms which are currently On. If the alarms are released, the message will be deleted automatically from the object.
Display Items	Decide the items to be displayed on the object. You can select 'Column Header', 'Outlines', 'Buttons', 'Alarm Time', 'Device name', 'Value', 'Alarm Status', 'Alarm Description', 'Ack Time', 'Clear Time' and 'Interest Tag'. Refer to the table below for more detailed information.
Display Order	Assign the order of displayed items. Select an item then press [Up]/[Down] button to move the items. You can also delete the selected item by pressing the [Del] button.
Display Count	You can assign the number of messages to be displayed on the object. You can enter the value from 1 to 500.
Run Specified Action On Double Click	Select this option to execute the command assigned to 'Execute Command by Alarm Ack.' by double-clicking the message.
New Item - Alarm Clear	Select this option to add a new message when an alarm is released. When this option is deselected, the alarm On message will be changed into alarm release message.

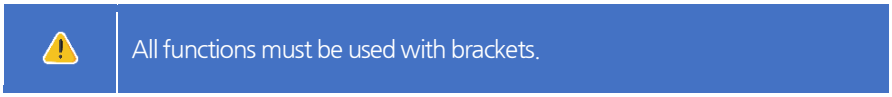
(1) Display Item

Item	Description
Column Header	Shows or hides the header of each column. 
Outlines	Shows or hides the border of the object. 
Buttons	Shows or hides the buttons at the bottom of the object. Stop Stamp ACK Delete Delete All Setup Config **Stop**: Stops the update of Alarm Summary object You can restart the update by pressing the button again. **Stamp**: Adds a message that the user has checked the alarm message. **ACK**: Changes the selected alarm to the acknowledged state. If 'Run Specified Action On Double Click' option is selected, the 'Execute Command by Alarm Ack.' will be executed. **Delete**: Deletes the selected alarm message from the object. However the alarm state is still maintained. **Delete All**: Deletes the entire alarm messages from the object. However the alarm state is still maintained. **Setup**: Brings up the simple alarm configuration window. You can configure the alarm group, 'Active Warning' and 'Filter' option.  **Config**: Brings up the Xpanel Config window.

	
Alarm Time	Shows or hides the header 'Alarm Time'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes.
Device Name	Shows or hides the header 'Device Name'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes.
Value	Shows or hides the header 'Alarm Time'. You can assign the width of header, from 3 to 50 pixels, and the text. You can also configure the decimal points of the value (0 to 5 decimal points). Press [Edit] button to apply the changes..
Alarm Status	Shows or hides the header 'Alarm Status'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes..
Alarm Description	Shows or hides the header 'Alarm Description'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes.
Ack Time	Shows or hides the header 'Ack Time'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes.
Clear Time	You can enable this option by deselecting the 'New Item - Alarm Clear' option. Shows or hides the header 'Clear Time'. You can assign the width of header, from 3 to 50 pixels, and the text. Press [Edit] button to apply the changes..
Interest Tag	Adds the interest tag to the display. Shows or hides the header 'Alarm Time'. You can assign the width of header, from 3 to 50 pixels, and the text. You can also configure the decimal points of the value (0 to 5 decimal points). Press [Add] button to add the tags. You can add up to 14 interest tags.

11.2.2 Related Features

In this section, you can find subroutines[6] frequently used for Alarm. For more detailed information, please refer to the next section.



Command			Description
Alarm	Subroutine	AlarmCsvWr	Saves the alarm messages as CSV file.
	Subroutine	AlarmPrint	Prints the alarm messages with printer.
	Subroutine	ClearAlarmLog	Deletes the entire alarm log of the assigned alarm group.

[6] Subroutine operates a certain action without any value returned, unlike the functions have return value.

Functions For Alarm

AlarmCsvWr	Saves the alarm messages as CSV file.
Subroutine	AlarmCsvWr(*AlarmGroup, "CSVFileName", TimeDisplay, PrintOption, Location*)
Description	Saves the messages of *AlarmGroup* at the assigned *Location* as *CSVFileName*. Enter 0 at *Location* to indicate the local. Assign 1 for SD/MMC and 2 for USB. You can also use strings for the *Location*. 0: _LOCAL_ 1: _SDMEM_ 2: _USBMEM_ The contents in the CSV file will be displayed with time data according to the value you assign to the *TimeDisplay*. 0: YYYY/MM/DD HH:MM:SS 1: DD/MM/YYY HH:MM:SS 2: MM/DD/YYYY HH:MM:SS 3: MM/DD HH:MM:SS 4: DD/MM HH"MM"SS 5: HH:MM:SS According to the value assigned to the *PrintOption*, different contents will be saved. If you wish to select multiple items, distinguish them with vertical bar (|). All Items: _ALMPRT_ALL_ or 511 Time and date: _ALMPRT_TIME_ or 1 Memory Address: _ALMPRT_ADDR_ or 2 Value: _ALMPRT_VALUE_ or 4 Alarm Type: _ALMPRT_TYPE or 8 Alarm Description: _ALMPRT_DESC_ or 16
Example	Saves the all contents of alarm group 1 as "AlmGrp1.CSV" in SD/MMC. The contents will be displayed with time value in "YYYY/MM/DD HH:MM:SS" format. AlarmCsvWr(1, "AlmGrp1", 0, _ALMPRT_ALL_, _SDMEM_);

AlarmPrint	Prints the alarm messages with printer.
Subroutine	AlarmPrint(*AlarmGroup, Messages, TimeDisplay, FontSize, PrintOption*)
Description	Prints the content of *AlarmGroup* as much as the value assigned to *Messages* (0~200 messages) with the assigned *FontSize* (10 or bigger). The time will be displayed according to the value assigned to the *TimeDisplay.* 0: YYYY/MM/DD HH:MM:SS 1: DD/MM/YYY HH:MM:SS 2: MM/DD/YYYY HH:MM:SS 3: MM/DD HH:MM:SS 4: DD/MM HH"MM"SS 5: HH:MM:SS According to the value assigned to the *PrintOption*, different contents will be saved. If you wish to select multiple items, distinguish them with vertical bar (|). All Items: _ALMPRT_ALL_ or 511 Time and date: _ALMPRT_TIME_ or 1 Memory Address: _ALMPRT_ADDR_ or 2 Value: _ALMPRT_VALUE_ or 4 Alarm Type: _ALMPRT_TYPE or 8 Alarm Description: _ALMPRT_DESC_ or 16
Example	Prints out the recent 10 messages of alarm group 1. AlarmPrint(1, 10, 1, 10, _ALMPRT_ALL_);

ClearAlarmLog	Deletes the entire alarm log of the assigned alarm group.
Subroutine	ClearAlarmLog(*AlarmGroup*)
Description	Deletes the entire alarm log of the assigned *AlarmGroup* (1~10).
Example	Clears the log of the alarm group 1. ClearAlarmLog(1)

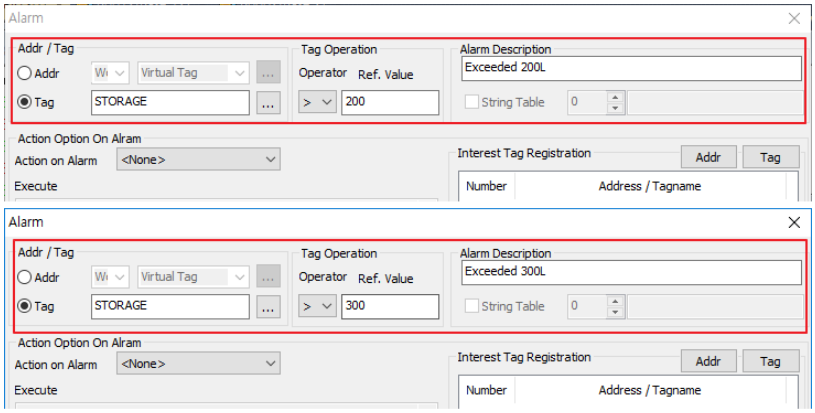
11.2.3 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

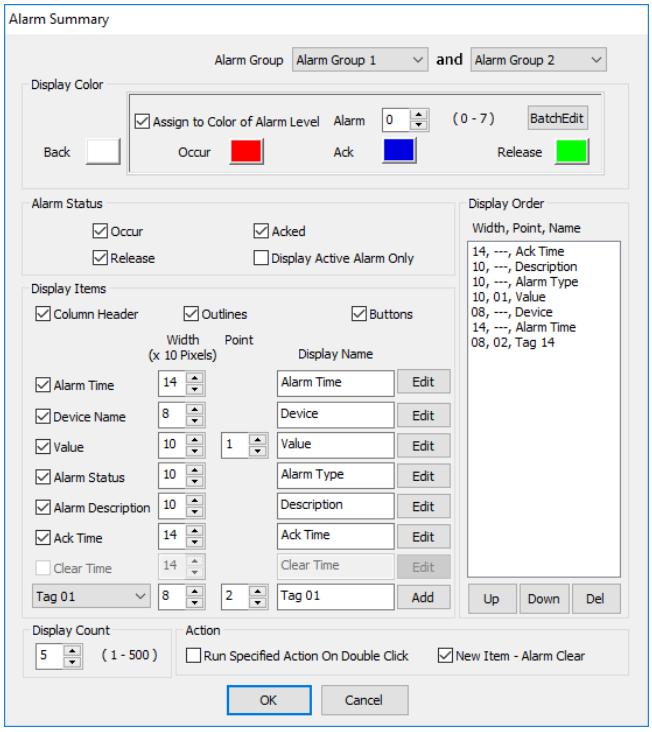
Exercise : Checking the Alarm Contents with Alarm Summary

(1) Alarm Configuration

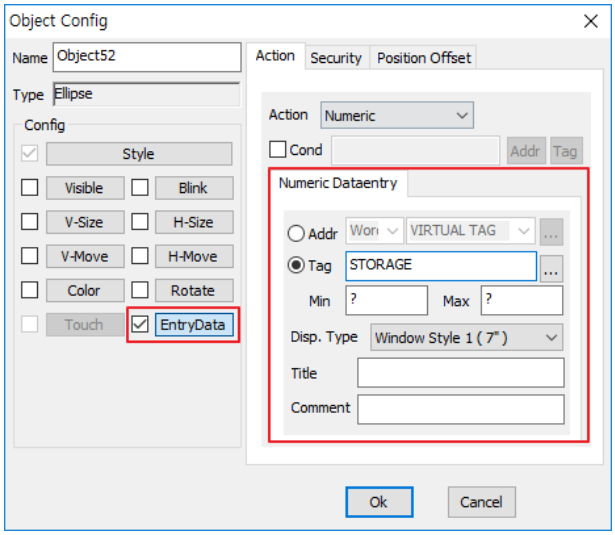
a) Select [Tools] - [Alarm] to bring up the [Alarm Configuration] window. Add an alarms to each alarm group 1 and 2. Configure an alarm with the condition of “Greater than 200”, and configure another alarm with the condition of “Greater than 300”. Enter the Alarm Description as “Exceeded 200L” and “Exceeded 300L”.



b) Select [Draw] - [Alarm Summary] and click the page to add two alarm summary objects. Double-click the object to configure the details such as alarm group to be displayed.

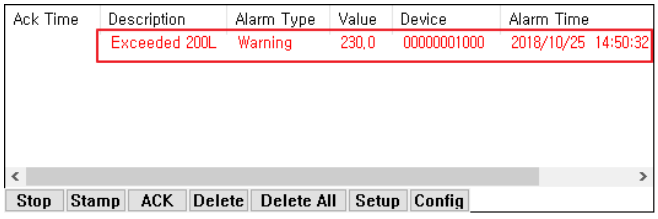


c) Since the operation will be checked by manually changing the tag value, add an object to the page and use 'EntryData' feature as shown below.

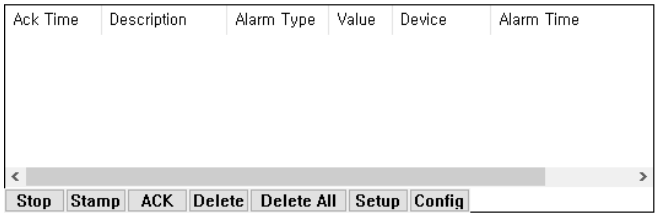


(2) Checking the Operation

a) Write the project to Xpanel or execute simulator to check the operation. Input the value “230” to the ‘STORAGE’ tag. An alarm will only appear on the alarm summary object which displays the alarm group 1.

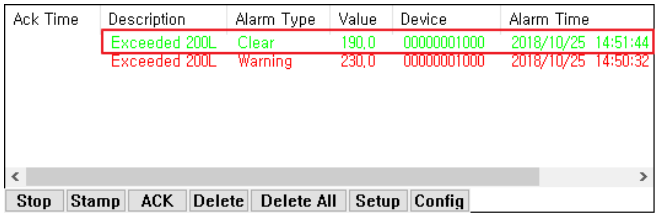


GROUP 1

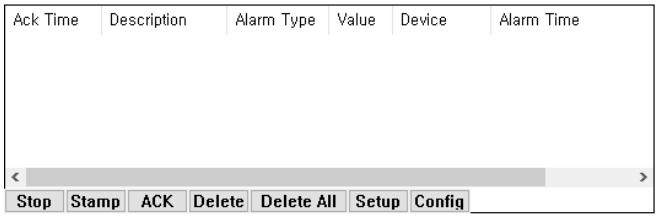


GROUP 2

b) Input the value “190” to the tag. The existing alarm will be cleared.

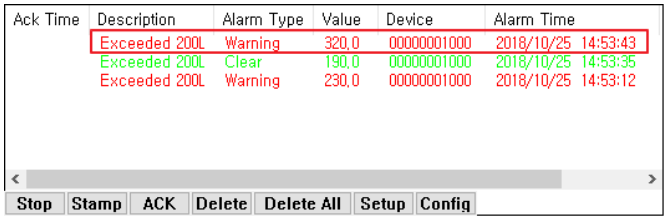


GROUP 1

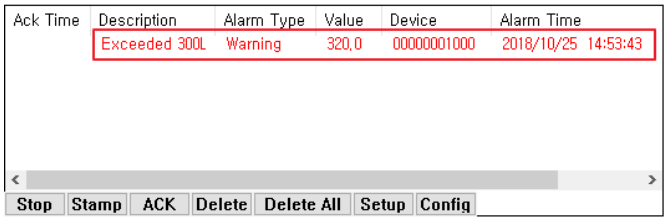


GROUP 2

c) Input the value “320” to the tag. ‘Exceeded 200L’ and ‘Exceeded 300L’ alarms will appear on the corresponding alarm summary object.

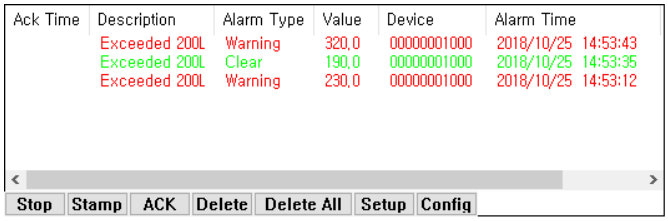


GROUP 1

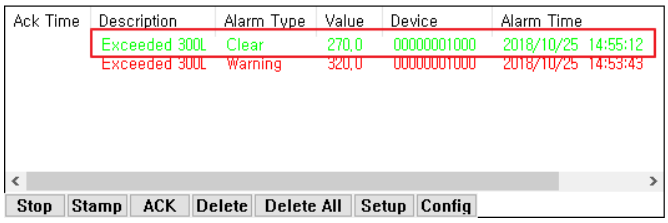


GROUP 2

d) Input the value “270” to the tag. Only the ‘Exceeded 300L’ alarm of alarm group 2 will be cleared.



GROUP 1



GROUP 2

12 Writing a Script

12.1 Script

The script of Xpanel uses a programming language that is very similar to C programming language. In the script, the user can use the variable, call the other programs. Also, Xpanel Designer provides keywords for flow control such as Switch-Case, For, While, If-Else, Goto.

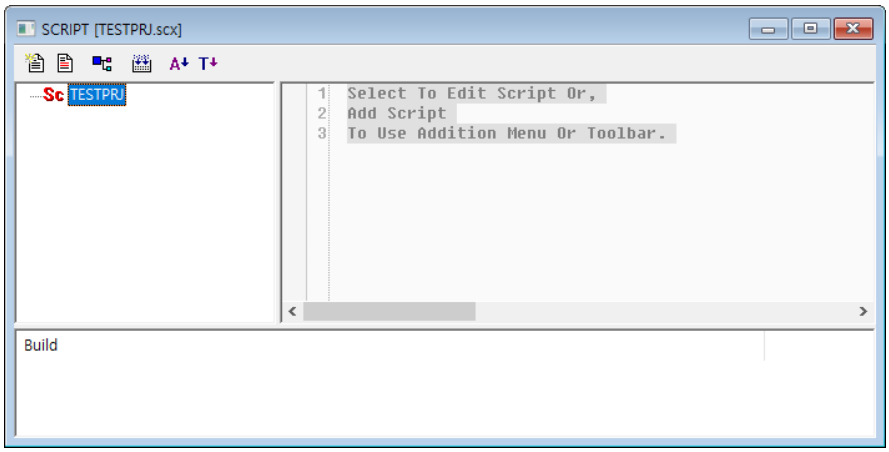
Each program is executed in multi-thread environment. Also, all programs are assigned with their own priority, from level 1 to 10.

12.1.1 Features

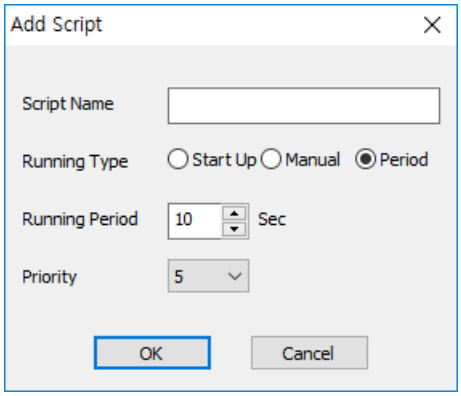
- The script is not case-sensitive.
- All tags registered in the Xpanel's database can be used as variables in the script.
- Two variable types are supported; Real Type and String Type. The variable type is decided automatically during the program execution. However, you cannot use a single variable for both real and string data process.

12.1.2 Settings

Select [Tools] - [Script] or press button to bring up the script editor as shown below.



Item	Description
	Adds a new script. [Add Script] window will appear.
	Edits the selected script. [Edit Script] window will appear. The window is same as the [Add Script] window except that the user cannot edit the script name.
	Compiles the selected script. The compile result will appear on the field marked as [Build].
	Compiles the all scripts registered in the project. The compile result will appear on the field marked as [Build].
	Adds a detailed device address to the point where the cursor is located.
	Adds a tag name to the point where the cursor is located.



Item	Description
Script Name	Assigns the script name. In case of the [Edit Script] window, this field is disabled.
Running Type	Selects the running type of the script. When you select the 'Start Up', the script will only be executed once on the project's startup. When you select the 'Manual', the script will only be executed once when it is called by the commands. When you select 'Period', the script will executed periodically.
Running Period	Assigns the script execution interval. This option is enabled only when the 'Period' option is selected. You can assign the interval from 1 to 65535 seconds.
Priority	Assigns the priority of the script. The lowest priority is level 1, and the highest priority is level 10.

12.1.3 Program Structure

The script is divided into two parts; Declaration Part and Program Part. The declaration part is for the declaration of internal variables and input parameters. The program part includes all program statements except the declaration.

Comment can be entered anywhere in the program. The strings starting with '//', until the end of the line are treated as comments.

(1) Declaration Part

Item	Description
Variable Declaration	Declares the internal variables in format of VAR *variable_name [, variable_name];*. The initial value of the declared variables are 0. To declare more than one variables, use comma " , " between the variables. You can use several VAR keywords before the program part starts. The variable name cannot be duplicated with the tag names (Group, Digital, Analog, String). The duplicated name may cause compile errors or misoperation.
Input Parameter Declaration	Declares the input parameters in format of PARAM *1st parameter [, 2nd parameter …];* . The input parameter is required when a program is called by the other program or a command. The declaration order must be identical to the order of input parameters. The parameter will be initialized with the values assigned by the caller. To declare more than one parameters, use comma " , " between the parameters. You can use several PARAM keywords before the program part starts.

Example	Program Name: **MyPgm** **VAR** a, b; **VAR** c; **PARAM** p1, p2; **PARAM** p3; The program **MyPgm** can be called by the external caller as shown below. **MyPgm(1,2,3);** In the parameter **p1, p2, p3**, assigned values (1, 2, 3) will be stored. The variables **a, b, c**, will be initialized as 0.

(2) Program part

In the program part, all program statements except the declaration (variables and parameters) can be used. The example of the most basic statement is the function call, calculation and storing the result.

Following is a program example with basic statements.

```
Tag_a = Tag_a + 1;
Tag_b = MyPgm(Tag_a, 2, 3);
```

Each statement must be marked with " ; " at the end. Each function returns a single result to the caller. The program mentioned above returns the result to the Tab_b.

(3) Constants

When you use constants in the program, you can use the notations as shown below.

Item	Description
Octal Constants	Uses only from 0 to 7. The octal constant must start with 0. (E.g. 01277)
Decimal Constants	General notation is used. (E.g. 153, 3.14, 2.45E-12)
Hexadecimal Constants	Starting with '0x', use alphabet or numbers in range of '0'-'F'. (E.g. 0xFFFF)
String Constants	Enter the string between the two double-quotation marks (" "). (E.g. "String Variable1")

You can also utilize the predefined constants as shown below.

Constant Name	Value	Usage
_PI_		3.141592… (Value of π)
LOCAL	0	Local Flash Memory
SDMEM	1	SD/MMC Memory
USBMEM	2	USB Memory
COM232	0	Uses COM1 port as RS232C mode.
COM422	1	Uses COM1 port as RS422 mode.
COM485	2	Uses COM1 port as RS485 mode.
COMAUX	3	Uses COM2 port as RS232C mode.
BPS300		300 bps
BPS600		600bps
BPS1200		1200bps
BPS2400		2400bps
BPS4800		4800bps
BPS9600		9600bps
BPS19200		19200bps
BPS38400		38400bps
BPS56000		56000bps
BPS57600		57600bps
BPS115200		115200bps
BPS128000		128000bps
BPS256000		256000bps
_PARITY_NONE_		NO PARITY BIT
_PARITY_EVEN_		EVEN PARITY
_PARITY_ODD_		ODD PARITY
_PARITY_MARK_		MARK PARITY
_PARITY_SPACE_		SPACE PARITY
_STOPBIT_ONE_		1 STOP BIT
_STOPBIT_TWO_		2 STOP BITS
_STOPBIT_ONE5_		1.5 STOP BIT

12.1.4 Operator

There are three types of operators that can be used in the programs; Calculation Operator, Logical/Comparative Operator and Others.

(1) Calculation Operator

In the table below, the calculation result is based on the assumption of variable A is 3 (0000 0000 0000 0011), and the variable B is 4 (0000 0000 0000 0100).

Remainder calculation and all Bitwise calculations will be performed with 32-bit integer data.

Operator	Function	Example	Description
~	Bitwise invert	~A	Each bit of A (0000 0000 0000 0011b) is inverted. The result is 1111 1111 1111 1100b.
+	Addition	A+B	Adds A and B. The result is 7.
-	Subtraction	A -B	Subtracts B from A. The result is -1.
*	Multiplication	A*B	Multiplies A and B. The result is 12.
/	Division	A / B	Divides A with B. The result is 0.75.
%	Remainder	A % B	Indicates the remainder from the division of A with B. The result is 3.
&	Bitwise AND	A & B	Bitwise logical AND calculation of A and B. The result is 0.
|	Bitwise OR	A | B	Bitwise logical OR calculation of A and B. The result is 0111b (= 7).
^	Bitwise XOR	A ^ B	Bitwise logical XOR calculation of A and B. The result is 0111b (= 7).
<<	Bitwise Shift Left	A << B	Shifts the bits of A to the left as much as B. The rightmost part is filled with 0. The result is 0011 0000b (= 48).
>>	Bitwise Shift Right	A >> B	Shifts the bits of A to the right as much as B. The leftmost part is filled with 0. The result is 0.

(2) Logical/Comparative Operator

In the table shown below, the result is a calculation based on the assumption of the variable A is 1 (True) and the variable B is 0 (False). In the Xpanel, the values other than 0 are all processed as True. Only 0 is recognized as False.

When the calculation result is true, the result is always 1.

Operator	Function	Example	Description
&&	Logical AND	A && B	If A and B are true, the result is 1. In other cases, the result is 0.
||	Logical OR	A || B	If A and B are false, the result is 0. In other cases, the result is 1.
<	Less than	A < B	If A is smaller than B, the result is 1. In other cases, the result is 0.
>	Greater than	A > B	If A is greater than B, the result is 1. In other cases, the result is 0.
<= or =<	Less than or equal to	A <= B	If A is smaller than or equal to B, the result is 1. In other cases, the result is 0.
>= or =>	Greater than or equal to	A >= B	If A is greater than or equal to B, the result is 1. In other cases, the result is 0.
==	Equal to	A == B	If A is equal to B, the result is 1. In other cases, the result is 0.
!=	Is not equal to	A != B	If A is not B, the result is 1. In other cases, the result is 0.

(3) Other Operator

Operator	Function	Example	Description
=	Store	A = B	Stores the value B to A and uses it as a result.

The Store (=) operator can be used consecutively.

A = B = C;

In this case, the value of A and B will be set as C. In other words, the value at the rightmost side of operator will be treated as the result value of "=" operation. The example mentioned above will be processed internally in the program as shown below.

B ← C

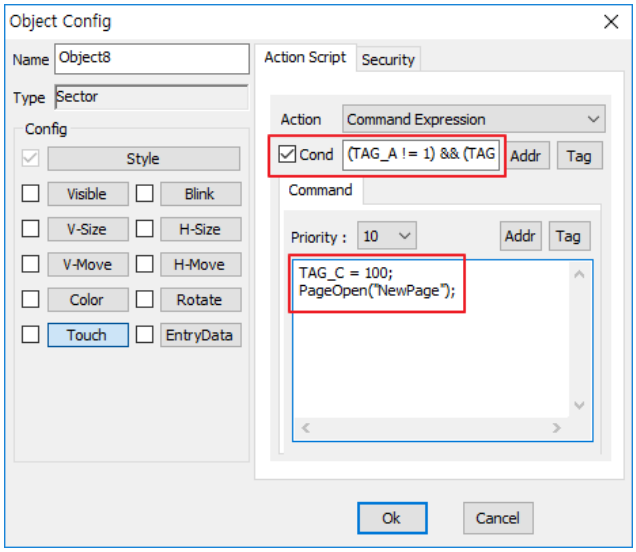
A ← B

Because of the characteristics of the “=” operator, a program error may occur that cannot be detected as shown below. In this case, even the values of A and B are not equal, the operation result of IF statement can be True. Also, the operation may cause an unwanted value to be stored in the A.

```
//====================
// A Program Error That Cannot Be Detected
//====================
If (A=B) // Misentry of A==B, checking if the value of A and B are same.
{
…
}
```

12.1.5 Command and Condition

Under a certain circumstances, it may be necessary to use simple script during the object configuration. For example, you may enter condition and command to the touch object as shown below. The conditional and command expressions follows the format of script programming.



(1) Condition Expression

Operator	Function	Example	Description
&&	Logical AND	A && B	If A and B are true, the result is 1. In other cases, the result is 0.
||	Logical OR	A || B	If A and B are false, the result is 0. In other cases, the result is 1.
<	Less than	A < B	If A is smaller than B, the result is 1. In other cases, the result is 0.
>	Greater than	A > B	If A is greater than B, the result is 1. In other cases, the result is 0.
<= or =<	Less than or equal to	A <= B	If A is smaller than or equal to B, the result is 1. In other cases, the result is 0.
>= or =>	Greater than or equal to	A >= B	If A is greater than or equal to B, the result is 1. In other cases, the result is 0.
==	Equal to	A == B	If A is equal to B, the result is 1. In other cases, the result is 0.
!=	Is not equal to	A != B	If A is not B, the result is 1. In other cases, the result is 0.

Following is an example of conditional expression.

Example	Description
(Tag_A != 1) && (Tab_B == 10)	If value of Tag_A is not 1 and the Tag_B's value is 10, returns the result 1. In other cases, returns 0.
Sin(Tag_A) == 1	If the sine of Tag_A is 1, returns the result 1. In other cases, returns 0.
Tag_A < 100	If Tag_A is smaller than 100, returns the result 1. In other cases, returns 0.
(Tag_A + Tag_B) < (Tag_A + Tag_C)	If the sum of Tag_A and Tag_B is smaller than the sum of Tag_A and Tag_C, returns the result 1. In other cases, returns 0.

(2) Command Expression

In Xpanel, multiple command expressions can be used. In other words, the command expression is a special script program. You can also use the functions in the script for command expression.

The priority of the command expression is different from the scripts. If the operation condition of the command expression is satisfied, the command takes the highest priority. It indicates that the other object's operations are not processed until the current command operation ends. Especially the function called by the command expression has the same priority as the command.

For example, when you use RunScript function in the command expression, the called script will operate in parallel. The command does not wait until the script ends. Instead, the next command expression will be executed.

Following is an example of command expression.

Example	Description
Tag_A = 100; PageOpen("NewPage");	Sets the value of Tag_A to 100 and opens the page named "NewPage".
Tag_B = Tab_B + 1	Increases the value of Tag_B by 1.
Tag_A = 100; Tag_B = 1; RunScript MyLoop(); MakeCsv("LogModel",1);	Sets the value of Tag_A and Tag_B to 100 and 1, then execute the script named MyLoop(). Once the script is executed, the data logging model named "LogModel" will be saved in the SD memory as CSV.

12.1.6 Statements

Following is a table of statements and keywords that can be used in the script.

Type	Description
IF-ELSE Statement	One of the most frequently used logical decision making statement.
WHILE/DO-WHILE Statement	Statements for the loop process.
FOR Statement	More complex but useful statement for the loop process.
SWITCH-CASE Statement	Statement for the different processes according to the several cases.
GOTO Statement	A statement that forces the flow of program.
CONTINUE Keyword	A keyword used in the loop process.
RETURN Keyword	A keyword that designates the value that will be returned to the caller.
RUNSCRIPT Keyword	A keyword that calls the external program.

(1) IF-ELSE Statement

IF-ELSE statement is one of the most frequently used logical decision making statement. The statement can be used in stack as IF-ELSE IF-ELSE IF…. There is no limit in the statement stack. Also, Else statement can be omitted.

```
If (A == 1)
{
    // A program when A is 1
}
Else
{
    // A program when A is not 1
}
```

(2) WHILE/DO-WHILE Statement

WHILE/DO-WHILE is a statement for the loop process. The statements below the WHILE keyword will be repeated while the condition next to the WHILE keyword is True.

```
A = 0;
While (A<10)
{
  // Write the program which will be repeated
  // while the WHILE keyword's condition is True.
  // This example will be repeated 10 times.
  A = A +1;
}
```

The subordinate statements may never be executed according to the condition within the WHILE statement. If you use DO-WHILE statements, you can execute the loop statement once at least. Then the system will check the condition.

```
Do {
  // Write the loop statement when the condition is True.
  // The loop statement will be executed once at least.
} While (A<10); // mark the end of the statement with ' ; '.
```

(3) FOR Statement

In this statement, all expressions for the initialization, the decision making and the post loop process is described in a single statement line.

Following is an example of (2) WHILE statement using FOR statement, instead.

```
For (A=0; A<10; A=A+1)
{
  // Write the loop statement.
}
```

FOR statement is followed by the initialization statement, decision making statement and the post processing statement.

FOR (*Initialization statement; DecisionMaking statement; PostProcessing statement*)

(4) SWITCH-CASE Statement

This statement is used when the different processes are needed within the different cases. Each case can be distinguished by the unlimited number of the CASE statement.

The number of the case must be constant and terminated with the colon " : ". In other words, you cannot use the tag or expression for the case number. In the SWITCH statement, only one Default statement can be used.

Default statement does not need a constant. This statement is executed if none of the cases are to be executed. You can omit the Default statement.

If the flow meets the BREAK keyword during the process, the SWITCH statement will be terminated. If the flow reaches the different case or default statement without meeting any BREAK keyword, the corresponding case or default statement will be executed.

```
Switch (A)
{
Case 1:
  // Write the program when A is 1.
  Break;
Case 5:
Case 7:
  // Write the program when A is 5 or 7.
  Break;
Default:
  // Write the default program. This section can be omitted.
  Break;
}
```

(5) GOTO Statement

GOTO statement can change the flow forcibly, This statement uses an index (unique name starting with "@") to point out the new location.

The index name must not be duplicated with the variable, tag and program names.

```
VAR A;

  A = 0;
@ComeHere                  // Assign an index.
  If (A < 10)
  {
      A = A + 1
      Goto ComeHere;    // Move to the assigned index.
  }
```

(6) CONTINUE Keyword

Continue keyword is used in the loop statement. When the system meets the Continue keyword, the flow moves to the first part of the current loop. This keyword is often used in the WHILE, DO-WHILE, FOR statements. Especially, when there are multiple decision making statements (IF-ELSE) in the loop, the keyword is useful.

Following examples have identical operation.

```
While (A<10)
{
  A = A +1;
  If (A < 5)
  {
     // Process when A is less than 5
  }
  Else
  {
    // Process when A is greater than or equal to 5
  }
}
```

```
While (A<10)
{
  A = A +1;
  If (A < 5)
  {
     // Process when A is less than 5
     Continue;
  }
    // Process when A is greater than or equal to 5
}
```

(7) Return Keyword

Every program returns a result value to the caller. RETURN keyword is used for designating a return value and termination of the program.

Following example processes three input parameters and returns the sum of them to the caller.

The name of the program shown below is **MyPgm**.

```
PARAM p1, p2, p3;
Return p1+p2+p3;
```

The program **MyPgm** will be called in the other program as shown below. Then the variable 'RtnValue' will receive the value '6'.

```
RtnValue = MyPgm(1, 2, 3);
```

(8) RUNSCRIPT Keyword

When you call an external program, the caller will be in stand-by mode until the called program (the external program) ends the operation.

However, if you use RunScript keyword to call an external program, the caller will not wait the end of the called program. Therefore both caller and called program will be executed.

```
If (A == 0)
   RunScript NewThread(); // Executes an external program (NewThread)
   A = A + 1;                    // Continues the rest of the program immediately.
```

12.1.7 Internal Functions

In Xpanel Script, there are three types of functions that can be used; Trigonometric Functions, Other Mathematic Functions and Special Functions.

The Trigonometric function returns the value such as Sine, Cosine, Tangent of the assigned real-number parameters.

The Other Mathematic Functions returns the value such as Log, Absolute value, Square value of the assigned real-number parameters.

The Special Functions controls the Xpanel project's features or the project itself. There are functions called 'Subroutine' in this category.

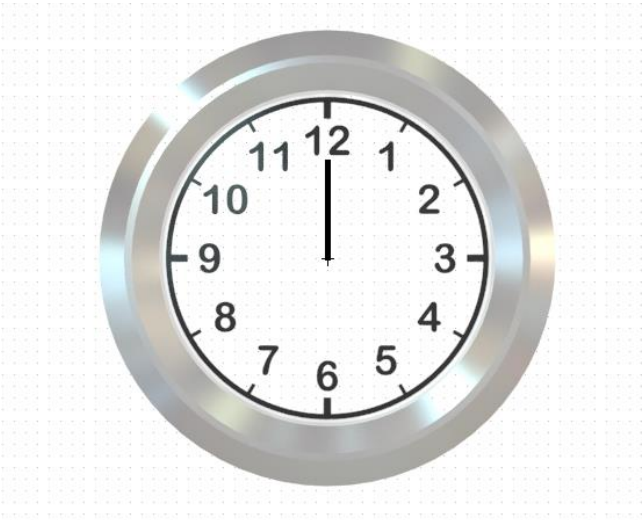
※ Please refer to the 'Script (Appendix)' for the detailed information.

12.1.8 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

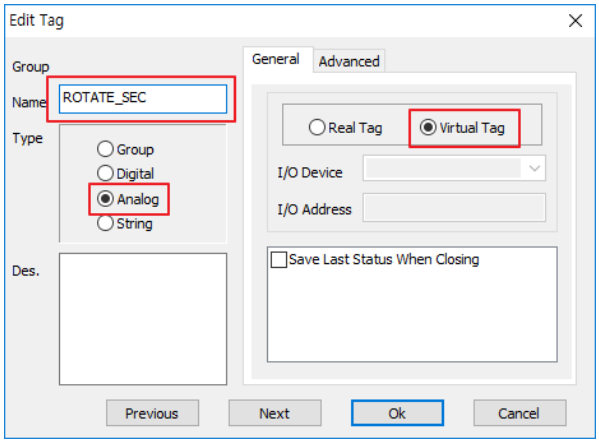
Exercise : Using Rotation Feature Periodically

You can move the second hand of the clock with the script.

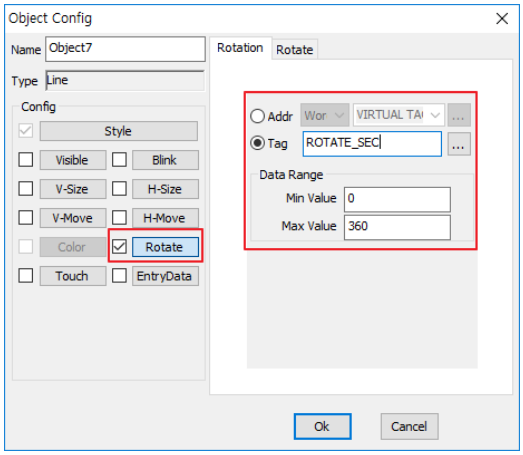


(1) Object Configuration

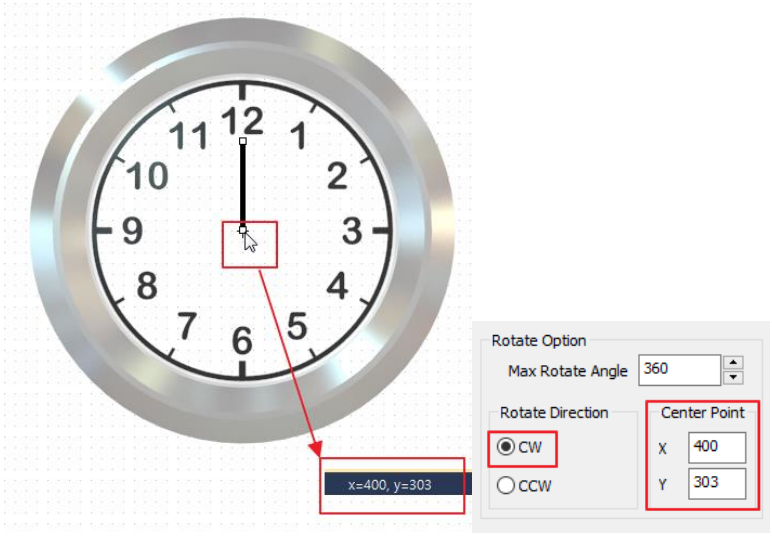
a) Register an analog tag named 'ROTATE_SEC'.



b) Double-click the second hand object to bring up the [Object Configuration] window. Select the [Rotate] feature and configure the object as shown below.

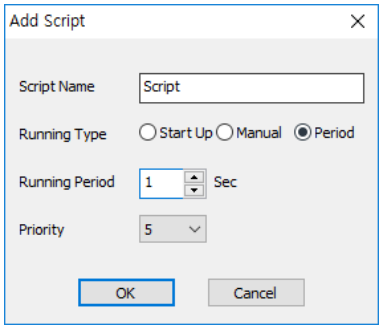


c) In the [Rotate] tab, you have to assign the 'Center Point'. To find the coordinate, place the mouse cursor on the center point. You will find the coordinate at the right-bottom of the Xpanel Designer.

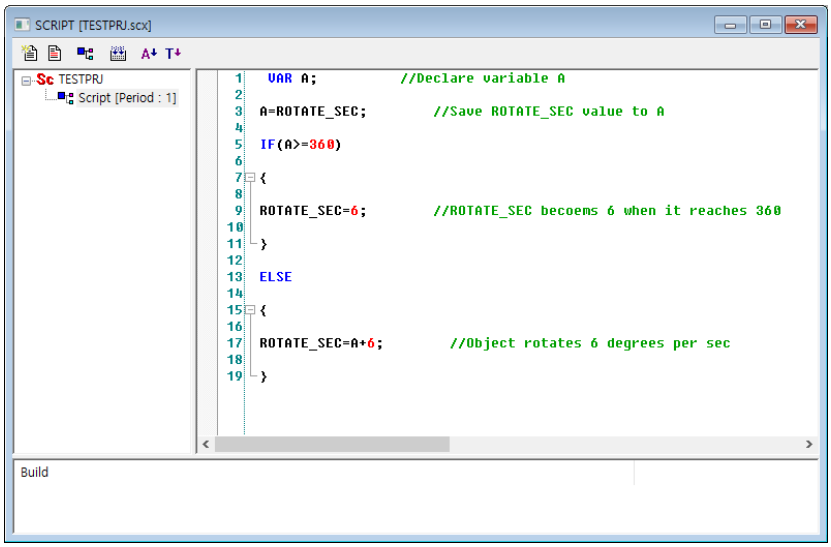


(2) Script

a) Select [Tools] - [Script] - [New Script] button to bring up the [Add Script] window. Set the running type as 'Period' then set the period as 1 sec.



b) Write the script as shown below. When the value of the "ROTATE_SEC" reaches or exceeds 360, the script will store 6 to the tag to continue the rotation. The object will rotate 6° per second.



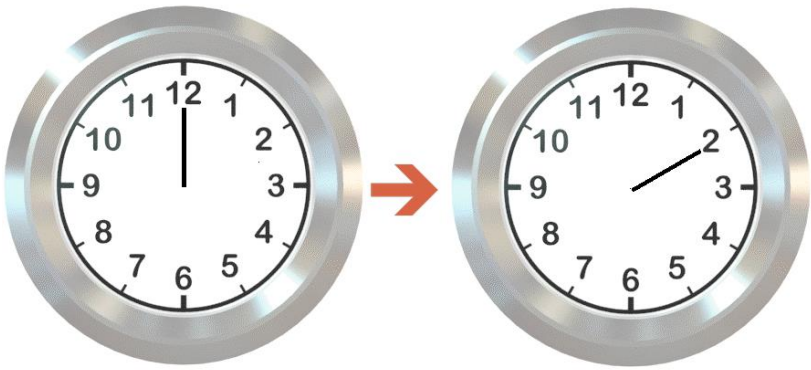
```
VAR A;              //Declare variable A
A=ROTATE_SEC;       //Save ROTATE_SEC value to A

IF(A>=360)
{
ROTATE_SEC=6;       //ROTATE_SEC becomes 6 when it reaches 360
}
ELSE
{
ROTATE_SEC=A+6;     //Object rotates 6 degrees per sec
}
```

c) Compile the script to finish the programming.

(3) Checking the Operation

a) Write the project to Xpanel or execute the project with simulator. You will find that the second hand object rotates each second.



13 I/O Device

To acquire data from the local devices, Xpanel needs to register the local devices to the project. “I/O device” function allows the Xpanel to communicate with the local devices and manage the data with the “Database”.

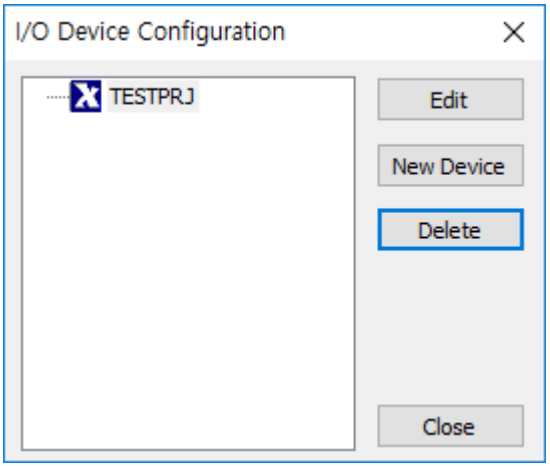
Xpanel supports approximately 90 communication drivers, categorized by serial communication (RS232/422/485) and Ethernet communication (UDP/TCP).

