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# XGT Panel XP-Builder

XGT Panel Series

User's Manual



## Safety Instructions

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

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# 1. About XP-Builder

XP-Builder is software that allows you to create and manage projects for machine control devices. You can use XP-Builder to create projects for the XGT Panel. XP-Builder includes multiple features that allow you to design and edit projects conveniently, such as:

- Customizable toolbars and hotkeys
- Customizable tool, project, and editing panes
- Functions to import and export common data
- Tabs for viewing multiple windows easily
- Previews of project windows
- Customizable image and object libraries
- Scripts and advanced functions, such as alarms, logs, schedules, and recipes
- Multiple language support

## 1.1 Overview

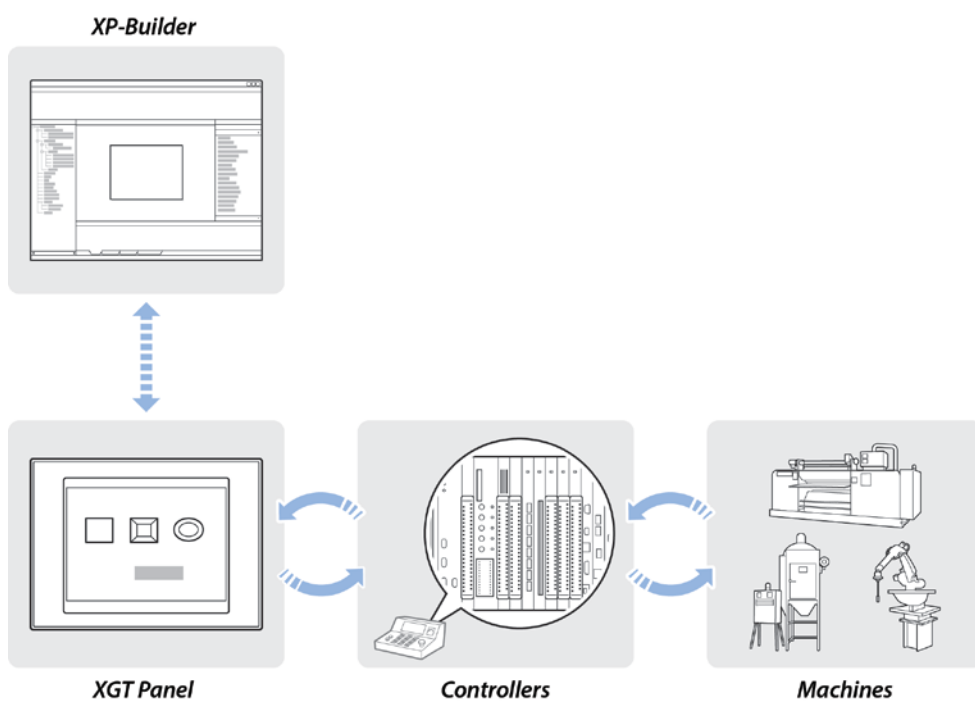
This section describes the basic concept of using XP-Builder to create interfaces for machine control devices and the types of hardware that XP-Builder supports.

### 1.1.1 XP-Builder Concept

XP-Builder is the starting point for creating human-machine interfaces (HMIs) for industrial applications. With XP-Builder, you can design user-friendly interfaces for XGT Panels that allow end users to control machine functions through configurable controllers, such as programmable logic controllers (PLCs), inverters, or servos.

With the XGT Panel, you can monitor information from each controller via a graphical user interface (GUI). In addition, simple control is possible with switch and writing objects. The XGT Panel supports additional programmable functions, such as scripts, loggings, recipes, and alarms, which allow you to fully customize the control environment.

As illustrated by the graphic that follows, the interface running on an XGT Panel provides input controls, in the form of bit objects that are linked to controller routines, such as a ladder program, or other parameters. The controller parameters dictate the operation of connected machinery and may also provide feedback to the XGT Panel. Data returned from a monitoring process can be displayed on the XGT Panel, in the form of word devices.



### 1.1.2 Supported Hardware Types

XP-Builder supports XP and iXP series XGT Panels and a wide range of controllers. Projects can be transferred from XP-Builder only to XGT Panels manufactured by LSIS. To view specifications for XGT Panels, in XP-Builder, click [Project] ► [New Project], and then select a series and model number from the drop-down lists.

The 'New Project' dialog box contains the following fields and options:

- Series:** iXP Series (selected)
- Model:** iXP80-TTA (selected)
- Specifications:**
  - Screen size: 12.1 Inch
  - Resolution: 800 x 600 Pixels
  - LCD: TFT Color LCD
  - Color: 65536 Colors
  - Memory: 128 MB
  - Video input: None
  - COM1: RS-232C
  - COM2: RS-232C/RS-422(RS-485)
  - USB: 4 Ports
  - CF card: On
  - SD card: On
  - LAN: 1 Port
- Controller:**
  - Maker: LSIS (selected)
  - Product: LSIS: XGK (LINK) (selected)
  - Communication Settings... (button)

Navigation buttons at the bottom: < Back, Finish, Cancel.

#### Note

- The iXP series XGT Panels are supported by XP-Builder versions 1.30 or higher.
- Available memory for XP series XGT Panels is 10MB for TTA models, with the exception of the XP90 model (20MB), and 4MB for TTE models.
- Available memory for iXP series XGT Panels is 128MB.

### 1.2 Installing and Updating

This section explains how to install and update the XP-Builder software, as well as the operating system software for an XGT Panel.

#### 1.2.1 Installing XP-Builder

You may install XP-Builder on a PC that meets the following minimum system requirements:

- Processor: Pentium 4 or higher
- Memory: 512MB or more free memory
- COM Ports: RS-232C serial port, Ethernet port, or USB port
- Hard Disk: 1GB capacity or higher
- Monitor: Minimum resolution of 1024x768
- OS: Windows XP, Windows Vista, Windows 7, or Windows 8
- Peripherals: Mouse and keyboard

To install XP-Builder in Windows XP:

1. Run the XP-Builder setup file. You can download the file from the LSIS website (<http://eng.lsis.biz/support/download/>).
2. Select an installation language (Chinese [Simplified], English, or Korean).
3. Follow the instructions in the installation wizard to complete the installation.

To install XP-Builder in Windows Vista:

1. Log in to your computer with an administrator account.
2. On your computer, click [Start] ► [Control Panel] ► [User Accounts and Family Safety].
3. Click [User Accounts] ► [Turn User Account Control on or off], and uncheck the tick box next to **Use User Account Control (UAC)** to help protect your computer.
4. Run the XP-Builder setup file. You can download the file from the LSIS website (<http://eng.lsis.biz/support/download/>).
5. Select an installation language (Chinese [Simplified], English, or Korean).
6. Follow the instructions in the installation wizard to complete the installation.



To install XP-Builder in Windows 7 or Windows 8:

1. Log in to your computer with an administrator account.
2. On your computer, click [Start] ► [Control Panel] ► [User Accounts and Family Safety].
3. Click [User Accounts] ► [Change User Account Control Settings], and drag the slider to Never notify.
4. Run the XP-Builder setup file. You can download the file from the LSIS website (<http://eng.lsis.biz/support/download/>).
5. Select an installation language (Chinese [Simplified], English, or Korean).
6. Follow the instructions in the installation wizard to complete the installation.

### 1.2.2 Updating XP-Builder

To check the version of your XP-Builder software, click [Help] ► [About XP-Builder]. To update XP-Builder refer to the LSIS website (<http://eng.lsis.biz/support/download/>).

#### Note

You can update an XGT Panel automatically in XP-Builder version 1.30. If you use a version lower than 1.24, you must update the XGT Panel manually.

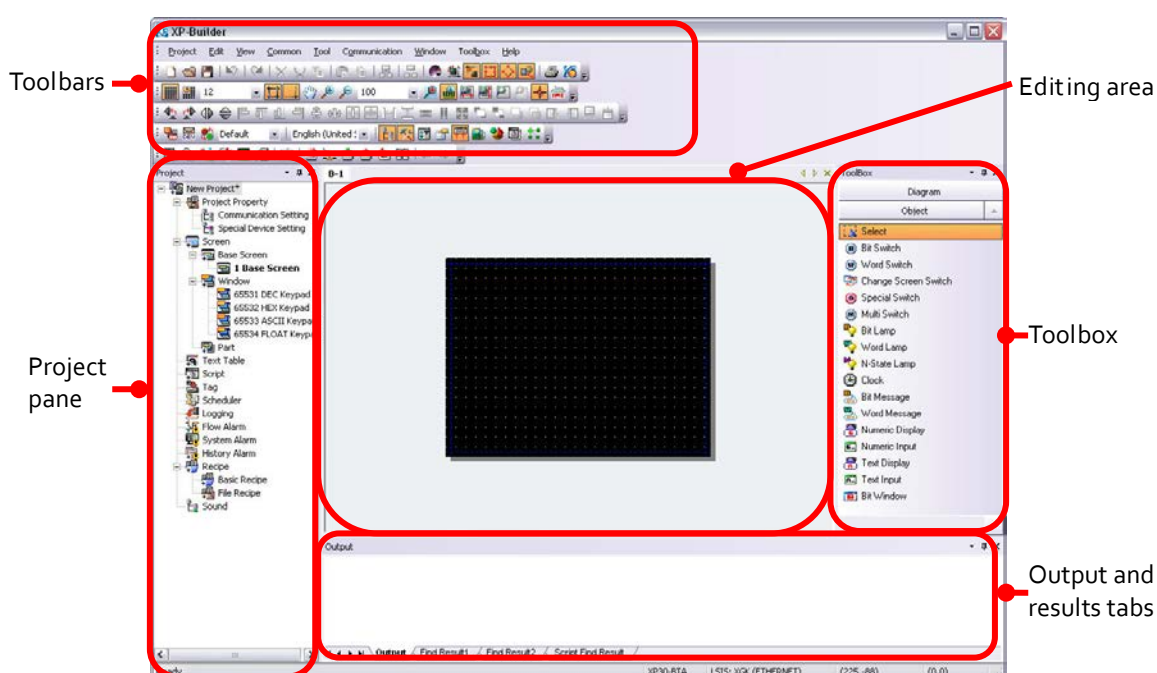
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## 1.3 Interface and Features

XP-Builder offers a wide range of customizable options that allow you to efficiently create and manage projects. This section describes the XP-Builder interface and explains how to customize it to suit your needs.

### 1.3.1 The XP-Builder Interface

The XP-Builder interface is similar to that of many Windows-based programs. You can customize the interface by selecting various toolbar and window options, as described in <1.3.2 Controls and Options>.



Interface	Description
Toolbars	Use tools or menus to perform tasks and specify options.
Project pane	Show the elements contained in the project in a cascading tree. You can open, reposition, or dock other windows, such as the Graphic Library, Object Library, Device Map, Script Toolbox, and Data Viewer windows.
Editing area	The center of the window, where you can add and manipulate objects, figures, and graphics to create an interface.
Toolbox	Use the objects or figures in the Toolbox to create a project.
Output and results tabs	These tabs allow you to view interface messages, error messages, and search results.

### 1.3.2 Controls and Options

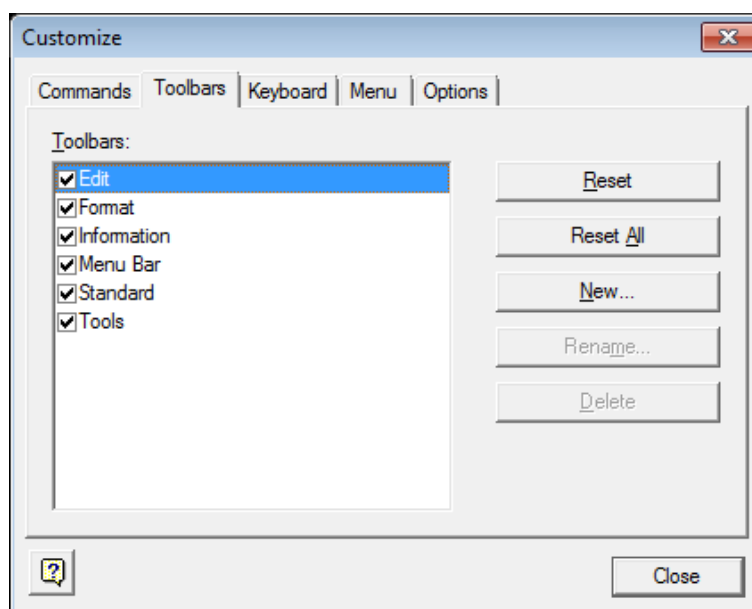
Customize toolbars, keyboard shortcuts, menus, and other options in the XP-Builder interface.

#### 1.3.2.1 Customizing Toolbars

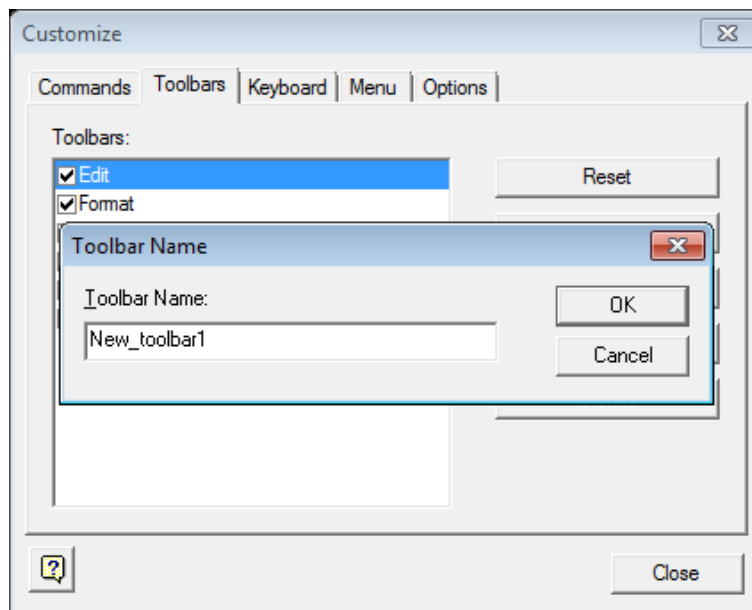
In the XP-Builder interface, you can create custom toolbars, add or remove icons on toolbars, and select which toolbars to show.

To create a toolbar:

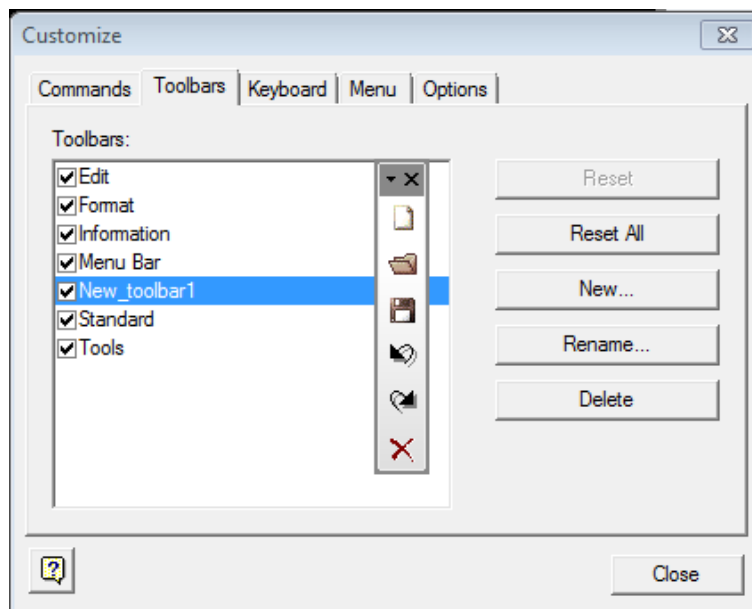
1. Click [Tool] ► [Customization] ► [Toolbars].



2. Click [New].

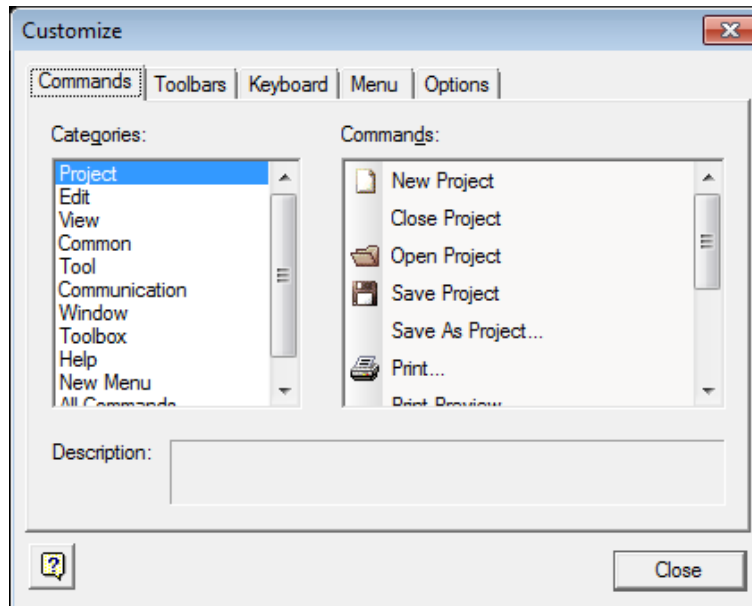


3. Enter a name for the toolbar and click [OK]. The new toolbar will be added to the list of available toolbars on the left of the Customize window. You can drag icons from the toolbars at the top of the XP-Builder window to the new toolbar.



To add or remove icons on toolbars:

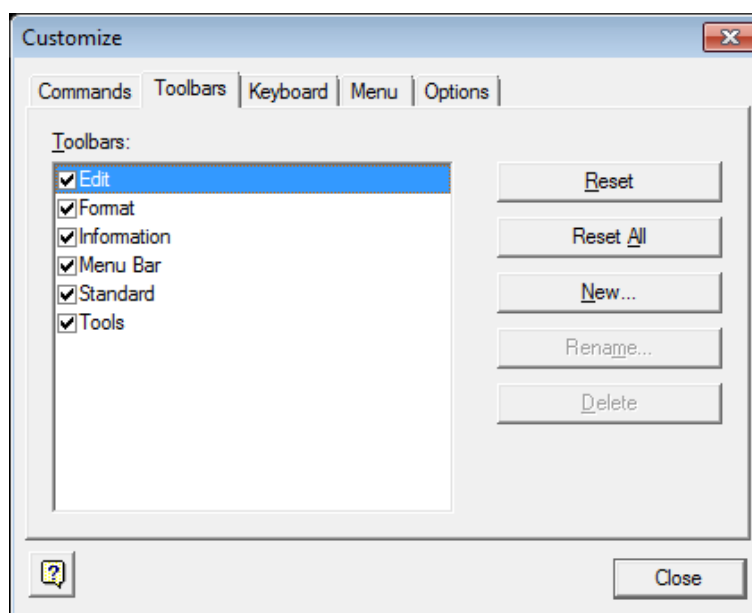
1. Click [Tool] ► [Customization] ► [Commands].



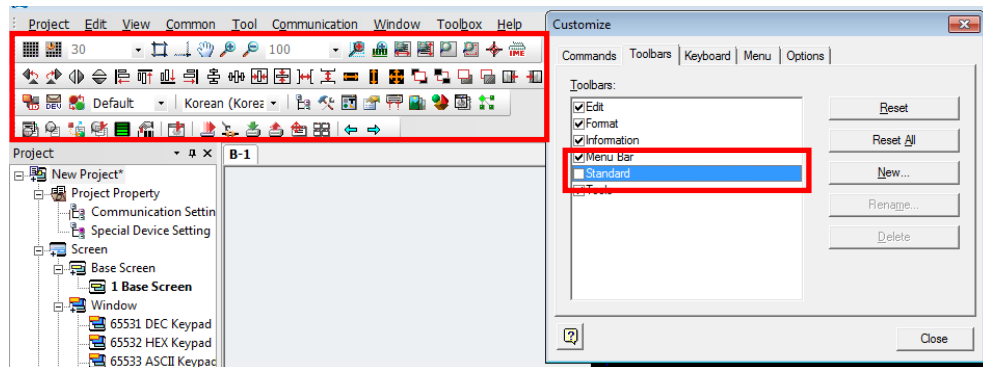
2. Click a tool category on the left, and then drag and drop a command onto an existing toolbar. Or, to remove an icon, drag it from a toolbar to the Customize window.

To select which toolbars to show:

1. Click [Tool] ► [Customization] ► [Toolbars].



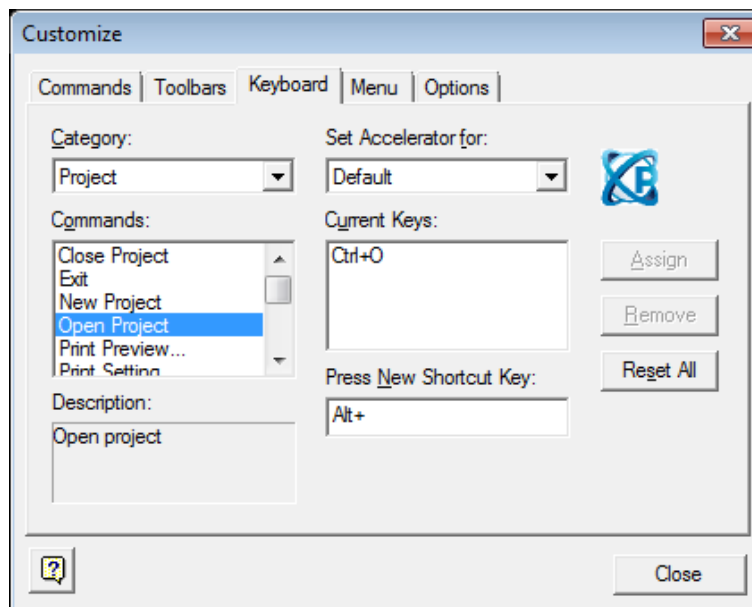
- Click the checkboxes to the left of the toolbars to select which to show (checked) and which to hide (unchecked).



### 1.3.2.2 Customizing Keyboard Shortcuts

To customize keyboard shortcuts (hotkeys):

- Click [Tool] ► [Customization] ► [Keyboard].
- Click a tool category from the drop-down list, and then click a command.
- Click the **Press New Shortcut Key** field and then press a key combination on the keyboard. If you press a combination that is already in use, the action that is assigned to the shortcut will appear below this field.





- Click [Assign].
- To remove a shortcut, select one from the **Current Keys** field and then click [Remove].
- When you are finished customizing keyboard shortcuts, click [Close].

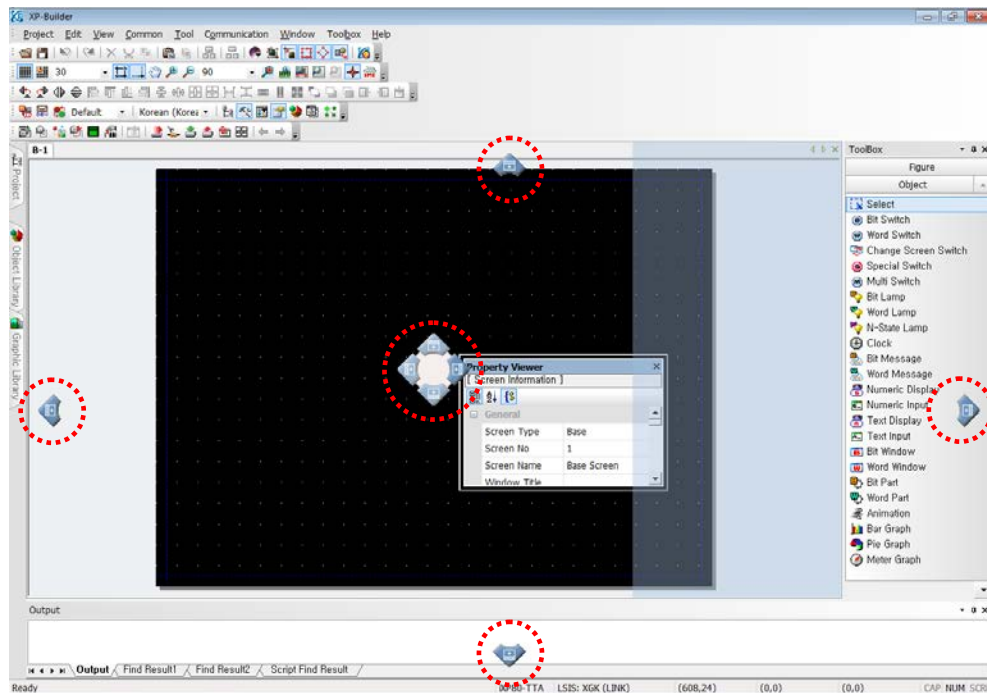
### 1.3.2.3 Customizing Menu Options

In the Customize window, you can select which Application Frame windows and Context menus to show. To customize menu options, click [Tool] ► [Customization] ► [Menu], and then select the desired options from the drop-down menus.

### 1.3.2.4 Customizing Pane Positions

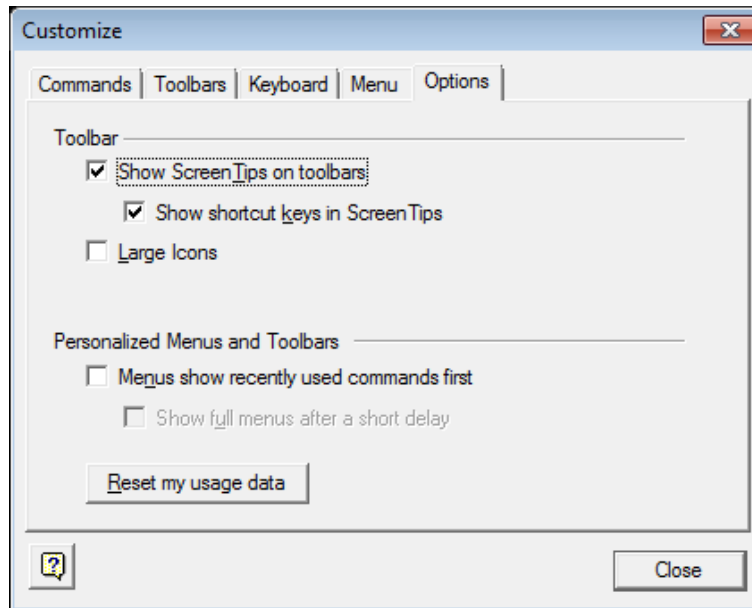
To view or hide panes, click [View], and then click the name of a pane. You can drag and drop panes in new positions within the XP-Builder window. To change properties for a pane, right-click the pane and click an option. You can set panes to dock or float and set whether or not the pane will hide automatically.

To dock the pane, move the pane to the desired location indicator. A shadow will appear to provide a preview of the docking location. To set a pane to float, on the pane, click  ► [Floating]. To hide a pane, on the pane, click .



### 1.3.2.5 Customizing Other Options

In the Customize window, you can customize additional options, such as whether or not to show tool tips, use large icons, and show the most recently-used commands first in menus and toolbars. To customize these options, click [Tool] ► [Customization] ► [Options], and then click the checkboxes next to the desired options.





## 2. Project Development

XP-Builder allows you to develop complex, but simple-to-use interfaces for controlling machines. You can add figures, objects, and graphics to represent functions or use scripts to define processes. XP-Builder also allows you to simulate projects and debug them before transferring them to an XGT Panel.

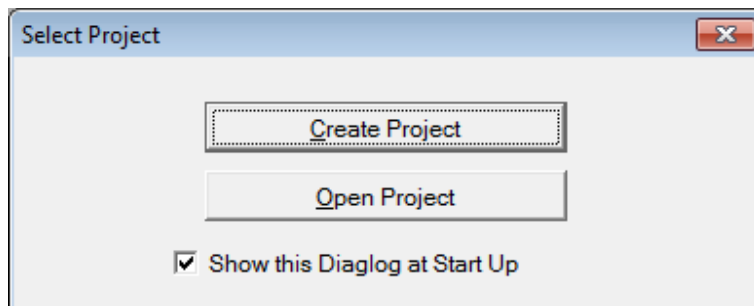
### 2.1 Creating a project

Learn how to start or open a project.

#### 2.1.1 Starting a New Project

To create a new project:

1. When you launch XP-Builder, the Select Project window appears. Click [Create Project] to create a project.



- To open a saved file, select [Open Project].
- You can also create a file by selecting [Project] ► [New Project].

- Set the panel series, model name, the controller manufacturer, and the controller model (Product).

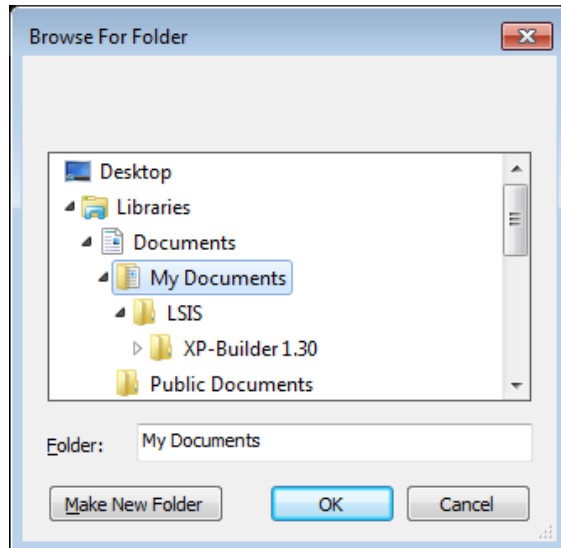
- If necessary, click [Communication Settings] and specify connection properties. For more details about connection properties, refer to <2.4 Connecting Controllers>
- Click [Finish] or [OK].

### Notes

- You can view XGT Panel specifications when you create a project by selecting the XGT Panel series and model.

- If the computer or panel you are working with does not have the font installed, data may not be represented properly. To solve this problem, install or export fonts as

needed: click [Tool] ► [Install Font] or [Export Font], specify a file location, and click [OK].



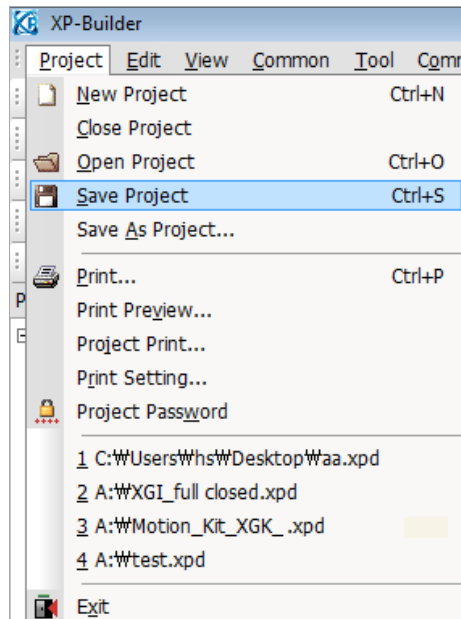
- Project files in XP-Builder are saved with the extension ".xpd." You can only import these types of project files to XP-Builder.
- The file extension for the executable file transferred to an XGT Panel is ".hmi."
- The file extension for the user object library is ".xpo."
- The file extension for the user graphic library is ".xpg."
- The extensions for common data types are shown in the following table:


Item	File Extension
Text table, Recipe, and Tag	*.CSV
History alarm	*.HAL
Flow alarm	*.FAL
Logging	*.LOG
Scheduler	*.SCH
Script	*.SPT

### 2.1.2 Saving a Project

To save a project:

1. Click [Project] ► [Save Project].



- You can also select the save project icon  from the toolbar.
  - To save the file with another name, select [Project] ► [Save as Project]
2. Select a destination for the saved file, enter a file name, and click [Save].

#### Notes

- When you save a project, two other files are created:
  - Backup file: The extension for the backup file is ".bak."
  - OSTS file: The extension for the OSTS file is ".OSTS." This file includes information about your project workspace, such as the current screen, docked windows, and toolbar information.
- When your project contains unsaved changes, the Project pane shows an asterisk (\*) next to the project name.

3. To close the project, click [Project] ► [Close Project].

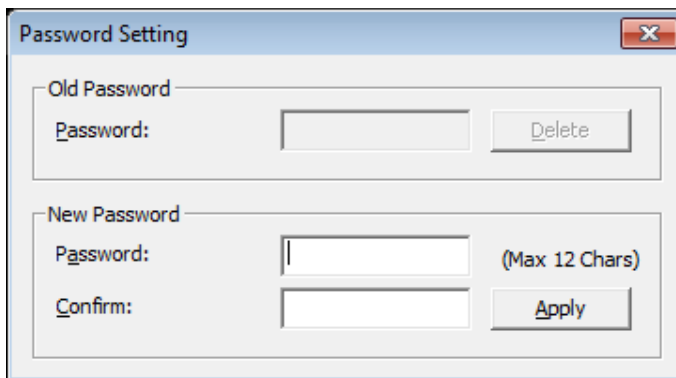
### 2.2 Configuring Project Properties

Set the properties or parameters for the project file. Specify properties for connecting with XGT Panels, window settings, security levels, languages, and more.

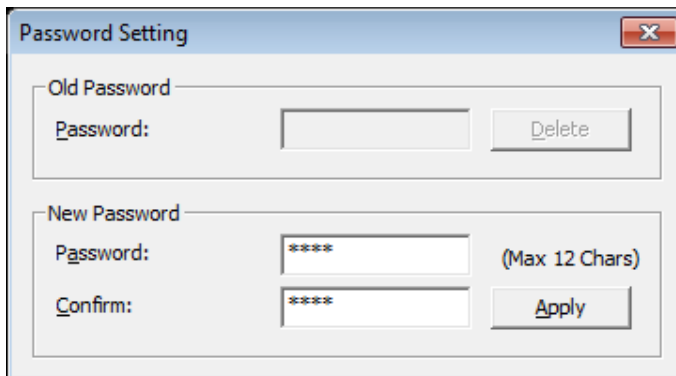
#### 2.2.1 Protecting the Project with a Password

You can prevent others from opening a project by setting a password.

1. Click [Project] ► [Project Password].



2. Enter a password and re-enter it to confirm.



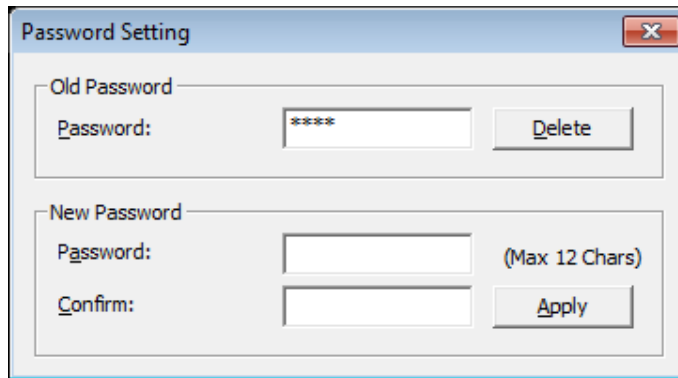
3. Click [Apply].

#### Notes

- XP-Builder supports only Latin characters in passwords. Passwords are case sensitive and can be up to 12 characters long.
- Be careful not to forget the password. If you forget the password, you cannot open the project file.

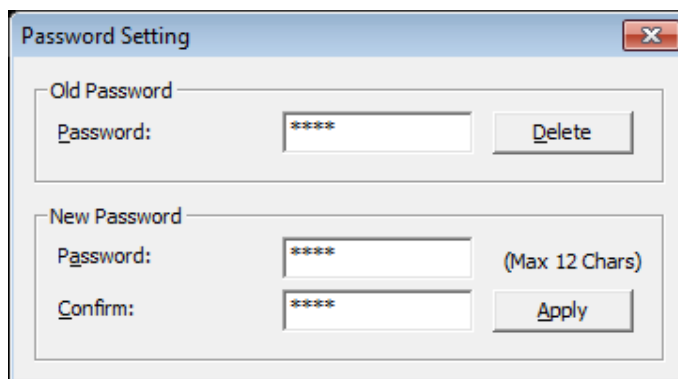
To change a password:

1. Click [Project] ► [Project Password].
2. Enter the current password in the **Old Password** field.



The screenshot shows a 'Password Setting' dialog box with a title bar containing a close button. It has two sections: 'Old Password' and 'New Password'. In the 'Old Password' section, the 'Password:' label is followed by a text box containing four asterisks and a 'Delete' button. In the 'New Password' section, the 'Password:' label is followed by an empty text box with '(Max 12 Chars)' to its right. Below that, the 'Confirm:' label is followed by another empty text box and an 'Apply' button.

3. Enter a new password and re-enter it to confirm in the **New Password** field.



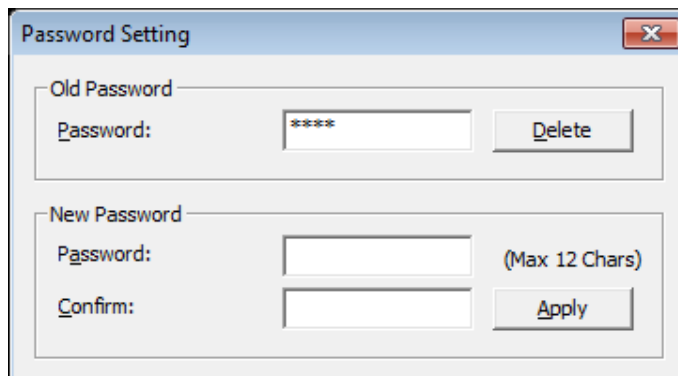
This screenshot shows the same 'Password Setting' dialog box, but now both the 'Old Password' and 'New Password' text boxes are filled with four asterisks. The 'Delete' button remains in the 'Old Password' section, and the 'Apply' button remains in the 'New Password' section.

4. Click [Apply].

To delete a password:

1. Click [Project] ► [Project Password].

2. Enter the current password in the **Old Password** field.

A screenshot of a 'Password Setting' dialog box. It has a title bar with a close button. The dialog is divided into two sections. The first section, 'Old Password', contains a 'Password:' label, a text field with four asterisks, and a 'Delete' button. The second section, 'New Password', contains a 'Password:' label, a text field, a '(Max 12 Chars)' label, a 'Confirm:' label, another text field, and an 'Apply' button.

3. Click [Delete].

### 2.2.2 Viewing and Editing Properties

XP-Builder allows you to view and edit general properties for projects. To view or edit project properties, click [Common] ► [Project Property Setting]. From the Project Property window, you can view or edit the following properties:

Tab	Description
Summary	Basic information for the project file, such as the project name and author
XGT Panel Settings	XGT Panel information and communication methods
Screen Settings	Window change options
Security Settings	Permissions for connected XGT Panels
Key Window Settings	Settings for key windows
Language	Editing language and runtime language options
Storage Settings	Destination and backup locations for project components and XGT Panel data
Global Script Settings	Global options to apply to scripts
Auxiliary Settings	Options for printing, capturing screens, displaying flow alarms, sending email alerts, displaying system alarms, and displaying communication errors
Extended Controller Settings	Settings for barcode readers

### 2.2.2.1 Changing Basic Project Properties

The Summary tab in the Project Property window contains basic information, such as the project name, file path, author, creation date, modification date, last download date, version, and project description. To change basic project properties, edit the information in the appropriate field and click [OK]:

The screenshot shows the 'Project Property' dialog box with the 'Summary' tab selected. The fields are as follows:

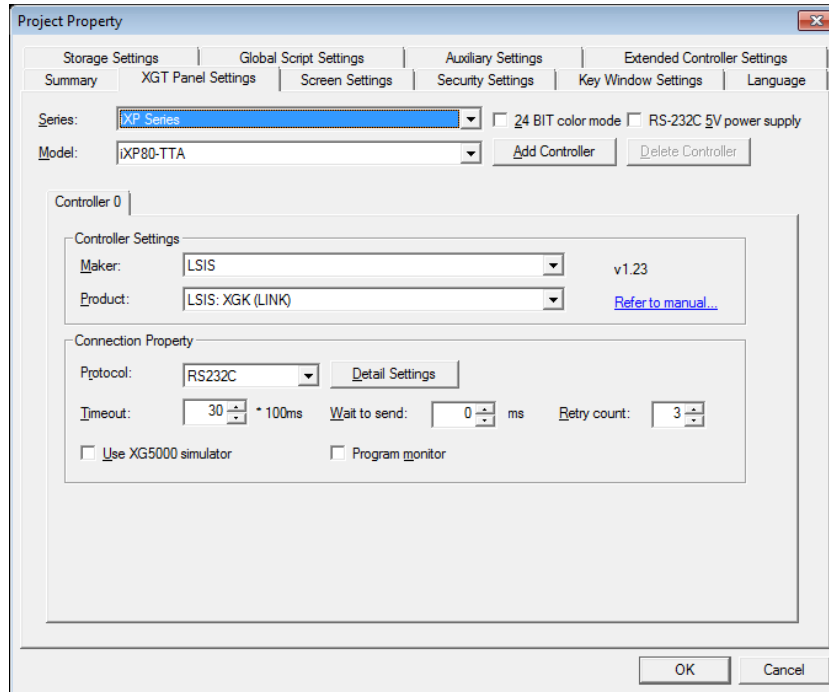
Field	Value
Project name:	aa
File path:	C:\Users\Whs\Desktop\Waa.xpd
Author:	hs
Description:	Project sample
Created:	03/12/13, 17:56:30
Modified:	03/12/13, 17:56:31
Downloaded:	
Version:	1.300000

Item	Description
Project Name	The project name does not have to match the file name. The file name you specify will appear at the top of the project tree in the Project pane.
File Path	The location of the project file (this cannot be edited)
Author	The creator of the file
Description	A description of the project
Created	The date the file was first created (this cannot be edited)
Modified	The date the file was last modified (this cannot be edited)
Downloaded	The date the project was last downloaded to an XGT Panel (this cannot be edited)
Version	The version of the XP-Builder software (you can change this information to create a unique identifier for customized properties)



### 2.2.2.2 Changing XGT Panel Settings

Edit the XGT Panel and model type. You can also set the connection method settings for connecting to controllers. The options vary by the connection method. To change XGT Panel settings, edit the information in the appropriate field and click [OK]:



XGT Panel Settings	Description
Series	<ul style="list-style-type: none"> <li>Select an XGT Panel type. The initial information is the same as you selected when you created the project.</li> <li>iXP series allow you to select color mode and power supply options as well.</li> </ul>
Model	Select a model number, based on the XGT Panel type you selected.
24 BIT Color Mode	This mode is supported only by iXP series. Select this option to use 24-bit color instead of the default setting (65,536 colors). 24-bit mode improves the appearance of images on the screen, but may result in slower screen refresh speeds.
RS-232C 5V Power Supply	This mode is supported only by iXP series. Select this option to use the RS232C connection (5V, 250mA) as the power supply.
Add Controller Delete Controller	This mode is supported only by iXP series. You can connect controllers with multiple protocols, including RS232C, RS422/485 or Ethernet.