13.1 Settings

In this section, you will be guided to configure the common items of the I/O device, Serial communication and Ethernet communication.

13.1.1 I/O Device Configuration

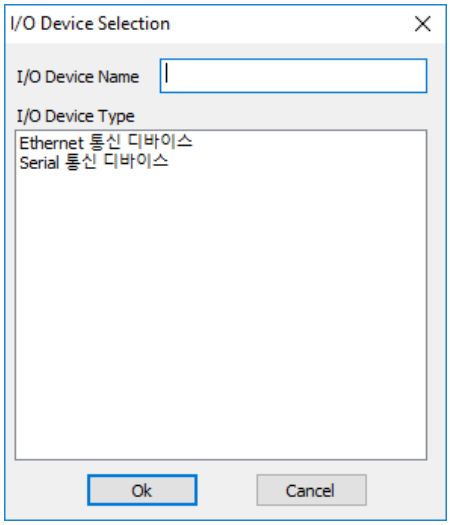
Select [Tools] - [I/O Devices] or press icon to bring up the following window.



Item	Description
Edit	Brings up the configuration window of the selected I/O device.
New Device	Adds a new I/O device. Press this button to bring up the [I/O Device Selection] window.
Delete	Deletes the selected I/O device.

(1) I/O Device Selection

Press [New Device] to bring up the [I/O Device Selection] window.

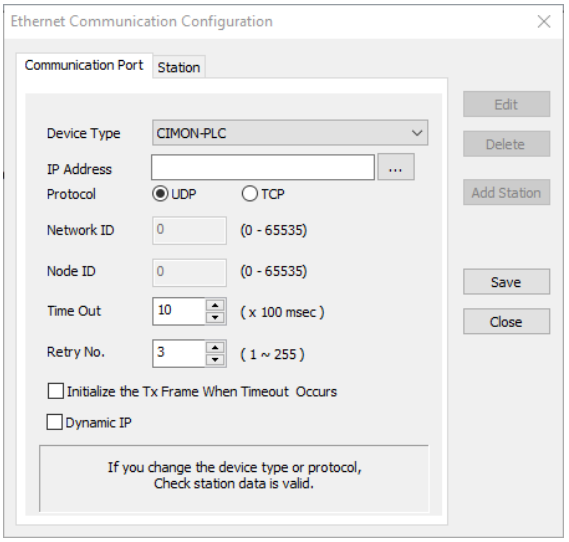


Item	Description
I/O Device Name	Designate the name of the I/O device. Once you enter the device name and press [OK], you will not be able to edit the device name. You cannot enter the device name with special characters such as "!", "@", "~", etc. However, you may use "_" for the device name.
I/O Device Type	Select the type of the target device. Select Serial or Ethernet.

13.1.2 Ethernet Communication Configuration

When you designate the device name and select Ethernet communication device, a window will be brought up as shown below.

(1) Communication port

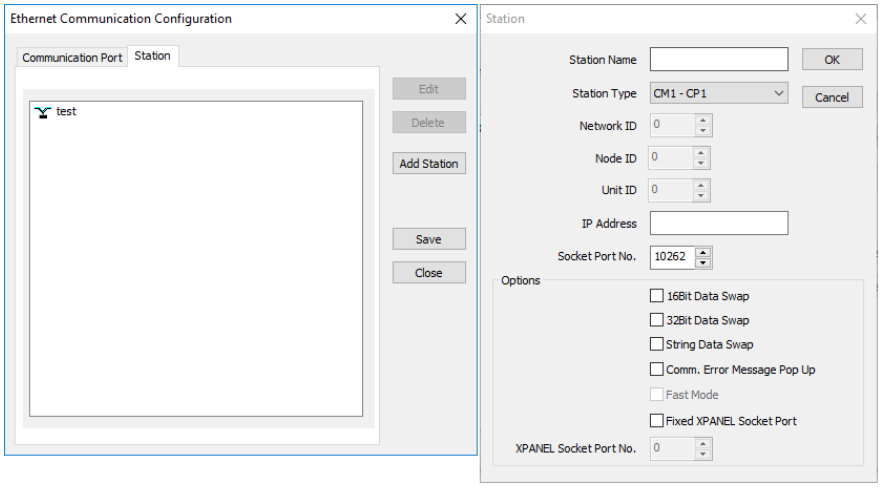


Item	Description
Device Type	Select the target device's protocol.
IP Address	Enter the local device's IP Address. This field is enabled only when the local device is CM- NP/iNP.
Protocol	Select the Ethernet protocol to use. You can select UDP/IP or TCP/IP.
Network ID	Enter the network ID if required by the device protocol.
Node ID	Enter the node ID if required by the device protocol.
Time Out	Timeout is a feature to set the standard of communication fail and success. If the requested frame is not received in the assigned time, it will be processed as communication failure. This option is not applied if the protocol is TCP/IP.
Retry No.	Assign the number of communication retries after the communication failure.
Initialize the Tx Frame When Timeout Occurs	Select this option to initialize the Tx frames that are registered during the timeout period.
Dynamic IP	Select this option if you use dynamic IP.

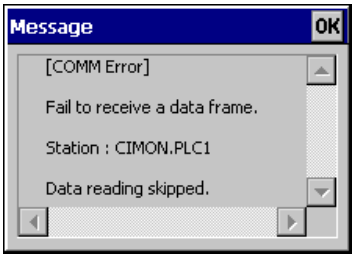
※ Refer to each driver's manual for detailed configuration method.

(2) Station

Assign the configuration items of the target device.



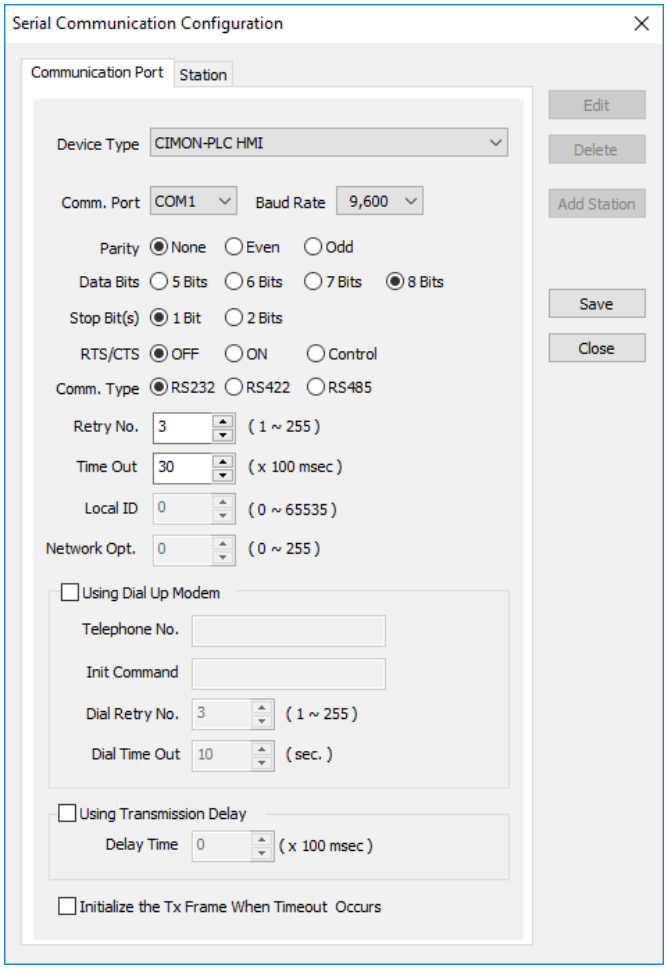
Item	Description	
Edit	Brings up the configuration window of the selected station.	
Delete	Deletes the selected station.	
Add Station	Configures the target device's communication items.	
	Station Name	Designate the station's name. You cannot enter the special characters.
	Station Type	Select the station type. Different station types are provided according to the device type you have selected in the [Communication Port] tab.
	Network ID	Enter the network ID if required by the protocol.
	Node ID	Enter the node ID if required by the protocol.
	Unit ID	Enter the unit ID if required by the protocol.
	IP Address	Enter the target device's IP address.
	Socket Port No.	Enter the socket port number of the target device.
	16Bit Data Swap	Swaps the upper and lower byte of word data (16-bit) during the communication.
	32Bit Data Swap	Swaps the upper and lower word of double-word data (32-bit) during the communication.

	String Data Swap	Supported by some of the communication drivers. Swaps bytes of the string data.
	Comm. Error Message Pop Up	Select this option to pop-up the communication error message. 
	Fast Mode	Select this option to use fast mode. This option is enabled according to the station type.
	Fixed XPANEL Socket Port	Select this option to fix the socket port number of Xpanel.
	Xpanel Socket Port No.	Assign the socket port number of Xpanel.

13.1.3 Serial Communication Configuration

When you designate the device name and select Serial communication device, a window will be brought up as shown below.

(1) Communication Port



Item	Description
Device Type	Select the protocol of the target device.
Comm. Port	Select the COM port to be used at the local device (Xpanel). Each COM port may support different communication method according to the model. You can assign the COM port number up to COM255. Refer to the table below for more information.

Baud Rate	Assign the baud rate. You can select the rate from 300 to 115,200 bps. The rate must be identical to the target device's configuration.	
Parity	Determines the usage of parity bit. You can select none, even or odd.	
Data Bits	Assign the size of the data bits. This option must be equal to the target device's configuration. 5~7 bits provide faster communication speed but generate the errors if the data contains Korean characters. If Korean characters are included in the frames, select 8-bit option.	
Stop Bits	Select bit data to determine the data length by 1-byrte unit. You can select 1 or 2 bits option. This option must be identical to the setting of the target device.	
RTS/CTS	Select this option to control the data flow. RTS is a signal of the device that can receive the data. CTS is a signal of the device that can send the data. Select an option according to the target device.	
Comm. Type	Select the communication type according to the target device. You can select RS232, RS422 and RS485.	
Retry No.	Assign the number of communication retries after the communication failure.	
TimeOut	If the requested frame is not received in the assigned time, it will be processed as communication failure.	
Local ID	Enter the local ID if required by the device protocol.	
Network Opt.	Assign the network option if required by the device protocol.	
Using Dial Up Modem	Select this option if you are using the modem.	
	Telephone No.	Enter the number of the modem.
	Init Command	Enter the initialization command if necessary.
	Dial Retry No.	Assign the number of communication retries after the dial failure.
	Dial Time Out	If the requested frame is not received in the assigned time, it will be processed as communication failure.
Using Transmission Delay	Assign the time to delay the data transmission from the Xpanel.	
Initialize the Tx Frame When Timeout Occurs	Select this option to initialize the Tx frames that are registered during the timeout period.	

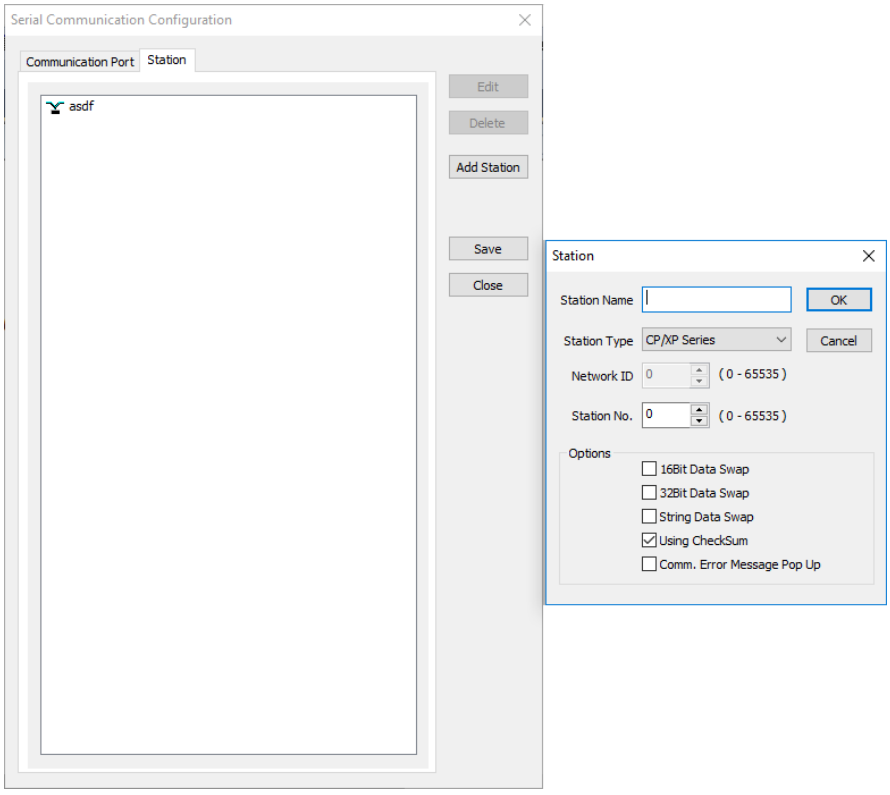
※ Refer to the corresponding driver manual for the configuration.

Following is a communication types supported by each COM ports of Xpanel models.

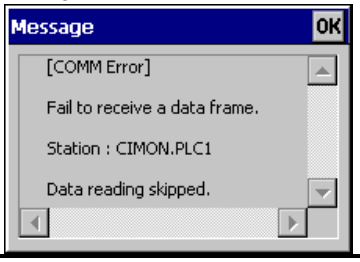
	XT04	XT07	XT08	XT10	XT12	XT15
COM1	RS232	RS232	RS232	RS422/485	RS422/485	RS422/485
COM2	RS422/485	RS422/485	RS422/485	RS232	RS232	RS232
COM3	-	-	-	RS232	RS232	RS232

(2) Station

Enters the configuration of the target device.



Item	Description
Edit	Brings up the configuration window of the selected station.
Delete	Deletes the selected station.

Add Station	Enter the configuration of the target I/O device.	
	Station Name	Enter the station's name. You cannot use special characters.
	Station Type	Select the target device's type. Different station types will be displayed according to the device type you have assigned in the [Communication Port] tab.
	Network ID	Enter the network ID if required by the device protocol.
	Station No.	Enter the station number of the target device.
	16Bit Data Swap	Swaps the upper and lower byte of word data (16-bit) during the communication.
	32Bit Data Swap	Swaps the upper and lower word of double-word data (32-bit) during the communication.
	String Data Swap	Supported by some of the communication drivers. Swaps bytes of the string data.
	Using CheckSum	Communicates with the checksum of the protocol.
	Comm. Error Message Pop Up	Select this option to pop-up the communication error message. 

13.2 Related Features

In this section, you can find functions and subroutines[7] frequently used for I/O Device.
For more detailed information, please refer to the next section.

⚠ All functions must be used with brackets.

Command			Description
Communication	Function	OpenPort	Opens the serial port.
	Function	ClosePort	Closes the serial port.
	Function	SendByte	Sends byte data with the selected port.
	Function	SendString	Sends string data with the selected port.
	Function	ReceiveByte	Receives data with the selected port.
	Function	GetCommStatus	Checks the selected station's communication status.
	Subroutine	EnableDriver	Controls the selected station's communication.

⚠
- EnableDriver() command only supports MODBUS RTU. (XpanelDesigner V2.52)
- GetCommStatus() command can only be used in the XpanelDesigner V2.52 or above.

[7] Subroutine operates a certain action without any value returned, unlike the functions have return value.

PortNo., BaudRate, Parity, Stop Bit use predefined constants. Refer to the table shown below for the details.

Constant Name	Value	Usage
COM232	0	Uses COM1 port as RS232C mode.
COM422	1	Uses COM1 port as RS422 mode.
COM485	2	Uses COM1 port as RS485 mode.
COMAUX	3	Uses COM2 port as RS232C mode.
BPS300		300 bps
BPS600		600bps
BPS1200		1200bps
BPS2400		2400bps
BPS4800		4800bps
BPS9600		9600bps
BPS19200		19200bps
BPS38400		38400bps
BPS56000		56000bps
BPS57600		57600bps
BPS115200		115200bps
BPS128000		128000bps
BPS256000		256000bps
_PARITY_NONE_		NO PARITY BIT
_PARITY_EVEN_		EVEN PARITY
_PARITY_ODD_		ODD PARITY
_PARITY_MARK_		MARK PARITY
_PARITY_SPACE_		SPACE PARITY
_STOPBIT_ONE_		1 STOP BIT
_STOPBIT_TWO_		2 STOP BITS
_STOPBIT_ONE5_		1.5 STOP BIT

OpenPort	Opens the serial port.
Function	n=OpenPort(*PortNo., BaudRate, Parity, Data Bit, Stop Bit*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *BaudRate* (use predefined constant, _BPSxxx_) *Parity* (use predefined constant, _PARITY_xxx_) *Data Bit* (7 or 8) *Stop Bit* (use predefined constant, _STOPBIT_xxx_) This function opens the assigned serial port. You cannot use this function if the port has already been opened. Once you opened the COM port with the script, it has to be closed with ClosePort() function. When an error occurs during the port opening, the script will return 0. If the port is successfully opened, the script will return the value other than 0.
Example	Opens COM1 port with following options; RS485, 19200bps, No Parity, Data Bit 8, Stop Bit 1. OpenPort(_COM485_, _BPS19200_, _PARITY_NONE_, 8, _STOPBIT_ONE_);

ClosePort	Closes the serial port.
Function	n=ClosePort(*PortNo.*)
Description	*PortNo.* (use predefined constant, _COMxxx_) Closes the assigned serial port which is opened by the OpenPort() function. When an error occurs during the port closing, the script will return 0. If the port is successfully closed, the script will return the value other than 0.
Example	Closes COM1 port. ClosePort(_COM485_);

SendByte	Sends byte data with the selected port.
Function	n=SendByte(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (0~255) This function is used when you wish to transmit a data with the COM port which is opened by OpenPort() function. *Data* must be a byte data in the range of 0(0x00) to 255(0xFF). If the data is greater than 255(0xFF), only the lower byte will be transmitted. For example, if you assign *Data* with 0x1234, only 0x34 will be transmitted. OpenPort() function must be used before the execution of SendByte() function. If an error occurs during the data transmission, the script will return 0. If the data is successfully transmitted, the script will return the value other than 0.
Example	Transmits byte data "2" through COM1 port which uses RS485 communication. SendByte(_COM485_, 2);

SendString	Sends string data with the selected port.
Function	SendString(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (Enter the String Tag or "String") This function is used when you wish to transmit a data with the COM port which is opened by OpenPort() function. The *Data* must be assigned with string tag or string data. If you use the string data, it must be used with double quotation marks. (" ") OpenPort() function must be used before the execution of SendString() function. If an error occurs during the data transmission, the script will return 0. If the data is successfully transmitted, the script will return the value other than 0.
Example	Transmits byte data "TEXT" through COM1 port which uses RS485 communication. SendString(_COM485_, "TEXT");

ReceiveByte	Receives data with the selected port.
Function	ReceiveByte(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (0~255) This function is used when you wish to receive a data with the COM port which is opened by OpenPort() function. Once you receive the data successfully, the *Data* (0~255) will be stored in the variable. If there is no received data until the timeout, the script will return 256. OpenPort() function must be used before the execution of ReceiveByte() function.

Example	Receives byte data through the COM1 port which uses RS485 communication. Saves the received data at the variable 'RxData'.
	VAR RxData;
	OpenPort(_COM485_, _BPS19200_, _PARITY_NONE_, 8, _STOPBIT_ONE_);
	RxData = RecieveByte(_COM485_, 1000);
	If(RxData < 256)
	{
	}
	……

GetCommStatus	Checks the selected station's communication status.
Function	GetCommStatus("*DeviceName*", "*StationName*")
Description	Returns the status of the assigned *DeviceName*'s *StationName*.. If the communication is normal, the script will return 1. If there is an error at the communication, the script will return 0.
Example	Checks the communication status of the device "PLC"'s station "STATION". CommStatus = GetCommStatus("PLC","STATION);

EnableDriver	Controls the selected station's communication.
Subroutine	EnableDriver(*"DeviceName", "StationName", Enable/Disable*)
Description	Controls the communication of the assigned *DeviceName*'s *StationName*. Enter 1 to *Enable/Disable* to enable the communication. Enter 0 to disable the communication. This function only supports MODBUS RTU at Xpanel Designer V2.52.
Example	Enables the station "STATION " of "MODBUS" device. EnableDriver("MODBUS", "STATION", 1);

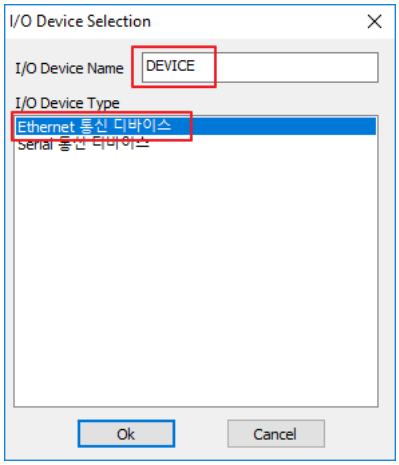
13.3 Exercise

This section explains the basics of the feature. Please utilize the feature according to your site environment.

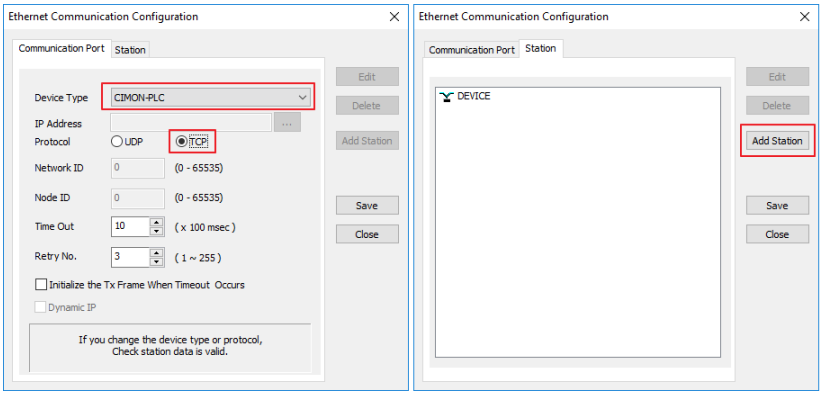
Exercise : Connecting to CIMON PLC through Ethernet

(1) I/O Device Configuration

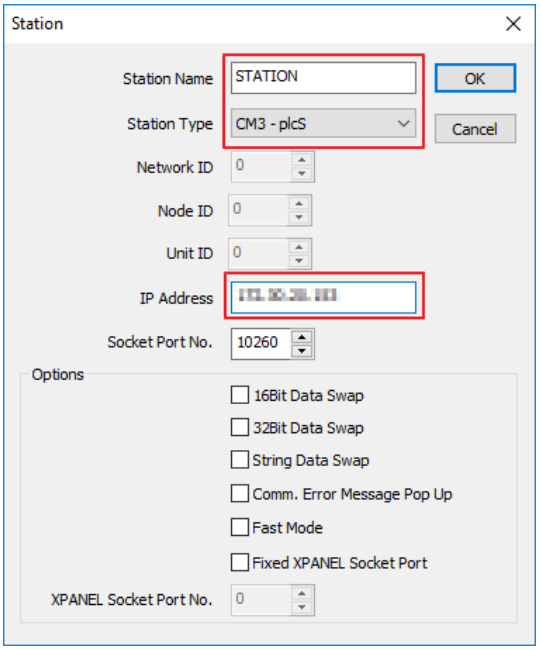
a) Select [Tools] - [I/O Devices] and press [New Device] button. Enter the device's name and select "Ethernet Communication Device" as shown below.



b) In the [Communication Port] tab, select the device type. In this example, select 'CIMON-PLC'. Go to [Station] tab and press the [Add Station] button.

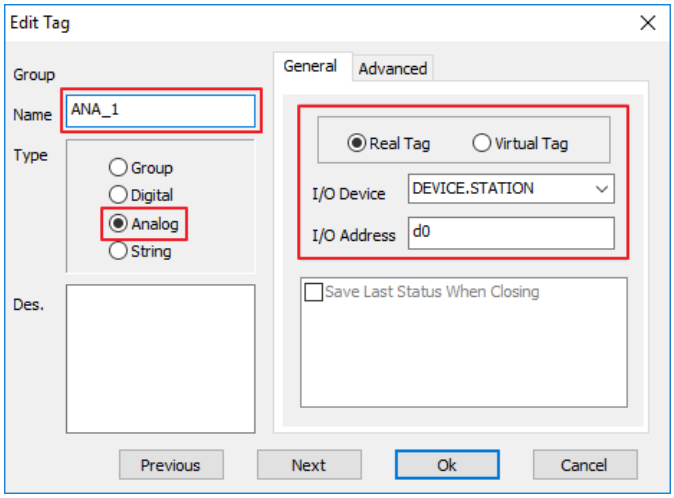


c) In the [Station] window, enter the station name, type, address, etc. Press [OK] button to finish the configuration.

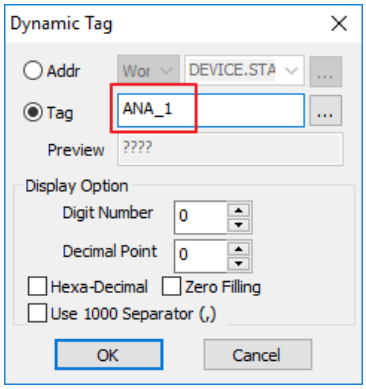


(2) Page Configuration

a) To receive the data from PLC, register a real tag to the database. Go to database and create an analog tag as shown below.

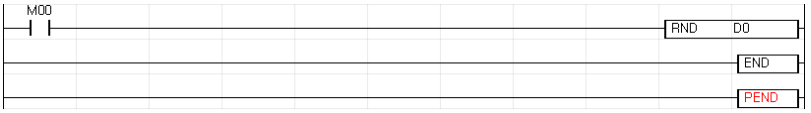


b) To express the tag value, select [Draw] - [Dynamic Tag] and click on the page. Configure the object as shown below and press [OK].

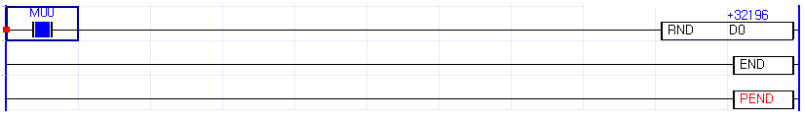


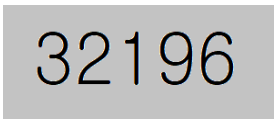
(3) Checking the Operation

a) In the CICON software, create the program as shown below and download it to the PLC. The program saves the random number at D0.



b) Write the program to the Xpanel and execute it. When M00 contact goes ON, you will find that the value stored in D0 changes.





14 Data Server

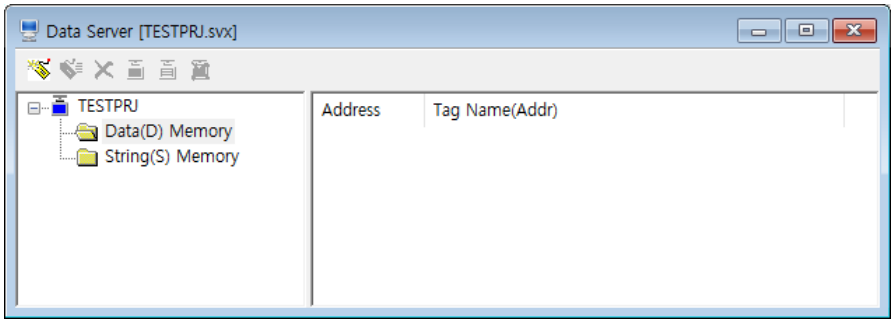
14.1 Xpanel Data Server

Xpanel is capable of transmitting the tag values to CIMON-SCADA through Ethernet. For this function, Xpanel provides two memory areas: Data Memory and String Memory. Each memory area is composed of 5,000 buffers, using them to communicate with CIMON-SCADA.

To use this function, Xpanel must be configured with fixed IP address.

14.1.1 Settings

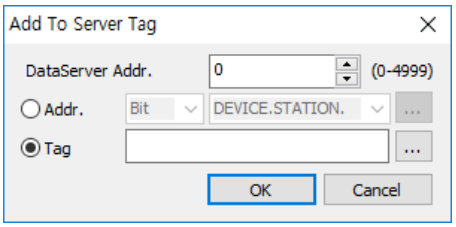
Select [Tools] - [Data Server] - [Xpanel Data Server] or press button to bring up the configuration window as shown below.



Item	Description
	Registers a tag for the data server.
	Edits the selected tag.
	Deletes the selected tag.
Data(D) Memory	Displays the tags registered in the data memory area. The tags support floating-point number.
String(S) Memory	Displays the tags registered in the string memory area. Only string tags can be registered.

(1) Data Memory

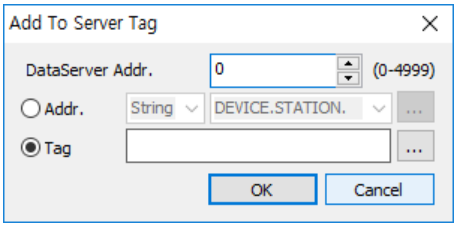
Select [Data(D) Memory] in the tree structure and press button to bring up the configuration window as shown below.



Item	Description
DataSever Addr.	Designate an address to be used in the CIMON-SCADA. The address will be displayed in format of D + address. E.g.) D0000, D0001 ··· D4999
Addr	Assign an address of the target device to be used as data server tag. You can select the data type (Bit/Word) and press ... button to configure the detailed address.
Tag	Assign a digital/analog tag to be used as data server tag. Press ... button to browse the tags or you can manually enter the tag name.

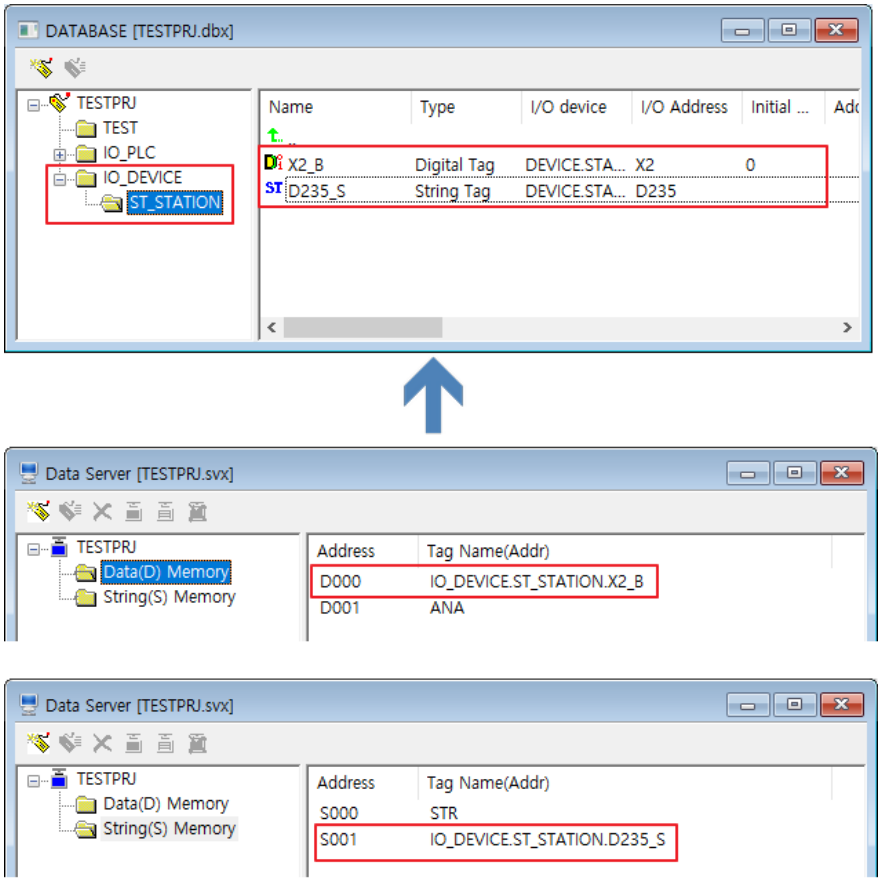
(2) String Memory

Select [String(S) Memory] in the tree structure and press button to bring up the configuration window as shown below.



Item	Description
DataSever Addr.	Designate an address to be used in the CIMON-SCADA. The address will be displayed in format of S + address. E.g.) S0000, S0001 … S4999
Addr	Assign an address of the target device to be used as data server tag. You can only assign string data type and press [...] button to configure the detailed address.
Tag	Assign a string tag to be used as data server tag. Press [...] button to browse the tags or you can manually enter the tag name.

If you register a data server tag with device address, a real tag will be created in the database with the corresponding information. The device name and the station name will be the group tag, while the device address and the data type are used as tag name.



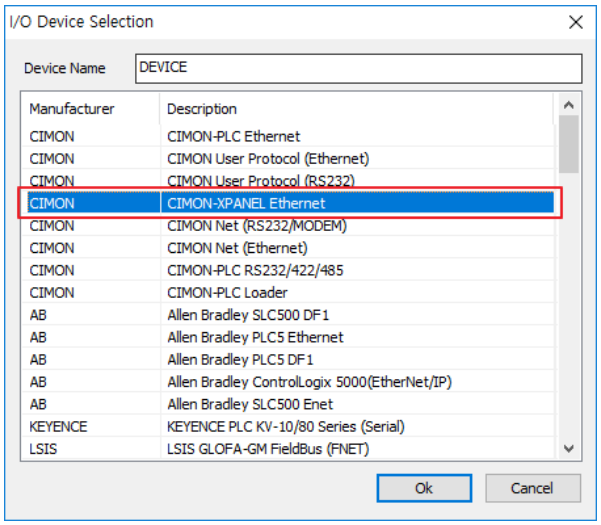
14.1.2 Related Features

Configuration in CIMON-SCADA

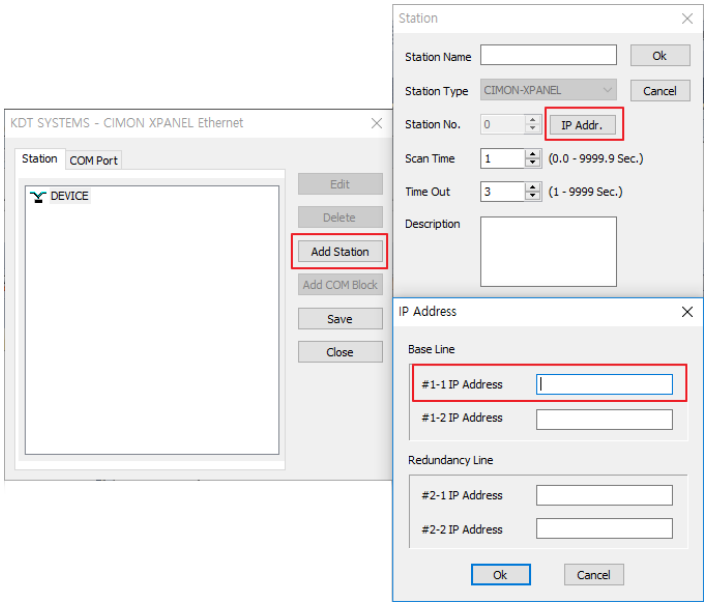
To properly use the Xpanel Data Server function, you must configure the CIMON-SCADA.

Configuring CIMON-SCADA

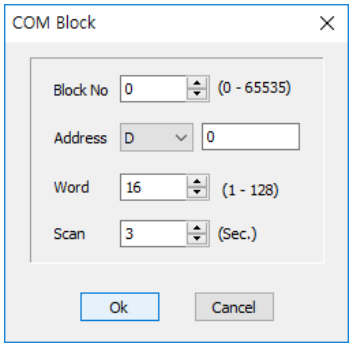
a) In CimonD, select [Tools] - [I/O Device]. Press [New Device] to bring up the [I/O Device Selection] window as shown below. Select 'CIMON-XPANEL Ethernet' and designate a name of the device.



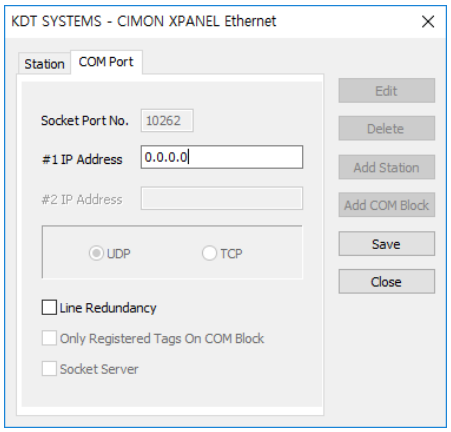
b) In the next window, press [Add Station] to enter the configuration of the Xpanel. Press [IP Addr.] to enter the target device's IP address. Then assign scan time, time out, etc.



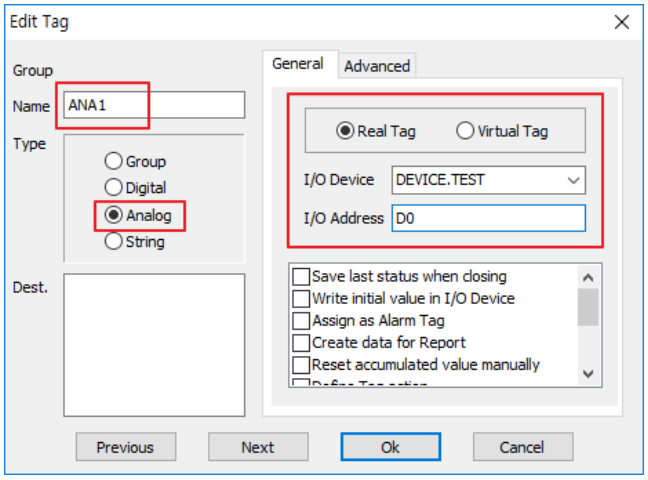
c) Press [Add COM Block] button to assign a data block for the communication.



d) Go to [COM Port] tab and enter the local PC's address.



e) Register a real tag according to the COM block's data range.



f) Execute CimonX to check the operation.

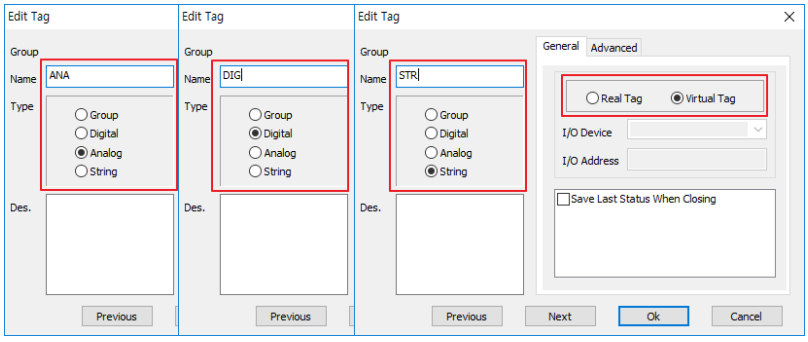
14.1.3 Exercise

> This section explains the basics of the feature. Please utilize the feature according to your site environment.

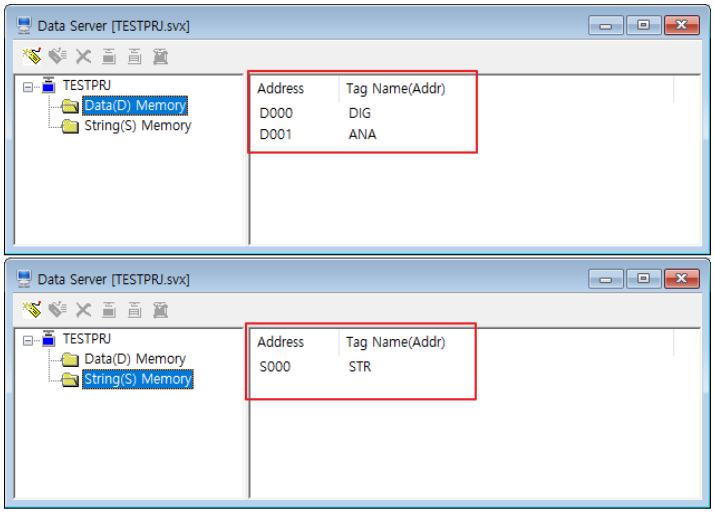
Exercise : Connecting to CIMON-SCADA with Ethernet

(1) Data Server Configuration

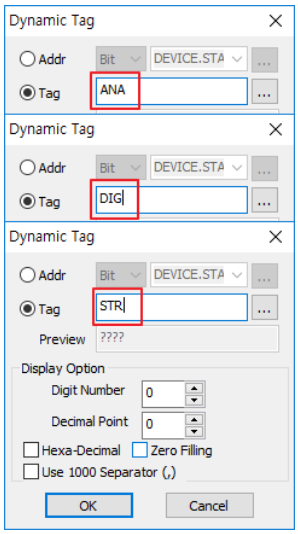
a) Select [Tools] - [Database] to create the tags for the communication with CIMON-SCADA. Create analog, digital, string virtual tags.



b) Select [Tools] - [Data Server] - [Xpanel Data Server] and add analog/digital tag to the [Data(D) Memory]. In [Sting(S) Memory], add string tag.

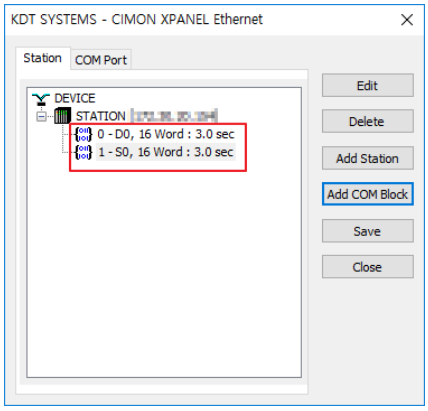


c) To check the tag value in the pages, add dynamic tag objects to the page.



(2) CimonD Configuration

a) Execute CIMON-SCADA and add COM block to the I/O device as shown below.



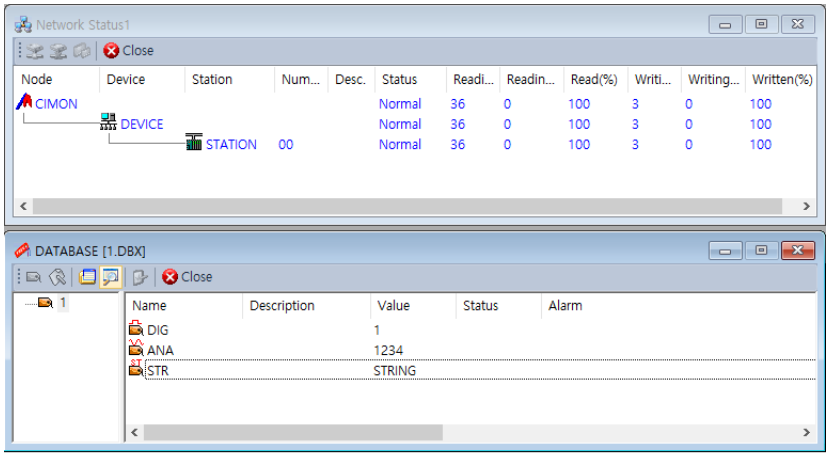
b) Select [Tools] - [Database] and register real tags with address D0, D1 and S0. Set D0 as a digital tag, D1 as an analog tag and S0 as a string tag.

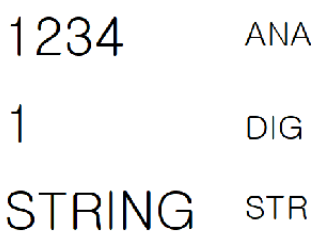
Name	Type	I/O device	I/O address	Initial v...
DIG	Digital Tag	DEVICE.STA...	D0	0
ANA	Analog Tag	DEVICE.STA...	D1	0
STR	String Tag	DEVICE.STA...	S0	

(3) Checking the Operation

a) Write the project to Xpanel and execute the CimonX. Enter values to the DIG, ANA, STR tags.

b) You can check the network is operating properly.





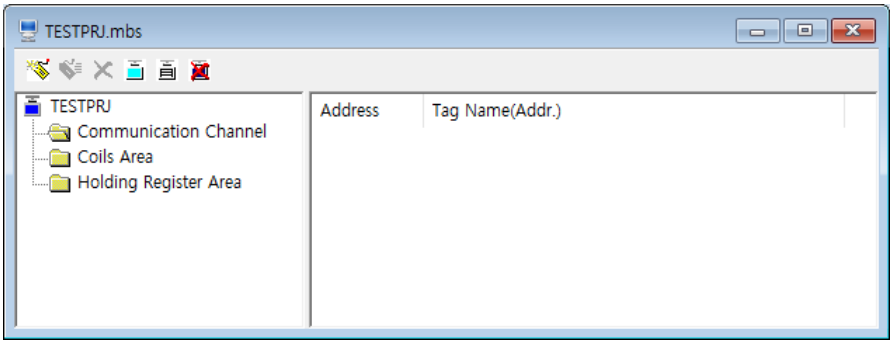
14.2 MODBUS Slave

Xpanel device has an individual memory for the MODBUS Slave operation. If there is a request from Master, through the memory, the Slave will respond with the frame containing data in the memory. You can use MODBUS RTU and TCP communication with this function. This function supports general MODBUS protocol.

The memory for MODBUS consists of Coils (Max. Size: 5,000) and Holding Register (Max. Size: 10,000). You can register only digital tags to the Coils area. In Holding Register area, you can register analog and string tags.

14.2.1 Settings

Select [Tools] - [Data Server] - [Modbus Slave] or double-click Modbus Slave button to bring up the window as shown below.

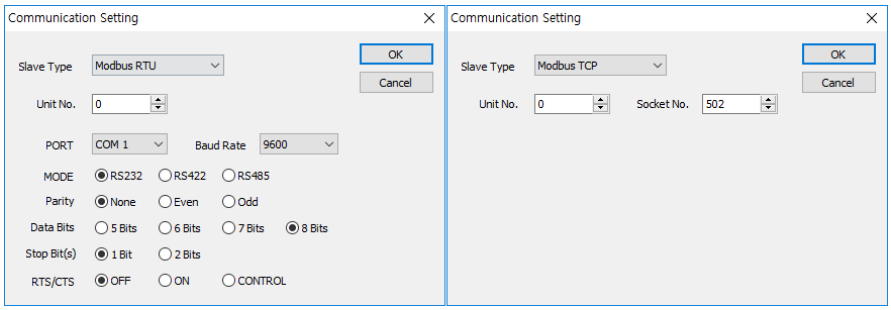


Item	Description
	Adds tags to the Coils and Holding Register area. You cannot add the tags in 'Communication Channel' folder. If you select an existing communication channel and press this button, you can only add string tags.
	Edits the selected tag.
	Deletes the selected tag.
	Adds a communication channel for MODBUS Slave. This button is enabled only when you select the 'Communication Channel' folder. You can register up to 3 channels.
	Edits the selected communication channel.
	Deletes the selected communication channel

Communication Channel	Registers the communication channel. The added channels will be displayed at the bottom of the folder icon.
Coils Area	Shows or adds the tags in the Coils area.
Holding Register Area	Shows or adds the tags in the Holding Register.

(1) Communication Channel

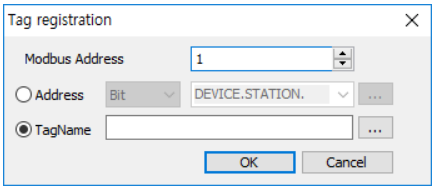
When you select [Communication Channel] in the tree structure and press button, configuration window will appear as shown below.



Item	Description
Slave Type	Selects the MODBUS Slave type. You can select MODBUS RTU or MODBUS TCP. When you select MODBUS TCP, you can only configure Unit No. and Socket No.
Unit No.	Assigns the Slave's unit number.
Socket No.	Assigns the Slave's socket port number. The default socket is 502. It is recommended to change the socket number only in case of the communication failure.
PORT	Assigns COM port to use MODBUS RTU Slave.
Baud Rate	Configures baud rate. (300bps ~ 256,000bps)
MODE	Selects one from the following communication modes: RS232, RS422, RS485.
Parity	Determines whether to use parity bit or not.
Data Bits	Determines the data bit. You can select an option among 5~8bits. If there is a Korean data, please select 8-bit option.
Stop Bit(s)	Determines the number of stop bits between the frames.
RTS/CTS	Determines whether to use RTS/CTS or not.

(2) Coils Area

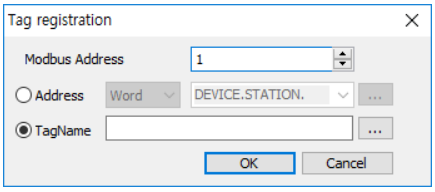
Select [Coils Area] and press button to bring up the configuration window as shown below.



Item	Description
Modbus Address	Assign a MODBUS address for the device address or tag. In Coils area, the address starts from 00001. The most significant digit "0" indicates the function code, which does not have a numerical value. E.g.) 00001, 00002 ··· 05000
Address	Assigns a device address for the current MODBUS Slave address. You can only register bit data. Press [...] button to configure the detailed device address.
TagName	Assigns a digital tag for the current MODBUS Slave address. You can only add the digital tag. Press [...] button to browse the tag or you can manually enter the tag name.

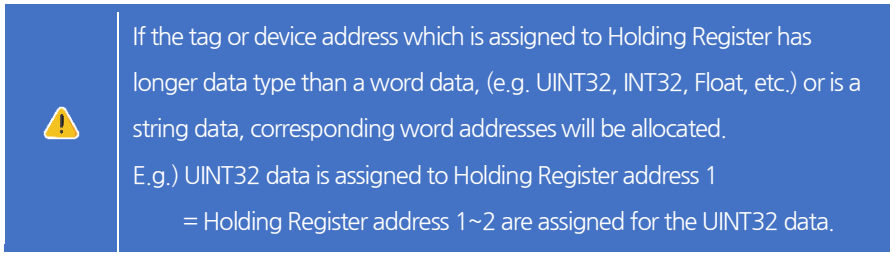
(3) Holding Register Area

Select [Holding Register Area] and press button to bring up the configuration window as shown below.

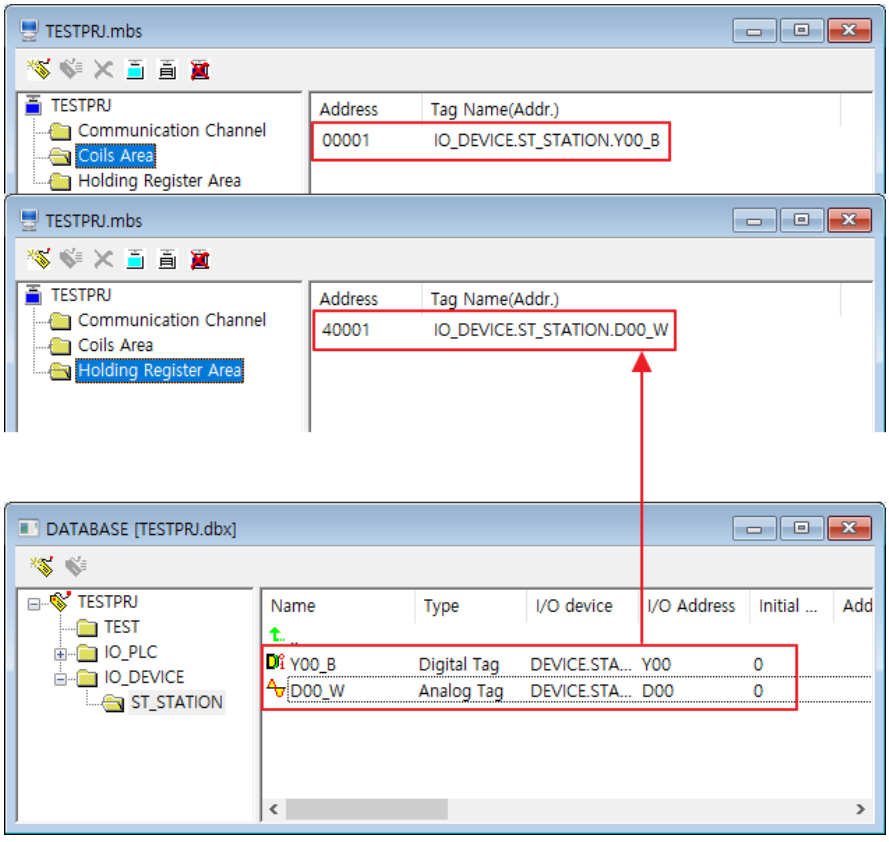


Item	Description
Modbus Address	Assign a MODBUS address for the device address or tag. In Holding Register area, the address starts from 40001. The most significant digit "4" indicates the function code, which does not have a numerical value. E.g.) 40001, 40002 ··· 410000
Address	Assigns a device address for the current MODBUS Slave address. You can register word and string data. Press [...] button to configure the detailed device address.

TagName	Assigns a digital tag for the current MODBUS Slave address. You can add the analog and string tag. Press [...] button to browse the tag or you can manually enter the tag name.



If you assigned device address for the MODBUS Slave address, a real tag will be created with the corresponding information, in the database. Device name and station name will be the group tag and the tag will be registered in the group tag.

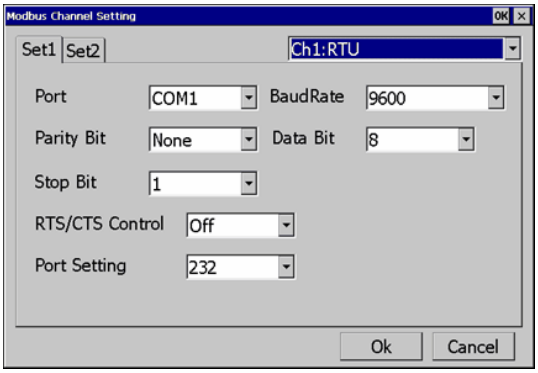


14.2.2 Related Features

Xpanel MODBUS Channel Config.

When MODBUS RTU feature is used in the project, you can check and set the related communication settings in the Xpanel device.

In the [Xpanel Config] window, select [Modbus] to bring up the window as shown below.



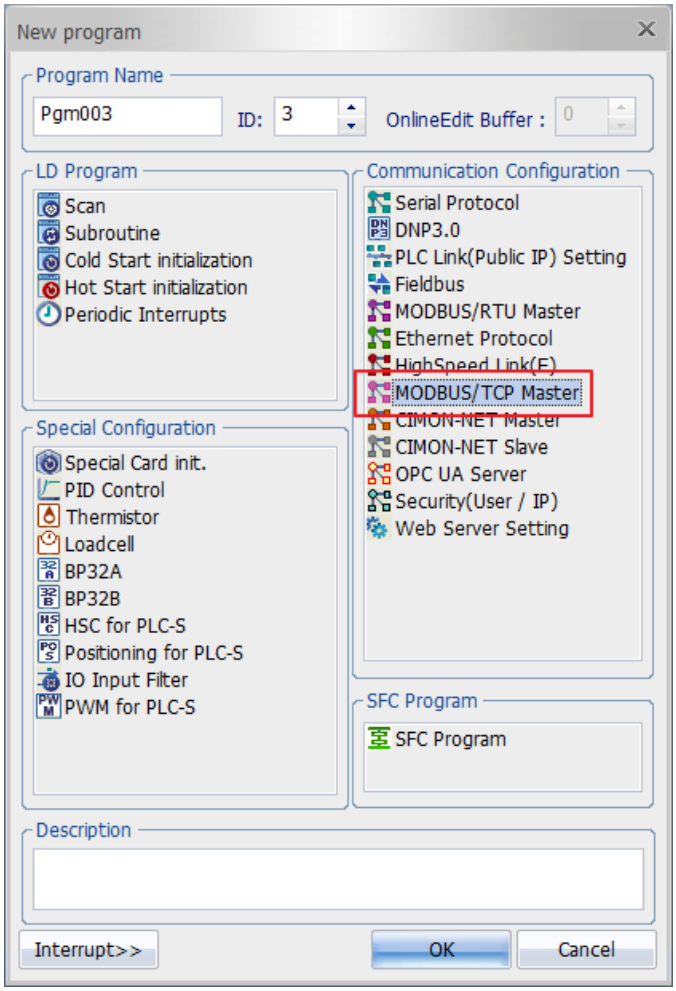
In case of the MODBUS TCP, the window will appear with all fields that are disabled. The Xpanel device will communicate with the Ethernet IP which is configured in the Ethernet Loader or Comm. Config.

Configuration in CICON

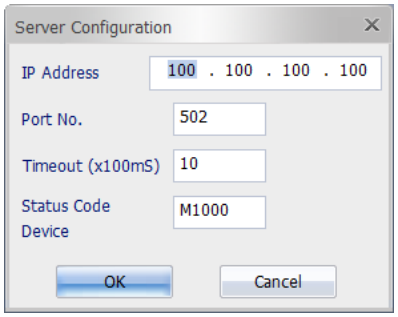
After configuring the MODBUS Slave in Xpanel Designer, you can connect the CIMON-PLC to Xpanel with the configuration in CICON software. Following is an example of PLCS configuration for the communication.

CICON Configuration

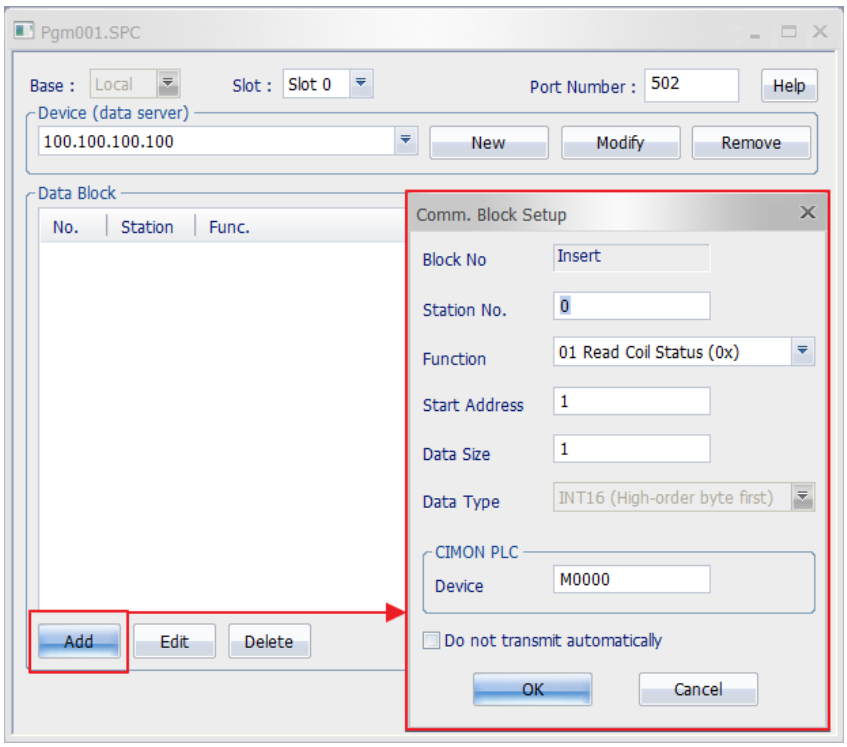
a) Create a project that uses PLCS CPU. Press [File] - [New Program] and select MODBUS/TCP Master. If you are using serial communication, select MOBUS/RTU Master.



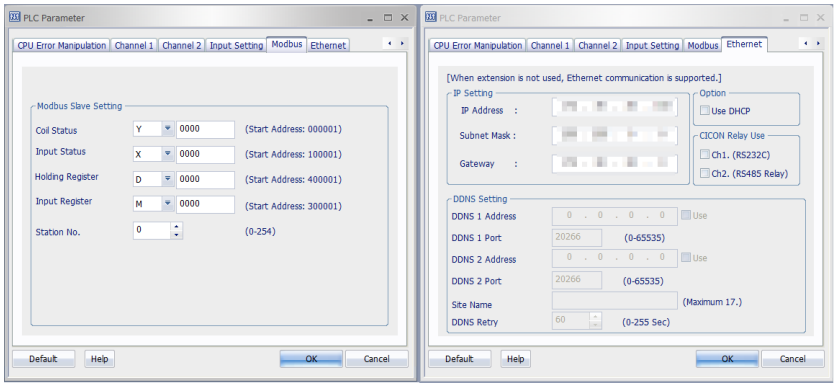
b) Press [New] to configure the target device's (Slave's) settings such as IP address, Port Number, Timeout and Status Code Device. Press [OK} to finish the configuration.



c) Press [Add] button to add the communication block as shown below.



d) After adding a communication block, select [Tool] - [PLC Parameter] - [Modbus] to set the device addresses for the communication. Then go to [Ethernet] tab to enter the configuration of the PLC. If you are using serial communication, go to [Channel 1] or [Channel 2] tab.



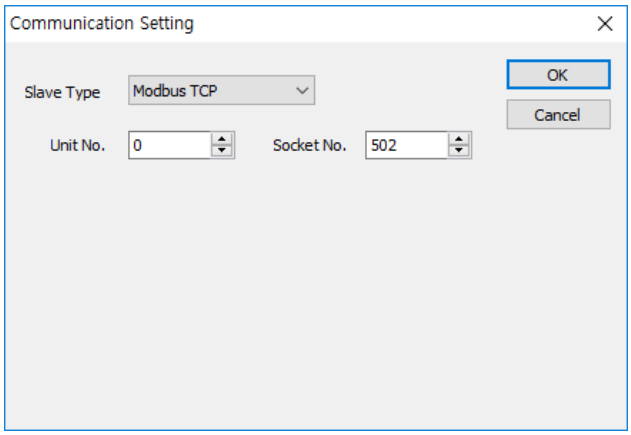
14.2.3 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

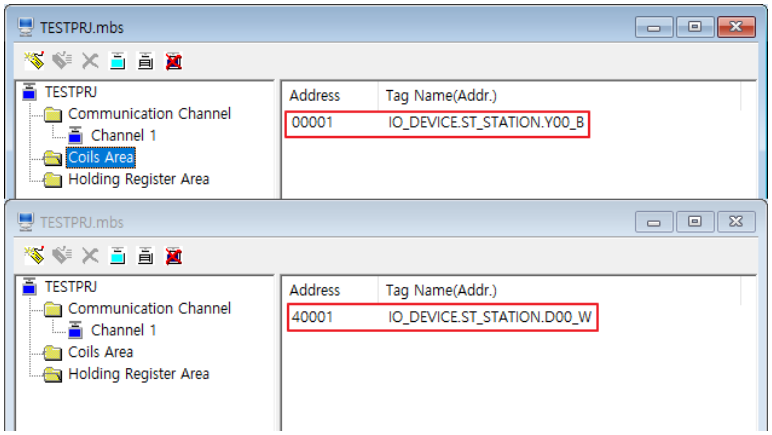
Exercise : Connecting to PLCS with Ethernet

(1) MODBUS Slave Configuration

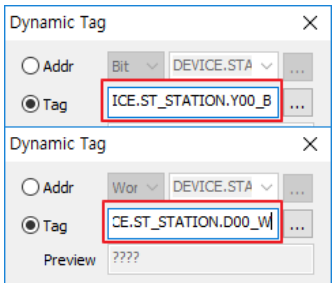
a) Select [Tools] - [Data-Server] - [Modbus Slave] to add the communication channel as shown below.



b) Add digital device address to [Coils Area]. Add analog device address to [Holding Register Area]. The device addresses are assigned as shown below.

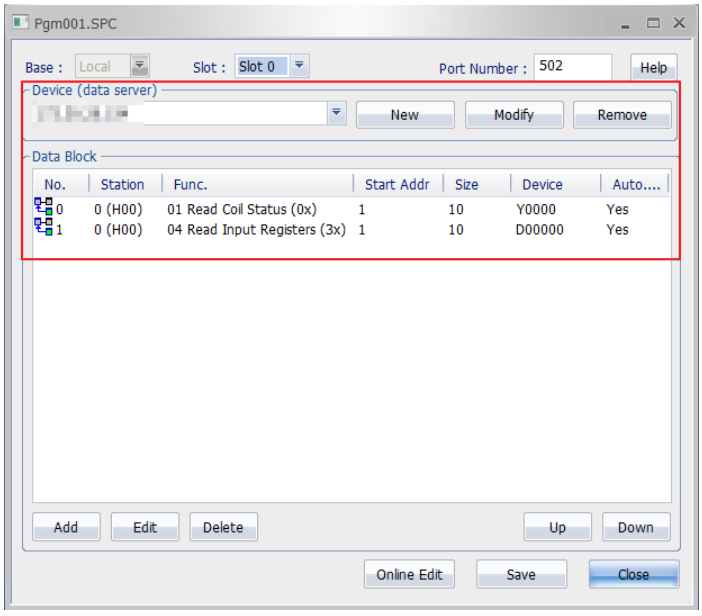


c) Add dynamic tag objects to the page to display the tag values.

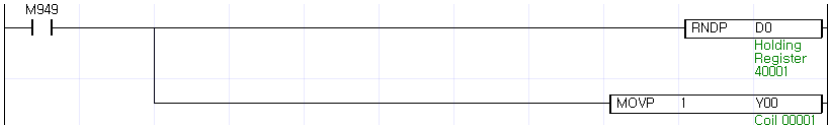


(2) CICON Configuration

a) In CICON software, add a communication program and set parameters as shown below. For more detailed information, please refer to [Related Features] - [Configuration in CICON].



b) Add a scan program and configure the program as shown below. The program saves random number at D0, and 1 at Y00 each time the M949 turns ON.

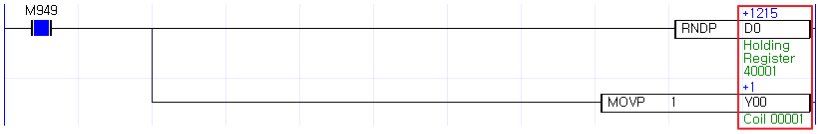


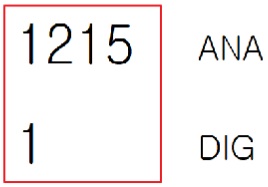
(3) Checking the Operation

a) Write the project to Xpanel and execute it. Download the programs and parameters to PLCS.

b) Check the values in Xpanel. You can check the Tx/Rx frames by selecting [Frame Monitor] in Xpanel Config. Window.

c) You can find that the communication is operating normal as shown below.





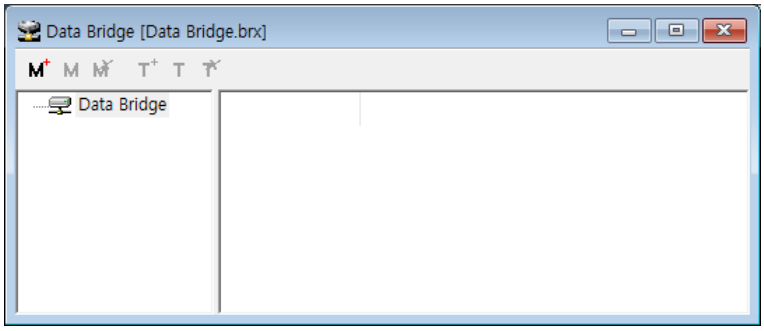
15 Data Bridge

XPANEL can act as a bridge and allow exchange of data between other devices. Devices that are connected to different Serial ports, or Serial and Ethernet ports can exchange data.

- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- Please note that excessive use of data bridge function can cause delays in PLC communication.

15.1 Settings

To bring up the data bridge editor window, double-click 'Data Bridge' in the project workspace. You may also select [Tools] - [Data Bridge] or icon for the same command.



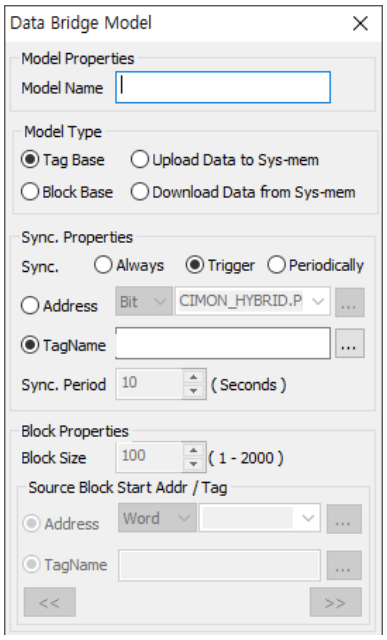
(1) Add Data Bridge Model

Adds a new data bridge model. Item settings will depends on the model type.

- Common

Item	Description
Model Name	Enter the model name in the text field. Duplicated name is not allowed.
Model Type	Select the method to synchronize each device data. You can exchange data based on tag, block, and system memory.

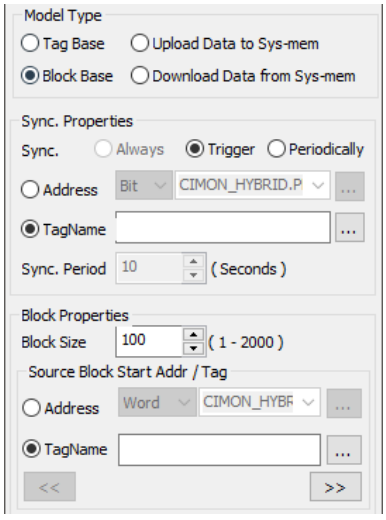
- **Tag based model**



Item	Description	
Model Type (Tag Base)	Select model type as 'Tag base'. Source and destination data will be exchanged by tag unit. This method is used when the number of data for synchronizing is small. You must add source and destination tag (address) after the model settings.	
Sync. Properties	Select the method to synchronize the data.	
	Always	Source and destination data are synchronized immediately when source data is changed.
	Trigger	Source and destination data are synchronized when triggering tag is set. You can register the analog or digital tag.
	Periodically	Source and destination data are synchronized at the specified intervals. You can assign intervals from 1 to 10000000 seconds.

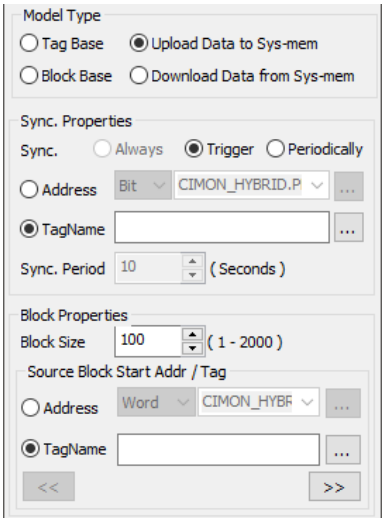
⚠ Through the data bridge function, data is processed in seconds even the real data in PLC is processed in milliseconds.

- **Block based model**



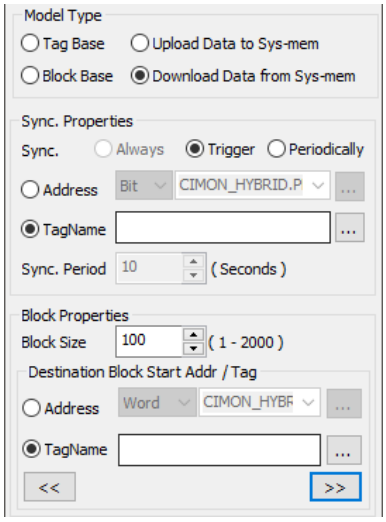
Item	Description	
Model Type (Block Base)	Select model type as 'Block base'. Source and destination data will be exchanged by Block unit. This method is used when transfer consecutive address data to the destination.	
Sync. Properties	Select the method to synchronize the data.	
	Trigger	Source and destination data are synchronized when triggering tag is set. You can register the analog or digital tag.
	Periodically	Source and destination data are synchronized at the specified intervals. You can assign intervals from 1 to 10000000 seconds.
Block Size	Enter the consecutive address size (block size) for the block. This address size will be based on the data type at the starting block. If the block starts with a DWord (INT, UINT, Float), the address data size will be counted as DWord.	
Source Block Start Addr / Tag	Enter the starting tag or address of the continuous addresses.	
Source Handshake Start Addr / Tag	This is used to internally when Xpanel reads the data. You must enter the digital tag including same I/O device assignment with source block.	
Destination Block Start Addr / Tag	Enter the destination start tag or address for receiving block data from the source.	
Destination Handshake Start Addr / Tag	This is used to internally when Xpanel sends the data. You must enter the digital tag including same I/O device assignment with destination block.	

- Data bridge for uploading device data to system memory



Item	Description	
Model Type (Upload Data to Sys-mem)	Select model type as 'Upload data to sys-mem'. This model reads data from source to Xpanel's system memory and synchronizes it.	
Sync. Properties	Select the method to synchronize the data.	
	Trigger	Source and destination data are synchronized when triggering tag is set. You can register the analog or digital tag.
	Periodically	Source and destination data are synchronized at the specified intervals. You can assign intervals from 1 to 10000000 seconds.
Block Size	Enter the consecutive address size (block size) for the block. This address size will be based on the data type at the starting block. If the block starts with a DWord (INT, UINT, Float), the address data size will be counted as DWord.	
Source Block Start Addr / Tag	Enter the starting tag or address of the continuous addresses. Source block transfers data from source PLC to the destination PLC.	
Source Handshake Start Addr / Tag	This is used to internally when Xpanel reads the data. You must enter the digital tag including same I/O device assignment with source block.	
Start Address of System Memory	Assign the start address of system memory for receiving data. Source data is transferred to the start address and ends at the location determined by the block size.	

- Data bridge for downloading device data from system memory



Item	Description	
Model Type (Download Data from Sys-mem)	Select model type as 'Download data from sys-mem'. You may write system memory data to the destination device.	
Sync. Properties	Select the method to synchronize the data.	
	Trigger	Source and destination data are synchronized when triggering tag is set. You can register the analog or digital tag.
	Periodically	Source and destination data are synchronized at the specified intervals. You can assign intervals from 1 to 10000000 seconds.
Block Size	Enter the consecutive address size (block size) for the block. This address size will be based on the data type at the starting block. If the block starts with a DWord (INT, UINT, Float), the address data size will be counted as DWord.	
Destination Block Start Addr / Tag	Enter the start address of destination device. The destination block receives data from Xpanel's system memory.	
Destination Handshake Start Addr / Tag	This is used internally when Xpanel writes data to the destination device. You must enter the digital tag including same I/O device assignment with destination block.	
Start Address of System Memory	Assign the start address of system memory for transferring data. System memory data is transferred to the destination and ends at the location determined by the block size.	

(2) Edit Data Bridge Model

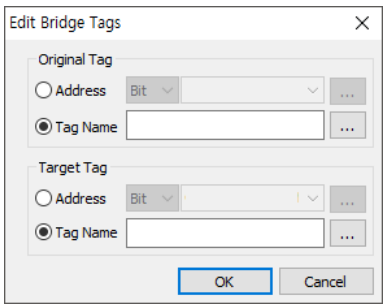
Modifies the selected model. Model type cannot be changed.

(3) Delete Data Bridge Model

Deletes the selected model.

(4) Add Data Bridge Tag

When the model type is 'Tag Base', you must add source and destination tag (address) for exchanging data.



Item	Description
Original Addr / Tag	Enter the tag name or address of source device to receive data.
Target Addr / Tag	Enter the tag name or address of destination device to transfer data.

(5) Edit Data Bridge Tag

Modifies the selected original and target tag (address).

(6) Delete Data Bridge Tag

Deletes the original and target tag (address) from the tag based model.

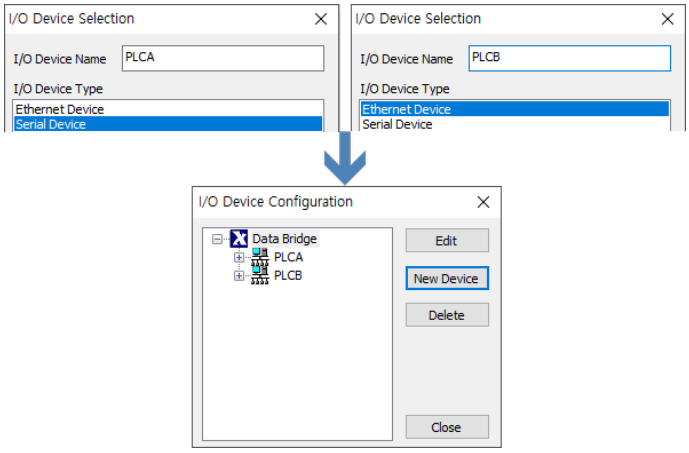
15.2 Example

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

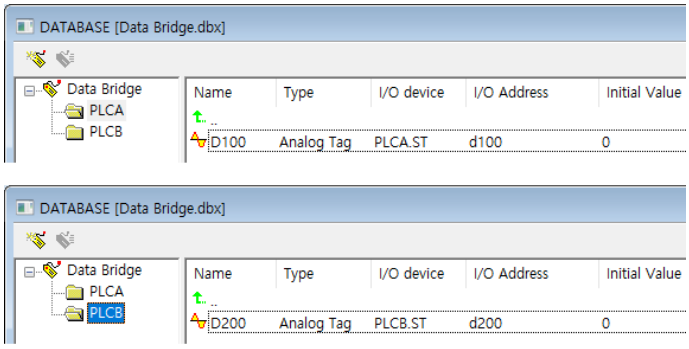
Example : Exchanging PLC value by data bridge function

In this section, you will register tag based model and transfer the value in PLC A to the PLC B. Each PLC is connected by Serial and Ethernet, and both of them are communicating with the Xpanel.

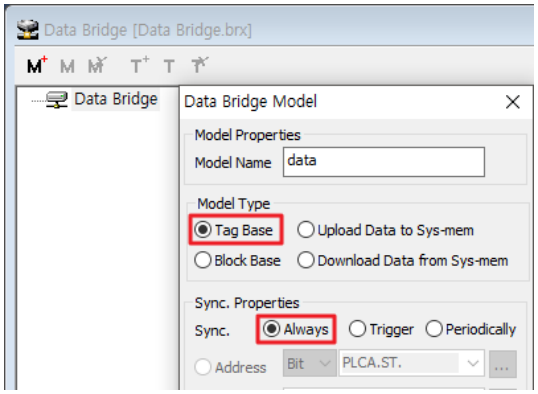
a) Enter the device name as 'PLC A' and 'PLC B' in the [Tools]-[I/O Device]. Each will registered by Serial device and Ethernet Device.



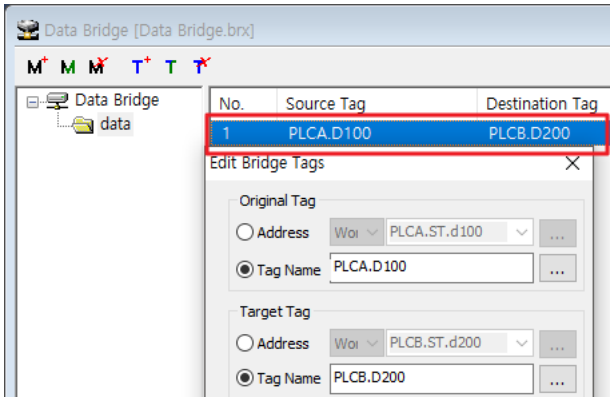
b) Create tags which are indicating points in each PLC. Enter the I/O addresses as 'D100' in 'PLC A' and 'D200' in 'PLC B'.



c) Go to [Tools]-[Data Bridge] and add a data bridge model. Select model type as 'Tag Base' and 'Sync.' as 'Always'. When the value of PLC A changes, the value of PLC B will be matched with it immediately.



d) Add a tag to synchronize the value. Enter the each tag name as 'PLCA.D100' in the original tag and 'PLCB.D200' in the target tag.



e) Launch the project in the Xpanel. You may see PLC A value is transferred to the PLC B via data bridge.

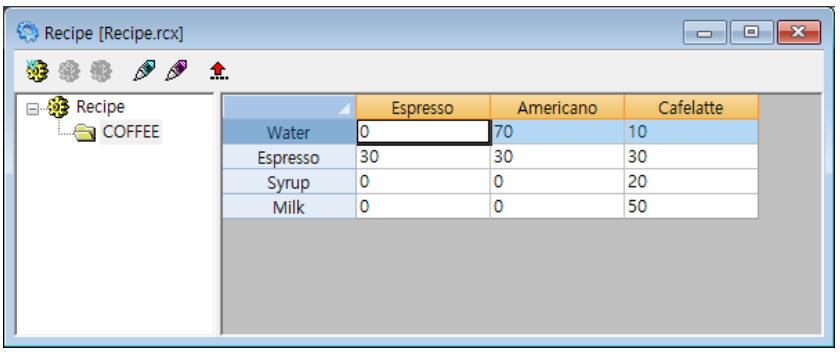
16 Recipe

A recipe is a collection of data that can be easily changed with the user's pre-defined values. For example, in a vehicle production factory that produces different types of vehicles, the operator can easily modify the ingredient data values to change between different option profiles. The recipe settings can be simply created, modified, or deleted during production. Also, recipe data can be imported and exported during runtime.

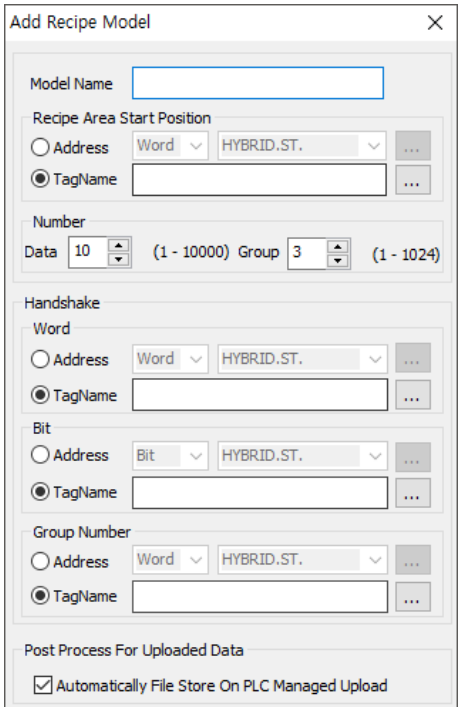
- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- Please check the type of PLC communication driver that supports the Recipe feature.

16.1 Settings

To bring up the Recipe editor window, double-click 'Recipe' in the project workspace. You may also select [Tools] - [Recipe] or icon for the same command.



(1) Add Recipe Model



Item	Description
Model Name	Enter the model name in the text field. The duplicated name is not allowed.
Recipe Area Start Position	Recipes use consecutive addresses for PLCs. Enter the starting address in the 'Recipe area start position'. Direct address or tag names can be used. The address or tag data must be in Word or DWord (INT, UINT, Float) format. All address or tag data must be the same type.
Data Number	'Data number' indicates the number of data items used in each group. You can assign from 1 to 10000 for data items.
Group Number	'Group number' indicates the unit for saving setting values. A single group can include many data items , and each group comprises different settings. When the group is changed, the overall settings will be switched. You can assign from 1 to 1024 for group numbers.
Handshake	The Xpanel recipe system takes care of the handshaking process automatically. You may assign addresses or tags not using in the PLC for handshaking. Only real tags can be used in handshake process.

	Word	Enter an analog tag or address. This is used to control uploading and downloading. You can assign Word or DWord data format.
	Bit	Enter a digital tag or address, This is used to check state of downloading and uploading.
	Group Number	Enter an analog tag or address. This is used to store the current recipe group number by PLC request.
Automatically File Store On PLC Managed Upload	If you modify values and upload or download group data from a PLC, the recipe group settings will be changed. Changes will remain in the Xpanel memory until power is On; they will recovered when power is turned off. This indicates that modified setting should be saved to the recipe setting file in order to keep changes. If this option is enabled, changes of PLC data will be saved to the Xpanel memory automatically.	

(2) Edit Recipe Model

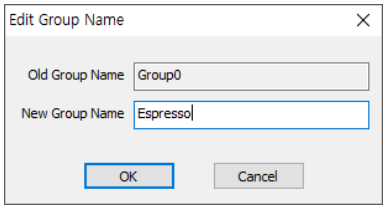
Modifies the selected recipe model. Alternatively, you can edit the model by double-clicking the model name.

(3) Delete Recipe Model

Deletes the selected recipe model from the project.

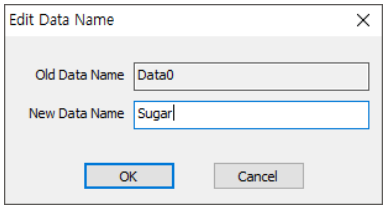
(4) Edit Group Name

Modifies the selected group name. Enter the new group name and press [OK] to change the text.



(5) Edit Data Name

Modifies the selected data name. Enter the new data name and press [OK] to change the text.



(6) Upload Recipe Data from Xpanel

Uploads the recipe model data from Xpanel. You may connect USB or Ethernet to receive data.

16.2 Related Features

In this section, you can find functions and subroutines[8] frequently used for Recipe. Please refer to the table below for applicable functions/subroutines. For more detailed information of each function and subroutine, please refer to the next section.

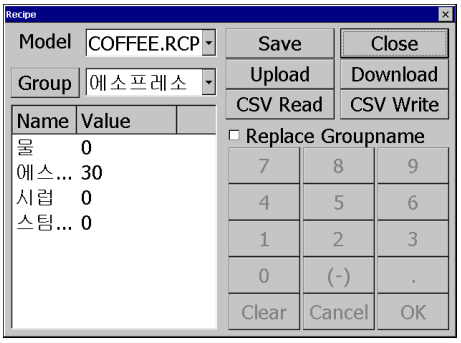
⚠ All functions must be used with brackets.

Command			Description
Recipe	Subroutine	RcpConfig	Displays the recipe settings window in Xpanel runtime.
	Subroutine	RcpFileRead	Reads the group data from recipe data file.
	Subroutine	RcpFileStore	Saves the model group data in the recipe file.
	Subroutine	RcpMemDown	Downloads the model group data from Xpanel to PLC.
	Subroutine	RcpMemUp	Receives the data from PLC and saves at the model group data in Xpanel.
	Subroutine	RcpDownLoad	Downloads model group data to the PLC.
	Subroutine	RcpUpLoad	Reads PLC data and save it to the recipe file.
	Subroutine	RcpCsvRd	Reads recipe model group data (*.csv file) and saves it in the memory.
	Subroutine	RcpCsvWr	Saves model group data in the memory as a csv file format.
	Subroutine	RcpGetSysMem	Copies one block of system memory to Xpanel memory.

[8] Subroutine operates a certain action without any value returned, unlike the functions have return value.

	Subroutine	RcpSetSysMem	Copies data in Xpanel memory and pastes to the system memory.
	Function	GetRcpDnGroup	Returns the recipe group name which has downloaded recently.
	Subroutine	RcpNewGroupName	Changes the recipe group name.
	Function	GetRcpGroupName	Returns the recipe group name.
	Function	GetRcpItemName	Returns the name of recipe data.

Functions for Recipe

<table>
<tr><td>RcpConfig</td><td>Displays the recipe settings window in Xpanel runtime.</td></tr>
<tr><td>Subroutine</td><td>RcpConfig()</td></tr>
<tr><td>Description</td><td>Brings up the recipe dialog box which contains functions for controlling the recipe operation.
 