XGT Panel Settings	Description
	<ul style="list-style-type: none"> <li>Click [Add Controller] to insert a new controller tab. The connection number for the new controller will be one higher than the previous controller's connection number automatically. XP series panels support up to 4 connection numbers (0-3) and iXP series support up to 16 connection numbers, depending on the connection protocol you use. For more information, refer to &lt;2.7.1 Using 1:N Communication with Multiple Protocols&gt;.</li> <li>Click a controller tab and then click [Delete Controller] to delete it. This option is active only after you have added at least one controller.</li> <li>Connection numbers are automatically renumbered when a controller is deleted. For example, if you have 3 controllers (numbered 0-2) and you delete controller 1, the last controller will be renumbered from 2 to 1 automatically.</li> </ul>
Controller Settings	Set the controller manufacturer and controller type (Product).
Refer to Manual	Click to open the reference manual for the selected controller.
Protocol	Set the connection method between the XGT Panel and the controller. Ensure that the setting matches the actual connection between the XGT Panel and the controller.
Detail Settings	Click to set detailed connection parameters. If a controller is selected, the default properties will be set automatically. The options available vary by the connection type.
Timeout	Set a network timeout.
Wait to Send	Set the length of time to wait for network communication between the XGT Panel and the controller.
Retry Count	Set the number of times to retry when communication fails between the XGT Panel and the controller.
Use XG5000 Simulator	Set whether or not to use the simulator. To run the simulator, click [Tool] ► [Simulation]. For more information, refer to <2.5.1 Simulating an Interface>. About XP-Builder
Program Monitor	Set whether or not to view controller data with the Program Monitor (supported only by XGK series PLCs). For more

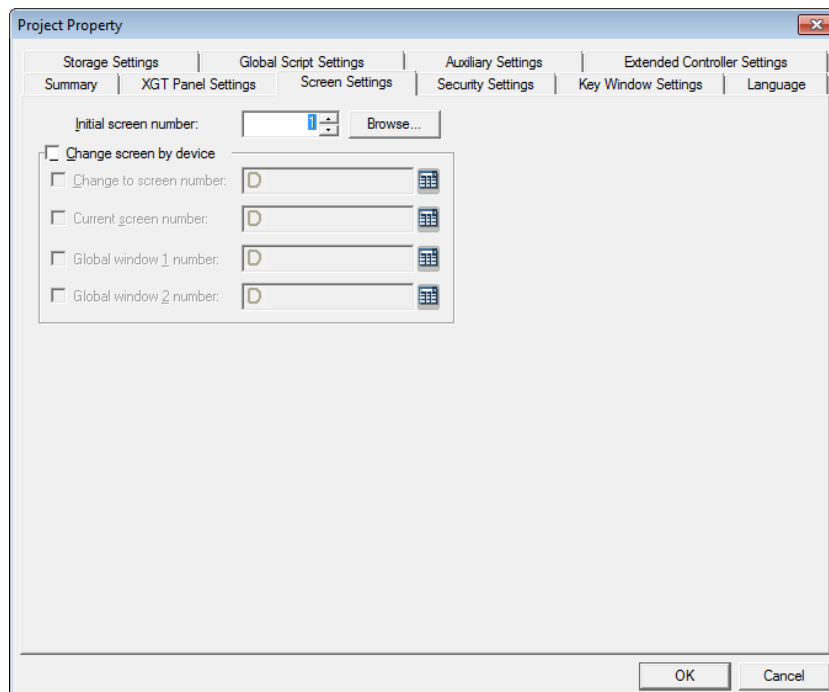
XGT Panel Settings	Description
	information about using the Program Monitor, refer to <0 Using Program Monitor>.

### Notes

- You can only change properties for an XGT Panel when the mode selected supports the same color specifications as the panel.
- When changing the XGT Panel type, the height and width of objects vary by resolution. Objects with fixed sizes and fonts are not affected by changes of the panel type.
- When transferring images to 256-color or economy panels (XP30-BTE and XP30-BTA), the images are converted to grey scale.

#### 2.2.2.3 Changing Screen (Window) Settings

You can specify the window that appears when an XGT Panel is switched on and settings for how and when the interface changes. To change window settings, edit the information in the appropriate field and click [OK]:

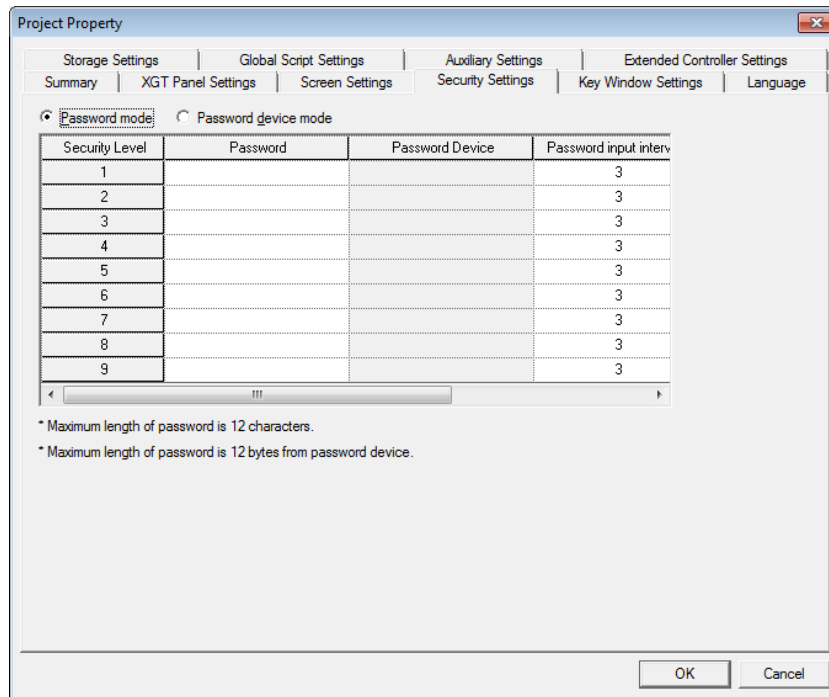


Screen Settings	Description
Initial Screen Number	<ul style="list-style-type: none"><li>• Set the number of the window that appears when the XGT Panel is switched on.</li></ul>

Screen Settings	Description
	<ul style="list-style-type: none"> <li>If no window is specified, an error will occur.</li> <li>To specify the start window, click [Browse] ► a window ► [OK].</li> </ul>
Screen Change by Device	Set whether or not to switch windows based on the device value. If you do not use a device to switch windows, the device value will be changed when the window is switched.
Change to Screen Number	Set the device to switch to a specified window. When the device value changes, the window specified by the device value will be activated (unsigned, 16 bit).
Current Screen Number	Set a number for the current window.
Global Window 1 Number Global Window 2 Number	Specify one or two windows that will be activated "globally"—across the entire interface—based on the device value. Windows specified here are called based on the specified device values and have no priority over each other.

### 2.2.2.4 Changing Security Settings

You can change security settings for a connected XGT Panel to regulate access by different types of users. XGT Panels support 10 security levels (0: lowest to 9: highest). To change security settings, edit the information in the appropriate field and click [OK]:



Security Settings	Description
Password Mode	Set to require a password to access the panel. Enter the passwords in the <b>Password</b> field for the corresponding security level.
Password Device Mode	Set to use a word device to control access to the XGT Panel. Authentication is initiated by user input, but the first 12 bytes of data in the device (max) specifies the password. You can use this feature to provide encrypt authentication or change authentication parameters frequently.
Security Level	Set passwords for security levels, as desired. Level 0 allows access by all users, so it is not possible to specify a password (only levels 1-9 are configurable).
Password	Set a password. XP-Builder supports only Latin characters in passwords. Passwords are case sensitive and can be up to 12 characters long.

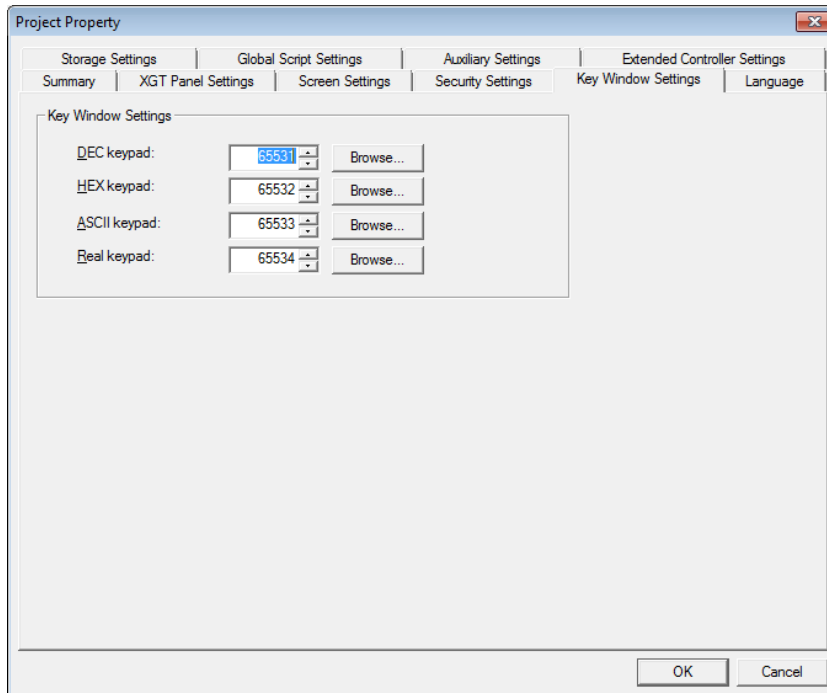
Security Settings	Description
Password Device	Set a word device to control access to the XGT Panel. Enter a device address or click the field, and then click the keypad icon on the right side of the field to specify a device address.
Password Input Interval(min)	<ul style="list-style-type: none"><li>Set the length of time to grant access after entering the password. The permission will expire based on your setting and will require the password to be re-entered. The default unit is minute and you can set an interval from 0 to 30 minutes.</li><li>If you set the interval to "0," a password must be entered for every operation where a security level is applied.</li><li>If you attempt to access an option that has a higher security level applied, you must enter the password, even when the password input interval has not yet expired. For highly sensitive operations, use shorter intervals.</li></ul>

**Note**

You can apply security settings to the following objects: bit switch, word switch, change screen switch, special switch, multi switch, numeric input, and text input.

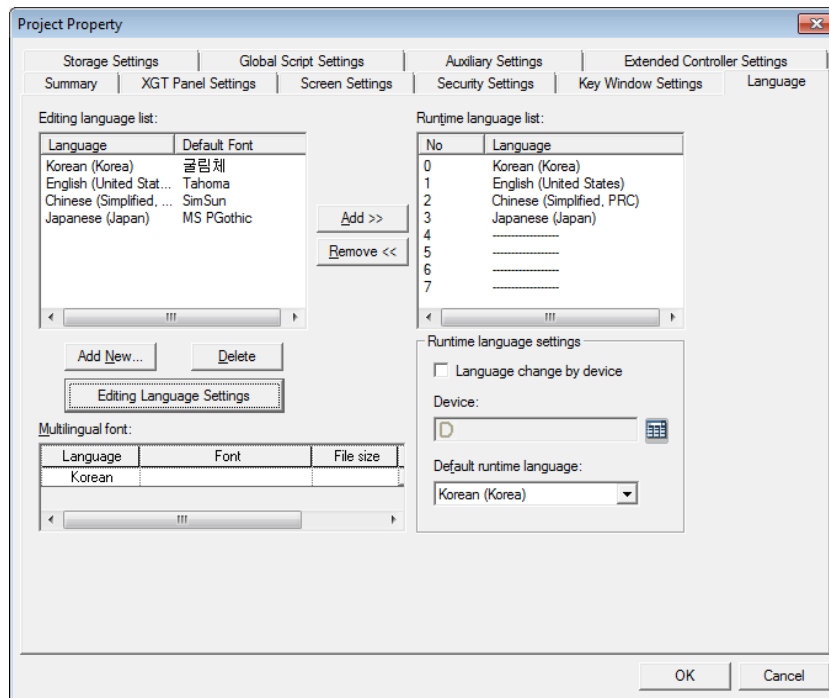
### 2.2.2.5 Changing Key Window Settings

You can set the key window number for input devices. The key window set here is applied as the default for all key windows. To change key window settings, click the arrow buttons (▲▼ or ▲▼) to select a new window number or click [Browse] and then click a key window type.

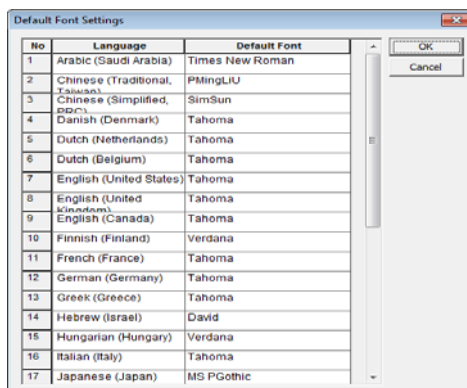


### 2.2.2.6 Changing Languages

From the Language tab, you can edit both display and runtime language settings. To change language settings, edit the information in the appropriate field and click [OK]:



Language Settings	Description
Editing Language List	<ul style="list-style-type: none"> <li>Set the display language.</li> <li>Languages shown in text tables are set here.</li> </ul>
Add New	Click to add additional display languages to the interface. Select a language from the list and then click [OK] to add it to the Editing Language List.
Delete	Select a language, and then click to remove it.
Editing Languages Settings	Change the default fonts for each editing language.





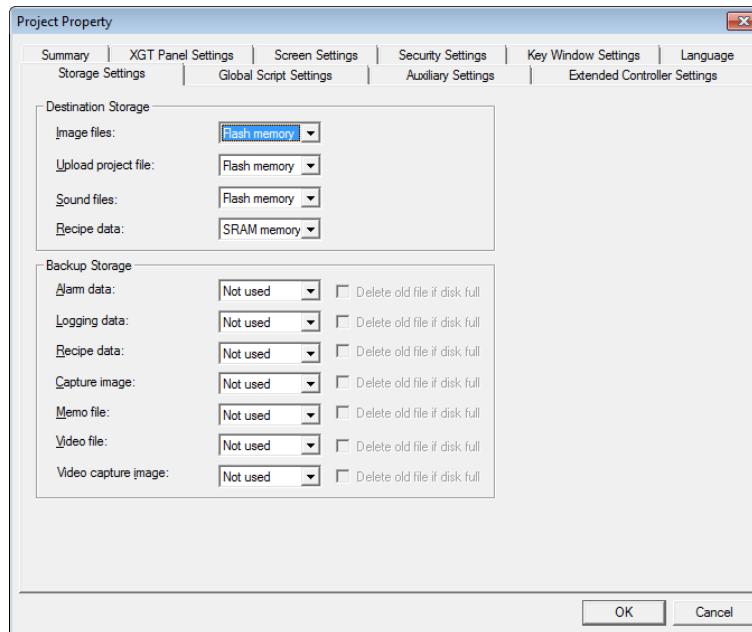
Language Settings	Description
Multilingual Font	<ul style="list-style-type: none"><li>• Set a font to transfer with the project file. This function is useful when the XGT Panel does not support Asian characters, such as in the case of XP series panels that run the Windows CE operating system.</li><li>• If you select this option, the entire font will be transferred to the panel. Ensure that the size of the font file does not exceed the available memory of the XGT panel model.</li></ul>
Runtime Language List	View and specify runtime languages to use with the project. You can add or remove languages that will be shown in the project.
Language Change by Device	Set the runtime language to change for specific devices. The XGT Panel reads the value from the device and displays the interface in the language you specify in the Runtime Language List.
Device	Select a word device.
Default Runtime Language	Set the runtime language that will be used by default on the XGT Panel.

### Notes

- Text may not be displayed properly if the text cannot be represented by the default font.
- If you set the language to change by device, you must designate a language for the device or nothing will be shown in the XGT Panel.

### 2.2.2.7 Changing Storage Settings

Set the storage locations for image and font files, as well as the locations for backing up logging data recipes, and screen captures from an XGT Panel.



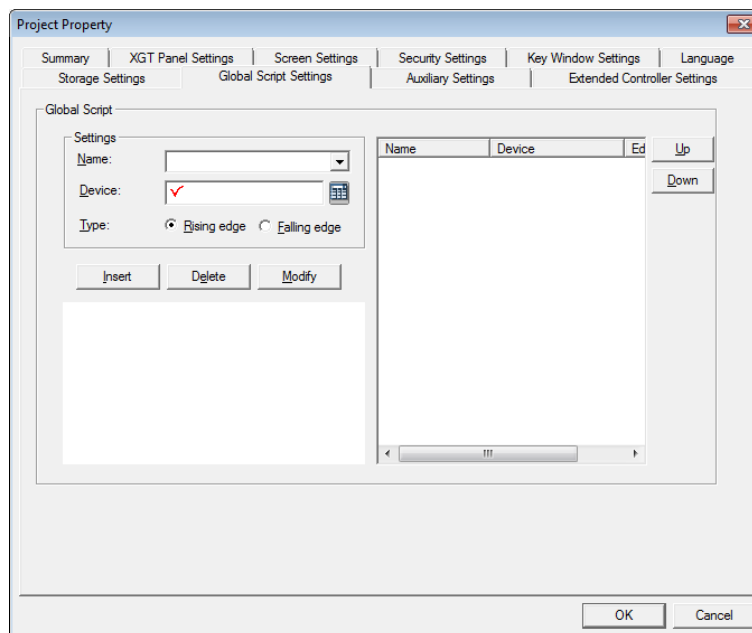
Storage Settings	Description
Image Files	<ul style="list-style-type: none"> <li>XGT Panel has a fixed amount of memory for saving project files.</li> <li>If you want to download XGT Panel data that exceeds the size of the allocated memory, you can save files on removable media.</li> <li>Use the entire path to specify the storage file path on the XGT Panel.</li> </ul>
Upload Project File Sound Files Recipe Data	Specify locations where files are stored.
Alarm Data Logging Data Recipe Data Capture Image Memo File Video File Video Capture Image	Specify an external location where the data will be backed up. If disk is full, existing data will be overwritten.

### Notes

- XGT Panels support three types of removable storage devices: USB devices, CF cards, and SD cards (iXP only).
- X30-BTE, XP30-TTE, XP40-TTE, XP40-TTA, and XP50-TTE models do not support CF cards.

#### 2.2.2.8 Changing Global Script Settings

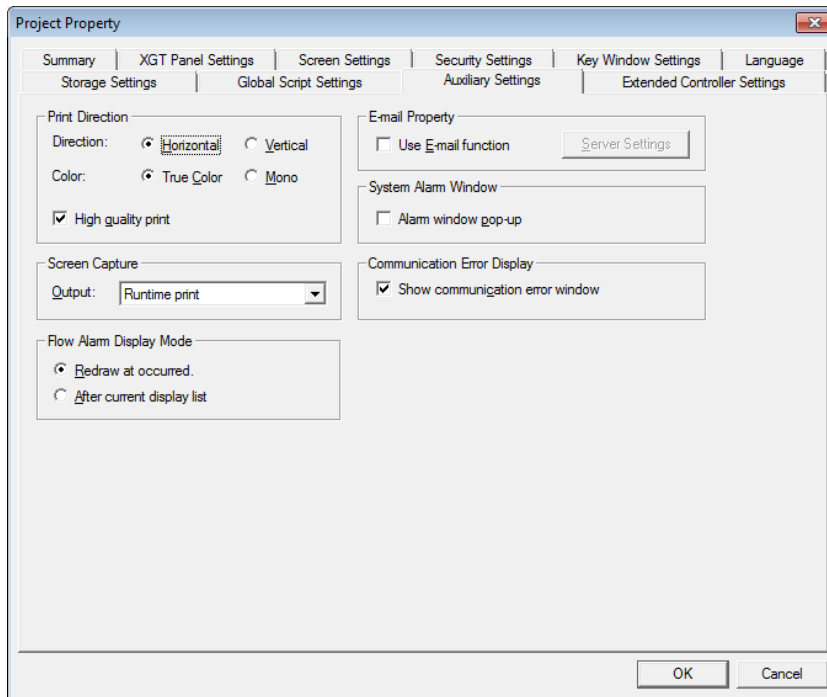
Global script conditions are monitored through an XGT Panel and executed if the conditions are met. Up to 8 global scripts can be created. If two or more conditions are met simultaneously, scripts are executed based on the priority that you specify.



Global Script Settings	Description
Name	Set a script name.
Device	Set a bit device that meets the conditions required to execute the script.
Type	Choose a trigger type for executing the script (Rising edge or Falling Edge).
Insert, Delete, Modify	Click to insert, delete, or modify global scripts.
Up Down	Specify the execution priority for when two or more conditions are met simultaneously.

### 2.2.2.9 Changing Auxiliary Settings

You can set the printing direction, locations for saving screen captures, and properties for the system alarm display.

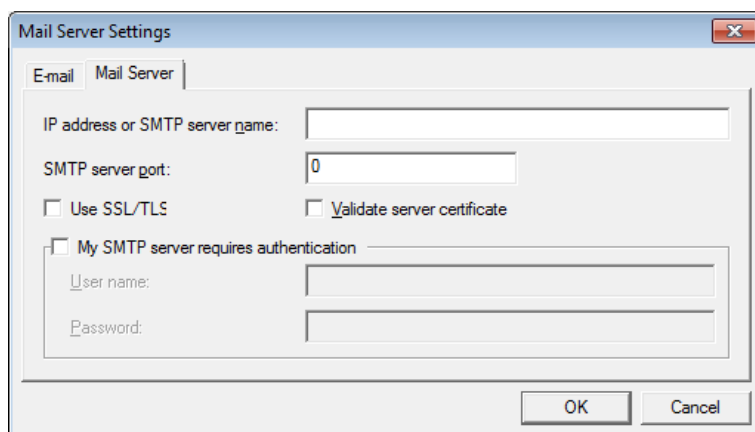


Auxiliary Settings	Description
Printing Direction	Set the print options such as direction, color, and whether or not to use the high quality printing.
Screen Capture	Set the action that occurs when the screen is captured on the XGT Panel. You can save the image in a file or print it.
Flow Alarm Display Mode	<ul style="list-style-type: none"> <li>Set to display the alarm message for the states of the flow alarm.</li> <li>When a flow alarm occurs and is then reset while the alarm message is displayed, you can specify one of two actions to occur: <ul style="list-style-type: none"> <li><b>Redraw at occurred:</b> The alarm message is replaced automatically with a new message.</li> <li><b>After current display list:</b> The alarm message remains on the screen and new alarms or reset alarms will be shown by subsequent messages.</li> </ul> </li> </ul>
E-mail Property	<ul style="list-style-type: none"> <li>Set whether or not to use email alerts.</li> <li>Click <b>Server Settings</b> to set email settings. When</li> </ul>

Auxiliary Settings	Description
	<p>specifying settings, keep the following in mind:</p> <ul style="list-style-type: none"> <li>- You can specify only one email recipient or CC recipient.</li> <li>- The email server must be on the same intranet as the XGT Panel.</li> <li>- An XGT Panel uses the Anonymous account. When you set the email server, set to use the email relay function of the Anonymous account.</li> <li>- The email is encoded in Unicode.</li> <li>- Use port number 25 (the default port) for the email function.</li> </ul>
System Alarm Window	Set whether or not to display system alarm messages.
Communication Error Display	Set whether or not to display communication error messages on top of other windows.

### Note

To configure the email server, click [Server Settings] ► [Mail Server].



The image shows a 'Mail Server Settings' dialog box with two tabs: 'E-mail' and 'Mail Server'. The 'Mail Server' tab is selected. It contains the following fields and options:

- IP address or SMTP server name:** A text input field.
- SMTP server port:** A text input field with the value '0'.
- ☐ **Use SSL/TLS**
- ☐ **Validate server certificate**
- ☐ **My SMTP server requires authentication**
  - User name:** A text input field.
  - Password:** A text input field.

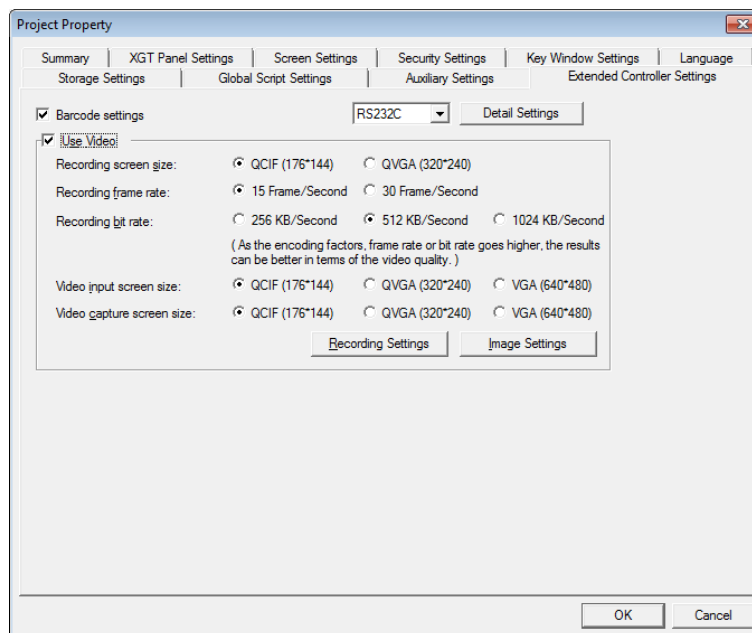
At the bottom right, there are 'OK' and 'Cancel' buttons.

Function	Description
IP Address or SMTP Server Name	Enter the IP address or SMTP server name.
SMTP Server Port	Enter the port number of the SMTP server. If you use an anonymous SMTP account service in the intranet, the port number is 25.
Use SSL/TLS	Encode data when transferring it to the mail server.
Validate Server	View the certificate of the mail server.

Certificate	
My SMTP Server Requires Authentication	Unless you use an anonymous SMTP mail service in the intranet, you need authentication for the user information.
User Name	Set the name for authentication.
Password	Set the password for authentication.

### 2.2.2.10 Changing Extended Controller Settings

You can connect a bar code reader to an XGT Panel's RS-232C port (COM2) and use video functions.



From the Project Property window, you can view or edit the following properties for a barcode reader that is connected to an XGT Panel:

Item	Description
Barcode Settings	Set to connect barcode reader to XGT Panel.
Connection Property	Set to use the barcode through the RS-232C protocol.
Detail Settings	Set detail connection options: <ul style="list-style-type: none"> <li>• <b>Bytes to read:</b> Set the amount of data to read from a barcode. If you set the number of bytes, the XGT Panel reads only the specified number of bytes. If you don't specify this setting, the XGT Panel reads the entire</li> </ul>

Item	Description
	<p>barcode.</p> <ul style="list-style-type: none"> <li>• <b>Save data in:</b> Set a location for saving barcode data. Data is saved from the specified device continuously.</li> <li>• <b>Read complete device:</b> Set to display a message when all data has been read.</li> <li>• Set the RS-232C communication parameter, such as the baud rate, data bits, and flow control.</li> </ul> <p><b>Note</b></p> <p>The baud rate must match the setting in the XGT Panel. To change the baud rate on the XGT Panel, touch and hold the screen to access the menu. Then, touch [Setting] ► [PC Conn Setting]. For iXP series XGT Panels, the IP address is set by default.</p>
Use Video	Set to use the video option.
Recording Screen Size	Select a screen size for the recorded file.
Recording Frame Rate	Set the number of frames per second to record.
Recording Bit Rate	Set the bit rate.
Video Input Screen Size	Set a screen size for displaying the recording screen.
Video Capture Screen Size	Set a screen size for capturing the screen.
Recording Settings	Set the properties for saving the recorded file.
Image Settings	Set the properties for recording quality.

### Notes

- The higher the frame rate and bit rate, the higher the quality of video that will be recorded.
- Bigger recording screen and video input screen sizes and higher frame rates and bit rates may reduce the quality of the video displayed on the XGT Panel.
- You cannot create other objects on the same screen as a movie player object. Doing so may disrupt communication with the XGT Panel.
- This option is supported only by iXP multimedia type.

To connect a bar code reader:

1. Select [Common] ► [Project Property Setting] ► [Extended Controller Settings].
2. Click the checkbox next to **Barcode Settings**.
3. Click [Detail Settings] and specify the following settings:

The image shows a 'Barcode Option' dialog box with the following settings:

- ☒ Bytes to read: 2
- Save data in: Device
- Data storage: [Red checkmark icon]
- ☐ Read complete device: [D icon]
- Baud rate: 9600
- Data bits: 8
- Flow control: NONE
- Parity: NONE
- Stop bit(s): 1

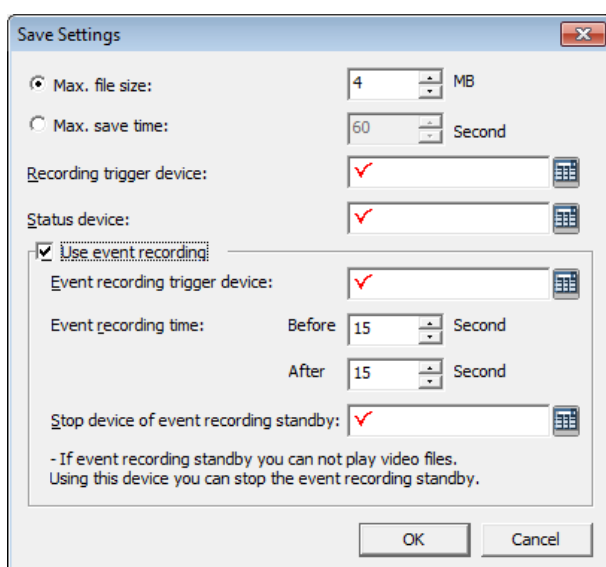
Item	Description
Bytes to Read	Set the amount of data to read from the bar code. If you leave this setting unspecified, all data (up to 255 characters) will be transferred from the bar code reader.
Save Data In	Select a location for saving barcode data.
Data Storage	Enter the first device to receive data from the bar code.
Read Complete Device	Turn on the assigned device when data read from the bar code has been saved.
Baud Rate Data Bits	Set the RS-232C communication parameters to match the bar code reader.



Item	Description
Flow Control Parity Stop Bit(s)	<div><b>Note</b></div> <p>The baud rate must match the setting in the XGT Panel. To change the baud rate on the XGT Panel, touch and hold the screen to access the menu. Then, touch [Setting] ► [PC Conn Setting]. For iXP series XGT Panels, the IP address is set by default.</p>

To use the video option, click the check box next to **Use Video**. For more detail about the video option, refer to <4.3.19 Movie Player Object>.

You can set the video save options:



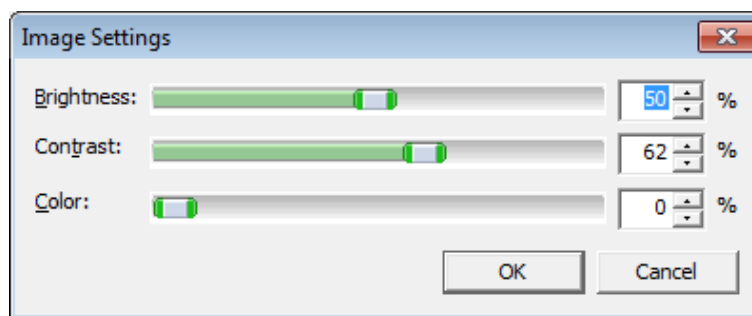
Save Settings	Description		
Max. File Size	Set the maximum size for video files (1–512 MB).		
Max. Save Time	Set the maximum length for videos (5–3600 seconds [1 hour]).		
Recording Trigger Device	Set a bit device to start or stop recording. When the device is turned "On," recording starts and when the device is turned "Off," recording stops.		
Status Device	<p>Set a word device to control video recording. Consecutive devices will include the following information:</p> <ul style="list-style-type: none"> <li>For devices "HW0000" to "HW0004"</li> </ul> <table border="1"> <tr> <td>HW0000</td><td>Status of video recording</td></tr> </table>	HW0000	Status of video recording
HW0000	Status of video recording		

Save Settings	Description	
	HW0001	Error codes during recording
	HW0002	Video recording file number
	HW0003	Video capture file number
	HW0004	Video capture error codes
	- Video recording status:	
	0 bit (HW0000.0)	"On" when recording
	1 <sup>st</sup> bit (HW0000.1)	"On" when playing the video
	2 <sup>nd</sup> bit (HW0000.2)	<ul style="list-style-type: none"> <li>"On" when exceeding the maximum number of saved videos</li> <li>It becomes "Off" in the following situations: <ul style="list-style-type: none"> <li>When starting the recording process</li> <li>When starting to collect the video file list</li> <li>When deleting video files from the storage device</li> </ul> </li> </ul>
	3 <sup>rd</sup> bit (HW0000.3)	<ul style="list-style-type: none"> <li>"On" when exceeding the maximum number of video capture files that can be saved (there is not enough free space in the backup route or total number of files is 1000). However, if you have set to delete old files when there is not enough storage space, "On" will not appear.</li> <li>Turns "Off" in the following situations: <ul style="list-style-type: none"> <li>When creating the video capture file</li> <li>When starting to collect the video capture file list</li> <li>When deleting video capture files from the storage device</li> </ul> </li> </ul>
	4 <sup>th</sup> bit (HW0000.4)	<ul style="list-style-type: none"> <li>"On" when an error occurs while recording, playing, or creating the</li> </ul>

Save Settings	Description
	<p>video capture file.</p> <ul style="list-style-type: none"> <li>When an error occurs while creating the video capture file, the code is stored by the error code saving device (HW0004).</li> <li>Turns "Off" when you turn off camera features: <ul style="list-style-type: none"> <li>When starting the recording process</li> <li>When the recording process is stopped or completed</li> <li>When creating the video capture file</li> <li>When playing the video</li> <li>When playback is stopped or completed</li> <li>When installation of a storage device for video files and capture files is complete</li> </ul> </li> </ul>
	<p>5<sup>th</sup> bit (HW0000.5)</p> <p>"On" when collecting the video file list</p>
	<p>6<sup>th</sup> bit (HW0000.6)</p> <p>"On" when collecting the video capture file list</p>
	<ul style="list-style-type: none"> <li>For more information about error codes during recording, refer to &lt;3.3 Resolving Error Codes during Recording&gt;</li> </ul>
Use Event Recording	Set to use event recording options.
Event Recording Trigger Device	Set a bit device to record the previous and post situations for the event. When the device turns "On," recording starts. Recording ends after the designated interval.
Event Recording Time	Set recording intervals and the pre and post time (5–60 seconds).
Stop Device of Event Recording Standby	Set whether or not to stand by for interval recording. In case of Off > On, stand-by is stopped, and in case of On > Off, stand-by is started.

Save Settings	Description
	While standing by, video cannot be played or captured. If you want to play video or create a capture file while standing by, set the interval recording stand-by device to "Off." In such cases, interval recording is not available, so if you want to continue with interval recording, set the device to "On."

You can change properties for input video images.



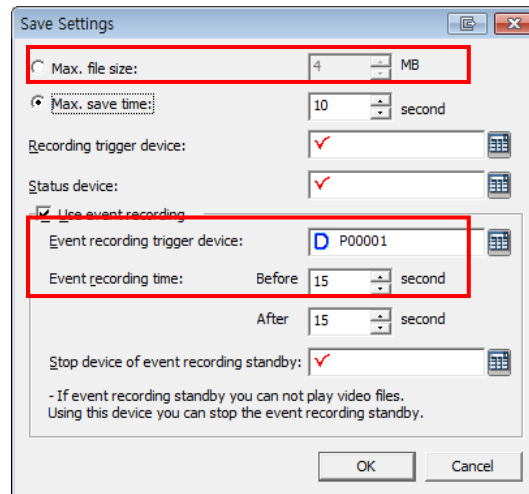
Function	Description
Brightness	Set brightness of the input video.
Contrast	Set contrast of the input video.
Color	Set color of the input video.

### Notes

- This option is supported only by iXP multimedia type.
- In the following situations, recorded video cannot be played and the current camera input cannot be captured:
  - When recording is in progress
  - When designating a stop device for event recording standby and interval recording start time greater than 0. But when the device is "On," playing video and creating capture files is possible, while recording is not. When the device is "Off," interval recording is possible while playing videos and creating capture files are not.
- If recording is in progress, a video cannot be played back.
- You cannot play video on a Window screen and a default screen at the same time.
- You cannot preview a camera on a Window screen and a default screen at the same time.
- Video capture files can be created only once per second. In other words, even if

you trigger video capture special switch several times very quickly, only one file per second will be created.

- You cannot use video functions while creating a list of stored video files and video capture files. The process of creating a file list may take several seconds to several minutes. While a video file list is being created, the 4th bit of the status device stays "On." While the video capture file list is being created, the 5th bit of the status device stays "On." At these times, you can watch the camera input screen and start or stop monitoring the screen.
  - Creation of video file lists and video capture files can happen in the following situations:
    - When starting the monitoring
    - When connecting the a computer and XGT Panel via ActiveSync and then canceling the connection
    - When the storage device is installed
  - When the safe removal switch is turned on, the switch lamp will be turned off when all applicable actions are complete in the following situations:
    - If the safe removal switch is turned on while the file list was being created, the switch will be turned off when the file list is complete.
    - If the safe removal switch is turned on while recording, the switch will be turned off when the recording is complete.
    - If the safe removal switch is turned on while playing the video, the switch will be turned off when the file was played completely.
    - If the safety removal lamp is turned off, because the safe removal switch was activated, recording cannot be started and a video capture file cannot be created.
  - Be careful when setting the Event recording trigger device:
    - Case 1: If the Event recording trigger device is On (Bit device) after the XGT Panel monitor is turned on and the Event recording time (Before) has passed, the event recording will start when the device is triggered and the duration is based on the Before and After values set in the Event recording time. For example:
-



With these settings, the event recording will occur as follows:

File 1: 0-10 seconds (10 second event)

File 2: 10-20 seconds (10 second event)

File 3: 20-30 seconds (10 second event)

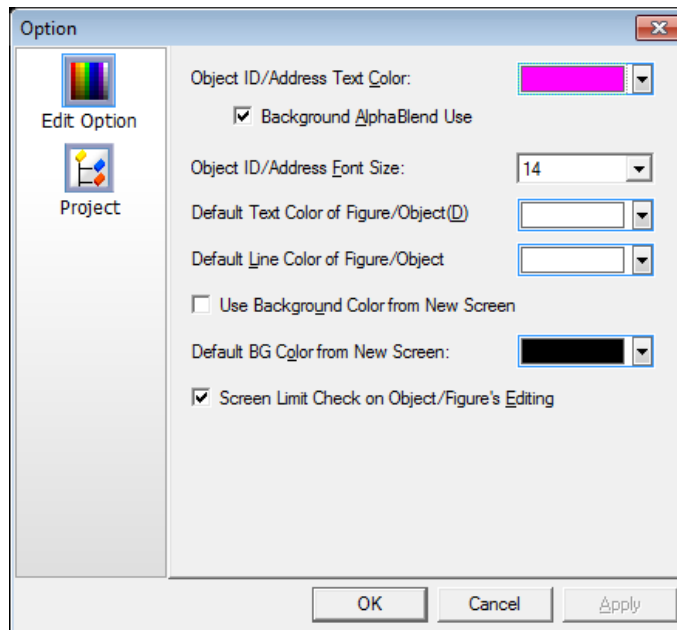
- Case 2: If the Event recording trigger device is turned On (Bit device) while the XGT Panel monitor is turned on, but the Event recording time (Before) has not passed, in this case, the event recording starts as soon as the XGT Panel monitor is turned on and the duration is based on the After value set in the Event recording time. For the same condition as case 1, the event recording will occur as follows:
  - File 1: 0-10 seconds (10 second event)
  - File 2: 10-15 (5 second event)
- Status device values are updated only in the following situations. So, if you change the value randomly, the new value will be reflected:
  - While recording, the device (Bit) is updated only when the recording is started or stopped.
  - If the storage device recognizes that the memory is exceeded when the recording is started or while making a list or files saved in storage device or while recording, the second bit of the status device (Video recording status device) is updated.
  - The bit of the status device is updated when the playback is stopped by a user or when the playback comes to an end.
- During event recording, an error less than 1 second long may occur because of a connection to the device or a system load of other actions. It may result when creating a file with less than 1 second play time. If the play time is less than 500 ms, the file is deleted automatically. When the file is saved separately, based on the maximum file size, an error of approximately 100kb may occur because of characteristics of the H.264 codec.

### 2.2.3 Editing default settings

You can edit default settings in XP-Builder.

#### 2.2.3.1 Changing default editing options

Change the editing options. Click [Tool] ► [Option] ► [Edit Option].

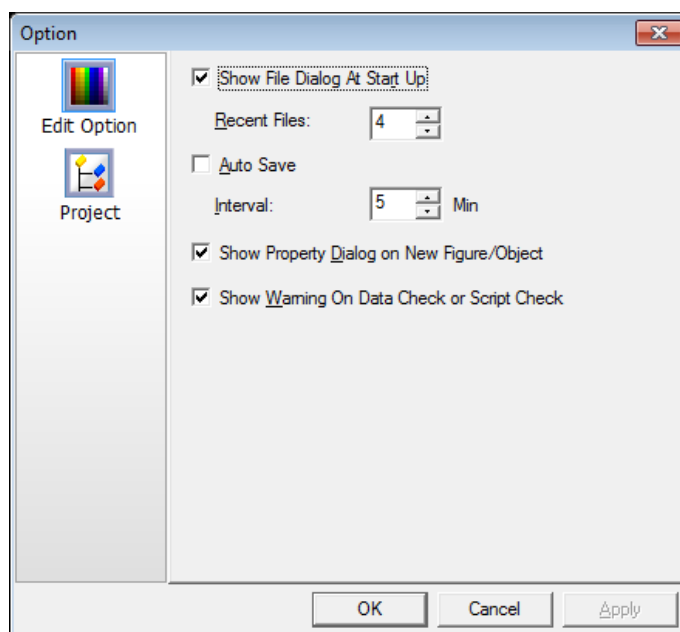


Item	Description
Object ID/Address Text Color	Set the default color for device and object IDs. The setting is applied immediately.
Background AlphaBlend Use	Set a semi-transparent background for device or object IDs. The setting is applied immediately.
Object ID/Address Font Size	Set the default font size for device and object IDs. The setting is applied immediately.
Default Text Color of Figure/Object(D)	Set the default font color for character strings in figures or objects. The setting is applied when you create new figures or objects.
Default Line Color of Figure/Object	Set the default line color for character strings in figures or objects. The setting is applied when you create new figures or objects.
Use Background Color from New Screen	Set a background color to use for new windows. The setting is applied when you create a new window.

Item	Description
Default BG Color from New Screen	Select the default background color. The setting is applied when you create a new window.
Screen Limit Check on Object/Figure's Editing	Prevent figures and objects from extending beyond the boundaries of the editing area. The setting is applied immediately.

### 2.2.3.2 Changing default project options

To edit project management properties, click [Tool] ► [Option] ► [Project].