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Model</td><td>Changes current recipe model.</td></tr>
<tr><td>Group</td><td>Changes current group to another group.</td></tr>
<tr><td>Group List</td><td>You may change the data name and setting values by double-clicking on each item.</td></tr>
<tr><td>Save</td><td>Saves modified group data in a recipe file (*.rcx). This command is the same as RcpFileStore().</td></tr>
<tr><td>Close</td><td>Quits from the recipe dialog box.</td></tr>
<tr><td>Upload</td><td>Reads data from the PLC and save it in recipe model group data. This command is the same as RcpMemUp().</td></tr>
<tr><td>Download</td><td>Sends recipe model group data to the PLC. This command is the same as RcpMemDownload().</td></tr>
<tr><td>CSV Read</td><td>You can browse CSV file to retrieve model group data. This command is the same as RcpCsvRd().</td></tr>
<tr><td>CSV Write</td><td>You can save current model group data as a CSV file. This command is the same as RcpCsvWr().</td></tr>
<tr><td>Replace Groupname</td><td>If this option has enabled during pressing ‘CSV Read’ button, selected group name will be replaced with name of CSV file to read.</td></tr>
</table></td></tr>
<tr><td>Example</td><td>Enter the command to display the recipe dialog box.
RcpConfig();</td></tr>
</table>

RcpFileRead	Reads the group data from recipe data file.
Subroutine	RcpFileRead("*Model Name*", *Group Number*)
Description	Reads the specified group data from the recipe data file.
Example	Enter the command to read first group data of 'ICECREAM' model from recipe data file. RcpFileRead("ICECREAM", 1);

RcpFileStore	Saves the model group data in the recipe file.
Subroutine	RcpFileStore("*Model Name*", *Group Number*)
Description	Saves the specified group data in the recipe data file. This subroutine is the same as 'Save' button of recipe dialog box.
Example	Enter the command to save first group data of 'ICECREAM' model to the recipe data file. RcpFileStore ("ICECREAM", 1);

RcpMemDown	Downloads the model group data from Xpanel to PLC.
Subroutine	RcpMemDown("*Model Name*")
Description	Transfers the model group data from Xpanel to the PLC. The group data must be stored in the Xpanel before using this subroutine.
Example	Enter the command to download group data of 'ICECREAM' from Xpanel to the PLC. RcpMemDown ("ICECREAM");

RcpMemUp	Receives the data from PLC and saves at the model group data in Xpanel.
Subroutine	RcpMemUp("*Model Name*")
Description	Uploads group data from PLC to recipe data file in the Xpanel. This subroutine is used to save data in the Xpanel before using RepMemDown() or RcpFileStore().
Example	Enter the command to apply PLC data to the group data of 'ICECREAM' model. RcpMemUp ("ICECREAM");

RcpDownLoad	Downloads model group data to the PLC.
Subroutine	RcpDownLoad("*Model Name", Group Number*)
Description	Reads the specified group data and transfers directly to the PLC. Assign the group number from 0 to n.
Example	Enter the command to download group data of number 0 to the PLC directly. RcpDownLoad("ICECREAM", 0);

RcpUpLoad	Reads PLC data and save it to the recipe file.
Subroutine	RcpUpLoad("*Model Name", Group Number*)
Description	Reads the data from PLC and save it in the recipe data file. Assign the group number from 0 to n.
Example	Enter the command to apply PLC data to the group data of number 0. RcpUpLoad("ICECREAM", 0);

If using RcpUpLoad/RcpDownload command consecutively, the latter command will override the former command. To use these commands subsequently, set enough interval between operations of two subroutines.
Ex)
RcpDownLoad("ICECREAM", 0);
Sleep(1000);
RcpDownLoad("ICECREAM", 1);

RcpCsvRd	Reads recipe model group data (*.csv file) and saves it in the memory.	
Subroutine	RcpCsvRd("*Model Name", "CSV File Name", CSV file directory*)	
Description	Replaces group data with specified CSV file data. Assign *CSV file directory* as below table.	
	CSV file directory	Description
	0	Xpanel internal memory
	1	SD/MMC
	2	USB
Example	Enter the command to read 'Recipe.CSV' file data stored in the USB and save it to the Xpanel recipe file. RcpCsvRd("ICECREAM", "Recipe", 2);	

RcpCsvWr	Saves model group data in the memory as a csv file format.	
Subroutine	RcpCsvWr("*Model Name", "CSV File Name", CSV file directory*)	
Description	Saves current group data as a CSV file format with specified file name. Assign *CSV file directory* as below table.	
	CSV file directory	Description
	0	Xpanel internal memory
	1	SD/MMC
	2	USB
Example	Enter the command to save the 'ICECREAM' group data as a csv file format. The file name will be designated as 'Recipe.csv', and will be saved in the USB. RcpCsvWr("°ICECREAM", "Recipe", 2);	

RcpGetSysMem	Copies one block of system memory to Xpanel memory.
Subroutine	RcpGetSysMem(*"Model Name", System memory address*)
Description	Copies one block of system memory to Xpanel memory.
Example	Enter the command to retrieve 'ICECREAM' model data from system memory No. 100. RcpGetSysMem(*"ICECREAM", 100*);

RcpSetSysMem	Copies data in Xpanel memory and pastes to the system memory.
Subroutine	RcpSetSysMem(*"Model Name", System memory address*)
Description	Copies data in Xpanel memory and pastes to the system memory.
Example	Enter the command to paste "ICECREAM" recipe data to the system memory sequentially from no. 100. RcpGetSysMem(*"ICECREAM", 100*);

GetRcpDnGroup	Returns the recipe group name which has downloaded recently.
Subroutine	GetRcpDnGroup(*"Model Name"*)
Description	Returns the recipe group name which has downloaded recently.
Example	Enter the command to store the recent group name of 'ICECREAM' model in the 'GROUP' tag. GROUP = GetRcpDnGroup(*"ICECREAM"*);

RcpNewGroupName	Changes the recipe group name.
Subroutine	RcpNewGroupName (*"Model Name", Group number, "New group name"*)
Description	Replaces specified group name with new group name. The group number starts from 0.
Example	Change the group name in number 3 of 'ICECREAM' model as 'CHOCO'. RcpNewGroupName (*"ICECREAM", 3, "CHOCO"*);

GetRcpGroupName	Returns the recipe group name.
Subroutine	GetRcpGroupName (*"Model name", Group number*)
Description	Returns the specified group name. The group number starts from 0.
Example	Gets the group name in number 1 of 'ICECREAM' model and store it in the 'MODEL' tag. MODEL = GetRcpGroupName ("ICECREAM", 1);

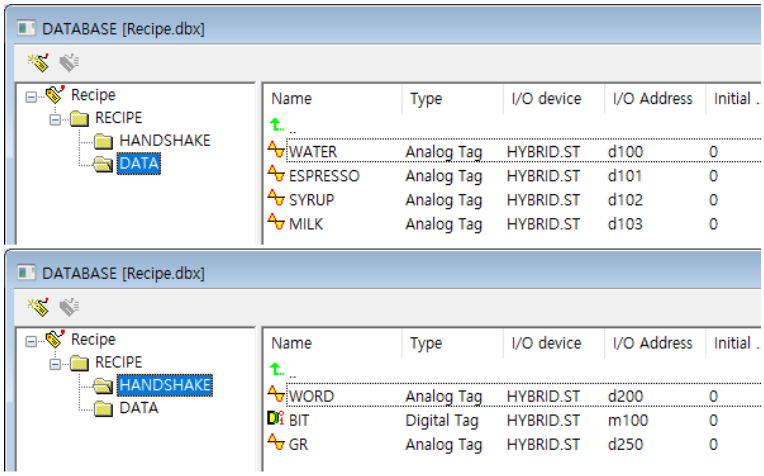
GetRcpItemName	Returns the name of recipe data.
Subroutine	GetRcpGroupName (*"Model name", Data item number*)
Description	Returns the specified data item name. The item number starts from 0.
Example	Gets the data name in number 1 of 'ICECREAM' model and store it in the 'ITEM' tag. ITEM = GetRcpItemName ("ICECREAM", 1);

16.3 Exercise

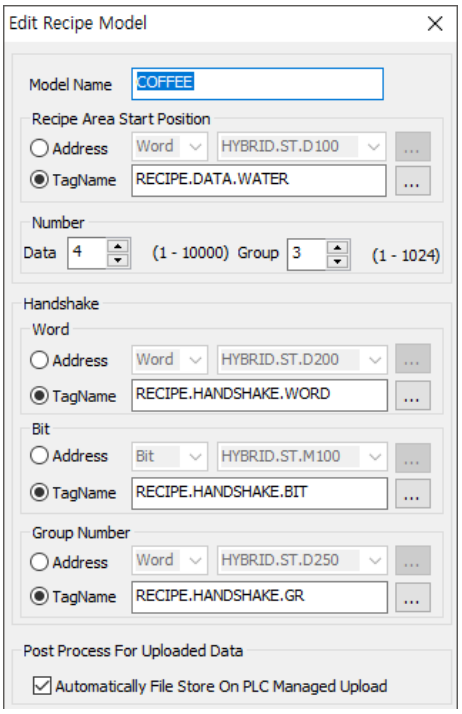
This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Designing a recipe screen

a) Go to database and create tags for recipe operation. Make a group as 'DATA' and generate four analog tags ('WATER', 'ESPRESSO', 'SYRUP', 'MILK') for recipe data. Make a group as 'HANDSHAKE' and generate tags for controlling recipe.



b) Go to [Tools]-[Recipe] or icon to open the recipe editor window. Add 'COFFEE' model as shown below.



- Model name: COFFEE
- Recipe area start position: RECIPE.DATA.WATER (D100)
- Handshake (Word): RECIPE.HANDSHAKE.WORD (D200)
- Handshake (BIT): RECIPE.HANDSHAKE.BIT (M100)
- Handshake (Group number): RECIPE.HANDSHAKE.GR (D250)
- Number of data: 4
- Number of group: 3

c) After creating the model, specify names for each group and data for making coffee.

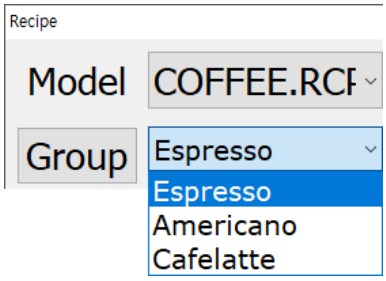
	Espresso	Americano	Cafelatte
Water	0	70	10
Espresso	30	30	30
Syrup	0	0	20
Milk	0	0	50

d) Create a touch object to bring up the recipe dialog box.

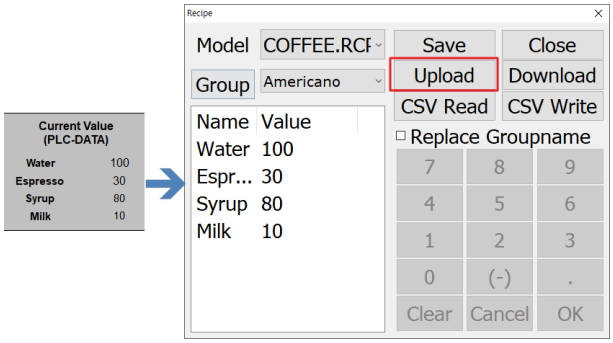
Recipe Control	Function	Touch
	Action	Command operation
	Command	RcpConfig()

e) Launch the project in the Xpanel and press the button to open the recipe dialog box.

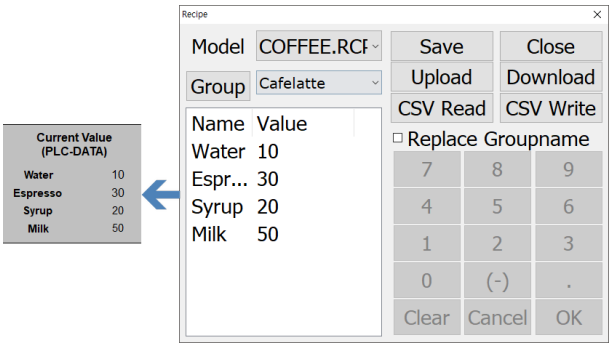
- You can change the model and group in each combo box.



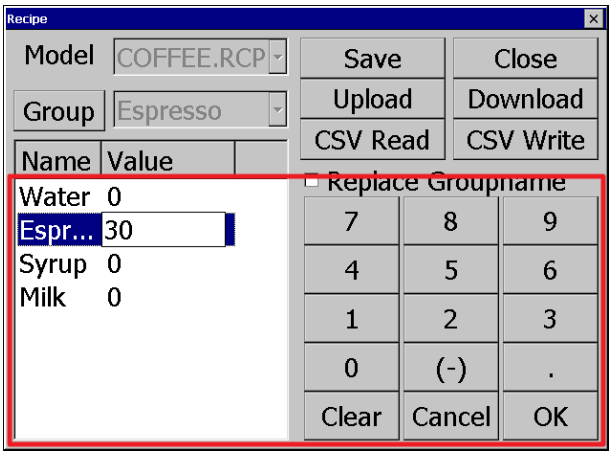
- You can retrieve the recipe data values from PLC by 'Upload' button.



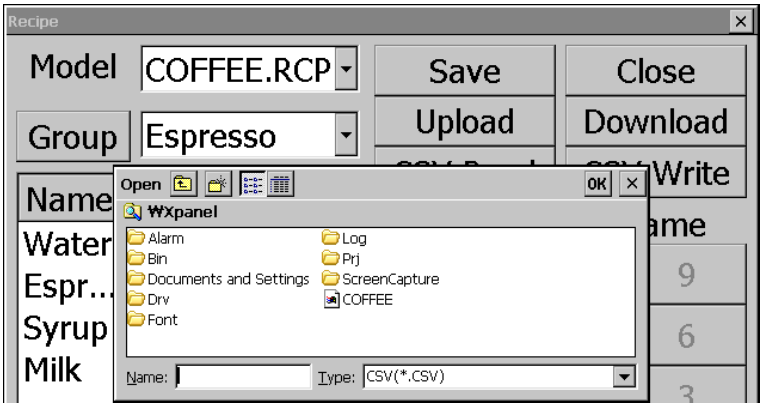
- You can download recipe data values to the PLC by 'Download' button.



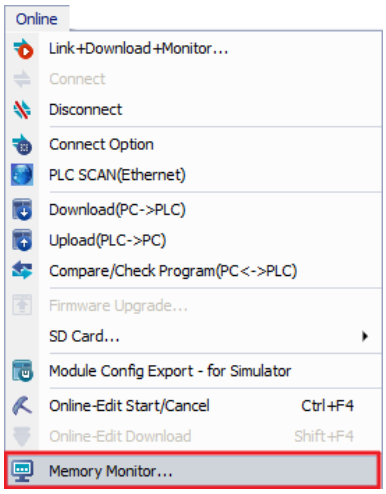
- You can modify recipe data values by using keypads.



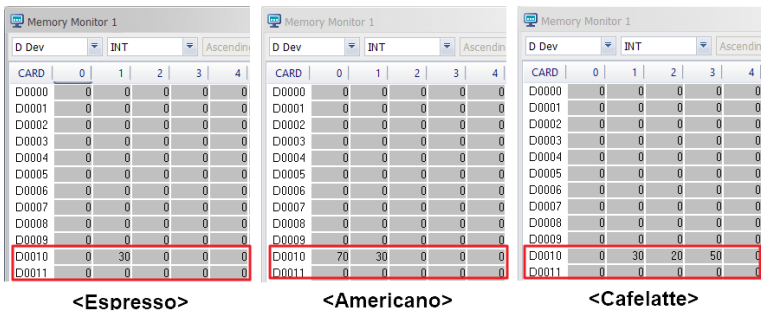
- You can browse the recipe data in the directory, or save group data as a csv file format.



f) Go to CICON software and press [Online] - [Memory Monitor].



g) You can check recipe data downloaded in the D device.



<Espresso> <Americano> <Cafelatte>

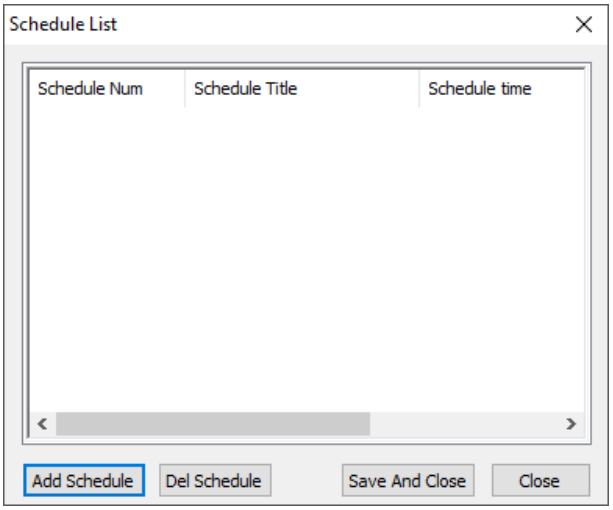
17 Schedule

Schedule allows the user to schedule a program to be run at a specific time. Schedules can be set for every day, week, month, or year, allowing user an easier management of the facility, such as writing tag value or command execution. The user can define up to 64 schedules in a project.

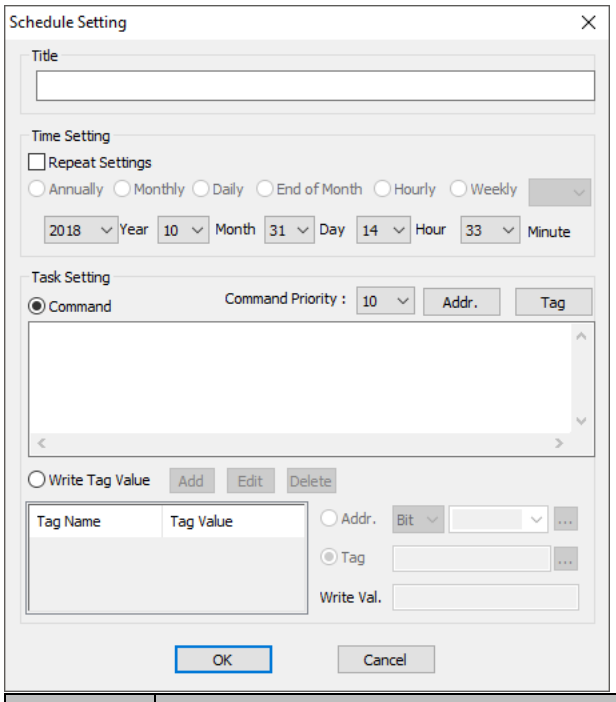
> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

17.1 Settings

Press [Tools] - [Schedule] to bring up the schedule list.



Item	Description
Add Schedule	Adds a new schedule in the 'Schedule Setting' window. You can add up to 64 schedules.
Del Schedule	Deletes a selected schedule from the schedule list.
Save and Close	Closes the list after saving schedules in the project. You must apply configurations by pressing this button.
Close	Quits from the 'Schedule List' dialog box.



Item	Description	
Title	Enter the name of schedule in the text field.	
Time Setting	Configure the time when the task executes. The task action operates only once at the assigned time when not using 'Repeat Settings' option.	
	Repeat Settings	Task is repeatedly operated annually, monthly, daily, hourly, or weekly.
Task Setting	Enter the action to execute at the specified time in 'Time Setting'. You may use command or write value to the tag.	
	Command	The field is enabled when selecting the 'Command'. Enter the operation or command to run at the designated time. You can set the priority for the task.
	Write Tag Value	The field is enabled when selecting the 'Write Tag Value'. Each value is written into the tag at the designated time. You can use digital or analog tag. Up to 8 tags can be added in the list.

17.2 Related Features

In this section, you can find functions and subroutines[9] frequently used for schedule. For more detailed information, please refer to the next section.

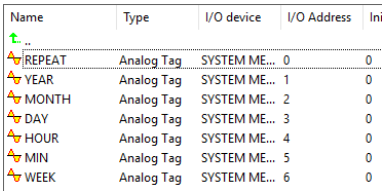
All functions must be used with brackets.

Command			Description
Schedule	Subroutine	ScheduleConfig	Displays the schedule list dialog box in the Xpanel runtime.
	Subroutine	SetScheduleSysMem	Modifies the schedule directly without using schedule setting window.
	Function	GetScheduleSysMem	Obtains the time data of certain schedule.
	Subroutine	SetScheduleState	Changes the active state of certain schedule.
	Function	GetScheduleState	Obtains the active state of certain schedule.

[9] Subroutine operates a certain action without any value returned, unlike the functions have return value.

17.2.1 Functions for Schedule

ScheduleConfig	Displays the schedule list dialog box in the Xpanel runtime.
Subroutine	ScheduleConfig()
Description	Brings up the 'Schedule list' dialog box. The schedule data is stored in the Xpanel system memory. You can change the time setting and active state of each schedule. When double-clicking each item, 'Schedule Config' dialog box will appear. You must click 'Save and Close' button to apply changes. The time data can be changed in the 'Schedule Config' dialog box.
Example	Brings up the schedule list on the screen. ScheduleConfig();

<table>
<tr><td>SetScheduleSysMem</td><td colspan="4">Modifies the schedule directly without using schedule setting window.</td></tr>
<tr><td>Subroutine</td><td colspan="4">SetScheduleSysMem(Schedule Index, Starting Address of SYSTEM MEMORY)</td></tr>
<tr><td>Description</td><td colspan="4">This subroutine is used to modify the schedule directly without using 'Schedule config' dialog box. To use this command, 7 system memory tags must be registered sequentially. System memory tags must have consecutive addresses. If the system memory is used for recipe as well, the addresses must not be overlapped each other.
 
<table>
<tr><th>Name</th><th>Type</th><th>I/O device</th><th>I/O Address</th><th>Ini</th></tr>
<tr><td>..</td><td></td><td></td><td></td><td></td></tr>
<tr><td>REPEAT</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>0</td><td>0</td></tr>
<tr><td>YEAR</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>1</td><td>0</td></tr>
<tr><td>MONTH</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>2</td><td>0</td></tr>
<tr><td>DAY</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>3</td><td>0</td></tr>
<tr><td>HOUR</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>4</td><td>0</td></tr>
<tr><td>MIN</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>5</td><td>0</td></tr>
<tr><td>WEEK</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>6</td><td>0</td></tr>
</table>
Enter the time data in each system memory tag as shown below table.
<table>
<tr><th>System Memory</th><th>Description</th><th colspan="2">Range of Input Value</th></tr>
<tr><td rowspan="7">0</td><td rowspan="7">Repeat Settings</td><td>0</td><td>Not repeat</td></tr>
<tr><td>1</td><td>Annually</td></tr>
<tr><td>2</td><td>Monthly</td></tr>
<tr><td>3</td><td>Daily</td></tr>
<tr><td>4</td><td>End of Month</td></tr>
<tr><td>5</td><td>Hourly</td></tr>
<tr><td>6</td><td>Weekly</td></tr>
<tr><td>1</td><td>Year</td><td colspan="2">Available from 2011 to 2041</td></tr>
<tr><td>2</td><td>Month</td><td colspan="2">Available from 1 to12</td></tr>
<tr><td>3</td><td>Date</td><td colspan="2">Available from 0 to 31</td></tr>
<tr><td>4</td><td>Hour</td><td colspan="2">Available from 0 to 23</td></tr>
<tr><td>5</td><td>Minute</td><td colspan="2">Available from 0 to 59</td></tr>
<tr><td rowspan="7">6</td><td rowspan="7">Day</td><td>1</td><td>Sunday</td></tr>
<tr><td>2</td><td>Monday</td></tr>
<tr><td>3</td><td>Tuesday</td></tr>
<tr><td>4</td><td>Wednesday</td></tr>
<tr><td>5</td><td>Thursday</td></tr>
<tr><td>6</td><td>Friday</td></tr>
<tr><td>7</td><td>Saturday</td></tr>
</table></td></tr>
</table>

Example	Enter the command to change the 1st schedule list to match with the time data saved in system memory address 0 to 6. SetScheduleSysMem(*1, 0*);

GetScheduleSysMem	Obtains the time data of certain schedule.
Function	n = GetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)
Description	Returns the time data of specified schedule index. To use this command, 7 system memory tags must be registered sequentially. ※ Please refer to the description of 'SetScheduleSysMem' command for configuring tag data.
Example	Enter the command to obtain the time data of 1st schedule from system memory address 0 to 6. TIME = GetScheduleSysMem(*1, 0*);

SetScheduleState	Changes the active state of certain schedule.	
Subroutine	SetScheduleState(*Schedule Index, Active State*)	
Description	This subroutine is used to change the active state of specified schedule.	
	Active State	**Description**
	0	Disable the specified schedule.
	1	Enable the specified schedule.
Example	Activate the 1st schedule. SetScheduleState(*1, 1*);	

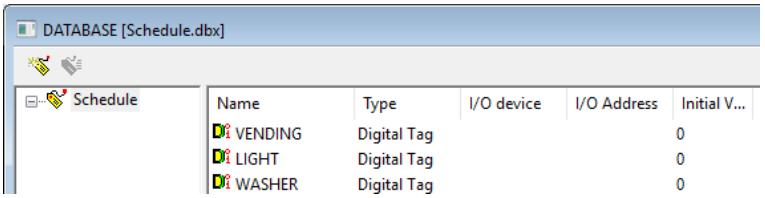
GetScheduleState	Obtains the active state of certain schedule.	
Subroutine	n = GetScheduleState(*Schedule Index*)	
Description	Returns the active state of specified schedule.	
	Active State	**Description**
	0	Disable the specified schedule.
	1	Enable the specified schedule.
Example	Enter the command to obtain the active state of 1st schedule. STATE = GetScheduleState(*1*);	

17.3 Exercise

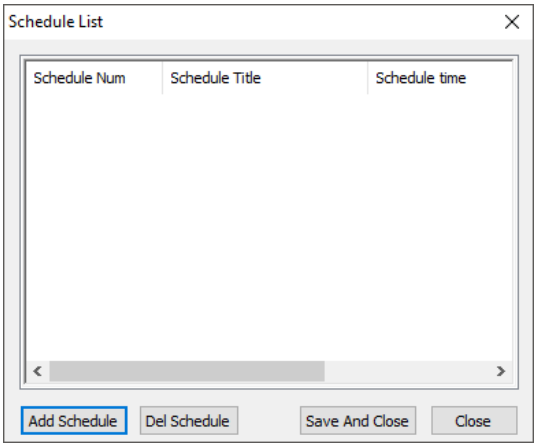
> This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Setting the function of vending machine with schedule feature

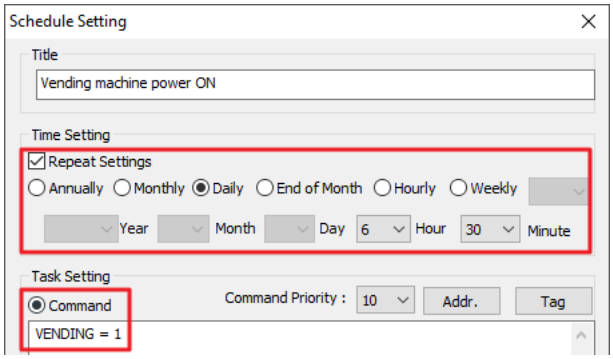
a) Create three digital tags named 'VENDING', 'LIGHT', and 'WASHER'.



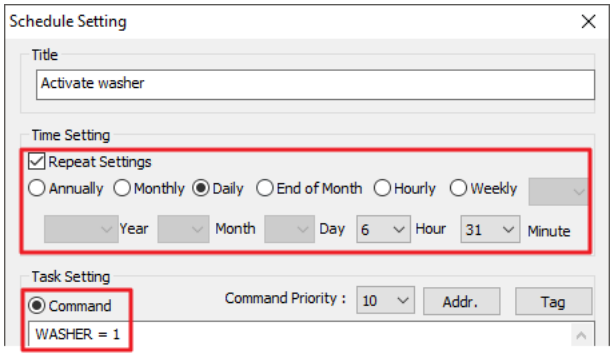
b) Click [Tools]-[Schedule] to bring up the schedule list dialog box.



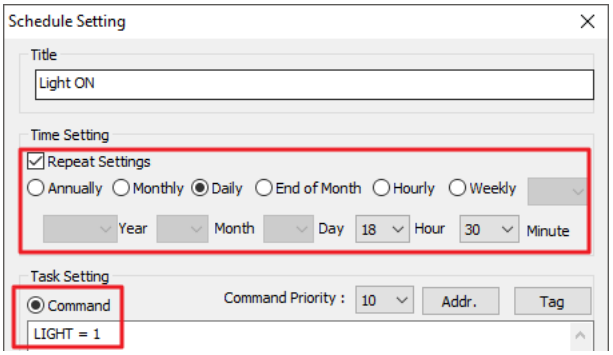
c) Press [Add schedule] button and add each schedule as shown below.



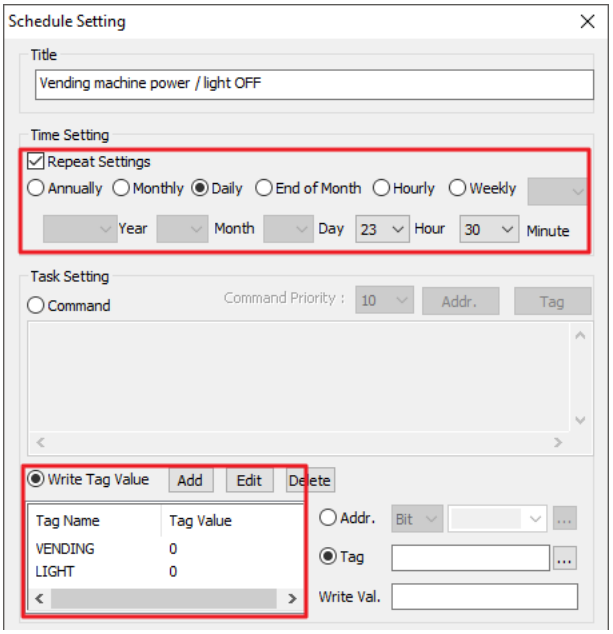
- Name: Vending machine power ON
- Time Setting: Check 'Repeat settings' and specify time as 6 : 30, daily.
- Task Setting: Select 'Command' and enter the operation as 'VENDING = 1'.



- Name : Activate washer
- Time Setting: Check 'Repeat settings' and specify time as 6 : 31, daily.
- Task Setting: Select 'Command' and enter the operation as 'WASHER = 1'.

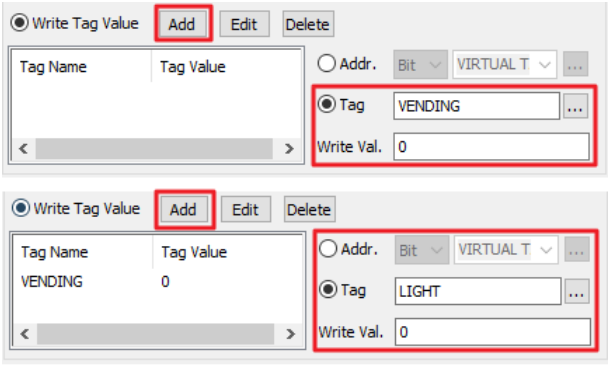


- Name: Light ON
- Time Setting: Check 'Repeat settings' and specify time as 18 : 30, daily.
- Task Setting: Select 'Command' and enter the operation as 'LIGHT = 1'.



- Name: Vending machine power / light OFF
- Time Setting: Check 'Repeat settings' and specify time as 23 : 30, daily.
- Task Setting: Select 'Write Tag Value' and add 'VENDING' and 'LIGHT' in the list.

Enter the each tag name and value in the text field, and press [Add] to register the tag.



d) Create a touch object for opening 'schedule settings' dialog box.

Schedule Setting	Function	Touch
	Action	Command
	Command	ScheduleConfig()

e) Launch the project in the Xpanel. Each function of vending machine activates at the designated time according to schedule settings. Everyday, the power is turned on at 6 : 30, and the washer operates at 6 : 31. The light may turned on at 18 : 30, and both power and light are turned off at 23 : 30. You can change the time data of schedule by pressing touch object.

18 Utilizing Other Functions

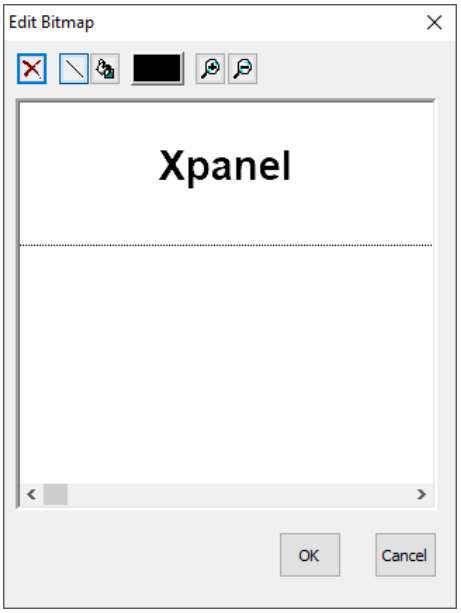
18.1 Bitmap Edit

Bitmap Edit is a feature in which the user can instantly edit the bmp image on the graphic page. The user can edit the bmp image file directly in the project without replacing the image.

> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

18.1.1 Settings

The bmp image must exist on the graphic page beforehand. To open the bitmap editor, select the image first and click [Tools] - [Bitmap Edit].



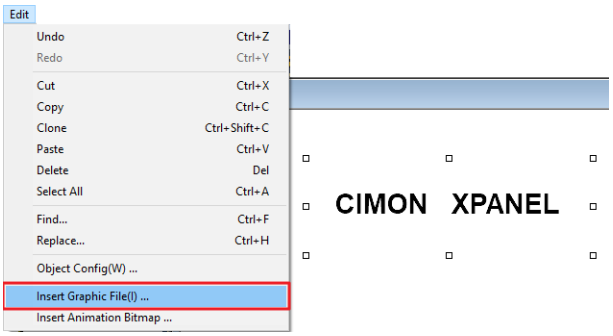
Item	Description
Undo	Cancels the last drawing action in the window.
Draw	Draws a line to the bitmap image.
Fill	Fills a color the certain area of the bitmap image.
Palette	You can select a color from the palette. The selected color will be used when you draw a line or fill color.
Zoom In / Out	Zoom in or out the bmp image. The valid magnification is from 100% to 800%.
OK	Applies the change to the bmp image and closes the window.
Cancel	Does not apply the change to the bmp image and closes the window.

18.1.2 Exercise

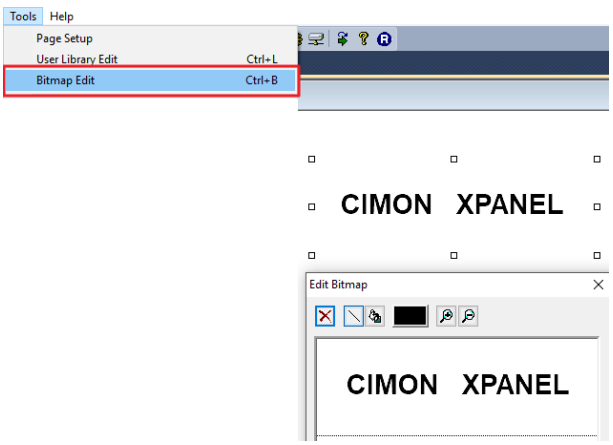
> This section explains the basics of the feature. Please utilize the feature according to your site environment.

Exercise : Changing the Object with Bitmap Edit

a) Select [Edit] - [Insert Graphic File] to add a bmp image to the graphic page.

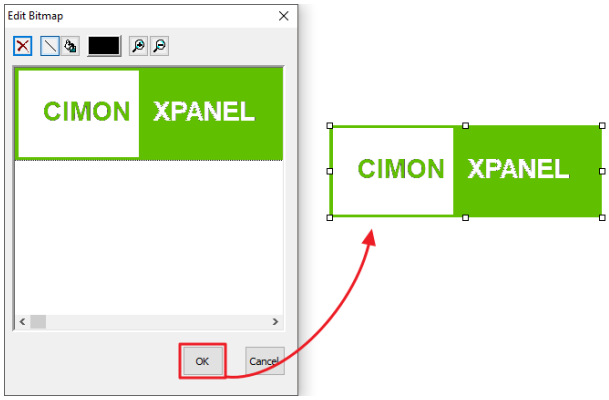


b) Click the image object and select [Tools] - [Bitmap Edit]. Then the [Edit Bitmap] window will appear.



c) You can edit the image with the tools.

d) Press [OK] button to apply the edited image to the object.

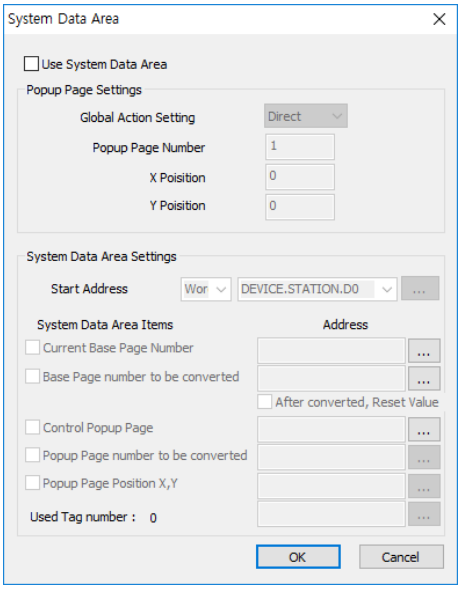


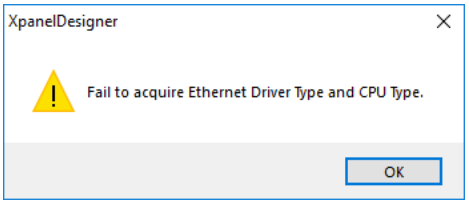
18.2 System Data Area

The system data area is a feature to assign a function to the device addresses of the target communication device and set the function to be always ready. You can switch the pages, bring up the popup page, and change the popup page's position using a specific device address.

18.2.1 Settings

Select [Tools] - [System Data Area] to bring up the configuration window as shown below.



Item	Description
Use System Data Area	Determines whether to use the system data area or not. There must be at least one I/O Device setting in the corresponding project. If the I/O Device does not exist in the project, following message will appear. 

Global Action Setting	Assign the action of the popup page. When you select [Indirect], you cannot configure the [Popup Page Number] and [X,Y Position] options in the Popup Page Settings area. These options will be controlled with the 4th, 5th, 6th device addresses grom the start address. When you select [Direct], you have to manually assign the popup page number and the X,Y position. You will only control the appearance of the popup page. When you select [Unused], you can only configure the [Current Base Page Number] and [Base Page number to be converted] options.
Popup Page Number	This option is enabled only when the Global Action Setting is [Direct]. The popup page will appear when the device address registered to [Control Popup Page] option becomes 1.
X Position	Assigns the X coordinate of the global popup page, by pixel.
Y Position	Assigns the Y coordinate of the global popup page, by pixel.
Start Address	Assign the starting address of the target communication device to be used for the system data area. Once you assign the starting address, consecutive device addresses will be automatically assigned to each option. You can only use word-sized device memory.
Current Base page Number	Prints the latest base page number which is opened in the Xpanel.
Base Page number to be converted	Manually enter the base page number for the immediate page converting.
After Converted, Reset Value	When you select this option, the device address assigned to [Base Page number to be converted] option will be initialized to 0, after the page switching.
Control Popup Page	When the Global Action Setting is [Indirect], the corresponding device address will bring up the popup page in the [Popup Page Number] option, when the value 1 is input. Input 0 to the device address to close the popup page. When the Global Action Setting is [Direct], Input 1 to the device address to bring up the assigned popup page on the assigned X,Y coordinate. Input 0 to close the popup page. This option is not used if the Global Action Setting is [Unused].
Popup Page number to be converted	This option is used only when the Global Action Setting is [Indirect]. Input the popup page number to be opened when the device address's value of [Control Popup Page] is 1.

Popup Page Position X,Y	This option is used only when the Global Action Setting is [Indirect]. Assign the X,Y coordinate of the popup page's left-top corner. If the page is already opened, the page will move as much as the assigned value. If the page is not opened, the popup page will be brought up on the assigned coordinate.
Used Tag Number	Displays the number of tags (device addresses) to be used in the system data area, according to the number of selected items in the [System Data Area Items].

The device addresses starting from the [Start Address] will automatically be registered in the Xpanel Designer's database.

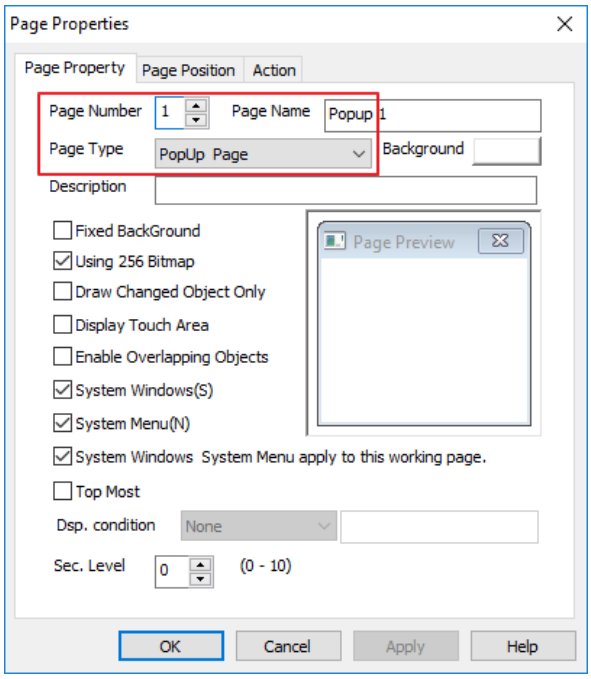
18.2.2 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

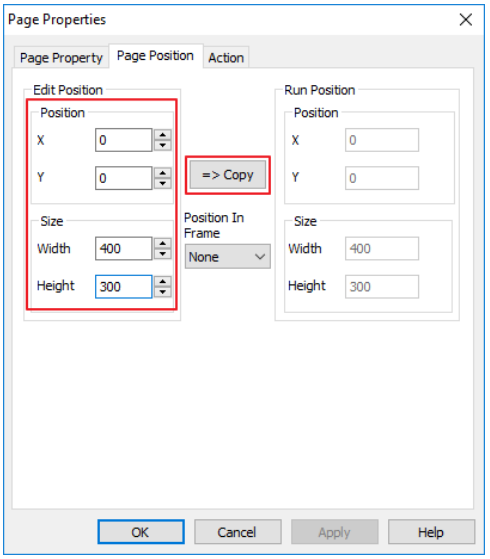
Exercise : Alert Pop Up

(1) Page Configuration

a) Select [File] - [New Page] to create a popup page number 1.

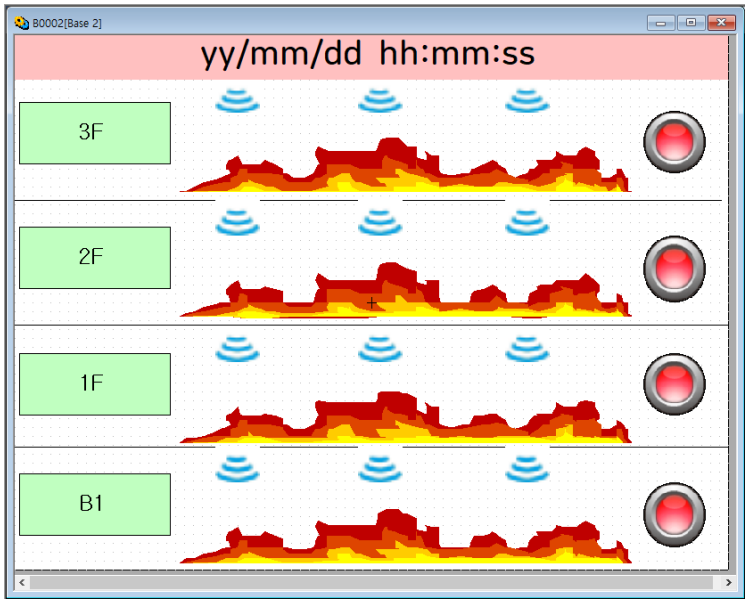


b) Go to [Page Position] tab and change the popup page's size. The configuration shown below will change the popup page's size to a quarter of a screen.



c) Configure the page as shown below. The popup page will appear when an alert is needed.

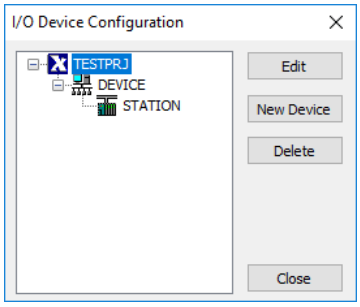
d) Create an base page as shown below. This page will become the starting page of the project.

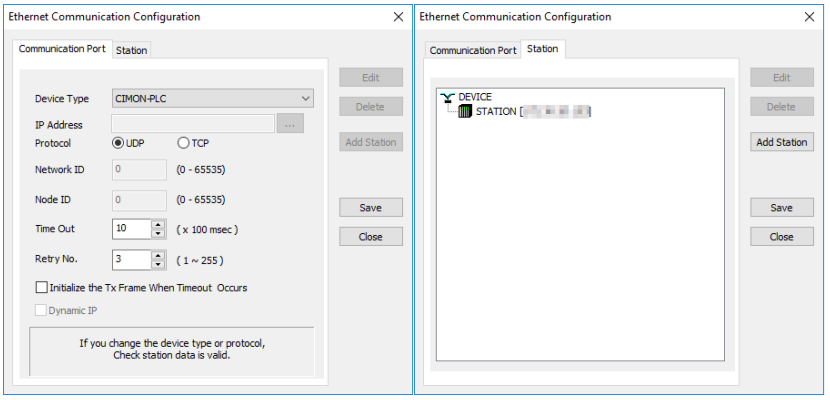


(2) I/O Device Configuration

a) To use system data area, the I/O device must be configured beforehand. Select [Tools] - [I/O Devices] and configure the I/O device as shown below. The Xpanel will communicate with CIMON-PLCS by Ethernet.

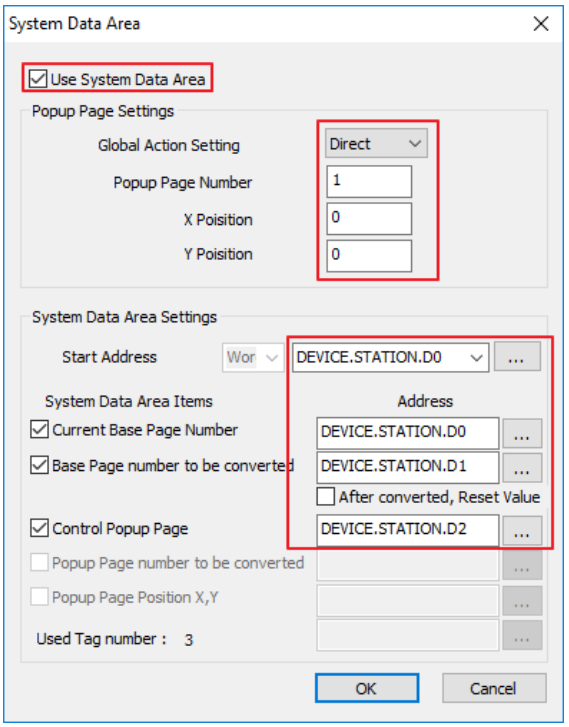
※ Please refer to the "I/O Device" manual for more information.





(3) System Data Area Configuration

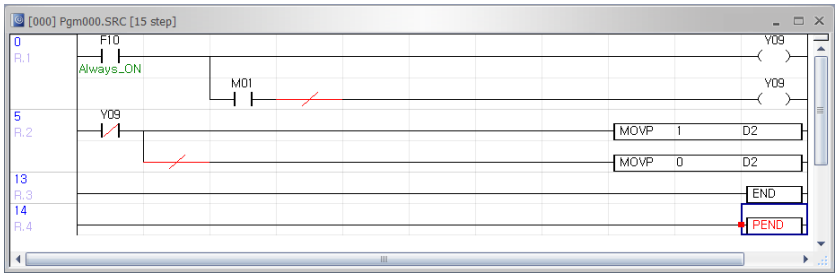
a) Select [Tools] - [System Data Area] to bring up the configuration window as shown below. Select 'Use System Data Area' option and then configure the feature.



The system will use the device address of 'DEVICE', from D0 to D2. When you input 1 to D2, the Alert popup page, which is created in (1), will be brought up.

(4) CICON Configuration

a) Download the scan program to the PLC as shown below.



When the PLC turns into RUN mode, the Y09 will be turned ON. When M01 is ON, Y09 will be turned OFF.

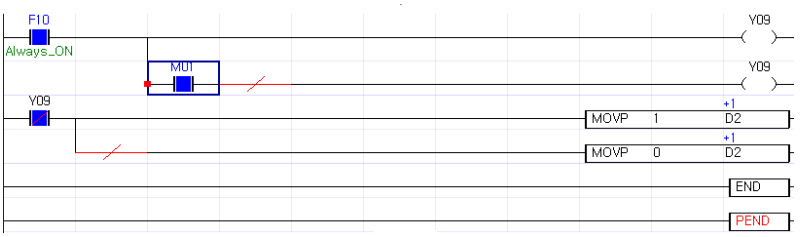
When Y09 goes OFF, the program will input 1 to D02.

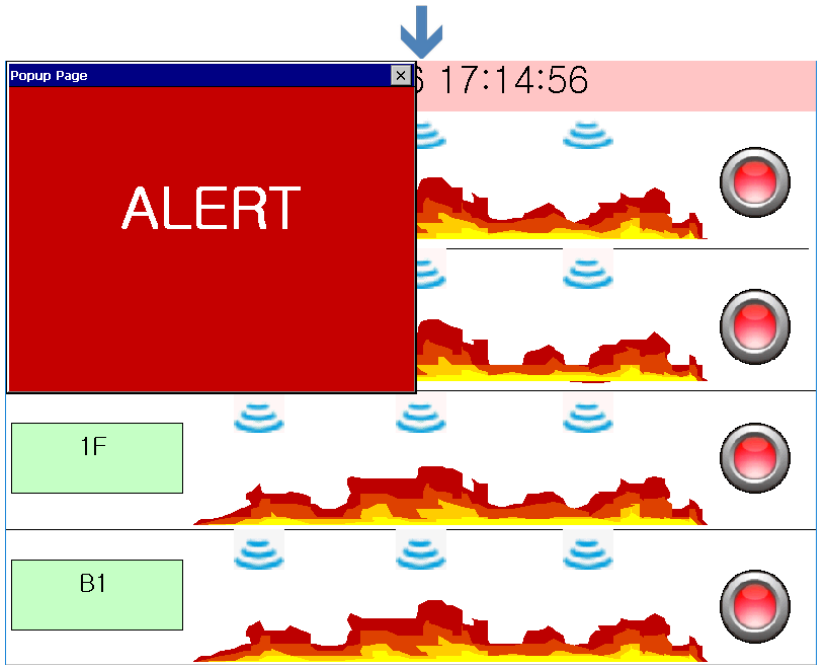
When Y09 goes ON, the program will input 0 to D02.

(5) Checking the Operation

a) Write the project to Xpanel and execute it. Switch the PLC mode to RUN.

b) Turn M01 ON and OFF to check the popup page on the screen.





18.3 Loading CICON Variable Table Info.

When the variable table is generated in the CICON project, you can load its information to the Xpanel Designer project. Variables used in the CIMON-PLC are converted into tags in the database by one click.

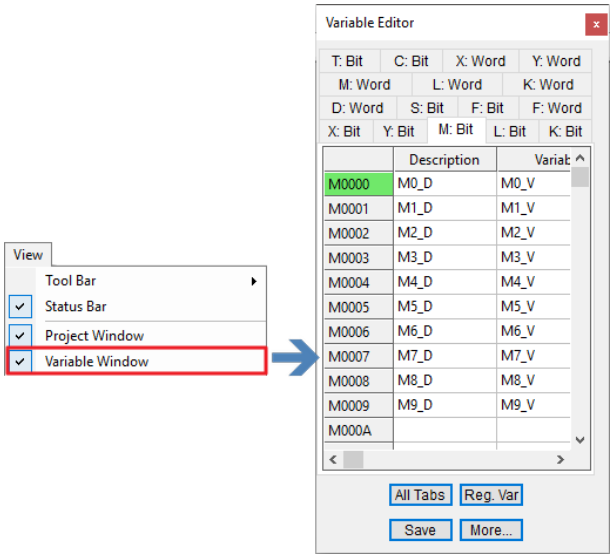
- This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.
- You can load the variable table configured in the CICON software 6.00 and below versions.

18.3.1 Way to Edit

(1) Editing the variable table in CICON

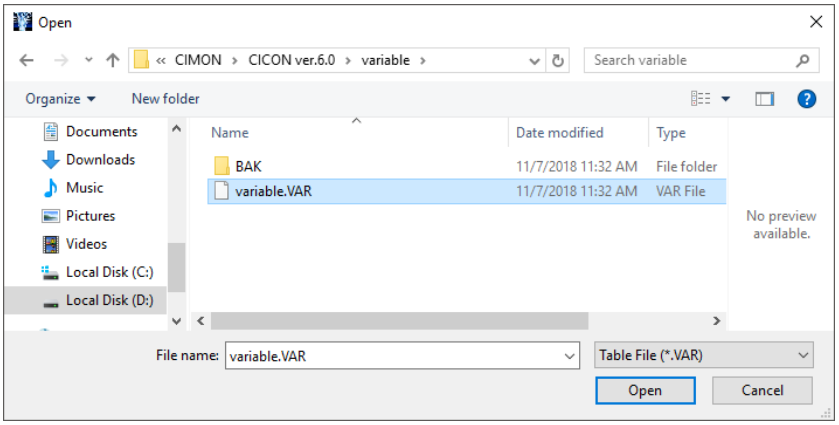
Create a PLC project in the CICON software and go to [Tools]-[Variable Window]. The variable editor will appear. You can input the information for each device address. Contents are saved by saving PLC project.

※ Please refer to the CICON help for more information about variable editor.

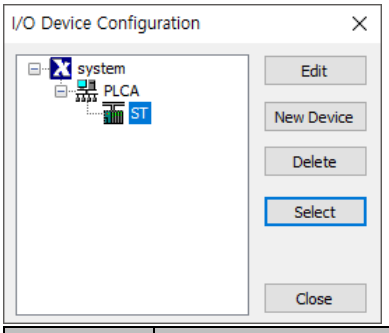


(2) Loading the variable table

Press [Tools]-[Loading CICON Variable Table Info.] in the Xpanel Designer, and the file browser will appear. You can browse variable table file (*.var file format) which is edited in the CICON software 6.00 and below versions.

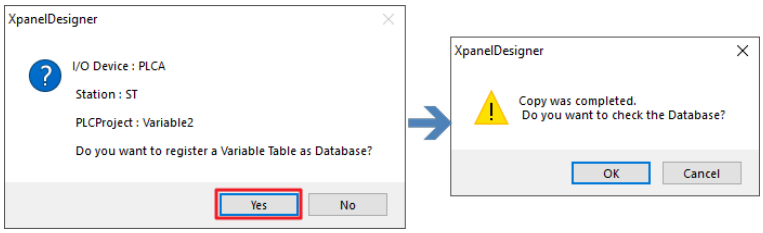


Select the variable table file and press [Open] to prompt the 'I/O device configuration' dialog box. When the I/O device settings are not saved in the Xpanel Designer, add a new device by pressing [New Device] button.

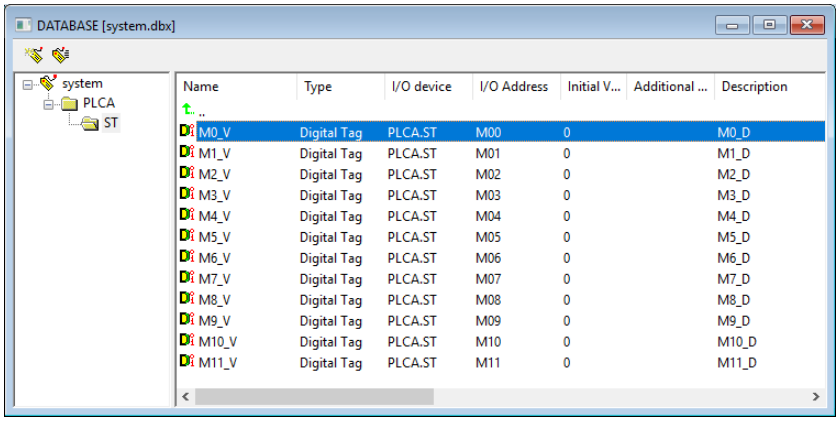


Item	Description
Edit	Modifies the selected I/O device.
New Device	Adds a new I/O device. Manufacturer must be selected as 'CIMON-PLC'.
Delete	Deletes the selected I/O device from the project.
Select	Applies the contents of variable table to the selected I/O device.

Following message will appear when you select the station name. You can convert variables of CICON project into tags of Xpanel Designer.



A group tag is created with I/O device name at the top-level of database. Another group tag with station name is created under the 'I/O device name' group. Each variable is changed to the tags according to the device information.



The table below explains about contents of conversion.

CICON	Xpanel Designer
Variable Name	Tag Name
Description	Description
Device	I/O Address
Bit	Digital Tag (Initial value: 0)
Word	Analog Tag (Initial value: 0)

19 Xpanel Runtime

19.1 Simulator

The operator can virtually simulate the project by using the simulator. This feature can be used when there are no physical devices (Xpanel and PLC) and need to test a project. The simulator includes remote control feature which can change the tag value for a more realistic simulation.

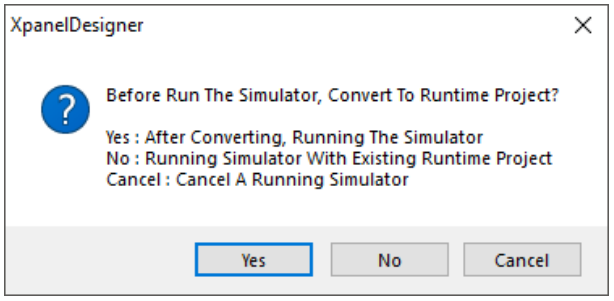
> ⚠ This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

19.1.1 Run Simulator

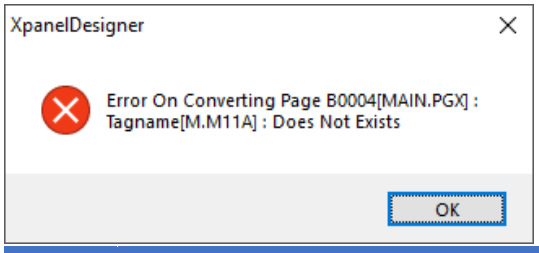
To execute the Xpanel simulator, press [Tools]-[Run Simulator]. If you wish to simulate the current graphic page, click [Tools]-[Run Simulator with Active Page].
Note that you cannot check the communication-related features in the simulator; data logging, data server, data bridge, recipe, etc.

> ⚠ Project operates virtually in the simulator without PLC communication, and real tags are converted into the virtual tag during simulator runtime. Please note that you cannot get real data in the simulator via communication functions.

Before the simulator is executed, the project is converted into the runtime project file. The system compiles the project configuration during the conversion.



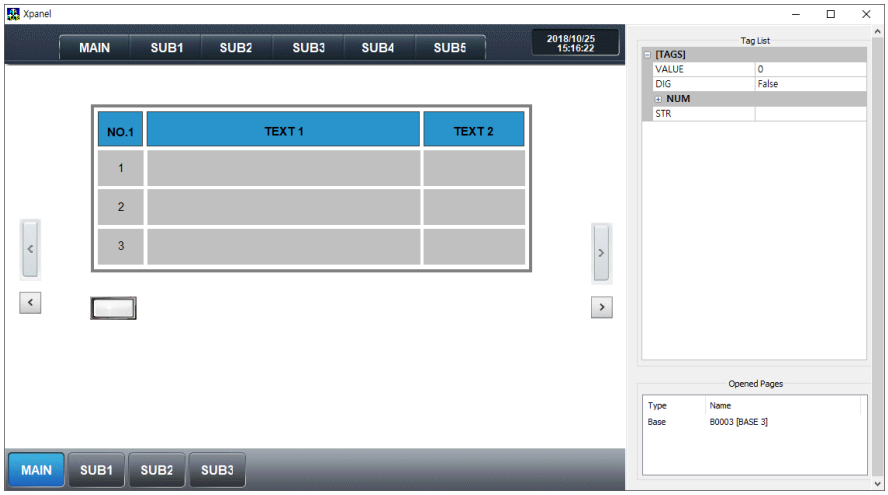
If there are any errors in the compiling phase, the conversion will be stopped and a message will appear informing the wrong configuration. You must properly set the function again to launch the simulator.



- If the security level is configured in the main page, the simulator will not executed successfully.
- Please note that you cannot specify popup page and keypad page for main page.

19.1.2 Simulation Screen

In the simulator runtime, the main screen and remote control function are displayed in the each side of window. You can use the mouse to interact with the page screen. The remote control shows tag names and page names which are currently used.

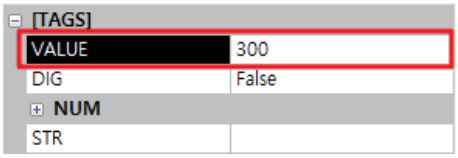


Virtual Control by Remote Control

You may change the value of virtual tags by using remote control feature. The tag name and its current value are shown in the remote control window.

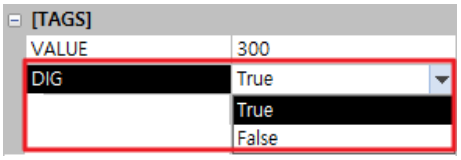
(1) Changing analog values

To change the value of an analog tag, click the input field next to the tag name and enter the value.



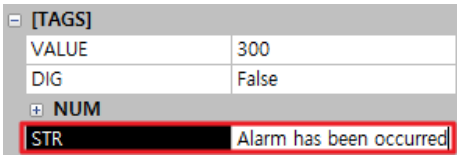
(2) Changing digital values

The combo box appears when clicking the tag value cell. You may choose TRUE or FALSE for the digital value.



(3) Changing string values

To change the string value, click the input field next to the tag name and enter the string data.



19.2 VNC

XPANEL provides a function for monitoring and controlling the system from anywhere. With Ethernet connection, you may monitor and control the system with PC or a smartphone.

- **Local Ethernet network**

A local Ethernet network uses its own Ethernet network locally without using the Internet. This allows the PC or smart phone to be connected to the Xpanel through a wireless router using the same network IP.

- **Public IP Ethernet network**

If a public IP is assigned to the Xpanel, user can access Xpanel anywhere using the Internet via Wi-Fi, 3G, or LTE.

> ⚠ Please note that VNC allows only one device to have a remote connection to the Xpanel at a time.

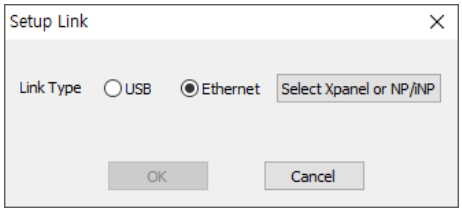
19.2.1 VNC Network Configuration

To use VNC function, You must start the VNC server in Xpanel before using the VNC function. You can start or stop server with following steps.

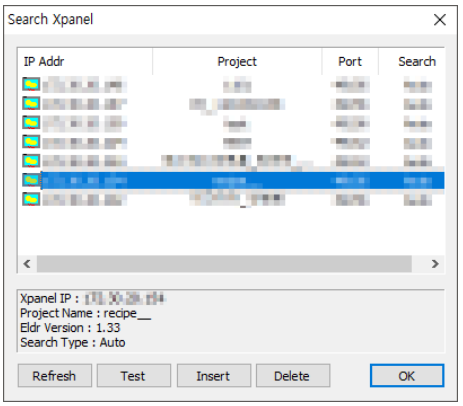
Starting and stopping the VNC server

(1) Starting and stopping the server in Xpanel Designer

a) Go to [Online]-[Setup Link] and select link method for 'Ethernet'.

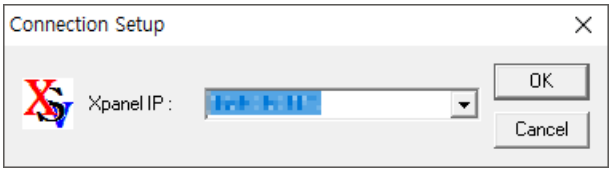


b) Press Search Xpanel or NP/iNP] and searched Xpanel will appear on the list. Select the Xpanel which you wish to connect.



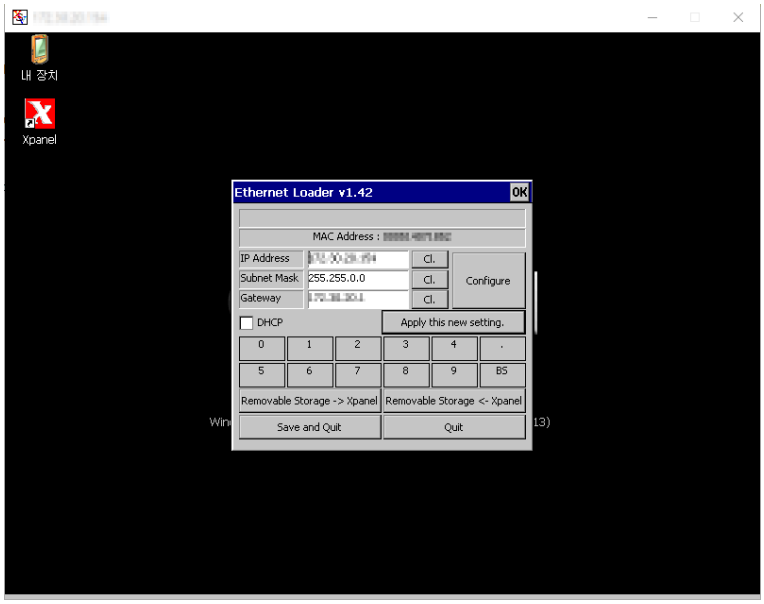
c) Select [Online] - [Run Remote Control Server].

d) Following dialog box will appear when you click [Online]-[Run Remote Control Viewer]. Enter the Xpanel IP to access the VNC server.

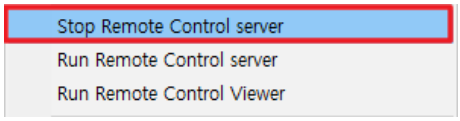


Subnet mask and gateway should be configured to match those of PC and Xpanel.

e) You can see the Xpanel screen by the VNC viewer.

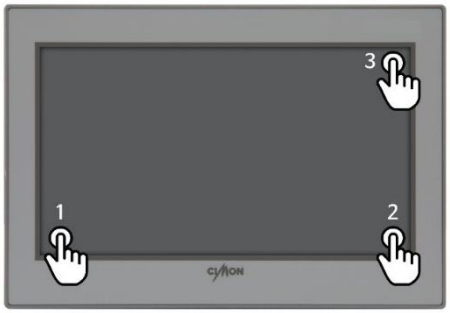


f) To turn off the connection to the remote control server, press [Online]-[Stop Remote Control Server].

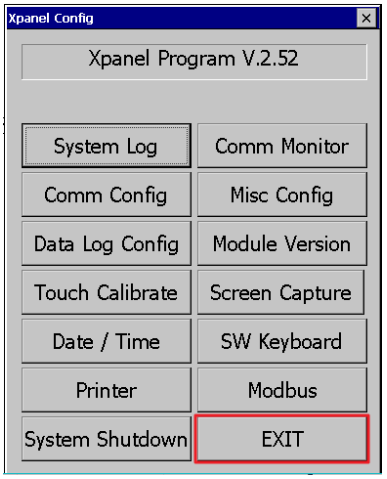


(2) Starting and stopping the server in Xpanel

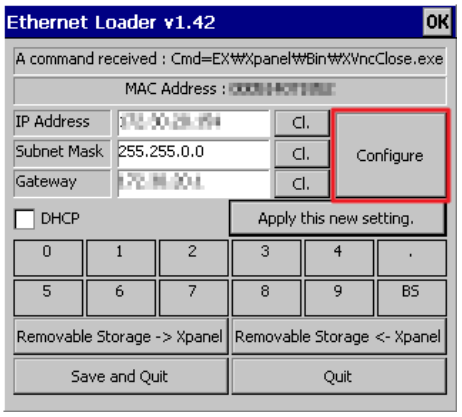
a) Click as numbered sequence and Xpanel Config dialog box will appear.



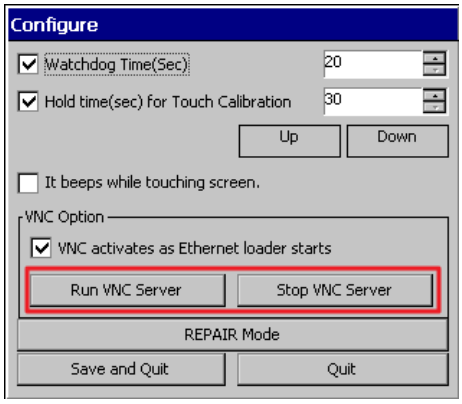
b) Press [Exit] button.



c) Press [Configure] button in the 'Ethernet Loader' dialog box.



d) You can start the remote control server by pressing [Run VNC Server] button. If 'VNC activates as Ethernet loader starts' option has selected, the server starts automatically when Xpanel is turned on.
You may stop the remote control server by pressing [Stop VNC Server] button.



(3) Starting and stopping the server by using command

You can run or stop VNC server in the project runtime directly by touch commands as shown below.

Run VNC Server	**Function**	Touch
	Action	Command Expression
	Command	RunApp("Xpanel/Bin/XVncServer.exe","")
	Description	Starts the remote control server.
Stop VNC Server	**Function**	Touch
	Action	Command Expression
	Command	RunApp("Xpanel/Bin/XVncClose.exe","")
	Description	Terminates the remote control server.

VNC Mobile Application Configuration

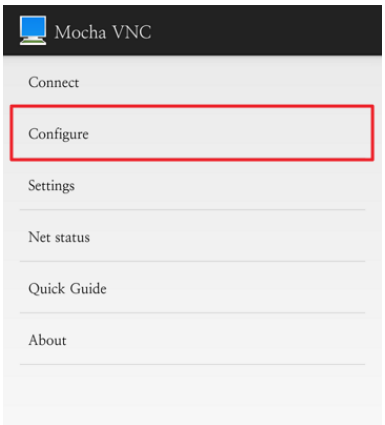
Xpanel remote control is possible by smart phone when you use a general-purpose VNC Viewer application, supports universal remote access interface. Note that display color may differ in the application which not supports 16-bit color option.

Mobile network configuration

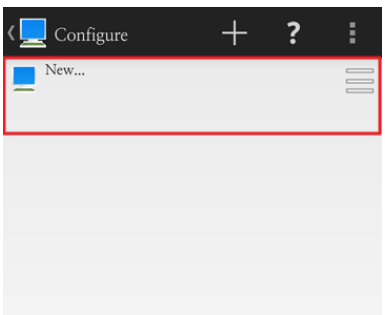
(1) Mobile configuration in Mocha VNC Lite application

a) Search a mobile viewer named 'Mocha VNC Lite' and install the application in the smart phone.

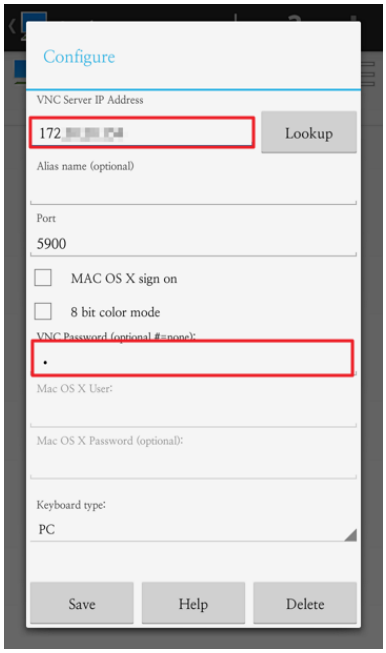
b) Tap 'Configure' menu in the start menu of application.



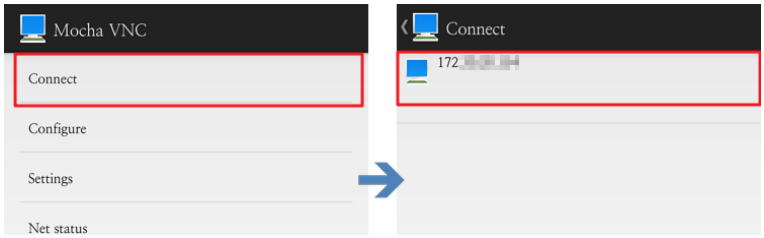
c) Tap 'New…' button to establish a new network configuration.



d) Input parameters for Xpanel IP, port, and password. Enter the hash sign(#) in the password field, which indicates nonuse of password. Tap [Save] to save the settings.



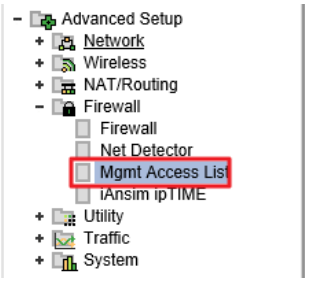
e) Go back to the start menu and tap 'Connect' button. You can connect to the Xpanel with configuration.



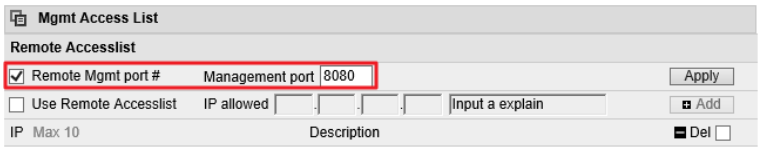
- **Assigning static IP address**

When you wish to connect Xpanel via 3G/LTE network, you must take a public IP address. In this statement, you can connect to the VNC server with static IP address or dynamic IP address. To use VNC function in the mobile phone, a wireless network configuration is required. Following instruction explains the step for mobile network through IpTime device.

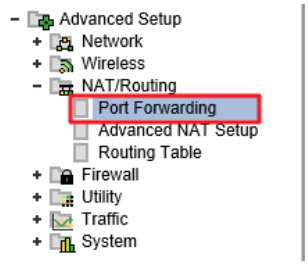
a) Input '192.168.0.1' and click [Set up] to enter settings window. Set remote Mgmt port by entering [Advanced Setup]-[Firewall]-[Mgmt Access List].



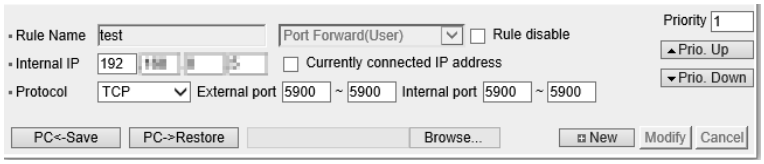
b) Check [Remote Mgmt port#] button and set the number of management port.



c) Below is the figure about how to set port forwarding to assign socket port number in ipTime. Go to [Advanced Setup]-[NAT/Routing]-[Port Forwarding] in settings window.



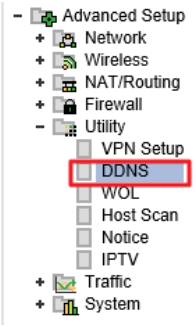
d) Assign a static IP address and socket port number using in Xpanel. The socket port number used in the Xpanel is 5900.



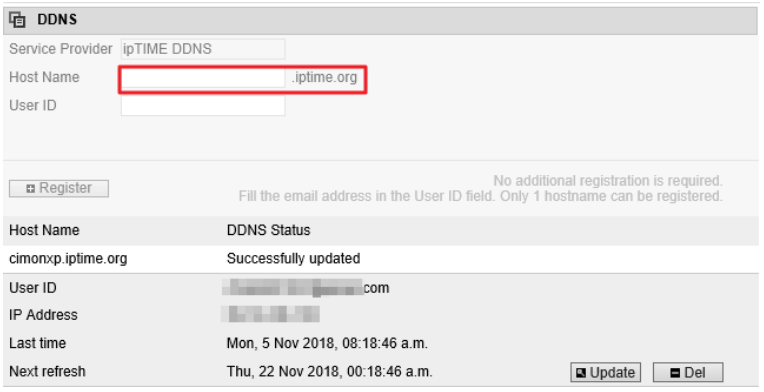
e) Enter the static IP address and port number of Xpanel at the configuration box in application.

- **Assigning dynamic IP address**

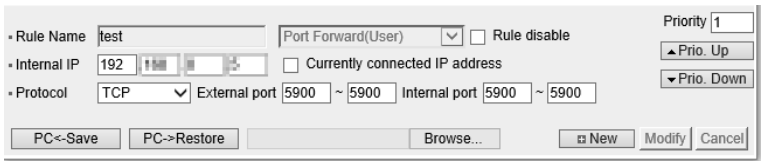
a) Go to [Advanced Setup]-[Utility]-[DDNS] to register the address of domain name.



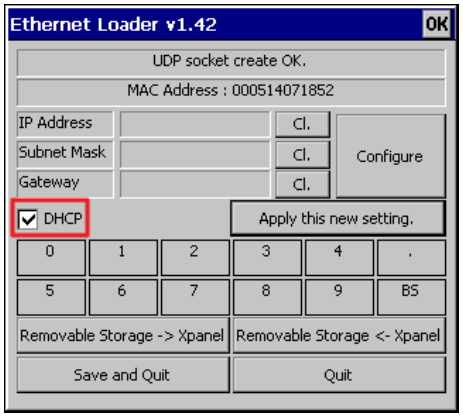
b) Input the host name to register the DDNS server.



c) Go to [Advanced Setup]-[NAT/Routing]-[Port Forwarding] in settings window. You can access Xpanel via port number by entering the domain name.



d) Check the 'DHCP' option to set Xpanel for using dynamic IP address.



e) Enter the domain name and port number of Xpanel at the configuration box in application.

19.3 PC Runtime

Before Xpanel Designer V2.52, writing the project to CIMON-XPANEL was the only way of executing the project. However, Xpanel Designer V2.52 now supports PC Runtime feature, which enables the users to execute the project in the CIMON-TOUCH PC (CM-NP/iNP). The PC Runtime is capable of the same operations as CIMON-XPANEL.

To use PC Runtime feature, the device type of the project must be CM-NP/iNP. Also, Key Lock for PC Runtime must be installed beforehand.

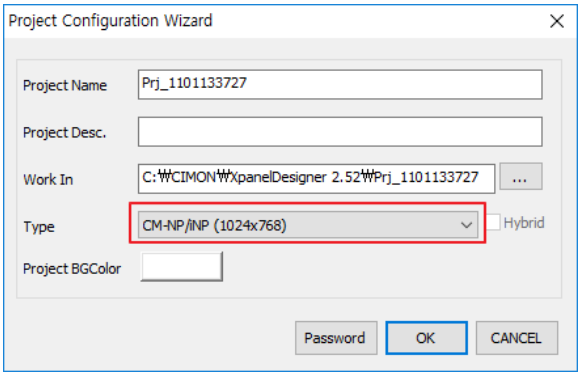
19.3.1 Prerequisites and Execution

(1) Prerequisites

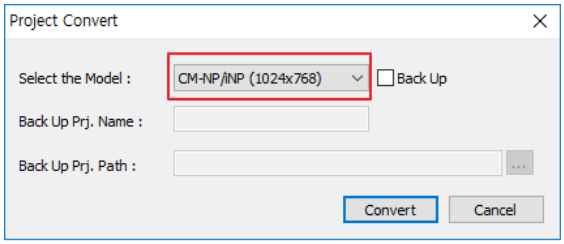
You must use CIMON-TOUCH PC (CM-NP/iNP), installed with Key Lock for PC Runtime. Since the Key Lock is included when you purchase the CIMON-TOUCH PC, you will only need to check the Key Lock when the PC Runtime is not executed.

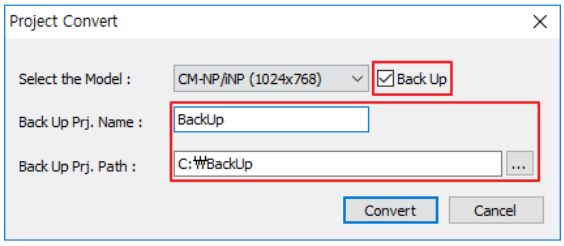
The device model assigned to the project in Xpanel Designer V2.52 must be CM-NP/iNP.

When you create a new project, select 'CM-NP/iNP (1024x786)' option in the [Type].



If you wish to execute the existing project in TOUCH PC (CM-NP/iNP), it may be necessary to convert the project. In this case, select [Tools] - [Project] - [Convert…] button and assign the model as CM-NP/iNP. If you need to back up the current project file, select 'Back Up' option then start converting.

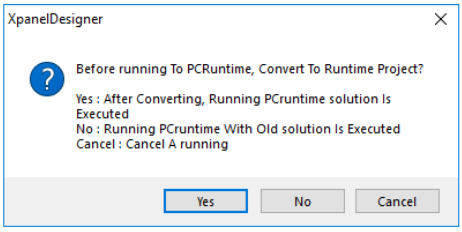


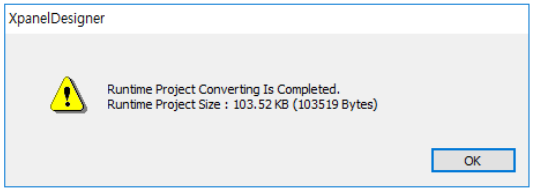


(2) Execution

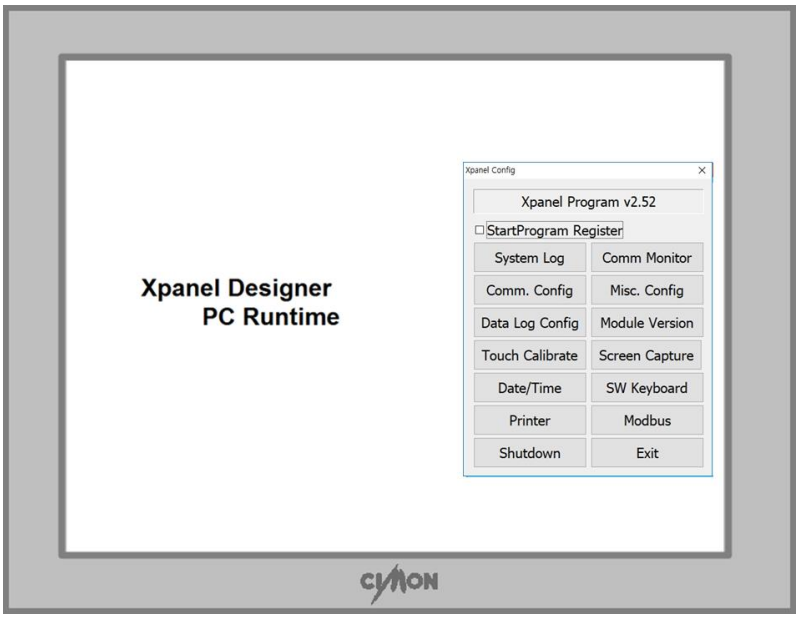
Press icon to execute the PC Runtime. If the model of the project is not CM-NP/iNP, PC Runtime will not be executed.

If the model of the project is CM-NP/iNP but executed in the general PC, Xpanel Designer will only create a runtime project. The actual PC Runtime will not be executed.





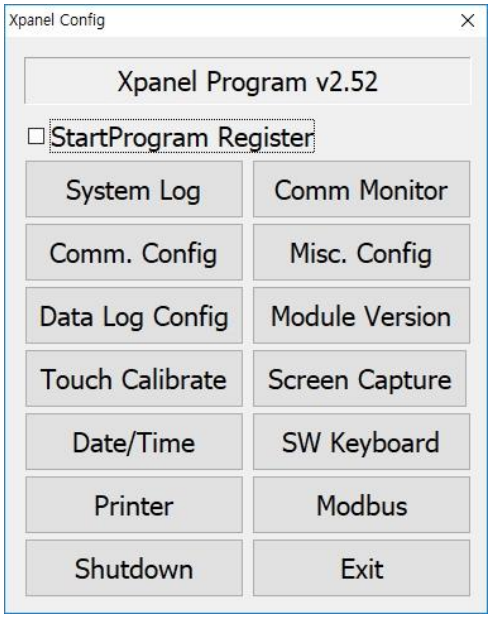
The PC Runtime will only be executed properly when the model of the project is CM-NP/iNP and the project is executed in the corresponding (CIMON-TOUCH) PC.



19.3.2 Related Features

Xpanel Config.

Generally, PC Runtime provides the same control operations as Xpanel device. However, few features in the [Xpanel Config.] operates differently from the Xpanel.

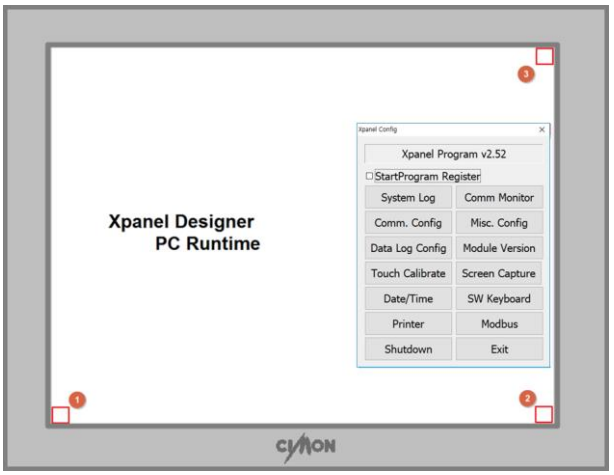


Item	Supported	Item	Supported
Start Program Register	O	Screen Capture	O
System Log	O	Date/Time	O
Comm Monitor	O	SW Keyboard	O
Comm. Config	O	Printer	O
Misc. Config	X	Modbus	O
Data Log Config	O	Shutdown	X
Module Version	O	Exit	O
Touch Calibrate	O		

Following methods are 3 ways to bring up the [Xpanel Config.] window in the PC Runtime.

(1) Runtime Screen

In the PC Runtime, press the corners of the screen (Left Bottom→Right Bottom→Right Top) to bring up the [Xpanel Config.] window.



Alternatively, you can bring up the [Xpanel Config.] window by triple-clicking the right top corner of the PC Runtime screen.

These methods will be disabled when the 'Disable Online Configuration' option in the [Tools] - [CIMON-XPANEL Configuration] is selected.