Item	Description
Show File Dialog at Start Up	Set whether or not to show the Select Project window when you launch XP-Builder.
Recent Files	Set the maximum number of recent files to show.
Auto Save	Set whether or not to save project files automatically.
Interval	Set how often XP-Builder will automatically save project files.
Show Property Dialog on New Figure/Object	Set to show the properties window when you create a new figure or object.
Show Warning On Data Check or Script Check	Set whether or not to show a warning message and list of errors in the following instances. If you do not use this



Item	Description
	<p>option, only the warning message will appear.</p> <ul style="list-style-type: none"> <li>• When you run a data check ([Tool] ► [Data Check]).</li> <li>• When you download a project file to an XGT Panel.</li> <li>• When you run a script check ([Tool] ► [Script Check]).</li> </ul>

### 2.3 Developing an Interface

You can use different types of windows when creating a project and draw or insert figures, objects, and graphics on windows. The following table describes available window types.

Type	Description
Base Screen	<ul style="list-style-type: none"> <li>• The main area for drawing and editing a project</li> <li>• The window size varies by panel model.</li> <li>• To insert pop-up windows or part windows, drag and drop them onto the base window.</li> </ul>
Window Screen	<ul style="list-style-type: none"> <li>• Windows that pop-up on the base window.</li> <li>• A project can support up to 65,534 windows, but windows 65,531-65,534 are reserved for system key information.</li> <li>• You can insert figures and objects, and up to 8 window objects.</li> <li>• To view the bit device status(On or Off), click [View] ► [Show/hide Object On/Off].</li> <li>• To view the word device status for the window number assigned to the conditional statement, change the value of the word status combo box on the toolbar.</li> <li>• A shift key does not appear on pop-up windows by default. To activate the shift key, click anywhere on the pop-up window.</li> </ul>
Key Window	<ul style="list-style-type: none"> <li>• Key windows are pre-defined pop-up windows that allow you to insert four types of keypads: decimal, ASCII, hexadecimal, and floating.</li> <li>• To control how users select a keypad, use the switch object function or import one of the provided object libraries, and then insert it into the window.</li> <li>• To change the key window settings, click [Common] ► [Project Property Setting] ► [Key Window Settings].</li> </ul>

Type	Description
Part Screen	<ul style="list-style-type: none"> <li>You can use part settings to control how figures (such as lines, circles, and images) behave on a base window.</li> <li>Drag and drop the part window from the Project pane to the editing area.</li> <li>The part window is used as a part of the part object, the bit part, and the word part.</li> <li>You can create up to 65534 part windows.</li> <li>You cannot register an object to a part window.</li> </ul>

Global window settings allow you to define up to two windows that can be activated across the entire interface, based on device values. To set the addresses for the global windows, click [Common] ► [Project Property Setting] ► [Screen Settings].

#### Note

A project can support a total of 65,534 windows and parts. However, windows 65531-65534 are reserved for decimal, HEX, ASCII, and real keypads, respectively. You can adjust the size of a base window, but not the sizes of other window types.

### 2.3.1 Adding Windows or Parts

You can insert three types of windows from the Project pane. You can also drag-and-drop the pop-up and part windows onto the base window. The following table describes how to add windows:

Type	Description
Base Screen	Right-click [Base Screen] and then click [Insert].
Window	Right-click [Window], click [Insert], and then drag-and-drop the window onto the Base window.
Part	Right-click [Part], click [Insert], and then drag-and-drop the window onto the Base window.

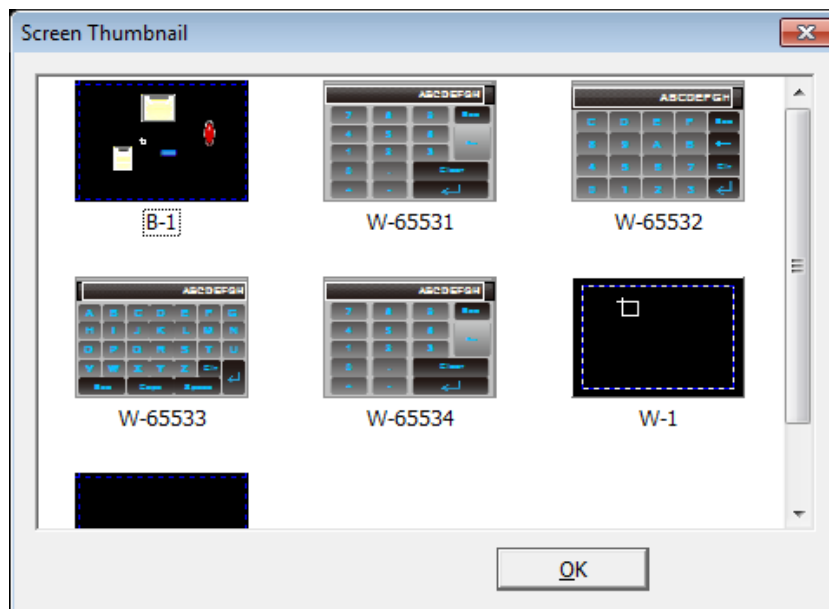
### 2.3.2 Configuring Windows

XP-Builder allows you to customize window properties, such as which window appears when the interface is started from the control panel.

#### 2.3.2.1 Opening or Closing a Window

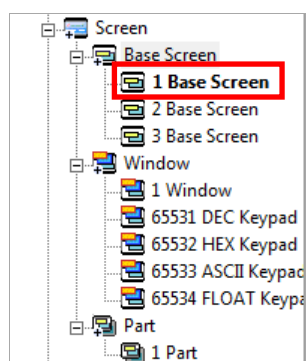
To open a window, double-click the window name in the Project pane. To close a window, right-click the window name and select [Close].

To view thumbnails of all the project windows, select [View] ► [Screen Thumbnails].



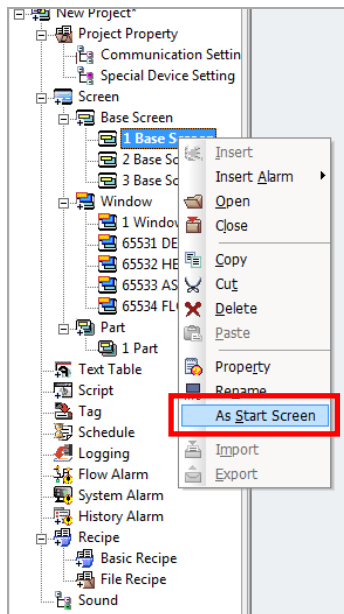
#### 2.3.2.2 Setting a Window as the Start Window

The start window is the window that appears when the interface is run on the XGT Panel. The start window must be a base window and it will appear in boldface in the Project pane.



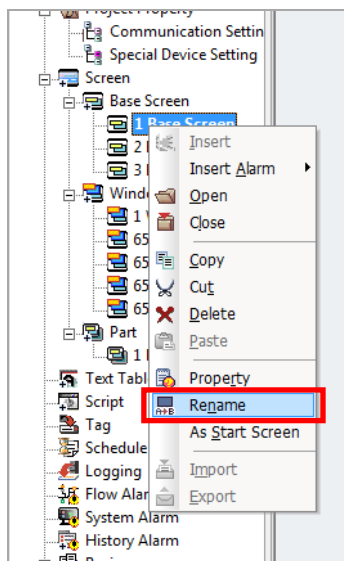
To set the start window:

1. In the Project pane, right-click one of the base windows.
2. Click [As Start Screen].



### 2.3.2.3 Renaming a Window

1. In the Project pane, right-click a window.
2. Click [Rename].



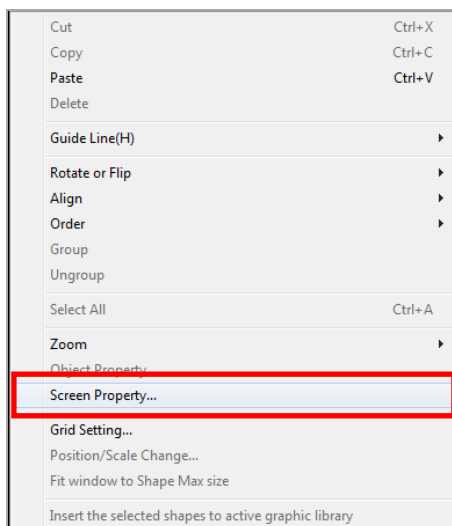
3. Enter a new name and press the Enter key.

### Notes

- Window names are composed of numbers, spaces, and text characters. You must separate the window number and name with a space or the window name will not be recognized (for example, if you enter "1 Base Window," the name will not be recognized).
- Keypad windows have fixed numbers: DEC (65531), HEX (65532), ASCII (65533), and FLOAT (65534).

#### 2.3.2.4 Changing Screen Properties

1. Right-click anywhere on a base window.
2. Click [Screen Property].



3. Set the following properties:

The screenshot shows the 'Screen property' dialog box. On the left, under 'Category', 'General' is selected. The main area contains the following fields and values:

- Screen Type: Base Screen
- Screen No.: 3
- Screen Name: Base Screen
- Window Title: (empty)
- Font: Agency FB
- Memory Size: 20 Byte
- Screen Width: 800
- Screen Height: 600

Buttons at the bottom: OK, Cancel, Apply.

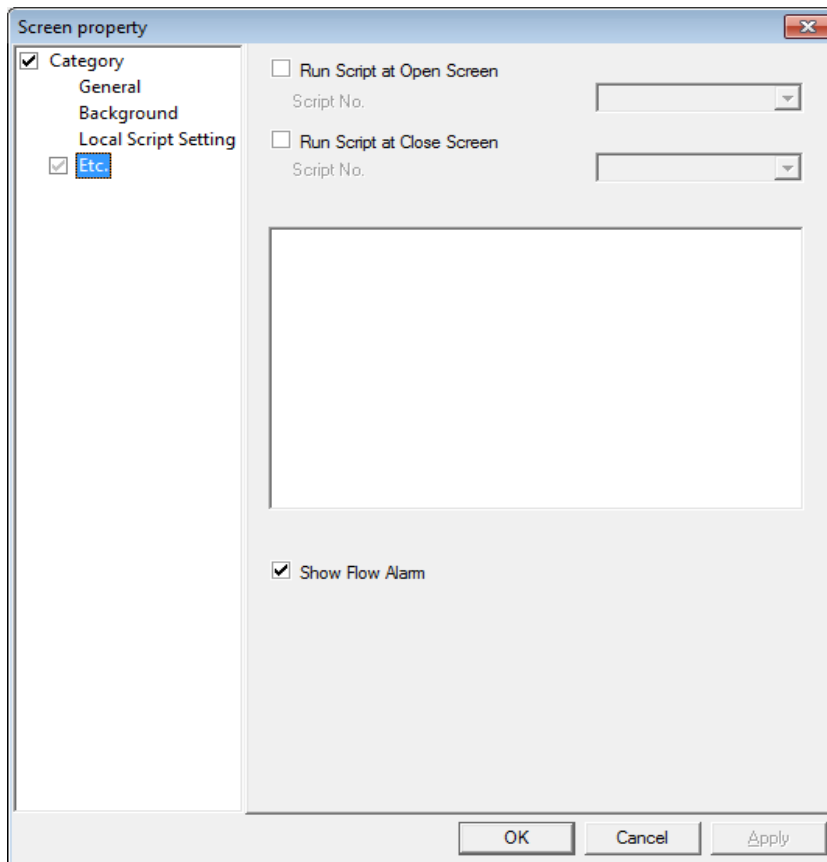
Category	Description
General	<ul style="list-style-type: none"> <li>Set basic information, such as type, number, name, or window size. If you specify window names from a text table, the text will be applied, but additional font properties will not. The name will appear in a fixed format: white, 15-point font.</li> <li>To change properties for multiple windows at the same time, hold the Ctrl key and click the window names. Then, right-click any of the selected window names and click [Properties]. The values you specify will be applied to all the selected screens at the same time.</li> </ul>
Background	<ul style="list-style-type: none"> <li>Set the background pattern, color, or image. To select a background image from your computer, click the check box next to <b>Use BG Image</b>, click [Library], and locate the image file. For more information, refer to &lt;2.3.6.3 Setting an Image as a Background&gt;.</li> <li>You can set a background with a color and image at the same time, but the image setting takes priority over the color setting.</li> <li>Supported background image formats include BMP, JPG, GIF, TGA, PNG, TIF, WMF, ICO, and PCX, except for the XP30-BTE,</li> </ul>

Category	Description
	which supports only BMP, GIF, and JPG.
Local Script Setting	<ul style="list-style-type: none"><li>• Set scripts to execute when the base window appears or switches. The script is executed only once, when the window changes.</li><li>• Scripts must be created before they can be applied to windows. For more information about scripts, refer to &lt;4.2 Scripts&gt;.</li><li>• To apply a script, select a script name and execution condition ► [Insert].</li><li>• You can specify an execution condition for a script (Consecutive, Periodic, On Bit Rising, On Bit Falling, or On Bit Changed) or specify a device to control execution of the script.</li></ul>
Etc.	Click the checkbox next to <b>Run Script at Open Screen</b> or <b>Run Script at Close Screen</b> and select a script for each case.

### Note

Although an execution condition is fulfilled while processing a script, there might be a slight delay, because the conditions are rechecked after the script is completed.

4. When you are finished configuring properties, click [OK] to save your changes.



### 2.3.3 Editing Windows

You can edit the windows with typical functions, such as cut, copy, and paste. To edit windows:

1. In the Project pane, right-click a window name.
2. Click an option, such as [Copy], [Paste], [Cut], or [Delete].
3. Click [OK] (If necessary).

#### Note

When you paste a window into the project, you can set the number for the window.



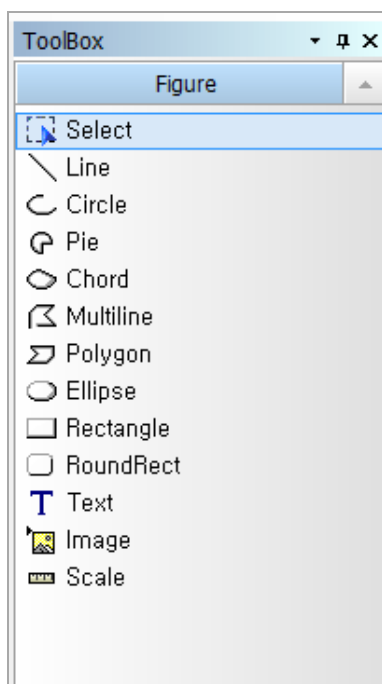
### 2.3.4 Inserting Figures or Objects

You can add figures, objects, or text to windows. You can also set properties, such as a width, height, color, or pattern and insert images from the graphic library.

#### 2.3.4.1 Drawing Figures

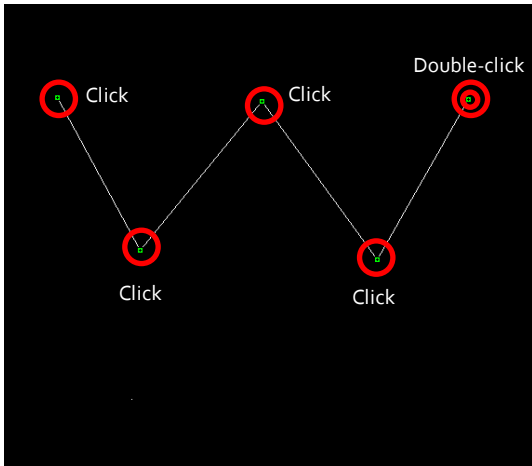
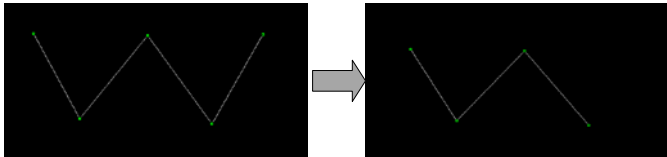
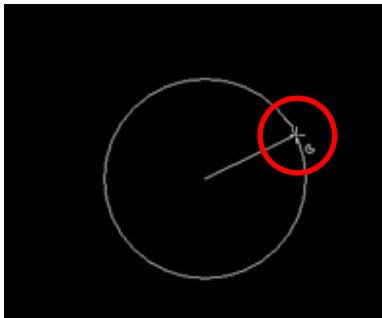
You can draw figures, such as lines, circles, and rectangles. To draw a figure:

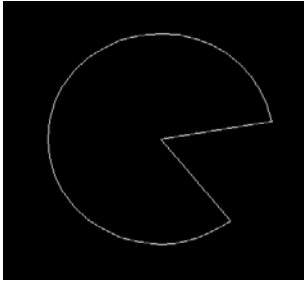
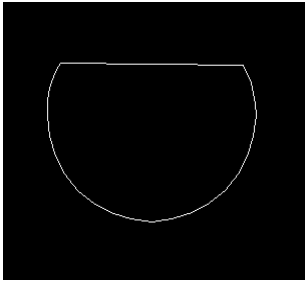
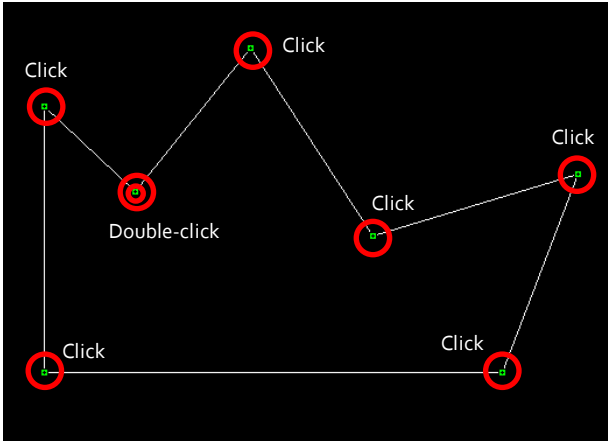
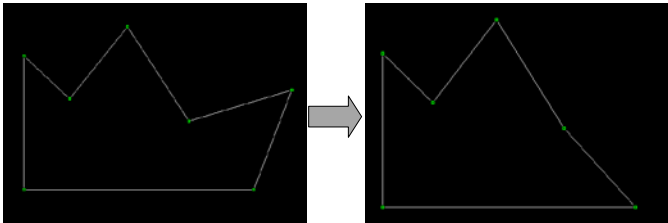
1. In the Toolbox pane, click [Figure].



2. Click a figure type.

3. Click the editing area and specify options for the figure:

Type	Description
Line Polyline	<ul style="list-style-type: none"> <li>To draw multiple lines, click multiple points and then double-click to insert the figure.</li> </ul>  <ul style="list-style-type: none"> <li>To delete part of a polyline, press and hold the Ctrl key while clicking a point.</li> </ul>  <ul style="list-style-type: none"> <li>To draw a line, drag the line on the editing area. If you want draw a straight line, press and hold the Shift key while dragging.</li> </ul>
Circle Pie Chord Ellipse Rectangle RoundRect	<ul style="list-style-type: none"> <li>To draw a perfect circle or square, press and hold the Shift key while dragging.</li> <li>When drawing circles, pies, or chords, draw a circle first, then click the circle to mark the starting point.</li> </ul>  <p>Draw the circle again until you complete the circle, pie, or chord.</p>

Type	Description
	<div>   </div> <div> <p>&lt;Pie&gt;                      &lt;Chord&gt;</p> <ul style="list-style-type: none"> <li>To draw an ellipse, rectangle, or roundrect, click and draw the figure.</li> </ul> </div>
Polygon	<ul style="list-style-type: none"> <li>To draw a polygon, click multiple points and then double-click to insert the figure.</li> </ul> <div>  </div> <ul style="list-style-type: none"> <li>To delete part of the polyline, press and hold the Ctrl key while clicking a point.</li> </ul> <div>  </div>
Image	<ul style="list-style-type: none"> <li>To import your own images from the computer, refer to <a href="#">&lt;2.3.6.4 Managing Image Libraries&gt;</a>.</li> <li>To change an image, double-click it.</li> </ul>
Scale	<ul style="list-style-type: none"> <li>You can select the location and direction (horizontal or vertical) of scales.</li> <li>Set the scale properties, including the number of tick marks, small or large ticks, and tick intervals.</li> </ul>

Type	Description
	<ul style="list-style-type: none"> <li>Set the appearance of the scale with the color options.</li> <li>You can create a table with the scale.</li> </ul>
Text	<ul style="list-style-type: none"> <li>Draw a text box on the screen, and then enter text in the text input box.</li> <li>To insert text from a text table, click the check box next to <b>From Text Table</b>, and then select [TextTable].</li> </ul>

4. When you are finished specifying figure properties, click [OK].

#### Notes

- The default size for figures varies by figure type.
- To draw a figure from the center point, click the figure, and then click [Edit] ► [First Point As Center] on the toolbar.
- You can apply 28 types of textures for figures, except for line, polyline, image, scale and text figures. The texture option is not supported by XP30-BTA panels.
- The textures displayed by an XGT panel may differ slightly from their appearances in XP Builder.

### 2.3.4.2 Drawing Objects

You can draw objects, such as switches, windows, parts, and graphs. These objects are the most important components for operating a control system based on device values or condition. For more information about objects, refer to <4.3 Objects >.

To draw an object:

1. In the Toolbox pane, click [Object].
2. Click an object type.
3. Click or drag in the editing area and specify options for the figure:

Type	Drawing Options
Bit/Word Switch Change Screen Switch Special Switch Multi Switch Bit/Word Lamp N-State Lamp Clock Bit Message Word Message Numeric Display Numeric Input Text Display Text Input Animation	Draw the object on the editing window or click the editing window to insert the object in its default size.
Bit Window Word Window	<ul style="list-style-type: none"><li>• To draw the object, click a point in the editing area.</li><li>• The sizes of these objects are fixed.</li></ul>
Bit Part Word Part	<ul style="list-style-type: none"><li>• Choose a movement type, such as [Fixed], [XY], [Line], or [Route].</li><li>• Draw a line or route method, similar to a line or polygon figure, respectively.</li><li>• The sizes of these objects are fixed, but the line and route types are customizable.</li></ul>

Type	Drawing Options
Bar Graph Pie Graph Meter Graph Trend Graph Logging Trend Graph Scatter Graph	Draw the object on the editing window or click the editing window to insert the object in its default size.
Closed Graph	<ul style="list-style-type: none"> <li>Choose a graph type: Ellipse or Polygon.</li> <li>Draw the closed graph, based on the ellipse or polygon type you selected. When drawing a polygon type closed graph, click multiple points to draw the polygon then double-click the drawing to complete it.</li> </ul>
History Alarm Viewer Datalist Logging Viewer Alarm Navigator MemoPad Datalist Editor File Recipe Editor Movie Player	<ul style="list-style-type: none"> <li>Draw the object on the editing window or click the editing window to insert the object in its default size.</li> <li>The size of the history alarm graph, datalist, and logging viewer are fixed.</li> </ul>

4. When you are finished editing properties, click [OK]. To change properties of an object, double-click it.

#### Note

The following table describes limits when creating objects.

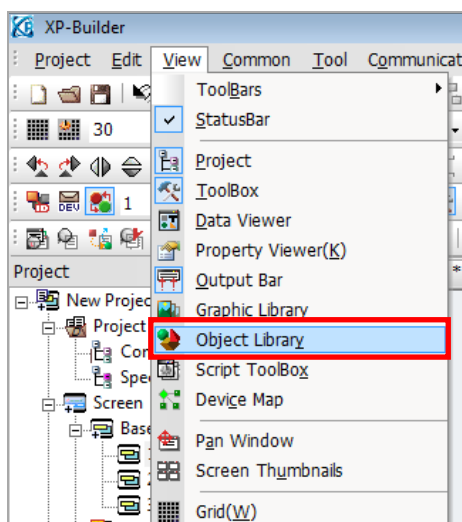
Type	Limit
History Alarm Viewer	1: you can insert only one object per screen.
Logging Viewer	
Alarm Navigator	
Bit Window	8: there is no limit for overlapped windows.

Word Window	
MemoPad	1: you can insert only one object per screen.
Recipe Navigator	<ul style="list-style-type: none"><li>• 1 for basic file recipes</li><li>• You can choose the recipe type in the properties window.</li><li>• If you exceed the limit, an error will occur when transferring the project to a panel.</li></ul>
Datalist Editor	1: you can insert only one object per screen.
File Recipe Editor	
Figure and other objects	Unlimited

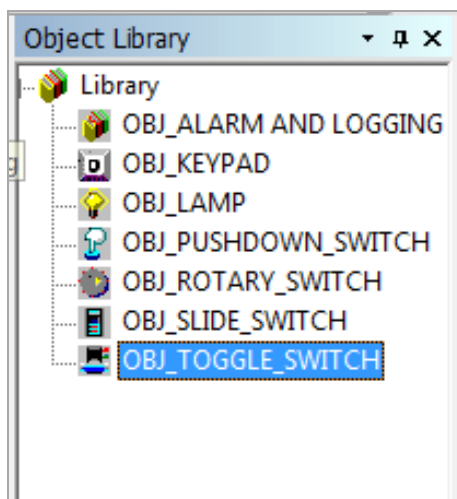
### 2.3.4.3 Inserting Objects from the Object Library

You can insert figures or objects from the Object Library. For more information about libraries, refer to <2.3.4.4 Managing Object Libraries>.

1. Click [View] ► [Object Library].



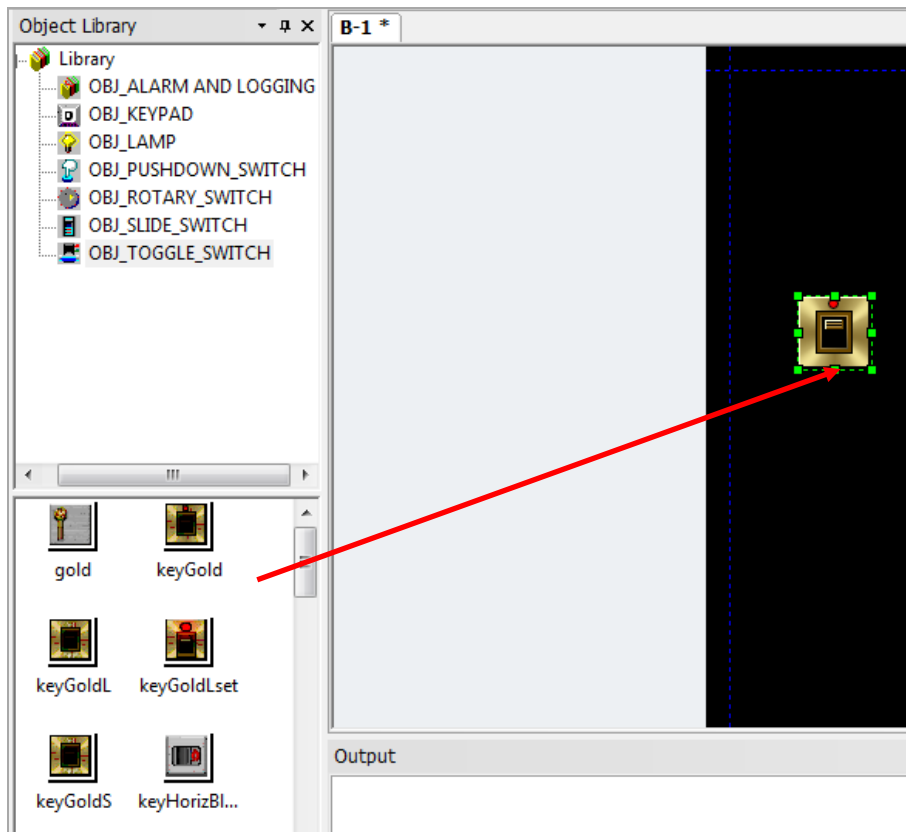
2. In the Object Library pane, click an object category.





## 2. Project Development

3. In the Object List, drag and drop an object onto the editing area.



4. Double-click the image and change the properties, if necessary.
5. When you are finished changing properties, click [OK].

### Note

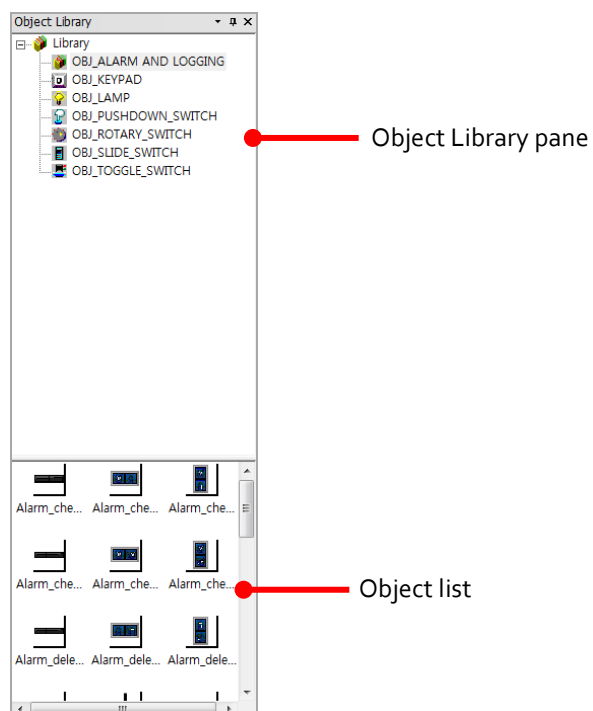
When you drag an object to the editing area, the object is created in the default size. The default sizes of objects vary.

### 2.3.4.4 Managing Object Libraries

Learn how to manage object libraries. Both the system and user object libraries can be managed, but only the user object library can be edited. For more information about inserting or editing objects, refer to <2.3.4.3 *Inserting Objects from the Object Library*> and <2.3.5 *Editing Objects*>.

Type	Description
System Object Library	Includes seven categories of objects, such as lamps and switches and cannot be edited
User Object Library	You can register or delete objects. The objects are saved in the current project and not in the XP-Builder program. You can import a User Object Library from another project or export it from the current project to use in other projects.

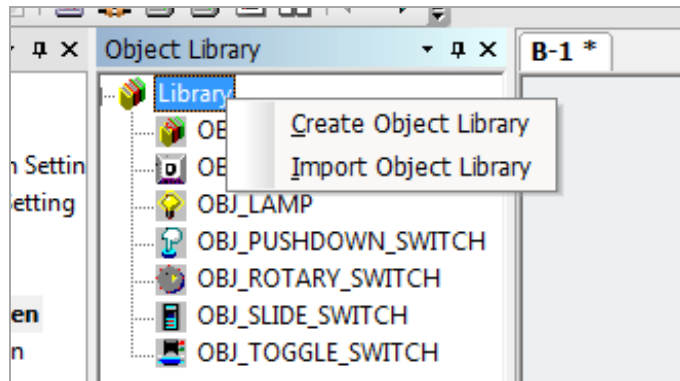
To open the Object Library pane, click [View] ► [Object Library]. The Object Library pane and the Object List will appear, as shown in the following image:



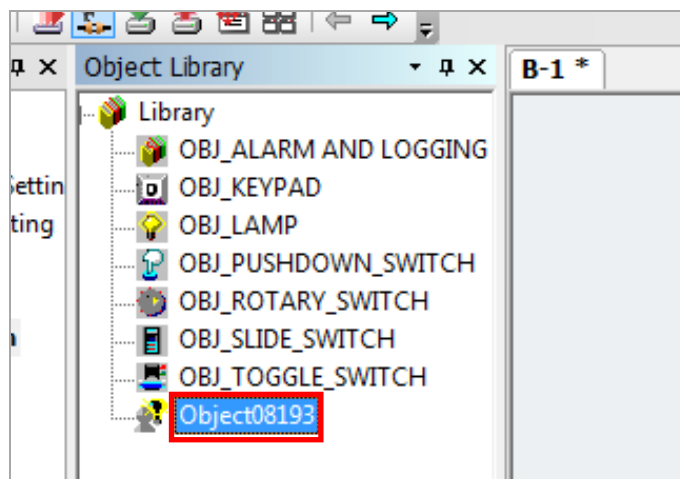
## 2. Project Development

To create an object library:

1. In the Object Library pane, right-click [Library].

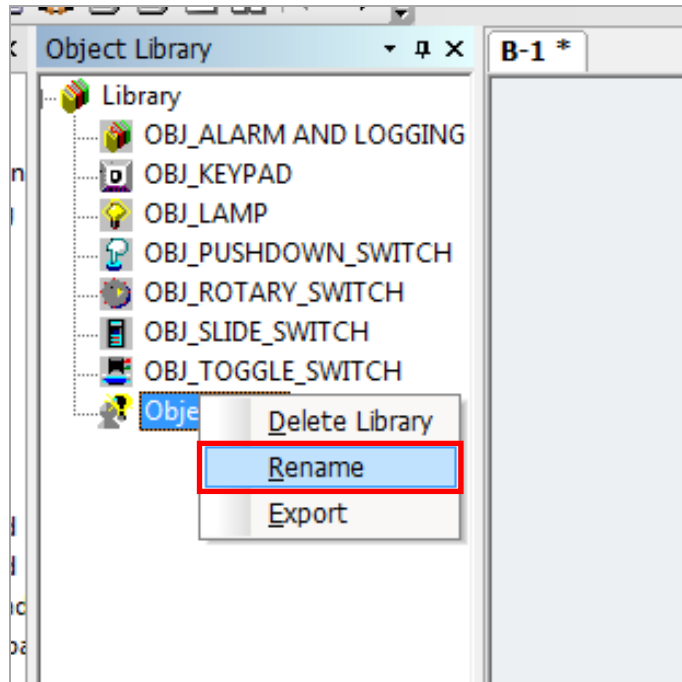


2. Click [Create Object Library]. A new object category will be created.



3. To change the name of the library:

4. Right-click the library name and click [Rename].



5. Enter the new name and press the Enter key to confirm.

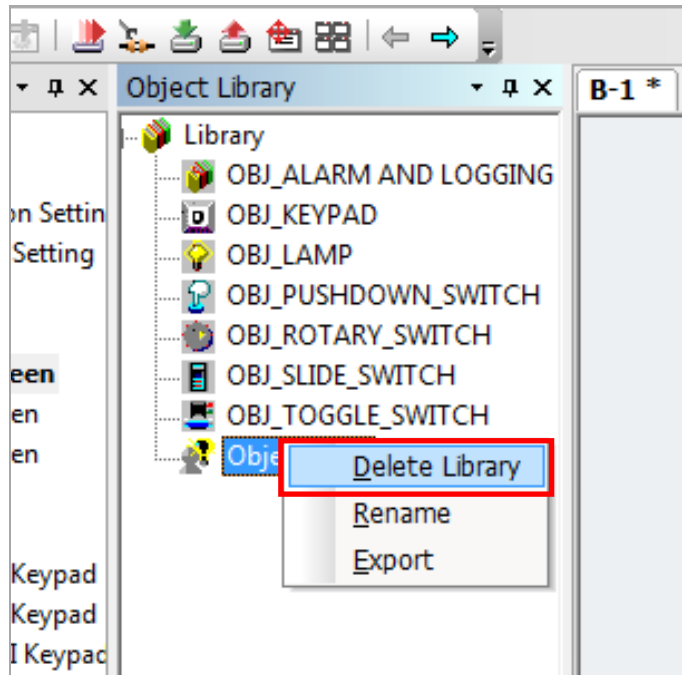
### Notes

- When you add an object library, the name is set to Object08193 by default. Additional libraries are numbered in ascending order from, 8194 to 65535.
- User Object Libraries are sorted in ascending order by name.

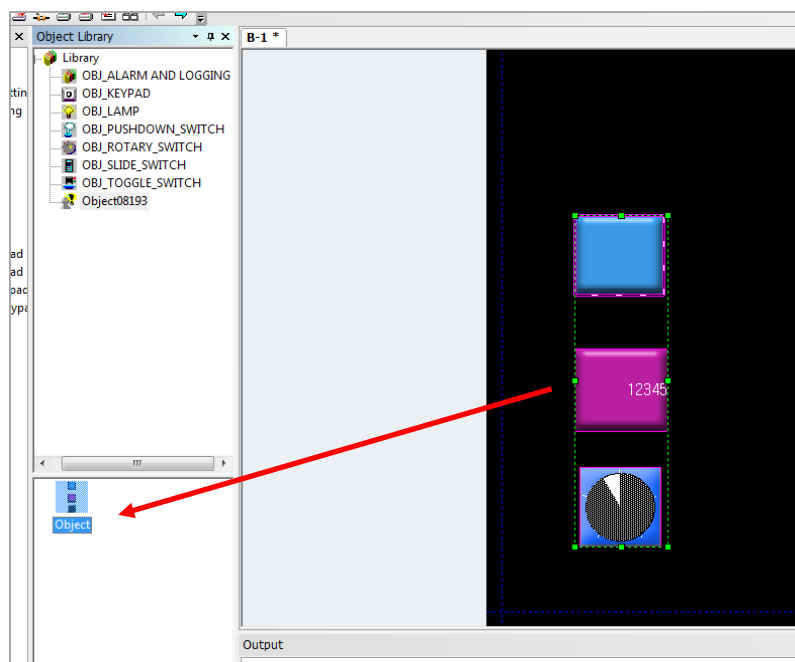
## 2. Project Development

To delete a library:

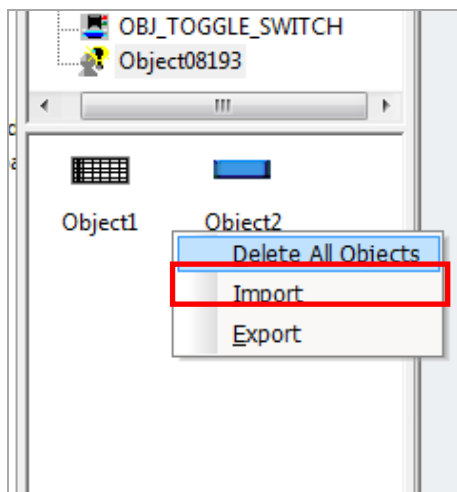
1. In the Object Library pane, right-click the library name.
2. Click [Delete Library].



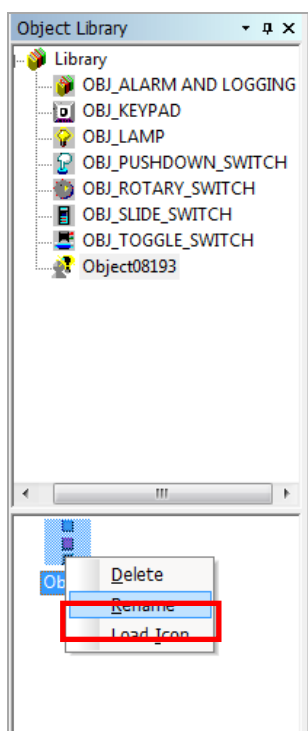
To add objects to a User Object Library, click the library name to select it, and then drag objects from the editing area to the Object List. You can select multiple objects and figures to drag them at once.



To delete objects, in the Object List, right-click the object and then click [Delete]. To delete all objects, right-click an empty area in the Object List and then click [Delete All Objects].



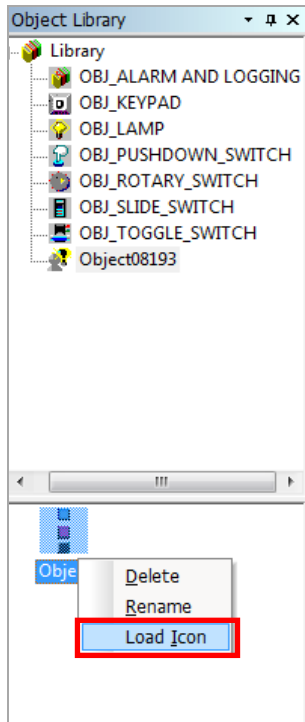
To change the name of an object, in the Object List, right-click the object and then click [Rename].



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To change the preview image of the object:

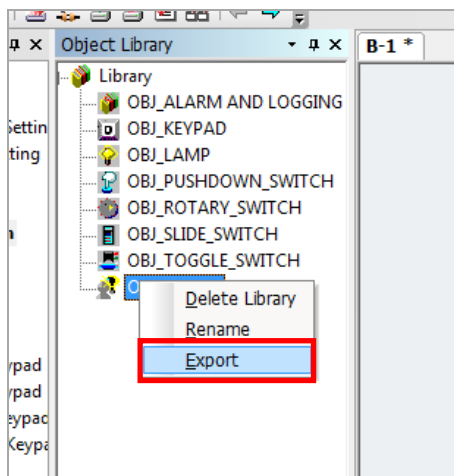
1. In the Object List, right-click an objects.
2. Click [Load Icon].



3. Select an icon and click [Open].

To export the user object library:

1. In the Object Library pane, right-click a library to export.
2. Click [Export].



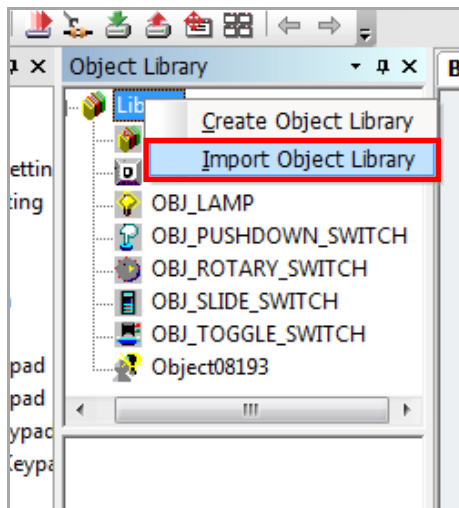
3. Enter a name for the file and set the file destination.
4. Click [Save].

### Note

The exported library is saved with the file extension “.xpo.”

You can either import a library into the project as a new library or you can import objects into an existing user object library. To import a new library:

1. In the Object Library pane, right-click [Library].
2. Click [Import Object Library].



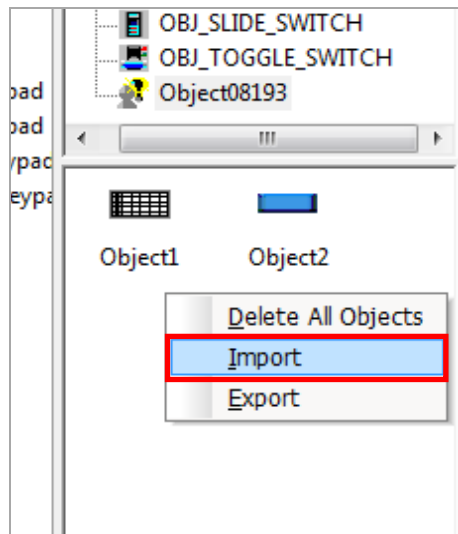
3. Select a file with an “.xpo” extension and click [Open]. The new library will be added to the Object Library List.

To import objects into an existing library:

1. In the Object Library pane, click a user object library name to select it.
2. In the Object List, right-click an empty space.



3. Click [Import].



4. Select a file with an ".xpo" extension and click [Open]. The objects in the library file you selected will be added to the existing library.