(2) OpenConfigWin()

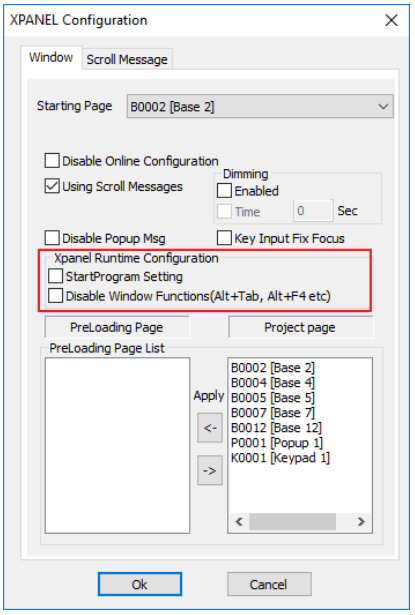
OpenConfigWin	Brings up the [Xpanel Config.] window.
Subroutine	OpenConfigWin()
Description	Brings up the [Xpanel Config.] window. This function is not affected by the 'Disable Online Configuration' option.
Example	Brings up the [Xpanel Config.] window. OpenConfigWin();

(3) OpenConfigSub(*Feature*)

OpenConfigSub	Brings up the [Xpanel Config.] window or its sub-feature.
Subroutine	OpenConfigSub(*Feature*)
Description	Brings up the [Xpanel Config.] window or its sub-feature. This function is not affected by the 'Disable Online Configuration' option. According to the value assigned to *Feature*, following features will be brought up. 0: Xpanel Config. 1: System Log 2: Comm Monitor 3: Comm. Config 4: Misc. Config 5: Touch Calibrate 6: Screen Capture 7: Date/Time 8: SW Keyboard 9: Printer 10: Modbus 11: Data Log Config 12: Module Version
Example	Brings up the [Xpanel Config.] window. OpenConfigSub(0);

CIMON-XPANEL Configuration

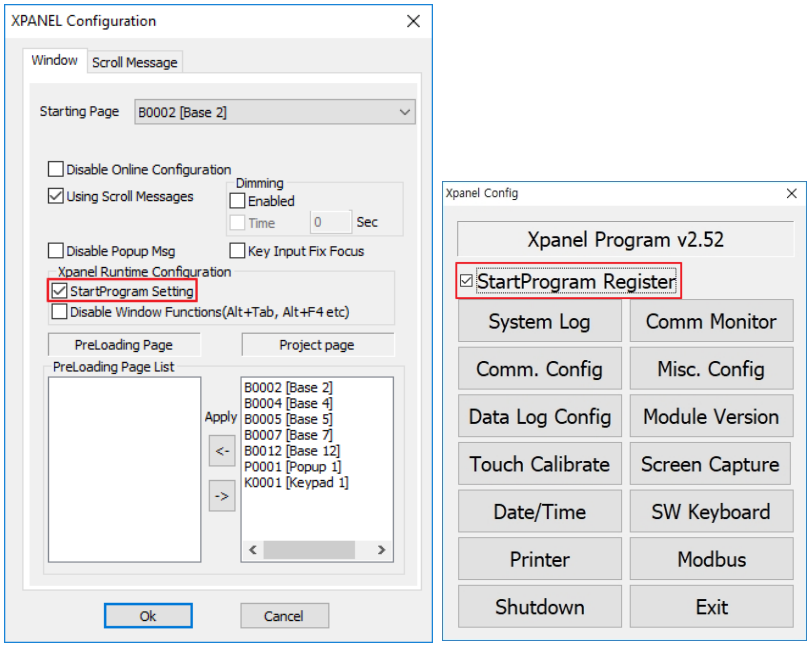
If the model of the project is CM-NP/iNP, options are added to the [Tools] - [CIMON-XPANEL Configuration].



(1) StartProgram Setting

You can configure the option in the [Xpanel Config] or the Xpanel Designer. After the PC reboot, open the project file in the Xpanel Designer. Then the corresponding project will be executed as PC Runtime.

When you select the option in the Xpanel Designer, the option will be applied immediately.



(2) Disable Window Functions (Alt+Tab, Alt+F4 etc)

If you execute PC Runtime with this option enabled, you cannot use Windows hotkeys, such as Alt+Tab or Alt+F4.

However, it is possible to use Ctrl+Alt+Del regardless of the option's status.

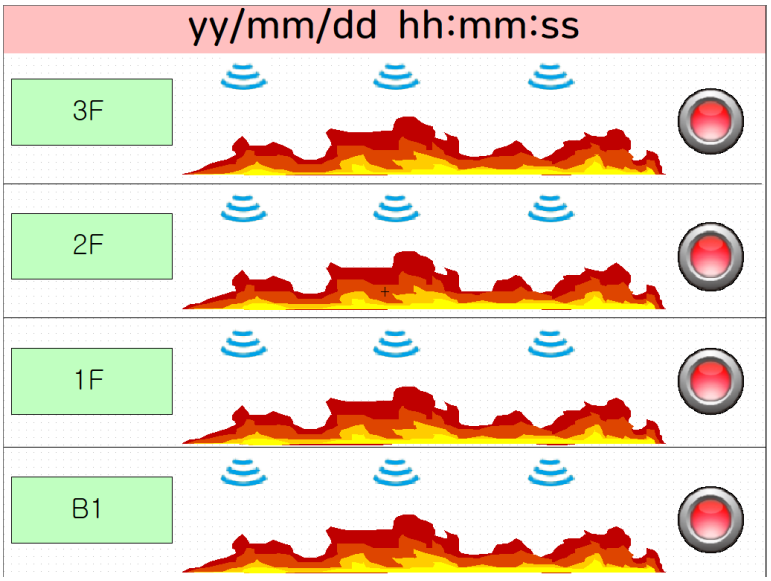
19.3.3 Exercise

> ⚠ This section explains the basics of the feature. Please utilize the feature according to your site environment.

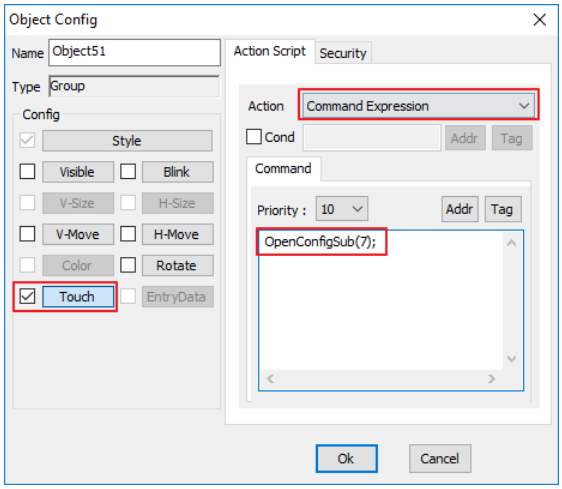
Exercise : Executing project with PC Runtime

(1) Page Configuration

a) Use basic objects, Library, Date/Time, Switch/Lame objects and configure the page as shown below.

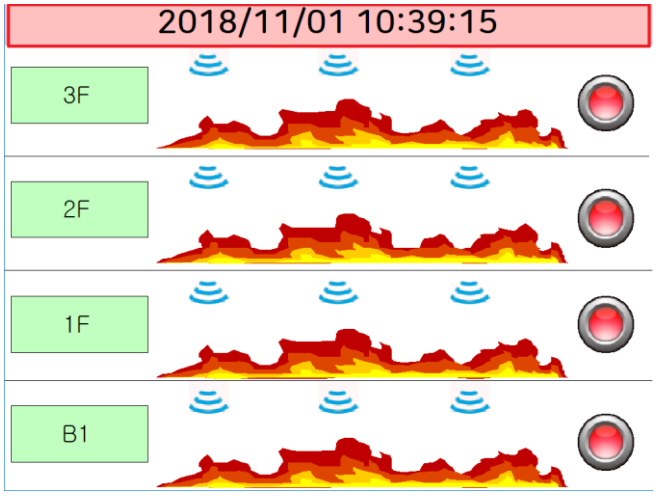


b) Assign the control features to each object. In this example, assign 'Touch' feature to the Date/Time object using OpenConfigSub(7) function. This function will bring up the Date/Time sub-feature of the [Xpanel Config] window.



(2) Checking the Operation

a) Press button to execute the project. In the configured page, touch the time/date area on the top. Then the system's Date/Time configuration window will appear.



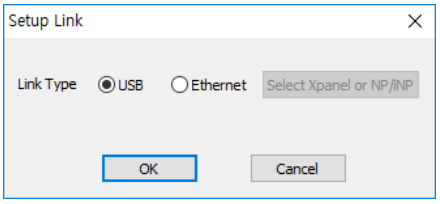
19.4 Xpanel Touch Calibration

In case of the mislocation of touch points, you can calibrate the touch panel of Xpanel device. You can start the calibration from the Xpanel Designer and the Xpanel device.

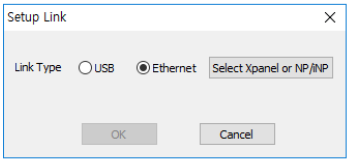
19.4.1 Xpanel Designer Touch Calibration

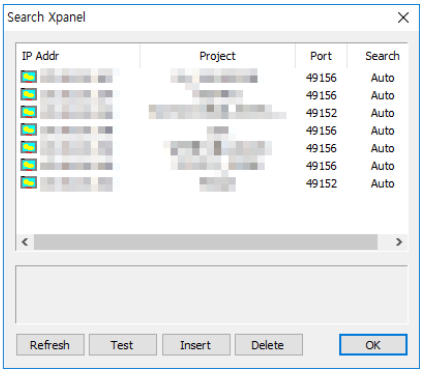
a) Select [Online] - [XPANEL Touch Calibration]. Regardless of the current [Setup Link] option, following window will appear.

- USB

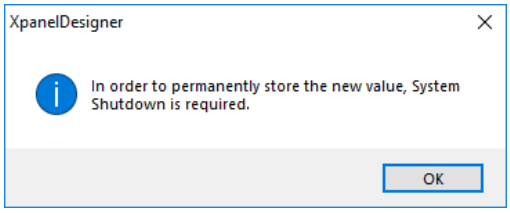


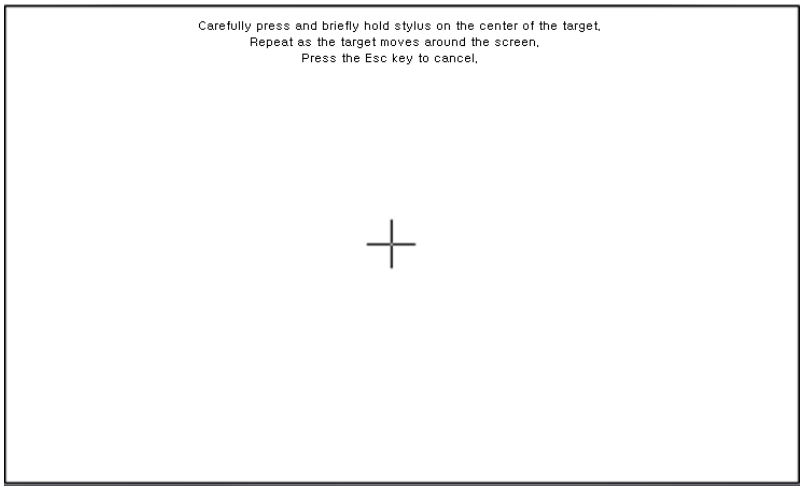
- Ethernet





b) When you press [OK], following message will pop-up and the Xpanel device will turn into the calibration screen.





c) Follow the instruction displayed in the screen. After the calibration, reboot the Xpanel device to save the calibration settings.

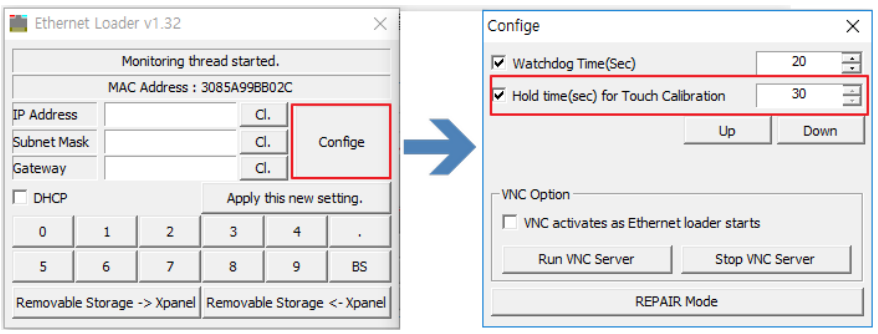
19.4.2 Touch Calibration in Xpanel

You can also start the touch calibration in the Xpanel device. There are three methods to start the calibration.

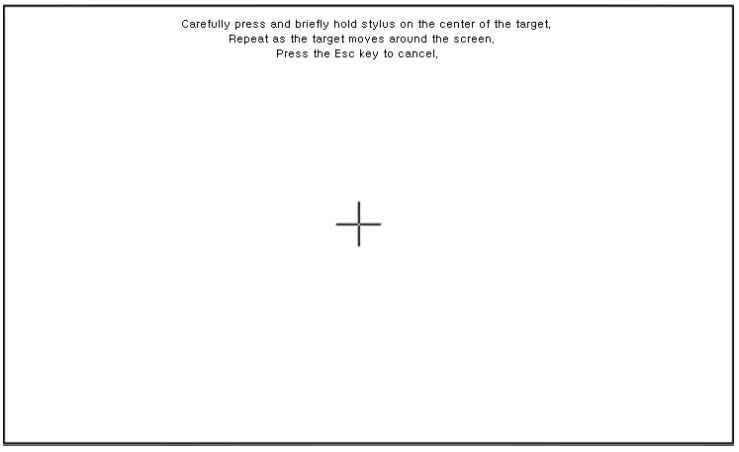
(1) Unable to open [Xpanel Config]

If the touch points are excessively mislocated and unable to use mouse, you can press a random point of the screen to start the touch calibration.

To use this option, the 'Hold time(sec) for Touch Calibration' option must be configured beforehand.

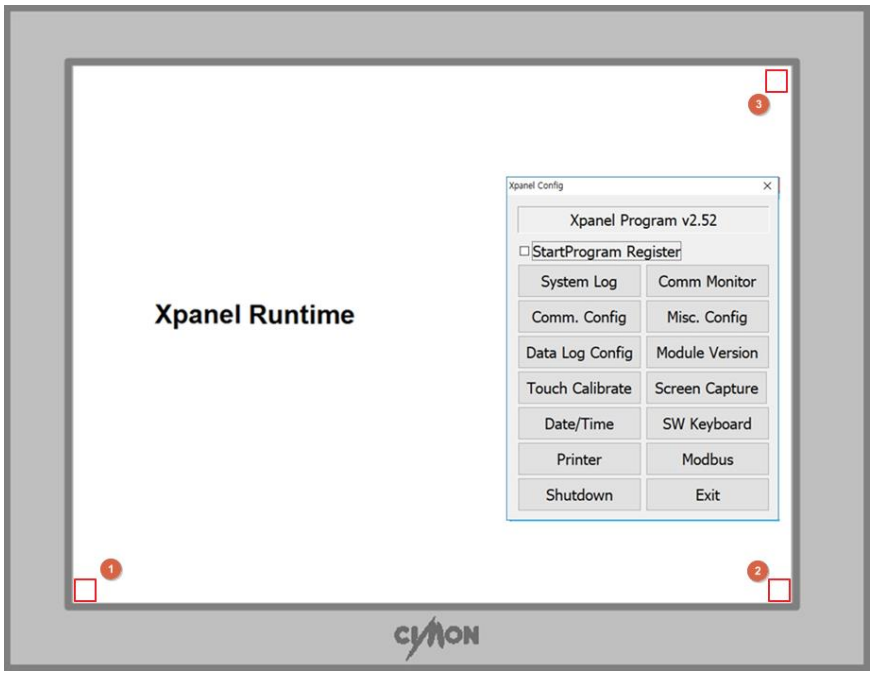


Press the screen as much as the time assigned in the [Confige] window. Then following screen will appear. Follow the instructions and reboot the Xpanel device after the calibration.

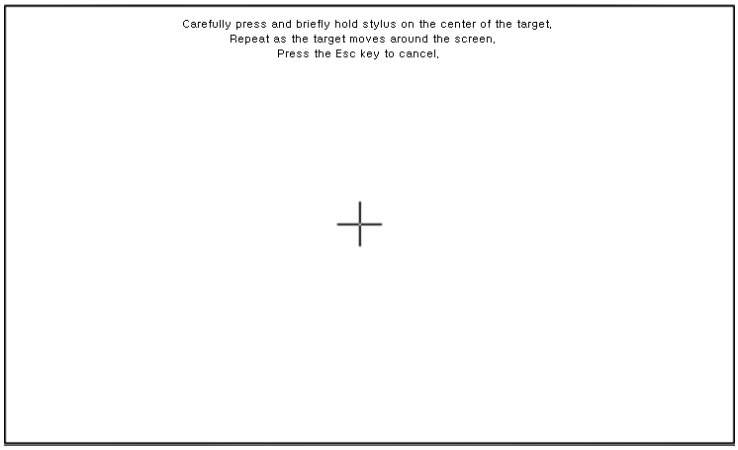


(2) Touch Calibration in [Xpanel Config]

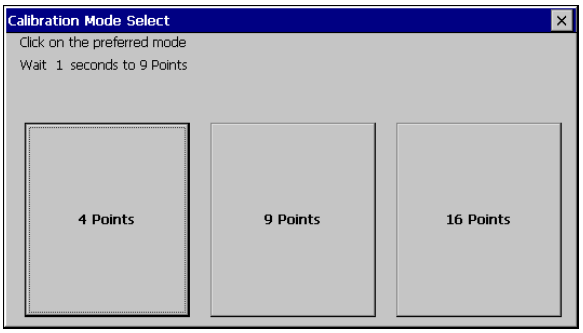
You can start touch calibration by pressing [Touch Calibrate] button in the [Xpanel Config] window. To bring up the [Xpanel Config] window, press the corners of the Xpanel screen as shown below. (Left bottom→Right bottom→Right top)



Press [Touch Calibrate] to start the calibration. After the calibration, reboot the Xpanel device to save the calibration settings.



In case of the models such as XT10/12CB, you can select the calibration mode. There are 4, 9, 16 points mode. For more accurate calibration, select '16 Points' mode.



(3) TouchCalib()

You can use TouchCalib() function to start touch calibration.

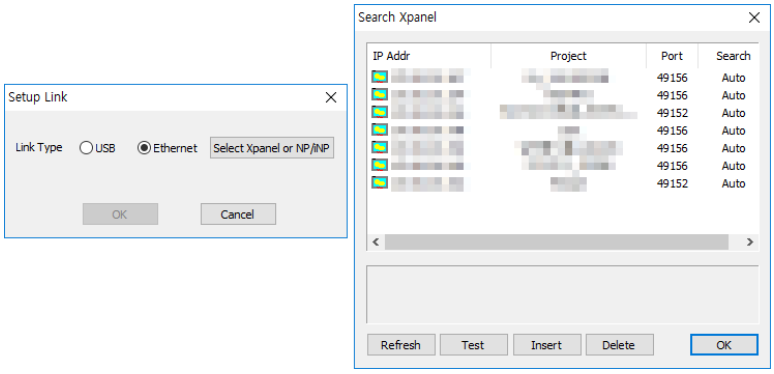
TouchCalib	Starts touch calibration.
Subroutine	TouchCalib()
Description	Starts touch calibration.. Operates same as the [Xpanel Config] - [Touch Calibrate] or [Online] - [Xpanel Touch Calibration].
Example	Starts touch calibration.. TouchCalib();

19.4.3 Exercise

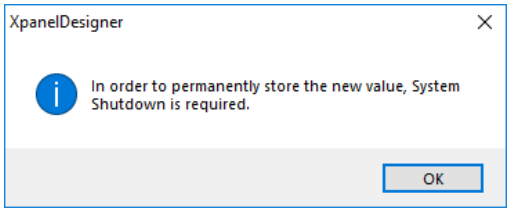
Calibrating Xpanel through Xpanel Designer

If the current Xpanel device has excessively mislocated touch points, unable to use mouse, and the 'Hold Time (sec) for Touch Calibration' option is disables, you can only start the touch calibration through Xpanel Designer.

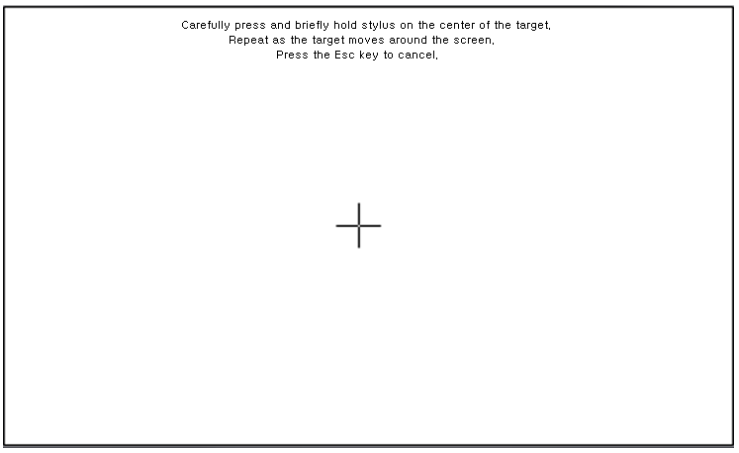
a) Select [Online] - [Xpanel Touch Calibration]. Select the target device in the following window.



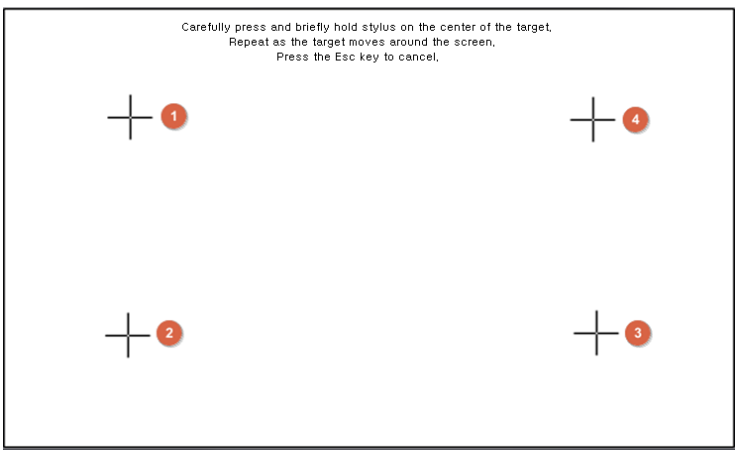
b) When the connection is successful, a message will pop-up as shown below.



c) On the Xpanel device, calibration window will appear as shown below.



d) Follow the instruction and then reboot the Xpanel to save the calibration setting.



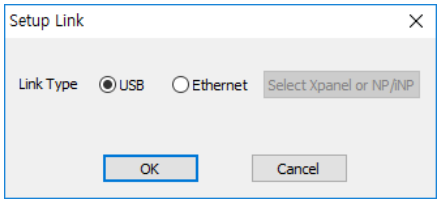
19.5 Repair Mode

When an error occurs during the project download to Xpanel, you can fix the error by using the Repair Mode. You can set the Xpanel as Repair Mode through Xpanel Designer and the Xpanel device.

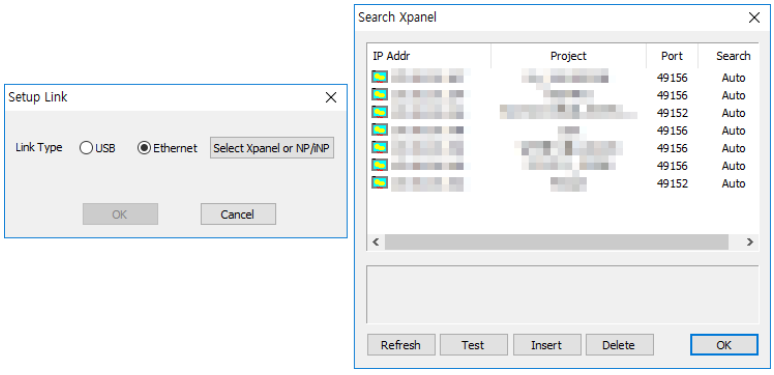
19.5.1 Operation

a) Select [Online] - [Setup Link] to connect to the target device.

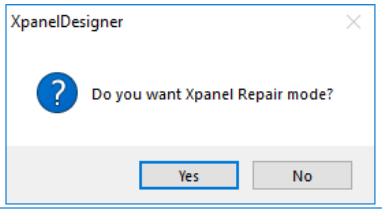
- USB

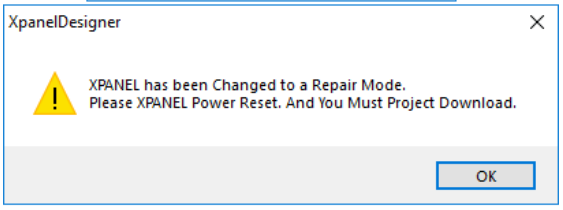


- Ethernet

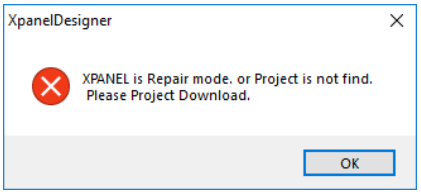


b) Select [Online] - [Repair Mode]. Then press [Yes] and [OK] to set the device as repair mode.



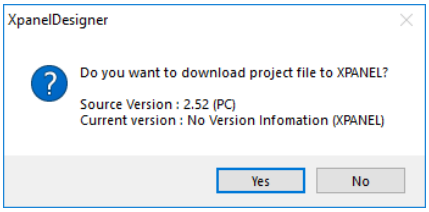


If the device is already in repair mode, following message will appear.



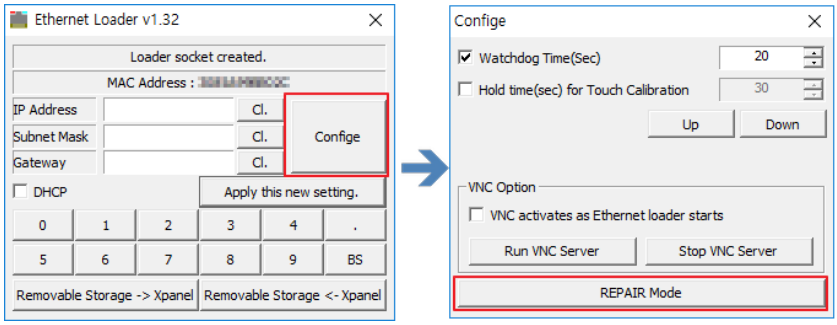
c) Reboot the Xpanel. Then the system will not execute the project, but a message will appear instead.

d) Download the project to the Xpanel. Select [Online] - [Download to Xpanel (PC→Xpanel)] or press button to start project downloading.

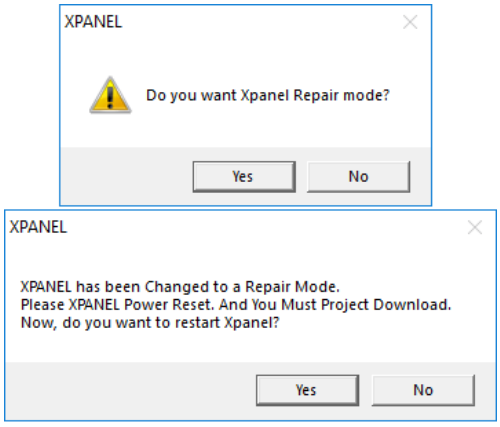


19.5.2 Repair Mode in Xpanel

You can also set the Xpanel as Repair Mode in the device. In the [Ethernet Loader] window, press [Confige] to bring up the window as shown below.



Press [Repair] button to set the Repair Mode. In the followed windows, press the [Yes] buttons to proceed.

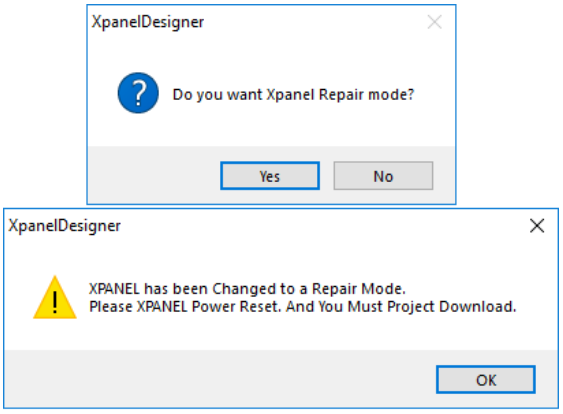


19.5.3 Exercise

Repairing a project through Xpanel Designer

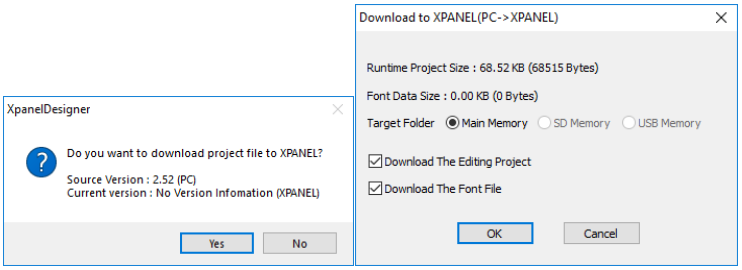
When an error occurs during the project download to Xpanel, you can use Repair Mode feature of the Xpanel Designer.

a) Select [Online] - [Repair Mode]. Then press [Yes] and [OK] to set the device as repair mode.

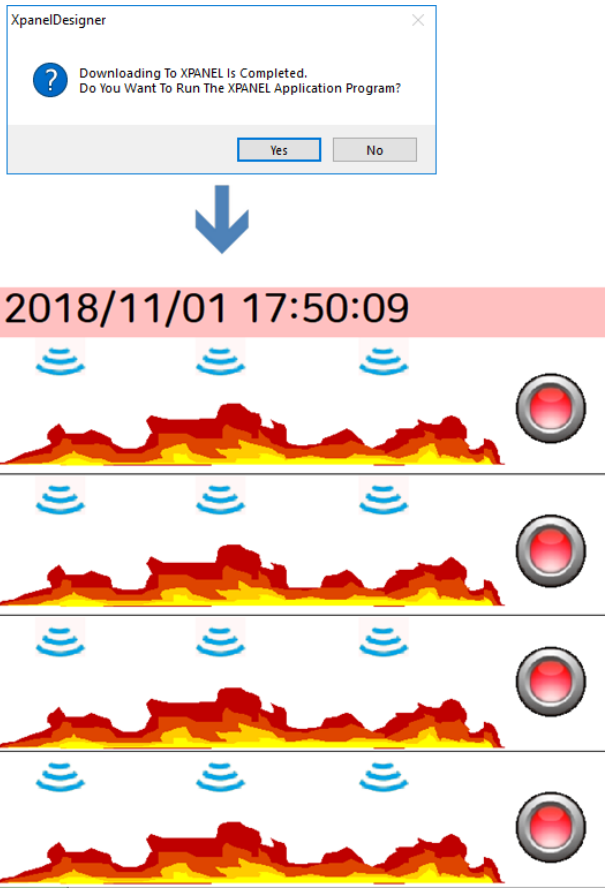


b) Reboot the Xpanel and check that the device is in Repair mode.

c) Download the project to the Xpanel. Select [Online] - [Download to Xpanel (PC→Xpanel)] or press button to start project downloading.



d) You will find that the project is successfully downloaded to Xpanel.

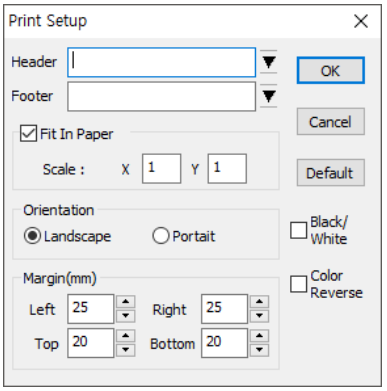


20 Print

The graphic pages created in the Xpanel Designer can be printed out within the user's settings. The user can assign a header or footer to the page so that the source of the page can be noticeable. Also, the user can preview the printout of the graphic pages.

20.1 Print Setup

You can configure the organization of printout such as the orientation, header, footer, etc. Select [File] - [Page Setup] to bring up the [Print Setup] window as shown below.



Item	Description
Header	Assign a header to the printout. Select ▼ button to use the options.
Footer	Assign a footer to the printout. Select ▼ button to use the options.
Fit In Paper	Select this option to print the graphic page according to the printing paper. When the option is deselected, the graphic page is printed according to the graphic page magnification.
Scale	Assign the number of pages to be printed.
Orientation	Assign the orientation of the graphic page to be printed. (Landscape or Portrait)
Option	Select the color option of the printout.
Margin	Assign the margin of the printout.
OK	Apply the settings to the print setup.
Cancel	Cancels the print setup.

Default	Initializes the all settings.:**Fit In Paper:** Selected, **Scale:** X1, Y1, **Orientation:** Landscape, **Option:** Deselected, **Margin:** Left 25mm, Right 25mm, Top 20mm, Bottom 20mm

(1) Header and Footer

The options for the header and footer will appear when you press ▼ button. You can arrange the options in the desired order.

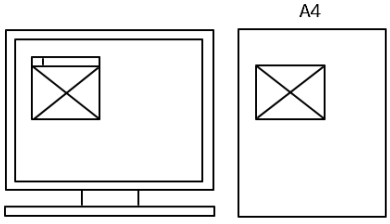
Item	Description
Page Number	Displays the page number. Entered as "%P".
Date	Displays the printed date. Entered as "%D".
Time	Displays the printed time. Entered as "%T".
Center	Centers the header/footer. Entered as "%C".
Left	Aligns the header/footer to the left. Entered as "%L".
Right	Aligns the header/footer to the right. Entered as "%R".
File Name	Displays the printed page's path and name. Entered as "%F".

When you configure the header as "Project %P %D %T %F %C", it will be printed as shown below.

Project 1 2018/01/01 12:00:00 C:₩FilePath₩PageName.PGX
…

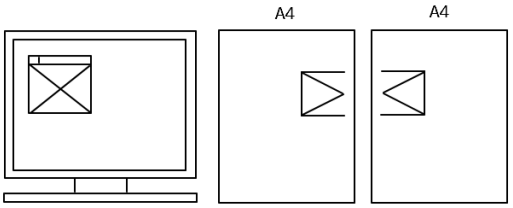
(2) Scale

You can assign the value to X and Y to determine the number of printing papers to be used to express a single graphic page. For example, the default setting (X=1, Y=1) uses a sheet of paper to print the width and the height.



X = 1, Y = 1

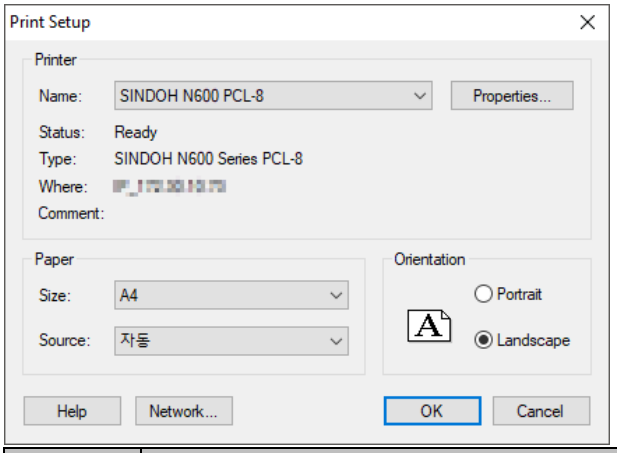
When the scale is assigned as X = 2, Y = 1, two sheets of paper is used to print the width and a sheet of paper for the height of the graphic page.



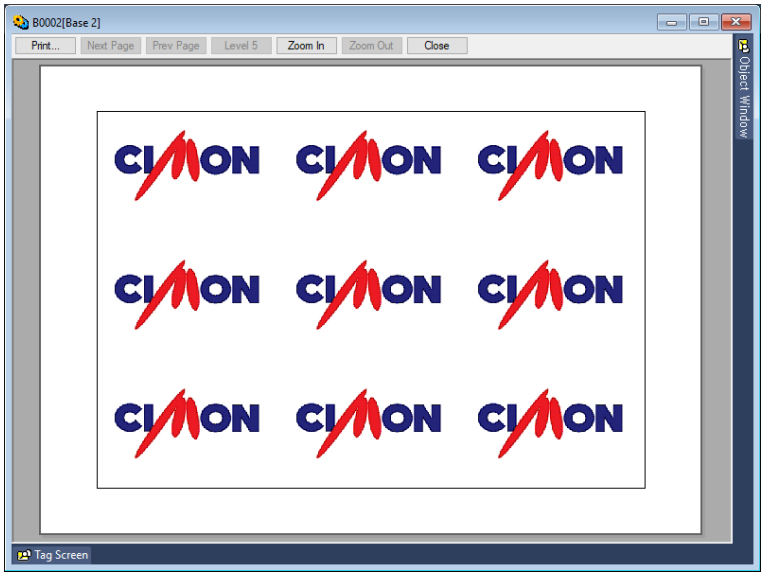
X = 2, Y = 1

20.2 Preview

Select [File] - [Preview] or icon to configure and preview the result of print setup. In the [Print Setup] window, press [OK] to start the preview.



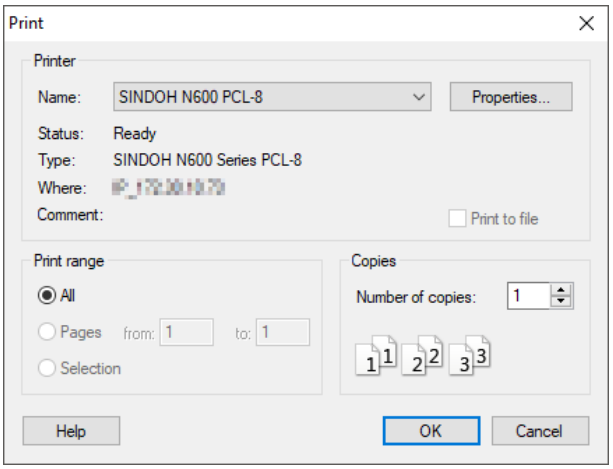
Item	Description
Name	Displays the list of available printers.
Properties	Brings up the property window of the selected printer.
Size	Select the size of the printing paper.
Source	Select the source of the printing paper.
Orientation	Assign the orientation of the printout.
Help	Brings up the Xpanel Designer Help.
Network	Brings up the Windows Network browser. You can select a printer registered in the local network.
OK	Applies the settings and the preview window will appear.
Cancel	Cancels the preview setup and returns to the graphic page.



Item	Description
Print	Prints out the graphic page as shown in the preview.
Next/Prev Page	If the graphic page is printed in several pages, you can move to the next or previous preview page.
Level 4	If the graphic page is printed in several sheets of papers, you can find the detailed display of a specific page.
Level 5	If the graphic page is printed in several sheets of papers, you can find the overall display of the pages.
Zoom In	Click the [Zoom In] button or a point of a page to enlarge the preview.
Zoom Out	Click the [Zoom Out] or a point of the enlarged page to reduce the preview.
Close	Closes the preview window and returns to the graphic page.

20.3 Print

You can print out the current graphic page with the printer. Select [File] - [Print] or icon to bring up the [Print] window.



Item	Description
Name	Displays the list of available printers.
Properties	Brings up the property window of the selected printer.
Print Range	Indicates the target pages to be printed. The options except 'All' are disabled.
Copies	Assigns the number of copies.
Help	Brings up the Xpanel Designer Help.
OK	Applies the configuration and prints out the graphic page.
Cancel	Cancels the print and returns to the graphic page.

20.4 Related Features

In this section, you can find a subroutine[10] frequently used for the printing out. Please refer to the table below for applicable subroutine.

All functions must be used with brackets.

Command			Description
Print	Subroutine	HardCopy	Prints out the runtime screen of Xpanel.

20.4.1 Function for Print

HardCopy	Prints out the runtime screen of Xpanel.
Subroutine	HardCopy()
Description	Prints out the runtime screen of Xpanel.
Example	Prints out the runtime screen of Xpanel. HardCopy()

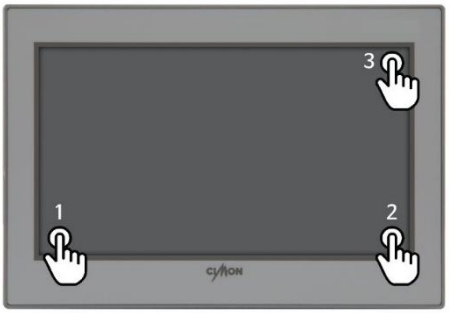
[10] Subroutine operates a certain action without any value returned, unlike the functions have return value.

20.5 Print in Xpanel

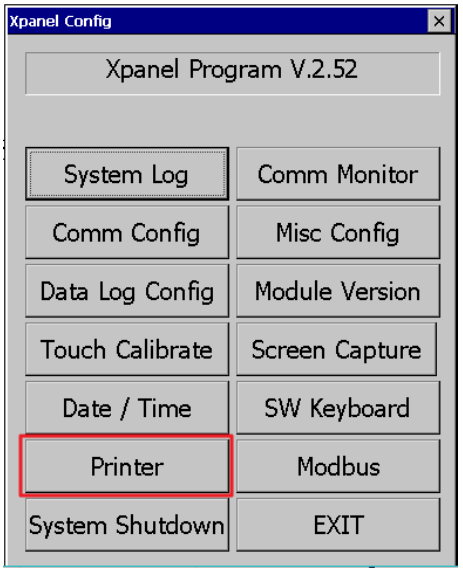
In the Xpanel runtime, you can configure the print setup in Xpanel Config dialog box and print out the project screen. Xpanel is compatible with PCL printer by USB connection. Refer to the following steps for print setup.

Print Setup in Xpanel

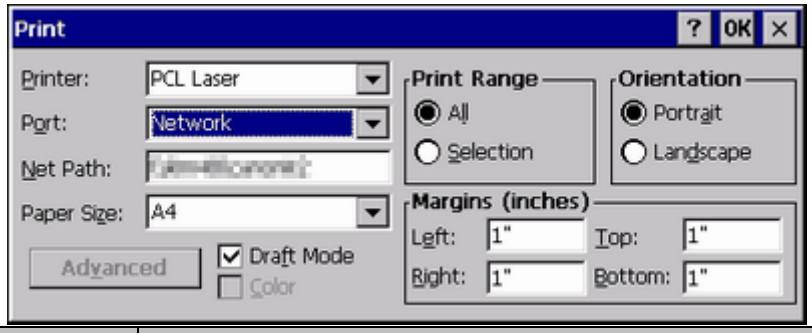
a) Click as numbered sequence. Xpanel Config dialog box appears.



b) Press 'Printer' button.

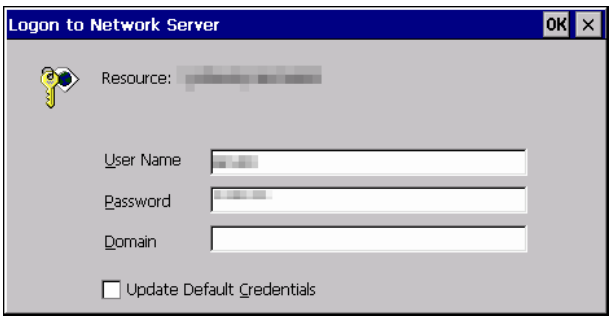


c) A print setup dialog box will appear as you press the 'Printer' button. Set any of the preferences described below, and click 'OK'.



Item	Description
Printer	Select the printer type. Xpanel supports inkjet and laser printer supporting PCL.
Port	Select a port that the printer is connected. If the printer is connected to the Xpanel via the USB host port, select the 'LPT1:'. The LPT1 port is automatically detected and displayed when the printer is ready. If the printer is connected with the network, select the 'Network'. In this case, the 'Net Path' field will be enabled.
Net Path	If you wish to connect the printer in network, you must enter the path as following exam; ₩₩PC_name₩Printer_name
Paper Size	Select the size of the printing paper.
Draft Mode	If the option is deselected, the size of the printed image decreases though the image is clearly printed out.
Color	This option is enabled when you select 'PCL Inkjet'.
Print Range	Indicates the target pages to be printed. The options except 'All' are disabled.
Orientation	Assign the orientation of the printout.
Margins	Assign the margin of the printout.

d) If the 'Port' is chosen as 'Network', the Xpanel tries to connect the PC via network and 'Logon' dialog box will appear. Enter the correct user name and password and press 'OK' button.



e) If logon information has entered correctly, the following message will appear. If 'Yes' is chosen, the entered password will be stored in the system permanently. Otherwise, the Xpanel will ask the password whenever you try to use the network printer.

f) Press 'System Shutdown' button in the Xpanel Config dialog box to save the settings. If the system shutdown was not executed, the settings will be canceled and the previous data will be restored when the system is restarted.

Appendix 1 Functions for Script

In this section, you can find functions and subroutines used in the script. Subroutine is a command expression that operates a certain action without any value returned, unlike the functions have return value.

In the Xpanel Designer script, you can use the functions and subroutines listed in this document. When you use the script, please beware of the following cautions.

When you use the functions with the return value, a variable to store the return value must be declared beforehand.

This manual is based on Xpanel Designer 2. 52 Ver. Software. Note that some features may differ depending on the version of Xpanel Designer.

Function List

The functions are listed in the table as shown below.