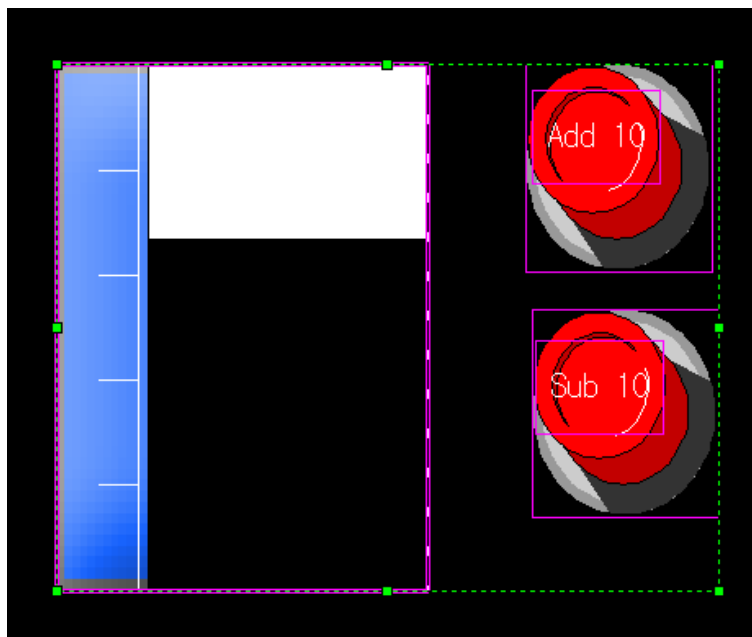
### 2.3.5 Editing Objects

Learn how to edit objects that you have inserted into a project.

#### 2.3.5.1 Copying Multiple Objects

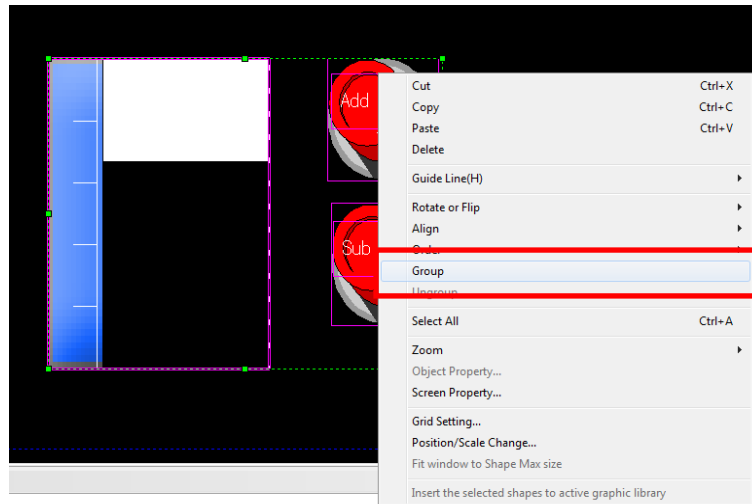
You can use the multi-copy function to insert multiple objects with the same properties.

1. Hold the Ctrl key and click multiple objects to copy.



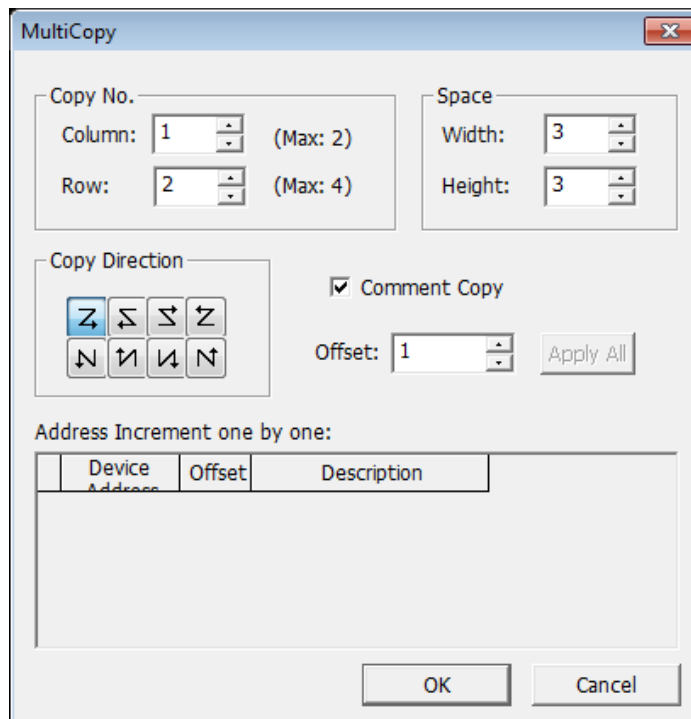
### Notes

- You can copy different objects at the same time.
- You can copy multiple objects more easily by grouping them first:
  - Select multiple objects.
  - Right-click an object and click [Group].



- To select all of the objects on a window at once, click [Edit] ► [Select All].

- Click [Edit] ► [MultiCopy].
- Specify the following properties as desired:



Type	Description
Copy No.	Set how many objects to paste by specifying the number of rows and columns for the new objects. The number of rows and columns cannot exceed the maximum number displayed in the window.
Space	Set the vertical and horizontal space between each object.
Copy Direction	Set the direction for pasting the new objects.
Comment Copy	Set to copy the description for an object.
Offset	Set an offset to specify the new device addresses automatically.
Apply All	Set to apply the offset number to every new object.
Address Increment one by one	Apply a different offset to each device. If you want to paste objects with different addresses, set the offset number manually.

4. Click [OK].

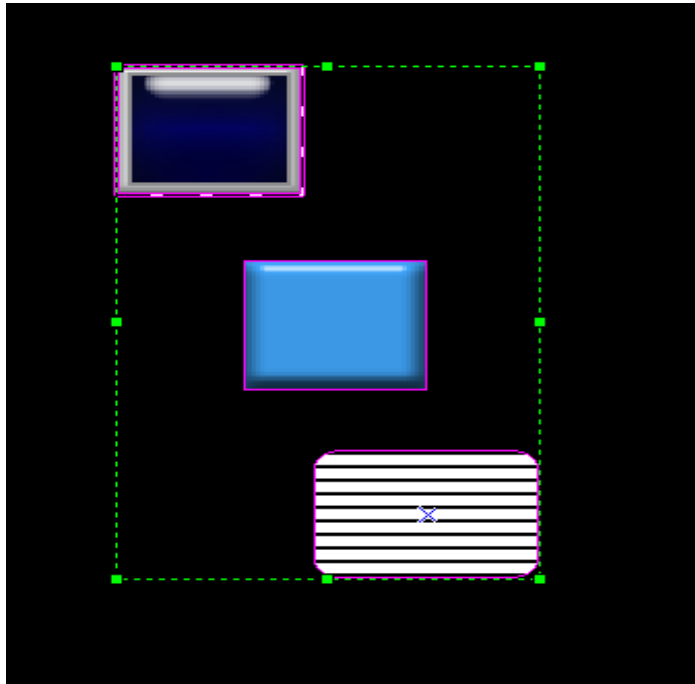
### Notes

- If the number of input columns or rows exceeds the maximum number, the objects cannot be copied.
- You cannot copy tags with the multi-copy function.

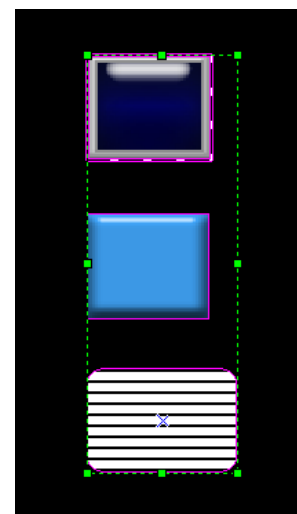
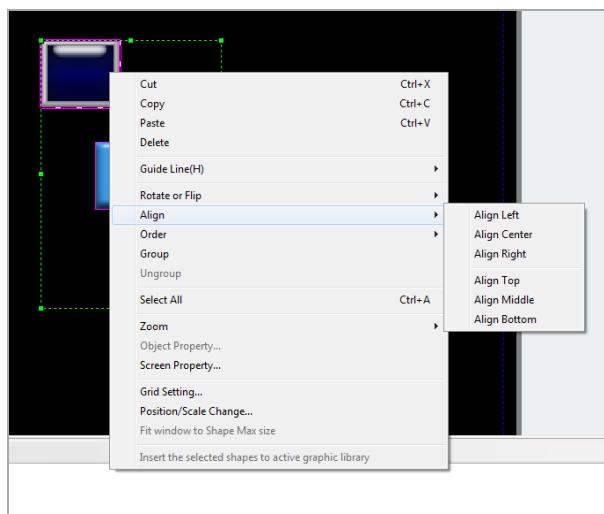
### 2.3.5.2 Arranging Objects

You can arrange objects or change the drawing order in the editing area. The last object created is shown at the top level. To arrange objects:

1. Hold the Ctrl key and click the objects to arrange.



2. Right-click a selected object.
3. Click [Align] ► an alignment option.

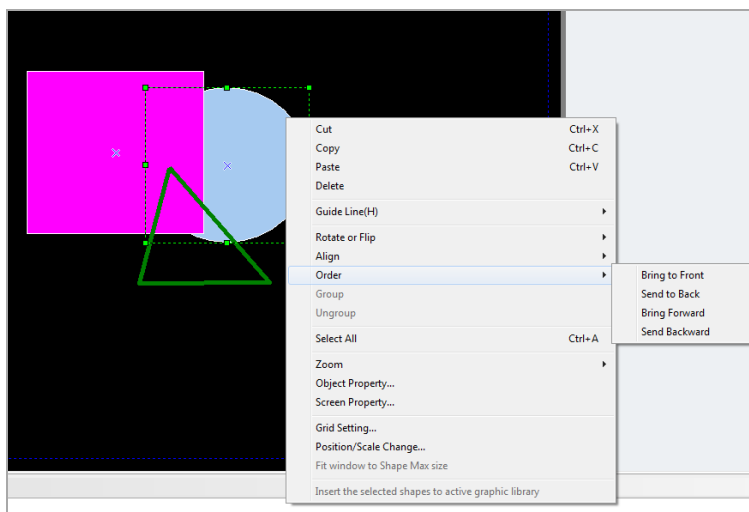


### Note

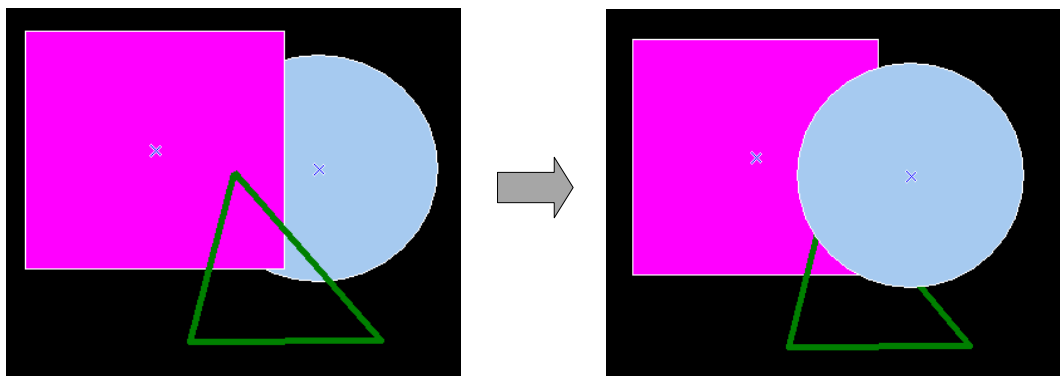
You can also arrange all objects to the center of the editing area. Select the objects to arrange, and then click [Edit] ► [Center in Page] ► [Horizontal] or [Vertical].

To change the drawing order:

1. Right-click an object.
2. Click [Order] ► an ordering option.



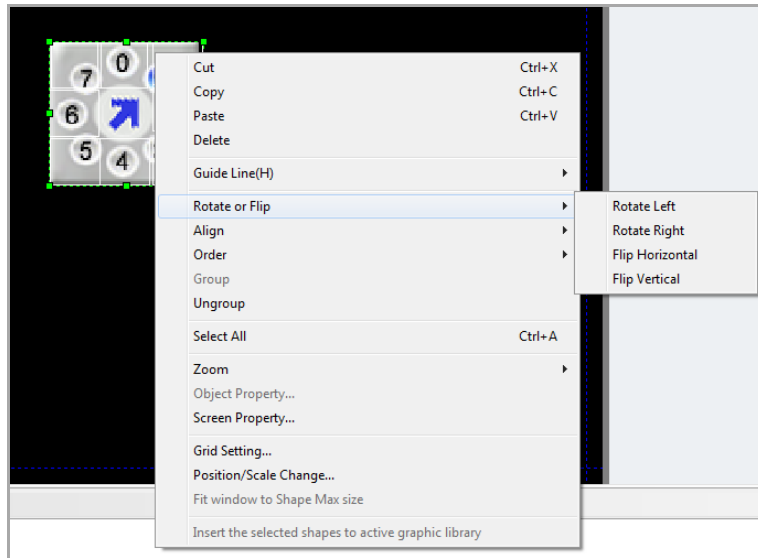
The object ordering is changed.



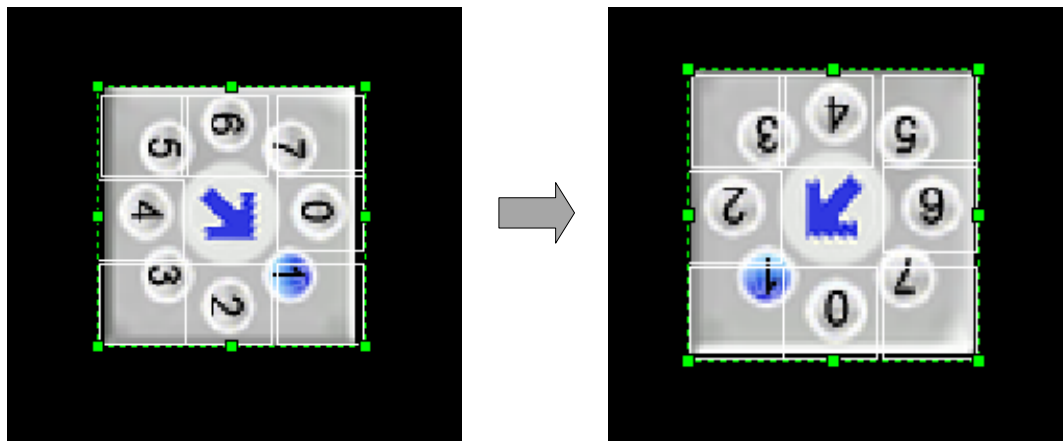
### 2.3.5.3 Rotating Objects

You can rotate or flip objects in a desired direction. To rotate objects:

1. Right-click an object.
2. Click [Rotate or Flip] ► a rotation or flip option.



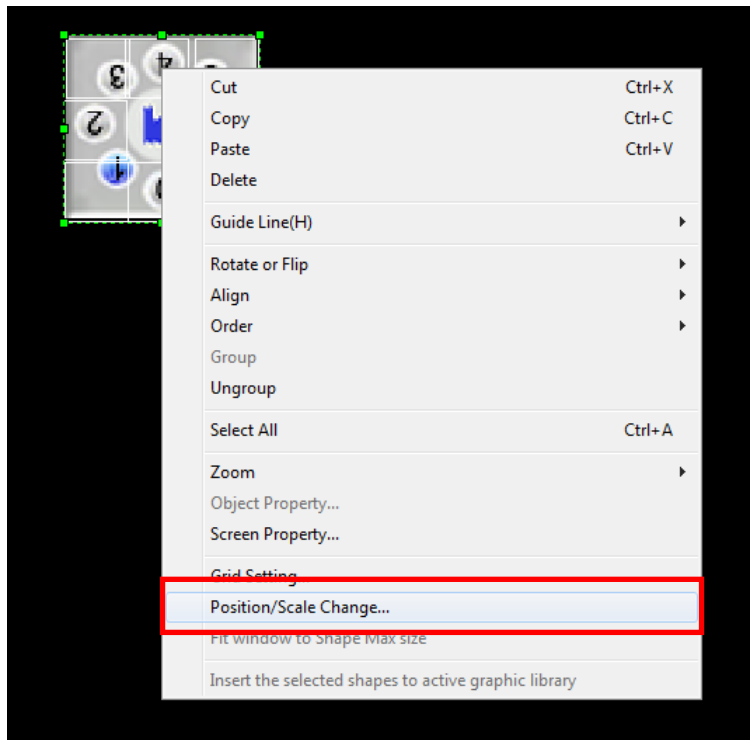
The object is rotated or flipped.



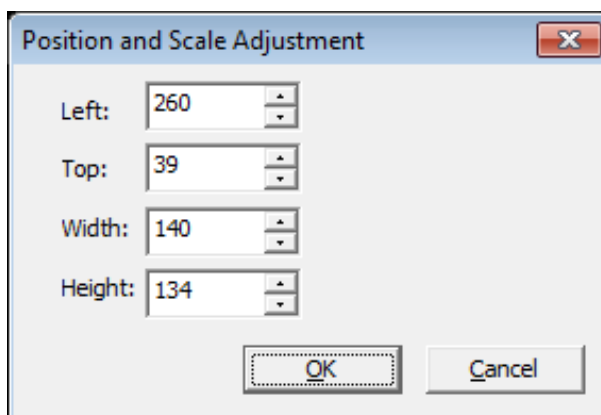
### 2.3.5.4 Resizing or Relocating Objects

You can resize or relocate objects. To resize or move objects:

1. Right-click an object.
2. Click [Position/Scale Change].



3. Set values for a new location or size. You can move the object to a precise position or specify a precise size.



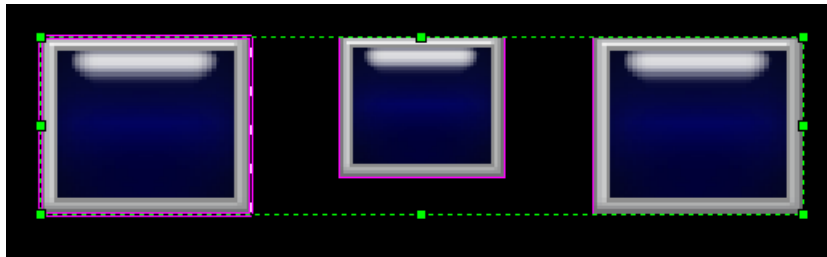
### Note

To move the objects incrementally on a grid, click an object, and then click [Edit] ► [Nudge] ► an option. If you hold the P key while nudging, the figure or object will move in seven-pixel increments.

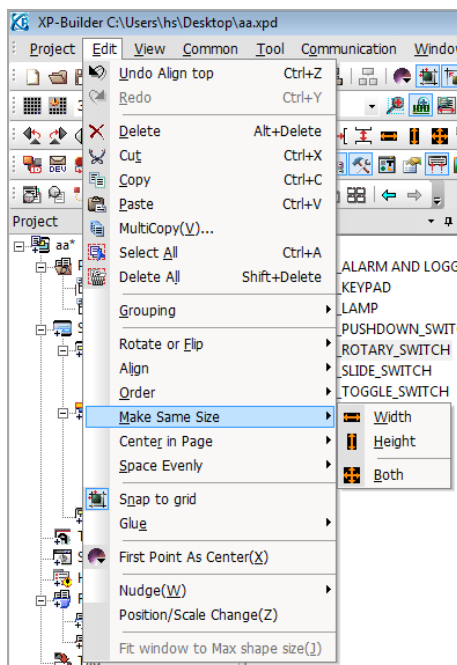
4. Click [OK].

To resize multiple objects:

1. Select the objects to resize.



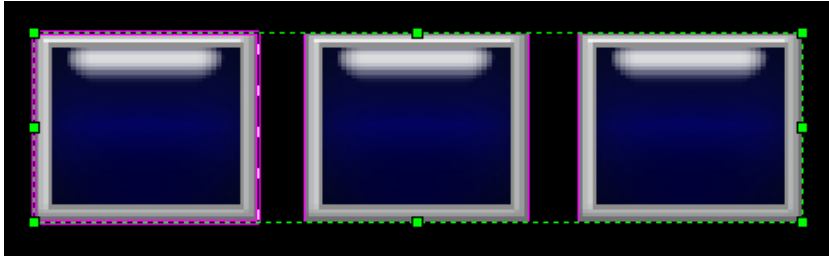
2. Click [Edit] ► [Make Same Size] ► [Width], [Height], or [Both].]





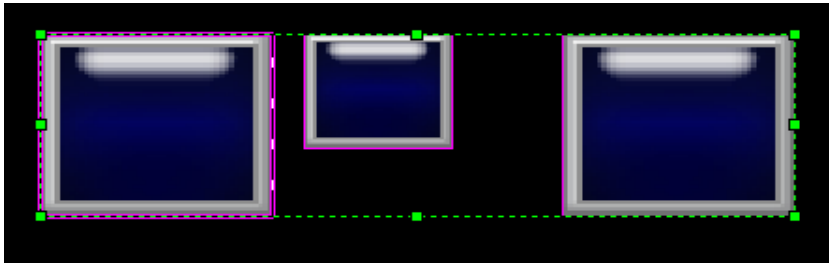
## 2. Project Development

The objects are all resized the same.

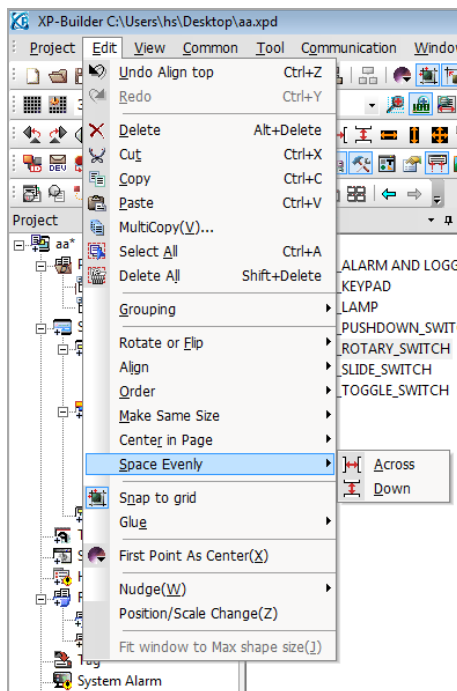


To space objects evenly:

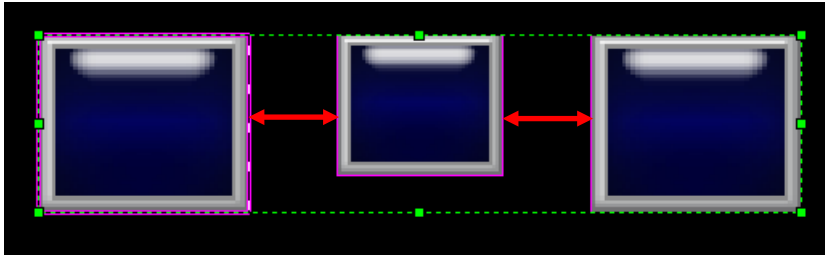
1. Select multiple objects.



2. Click [Edit] ► [Space Evenly] ► [Across] or [Down].

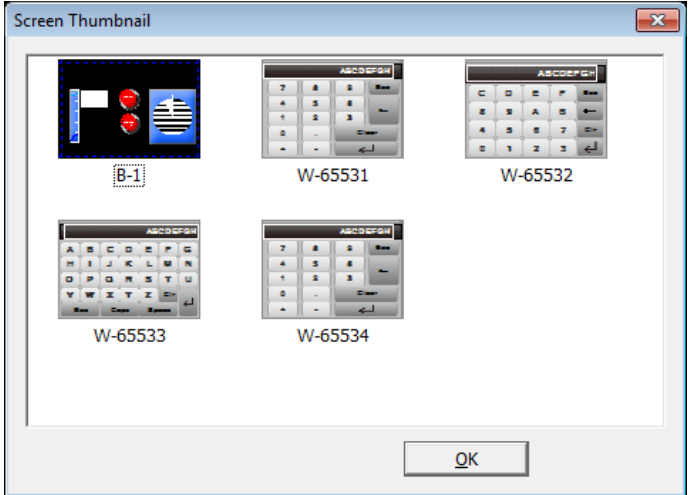


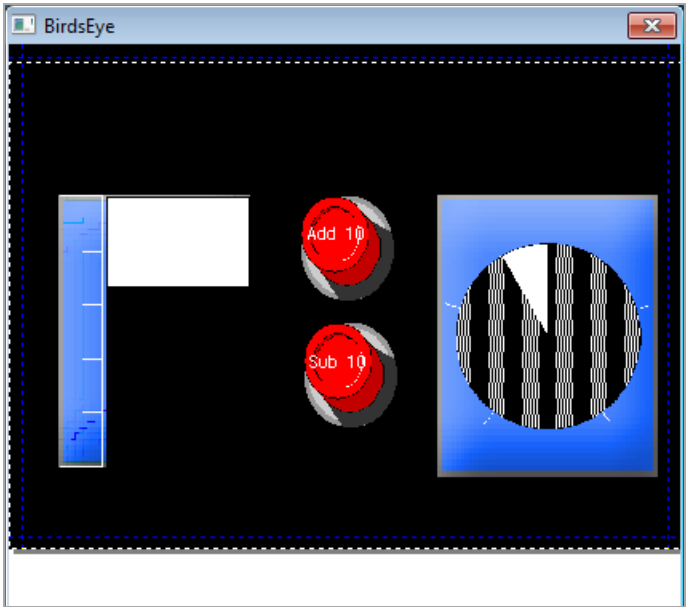

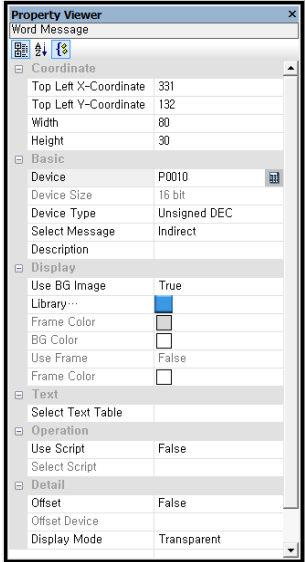
The objects are all spaced evenly.




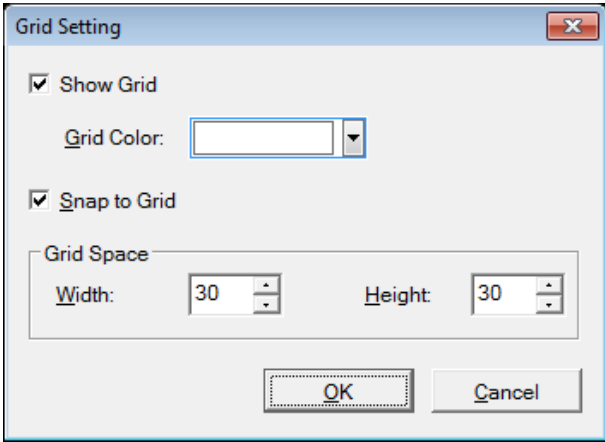
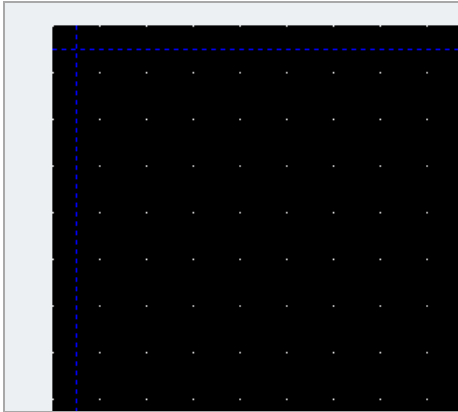
### 2.3.5.5 Setting Viewing Options

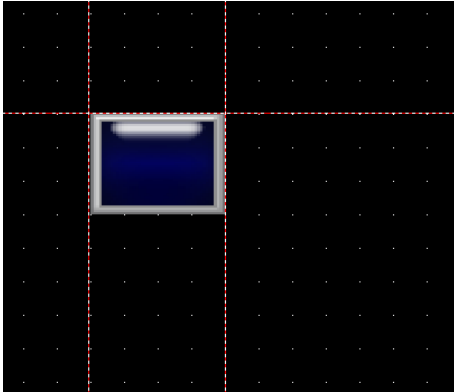
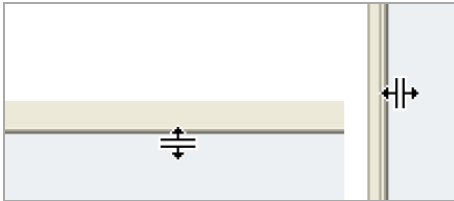

You can set viewing options, as described in the following table:


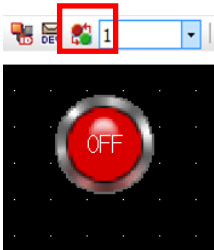
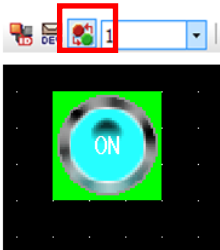
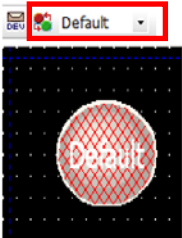



Type	Description
Thumbnail	<ul style="list-style-type: none"> <li>You can show all windows in a project on a single screen. Double-click a window to select it.</li> <li>Click [View] ► [Screen Thumbnails].</li> </ul> 
Pan Window	<ul style="list-style-type: none"> <li>You can view the current window in a birds-eye view and scroll through the windows.</li> <li>Click [View] ► [Pan Window].</li> </ul>

Type	Description
Zooming	 <ul style="list-style-type: none"> <li>You can zoom in or out on the current window.</li> <li>Click the magnifier icon on the toolbar. You can also enter a magnification percentage in the toolbar or select one of the presets in the dropdown list.</li> </ul> 
Property Viewer	<ul style="list-style-type: none"> <li>You can view and edit information about windows, figures, or objects on the current window without opening a dialog box.</li> <li>Click [View] ► [Property Viewer], then select an object or window.</li> </ul> 

You can also set options for the editing area, as described in the following table:

Type	Description
Grid Setting	<ul style="list-style-type: none"> <li>You can move and arrange objects conveniently with the grids in the editing area.</li> <li>To show or hide gridlines, click [View] ► [Grid].</li> </ul>  <ul style="list-style-type: none"> <li>You can set the color, width, and height of the dots on the grid. To change the settings, click [View] ► [Grid Setting].</li> </ul> 
Margin Line	<ul style="list-style-type: none"> <li>The margin line is the boundary of the editing area.</li> </ul>  <ul style="list-style-type: none"> <li>To show or hide the lines, click [View] ► [Margin Line].</li> </ul>
Guide Line	<ul style="list-style-type: none"> <li>The guide line is the base line for drawing or arranging objects.</li> </ul>

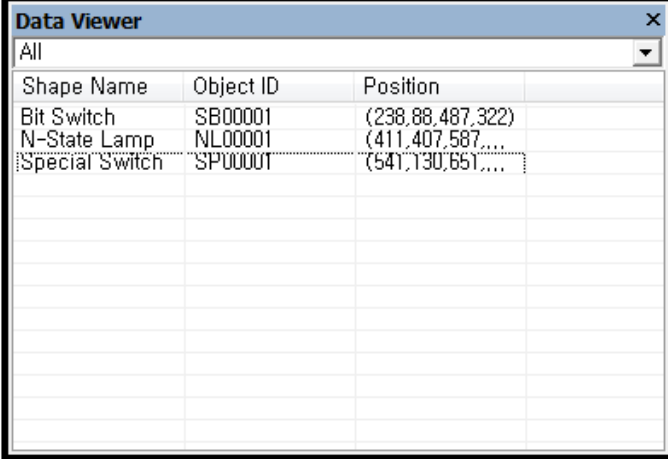
Type	Description
	 <ul style="list-style-type: none"> <li>• To show or hide the lines, click [View] ► [Guide Line].</li> <li>• To draw guide lines, place the mouse cursor on the border of the window frame, and then drag the line to the editing area.</li> </ul>  <ul style="list-style-type: none"> <li>• To lock or unlock the guide lines, right-click the line and then click [Guide Line] ► [Lock Guide Line].</li> <li>• To delete the guide line, right-click the line and then select [Guide Line] ► [Delete Guide Line].</li> </ul>
Object ID Viewer	<ul style="list-style-type: none"> <li>• All objects have an ID, which makes the objects unique.</li> </ul>  <ul style="list-style-type: none"> <li>• To show or hide the ID, select [View] ► [Show/hide Object ID].</li> <li>• You can determine the type of object by its object ID. For example, an ID that begins with "SD" refers to a Word Switch.</li> </ul>
Object Address Viewer	To view an object address, select [View] ► [Show/hide Object Address].

Type	Description
	
Object Status Viewer	<ul style="list-style-type: none"> <li>An object with a bit or word address can appear differently depending on its On/Off state or the preset condition. You can preview the states before transferring the data to an XGT Panel.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="text-align: center;">&lt;Bit device&gt;</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="text-align: center;">&lt;Word device&gt;</p> <ul style="list-style-type: none"> <li>To view the states, click [View] ► [Show/hide Object On/Off].</li> </ul>
IME Viewer	<ul style="list-style-type: none"> <li>You can input code with the IME keyboard. To show the IME keyboard, click [View] ► [IME].</li> </ul>  <ul style="list-style-type: none"> <li>The default font for Chinese text is SimSun.</li> </ul>
Data Viewer	<ul style="list-style-type: none"> <li>The Data Viewer shows an object's type, ID, and location information. To open the Data Viewer, click [View] ►</li> </ul>

### Type

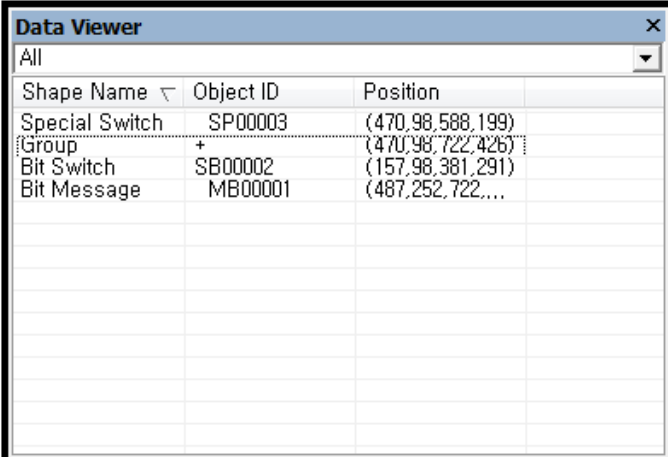
### Description

[Data Viewer].



Shape Name	Object ID	Position
Bit Switch	SB00001	(238,88,487,322)
N-State Lamp	NL00001	(411,407,587,...)
Special Switch	SP00001	(541,130,651,...)

- Grouped objects are shown as a "Group" and their sizes are shown as the maximum boundaries.



Shape Name	Object ID	Position
Special Switch	SP00003	(470,98,588,199)
Group	+	(470,98,722,426)
Bit Switch	SB00002	(157,98,381,291)
Bit Message	MB00001	(487,252,722,...)

- You can select, copy, cut, and paste items in the Data Viewer window.

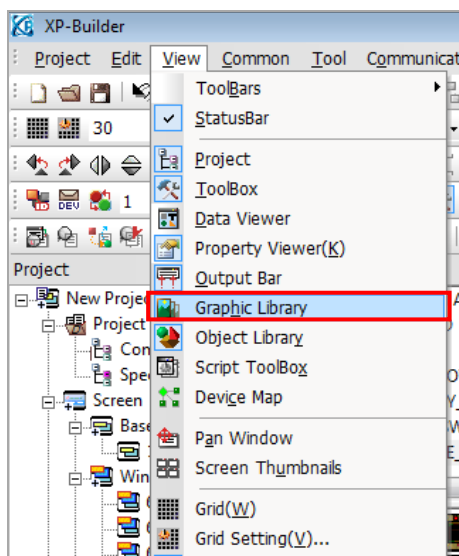
### 2.3.6 Applying Images

You can insert images from the Graphic Library. For more information about the Graphic Library, refer to <2.3.6.4 Managing Image Libraries>.

#### 2.3.6.1 Inserting Images

To insert images from the Graphic Library:

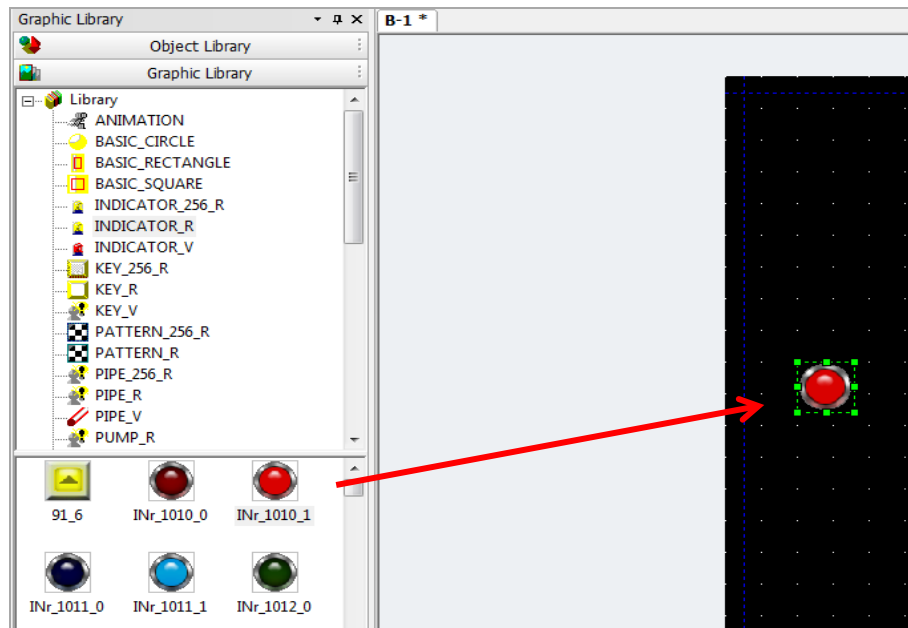
1. Click [View] ► [Graphic Library].



2. In the Graphic Library pane, click an object to the editing area.



3. In the Graphic List, drag and drop the image onto the editing area.



### Notes

- There are two types of images: vector and raster. Vector images maintain their shape even if you change the size. Raster images may be distorted if you enlarge or reduce the size.
- When you drag an image to the editing area, it is created in its default size. The default sizes of images are variable.

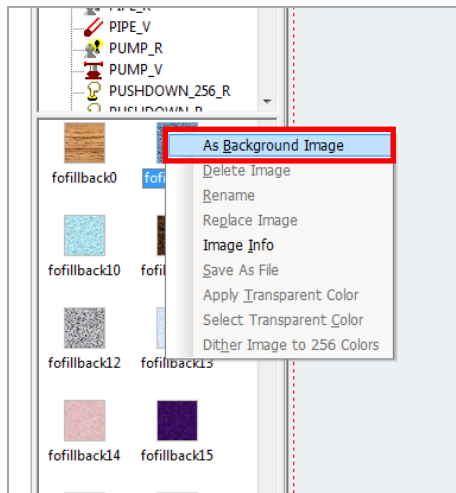
### 2.3.6.2 Replacing Images

To replace an Image:

1. Double-click an Image or right-click an image and click [Object Property].
2. Click another image from the list ► [OK].

### 2.3.6.3 Setting an Image as a Background

1. Select a category from the Graphic Library.
2. Right-click an image.
3. Click [As Background Image].

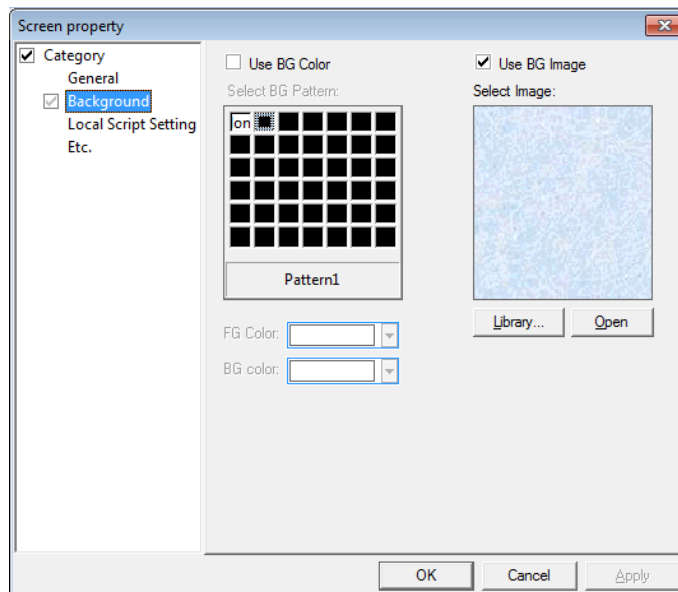


4. For more information about specifying background images, refer to <2.3.2.4 Changing Screen Properties>.

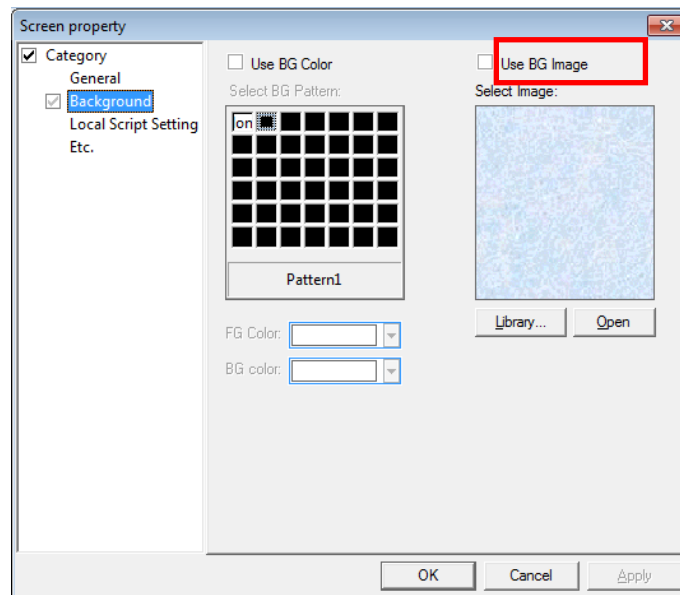
#### Note

To remove a background image:

1. Right-click the image that is currently set as the background image.
2. Click [Screen Property] ► [Background].



3. Clear the checkbox next to **Use BG Image**.



4. Click [OK].

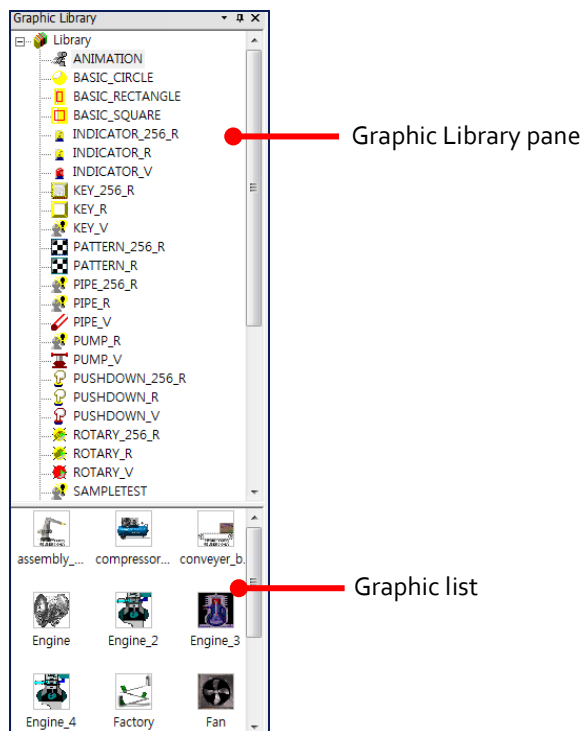
### 2.3.6.4 Managing Image Libraries

Learn how to manage image libraries. Both the system and user image libraries can be managed, but only the user image library can be edited.

Type	Description						
System Graphic Library	<p>About 1,000 images in 26 categories are included in the System Graphic Library. This library cannot be edited. You can select raster (256-color) or vector (65,535-color) images, depending on the color capabilities of the XGT Panels you are using. The following table describes characteristics of raster and vector images:</p> <table> <tr> <th>Type</th><th>Description</th></tr> <tr> <td>Raster</td><td> <ul style="list-style-type: none"> <li>Displayed in pixels as a bitmap image</li> <li>Distorts when you zoom in or out</li> <li>If used as a background image in an object, the pattern and color cannot be changed.</li> <li>File names include the suffix "_R".</li> </ul> </td></tr> <tr> <td>Vector</td><td> <ul style="list-style-type: none"> <li>Expressed by connected lines</li> <li>Not distorted when you zoom in or out</li> <li>If used as a background image in an object,</li> </ul> </td></tr> </table>	Type	Description	Raster	<ul style="list-style-type: none"> <li>Displayed in pixels as a bitmap image</li> <li>Distorts when you zoom in or out</li> <li>If used as a background image in an object, the pattern and color cannot be changed.</li> <li>File names include the suffix "_R".</li> </ul>	Vector	<ul style="list-style-type: none"> <li>Expressed by connected lines</li> <li>Not distorted when you zoom in or out</li> <li>If used as a background image in an object,</li> </ul>
Type	Description						
Raster	<ul style="list-style-type: none"> <li>Displayed in pixels as a bitmap image</li> <li>Distorts when you zoom in or out</li> <li>If used as a background image in an object, the pattern and color cannot be changed.</li> <li>File names include the suffix "_R".</li> </ul>						
Vector	<ul style="list-style-type: none"> <li>Expressed by connected lines</li> <li>Not distorted when you zoom in or out</li> <li>If used as a background image in an object,</li> </ul>						

Type	Description
	<div>the pattern or color can be changed.</div> <ul style="list-style-type: none"> <li>File names include the suffix "_V".</li> </ul>
User Graphic Library	You can register or delete images. The images are saved in the current project and not in the XP-Builder program. You can import a User Graphic Library from another project or export it from the current project to use in other projects.

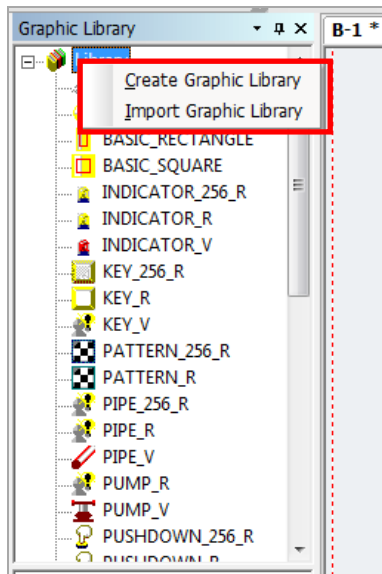
To open the Graphic Library pane, click [View] ► [Graphic Library]. The Graphic Library pane and the Graphic List will appear, as shown in the following image:



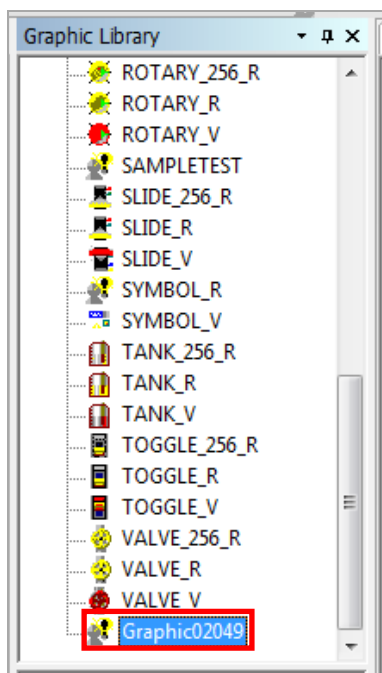
## 2. Project Development

You can create your own user image library. To create a library:

1. In the Graphic Library pane, right-click [Library].

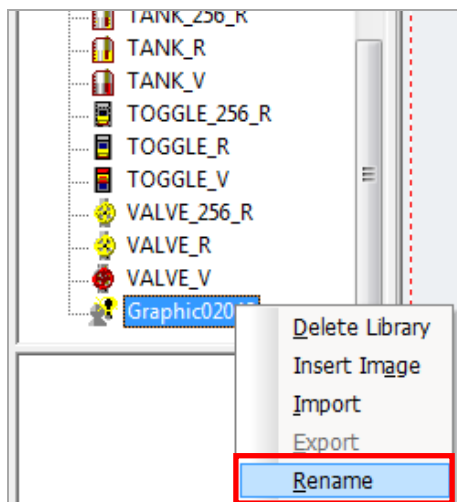


2. Click [Create Graphic Library]. A new image category will be created.



3. To change the name of the library:

4. Right-click the library name and click [Rename]. Or, you can click the library name and click again.



5. Enter the new name and press the Enter key to confirm.

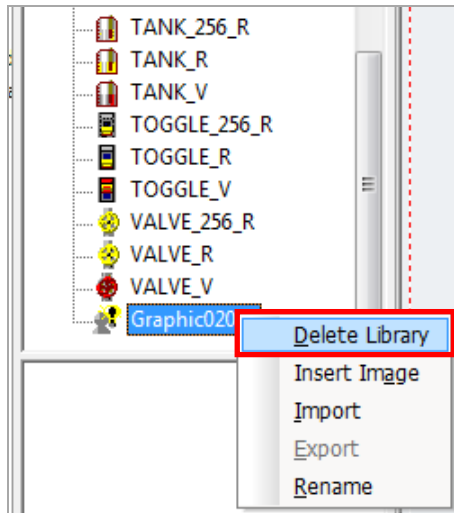
### Notes

- When you add an image library, the name is set to Graphic02049 by default. Additional libraries are numbered in ascending order from 2050 to 4095.
- User image libraries are sorted in ascending order by name.
- The name of a system image library cannot be changed.

## 2. Project Development

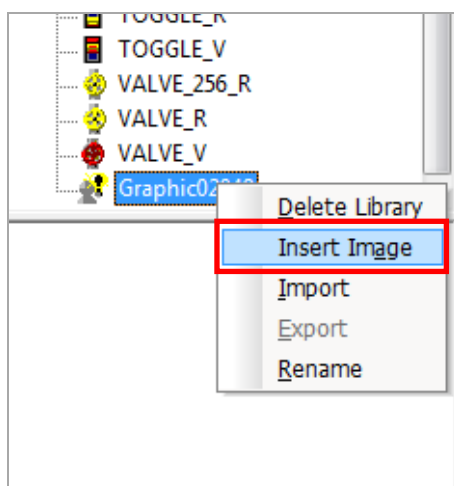
To delete a library:

1. In the Graphic Library pane, right-click the library name.
2. Click [Delete Library].



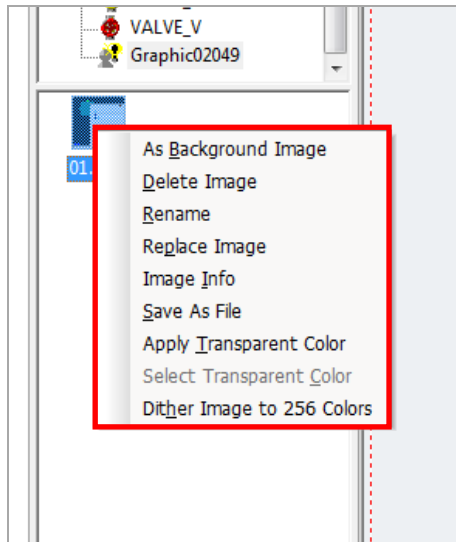
You can add images to your user image library and edit them as well. To add images to a User Graphic Library:

1. In the Graphic Library pane, right-click a library name.
2. Click [Insert Image]. You can also right-click on the Graphic list and click [Insert Image(A)].



3. Select an image file and click [Open].

Several options are available when editing, such as setting the transparency value of images and saving them in WMF format to maintain resolution when magnifying them. To edit or apply changes to an image, right-click it and select from the following options:



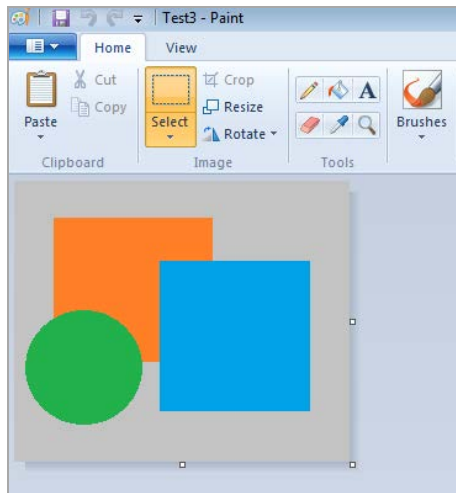
Functions	Description
Replace Image	Replace an existing image in the user image library.
Image Info	View the size of the image.
Save as File	Save the image with a different file name.
Apply Transparent Color	Apply a transparent color to the image (see the following procedure).
Select Transparent Color	Set the transparency value of an existing color in the image (see the following procedure).
Dither Image to 256 Colors	<ul style="list-style-type: none"> <li>Change the color value of the image to 256 colors to reduce the size of the file.</li> <li>Once the image is dithered, it cannot be restored.</li> </ul>



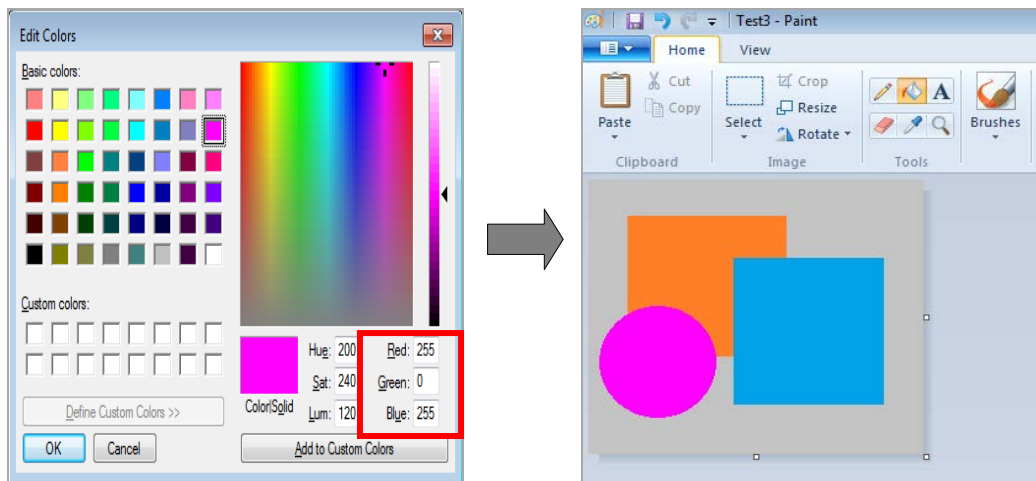
## 2. Project Development

To set the transparency of the image and apply it to XP-Builder:

1. Open the image in Paint.

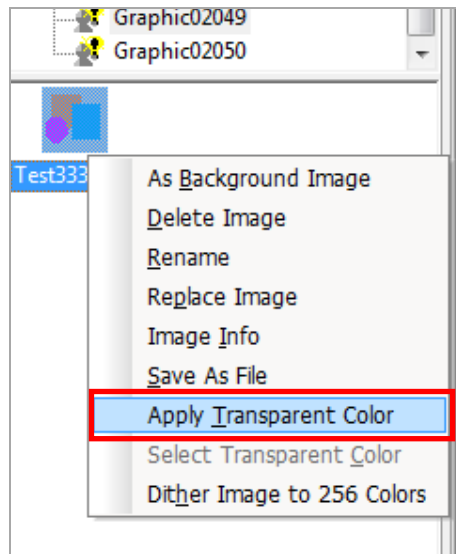


2. Set the RGB color properties of the image to 255, 0, 255, to make it transparent.

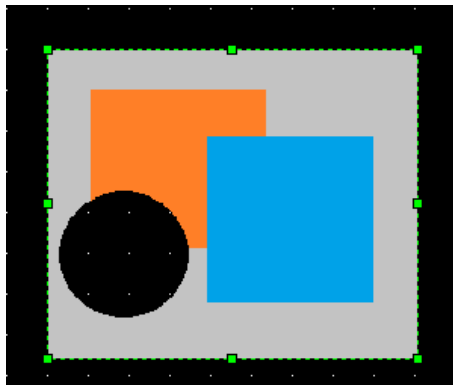


3. Register the image to the Graphic library.

4. Right-click the image and click [Apply Transparent Color].



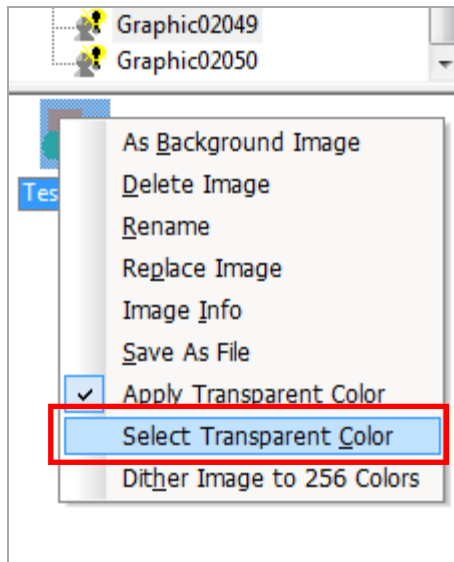
5. Apply the image to the editing area to view the transparency settings.



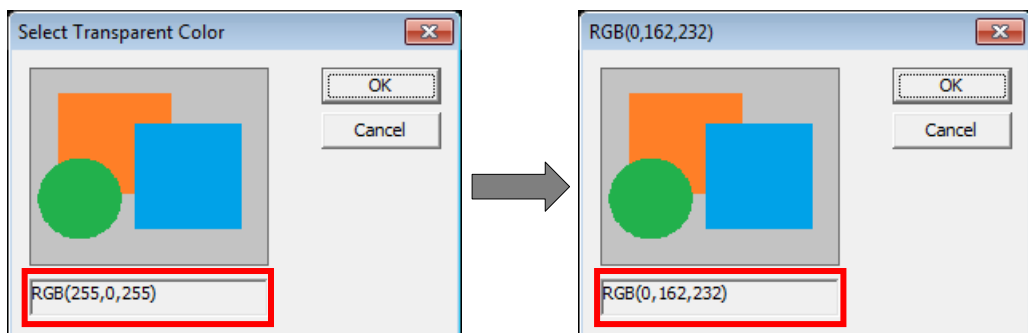
## 2. Project Development

To set the transparency of an existing image:

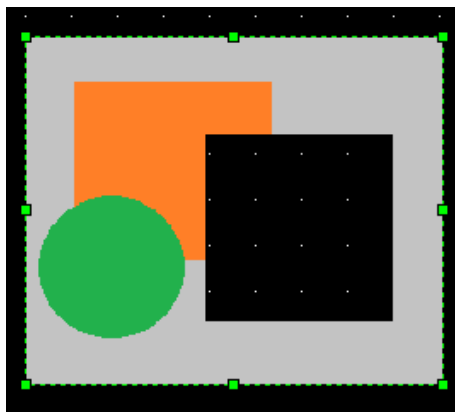
1. Right-click an image and click [Select Transparent Color].



2. Select the part of the image that you want to make transparent. Then, the RGB value will be changed.

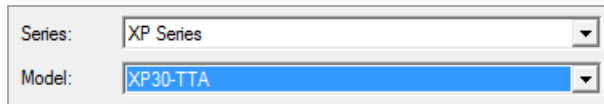


3. Click [OK]
4. View the new transparent part in the editing area.

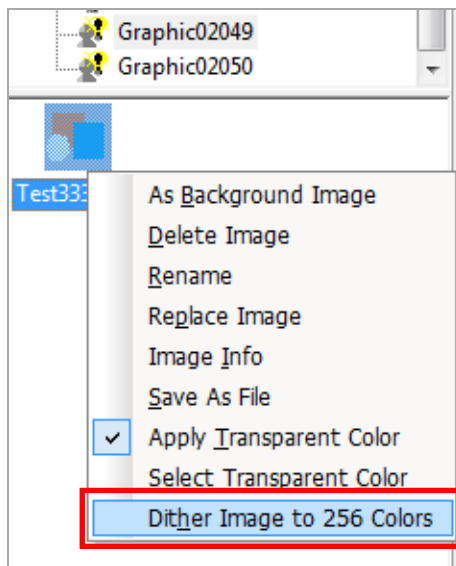


To dither the image to 256 colors:

1. Select an XGT Panel model with a TTA model.



2. Right-click an image and click [Dither Image to 256 Colors].



3. Click [OK]. After you dither the image, you cannot restore the color value.

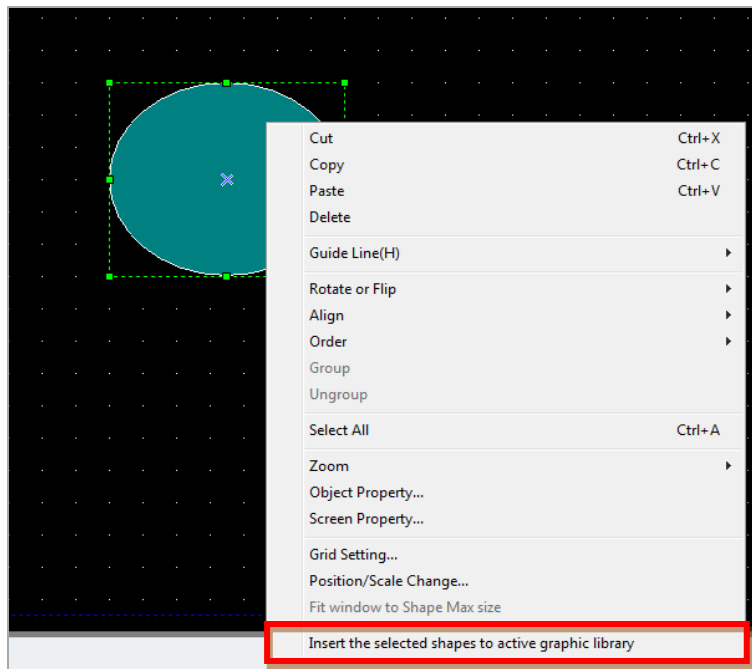
### Notes

- The default RGB values for transparency are 255, 0, 255.
- Setting a transparent color is not a default option.
- You can select multiple images and apply transparency at the same time, if the image properties are the same. If image formats are different or if one of the images has a transparency applied already, the function will not work.
- You can use the dithering function only in projects for color mode panels. After WMF, TGA, and JPG files are dithered, they are saved as BMP files.

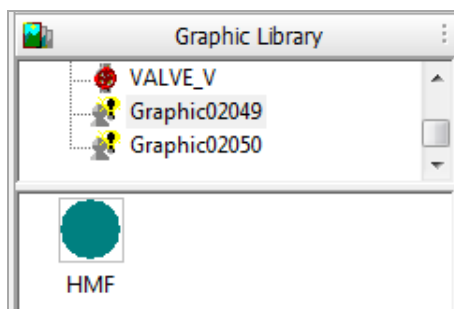
## 2. Project Development

You can add WMF format figures to the Graphic library. The WMF format is used only in XP-Builder (not in the panel) and it is not distorted when you change the image size. To add WMF (vector) figures to a library:

1. In the editing area, right-click a figure to save.
2. Click [Insert the selected shapes to active graphic library].



The image is added to the library in WMF format.

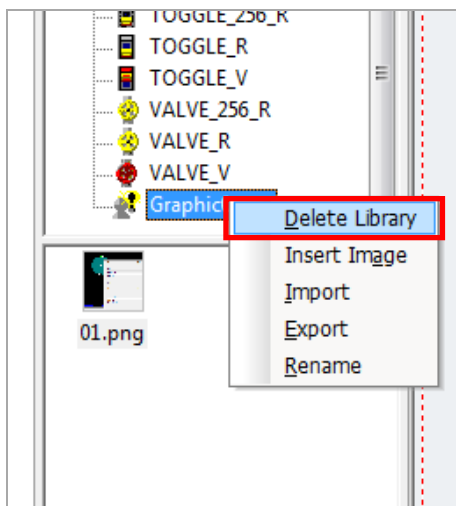


### Notes

- You cannot register objects or images in WMF format.
- Figures filled with patterns 3-41 cannot be registered in WMF format.
- Figures with textures cannot be registered in WMF format.

To delete an image:

1. In the Graphic List, right-click an image.
2. Click [Delete Image].

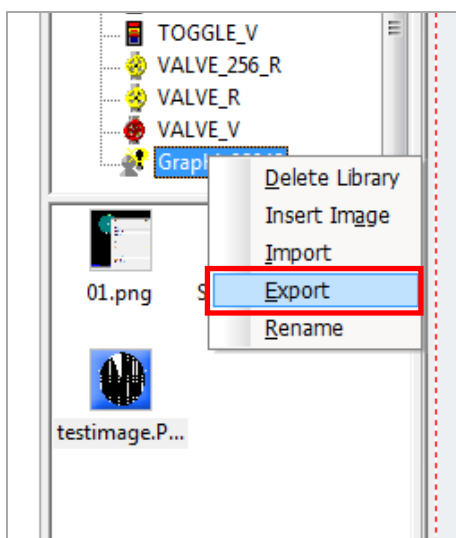


#### Note

To delete all images, right-click an empty space in the Graphic List, and then click [Delete All Images].

You can share your libraries between projects. To export the user image library:

1. In the Graphic Library pane, right-click a library to export.
2. Click [Export].



## 2. Project Development

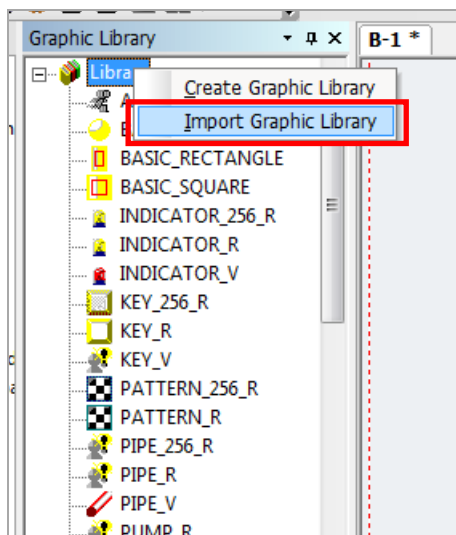
3. Enter a name for the file and set the file destination.
4. Click [Save].

### Notes

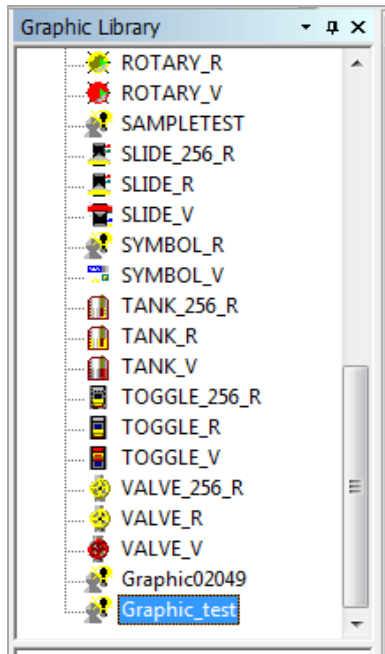
- The exported library is saved with the file extension “.xpg.”
- If there are no images in the library, you cannot export the library.

You can either import a library into the project as a new library or you can import images into an existing user image library. To import a new library:

1. In the Graphic Library pane, right-click [Library].
2. Click [Import Graphic Library].

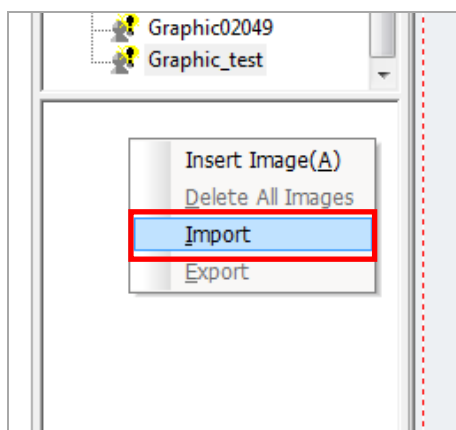


3. Select a file with an ".xpg" extension and click [Open]. The new library will be added to the Graphic Library List.



To import images into an existing library:

1. In the Graphic Library pane, click a user image library name to select it.
2. In the Graphic List, right-click an empty space.
3. Click [Import].



4. Select a file with an ".xpg" extension and click [Open]. The images in the library file you selected will be added to the existing library.



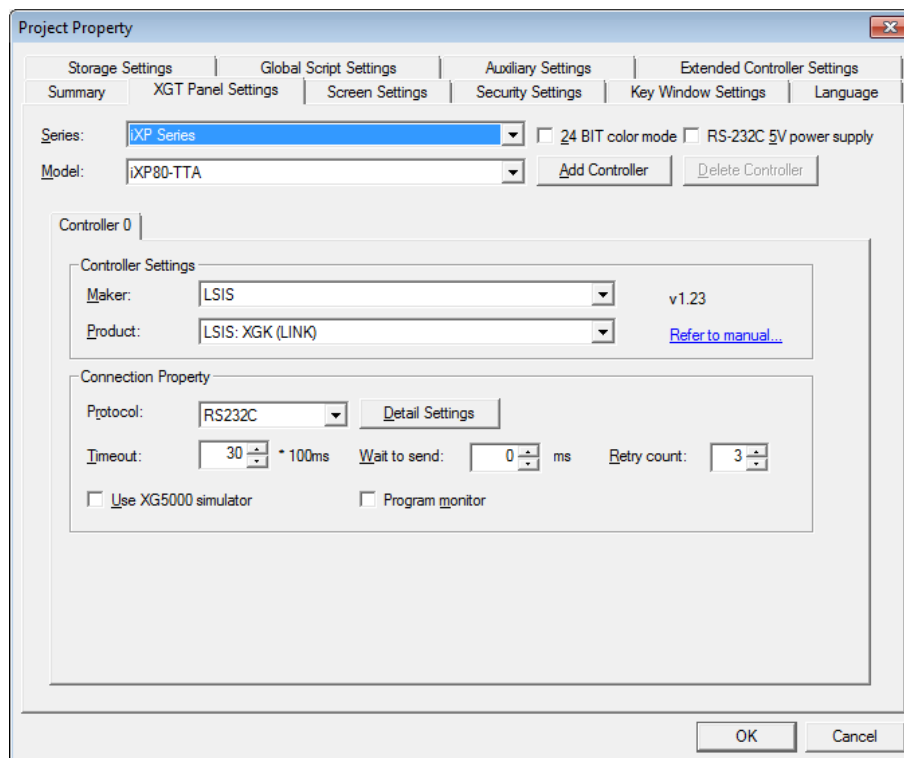
### 2.4 Connecting Controllers

Configure the communication settings for the XGT Panel and controller. To connect an XGT Panel to the controller, use the Ethernet connection and the serial port. In the serial ports, there are three connection methods: RS232C, RS485, and RS422. This section describes how to set the communication method. For more details about XGT Panel settings, refer to <2.2.2.2 *Changing XGT Panel Settings*>.

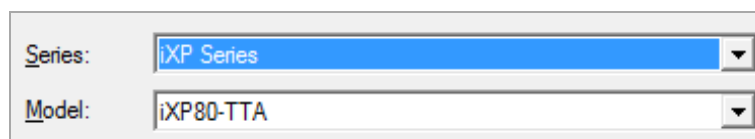
#### 2.4.1 Connecting with Ethernet

Connect the XGT Panel to the controller with an Ethernet cable. To set the Ethernet method:

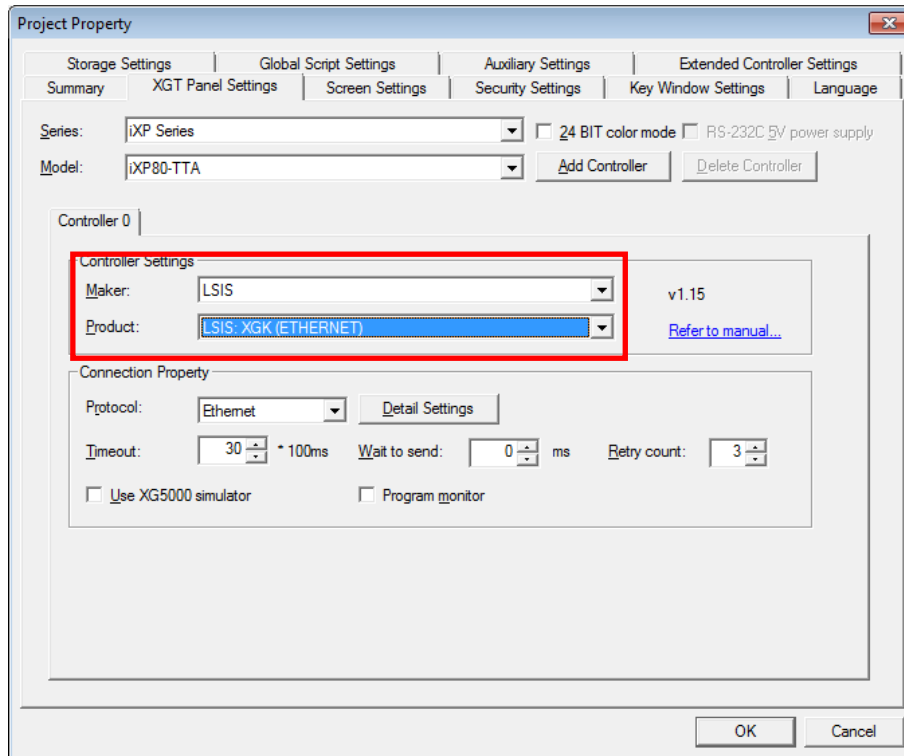
1. Click [Common] ► [Project Property Setting] ► [XGT Panel Settings].



2. Select the XGT Panel series and model name.



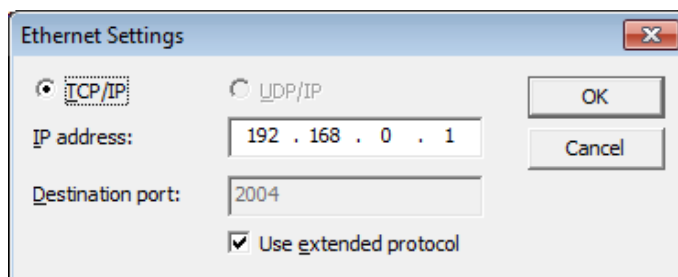
- Set the controller manufacturer and the controller model (Product). Select a product with "ETHERNET" at the end of the controller name.



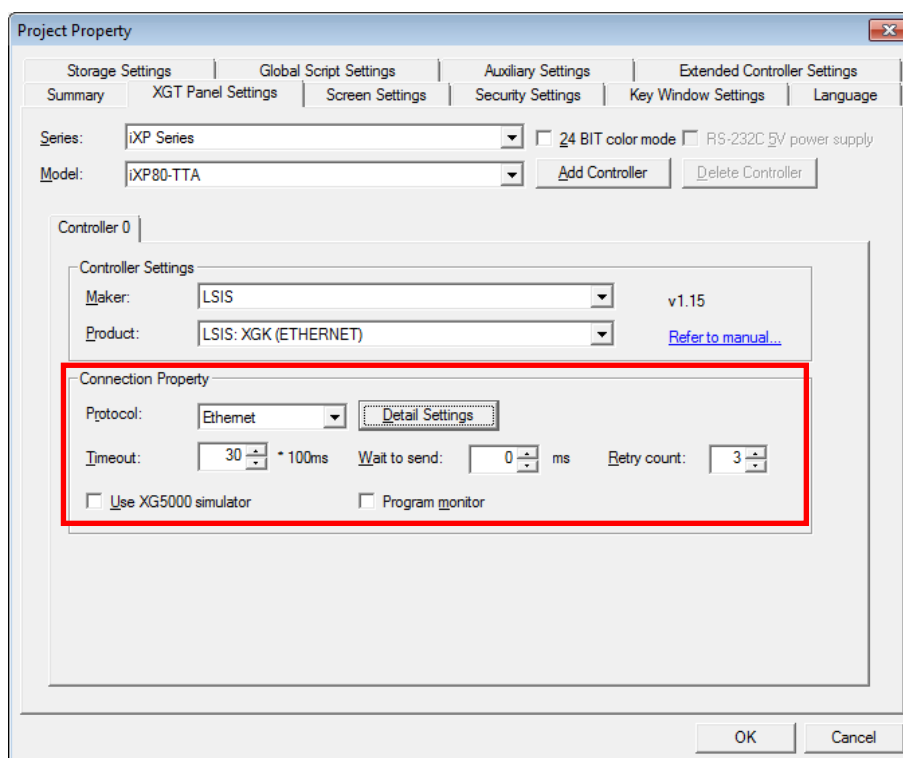
### Notes

- The connection type at the end of the controller name may differ by product.
- Available protocols may differ by product.

- Select the protocol to **Ethernet**.
- Select **Detail Settings**, configure the IP settings, and click [OK].



6. Set the additional connection properties in **Connection Property** and click [OK].

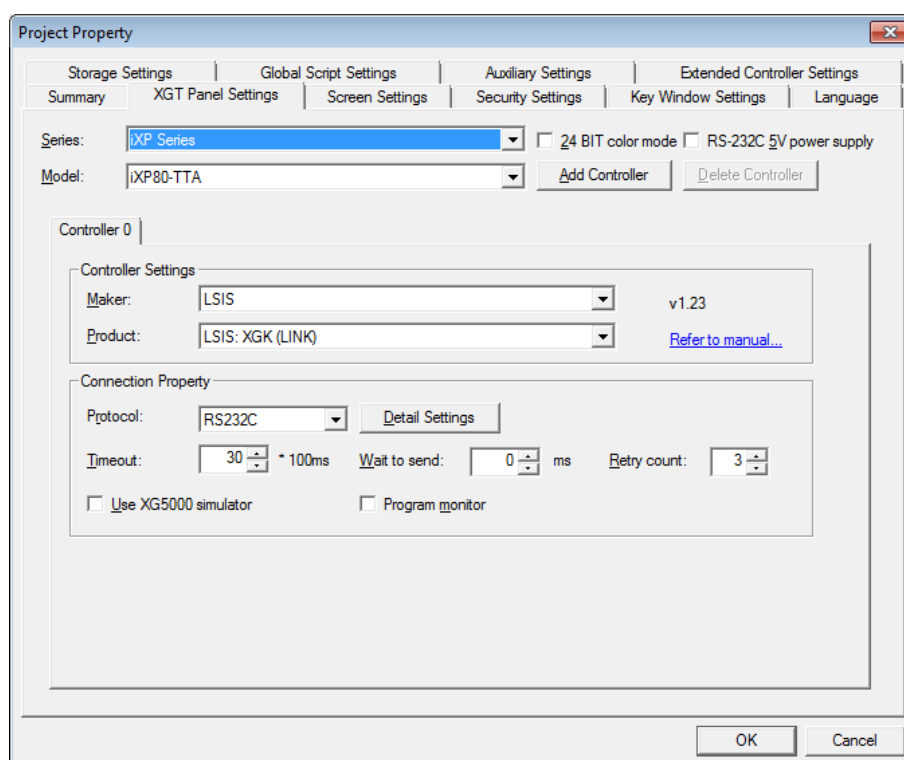


### 2.4.2 Connecting with a Serial Port

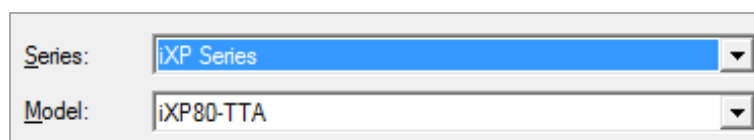
Connect the XGT Panel to the controller via a serial port. You can select RS232C, RS485, or RS422.

#### 2.4.2.1 Using RS232C

1. Click [Common] ► [Project Property Setting] ► [XGT Panel Settings].

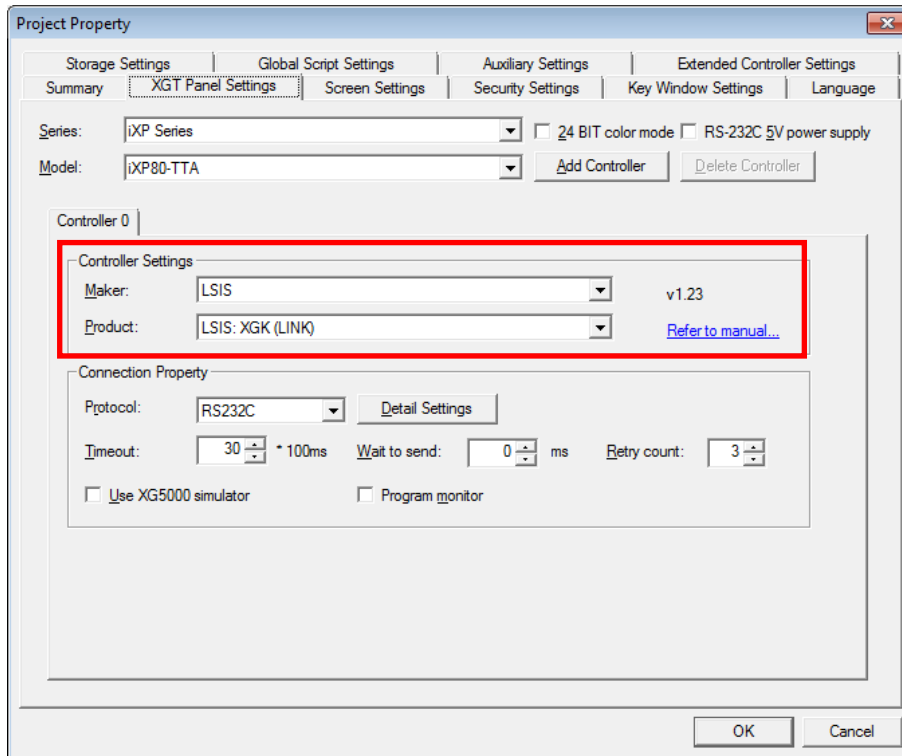


2. Select the XGT Panel series and model name.



## 2. Project Development

- Set the controller manufacturer and the controller model (Product). Select a product with "LINK" at the end of the controller name.

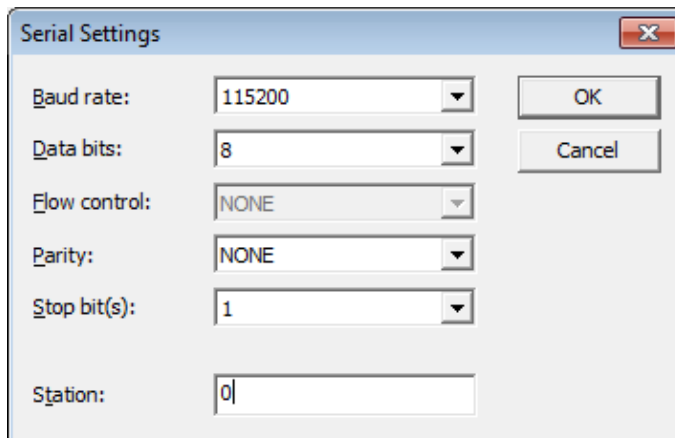


### Notes

- The connection type at the end of the controller name may differ by product.
- Available protocols may differ by product.

- Select the protocol to **RS232C**.

5. Select **Detail Settings**, configure the properties, and click [OK].



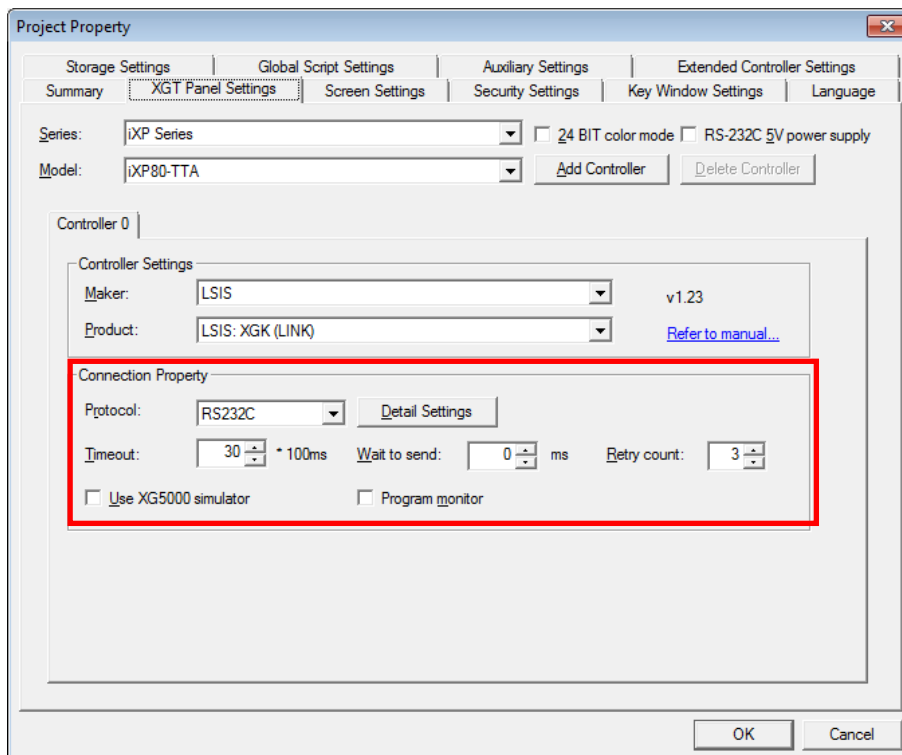
The Serial Settings dialog box contains the following fields and controls:

- Baud rate:** 115200 (dropdown menu)
- Data bits:** 8 (dropdown menu)
- Flow control:** NONE (dropdown menu)
- Parity:** NONE (dropdown menu)
- Stop bit(s):** 1 (dropdown menu)
- Station:** 0 (text input field)
- Buttons:** OK, Cancel

#### Note

The baud rate must match the setting in the XGT Panel. To change the baud rate on the XGT Panel, touch and hold the screen to access the menu. Then, touch [Setting] ► [PC Conn Setting]. For iXP series XGT Panels, the IP address is set by default.