Command			Description	Ref.
Trigonometric Function	Function	Sin(*number*)	Computes the Sine value.	1.2
	Function	Cos(*number*)	Computes the Cosine value.	
	Function	Tan(*number*)	Computes the Tangent value.	
	Function	Asin(*number*)	Computes the Arc Sine value.	
	Function	Acos(*number*)	Computes the Arc Cosine value.	
	Function	Atan(*number*)	Computes the Arc Tangent value.	
	Function	Sinh(*number*)	Computes the Hyperbolic Sine value.	
	Function	Cosh(*number*)	Computes the Hyperbolic Cosine value.	

	Function	Tanh (*number*)	Computes the Hyperbolic Tangent value.	
	Function	Atan2(*number1, number2*)	Computes the Arc Tangent value.	

Mathematic Function	Function	Abs(*number*)	Returns the absolute value.	1.3
	Function	Ceil(*number*)	Returns the ceiling of a value.	
	Function	Floor(*number*)	Returns the floor of a value.	
	Function	Fmod(*number1, number2*)	Returns the floating-point remainder.	
	Function	Log (*number*)	Computes the natural logarithm.	
	Function	Log10(*number*)	Computes the base-10 logarithm.	
	Function	Rand()	Generates the pseudorandom number.	
	Function	Sqrt(*number*)	Computes the square root.	

The special functions listed in the table shown below are categorized, starting from section 1.4.

Special Function	Subroutine	AddMessage(*Message ID, Added Message*)	Adds a new message to the scroll message window.
	Subroutine	AddMessageEx(*Message ID, Added Message,Level*)	Adds a new message to the scroll message window with a level.
	Subroutine	AlarmCsvWr(*AlarmGroup, "CSVFileName", TimeDisplay, PrintOption, Location*)	Saves the alarm messages as CSV file.
	Subroutine	AlarmPrint(*AlarmGroup, Messages,TimeDisplay, FontSize, PrintOption*)	Prints the alarm messages with printer.
	Subroutine	ClearAlarmLog(*AlarmGroup*)	Deletes the entire alarm log of the assigned alarm group.
	Subroutine	ClosePort(*PortNo*)	Closes the serial port.
	Subroutine	FrameOpen(*"FrameFile"*)	Opens the frame file.
	Function	GetExplorerPath(*PathType*)	Returns the recently selected file's path.
	Function	GetCommStatus(*"DeviceName", "StationName"*)	Checks the selected station's communication status.
	Function	GetRcpDnGroup(*"Model Name"*)	Returns the recipe group name which has downloaded recently.
	Function	GetRcpGroupname(*"Model Name", Group Number*)	Returns the recipe group name.
	Function	GetRcpItemName(*"Model Name", Data item number)*	Returns the name of recipe data.
	Function	GetScheduleState(*Schedule Index*)	Obtains the active state of certain schedule.
	Function	GetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)	Obtains the time data of certain schedule.
	Function	GetSecurity()	Returns the current security level.(0 - 10)
	Function	GetSysMem(*System Memory Address*)	Returns the system memory value.
	Function	GetTime(*Value Type*)	Returns the current time value.
	Subroutine	HardCopy()	Prints out the runtime screen of Xpanel.

	Function	IsDirectory(*"File or Folder Name"*)	Checks if the file or folder exists in the Xpanel.
	Subroutine	LcdBacklight(*ON/OFF*)	Turns on or off the LCD Backlight.
	Subroutine	LcdBrightDown()	Dims the LCD light.
	Subroutine	LcdBrightUp()	Brightens the LCD light.
	Subroutine	LogOff()	Logs out the current user.
	Subroutine	LogOn(*"UserID", "Password"*)	Logs on with the user information.
	Subroutine	LogOnWin()	Brings up the User Log On window.
	Subroutine	MakeCsv(*"LogModelName", BlockNumber*)	Saves the data block to the SD/MMC memory in CSV file format.
	Subroutine	MakeCsvUsb(*"LogModelName", BlockNumber*)	Saves the data block to the USB storage in CSV file format.
	Subroutine	MakeLogCsv(*"LogModelName", BlockNumber, Location*)	Saves the data block to the assigned location in CSV file format.
	Subroutine	MakeLogCsvEx(*"Header", "LogModelName", BlockNumber, Location*)	Saves the data block in CSV file format and stores the header name at cell A1.
	Subroutine	MakeSysMemCsv(*"Header", Starting address of System Memory, number of memories, number of Columns, Location*)	Saves the system memories in CSV file format.
	Function	NumToStr(*TargetValue, Value Type, Format*)	Converts the numeric value to the string.
	Subroutine	OpenConfigSub(*Function*)	Brings up the Xpanel Config. window or its sub-features.
	Subroutine	OpenConfigWin()	Brings up the Xpanel Config. window.
	Function	OpenPort (*PortNo, BaudRate, Parity, Databit, Stopbit*)	Opens the serial port.
	Subroutine	PageOpen(*"PageName"*)	Opens the page.
	Subroutine	PrePage()	Moves to the previous page.
	Subroutine	PrePageEx()	Moves to the previous base page.
	Subroutine	PlayWave(*WavFileLocation, Path, Sync/Async*)	Executes the wav file in the assigned path.
	Subroutine	RcpConfig()	Displays the recipe settings window in Xpanel runtime.

	Subroutine	RcpCsvRd(*"Model Name", "CSV File Name", CSV file directory*)	Reads recipe model group data (*.csv file) and saves it in the memory.
	Subroutine	RcpCsvWr(*"Model Name", "CSV File Name", CSV file directory*)	Saves model group data in the memory as a csv file format.
	Subroutine	RcpDownload(*"Model Name", Group Number*)	Downloads model group data to the PLC.
	Subroutine	RcpFileRead(*"Model Name", Group Number*)	Reads PLC data and save it to the recipe file.
	Subroutine	RcpFileStore(*"Model Name", Group Number*)	Saves the model group data in the recipe file.
	Subroutine	RcpGetSysMem(*"Model Name", System Memory Address*)	Copies one block of system memory to Xpanel memory.
	Subroutine	RcpMemDown(*"Model Name"*)	Downloads the model group data from Xpanel to PLC.
	Subroutine	RcpMemUp(*"Model Name"*)	Receives the data from PLC and saves at the model group data in Xpanel.
	Subroutine	RcpSetSysMem(*"Model Name", System Memory Address*)	Copies data in Xpanel memory and pastes to the system memory.
	Subroutine	RcpStop(*"Model Name"*)	Stops and terminate the Recipe.
	Subroutine	RcpUpload(*"Model Name", Group Number*)	Reads PLC data and save it to the recipe file.
	Subroutine	ReceiveByte(*PortNo, Data*)	Receives data with the selected port.
	Subroutine	RemoveMessage(*MessageID*)	Removes the scroll message which is added by AddMessage() function.
	Subroutine	RunApp(*"ProgramName", "ProgramParameter"*)	Executes the external program.
	Subroutine	ScheduleConfig()	Displays the schedule list dialog box in the Xpanel runtime.
	Subroutine	ScrCapture(*"SeedName", Location*)	Saves the Xpanel screen in BMP file.
	Function	SendByte(*PortNo, Data*)	Sends byte data with the selected port.
	Function	SendString(*PortNo, Data*)	Sends string data with the selected port.
	Subroutine	SetDate(*Year,Month,Date*)	Changes the date of Xpanel.

	Subroutine	SetScheduleState(*Schedule Index, Active State*)	Changes the active state of certain schedule.
	Subroutine	SetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)	Modifies the schedule directly without using schedule setting window.
	Subroutine	SetSpeed(*Acc./Dec.*)	Controls the process time of the script module.
	Subroutine	SetSysMem(*System Memory Address, Set Value*)	Sets the system memory value.
	Subroutine	SetTime(*Hour,Minute,Second*)	Changes the time of Xpanel.
	Subroutine	Sleep(*Delay*)	Delays the script program.
	Subroutine	SoftKeyboard(*Show/Hide, X Coordinate, Y Coordinate*)	Opens or closes the virtual keyboard.
	Subroutine	StaticBeepCtrl(*ON/OFF*)	Controls the Beep output (On/Off)
	Function	StringTable(*Group Number, String Number*)	Gets a string data from the string table.
	Function	StrToNum(*Target String, Numeral System*)	Converts the string to the numeric value.
	Subroutine	SysMemFill(*System Memory Address, Data, Number of data*)	Fills the block of system memory with the assigned value.
	Subroutine	SysMemMove(*Current Address, Target Address, Number of Data*)	Moves the data block in the system memory.
	Subroutine	TimeStr(*Acquired Value, "Format"*)	Generates the time-displaying string.
	Subroutine	TouchCalib()	Brings up the touch calibration screen.
	Subroutine	TrendCsvWr(*"TrendName", Location*)	Saves the Trend in CSV format.
	Subroutine	WindowsExplorer(*"Path", "Extension", X Coordinate, Y Coordinate*)	Brings up the Windows Explorer at the assigned position.
	Subroutine	XpanelReset()	Restarts the Xpanel Runtime.

Trigonometric Function

Type	Format	Description
Function	Sin(*number*)	Computes the Sine value.
Function	Cos(*number*)	Computes the Cosine value.
Function	Tan(*number*)	Computes the Tangent value.
Function	Asin(*number*)	Computes the Arc Sine value.
Function	Acos(*number*)	Computes the Arc Cosine value.
Function	Atan(*number*)	Computes the Arc Tangent value.
Function	Sinh(*number*)	Computes the Hyperbolic Sine value.
Function	Cosh(*number*)	Computes the Hyperbolic Cosine value.
Function	Tanh (*number*)	Computes the Hyperbolic Tangent value.
Function	Atan2(*number1, number2*)	Computes the Arc Tangent value.

Function	n=Sin(*number*)
Description	Computes the Sine value.
Example	Returns Sin 60 to the variable VAL. VAR VAL; VAL=Sin(60);

Function	n=Cos(*number*)
Description	Computes the Cosine value.
Example	Returns Cos 60 to the variable VAL. VAR VAL; VAL=Cos(60);

Function	n=Tan(*number*)
Description	Computes the Tangent value.
Example	Returns Tan 60 to the variable VAL. VAR VAL; VAL=Tan(60);

Function	n=Asin(*number*)
Description	Computes the Arc Sine value.
Example	Returns Arc Sine 1 to the variable VAL. VAR VAL; VAL=Asin(1);

Function	n=Acos(*number*)
Description	Computes the Arc Cosine value.
Example	Returns Acos 1 to the variable VAL. VAR VAL; VAL=Acos(1);

Function	n=Atan(*number*)
Description	Computes the Arc Tangent value.
Example	Returns Arc Tangent 1 to the variable VAL. VAR VAL; VAL=Atan(1);

Function	n=Sinh(*number*)
Description	Computes the Hyperbolic Sine value.
Example	Returns Hyperbolic Sine 0 to the variable VAL. VAR VAL; VAL=Sinh(0);

Function	n=Cosh(*number*)
Description	Computes the Hyperbolic Cosine value.
Example	Returns Hyperbolic Cosine 0 to the variable VAL. VAR VAL; VAL=Cosh(0);

Function	n=Tanh(*number*)
Description	Computes the Hyperbolic Tangent value.
Example	Returns Hyperbolic Tangent 0 to the variable VAL. VAR VAL; VAL=Tanh(0);

Function	n=Atan2(*number1, number2*)
Description	Computes the Arc Tangent value. Unlike the Atan() function, returns the Arc Tangent of *number1/number2*.
Example	Returns Arc Tangent (1/2) to the variable VAL. VAR VAL; VAL=Atan2(1,2);

Mathematic Function

Type	Format	Description
Function	Abs(*number*)	Returns the absolute value.
Function	Ceil(*number*)	Returns the ceiling of a value.
Function	Floor(*number*)	Returns the floor of a value.
Function	Fmod(*number1, number2*)	Returns the floating-point remainder.
Function	Log (*number*)	Computes the natural logarithm.
Function	Log10(*number*)	Computes the base-10 logarithm.
Function	Rand()	Generates the pseudorandom number.
Function	Sqrt(*number*)	Computes the square root.

Function	n=Abs(*number*)
Description	Returns the absolute value.
Example	Returns the absolute value of -992 to the variable VAL. VAR VAL; VAL=Abs(-992);

Function	n=Ceil(*number*)
Description	Returns the ceiling of a value.
Example	Returns the ceiling of 2.1416 to the variable VAL. VAR VAL; VAL=Ceil(2.1416);

Function	n=Floor(*number*)
Description	Returns the floor of a value.
Example	Returns the floor of 2.1416 to the variable VAL. VAR VAL; VAL=Floor(2.1416);

Function	n=Fmod(*number1, number2*)
Description	Returns the floating-point remainder.
Example	Returns the floating-point remainder of 2.25/4 to the variable VAL. VAR VAL; VAL=Fmod(2.25,4);

Function	n=Log(*number*)
Description	Computes the natural logarithm.
Example	Returns the natural logarithm of 5.5 to the variable VAL. VAR VAL; VAL=Log(5.5);

Function	n=Log10(*number*)
Description	Computes the base-10 logarithm.
Example	Returns the base-10 logarithm of 5.5 to the variable VAL. VAR VAL; VAL=Log10(5.5);

Function	n=Rand()
Description	Generates the pseudorandom number.
Example	Saves the pseudorandom number to the variable VAL. VAR VAL; VAL=Rand();

Function	n=Sqrt(*number*)
Description	Computes the square root.
Example	Returns the square root of 4002 to the variable VAL. VAR VAL; VAL=Sqrt(4002);

Functions for Pages and Project

Type	Format	Description
Subroutine	FrameOpen(*"FrameFile"*)	Opens the frame file.
Function	GetExplorerPath(*"PathType"*)	Returns the recently selected file's path.
Function	IsDirectory(*"File or Folder Name"*)	Checks if the file or folder exists in the Xpanel.
Function	NumToStr(*TargetValue, Value Type, Format*)	Converts the numeric value to the string.
Subroutine	PageOpen(*"PageName"*)	Opens the page.
Subroutine	PrePage()	Moves to the previous page.
Subroutine	PrePageEx()	Moves to the previous base page.
Subroutine	RunApp(*"ProgramName", "ProgramParameter"*)	Executes the external program.
Subroutine	ScrCapture(*"SeedName", Location*)	Saves the Xpanel screen in BMP file.
Subroutine	SetSpeed(*Acc./Dec.*)	Controls the process time of the script module.
Subroutine	Sleep(*Delay*)	Delays the script program.
Subroutine	SoftKeyboard(*Show/Hide, X Coordinate, Y Coordinate*)	Opens or closes the virtual keyboard.
Function	StrToNum(*Target String, Numeral System*)	Converts the string to the numeric value.
Subroutine	TimeStr(*Acquired Value, "Format"*)	Generates the time-displaying string.

FrameOpen	Opens the frame file.
Subroutine	FrameOpen(*"FrameFile"*)
Description	Opens the frame file. You can only enter the file name without the extension.
Example	Opens the frame file named "FRAME". FrameOpen("FRAME");

GetExplorerPath	Returns the recently selected file's path.
Function	n=GetExplorerPath(*PathType*)
Description	Returns the recently selected file's path. *Path Type* can be assigned with the values as shown below. 0: Superordinate of the file or folder. 1: Selected file name 2: Whole path including superordinate path and the file name.
Example	If you have selected the "Elder.exe" file in the Xpanel folder then executed the function as shown below. the entire path information will be returned. VAR Path; Path = GetExplorerPath(2);

IsDirectory	Checks if the file or folder exists in the Xpanel.
Function	n=IsDirectory(*"File or Folder Name"*)
Description	Checks if the file or folder exists in the Xpanel. The parameter must be entered with the double quotation marks. If the file or folder exists, the function will return 1. If not, the function will return 0.
Example	Checks is USB Storage folder exists in Xpanel. VAR FolderCheck; FolderCheck = IsDirectory("USB Storage");

NumToStr	Converts the numeric value to the string.
Function	STR=NumToStr(*TargetValue, Value Type, Format*)
Description	Recognizes the *TargetValue* as the data in *Value Type*. Then the value will be converted according to the *Format*. This function supports *Value Type* as shown below. _UINT_ : Unsigned Integer _INT_ : Signed Integer _FLOAT_ : Floating-Point _HEX_ : Hexadecimal *Format* must be written in the configuration as shown below. [Width] [.precision] **Width** : Assign the number of letters to be returned after the conversion. If you enter 3, the converted string will be composed of 3 letters. If the original value is greater than the **Width** value, the more significant digits will be deleted. In the opposite case, the spaces will be filled. If the **Width** contains a leading-zero, the spaces will be replaced with the zeros. **Precision :** Assign the **Precision** when you convert the floating-point number. Assign the significant digits for the decimal points to be converted. **Precision** must be smaller than the **Width**.
Example	Stores 123 to Val1, 0123 to Val2, 123.45 to Val3. VAR Val1,Va2,Val3; Val1 = NumToStr(123.456, _FLOAT_, “3.0”); Val2 = NumToStr (123.456, _FLOAT_, “04.0”); Val3 = NumToStr (123.456, _FLOAT_, “6.2”); ……

PageOpen	Opens the page.
Subroutine	PageOpen(*“PageName”*)
Description	Opens the page. You must enter the file name except the extension. According to the page type, the pages will be opened with different operation. If there is no special configuration, the current page (existing page) will be closed. **Popup Page:** If you open the Popup Page with this function, the current page (existing page) will not be closed. **Frame page**: The page will be opened at the position where it is assigned in the frame. If you open the page in the same frame position, the page will be replaced with the new page.
Example	Opens the page file named “PAGE”. PageOpen(“PAGE”);

PrePage	Moves to the previous page.
Subroutine	PrePage()
Description	Moves to the previous page. You can move to the recent 20 pages regardless of the page type.
Example	Moves to the previous page. *PrePage();*

RunApp	Moves to the previous base page.
Subroutine	PrePageEx()
Description	Moves to the previous base page. This function only recognizes the base pages. If the previous page is Popup Page or Keypad Page, they are ignored and moves to the former base page.
Example	Moves to the previous base page. *PrePageEx();*

RunApp	Executes the external program.
Subroutine	RunApp(***"ProgramName", "ProgramParameter"***)
Description	Executes the external program. ***ProgramName*** must include the file location and the extension. ***ProgramParameter*** is recognized as string, therefore must be written with the double quotation mark. You can only execute the Windows program or the program developed by the user.
Example	Opens DOS and operates the ping test. *RunApp("Ping.EXE", "-t 100.100.100.1");*

ScrCapture	Saves the Xpanel screen in BMP file.
Subroutine	ScrCapture(*"SeedName", Location*)
Description	Saves the current Xpanel screen and saves it in BMP image file. The file name will be created as shown below. *"SeedName*_HHMMSS.BMP" The image file will be saved in the path according to the value of ***Location***. When you assign 0 at ***Location***, it means the local. The value 1 means the SD/MMC and the value 2 means the USB. You can also assign the ***Location*** as shown below. 0: _LOCAL_ 1: _SDMEM_ 2: _USBMEM_
Example	Saves the current Xpanel screen as BMP file in the SD/MMC memory. *ScrCapture("Mybmp", _SDMEM_);*

SetSpeed	Controls the process time of the script module.
Subroutine	SetSpeed(***Acc./Dec.***)
Description	When you assign a value other than 0 to the ***Acc./Dec.***, the later commands will be processed faster.
Example	*The process will be faster after the calling SetSpeed function.* TAG0 = TAG0 + 1; SetSpeed(1); TAG1 = TAG1 + 1; TAG2 = TAG2 + 2;

If you use SetSpeed during the repeated script, it may cause the low performance of the Xpanel until the script's end.

The functions called by the RuntScript after the SetSpeed will not be influenced by the SetSpeed function.

Ex)

SetSpeed(1);

```
RunScript TestScript(); // TestScript is not influenced by SetSpeed
TestScript2(); // TestScript is influenced by SetSpeed
```

Sleep	Delays the script program.
Subroutine	Sleep(*Delay*)
Description	Assign the delay time to *Delay* in msec. This function will be used in the middle of the script program and pauses the corresponding script as much as the delay.
Example	Pauses the script for 1 sec (1000msec). Sleep(1000);

SoftKeyboard	Opens or closes the virtual keyboard.
Subroutine	SoftKeyboard(*Show/Hide, X Coordinate, Y Coordinate*)
Description	Assign the position at *X Coordinate* and *Y Coordinate*. Assign a value other than 0 to the *Show/Hide* to open the virtual keyboard. When you assign 0, the keyboard will be closed.
Example	Opens the virtual keyboard at (10,10) positon of the screen. SoftKeyboard(1,10,10);

StrToNum	Converts the string to the numeric value.
Function	n=StrToNum(*Target String, Numeral System*)
Description	*Target String* must contain the string that can be converted into numeric value. If the *Numeral System* is 10, the function can process the string in the following format. **[sign][digit][.digit][{d|D|e|E}[sign]digit]** Assign (+) or (-) to the Sign. Digit must be assigned with a single or multiple digit-decimal. At lease one decimal digit must be assigned before or after the decimal character(.). When the numeral system is decimal, you can process the exponent which is composed of letters (**d|D|e|E**) and the signed integer. If the exponent or decimal point appears, the system will assume that the decimal number follows. If you cannot convert the *Target String*, 0 will be returned. Assign 0 or 2~36 to the *Numeral System*. If the *Numeral System* is 0, it will be processed according to the following rules. - The first letter defines the numeral system. - The first letter is "0" and the following letter is not "x", "X" : recognized as octal number. (e.g. 01234) - The first letter is "0" and the following letter is "x", "X" : recognized as hexadecimal number. (e.g. 0x1234) If the *Numeral System* is greater than 10, "a" to "z" (or "A" to "Z") will be process as the number between 10 to 35. This function only operates when the assigned value is smaller than the *Numeral System*.
Example	Stores the 3.140 to the variable VAL. VAR VAL; VAL = StrToNum("3.14e3",10);

TimeStr	Generates the time-displaying string.
Function	STR=TimeStr(*Acquired Value, "Format"*)
Description	Assign the value acquired by GetTime(0) function or second-unit counter since Jan/01/1970 (UTC) to *Acquired Value*. *"Format"* will be composed with the following symbols. %A : Full name of the day (e.g. Sunday) %a : Abbreviation of the day (e.g. Sun) %B : Full name of the month (e.g. January) %b : Abbreviation of the month (e.g. Jan) %d : Date (1~31) %H : Hour in 24-hour format (0~23) %I : Hour in 12-hour format (1~12) %m : Month (1~12) %M : Minute (0~59) %p : Indicator of 12-hour format (AM/PM) %S : Second (0~59) %y : 2-digit year (e.g. 00, 99) %Y : 4-digit year (e.g. 2000, 1999)
Example	Generates the string in Year/Month/Date Hour:Minute:Second format. CurTime = GetTime(0); StrTag = TimeStr(CurTime, "%Y/%m/%d/ %H:%M:%S");

Functions for Xpanel device

Type	Format	Description
Function	GetTime(*Value Type*)	Returns the current time value.
Subroutine	LcdBacklight(*ON/OFF*)	Turns on or off the LCD Backlight.
Subroutine	LcdBrightDown()	Dims the LCD light.
Subroutine	LcdBrightUp()	Brightens the LCD light.
Subroutine	OpenConfigSub(*Function*)	Brings up the Xpanel Config. window or its sub-features.
Subroutine	OpenConfigWin()	Brings up the Xpanel Config. window.
Subroutine	PlayWave(*WavFileLocation, Path, Sync/Async*)	Executes the wav file in the assigned path.
Subroutine	SetDate(*Year,Month,Date*)	Changes the date of Xpanel.
Subroutine	SetTime(*Hour,Minute,Second*)	Changes the time of Xpanel.
Subroutine	StaticBeepCtrl(*ON/OFF*)	Controls the Beep output (On/Off)
Subroutine	TouchCalib()	Brings up the touch calibration screen.
Subroutine	WindowsExplorer(*"Path", "Extension", X Coordinate, Y Coordinate*)	Brings up the Windows Explorer at the assigned position.
Subroutine	XpanelReset()	Restarts the Xpanel Runtime.

GetTime	Returns the current time value.
Function	n=GetTime(*Value Type*)
Description	Assign the type of the data to acquire to *Value Type*. 0: The number of seconds after 1st Jan 1970 UTC 1: 4-digit Year (e.g. 1970, 1932) 2: Month (1~12) 3: Date (1~31) 4: Hour (0~23) 5: Minute (0~59) 6: Second (0~59) 7: Day of the week (1~7, 1=SUN, 2=MON, … 7=SAT) 8: Today's minute counter (Since midnight, the minutes passed until present.) 9: Today's seconds counter (Since midnight, the seconds passed until present.)
Example	Stores the current year to the variable GetYear. VAR GetYear; GetYear = GetTime(1);

LcdBacklight	Turns on or off the LCD Backlight.
Subroutine	LcdBacklight(*ON/OFF*)
Description	Assign the value other than 0 to turn ON the LCD Backlight. To turn OFF the backlight, assign 0.
Example	*Turns off the LCD backlight.* LcdBacklight(0);

LcdBrightDown	Dims the LCD light.
Subroutine	LcdBrightDown()
Description	Dims the LCD light. (1 Step) There are total 32 steps.
Example	*Dims the LCD light.* LcdBrightDown();

LcdBrightUp	Brightens the LCD light.
Subroutine	LcdBrightUp()
Description	Brightens the LCD light. (1 Step) There are total 32 steps.
Example	Brightens the LCD light. LcdBrightUp();

OpenConfigSub	Brings up the Xpanel Config. window or its sub-features.
Subroutine	OpenConfigSub(*Function*)
Description	Brings up the Xpanel Config. window or its sub-features. You can assign the values as shown below to the *Function*. 0: Xpanel Config. 1: System Log 2: Comm Monitor 3: Comm Config 4: Misc Config 5: Touch Calibrate 6: Screen Capture 7: Date/Time 8: SW Keyboard 9: Printer Setup 10: Modbus 11: Datalog 12: Module Version
Example	*Brings up the Xpanel Config.* OpenConfigSub(0);

OpenConfigWin	Brings up the Xpanel Config. window.
Subroutine	OpenConfigWin()
Description	Brings up the Xpanel Config. window.
Example	Brings up the Xpanel Config. window. OpenConfigWin();

PlayWave	Executes the wav file in the assigned path.
Subroutine	PlayWave(*WavFileLocation, Path, Sync/Async*)
Description	Executes the *.wav file from the *Path* in the *WavFileLocation* *WavFileLocation* can be expressed with the following strings 0: _LOCAL_ (₩₩Xpanel₩) 1: _SDMEM_ (SD Memory Root Path) 2: _USBMEM_ (USB Memory Root Path) *Path* must include the file's name and extension. Enter 0 at *Sync/Async,* which indicates the 'Sync', to stop the next script's execution until the end of the audio file. Enter 1 to continue the script execution while the audio file is operating.
Exercise	Execute 'alarm.wav' file in the sound folder in the Xpanel. The next script will not be executed until the audio file ends. PlayWave(_LOCAL_, "sound/alarm.wav", 0);

SetDate	Changes the date of Xpanel.
Subroutine	SetDate(*Year,Month,Date*)
Description	Changes the date of Xpanel. *Year*: Enter 4-digit number. *Month*: Enter the value between 1~12. *Date*: Enter the value between 1~31 according to the month.
Example	*Changes the date of Xpanel to 2018/11/30.* SetDate(2018,11,30);

SetTime	Changes the time of Xpanel.
Subroutine	SetTime(*Hour,Minute,Second*)
Description	Changes the time of Xpanel. *Hour*: Enter the value between 0~24. *Minute*: Enter the value between 0~59. *Second*: Enter the value between 0~59.
Example	*Changes the time of Xpanel to 18:30:30.* SetTime(18,11,30);

StaticBeepCtrl	Controls the Beep output (On/Off)
Subroutine	StaticBeepCtrl(*ON/OFF*)
Description	Controls the Beep output (On/Off). Assign 0 to turn off the beep sound. Other values will turn on the Beep.
Example	*Turns on the Beep.* StaticBeepCtrl(1);

StaticBeepCtrl function only operates in the following models.

XT04CA, XT05SB, XT06CB, XT07CA, XT07CB

TouchCalib	Brings up the touch calibration screen.
Subroutine	TouchCalib()
Description	Brings up the touch calibration screen. After the calibration, you must restart the device.
Example	Brings up the touch calibration screen. TouchCalib();

WindowsExplorer	Brings up the Windows Explorer at the assigned position.
Subroutine	WindowsExplorer(*"Path", "Extension", X Coordinate, Y Coordinate*)
Description	Brings up the Windows Explorer at the assigned position. Displays the all files that corresponds to the *"Extension"* in the *"Path"*. The Windows Explorer will be opened at the *X Coordinate, Y Coordinate*. When you enter "" to the *"Extension"*, the Explorer will display the entire file in the device. To open the Explorer at the center of the screen assign -1 to *X Coordinate* and *Y Coordinate*. If you double-click the folder type, the folder will be opened.
Example	*Brings up the Window Explorer which displays the CSV files, at the center of the screen.* WindowsExplorer("₩Xpanel", "CSV", -1, -1);

XpanelReset	Restarts the Xpanel Runtime.
Subroutine	XpanelReset()
Description	Restarts the Xpanel Runtime. The Xpanel will be booted after 5 seconds.
Example	*Restarts the Xpanel Runtime.* XpanelReset();

Functions for Alarm

Type	Format	Description
Subroutine	AddMessage(***Message ID, Added Message***)	Adds a new message to the scroll message window.
Subroutine	AddMessageEx(***Message ID, Added Message,Level***)	Adds a new message to the scroll message window with a level.
Subroutine	AlaramCSVWr(***AlarmGroup, "CSVFileName", TimeDisplay, PrintOption, Location***)	Saves the alarm messages as CSV file.
Subroutine	AlarmPrint(***AlarmGroup, Messages,TimeDisplay, FontSize, PrintOption***)	Prints the alarm messages with printer.
Subroutine	ClearAlarmLog(***AlarmGroup***)	Deletes the entire alarm log of the assigned alarm group.
Subroutine	RemoveMessage(***MessageID***)	Removes the scroll message which is added by AddMessage() function.

AddMessage	Adds a new message to the scroll message window.
Subroutine	AddMessage(***Message ID, Added Message***)
Description	Adds a new message to the scroll message window. At ***MessageID,*** you can enter the value from 0 to 9999. If you assign the duplicated message ID, the recent message will be ignored. ***Added Message*** can be written in strings with double quotation mark (“ ”) or assigned with string tag.
Example	*Displays the “This message will be displayed at the bottom of the window” at the scroll message.* AddMessage(1, “This message will be displayed at the bottom of the window”);

AddMessageEx	Adds a new message to the scroll message window with a level.
Subroutine	AddMessageEx(*Message ID, Added Message,Level*)
Description	Adds a new message to the scroll message window. At *MessageID,* you can enter the value from 0 to 9999. If you assign the duplicated message ID, the recent message will be ignored. *Added Message* can be written in strings with double quotation mark (“ ”) or assigned with string tag. At *레벨*, you can assign the value from 0 to 7. The message will be displayed with the corresponding level's color.
Example	*Displays the “This message will be displayed at the bottom of the window” at the scroll message with color of level 3.* AddMessageEx(1, “This message will be displayed at the bottom of the window”,3);

AlarmCsvWr	Saves the alarm messages as CSV file.
Subroutine	AlarmCsvWr(*AlarmGroup, “CSVFileName”, TimeDisplay, PrintOption, Location*)
Description	Saves the messages of *AlarmGroup* at the assigned *Location* as *CSVFileName*. Enter 0 at *Location* to indicate the local. Assign 1 for SD/MMC and 2 for USB. You can also use strings for the *Location*. 0: _LOCAL_ 1: _SDMEM_ 2: _USBMEM_ The contents in the CSV file will be displayed with time data according to the value you assign to the *TimeDisplay*. 0: YYYY/MM/DD HH:MM:SS 1: DD/MM/YYY HH:MM:SS 2: MM/DD/YYYY HH:MM:SS 3: MM/DD HH:MM:SS 4: DD/MM HH”MM”SS 5: HH:MM:SS

	According to the value assigned to the *PrintOption*, different contents will be saved. If you wish to select multiple items, distinguish them with vertical bar (|). All Items: _ALMPRT_ALL_ or 511 Time and date: _ALMPRT_TIME_ or 1 Memory Address: _ALMPRT_ADDR_ or 2 Value: _ALMPRT_VALUE_ or 4 Alarm Type: _ALMPRT_TYPE or 8 Alarm Description: _ALMPRT_DESC_ or 16
Example	Saves the all contents of alarm group 1 as "AlmGrp1.CSV" in SD/MMC. The contents will be displayed with time value in "YYYY/MM/DD HH:MM:SS" format. AlarmCsvWr(1, "AlmGrp1", 0, _ALMPRT_ALL_, _SDMEM_);

AlarmPrint	Prints the alarm messages with printer.
Subroutine	AlarmPrint(*AlarmGroup, Messages, TimeDisplay, FontSize, PrintOption*)
Description	Prints the content of *AlarmGroup* as much as the value assigned to *Messages* (0~200 messages) with the assigned *FontSize* (10 or bigger). The time will be displayed according to the value assigned to the *TimeDisplay.* 0: YYYY/MM/DD HH:MM:SS 1: DD/MM/YYY HH:MM:SS 2: MM/DD/YYYY HH:MM:SS 3: MM/DD HH:MM:SS 4: DD/MM HH”MM”SS 5: HH:MM:SS According to the value assigned to the *PrintOption*, different contents will be saved. If you wish to select multiple items, distinguish them with vertical bar (|). All Items: _ALMPRT_ALL_ or 511 Time and date: _ALMPRT_TIME_ or 1 Memory Address: _ALMPRT_ADDR_ or 2 Value: _ALMPRT_VALUE_ or 4 Alarm Type: _ALMPRT_TYPE or 8

	Alarm Description: _ALMPRT_DESC_ or 16
Example	Prints out the recent 10 messages of alarm group 1. AlarmPrint(1, 10, 1, 10, _ALMPRT_ALL_);

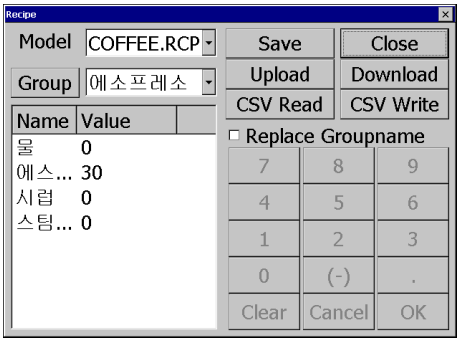
ClearAlarmLog	Deletes the entire alarm log of the assigned alarm group.
Subroutine	ClearAlarmLog(*AlarmGroup*)
Description	Deletes the entire alarm log of the assigned *AlarmGroup* (1~10).
Example	Clears the log of the alarm group 1. ClearAlarmLog(1)

RemoveMessage	Removes the scroll message which is added by AddMessage() function.
Subroutine	RemoveMessage(*MessageID*)
Description	Removes the scroll message which is added by AddMessage() function. Assign the message ID (0~9999) to the *MessageID*. When you assign -1, all messages in the scroll message window will be deleted.
Example	*Deletes the entire messages in the scroll message window.* RemoveMessage(-1);

Functions for Recipe

Type	Format	Description
Subroutine	RcpConfig()	Displays the recipe settings window in Xpanel runtime.
Subroutine	RcpFileRead("*Model Name*", *Group Number*)	Reads the group data from recipe data file.
Subroutine	RcpFileStore("*Model Name*", *Group Number*)	Saves the model group data in the recipe file.
Subroutine	RcpMemDown("*Model Name*")	Downloads the model group data from Xpanel to PLC.
Subroutine	RcpMemUp("*Model Name*")	Receives the data from PLC and saves at the model group data in Xpanel.

Subroutine	RcpDownLoad("*Model Name", Group Number*)	Downloads model group data to the PLC.
Subroutine	RcpUpLoad("*Model Name", Group Number*)	Reads PLC data and save it to the recipe file.
Subroutine	RcpCsvRd("*Model Name", "CSV File Name", CSV file directory*)	Reads recipe model group data (*.csv file) and saves it in the memory.
Subroutine	RcpCsvWr("*Model Name", "CSV File Name", CSV file directory*)	Saves model group data in the memory as a csv file format.
Subroutine	RcpGetSysMem(*"Model Name", System memory address*)	Copies one block of system memory to Xpanel memory.
Subroutine	RcpSetSysMem(*"Model Name", System memory address*)	Copies data in Xpanel memory and pastes to the system memory.
Function	GetRcpDnGroup(*"Model Name"*)	Returns the recipe group name which has downloaded recently.
Subroutine	RcpNewGroupName (*"Model Name", Group number, "New group name"*)	Changes the recipe group name.
Function	GetRcpGroupName (*"Model name", Group number*)	Returns the recipe group name.
Function	GetRcpGroupName (*"Model name", Data item number*)	Returns the name of recipe data.

<table>
<tr><td>RcpConfig</td><td>Displays the recipe settings window in Xpanel runtime.</td></tr>
<tr><td>Subroutine</td><td>RcpConfig()</td></tr>
<tr><td>Description</td><td>Brings up the recipe dialog box which contains functions for controlling the recipe operation.
 

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Model</td><td>Changes current recipe model.</td></tr>
<tr><td>Group</td><td>Changes current group to another group.</td></tr>
<tr><td>Group List</td><td>You may change the data name and setting values by double-clicking on each item.</td></tr>
<tr><td>Save</td><td>Saves modified group data in a recipe file (*.rcx). This command is the same as RcpFileStore().</td></tr>
<tr><td>Close</td><td>Quits from the recipe dialog box.</td></tr>
<tr><td>Upload</td><td>Reads data from the PLC and save it in recipe model group data. This command is the same as RcpMemUp().</td></tr>
<tr><td>Download</td><td>Sends recipe model group data to the PLC. This command is the same as RcpMemDownload().</td></tr>
<tr><td>CSV Read</td><td>You can browse CSV file to retrieve model group data. This command is the same as RcpCsvRd().</td></tr>
<tr><td>CSV Write</td><td>You can save current model group data as a CSV file. This command is the same as RcpCsvWr().</td></tr>
<tr><td>Replace Groupname</td><td>If this option has enabled during pressing ‘CSV Read’ button, selected group name will be replaced with name of CSV file to read.</td></tr>
</table></td></tr>
<tr><td>Example</td><td>Enter the command to display the recipe dialog box.
RcpConfig();</td></tr>
</table>

RcpFileRead	Reads the group data from recipe data file.
Subroutine	RcpFileRead("*Model Name*", *Group Number*)
Description	Reads the specified group data from the recipe data file.
Example	Enter the command to read first group data of 'ICECREAM' model from recipe data file. RcpFileRead("ICECREAM", 1);

RcpFileStore	Saves the model group data in the recipe file.
Subroutine	RcpFileStore("*Model Name*", *Group Number*)
Description	Saves the specified group data in the recipe data file. This subroutine is the same as 'Save' button of recipe dialog box.
Example	Enter the command to save first group data of 'ICECREAM' model to the recipe data file. RcpFileStore ("ICECREAM", 1);

RcpMemDown	Downloads the model group data from Xpanel to PLC.
Subroutine	RcpMemDown("*Model Name*")
Description	Transfers the model group data from Xpanel to the PLC. The group data must be stored in the Xpanel before using this subroutine.
Example	Enter the command to download group data of 'ICECREAM' from Xpanel to the PLC. RcpMemDown ("ICECREAM");

RcpMemUp	Receives the data from PLC and saves at the model group data in Xpanel.
Subroutine	RcpMemUp("*Model Name*")
Description	Uploads group data from PLC to recipe data file in the Xpanel. This subroutine is used to save data in the Xpanel before using RepMemDown() or RcpFileStore().
Example	Enter the command to apply PLC data to the group data of 'ICECREAM' model. RcpMemUp ("ICECREAM");

RcpDownLoad	Downloads model group data to the PLC.
Subroutine	RcpDownLoad("*Model Name", Group Number*)
Description	Reads the specified group data and transfers directly to the PLC. Assign the group number from 0 to n.
Example	Enter the command to download group data of number 0 to the PLC directly. RcpDownLoad("ICECREAM", 0);

RcpUpLoad	Reads PLC data and save it to the recipe file.
Subroutine	RcpUpLoad("*Model Name", Group Number*)
Description	Reads the data from PLC and save it in the recipe data file. Assign the group number from 0 to n.
Example	Enter the command to apply PLC data to the group data of number 0. RcpUpLoad("ICECREAM", 0);

⚠ If using RcpUpLoad/RcpDownload command consecutively, the latter command will override the former command. To use these commands subsequently, set enough interval between operations of two subroutines.
Ex)
RcpDownLoad("ICECREAM", 0);
Sleep(1000);
RcpDownLoad("ICECREAM", 1);

RcpCsvRd	Reads recipe model group data (*.csv file) and saves it in the memory.	
Subroutine	RcpCsvRd("*Model Name", "CSV File Name", CSV file directory*)	
Description	Replaces group data with specified CSV file data. Assign *CSV file directory* as below table.	
	CSV file directory	Description
	0	Xpanel internal memory
	1	SD/MMC
	2	USB
Example	Enter the command to read 'Recipe.CSV' file data stored in the USB and save it to the Xpanel recipe file. RcpCsvRd("ICECREAM", "Recipe", 2);	

RcpCsvWr	Saves model group data in the memory as a csv file format.	
Subroutine	RcpCsvWr("*Model Name*", "*CSV File Name*", *CSV file directory*)	
Description	Saves current group data as a CSV file format with specified file name. Assign *CSV file directory* as below table.	
	CSV file directory	Description
	0	Xpanel internal memory
	1	SD/MMC
	2	USB
Example	Enter the command to save the 'ICECREAM' group data as a csv file format. The file name will be designated as 'Recipe.csv', and will be saved in the USB. RcpCsvWr("°ICECREAM", "Recipe", 2);	

RcpGetSysMem	Copies one block of system memory to Xpanel memory.
Subroutine	RcpGetSysMem(*"Model Name", System memory address*)
Description	Copies one block of system memory to Xpanel memory.
Example	Enter the command to retrieve 'ICECREAM' model data from system memory No. 100. RcpGetSysMem(*"ICECREAM", 100*);

RcpSetSysMem	Copies data in Xpanel memory and pastes to the system memory.
Subroutine	RcpSetSysMem(*"Model Name", System memory address*)
Description	Copies data in Xpanel memory and pastes to the system memory.
Example	Enter the command to paste "ICECREAM" recipe data to the system memory sequentially from no. 100. RcpGetSysMem(*"ICECREAM", 100*);

GetRcpDnGroup	Returns the recipe group name which has downloaded recently.
Subroutine	GetRcpDnGroup(*"Model Name"*)
Description	Returns the recipe group name which has downloaded recently.
Example	Enter the command to store the recent group name of 'ICECREAM' model in the 'GROUP' tag. GROUP = GetRcpDnGroup(*"ICECREAM"*);

RcpNewGroupName	Changes the recipe group name.
Subroutine	RcpNewGroupName (*"Model Name", Group number, "New group name"*)
Description	Replaces specified group name with new group name. The group number starts from 0.
Example	Change the group name in number 3 of 'ICECREAM' model as 'CHOCO'. RcpNewGroupName (*"ICECREAM", 3, "CHOCO"*);

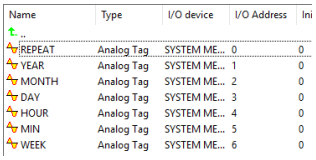
GetRcpGroupName	Returns the recipe group name.
Subroutine	GetRcpGroupName (*"Model name", Group number*)
Description	Returns the specified group name. The group number starts from 0.
Example	Gets the group name in number 1 of 'ICECREAM' model and store it in the 'MODEL' tag. MODEL = GetRcpGroupName ("ICECREAM", 1);

GetRcpItemName	Returns the name of recipe data.
Subroutine	GetRcpGroupName (*"Model name", Data item number*)
Description	Returns the specified data item name. The item number starts from 0.
Example	Gets the data name in number 1 of 'ICECREAM' model and store it in the 'ITEM' tag. ITEM = GetRcpItemName ("ICECREAM", 1);

Functions for Schedule

Type	Format	Description
Subroutine	ScheduleConfig()	Displays the schedule list dialog box in the Xpanel runtime.
Subroutine	SetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)	Modifies the schedule directly without using schedule setting window.
Function	GetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)	Obtains the time data of certain schedule.
Subroutine	SetScheduleState(*Schedule Index, Active State*)	Changes the active state of certain schedule.
Function	GetScheduleState(*Schedule Index*)	Obtains the active state of certain schedule.