6. Set the additional connection properties and click [OK].



The Project Property dialog box shows the following configuration:

- Tabs:** Storage Settings, Global Script Settings, Auxiliary Settings, Extended Controller Settings, Summary, XGT Panel Settings (selected), Screen Settings, Security Settings, Key Window Settings, Language.
- Series:** iXP Series
- Model:** iXP80-TTA
- Buttons:** Add Controller, Delete Controller
- Controller 0:**
  - Controller Settings:**
    - Maker:** LSIS
    - Product:** LSIS: XGK (LINK)
    - Version:** v1.23
    - Link:** [Refer to manual...](#)
  - Connection Property (highlighted with a red box):**
    - Protocol:** RS232C
    - Detail Settings:** (button)
    - Timeout:** 30 \* 100ms
    - Wait to send:** 0 ms
    - Retry count:** 3
    - Checkboxes:**
      - ☐ Use XG5000 simulator
      - ☐ Program monitor
- Buttons:** OK, Cancel

## 2. Project Development

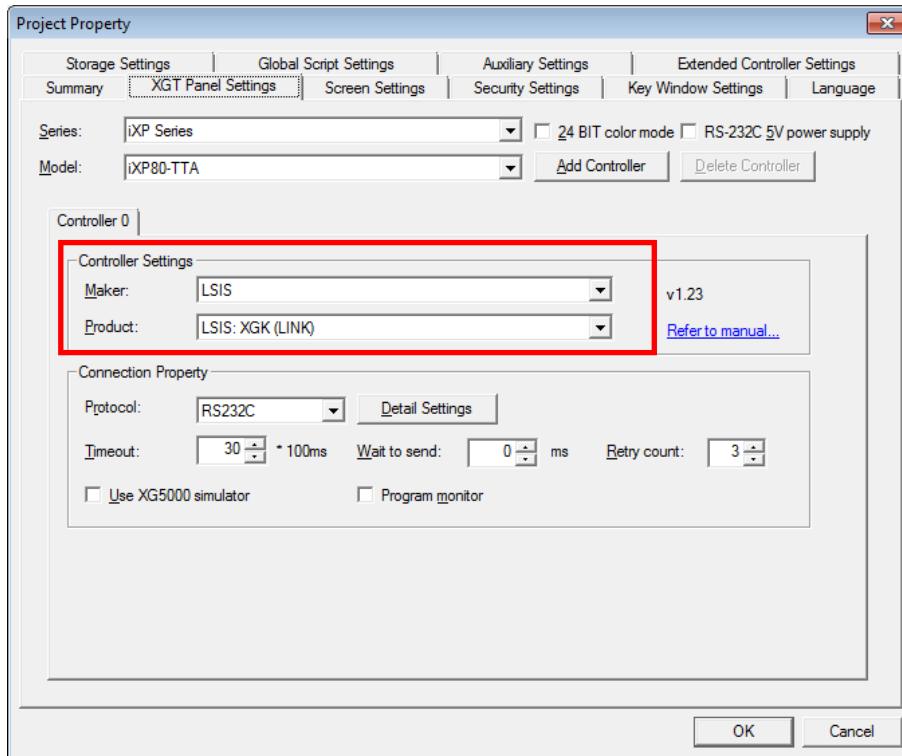
### 2.4.2.2 Using RS485/RS422

1. Click [Common] ► [Project Property Setting] ► [XGT Panel Settings].

The screenshot shows the 'Project Property' dialog box with the 'XGT Panel Settings' tab selected. The 'Series' dropdown is set to 'iXP Series' and the 'Model' dropdown is set to 'iXP80-TTA'. There are checkboxes for '24 BIT color mode' and 'RS-232C 5V power supply'. Below these are 'Add Controller' and 'Delete Controller' buttons. The 'Controller 0' section contains 'Controller Settings' with 'Maker' set to 'LSIS' and 'Product' set to 'LSIS: XGK (LINK)'. It also shows 'v1.23' and a 'Refer to manual...' link. The 'Connection Property' section has 'Protocol' set to 'RS232C' and a 'Detail Settings' button. It includes fields for 'Timeout' (30 \* 100ms), 'Wait to send' (0 ms), and 'Retry count' (3). There are also checkboxes for 'Use XG5000 simulator' and 'Program monitor'. 'OK' and 'Cancel' buttons are at the bottom right.

2. Select the XGT Panel series and model name.

- Set the controller manufacturer and the controller model (Product). Select a product with "LINK" at the end of the controller name.



### Notes

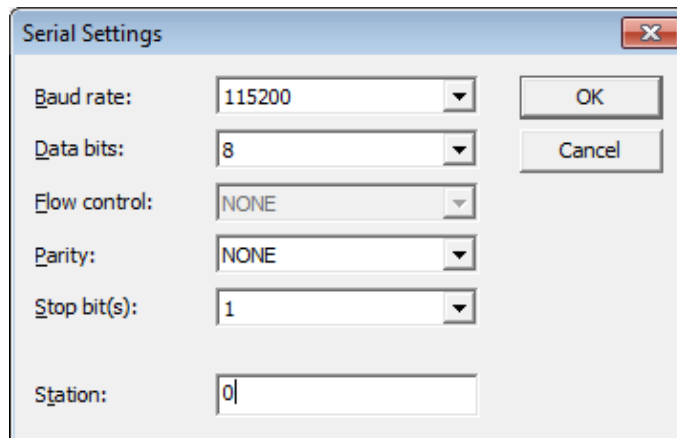
- The connection type at the end of the controller name may differ by product.
- Available protocols may differ by product.

- Select the protocol to **RS485** or **RS422**.



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5. Select **Detail Settings**, configure the properties, and click [OK].



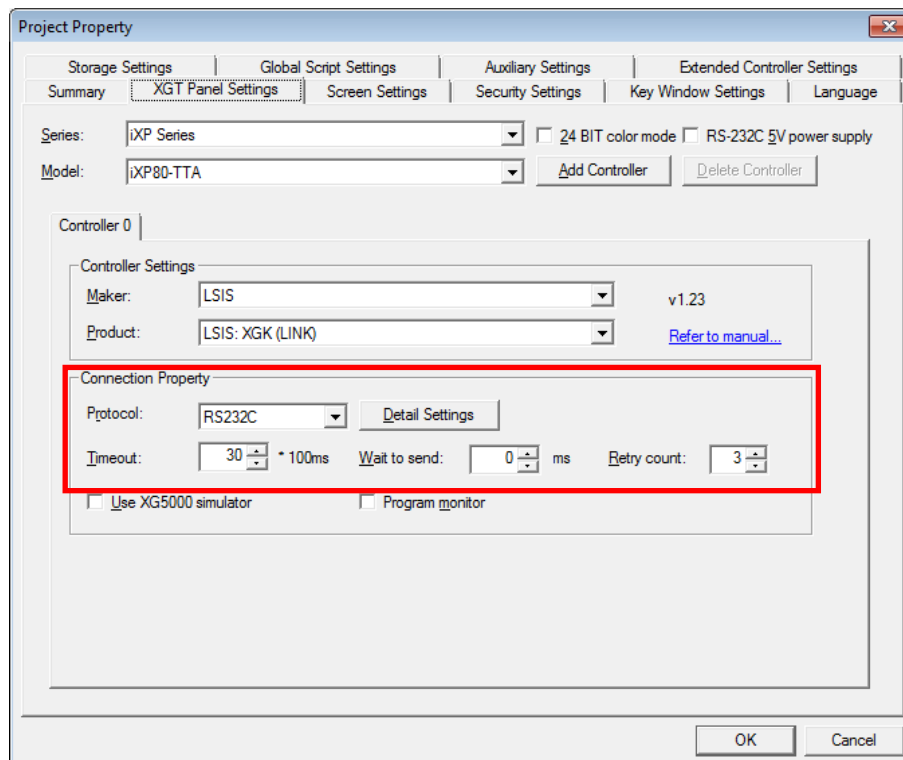
The Serial Settings dialog box contains the following fields and controls:

- Baud rate: 115200 (dropdown)
- Data bits: 8 (dropdown)
- Flow control: NONE (dropdown)
- Parity: NONE (dropdown)
- Stop bit(s): 1 (dropdown)
- Station: 0 (text input)
- Buttons: OK, Cancel

### Note

The baud rate must match the setting in the XGT Panel. To change the baud rate on the XGT Panel, touch and hold the screen to access the menu. Then, touch [Setting] ► [PC Conn Setting]. For iXP series XGT Panels, the IP address is set by default.

6. Set the additional connection properties and click [OK].



The Project Property dialog box has multiple tabs: Storage Settings, Global Script Settings, Auxiliary Settings, Extended Controller Settings, Summary, XGT Panel Settings, Screen Settings, Security Settings, Key Window Settings, and Language. The XGT Panel Settings tab is active.

Series: iXP Series (dropdown)    ☐ 24 BIT color mode    ☐ RS-232C 5V power supply

Model: iXP80-TTA (dropdown)    Add Controller    Delete Controller

Controller 0

Controller Settings

Maker: LSIS (dropdown)    v1.23

Product: LSIS: XGK (LINK) (dropdown)    [Refer to manual...](#)

Connection Property (highlighted with a red box)

Protocol: RS232C (dropdown)    Detail Settings

Timeout: 30 \* 100ms    Wait to send: 0 ms    Retry count: 3

☐ Use XG5000 simulator    ☐ Program monitor

Buttons: OK, Cancel

## 2.5 Simulating & Debugging

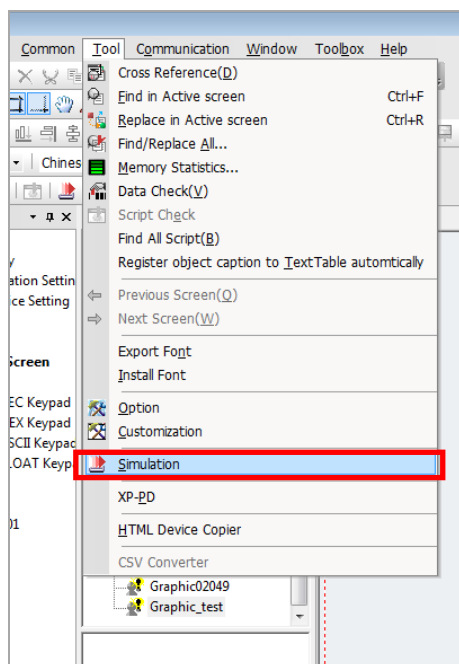
After developing an interface, it is a good idea to test it before putting it to use. XP-Builder offers multiple ways to check the integrity of your data, including an interface simulator, data check and device map functions, and a script cross-reference that can help you debug your program.

### 2.5.1 Simulating an Interface

The simulator provided in XP-Builder allows you to verify the function and appearance of your interface before you transfer it to an XGT Panel. By testing your project, you can correct errors and verify the operation and response of the system in advance.

To run the simulator:

1. Click [Tool] ► [Simulation].

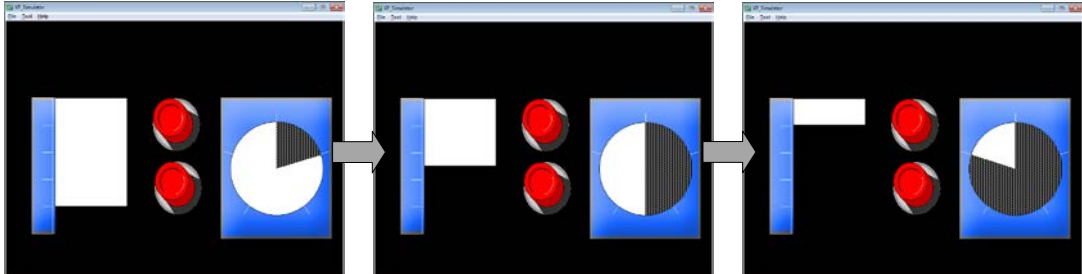


#### Notes

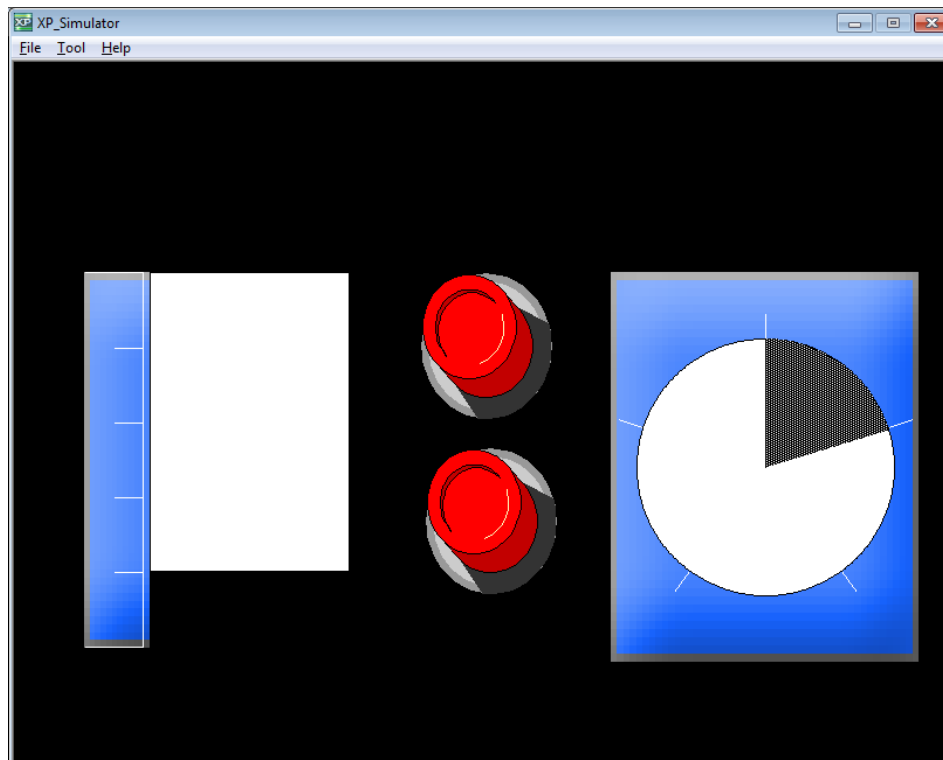
- Except for the menu and title, the simulation window will be invoked in the same resolution as when it is downloaded to an XGT Panel.
- If media player object is edited in iXP TTM model, the object is not displayed on the simulator.
- Only one simulator can be run at a time. If you're running the simulator, you can't execute another one.
- The size of simulator window may vary according to the set XGT Panel size.

## 2. Project Development

2. Verify operations by clicking or selecting objects and activating functions in the interface.  
As shown in the following example, you can input the value virtually and review the operation via the simulation.



The simulator interface includes the following functions:



Function		Description
File	Exit	End the simulation and close the window.
Tool	Virtual Device Start	Start or end device monitoring. For more information, refer to <2.5.2 Inputting Simulated Data>.
	Screen Capture	Capture an image of the current screen.
Help	XP_Simulator Information(A)	View the current version information.

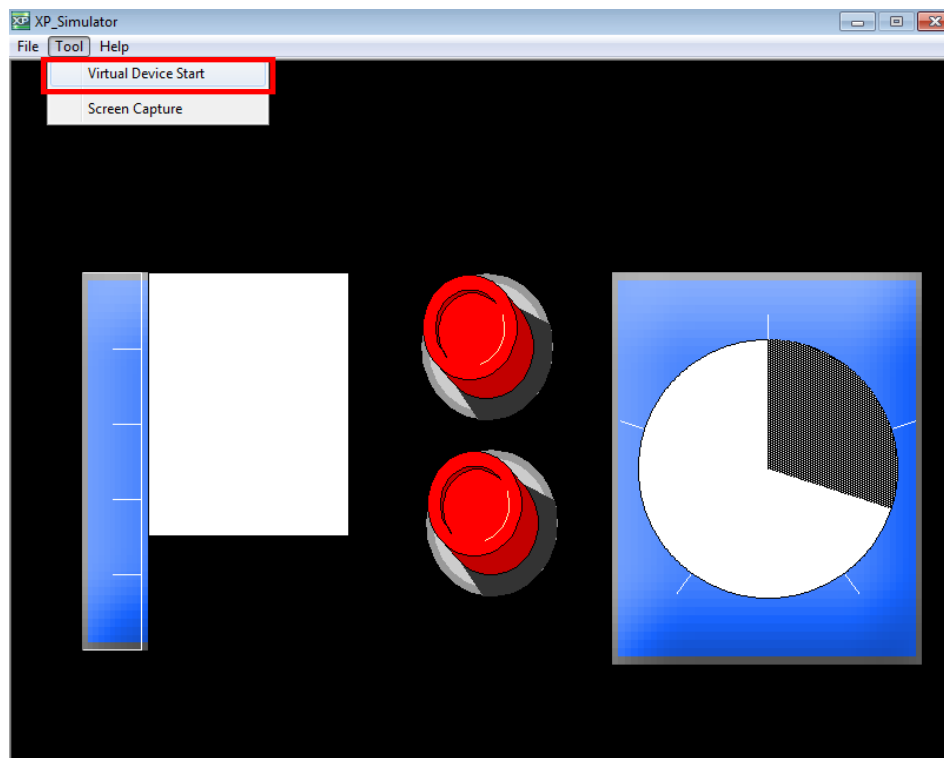
### 2.5.2 Inputting Simulated Data

Learn how to create the simulated data and change the value to check the process.

#### 2.5.2.1 Monitoring Devices

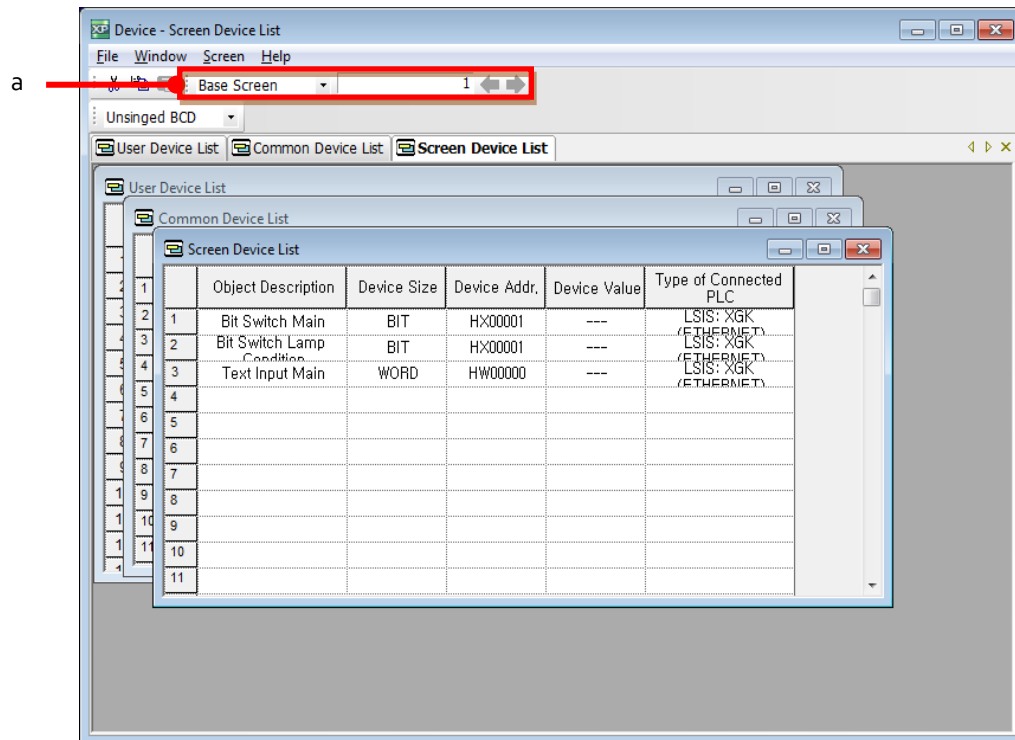
Use the simulator to generate sample data that you can use to monitor devices.

1. Click [Tool] ► [Simulation].
2. In the simulator, click [Tool] ► [Virtual Device Start].



Device lists with simulated data will appear.

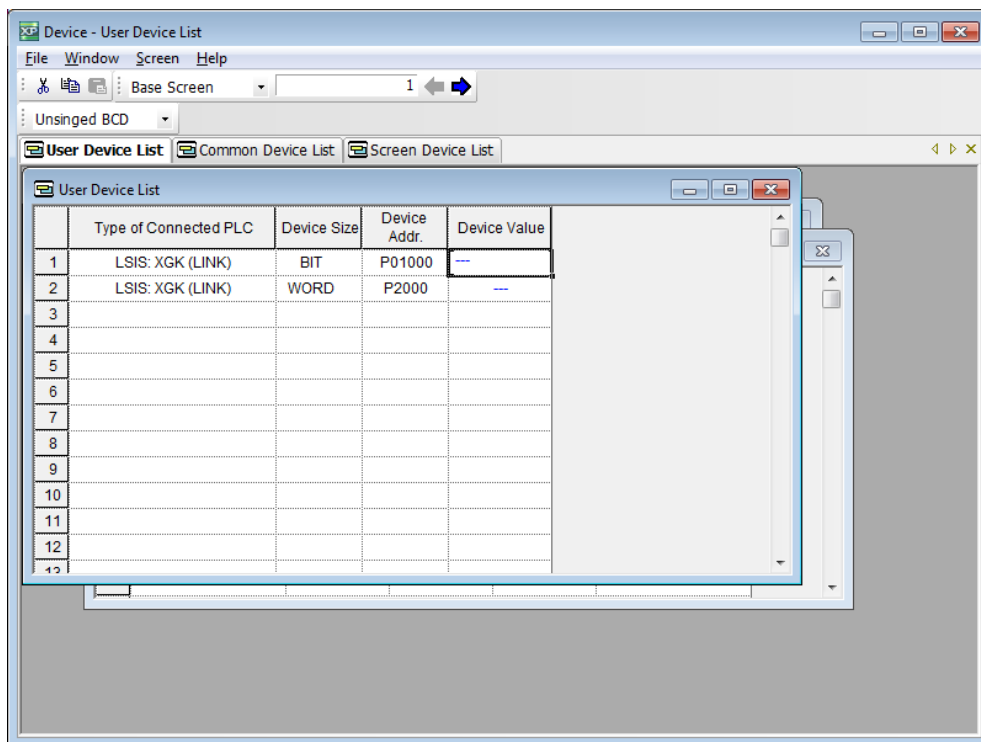
## 2. Project Development



Data Type	Description
a	Set the type of window and number of windows that you want to monitor. All base windows with objects and pop-up windows can be selected from combo box, but you cannot monitor common data devices. The simulator changes the display based on the number of windows you select. But if you select a pop-up window, the display will not change.
User Device List	Set the device value manually to simulate the project.
Common Device List	Shows list of the common data, such as History Alarms, Recipes, and Flow Alarms.
Screen Device List	Click to show the list of all the edited objects in the base window.
Object Description	Shows the address of the device.
Device Size	Shows the size of the device: Bit, 16Bit (word), or 32Bit (word).
Device Addr.	Shows the address of the device.
Device Value	Shows the value of the current device.
Type of Connected PLC	Shows the controller type.

### 2.5.2.2 Changing Device Values

Set device information and change value in the **User Device List**. You can set bit devices to on or off and enter device values manually for word devices. Values are applied to the simulator as soon as you change them.



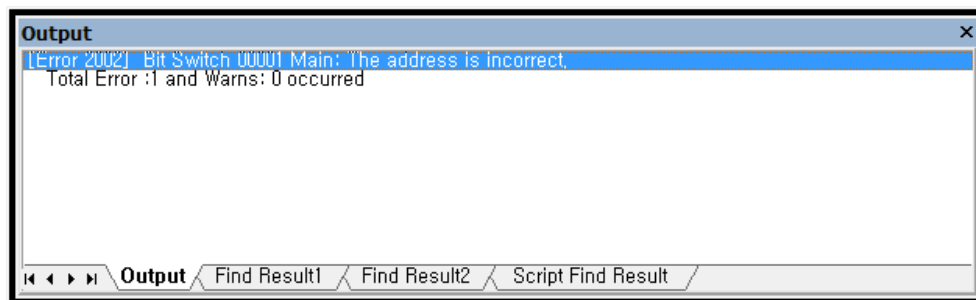
#### Note

To use XG5000 with the Simulator, click the checkbox next to **Use XG5000 simulator** in the XGT Panel Settings.

### 2.5.3 Running a Data Check

The data check allows you to locate and correct data errors before transferring a project to an XGT Panel. You can verify deleted image numbers, tags, display numbers, existing addresses, and errors unique to objects or common items. For more information about the messages that are displayed during a data check, refer to <3. *Troubleshooting*>.

To run a data check, click [Tool] ► [Data Check]. Error numbers and their descriptions will appear in the output window.



#### Note

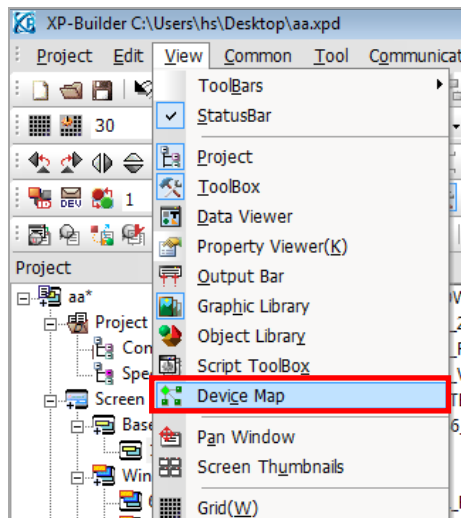
If you close all the project windows and double-click on an item in the output window, you can activate windows or objects that correspond to error messages, so that you can modify them.

### 2.5.4 Viewing the Device Map

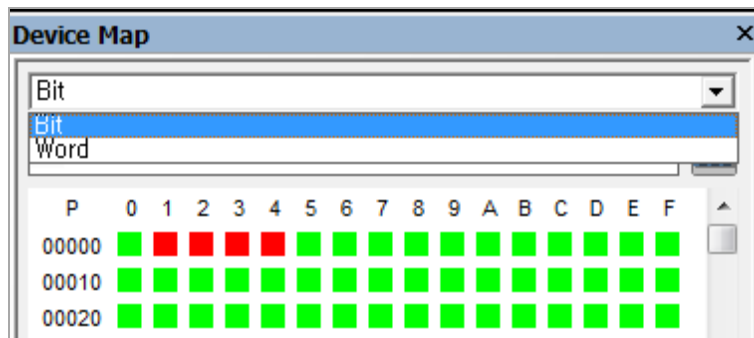
The Device Map allows you to view the locations and other parameters of devices in the PLC.

To view the device map:

1. Click [View] ► [Device Map].



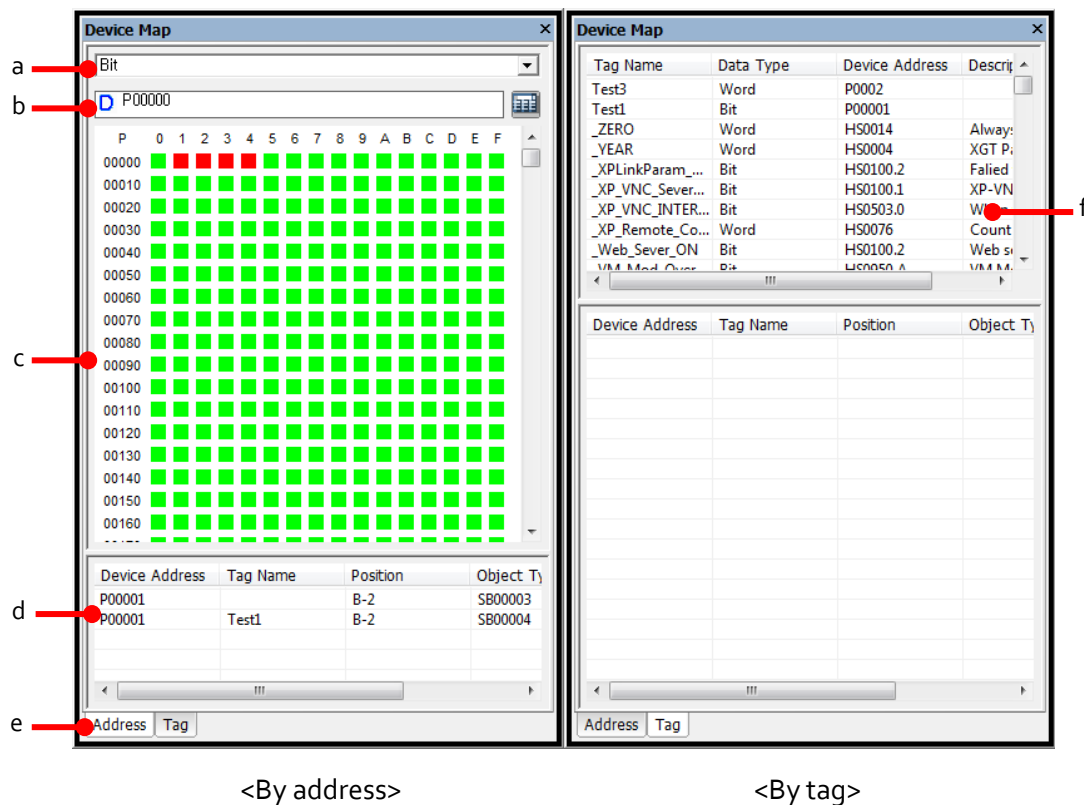
2. Click the drop-down list to select a device type (Bit or Word).





## 2. Project Development

- Enter a device address or click the keypad icon to the right of the device input area to specify a device address.



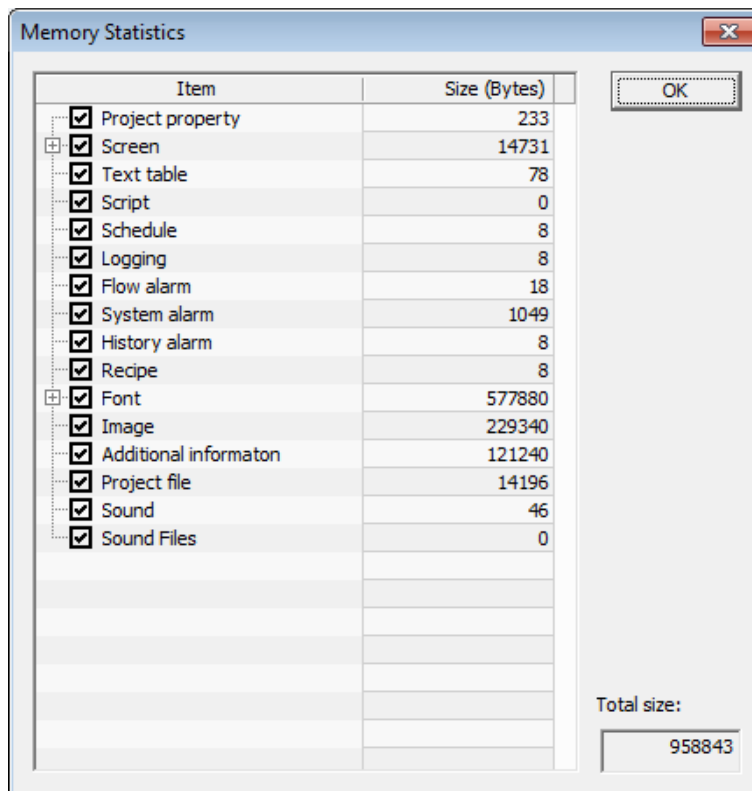
Item	Description
a. Device Type	Input a device type to search for (Bit or Word).
b. Device Address	Input a device address to search for and then press the Enter key.
c. Device Map	Show the device addresses in use.
d. Device Reference	Show the currently-selected device and its position in the device map.
e. Address or Tag Tabs	Click the tabs to view information by address or by tag.
f. Tag List	Shows the tags registered to each device.

### 2.5.5 Evaluating Project Size (Memory Usage)

When the current project data is transferred to XGT Panel, the files are saved and transferred with the extension ".hmi". The size of an HMI file must not exceed the memory limit of the XGT Panel, so it is important to know the size of the HMI file and the components of the current project.

To evaluate the project size:

1. Create a project, as described in <2. Project Development>.
2. Select [Tool] ► [Memory Statistics]. The memory size of each element is shown, including windows and common data.



#### Notes

- Memory statistics do not include the sizes of images used in the project. Image and font sizes are included in the total memory size. If an image is used more than once in a project, the file is only transferred to the XGT Panel once, so the memory size is the same as the size of the individual image.
- If the memory required for images or fonts is quite large, you can set the storage location for those files to an external drive that is connected to the XGT Panel.

- Additional information is included in the size of the communication driver module.
- The font size includes not only the font used in the XGT Panel, but also the font used in code pages required for multi-language display for text display objects.

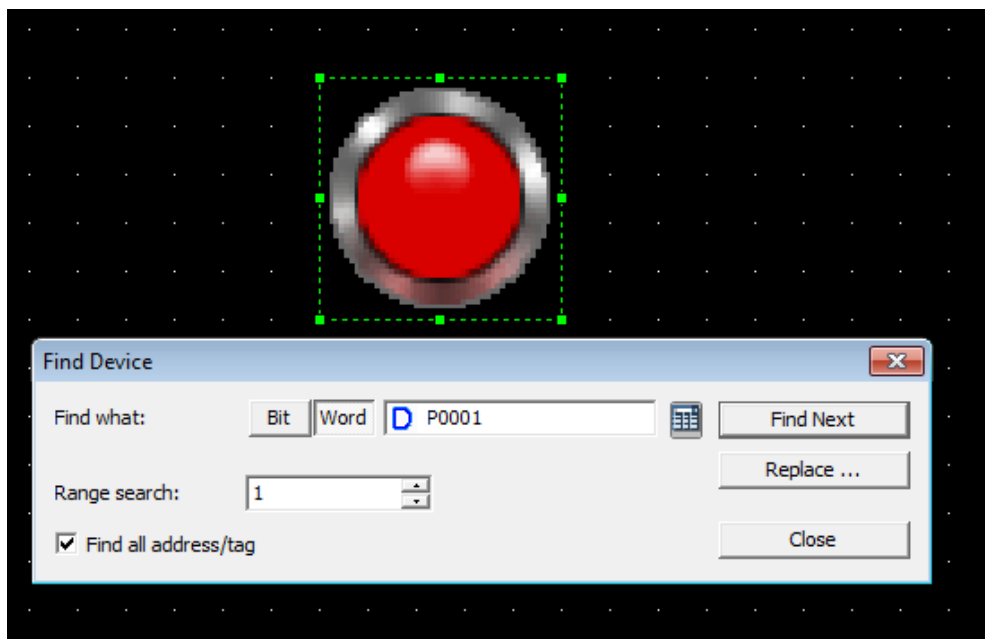
### 2.5.6 Finding and Replacing Devices

This function allows you to locate the addresses of objects used in a project and, if necessary, relocate them to a new address.

#### 2.5.6.1 Finding and Replacing Devices on the Active Window

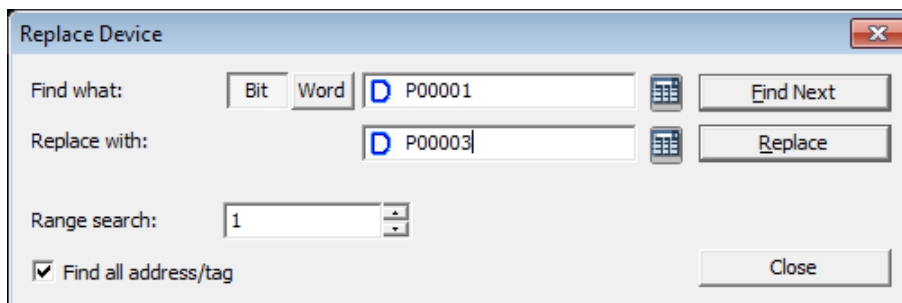
To find and replace devices on the active window:

1. Click [Tool] ► [Find in Active Screen]. The object's address is shown in the Find Device window.



2. Click [Find Next] to determine if another object exists with the same address.

3. To relocate the device to a new address, click [Replace]. The Replace Device window appears.



4. Enter a new address in the **Replace With** field or click the keypad to the right of the field to specify a device address.
5. After entering the new device address, click [Close].

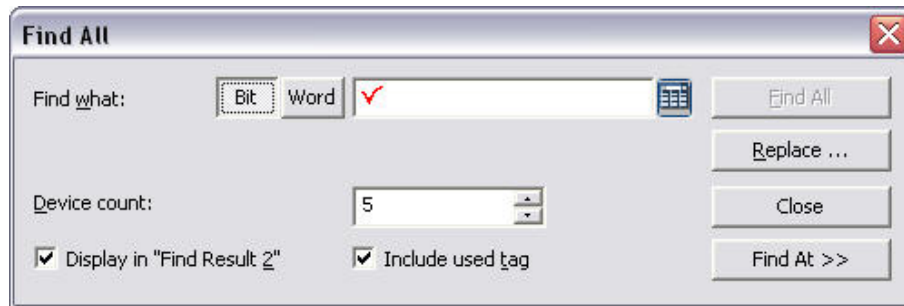
### Notes

- By default, the find function locates either device addresses or tags, based on the type of information that you specify. To search for both device address and tags, click the check box next to Find All Addresses/Tags.
- To locate a range of addresses, set the range in the **Range Search** field. By default, the range is "1," which returns a single device address. You can also renumber addresses automatically (replace) in a range from a specified starting point, for as many devices as you specify in the **Range Search**.

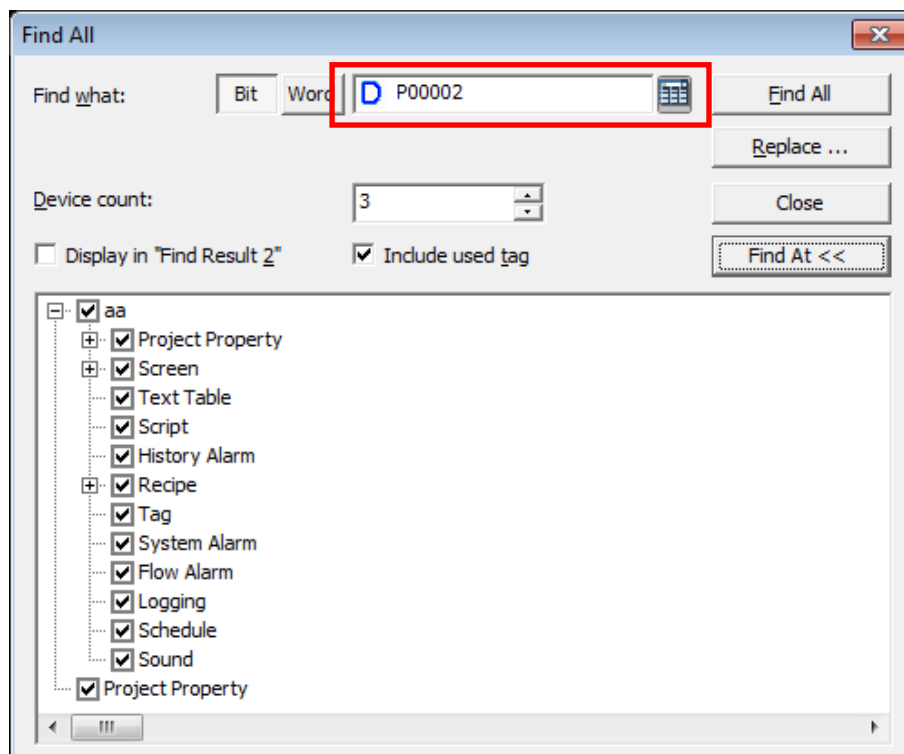
### 2.5.6.2 Finding and Replacing All Devices

To find all objects of a particular type at once:

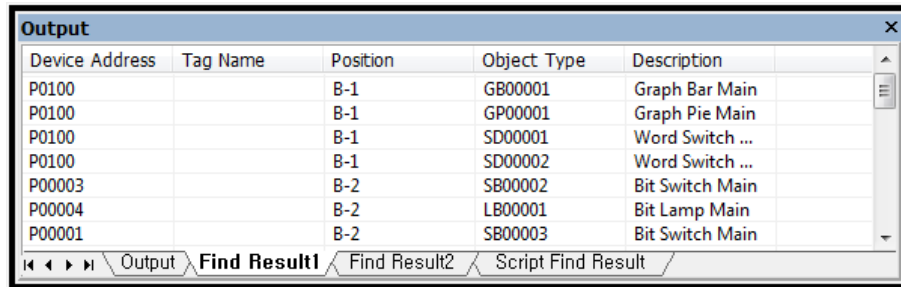
1. Click an object to select it, and then click [Tool] ► [Find/Replace All]. The current object's address is shown in the Find All window.



2. Click object types and enter the original device address to find in the **Find What** field. The entire project is selected by default.



- Click [Find All]. The output window shows the results of the search. You can double-click a column to view details about the objects.



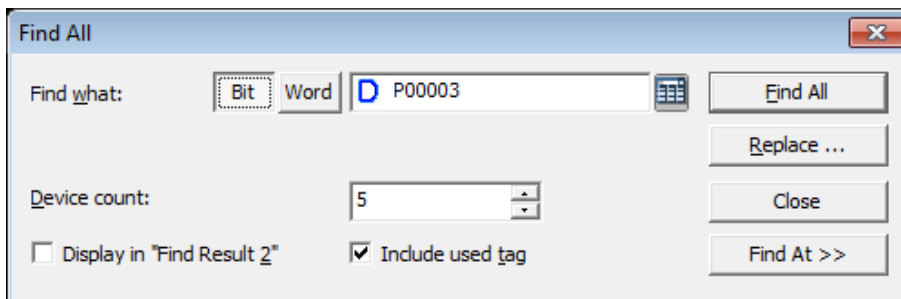
The screenshot shows the 'Output' window with a table of search results. The table has columns: Device Address, Tag Name, Position, Object Type, and Description. The results are as follows:

Device Address	Tag Name	Position	Object Type	Description
P0100		B-1	GB00001	Graph Bar Main
P0100		B-1	GP00001	Graph Pie Main
P0100		B-1	SD00001	Word Switch ...
P0100		B-1	SD00002	Word Switch ...
P00003		B-2	SB00002	Bit Switch Main
P00004		B-2	LB00001	Bit Lamp Main
P00001		B-2	SB00003	Bit Switch Main

At the bottom of the window, there are tabs: 'Output', 'Find Result1', 'Find Result2', and 'Script Find Result'. 'Find Result1' is currently selected.

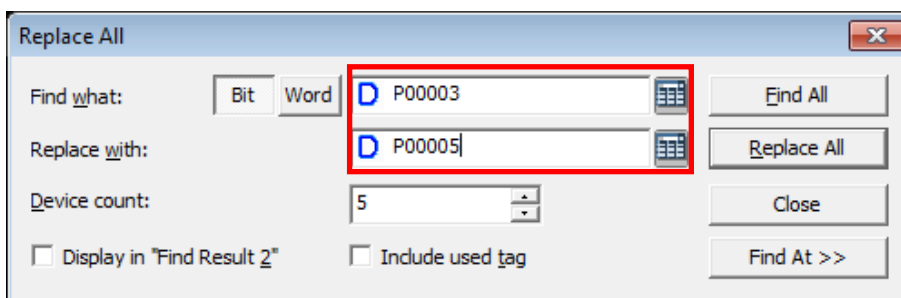
To replace all objects in a range of addresses at once:

- Click an object to select it, and then click [Tool] ► [Find/Replace All]. The current object's address is shown in the Find All window.



The 'Find All' dialog box is shown. It has a 'Find what:' field with 'D P00003' entered. There are 'Bit' and 'Word' radio buttons, with 'Word' selected. Below this is a 'Device count:' field with '5' entered. At the bottom, there are checkboxes for 'Display in "Find Result 2"' (unchecked) and 'Include used tag' (checked). On the right side, there are buttons for 'Find All', 'Replace ...', 'Close', and 'Find At >>'.

- Click [Replace].
- Enter the original device address in the **Find what** field and the new address in the **Replace with** field.



The 'Replace All' dialog box is shown. It has a 'Find what:' field with 'D P00003' entered and a 'Replace with:' field with 'D P00005' entered. Both fields are highlighted with a red rectangle. There are 'Bit' and 'Word' radio buttons, with 'Word' selected. Below this is a 'Device count:' field with '5' entered. At the bottom, there are checkboxes for 'Display in "Find Result 2"' (unchecked) and 'Include used tag' (unchecked). On the right side, there are buttons for 'Find All', 'Replace All', 'Close', and 'Find At >>'.

- Click [Replace All].
- Click [Yes] to confirm the address replacement.

### Note

To replace addresses in a specified range, change the **Device Count** setting. Addresses

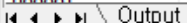
will be replaced for the number of devices you specify.

### 2.5.6.3 Viewing Device Cross-References



You can view device cross references to see device and script information for the entire project at once. To view device cross-references, click [Tool] ► [Cross Reference].

Device addresses, tags, positions, object types, and descriptions are shown in the Output pane. You can double-click an entry in the cross reference to view device or script details.

Output					
Device Address	Tag Name	Position	Object Type	Description	
P0100		B-1	GB00001	Graph Bar Main	
P0100		B-1	GP00001	Graph Pie Main	
P0100		B-1	SD00001	Word Switch ...	
P0100		B-1	SD00002	Word Switch ...	
P00003		B-2	SB00002	Bit Switch Main	
P00004		B-2	LB00001	Bit Lamp Main	
P00001		B-2	CB00001	Bit Switch Main	

 Output Find Result1 Find Result2 Script Find Result

### 2.5.7 Switching Project Windows

To switch project windows conveniently, you can use the Next/Previous function. This allows you to scroll through windows in order. To switch project windows, click [Tool] ► [Previous Screen/Next Screen]. You can also click the Next  or Previous  icons on the toolbar.

## 2.6 Managing a Project


Learn about project management functions, including transferring data to XGT Panels or removable drivers, backing up projects, and printing project details.

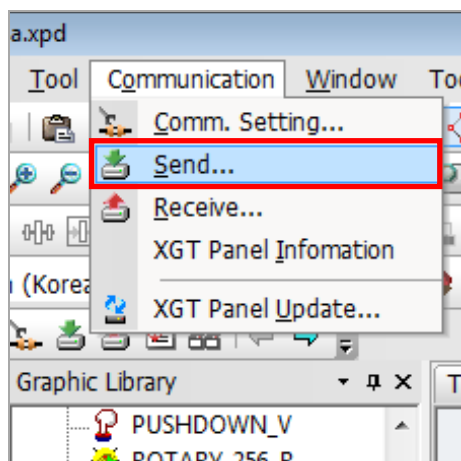
### 2.6.1 Transferring to an XGT Panel

The GUI you design in XP-Builder must be transferred to an XGT Panel. You can transfer the interface with one of two methods: full transfer or modification transfer. By default, XP-Builder determines whether or not a previous version of the project exists on the XGT Panel and then transfers either the entire project or only modified parts of the project accordingly. However, you can force XP-Builder to transfer the full project, if desired.

Before transferring a project, you must select a connection method, as described in the following sections. There are four connection methods available: RS232C, USB, Ethernet, and ActiveSync. The connection methods available will vary based on the XGT Panel model you are using. Additional options, such as compressed project file reception, logging, and use of recipes will vary as well.

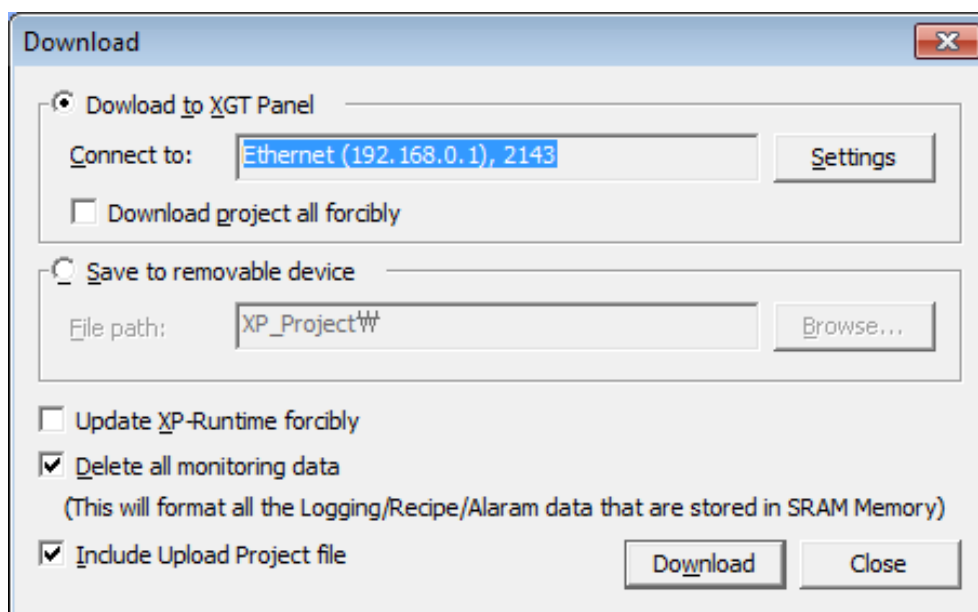
To transfer the project:

1. Click [Communication] ► [Send] (or select the download icon on the toolbar .





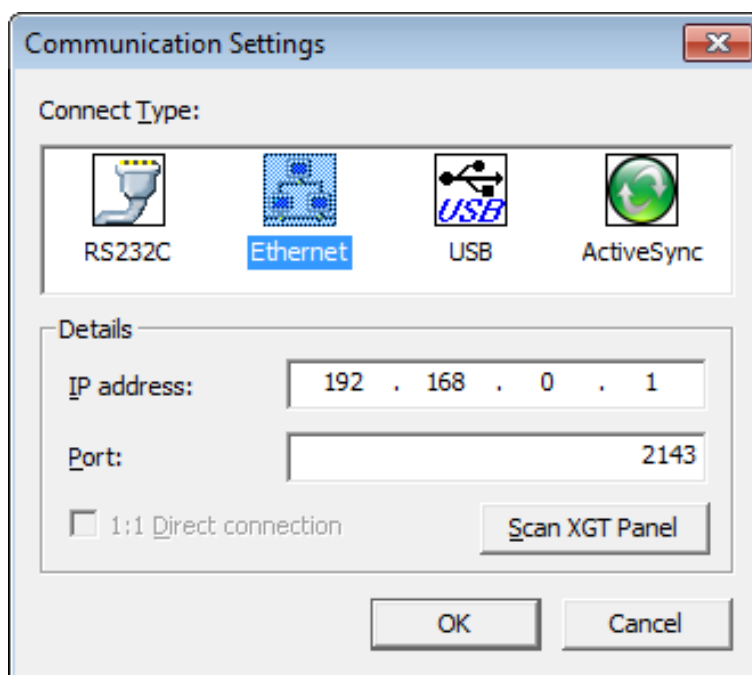
- Set the following options, as necessary:



Function	Description
Download to XGT Panel	Select this option to transfer a project to an XGT Panel. This is the default option. Click [Settings] to change the communication settings.
Download Project All Forcibly	By default, XP-Builder determines if a previous version of the project exists on the panel and determines whether or not to transfer the full project or only to update data that has changed. However, you can select this option to force XP-Builder to transfer the entire project.
Save to Removable Device	Select this option to transfer a project a removable device that is connected to your computer. For more details, refer to <2.6.2 Transferring to a Removable Drive>
Update XP-Run time Forcibly	By default, XP-Builder determines whether or not the runtime files need to be updated on the XGT Panel. However, you can select this option to force XP-Builder to update the runtime files on the panel.
Delete All Monitoring Data	Select this option to delete alarm, logging, and recipe data stored in the SRAM of the XGT Panel.
Include Upload Project File	Select this option to transfer a compressed project file to the XGT Panel in addition to the normal project files. You

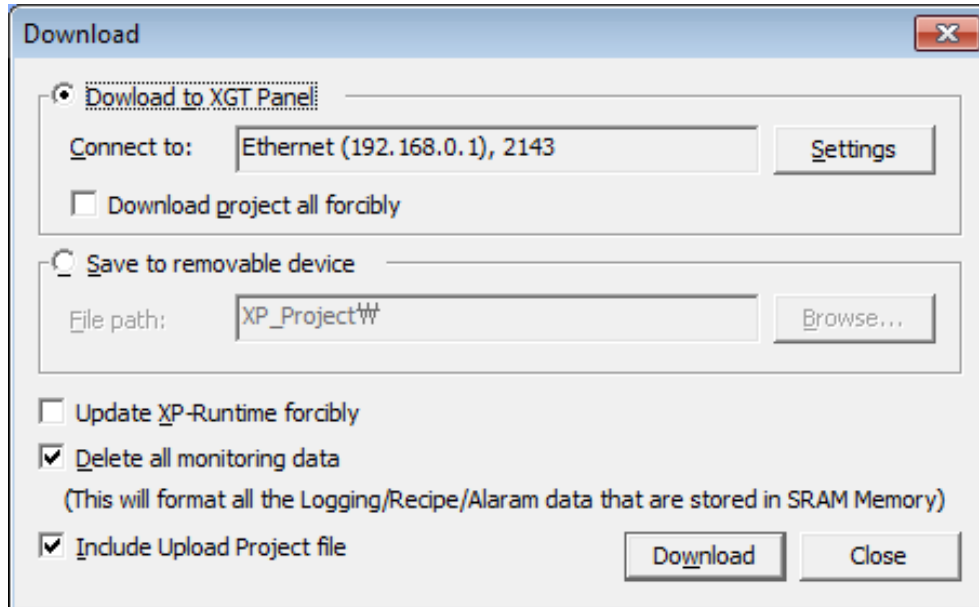
Function	Description
	must select this option to extract images from an XGT Panel later. The compressed file size requires only a small amount of memory, so this option is highly recommended.
Download	Click to transfer the data to the XGT Panel.

3. If necessary, click [Settings] to view or change the connection settings.



Function	Description
Connect Type	Set the connection type between your computer and the XGT Panel.
Details	For Ethernet and RS-232C connections, you can specify the detailed connection settings. In Windows XP, a virtual IP address is created automatically when the computer and panel have different IP addresses. In Windows 7 or Windows 8, you must set the same IP address manually, or communication is not possible.
Scan XGT Panel	Click to scan for XGT Panels connected via Ethernet.

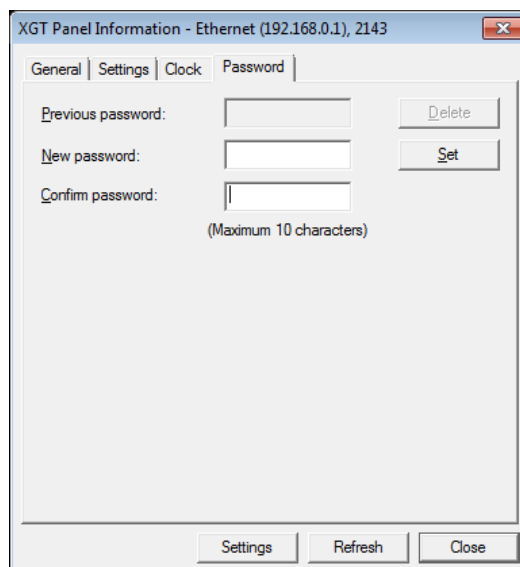
4. Verify that your computer and the XGT Panel are both properly connected via your chosen connection method, and then click [Download].



5. If necessary, enter a communication password for the XGT Panel and click [OK]. In XP-Builder, the transfer progress will be shown in the output window.

### Notes

- To set the password, in XP-Builder, click [Communication] ► [XGT Panel Information] ► [Password]. When you set the password for the first time, enter the new password again to confirm it. You can enter a password of up to 10 characters in length.



- It is recommended to let XP-Builder transfer only the updated portion of a project, except in the following conditions:
  - You are transferring the project to the panel for the first time or the project has been deleted from the panel.
  - You have changed the project properties, which can affect data throughout the entire project.
  - The project ID has been deleted on the panel due to a communication error and, therefore, the project IDs cannot be compared between your computer and the panel.
- Project files are stored in the GENERAL folder, except for BTE models, where it is stored in the BTE folder. On the XGT Panel, you can view the file version on an XGT Panel by accessing the update menu and selecting the [Displaying XGT Panel File Version] option.
- If the transfer is unsuccessful, it may be due to different runtime versions between XP-Builder and the XGT Panel. Update the runtime file on the panel to match XP-Builder and try the transfer again.

---

### 2.6.1.1 Using a Serial (RS-232C) Connection

A serial connection provides a 1:1 communication method between the control device and a computer. A 6-pin cable is required to make a serial connection, but this cable is not provided with the XGT Panel.

#### **Note**

Transfer failure errors can occur if the serial cable is not securely connected to the back of the XGT Panel's TOOL port. Transfers can also be affected by proximity to devices that emit large amounts of noise, such as high voltage switches or motors. Ensure that the cable is securely connected and that it is shielded or placed away from devices that may cause interference.

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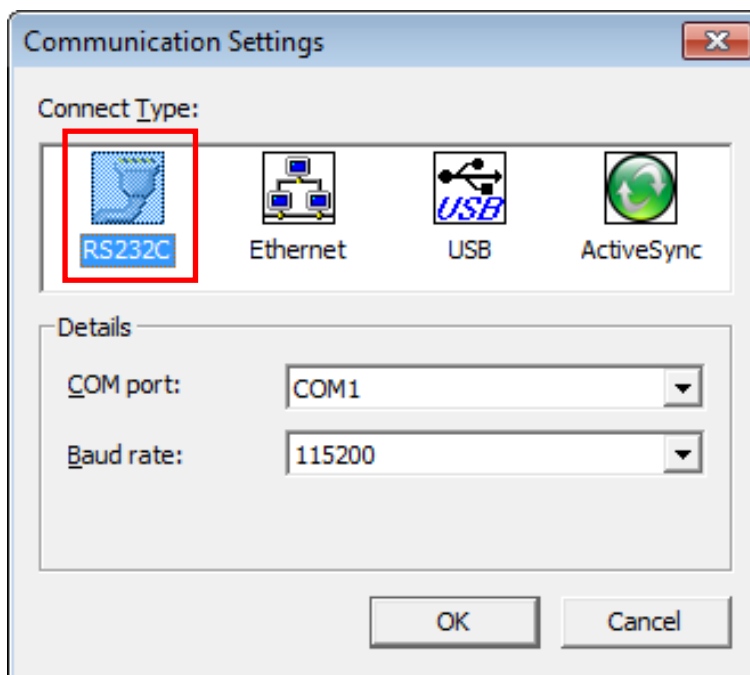
To use a serial connection:

1. Connect the serial cable to the TOOL port on the XGT Panel and RS-232C port on a computer.
2. On the XGT Panel, close any open programs.
3. Touch and hold the screen to open the menu.
4. Touch [Settings] ► [PC Conn Setting].
5. In **RS232 Baud Rate**, select a baud rate.

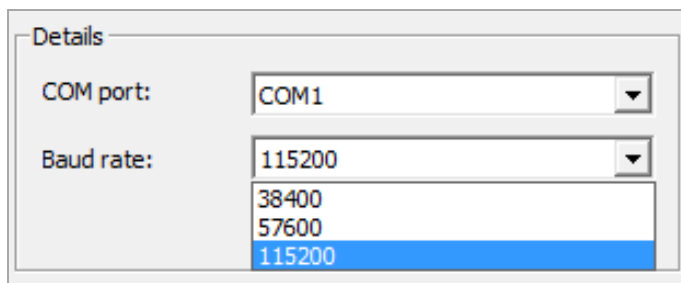
### Note

Only XP series panels have RS232 ports. Serial ports are not available on iXP series panels.

6. In XP-Builder, select [Communication] ► [Send] ► [Settings] ► [RS232C].



7. Select the same baud rate that you set on the XGT Panel. If the transfer rates do not match, the transfer will fail.



8. Select the serial port that is connected to the XGT Panel. The COM port number must be the same as the one used by your computer for the RS-232C connection. To set the port number on your computer, open the Control Panel, locate the Device Manager, and modify the Ports (COM&LPT) settings.

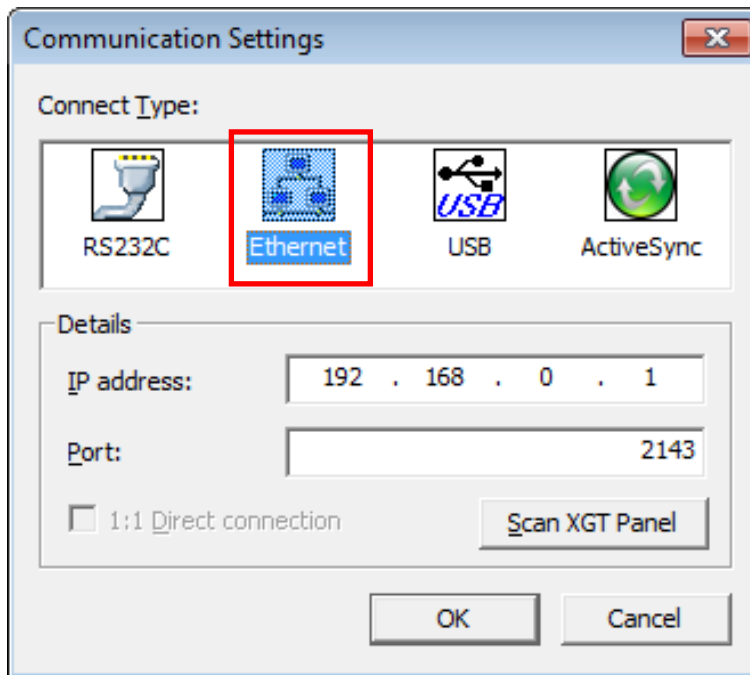
#### 2.6.1.2 Using an Ethernet Connection

An Ethernet connection is typically much faster than a serial connection, so using Ethernet is highly recommended.

To use an Ethernet connection:

1. Connect a computer and an XGT Panel to a network with Ethernet cables. You can also use a cross cable connection if a network is unavailable. The IP addresses of the XGT Panel and the connected computer must be in the same Subnet mask. For more details, refer to <5.1.5 Ethernet settings>
2. On the XGT Panel, close any open programs.
3. Touch and hold the screen to open the menu.
4. Touch [Settings] ► [Ethernet Setting].
5. Set the Ethernet IP, Gateway, and Subnet mask.
6. Touch [Go to Main Menu]. If you are connecting an iXP model panel, the setup is complete (the port number is set by default).
7. Touch [Settings] ► [PC Conn Setting] and set the **Port number**. The default value is 2143.

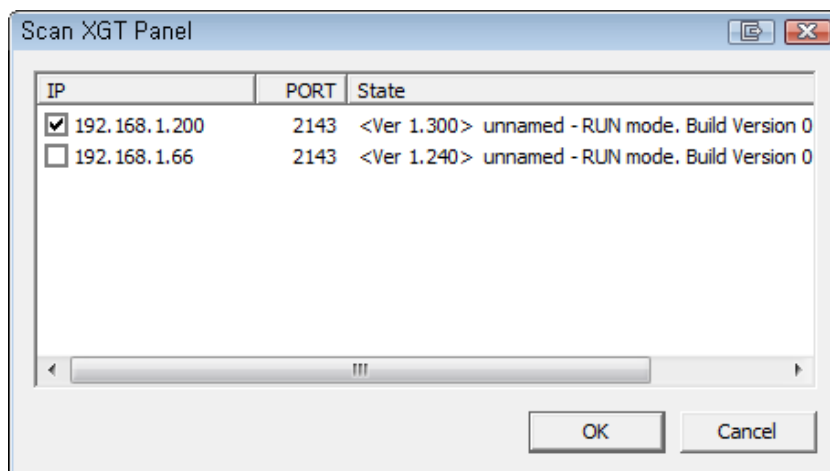
8. In XP-Builder, click [Communication] ► [Send] ► [Settings] ► [Ethernet].



9. Set the IP address and port number.

### Notes

- You can use the automatic search function in XP-Builder (Scan XGT Panel) to locate and connect XGT Panels on a network. The feature uses the UDP protocol to retrieve information about the XGT Panel and returns it via broadcast messages to a default address (255.255.255.255). This search is performed only on the local network. If a gateway exists between the search computer and the XGT Panel, the message may be blocked.
- By default, the last address used will remain in the settings until you replace it manually or update it by performing a scan for connected XGT Panels.
- If you are transferring information to multiple XGT Panels, the data will be transferred in order by IP address. When you view IP addresses as shown in the following example, they appear in ascending order.



### 2.6.1.3 Using a USB Connection

To use a USB connection, you must use an XPO-USBC model cable, manufactured by LSIS. The USB cable is not provided with the XGT Panel, so you must purchase one separately. A USB connection provides 1:1 communication between a computer and a control device.

#### Notes

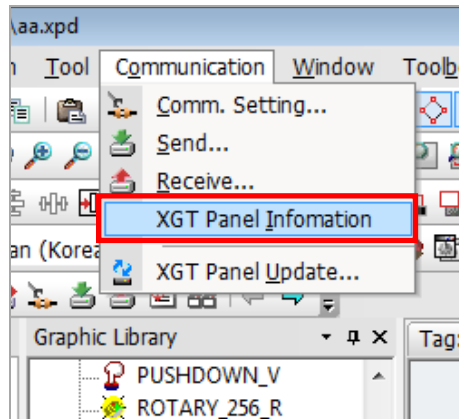
- To use a USB connection, connect the controllers first through the serial port or by Ethernet.
- Only XP series panels support this function. USB connection is supported by XGT Panel operating software versions 1.24 and up.



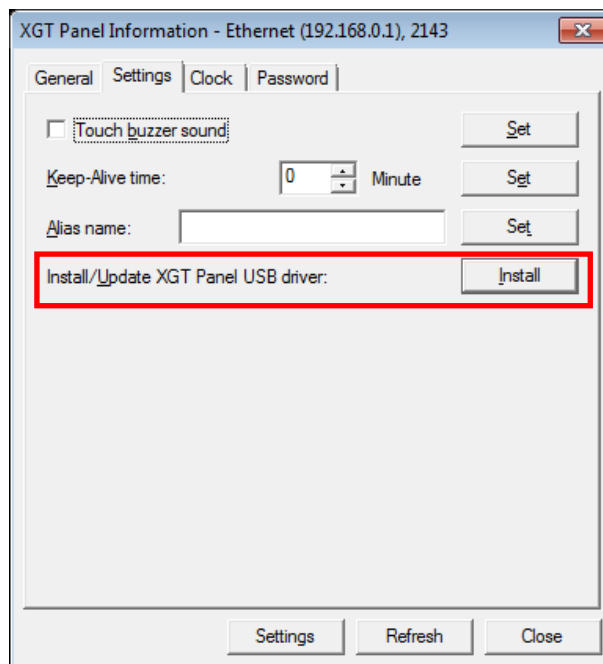
## 2. Project Development

To use a USB connection:

1. Install the XGT Panel USB driver: in XP-Builder, click [Communication] ► [XGT Panel Information].



2. Click the **Settings** tab, and then click [Install] next to the **Install/Update XGT Panel USB driver** option.



3. Connect a USB cable to the USB port on the XGT Panel and an open a USB port on a computer. When a USB cable is connected to the XGT Panel, a USB icon appears at the bottom-left of the display.
4. In XP-Builder, select [Communication] ► [Send] ► [Settings] ► [USB].

#### 2.6.1.4 Using an ActiveSync Connection

To use an ActiveSync connection, you must use a USB 2.0 cable with a mini-B connector on one end. The USB cable is not provided with the XGT Panel, so you must purchase one separately. An ActiveSync connection provides 1:1 communication between a computer and a control device.

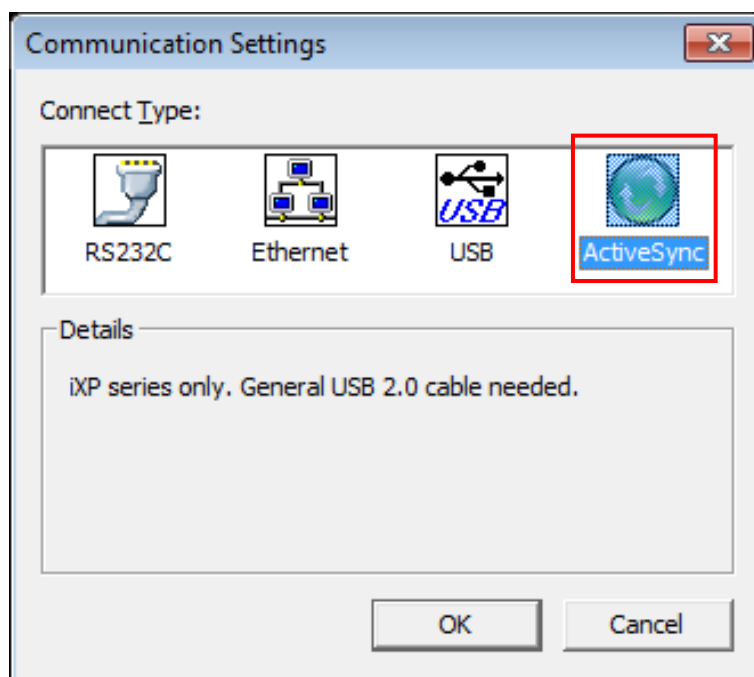
##### Note

Only iXP series panels support this function.

To use an ActiveSync connection:

Connect a USB 2.0 cable to the front USB OTG port (mini B type) on the XGT Panel and an open USB port on a computer. The computer should recognize the ActiveSync connection automatically.

Create project to send and then save it. Run Project Download screen. Select [Communication] ► [Comm. Setting] ► [ActiveSync].



##### Notes

- If the ActiveSync window inadvertently indicates that the device has been disconnected, leave the cable connected and the situation should resolve itself

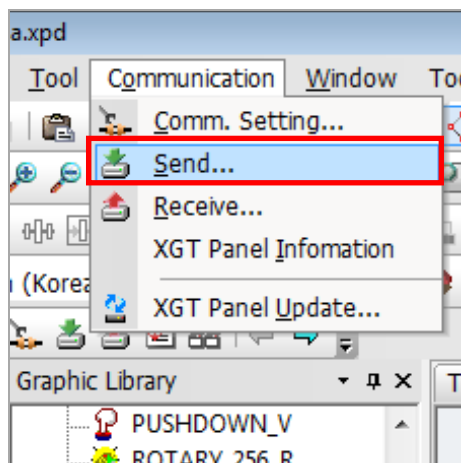
shortly.

- When an ActiveSync connection is made to the XGT Panel, a USB status window will appear and the message "Connecting to Host" will change to "User Authenticated" before the window closes.

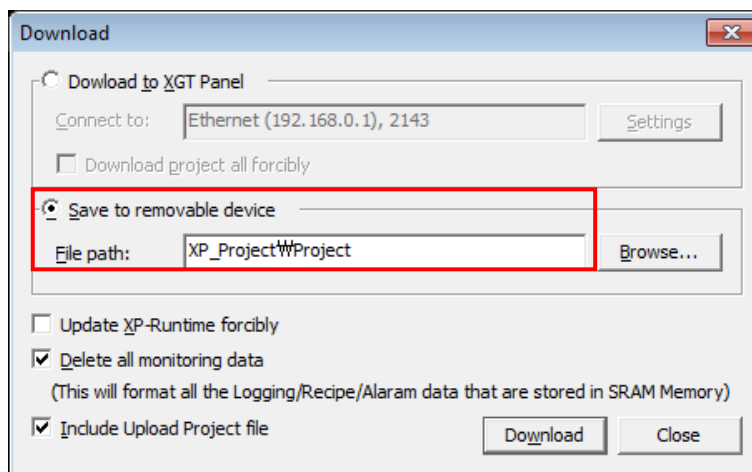
### 2.6.2 Transferring to a Removable Drive

For convenience, you can transfer the project to a removable drive and then connect the drive to an XGT Panel to update it. To transfer the project to a removable drive:

1. Click [Communication] ► [Send] (or select the download icon on the toolbar .



2. Click the checkbox next to **Save to removable device** and select the location of the removable drive. By default, the project will be saved in the **XP\_Project** folder, unless you specify a different folder name. To download the project file, you must create a **Project** folder inside the **XP\_Project** folder. The folder will be created automatically.




### 3. Click [Download].

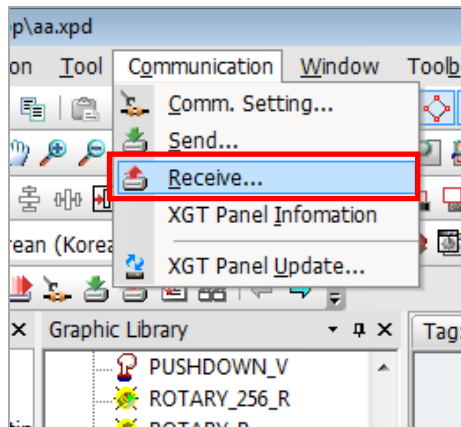
#### Notes

- Ensure that your removable drive has sufficient space to store the project files that you choose to transfer. If the drive has insufficient space available, an error message will appear that describes the available memory and the total memory required to transfer the project files.
- It is recommended to let XP-Builder transfer only the updated portion of a project, except in the following conditions:
  - You are transferring the project to the panel for the first time or the project has been deleted from the panel.
  - The project ID has been deleted on the panel due to a communication error and, therefore, the project IDs cannot be compared between your computer and the panel.
  - You have changed the project properties, which can affect data throughout the entire project.
  - You are transferring the project to multiple HMIs.
  - The project already in the HMI has a different version than the one specified in XP-Builder.
- Project files are stored in the GENERAL folder, except for BTE models, where it is stored in the BTE folder. On the XGT Panel, you can view the file version on an XGT Panel by accessing the update menu and selecting the [Displaying XGT Panel File Version] option.
- If the transfer is unsuccessful, it may be due to different runtime versions between XP-Builder and the XGT Panel. Update the runtime file on the panel to match XP-Builder and try the transfer again.

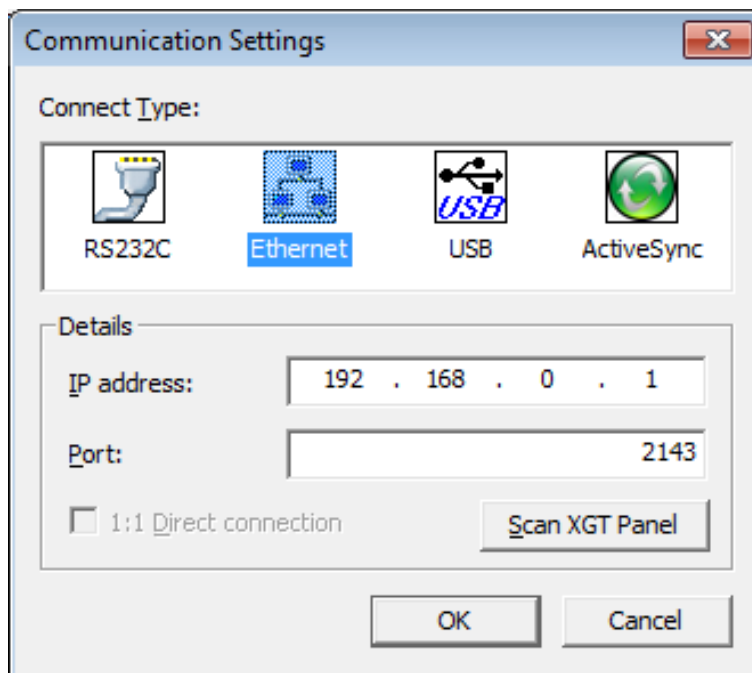
### 2.6.3 Receiving a Project File from an XGT Panel

You can transfer project file from an XGT Panel to your computer. To receive a project file:

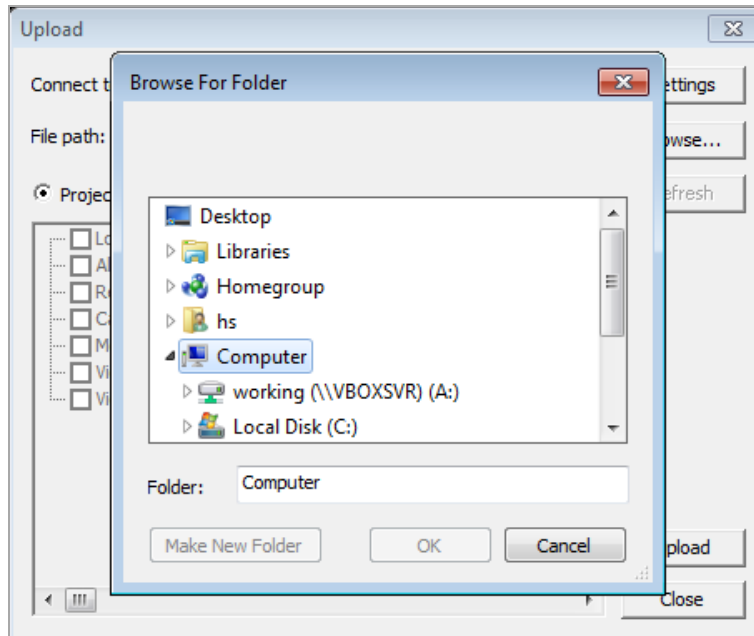
1. In XP-Builder, click [Communication] ► [Receive] (or select the upload icon on the toolbar ).



2. If necessary, click [Settings] to change the communication settings.



3. Click [Browse] to select a destination folder for the project file. If you don't set the destination, you cannot receive the project file from an XGT Panel.




4. Select Project file. You can click the checkboxes in the list to specify which types of data to transfer.
5. Click [Upload].
6. If necessary, enter a communication password for the XGT Panel and click [OK]. In XP-Builder, the transfer progress will be shown in the output window.

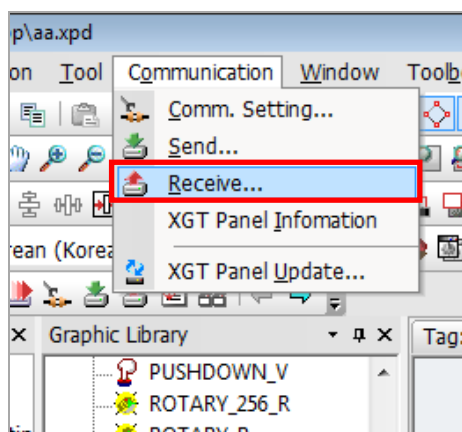
### Note

You cannot receive images unless you selected the Include Upload Project File option when transferring the project to the XGT Panel. For more information, refer to <2.6.1 Transferring to an XGT Panel> or <2.6.2 Transferring to a Removable Drive>.

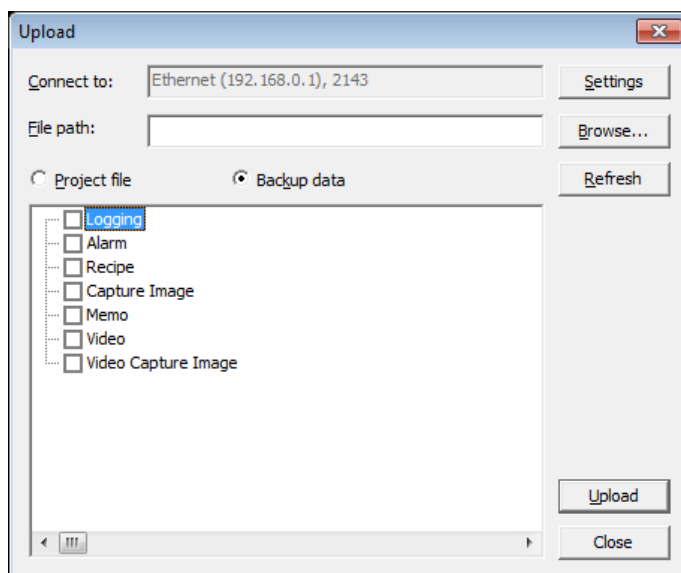
### 2.6.4 Backing up Project Data

You can back up project data from a removable storage drive in an XGT Panel to your computer, including logging and alarm data, recipes, screen captures, memos, videos, and video captures. To back up project data:

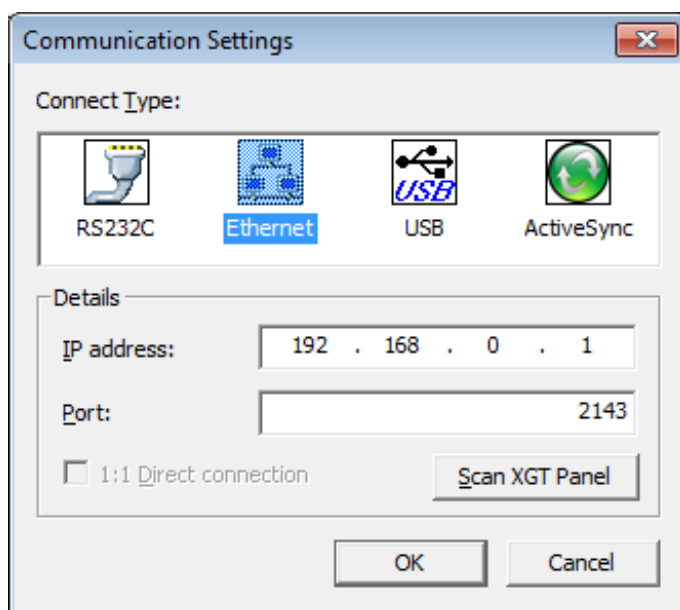
1. In XP-Builder, click [Communication] ► [Receive] (or select the upload icon on the toolbar ).



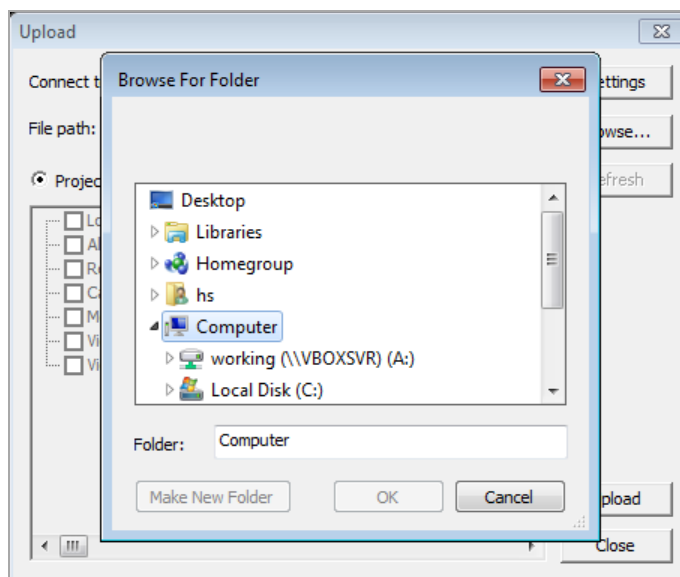
2. Click [Backup data].



3. If necessary, click [Settings] to change the communication settings.



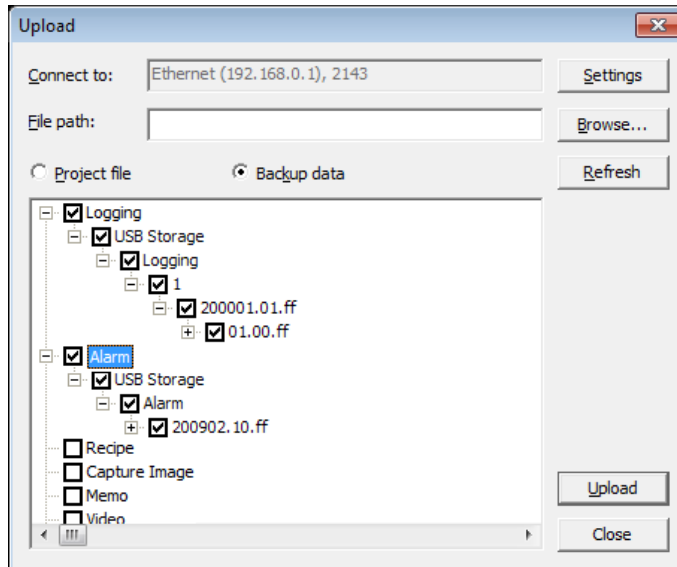
4. Click [Browse] to select a destination folder for the project data.



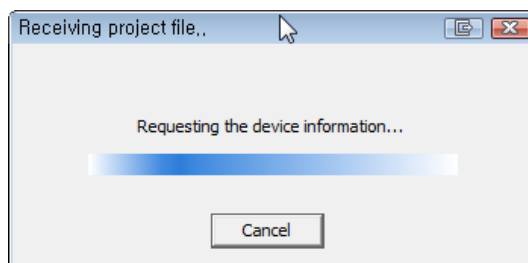
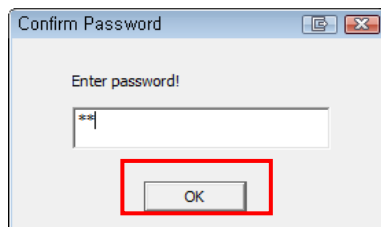


## 2. Project Development

5. Select Backup data. You can click the checkboxes in the list to specify which types of data to transfer.



6. Click [Upload].
7. If necessary, enter a communication password for the XGT Panel and click [OK]. In XP-Builder, the transfer progress will be shown in the output window.