ScheduleConfig	Displays the schedule list dialog box in the Xpanel runtime.
Subroutine	ScheduleConfig()
Description	Brings up the 'Schedule list' dialog box. The schedule data is stored in the Xpanel system memory. You can change the time setting and active state of each schedule. When double-clicking each item, 'Schedule Config' dialog box will appear. You must click 'Save and Close' button to apply changes. The time data can be changed in the 'Schedule Config' dialog box.
Example	Brings up the schedule list on the screen. ScheduleConfig();

<table>
<tr><td>SetScheduleSysMem</td><td>Modifies the schedule directly without using schedule setting window.</td></tr>
<tr><td>Subroutine</td><td>SetScheduleSysMem(Schedule Index, Starting Address of SYSTEM MEMORY)</td></tr>
<tr><td>Description</td><td>This subroutine is used to modify the schedule directly without using ‘Schedule config’ dialog box. To use this command, 7 system memory tags must be registered sequentially. System memory tags must have consecutive addresses. If the system memory is used for recipe as well, the addresses must not be overlapped each other.
 
<table>
<tr><th>Name</th><th>Type</th><th>I/O device</th><th>I/O Address</th><th>Ini</th></tr>
<tr><td>..</td><td></td><td></td><td></td><td></td></tr>
<tr><td>REPEAT</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>0</td><td>0</td></tr>
<tr><td>YEAR</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>1</td><td>0</td></tr>
<tr><td>MONTH</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>2</td><td>0</td></tr>
<tr><td>DAY</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>3</td><td>0</td></tr>
<tr><td>HOUR</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>4</td><td>0</td></tr>
<tr><td>MIN</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>5</td><td>0</td></tr>
<tr><td>WEEK</td><td>Analog Tag</td><td>SYSTEM ME...</td><td>6</td><td>0</td></tr>
</table>
Enter the time data in each system memory tag as shown below table.
<table>
<tr><th>System Memory</th><th>Description</th><th colspan="2">Range of Input Value</th></tr>
<tr><td rowspan="7">0</td><td rowspan="7">Repeat Settings</td><td>0</td><td>Not repeat</td></tr>
<tr><td>1</td><td>Annually</td></tr>
<tr><td>2</td><td>Monthly</td></tr>
<tr><td>3</td><td>Daily</td></tr>
<tr><td>4</td><td>End of Month</td></tr>
<tr><td>5</td><td>Hourly</td></tr>
<tr><td>6</td><td>Weekly</td></tr>
<tr><td>1</td><td>Year</td><td colspan="2">Available from 2011 to 2041</td></tr>
<tr><td>2</td><td>Month</td><td colspan="2">Available from 1 to12</td></tr>
<tr><td>3</td><td>Date</td><td colspan="2">Available from 0 to 31</td></tr>
<tr><td>4</td><td>Hour</td><td colspan="2">Available from 0 to 23</td></tr>
<tr><td>5</td><td>Minute</td><td colspan="2">Available from 0 to 59</td></tr>
<tr><td rowspan="7">6</td><td rowspan="7">Day</td><td>1</td><td>Sunday</td></tr>
<tr><td>2</td><td>Monday</td></tr>
<tr><td>3</td><td>Tuesday</td></tr>
<tr><td>4</td><td>Wednesday</td></tr>
<tr><td>5</td><td>Thursday</td></tr>
<tr><td>6</td><td>Friday</td></tr>
<tr><td>7</td><td>Saturday</td></tr>
</table></td></tr>
</table>

Example	Enter the command to change the 1st schedule list to match with the time data saved in system memory address 0 to 6. SetScheduleSysMem(*1, 0*);

GetScheduleSysMem	Obtains the time data of certain schedule.
Function	n = GetScheduleSysMem(*Schedule Index, Starting Address of SYSTEM MEMORY*)
Description	Returns the time data of specified schedule index. To use this command, 7 system memory tags must be registered sequentially. ※ Please refer to the description of 'SetScheduleSysMem' command for configuring tag data.
Example	Enter the command to obtain the time data of 1st schedule from system memory address 0 to 6. TIME = GetScheduleSysMem(*1, 0*);

SetScheduleState	Changes the active state of certain schedule.	
Subroutine	SetScheduleState(*Schedule Index, Active State*)	
Description	This subroutine is used to change the active state of specified schedule.	
	Active State	**Description**
	0	Disable the specified schedule.
	1	Enable the specified schedule.
Example	Activate the 1st schedule. SetScheduleState(*1, 1*);	

GetScheduleState	Obtains the active state of certain schedule.	
Subroutine	n = GetScheduleState(*Schedule Index*)	
Description	Returns the active state of specified schedule.	
	Active State	**Description**
	0	Disable the specified schedule.
	1	Enable the specified schedule.
Example	Enter the command to obtain the active state of 1st schedule. STATE = GetScheduleState(*1*);	

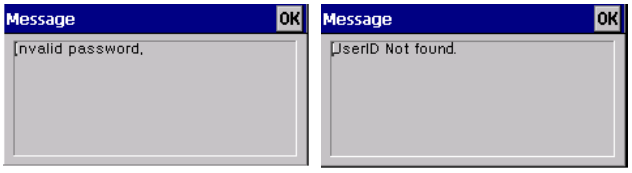
Function for Trend

Type	Format	Description
Subroutine	TrendCsvWr(*"TrendName", Location*)	Saves the trend data as CSV file.

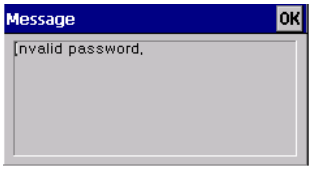
TrendCsvWr	Saves the trend data as CSV file.
Subroutine 명	TrendCsvWr(*"TrendName", Location*)
Description	Saves the assigned *TrendName* to the assigned *location* in CSV file format. When you assign 0 at *Location*, it means the local. The value 1 means the SD/MMC and the value 2 means the USB. You can also assign the *Location* as shown below. 0: _LOCAL_ 1: _SDMEM_ 2: _USBMEM_ The file is saved as "Trendname_MMDDHHmmss.CSV".
Example	Saves the trend object named "Trend" as CSV file in USB memory. TrendCsvWr("Trend",2)

Functions for Security

Type	Format	Description
Subroutine	LogOn("*UserID*", "*Password*")	Logs on with the user information.
Subroutine	LogOff()	Logs out the current user.
Subroutine	LogOnWin()	Brings up the User Log On window.
Function	GetSecurity()	Returns the current security level.

LogOn	Logs on with the user information.
Subroutine	LogOn("*UserID*","*Password*")
Description	Logs on with the user ID and password which is registered in the 'Security'. If the wrong information is used, the message will pop up as shown below. 
Example	Logs on with the user ID "CIMON", password "0000". LogOn("CIMON","0000")

LogOff	Logs out the current user.
Subroutine	LogOff()
Description	Logs out the current user.
Example	Logs out the current user. LogOff()

LogOnWin	Brings up the User Log On window.
Subroutine	LogOnWin()
Description	Brings up the User Log On window on Xpanel. If there is no registered user in the project, the window will not appear. Select a user and enter the password. If you enter a wrong password, the message will pop up as shown below. 
Example	Brings up the User Log On window. LogOnWin()

GetSecurity	Returns the current security level.
Function	n=GetSecurity()
Description	Returns the current security level and store the value to the variable.
Example	Stores the current security level to the variable “Slevel”. Var Slevel;; …… Slevel = GetSecurity();

Functions for System Memory

Type	Format	Description
Function	GetSysMem(*System Memory Address*)	Returns the system memory value.
Subroutine	SetSysMem(*System Memory Address, Set Value*)	Sets the system memory value.
Subroutine	SysMemFill(*System Memory Address, Data, Number of data*)	Fills the block of system memory with the assigned value.
Subroutine	SysMemMove(*Current Address, Target Address, Number of Data*)	Moves the data block in the system memory.

GetSysMem	Returns the system memory value.
Function	n=GetSysMem(*System Memory Address*)
Description	Returns the value assigned to *System Memory Address*.
Example	Stores the System Memory 100's value to the variable VAL. VAR VAL; VAL=GetSysMem(100);

SetSysMem	Sets the system memory value.
Subroutine	SetSysMem(*System Memory Address, Set Value*)
Description	Sets the value to the assigned *System Memory Address*.
Example	Sets 1234 to the System Memory 100. SetSysMem(100, 1234);

SysMemFill	Fills the block of system memory with the assigned value.
Subroutine	SysMemFill(*System Memory Address, Data, Number of data*)
Description	Fills the assigned number of memories starting from *System Memory Address* , with the *Data*.
Example	Fills the value 1234 to the 10 memories starting from System Memory 100. SysMemFill(100, 1234, 10);

SysMemMove	Moves the data block in the system memory.
Subroutine	SysMemMove(*Current Address, Target Address, Number of Data*)
Description	Moves the block of system memories starting from the *Current Address* to the *Target Address*. If the memories overlap, the overlapped area will maintain the existing data.
Example	Moves the 10 memories starting from the system memory 100 to the 200. (100~109 to 200~209) SysMemMove(100, 200, 10);

Functions for Data Logging

Type	Format	Description
Subroutine	DataLog(*"LogModelName",BlockControl*)	Creates or stops the data logging block.
Subroutine	MakeCsv(*"LogModelName", BlockNumber*)	Saves the data block to the SD/MMC memory in CSV file format.
Subroutine	MakeCsvUsb(*"LogModelName", BlockNumber*)	Saves the data block to the USB storage in CSV file format.
Subroutine	MakeLogCsv(*"LogModelName", BlockNumber, Location*)	Saves the data block to the assigned location in CSV file format.
Subroutine	MakeLogCsvEx(*"Header", "LogModelName", BlockNumber, Location*)	Saves the data block in CSV file format and stores the header name at cell A1.

DataLog	Creates or stops the data logging block.
Subroutine	DataLog("*LogModelName",BlockControl*)
Description	Creates or stops the data logging block. Enter 0 at *BlockControl* to stop the block. Enter 1 to create a new block.
Example	Creates a new block for the data logging model "LOG" and start logging. DataLog("LOG",1)

MakeCsv	Saves the data block to the SD/MMC memory in CSV file format.
Subroutine	MakeCsv(*"LogModelName", BlockNumber*)
Description	Saves the assigned *LogModelName* 's data block to the SD/MMC memory in CSV file format. You can assign the value from 0 to 31 at *BlockNumber.*
Example	Saves the 10th data block in data logging model "LOG" to SD/MMC memory in CSV file format. MakeCsv("LOG",10)

MakeCsvUsb	Saves the data block to the USB storage in CSV file format.
Subroutine	MakeCsvUsb(*"LogModelName", BlockNumber*)
Description	Saves the assigned *LogModelName* 's data block to the USB storage in CSV file format. You can assign the value from 0 to 31 at *BlockNumber*.
Example	Saves the 10th data block in data logging model "LOG" to USB in CSV file format. MakeCsvUsb("LOG",10)

MakeLogCsv	Saves the data block to the assigned location in CSV file format.
Subroutine	MakeLogCsv(*"LogModelName", BlockNumber, Location*)
Description	Saves the assigned *LogModelName* 's data block to the assigned *location* in CSV file format. You can assign the value from 0 to 31 at *BlockNumber.* When you assign 0 at *Location*, it means the local. The value 1 means the SD/MMC and the value 2 means the USB.
Example	Saves the 10th data block in data logging model "LOG" to USB in CSV file format. MakeLogCsv("LOG",10,2)

MakeLogCsvEx	Saves the data block in CSV file format and stores the header name at cell A1.
Subroutine	MakeLogCsvEx(*"Header", "LogModelName", BlockNumber, Location)*
Description	Saves the assigned *LogModelName*'s data block in CSV file format and stores the header name at cell A1. You can assign the value from 0 to 31 at *BlockNumber.* When you assign 0 at *Location*, it means the local. The value 1 means the SD/MMC and the value 2 means the USB.
Example	Saves the 10th data block in data logging model "LOG" to USB in CSV file format. Sets the header name "Header" at cell A1. MakeLogCsvEx("Header","LOG",10,2)

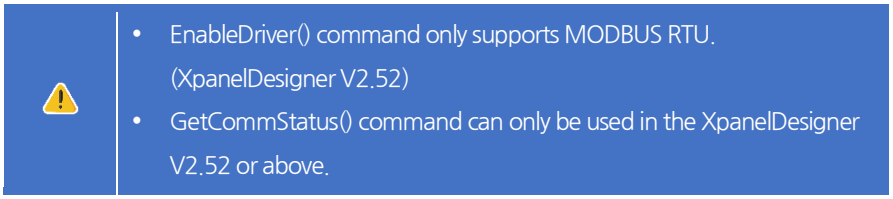
Function for String Editor

Type	Format	Description
Function	StringTable (*"Group Number", "String number in a group"*)	Gets a string data from string table.

StringTable	Gets a string data from string table.
Function	n = StringTable (*"Group Number", "String number in a group"*)
Description	Returns a string data from specified string group. A string tag must be used for the string data.
Example	Returns the first string data in group number 1. StrTag = StringTable (1, 1)

Functions for Communication

Type	Format	Description
Function	OpenPort(*PortNo., BaudRate, Parity, Data Bit, Stop Bit*)	Opens the serial port.
Function	ClosePort(*PortNo*)	Closes the serial port.
Function	SendByte(*PortNo., Data*)	Sends byte data with the selected port.
Function	SendString(*PortNo., Data*)	Sends string data with the selected port.
Function	ReceiveByte(*PortNo, Data*)	Receives data with the selected port.
Function	GetCommStatus("*DeviceName*", "*StationName*")	Checks the selected station's communication status.
Subroutine	EnableDriver("*DeviceName*", "*StationName*", *Enable/Disable*)	Controls the selected station's communication.



PortNo., BaudRate, Parity, Stop Bit use predefined constants. Refer to the table shown below for the details.

Constant Name	Value	Usage
COM232	0	Uses COM1 port as RS232C mode.
COM422	1	Uses COM1 port as RS422 mode.
COM485	2	Uses COM1 port as RS485 mode.
COMAUX	3	Uses COM2 port as RS232C mode.
BPS300		300 bps
BPS600		600bps
BPS1200		1200bps
BPS2400		2400bps
BPS4800		4800bps
BPS9600		9600bps
BPS19200		19200bps
BPS38400		38400bps
BPS56000		56000bps
BPS57600		57600bps
BPS115200		115200bps
BPS128000		128000bps
BPS256000		256000bps
_PARITY_NONE_		NO PARITY BIT
_PARITY_EVEN_		EVEN PARITY
_PARITY_ODD_		ODD PARITY
_PARITY_MARK_		MARK PARITY
_PARITY_SPACE_		SPACE PARITY
_STOPBIT_ONE_		1 STOP BIT
_STOPBIT_TWO_		2 STOP BITS
_STOPBIT_ONE5_		1.5 STOP BIT

OpenPort	Opens the serial port.
Function	n=OpenPort(*PortNo., BaudRate, Parity, Data Bit, Stop Bit*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *BaudRate* (use predefined constant, _BPSxxx_) *Parity* (use predefined constant, _PARITY_xxx_) *Data Bit* (7 or 8) *Stop Bit* (use predefined constant, _STOPBIT_xxx_) This function opens the assigned serial port. You cannot use this function if the port has already been opened. Once you opened the COM port with the script, it has to be closed with ClosePort() function. When an error occurs during the port opening, the script will return 0. If the port is successfully opened, the script will return the value other than 0.
Example	Opens COM1 port with following options; RS485, 19200bps, No Parity, Data Bit 8, Stop Bit 1. OpenPort(_COM485_, _BPS19200_, _PARITY_NONE_, 8, _STOPBIT_ONE_);

ClosePort	Closes the serial port.
Function	n=ClosePort(*PortNo.*)
Description	*PortNo.* (use predefined constant, _COMxxx_) Closes the assigned serial port which is opened by the OpenPort() function. When an error occurs during the port closing, the script will return 0. If the port is successfully closed, the script will return the value other than 0.
Example	Closes COM1 port. ClosePort(_COM485_);

SendByte	Sends byte data with the selected port.
Function	n=SendByte(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (0~255) This function is used when you wish to transmit a data with the COM port which is opened by OpenPort() function. *Data* must be a byte data in the range of 0(0x00) to 255(0xFF). If the data is greater than 255(0xFF), only the lower byte will be transmitted. For example, if you assign *Data* with 0x1234, only 0x34 will be transmitted. OpenPort() function must be used before the execution of SendByte() function. If an error occurs during the data transmission, the script will return 0. If the data is successfully transmitted, the script will return the value other than 0.
Example	Transmits byte data "2" through COM1 port which uses RS485 communication. SendByte(_COM485_, 2);

SendString	Sends string data with the selected port.
Function	SendString(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (Enter the String Tag or "String") This function is used when you wish to transmit a data with the COM port which is opened by OpenPort() function. The *Data* must be assigned with string tag or string data. If you use the string data, it must be used with double quotation marks. (" ") OpenPort() function must be used before the execution of SendString() function. If an error occurs during the data transmission, the script will return 0. If the data is successfully transmitted, the script will return the value other than 0.
Example	Transmits byte data "TEXT" through COM1 port which uses RS485 communication. SendString(_COM485_, "TEXT");

ReceiveByte	Receives data with the selected port.
Function	ReceiveByte(*PortNo., Data*)
Description	*PortNo.* (use predefined constant, _COMxxx_) *Data* (0~255) This function is used when you wish to receive a data with the COM port which is opened by OpenPort() function. Once you receive the data successfully, the *Data* (0~255) will be stored in the variable. If there is no received data until the timeout, the script will return 256. OpenPort() function must be used before the execution of ReceiveByte() function.

Example	Receives byte data through the COM1 port which uses RS485 communication. Saves the received data at the variable 'RxData'.
	VAR RxData;
	OpenPort(_COM485_, _BPS19200_, _PARITY_NONE_, 8, _STOPBIT_ONE_);
	RxData = RecieveByte(_COM485_, 1000);
	If(RxData < 256)
	{
	}
	……

GetCommStatus	Checks the selected station's communication status.
Function	GetCommStatus("*DeviceName*", "*StationName*")
Description	Returns the status of the assigned *DeviceName*'s *StationName*.. If the communication is normal, the script will return 1. If there is an error at the communication, the script will return 0.
Example	Checks the communication status of the device "PLC"'s station "STATION". CommStatus = GetCommStatus("PLC","STATION);

EnableDriver	Controls the selected station's communication.
Subroutine	EnableDriver(*"DeviceName", "StationName", Enable/Disable*)
Description	Controls the communication of the assigned *DeviceName*'s *StationName*. Enter 1 to *Enable/Disable* to enable the communication. Enter 0 to disable the communication. This function only supports MODBUS RTU at Xpanel Designer V2.52.
Example	Enables the station "STATION " of "MODBUS" device. EnableDriver("MODBUS", "STATION", 1);

Function for Print

Type	Format	Description
Subroutine	HardCopy()	Prints out the runtime screen of Xpanel.

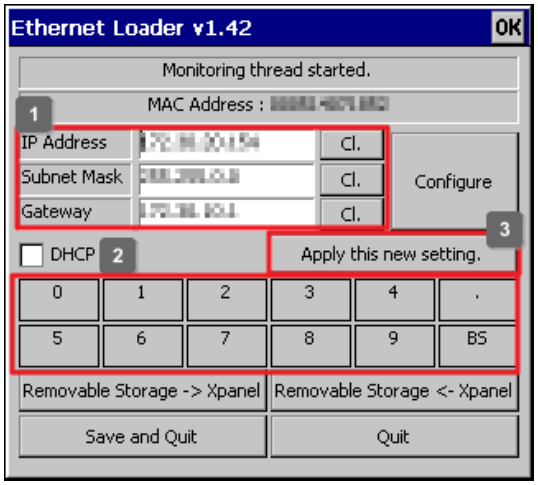
HardCopy	Prints out the runtime screen of Xpanel.
Subroutine	HardCopy()
Description	Prints out the runtime screen of Xpanel.
Example	Prints out the runtime screen of Xpanel. HardCopy()

Appendix 2 How to Use Ethernet Loader

The Ethernet Loader is an embedded program in xpanel to upload or download projects via Ethenet. This function also allows updating the project with an removable disk.

Xpanel IP Setting

Xpanel IP Setting



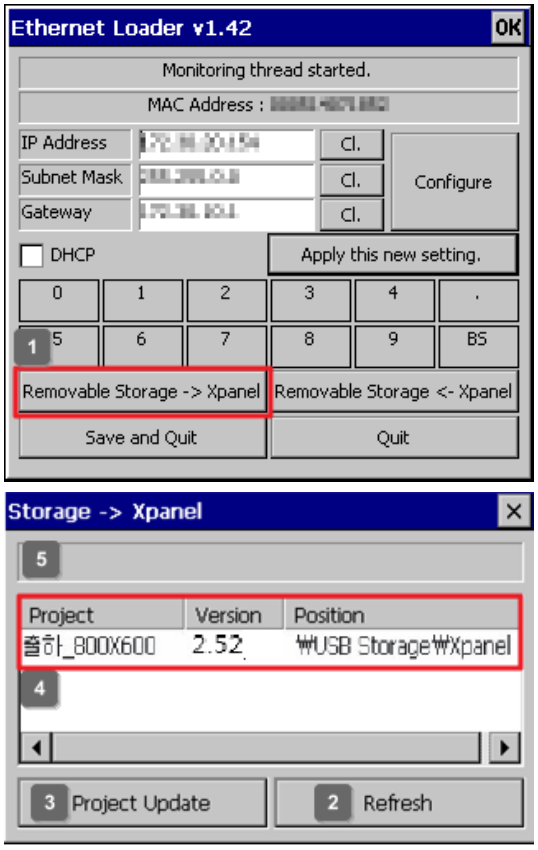
a) Select the field to change IP address, subnet mask, or gateway in (1). You can erase numbers at once by clicking 'Cl.' Button. Select the 'DHCP' checkbox to assign a dynamic IP to Xpanel. The input fields will be disabled in this moment.

b) In (2) you can enter numbers and period ('.') into the input fields. You can remove numbers on by on with 'BS' button.

c) Apply the IP setting to the Xpanel by pressing (3) 'Apply this new setting.' button. Then the system will be restarted.

Project Update

Project Update by Ethernet Loader



a) Copy the project file into the removable disk by selecting [Online]-[Copy project to removable memory] in the Xpanel Designer.
※ Please refer to the 'Online menu' manual for more information about 'Copy project to removable memory' function.

b) Connect the removable disk that has the updated project to Xpanel.

c) Select (1) 'Removable Storage → Xpanel' button in the Ethernet Loader dialog box.

d) Select (2) 'Refresh' and you will see projects in removable disk that can be uploaded.

e) The name of project stored in the removable disk are listed in the (4).

f) Click a project to update on the list and select (3) 'Project Update' button.

g) The content for updating project is displayed in the (5). The message 'All file update: OK' will be displayed when update is finished.

- When you select [Project Update], the project and application program in the Xpanel will be deleted first.
- [Project Update] button will be deactivated when the procedure starts and reactivated when update is complete. "All file update: OK" message will appear when update is completed.
- Do not touch the panel during update as it could cause incorrect.

h) Close the dialog box by clicking 'X' button.

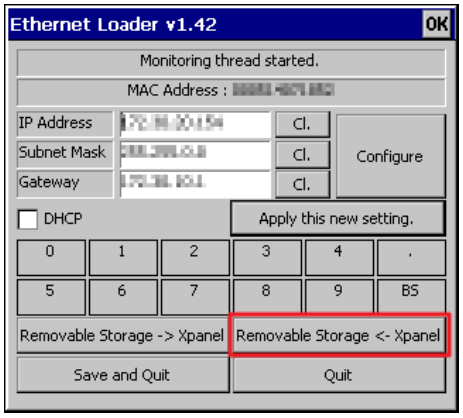
i) Remove the removable disk from Xpanel and double-click the 'Xpanel' icon to launch the project.

Project Upload

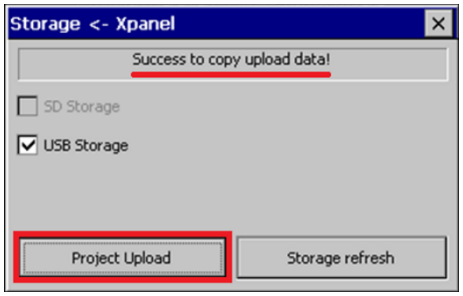
Opening project with removable disk

You can transfer the project from Xpanel to the Xpanel Designer via removable disk.

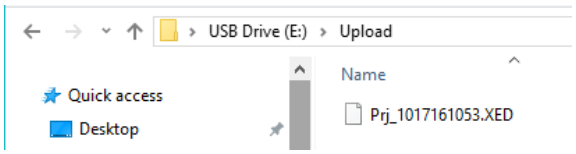
a) Connect USB or SD card to the Xpanel and select [Removable Storage ← Xpanel] in Ethernet Loader dialog box.



b) A check mark inside the box will indicate the media type that is connected. A Success message will appear when you select [Project Upload] and upload is completed.

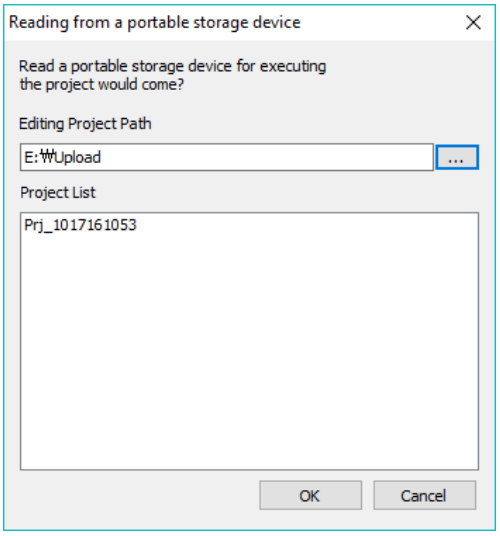


c) Xpanel project file is copied to Upload folder located in USB or SD card.

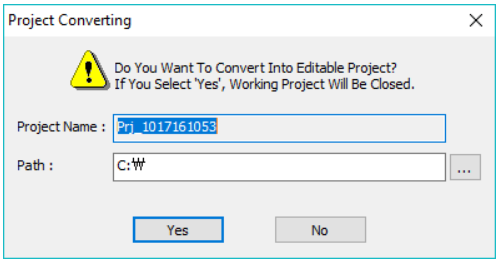


d) Connect USB or SD card to the PC. Go to [Online] - [Upload from Storage] in Xpanel Designer.

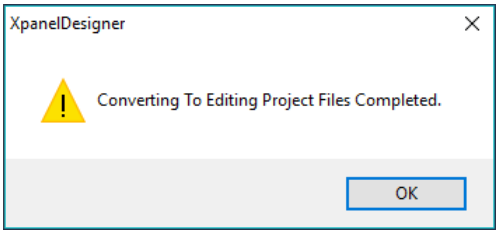
e) Specify the project path of copied project file. Project file located in Xpanel will appear on the list.



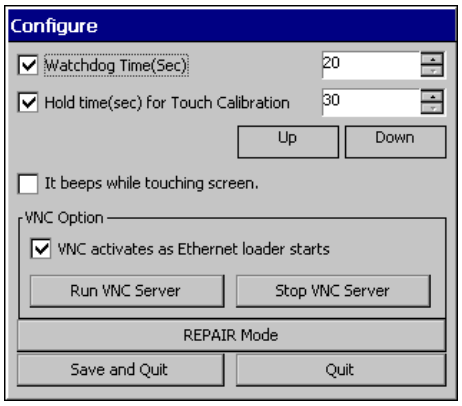
f) Specify the path and select [OK] to convert, save, and open editable project.



g) A message will appear when conversion is completed. Click [OK] to open the converted project file.



Other Features



Item	Description	
Watchdog Time	Watchdog Timer is a function that automatically resets the hardware when project data has been failed to operate. You can assign from 10 to 65535 seconds for watchdog operation. This function operates properly in the project 2.09 and above versions.	
Hold time for Touch Calibration	If the touch points are severely mislocated and unable to use mouse, you can press a random point of the screen to start the touch calibration. You can assign the holding time from 30 to 32676 seconds. ※ Please refer to the 'Xpanel repair mode' manual for more information.	
It beeps while touching screen	Beep sounds continuously while touching the Xpanel screen.	
VNC Option	This option is for using remote control server. ※ Please refer to the 'VNC' manual for more information.	
	VNC activates as Ethernet loader starts	The remote control server starts automatically when the checkbox has selected.
	Run VNC Server	Starts the remote control server.
	Stop VNC Server	Terminates the remote control server..
REPAIR Mode	When an error occurs during downloading the project to Xpanel, you can fix the error through repair mode. ※ Please refer to the 'Xpanel repair mode' manual for more information.	
Save and Quit	Saves the settings in 'Configure' dialog box and goes back to the Ethernet loader.	
Quit	Closes the 'Configure' dialog box without saving the settings.	

Appendix 3 Xpanel Troubleshooting

This section describes errors that may happen during Xpanel runtime and actions to be taken.

Booting Problem

There are cases where Xpanel cannot boot up normally after power is on. Verify the power capacity or damage to the external power supply. Check if the power cable is securely connected. If there is no problem with the power supply, please refer to the following troubleshooting procedures below.

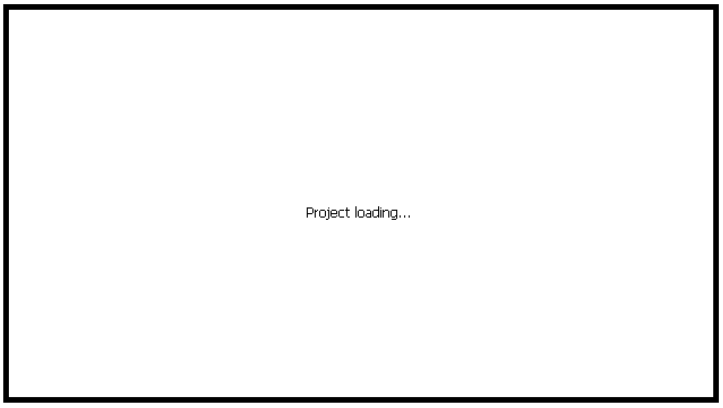
(1) Freezes in Windows CE loading screen.

- The Windows OS file could be damaged.

Restart the product. If the same problem occurs, please contact vendor or CIMON service center.

(2) The screen stops loading as shown in the image below.

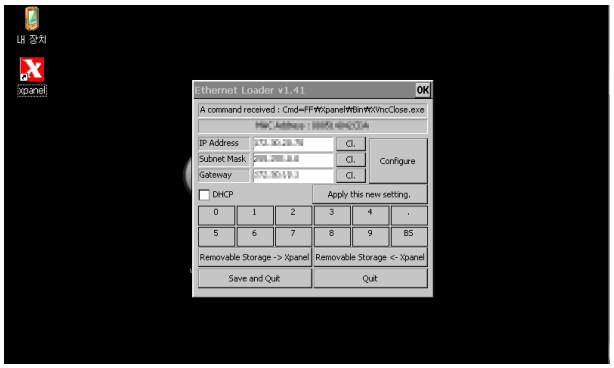
- A project file could be damaged or lost.



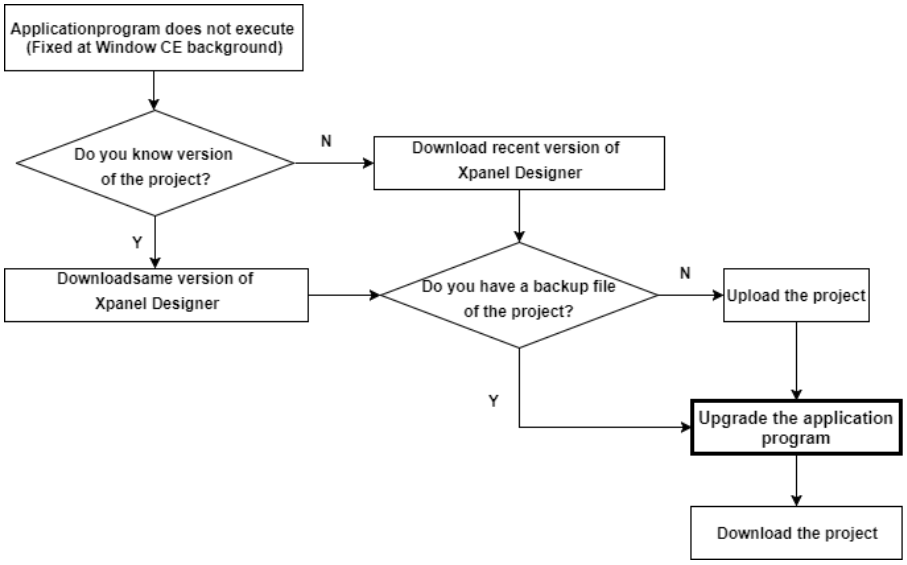
Download the same project from Xpanel Designer to Xpanel.

※ Please refer to the 'Online menu' manual to get information about ways to download project.

(3) It does not convert from Windows CE main screen to project screen automatically.



- Xpanel Designer's application program could be damaged or lost.



Upgrade Xpanel application program

If you know the version of application program or project, download the same version of Xpanel Deisner in the CIMON website (www.cimon.com). Upgrade application program as below.

> ⚠ When there is no project backup file, upgrade the application program after uploading the project When there is no project backup file, upgrade the application program after uploading the project.

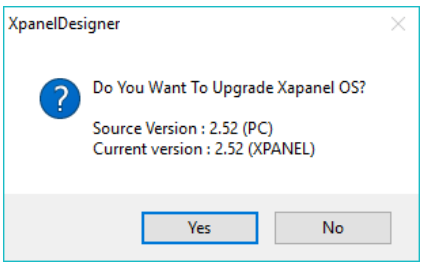
If you don't know the version of application program or project, upload the project and install recent version of Xpanel Designer in the CIMON website (www.cimon.com). Upgrade application program as below.

※ Please refer to 'Online menu' manual to get information about uploading or downloading a project from Xpanel Designer.

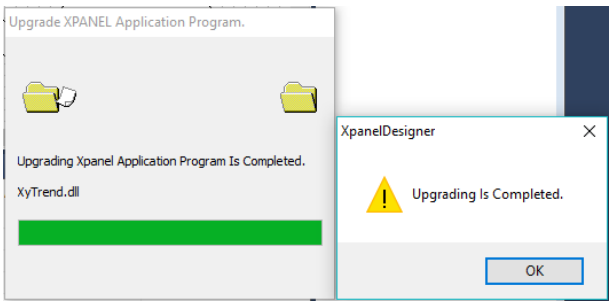
⚠	The project will not operate correctly if the version of the Xpanel Designer that was used to create the project is different from the version of the Xpanel Designer that is running the project. Update or downgrade the software until both versions are identical.

a) Go to [Online] - [Upgrade Xpanel Application Program] and specify the connection method.

b) Confirm the upgrade version.



c) A dialog box appears when application program upgrade is completed.



d) Upload the project or project backup file from Xpanel Designer and download it to Xpanel.

e) Check if the project screen appears properly by double-clicking [Xpanel] icon.

Touch Problem

First, check if the protective film is removed. Protective film is only there for temporary protection of product. It must be removed before operating the product. If there seems to be a problem even when the protective film is removed, please refer to the following steps.

(1) Intended and actual touch points are different.

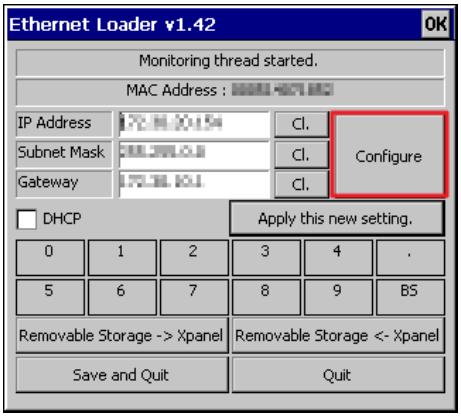
The device might require additional calibration. Calibration methods are described below.

- **Calibrating Xpanel using long-touch**

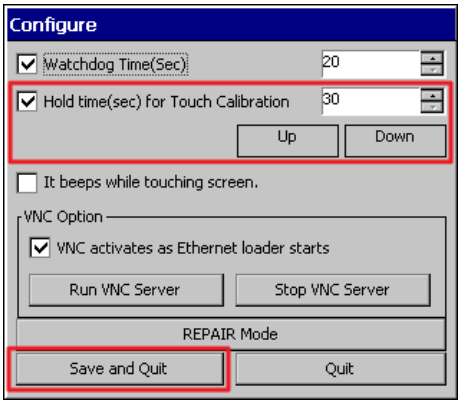
The way can be only used when preset below is applied.

Xpanel Calibration using long-touch

a) Select [Configure] in the Ethernet loader dialog box.

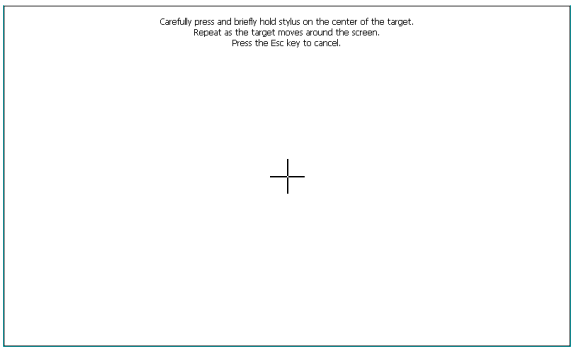


b) Check the box [Hold time for Touch Calibration] and set touch time in range of 30 seconds to 32767 seconds. Select [Save and Quit].



c) When the location is not recognized, give a long-touch to Xpanel screen during preset time (default value is 30 seconds).

d) Click the center of cross mark according to introduction.



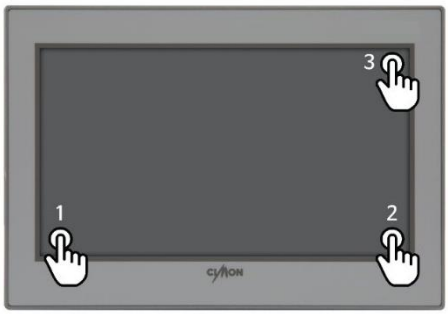
e) Confirm the touch statement after calibration is completed.

- **Setting in the Xpanel config dialog box**

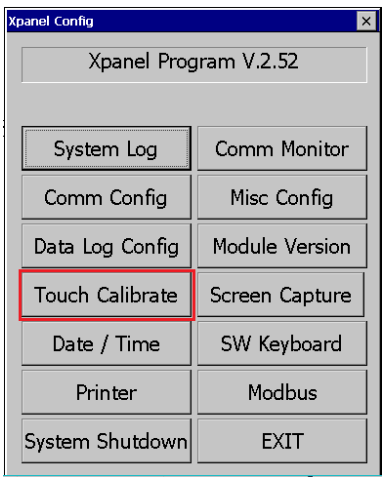
When the problem occurred in emergency situation that you cannot use calibration setting for long-touch, you may connect a mouse to the USB host of Xpanel and perform calibration easily.

Xpanel Calibration using mouse

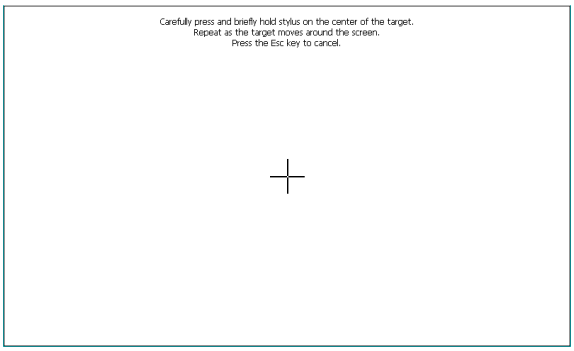
a) You can connect a mouse to the USB host port of Xpanel. Click as numbered sequence shown below to bring up Xpanel Config dialog box.



b) Select [Touch Calibration].



c) Click the center of cross mark according to introduction.



d) Confirm the touch statement after calibration is completed.

(2) There is no response after screen is touched.

When the same situation occurs even when you have restarted Xpanel, contact vendor or CIMON service center for product inspection.

Communication Problem

Since Xpanel operates with multiple external devices, there is a greater chance of exposure to external noise. Especially when used together with other companies' products, there could be communication problems due to different settings or specifications.

The following are basic descriptions of and solutions to communication problems. Contact CIMON service center or other companies' service center to acquire detailed troubleshooting information.

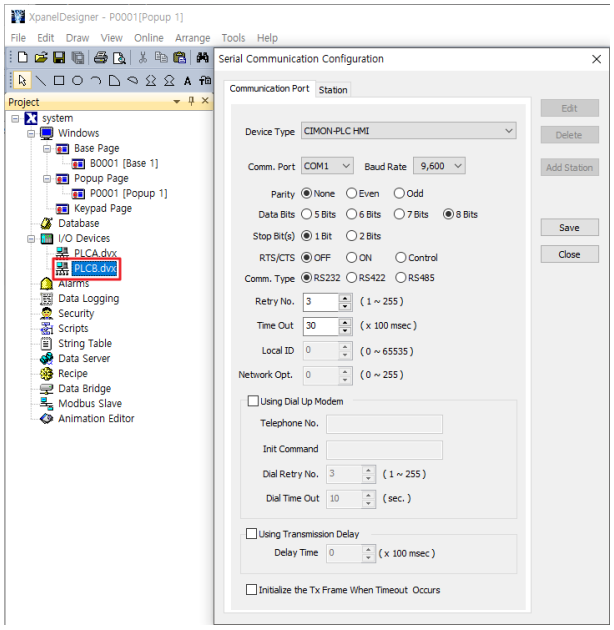
(1) Serial communication is not available.

- **Cable could be damaged or with a wrong standard.**

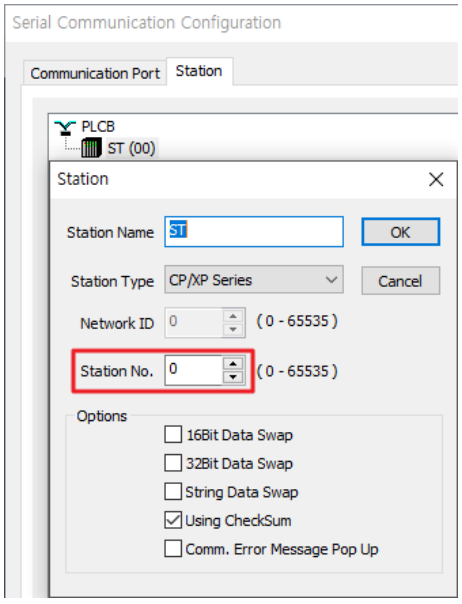
Check the connection status of cable or exchange the cable.

- **Settings for communication could be the cause.**

Run the Xpanel Designer and go to [Tools] - [I/O Device] or double-click device information. Confirm that communication setting is the same as PLC.



Make sure to configure the station number of CICON and Xpanel Designer to be identical.



In the case when the communication setting is different between Xpanel and PLC, communication is not possible. Check if communication settings are identical.

(2) Ethernet communication is not available.

- The Ethernet IP address could be configured incorrectly. Please refer to the communication setting.
- The Ethernet cable could be damaged or unsuitable. Replace the cable.
- The Ethernet port on Xpanel, PC or connected device could be damaged. Please verify the condition of the port.
- The firewall of the other device could a cause of communication problem. Modify the firewall setting after consulting with the network security manager.