### Note

Logging, alarm, and recipe data are stored in CSV format. Memos and screen captures are saved in BMP format. Videos are saved in AVI format and video capture images are saved in JPEG format.

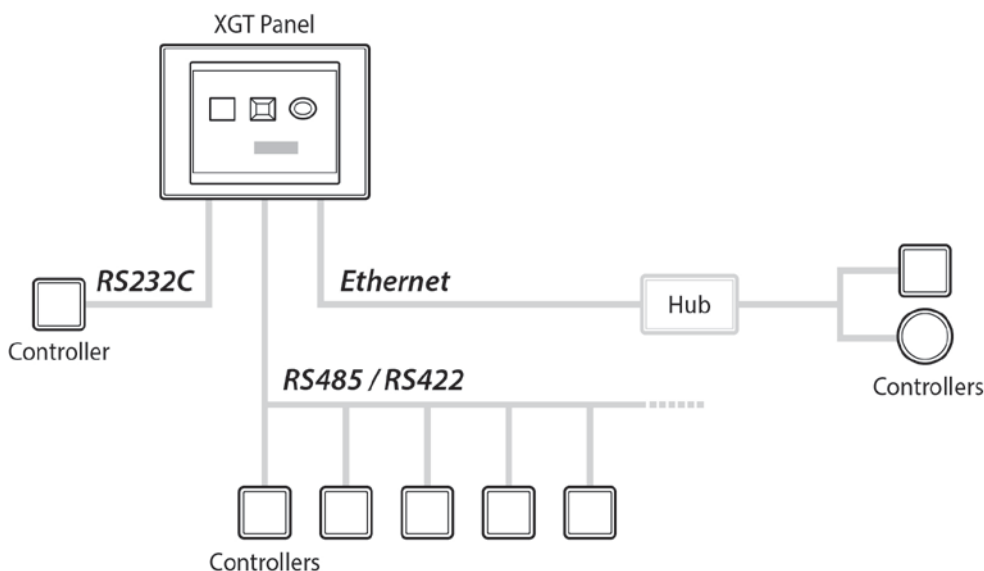
## 2.7 Configuring Advanced Communication Settings

XP-Builder supports several communication types to allow for flexible controller and panel configurations. This section describes the communication types available.

Multiple controllers can be monitored from a single XGT Panel. The XP series panels support up to 4 connection numbers (0-3) and the iXP series panels support up to 16 connection numbers (0-15) for different types of controllers, when connected to multiple protocols (RS232C, RS422/485, and Ethernet).

### 2.7.1 Using 1:N Communication with Multiple Protocols

When setting up 1:N communication with multiple protocols, you can connect various types of controllers via the different protocols. The RS485 connection uses only one port and, therefore, can be assigned only one connection number. However, it provides additional flexibility by allowing you to add different controller types via RS232C and Ethernet channels. The RS232C protocol allows you to connect only one controller, while the Ethernet protocol allows you to connect up to 2 different types of controllers for XP series panels or up to 14 different types of controllers for iXP series panels. A "multi-channel" setup of 1:N communication is illustrated by the following image (XP Series).



#### Notes

- When you connect controllers via RS232C only, you can connect only one controller from each series.
- When you connect controllers via RS232C and RS485/RS422, you can connect

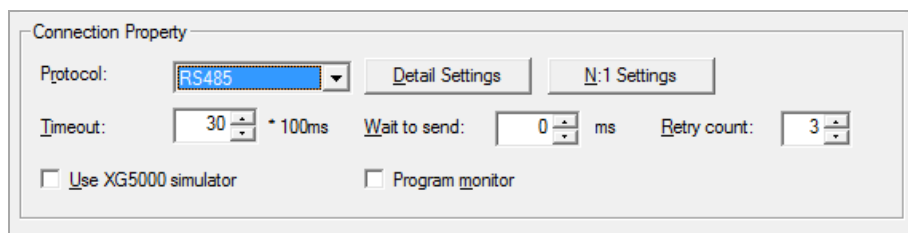
only one controller form each series per protocol.

- When you connect controllers via Ethernet only, you can connect 4 XP series controllers and 16 iXP series controllers.

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To use 1:N communication:

1. In XP-Builder, click [Common] ► [Project Property Setting] ► [XGT Panel Settings] ► [Add Controller].



2. Select the PLC and manufacturer from the drop-down list. If necessary, click [Detail Settings] and change the properties.

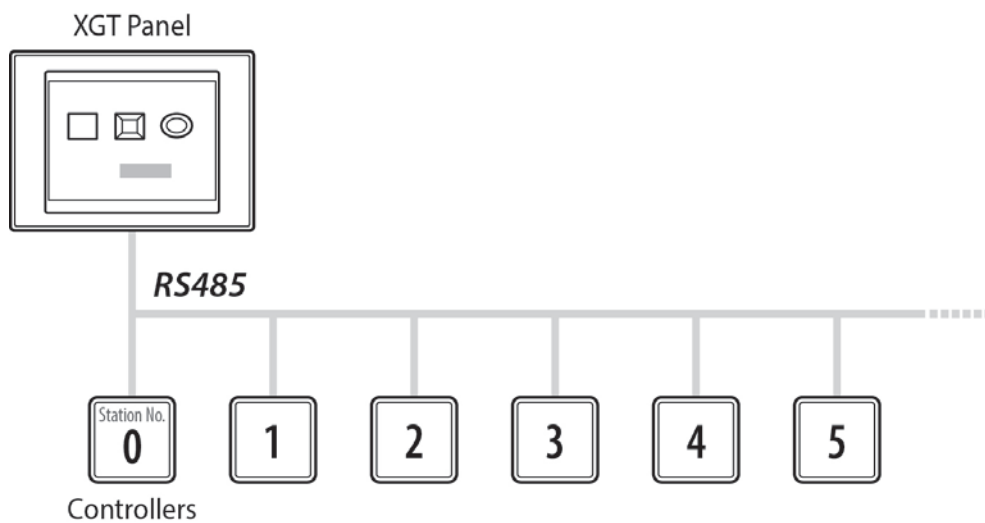
### Note

To delete a controller, select it from the list and click [Delete Controller].

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### 2.7.2 Using 1:N Communication with RS485

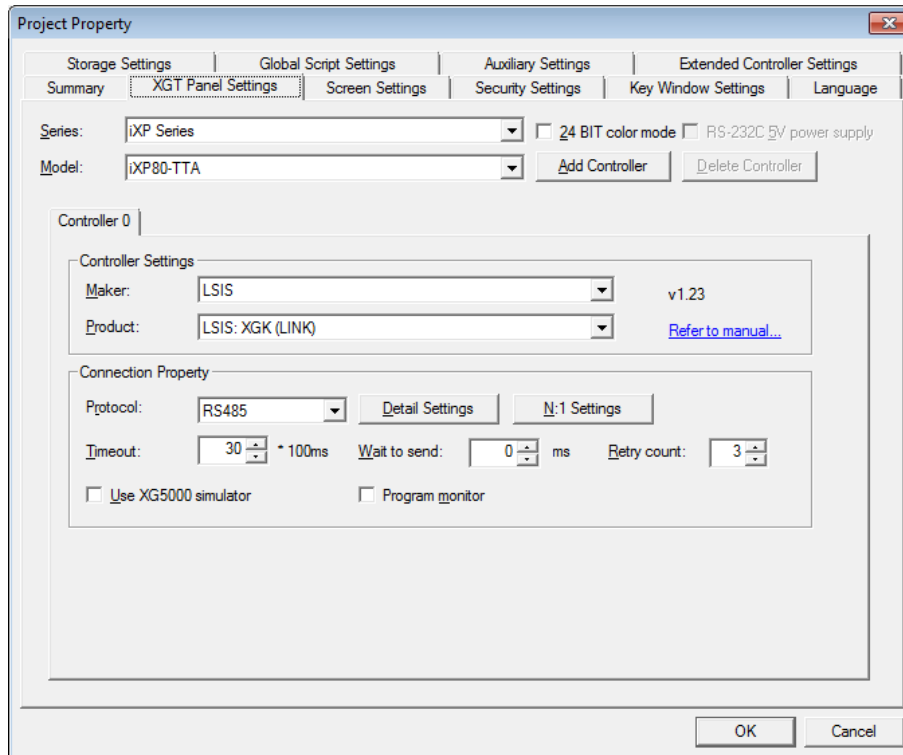
When setting up 1:N communication with RS485, you can connect a large number of controllers, as long as they are all the same type and make of controller. The RS485 connection uses only one port and, therefore, can be assigned only one connection number. With a RS485 connection, you can also set station numbers for devices in the advanced communication settings, so that the same device can be referenced by multiple controllers. A “multi-drop” setup of 1:N communication with RS485 is illustrated by the following image.



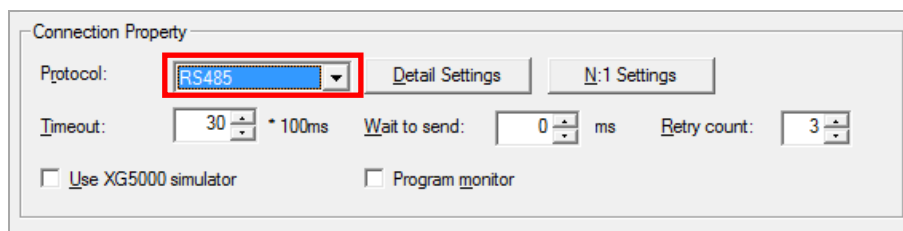
## 2. Project Development

To use 1:N communication with RS485:

1. In XP-Builder, click [Common] ► [Project Property Setting] ► [XGT Panel Settings].

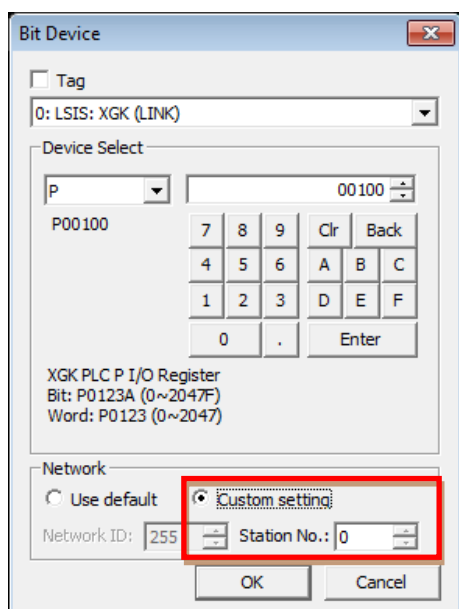


2. In the connection properties, select **RS485**.



3. In the object settings, click  to set the properties.

4. Check the box next to **Custom setting**.
5. Set the station number.



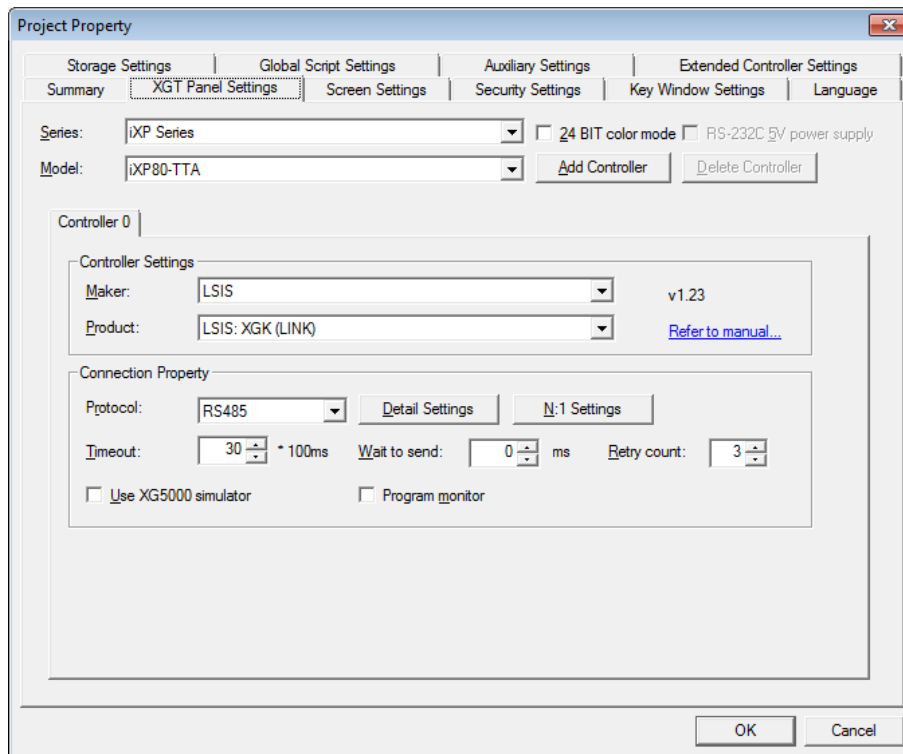
### 2.7.3 Using N:1 Communication

This is a useful way to make several XGT Panels to communicate with one PLC. N:1 communication is available only with the RS-485 communication protocol and uses a token ring bus to regulate communication. Only one XGT Panel can hold the token at a time and the token is passed after a defined holding time. The XGT Panel that you set to station "0" is the starting point for communication. After the token is released, it is delivered to station "1" and so on.

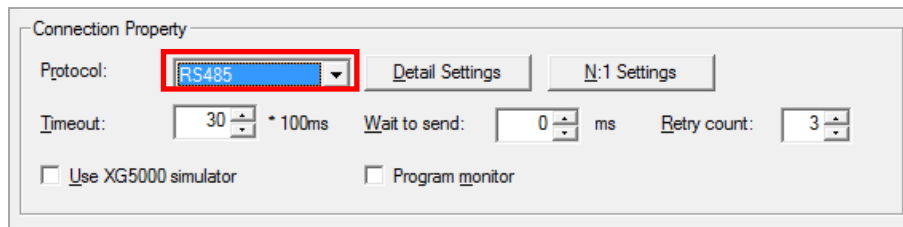
## 2. Project Development

To use N:1 communication, set the communication parameters:

1. In XP-Builder, click [Common] ► [Project Property Setting] ► [XGT Panel Settings].



2. In the **Connection Property** area, set [Protocol] to **RS485**.



3. Click [N:1 Settings].

4. Click the checkbox next to **Use N:1 Communication** and input the following parameters:

N:1 Settings	Description
Use N:1 Communication	Select whether or not to use N:1 communication.
N:1 Station Number	Select a station number (0-15). The first station must be set to "0". Station numbers must be continuous, or communication will fail. Duplicated station numbers are not allowed.
Number of XGT Panel	Select the total number of XGT panels you are using (up to 16).
Max. Token Holding Time	Select the maximum time that each panel can hold the token (up to 69 seconds). The token is automatically released when the maximum time is reached.

### Notes

- The total number of XGT Panels you specify must match the total number of stations exactly.
- The [N:1 Settings] option appears when you select a controller that supports N:1 communication.
- The more XGT panels you connect, the slower the communication speed will be.
- All XGT Panels participating in N:1 communication should have the same controller settings and parameter settings (except for station numbers), if possible.
- When using N:1 communication, the [Program Monitor] function is not supported and the controller monitor protocol cannot be used, which results in decreased communication speed.
- N:1 communication does not function in the simulator.
- If you use this option with 1:1 communication, the screen refresh time will slow down.



The following drivers support N:1 communication:

Manufacturer	Driver
LS Industrial Systems	LSIS:XGK(LINK)
	LSIS:XGI/XGR/XEC(LINK)
	LSIS:XGB(LINK)
	LSIS:GM(LINK)
	LSIS:MASTER-K(80, 120, 200, 300, 1000)S(LINK)
LS Mecapion	LS Mecapion:VS/VP Servo Drive
Mitsubishi Electric Corporation	MITSUBISHI:MELSEC-A(LINK)
	MITSUBISHI:MELSEC-QnA, Q(LINK)

## 3. Troubleshooting

In XP-Builder, you may be notified of an error via a code in the Results pane or a message in a pop-up window. In these cases, locate the error in the corresponding sections that follow and take the appropriate steps to resolve the error. For errors that are not identified by an error code or a pop-up message, refer to <3.4 Resolving Other Issues> for possible remedies. The following subsections describe how to resolve error codes during recording. These error codes are displayed by the device that saves error codes.

Error Code	Description
1	The path for saving video files has been set in XP-Builder.
2	A device for saving video files has not been installed or the patch for saving video files cannot be created in the device.
3	The current free space is less than the maximum file size. At least 10MB free space must be available before recording.
4	The number of files in video file backup path exceeds the limit. Format the storage device and reinstall it. Up to 1,000 files can be saved to the backup path.
5	The number of files per directory in the video file backup path exceeds the limit. Format the storage device and reinstall it. Up to 100 files can be saved in the backup path and, if more than 100 files are saved by user manipulation, recording cannot be started.
6	The video file cannot be deleted due to a file system problem. Format the storage device and reinstall it.
7	The video file cannot be created due to a file system problem. Format the storage device and reinstall it.
8	Creating a list of stored video files is in progress. Try again later. Refer to 5th byte of the status device.
10	The safety removal switch of the video file backup storage device is deactivated.
11	A video is being played. Recording is not available.
12	A recording is in progress. Recording cannot be started again.
13	A file cannot be created in the current storage device.
14	This file format cannot be played.
101	The path for saving a video capture file is not specified in XP-Builder.
102	The storage device for saving video capture files is not installed or the saving path cannot be created in the device.

### 3. Troubleshooting

Error Code	Description
103	The current free space is not enough to save the video capture file. At least 10MB of free space is required to save the video capture file.
104	The number of files in the video capture file backup path exceeds the limit. Format the storage device and reinstall it. Up to 1,000 files can be saved in the backup route.
105	The number of files per directory in video capture file backup path exceeds the limit. Format the storage device and reinstall it.
106	The video capture file cannot be deleted due to a file system problem. Format the storage device and reinstall it.
107	The video capture file cannot be created due to a file system problem. Format the storage device and reinstall it.
108	Creating a list of stored video capture files is in progress. Try again later. Refer to 6th bit of status device.
110	The safety removal switch for a video file backup storage device is deactivated.
111	Pre-recording is in progress, so the video cannot be captured.
112	Recording is in progress, so the video cannot be captured.

#### Notes

- To start recording, there must be at least 10MB of free space in the storage device. If free space is less than 10mb, recording cannot be started and error code 3 will be displayed. However, if you set the **Delete old file if disk full** option in Storage Settings, it deletes the oldest video file and you can try again.
- To capture video, there must be at least 1MB of free space in the storage device. If free space is less than 1mb, recording cannot be started and error code 11 will be displayed. However, if you set the **Delete old file if disk full** option in Storage Settings, it deletes the oldest video file and you can try again.
- In case of video recording file or video capture file, if the total number of file exceeds 1,000, delete the oldest file, so that the total number becomes less than 1,000.

### 3.1 Resolving Error Codes Found in the Results Pane

The following table lists error codes that appear in the Results pane. The errors and suggestions for resolving them are listed in order by code number.

Code	Error Message	How to Resolve the Error
1000	There is no background image.	The image set for the background does not exist. Choose another image for the background.
1003	You have selected script "XX" which has not been set.	The selected script does not exist. Replace the script with another one or create and register a new script.
1004	You cannot insert more than 8 window objects in a window.	More than 8 window objects have been registered. Delete window objects until 8 or fewer remain.
1005	The window size has exceeded the maximum size of the HMI window.	A window cannot be larger than the dimensions supported by the XGT Panel type specified. Set the window size to fit within the maximum dimensions allowed by the XGT Panel type.
2000	The set image information is incorrect.	The specified image has been deleted or the file extension is incorrect. Select another image or select an image type that is supported.
2001	Number "XX" of Display "YY" is incorrect.	The display specified does not exist. Change the display type and number of the object.
2002	The device address is incorrect.	The device type is incorrect or the device address has not been set. Set or change the device address.
2004	You have used a deleted or wrong text table.	The specified text table does not exist. Specify another text table.
2005	You have selected a script that has not been set.	The specified script does not exist. Specify another text table.
2007	The "XX" font you selected cannot express all the headings set as "YY."	The font you selected cannot be found or the font you selected does not support the double-byte characters you used in the heading. You must re-install the font, select a font that supports the characters in the heading, or change the heading.
2008	There is an object or picture	The object is outside the boundaries of the

### 3. Troubleshooting

Code	Error Message	How to Resolve the Error
	outside the screen area.	window. Relocate the object or adjust the size until it fits within the window boundaries.
2009	The "XX" font you selected has not been installed in the system.	The font you selected cannot be found. You must re-install the font.
2011	The image you specified is not available.	The specified image type is not supported. Delete the image or select an image type that is supported.
2012	The standard device exists in the specified "SCRIPT." An unexpected result might occur.	The variable type is incorrect in the script. Change the variable to a temporary variable to display a result without writing it in the standard device.
2013	There is no history alarm of which the printing has been set	The history alarm list in a special switch or multi switch has been deleted. Specify another history alarm list.
2014	If the number of rows is "XX" and number of lines is "YY, the maximum device range is exceeded.	The number of rows and lines you set exceed the maximum device range. Set the number of rows and lines to fall within the maximum device range.
2015	Device "XX" is read-only.	You have set a read-only device where a write device is required. Specify a write device for the object.
2016	Lamp condition you wrote does not exist. Default condition will apply.	The specified condition for a word lamp does not exist. Add a condition for the word lamp.
2017	The key pad location exceeds screen area.	The key window location is outside the dimensions of the window boundaries. Change the window location to fit within the window boundaries.
2018	The logging number does not exist.	The specified logging group does not exist. Register the logging group in the logging properties.
2019	Check whether there is another object whose cursor input group ID and Input order Number are the same as the object.	Two objects have the same automatic cursor and input order numbers. Change the automatic cursor and input order to unique numbers or remove the object with the redundant setting.

Code	Error Message	How to Resolve the Error
2021	You cannot monitor the connected device.	The specified controller does not support program monitoring. Change the function of the special switch or specify a controller that supports program monitoring.
2022	You did not set program monitoring. Go to [Common]-[Project monitoring]-[Device setting] and check monitoring.	The program monitor function has not been set for the object. Change the function of the special switch or activate program monitoring in the device settings.
2023	This device subject to logging cannot display error type.	The specified device cannot display logging errors. Change the display settings for the object or specify another device.
2024	There is more than one list.	The translated explanation we have doesn't make sense for the message: Objects in Trend, logging trend and distribution are registered without adding a list. Delete the object or add a list.
2025	Object or shapes exceed screen area.	An object or image location is outside the dimensions of the window boundaries. Change the object or image location to fit within the window boundaries.
2026	Group number is available from 1 to 253.	The specified number is beyond the allowable range for a group number. Specify a number from 1 to 253.
2027	Internal device only	Only an internal device type can be specified for this function. Change the device type to an internal device.
2028	Font for the language is not set. Go to [Common]- [Project properties] – [Language].	No font is specified for the selected language. Specify a font in the language settings.
2029	Execution path is not correct.	The path and filename are incorrect for an external program. Enter the correct path and filename.
3000	Initial screen setting "XX" is incorrect.	The specified start window does not exist. Specify an existing window or create a new window to use as the start window.

### 3. Troubleshooting

Code	Error Message	How to Resolve the Error
3002	Key window "XX" is not correct.	The specified key window does not exist. Specify an existing window or create a new window to use as the key window.
3003	The base screen change device is not correct.	The window change device has not been specified. Specify the device in the project properties window.
3004	Window 1 change device is not correct.	The window change device has not been specified. Specify the device in the project properties window.
3005	Window 2 change device is not correct.	The window change device has not been specified. Specify the device in the project properties window.
4000	The logging start device of logging "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4001	The logging device of logging "XX" is not correctly set.	The device has not been specified. Specify the device in the logging properties.
4002	The logging display device of "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4003	The logging stop device of "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4004	The logging area pool device of logging "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4005	The logging area deleting device of logging "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4006	The logging backup device of logging "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4007	The logging backup completing device of logging "XX" is not correct.	The device has not been specified. Specify the device in the logging properties.
4008	Logging area setting is not correct.	The logging storage area has not been specified. Specify the storage area in the logging area settings.
4009	The maximum size of the	The sum of the specified storage areas exceeds

Code	Error Message	How to Resolve the Error
4010	logging area has been exceeded ("XX" KB).	the maximum logging area size. Adjust the storage areas to fit within the maximum size.
	The logging area has not been set.	The logging storage area has not been specified. Specify the storage area in the logging area settings.
4014	The path of the object to backup the logging has not been specified.	The logging backup path has not been specified. Specify the backup path in the logging properties.
4015	The setting of the device to log is not correct. The maximum device size that can be set by the number of the devices has been executed.	The maximum number of devices to log has been exceeded. Reduce the number of device to log until it is within the maximum.
4016	Redundant setting has been found in the control device of logging "XX." Redundancy of control devices is not permitted.	Two logging control devices have the same number. Change one of the devices to a unique number.
5000	Setting of the alarm number storage device is not correct.	The device has not been specified. Specify the device in the alarm properties.
5001	The flow alarm supervisory device setting is incorrect or setting has not been done for all the registered alarms.	All required devices have not been specified or a device address is incorrect. Specify a device or verify specified devices in the flow alarm settings.
5002	The flow alarm supervisory devices have been redundantly set.	Two flow alarm devices have the same number. Change one of the devices to a unique number.
5003	The alarm message setting of [Flow Alarm "XX"] is not correct.	No alarm message has been selected. Select an alarm message.
7000	The setting No of alarms occurred device is incorrect.	The device has not been specified. Specify the device in the history alarm properties.
7001	The setting of the alarm history deleting device is incorrect.	The device has not been specified. Specify the device in the history alarm properties.
7003	The setting of the alarm printing finishing device is incorrect.	The device has not been specified. Specify the device in the history alarm properties.



### 3. Troubleshooting

Code	Error Message	How to Resolve the Error
7004	The setting of the history alarm data acquisition cycle is incorrect.	The specified history alarm acquisition cycle contains an error. Verify the cycle in the history alarm properties.
7005	There is not text displaying the alarm group "XX."	The alarm group display text has not been selected. Select display text in the group properties window.
7006	The text setting of alarm list "XX" is not correct.	No text has been selected in the alarm list. Select a text table or create and specify a new text table for the alarm list.
7007	The setting of the device to be monitored in alarm list "XX" is incorrect.	The device has not been specified. Specify the device in the alarm list settings.
7008	The alarm range setting of alarm list "XX" is incorrect.	The specified conditional expression in the alarm list contains an error. Verify the expression in the alarm list settings.
7009	The detailed display number setting of alarm list "XX" is incorrect.	The detailed display setting in the alarm list contains an error. Verify the setting in the alarm list settings.
7010	The alarm message setting of alarm list "XX" is not correct.	No alarm message has been set. Select a text string from a text table in the alarm list to use as the alarm message.
7011	Alarm list "XX" and "YY" are set to supervise the same device.	Two history alarms are set to monitor the same device. Specify a unique device for one of the alarms or delete one of the alarms.
7012	All the alarm list devices of alarm list "XX" must be set.	Some devices in the alarm list have not been specified. Specify all devices in the alarm list.
7013	The lists to supervise of alarm list "XX" have been redundantly set.	Two history alarms are set to monitor the same device. Specify a unique device for one of the alarms or delete one of the alarms.
7014	The supervision device word condition information setting of alarm list "XX" is not correct.	The specified conditional expression in the alarm list contains an error. Verify the expression in the alarm list settings.
8000	Writing start device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.

Code	Error Message	How to Resolve the Error
8001	Reading start device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8002	Backup device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8003	The recipe numbering device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8004	The recipe block numbering device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8005	The recipe data transfer completion signal device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8006	Recipe data transfer error display device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8007	Recipe device setting is not correct.	The device has not been specified. Specify the device in the recipe properties window.
8008	The maximum recipe setting size (63KB) has been exceeded.	The sum of the specified recipes exceeds the maximum memory size. Adjust the number of data blocks within the recipes to fit within the maximum size.
8009	The recipe backup path has not been specified.	Set the recipe backup path in the recipe properties window.
8010	Recipe device setting is not correct. Check whether the number of the recipe devices exceeds the maximum device setting size.	The device has not been specified or the number of devices exceeds the maximum allowed. Verify the specified devices in the recipe entry window.
9000	The download data size ("XX" MB) exceeds the maximum size (10 MB).	The total size of the selected data exceeds the maximum memory available for download to the XGT Panel. Unselect items to reduce the total data size and try again.
9001	The font "XX" used in the project is not the font installed in the system. Change it into the font	The specified font is not installed on the system. Install the font on the system or specify another font in the project properties.

### 3. Troubleshooting

Code	Error Message	How to Resolve the Error
	installed in the system. If you do not change it, the text might not be displayed.	
11000	Font "XX" file is not detected.	The specified font cannot be found or is not installed on the system. Try restarting XP-Builder. If the problem reoccurs, install the font on the system or specify another font in the project properties.
11001	Characters that cannot be output as font "XX" are included. Check whether you used any character which does not fit for the selected font in the text table or window contents.	The selected font cannot display the special characters you are using. You must select another font that is capable of displaying the special characters.
13001	The script selected as the operation does not exist.	The specified script does not exist. Specify another script or create a new script.
15000	Backup file transformation: The backup file cannot be opened.	The file may be in use. Ensure that the file is closed and try again.
15001	Backup file transformation: The output file cannot be made.	The file may be in use. Ensure that the file is closed and try again.
15002	Backup file transformation: the backup file is not accessible.	The file may be in use. Ensure that the file is closed and try again.
15003	Backup file transformation: The backup file cannot be read.	The file may be in use. Ensure that the file is closed and try again.
15004	Backup file transformation: The output file is not writable.	The file may be in use. Ensure that the file is closed and try again.
15006	Backup file transformation: The alarm header is not 0x5a4b.	An incorrect character is included in the alarm header. Contact the Customer Service Center.
15007	Backup file transformation: The front offset is larger than the file size.	The file offset exceeds the file size. Contact the Customer Service Center.
15008	Backup file transformation: The name of the group is longer than the maximum.	The group name in the backup file exceeds the maximum number of characters (200). Contact the Customer Service Center.

Code	Error Message	How to Resolve the Error
15009	Backup file transformation: The alarm is longer than the maximum.	The alarm name in the backup file exceeds the maximum number of characters (200). Contact the Customer Service Center.
15010	Backup file transformation: The size recorded in the file is different from the actual file size.	The logging data recorded to the backup file does not match the file length. Contact the Customer Service Center.
15011	Backup file transformation: The record is smaller than the minimum size.	The logging record is smaller than the minimum size (16 characters). Contact the Customer Service Center.
15012	Backup file transformation: The maximum number of loggings at a time is exceeded.	An attempt was made to record more than the maximum allowable number of logging entries (32). Contact the Customer Service Center.
15013	Backup file transformation: The number of recipes exceeds the maximum.	An attempt was made to record more than the maximum allowable number of recipe entries (32). Contact the Customer Service Center.
15014	Backup file transformation: The entry number exceeds the maximum.	An attempt was made to record more than the maximum allowable number of devices in each recipe block (100). Contact the Customer Service Center.
15015	Backup file transformation: The number of blocks exceeds the maximum.	An attempt was made to record more than the maximum allowable number of recipe blocks (16). Contact the Customer Service Center.
15016	Backup file transformation: wrong data type.	The recipe data type is undefined. Contact the Customer Service Center.
16001	The writing protection device in the script has been used for writing.	You have set a read-only device where a write device is required. Specify a write device for the script.

## 3.2 Resolving Error Messages in Pop-up Windows

The following table how to resolve error messages that appears in pop-up windows within the XP-Builder interface. These error messages have no error codes. They are listed in the following table alphabetically.

Error Message	How to Resolve the Error
"XX" cannot be specified as an interval. The scale interval is between 0 and 10.	Set the scale interval for the graph between 0 and 10.
"XX" cannot be specified as the number of scale. The scale number is between 0 and 255.	Set the number of scales in the graph object between 0 and 255.
"XX" is not a 16 BCD data type. Enter a value between 0~9999.	If the size and form of the device is 16 bit BCD, you must set the conditional range between 0 and 9999.
"XX" is not a 16 bit signed data type. Enter a value between - 32768~32767.	If the device size and type is signed 16 bit, you must set the conditional range between 32768 and 32767.
"XX" is not a 16 bit unsigned data type. Enter a value between 0~65535.	If the device size and type is unsigned 16 bit, you must set the conditional range between 0 and 65535.
"XX" is not a 32 bit BCD data type. Enter a value between 0~99999999.	If the device size and type is 32 bit BCD, you must set the conditional range between 0 and 99999999.
"XX" is not a 32 bit signed data type. Enter a value between - 2147483648 and 2147483647.	If the device size and type is signed 32 bit, you must set the conditional range between 2147483648 and 2147483647.
A mobile GIF cannot be used as an image of an object/figure.	Select another image type.
A temporary directory is a place to store a temporary XGT file, so you cannot save or open a file here.	You cannot save or open files in the temporary directory. Specify another file location.

Error Message	How to Resolve the Error
Caption "XX" cannot be all displayed with the currently set font "YY." Choose the font meeting the entered contents.	This error occurs when the selected font cannot display the double-byte characters used in the caption. Change the font or translate the caption into a language that is supported by the selected font.
Changed into an indirect method. All the expressions of the built conditional sentences are deleted.	This message appears when the method of selecting the message or display for the word message, word component, or word window has been changed from [Status] to [Condition].
Communication connection has been failed.	There is no connection to the XGT Panel. Check the connection to the XGT Panel and the communication settings.
Connection passwords are different.	The password you entered is incorrect. Re-enter the connection password for the XGT Panel.
Disconnected. Try again after connection.	This error occurs when the XGT Panel is disconnected. Check the connection between your computer and the XGT Panel and ensure that the communication settings are correct.
Edit device is Read-Only. Use writable device.	Device input fails when the object does not support writing. Some objects support both reading and writing, but other devices, such as lamps, are read-only devices. To support device input, you must use a writable device, such as a switch, number input, or character input object. For more information about object types, refer to <4.3 Objects>.
File transformation error	This error occurs when the file to be transferred cannot be read, due to an error in the file. Download the project to the XGT Panel again. Refer to <2.6.1 Transferring to an XGT Panel>.
Graphic library load has been failed.	The image library is corrupt or damaged. You must create a new image library.
More than 10M cannot be downloaded.	The XGT panel that is currently connected has only 10M of available memory. You cannot transfer a file larger than 10M.
No reply within the set period or disconnected	This error may occur during data transfer. Check the connection between your computer and the XGT Panel and the power cable for the XGT Panel.
Object library load has been	The object library is corrupt or damaged. You must create a

### 3. Troubleshooting

Error Message	How to Resolve the Error
failed.	new object library.
Password setting has been failed.	The new password cannot be set. Check the connection to the XGT Panel and the communication settings.
Problem with data	This error occurs when incorrect data is included in the transfer. Try the transfer again.
Save the project file.	Enter a file name and save the project file.
Save the project first.	This error occurs when you attempt transfer a project without saving it first. Save the project and try again.
Shift to the XGT Panel program update mode.	This error occurs when you attempt to update the XGT Panel while the panel is in the normal operating mode, instead of the update mode. On the XGT Panel, touch and hold the screen to access the XGT Panel menu, and then select the update mode.
The "XX" set lines exceed the maximum display range.	The number of lines set in the object exceeds the horizontal dimensions of the screen.
The "XX" set rows exceed the maximum display range.	The number of rows set in the object exceeds the vertical dimensions of the screen. Set the number of rows below the maximum.
The backup data you want to download is not in XGT Panel.	This error occurs when there is no backup data in the XGT Panel.
The backup path has been incorrectly designated.	The download path for the font or image file is incorrect. Ensure that a USB drive is connected or a CF card is installed in the XGT Panel and then modify the download path in the project properties information.
The color is a user library larger than the number of colors that an XGT model can have now.	The XGT Panel that is currently connected does not support color. You must change the project settings to black and white or connect to an XGT Panel that supports color.
The compressed project file you want to download is not in the XGT Panel.	This error occurs when a compressed project file does not exist on the XGT Panel. To include the compressed project file when transferring a project to an XGT Panel, refer to <2.6.1 Transferring to an XGT Panel>.
The executable file in the device and the executable file	The executable file has been modified. Transfer the entire project to the XGT Panel.

Error Message	How to Resolve the Error
to send are not the same.	
The file already exists. Would you overwrite?	A file with the same name exists in the directory you specified. Click [Yes] to select another destination for the file or [Cancel] to discontinue saving the file.
The file cannot be read. Check whether another program is being used.	The download file is locked. This may occur if the project file is being accessed by another connected computer. If that is case, ensure that the project is not open by more than one computer and try again.
The file is not writable. Check the disk memory.	This error occurs when there is insufficient memory in the XGT Panel to store the file. Check the memory in the XGT Panel and make additional memory available, if necessary.
The maximum value must be larger than the minimum value.	Set the maximum value to be larger than the minimum value.
The number of characters that can be displayed should be an even number.	Set the number of characters in the character indicator and character input/output units to an even number.
The number of the X axis displays that can be selected is between 3 and 120. Check and enter again.	The range of acceptable display numbers has been exceeded. Set the number of X axis displays in the trend graph [Display] between 3 and 120.
The password is incorrect.	Enter the correct password.
The previous project information is not available.	An earlier version of the project does not exist on the XGT Panel. Transfer the entire project to the XGT Panel. Refer to <2.6.1 Transferring to an XGT Panel>.
The print template file does not exist.	The excel template for printing does not exist. You must create a new template.
The project header information is wrong.	The project header information is corrupt or incorrect.
The project ID is not correct.	The project IDs in XP-Builder and the XGT Panel are different. Transfer the entire project to the XGT Panel. Refer to <2.6.1 Transferring to an XGT Panel>.
The selectable display numbers are from 1 to 4095.	The range of acceptable display numbers has been exceeded.



### 3. Troubleshooting

Error Message	How to Resolve the Error
Check the number and enter again.	Specify a display number between 1 and 4095.
The simulator cannot be executed.	The simulator file does not exist. You must create a new simulator file.
The total number of figures should be larger than the number of figures below the decimal point.	Set the total number of figures larger than the number of figures below the decimal point.
The upload file is the same as the opened project file and cannot be saved. Do you want to specify another directory?	You cannot overwrite the project file, because it is open. Click [Yes] to select another destination for the file or [Cancel] to discontinue saving the file. To overwrite the project file, ensure the original file is closed and then try again.
The XGT Panel model does not match the model set in the editor.	This error occurs when you attempt to transfer a project to an XGT Panel model that is not the same as you have set in the project properties. Change the XGT Panel model in the project properties or transfer the project to the same type of panel you have specified in the project properties. Refer to <2.2.2 Viewing and Editing Properties>.
There is no executable file in the device. Send the entire XGT file first.	The executable file has been modified or is incomplete. Transfer the entire project to the XGT Panel.
This is not a 32 bit unsigned data type. Enter a value between 0~4294967295.	If the device size and type is 32 bit decimal, you must set the conditional range between 0 and 4294967295.
This project has an error. Check the tool-data.	Recheck your data and correct any errors before transferring the project.
[Working]/[Engine connection status is in early stage]. Try again.	The XGT Panel is in the operational mode, instead of the update mode. Touch and hold the XGT Panel screen to open the menu. Then, touch [Update HMI Engine] and select the engine download mode.
Wrong display number.	A display with the same number exists or the range of acceptable display numbers has been exceeded. Change the display number.
XGT INI file open error	The initialization file for transferring the XGT Panel engine is

Error Message	How to Resolve the Error
XGT model types are not the same.	missing or in use. Ensure that the initialization file is not in use and try transferring the project again.
XGT Panel is not ready to receive.	Change the XGT Panel model in the project properties or transfer the project to a different XGT Panel.
You can select only mobile GIF images.	XGT Panel is carrying out another operation. Wait a moment and try again.
	Select a mobile GIF image.

### 3.3 Resolving Error Codes during Recording

The following subsections describe how to resolve error codes during recording. These error codes are displayed by the device that saves error codes.

Error Code	Description
1	The path for saving video files has been set in XP-Builder.
2	A device for saving video files has not been installed or the patch for saving video files cannot be created in the device.
3	The current free space is less than the maximum file size. At least 10MB free space must be available before recording.
4	The number of files in video file backup path exceeds the limit. Format the storage device and reinstall it. Up to 1,000 files can be saved to the backup path.
5	The number of files per directory in the video file backup path exceeds the limit. Format the storage device and reinstall it. Up to 100 files can be saved in the backup path and, if more than 100 files are saved by user manipulation, recording cannot be started.
6	The video file cannot be deleted due to a file system problem. Format the storage device and reinstall it.
7	The video file cannot be created due to a file system problem. Format the storage device and reinstall it.
8	Creating a list of stored video files is in progress. Try again later. Refer to 5 <sup>th</sup> byte of the status device.
10	The safety removal switch of the video file backup storage device is

### 3. Troubleshooting

Error Code	Description
	deactivated.
11	A video is being played. Recording is not available.
12	A recording is in progress. Recording cannot be started again.
13	A file cannot be created in the current storage device.
14	This file format cannot be played.
101	The path for saving a video capture file is not specified in XP-Builder.
102	The storage device for saving video capture files is not installed or the saving path cannot be created in the device.
103	The current free space is not enough to save the video capture file. At least 10MB of free space is required to save the video capture file.
104	The number of files in the video capture file backup path exceeds the limit. Format the storage device and reinstall it. Up to 1,000 files can be saved in the backup route.
105	The number of files per directory in video capture file backup path exceeds the limit. Format the storage device and reinstall it.
106	The video capture file cannot be deleted due to a file system problem. Format the storage device and reinstall it.
107	The video capture file cannot be created due to a file system problem. Format the storage device and reinstall it.
108	Creating a list of stored video capture files is in progress. Try again later. Refer to 6 <sup>th</sup> bit of status device.
110	The safety removal switch for a video file backup storage device is deactivated.
111	Pre-recording is in progress, so the video cannot be captured.
112	Recording is in progress, so the video cannot be captured.

#### Notes

- To start recording, there must be at least 10MB of free space in the storage device. If free space is less than 10mb, recording cannot be started and error code 3 will be displayed. However, if you set the **Delete old file if disk full** option in Storage Settings, it deletes the oldest video file and you can try again.
- To capture video, there must be at least 1MB of free space in the storage device. If free space

is less than 1mb, recording cannot be started and error code 11 will be displayed. However, if you set the **Delete old file if disk full** option in Storage Settings, it deletes the oldest video file and you can try again.

- In case of video recording file or video capture file, if the total number of file exceeds 1,000, delete the oldest file, so that the total number becomes less than 1,000.

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## 3.4 Resolving Other Issues

The following subsections describe how to resolve issues that are not accompanied by an error code or error message.

### 3.4.1 *I Cannot Select the HS Internal Device*

The HS internal device is a special device for displaying information about the XGT Panel. This device does not allow writing, so it is not available for devices that allow input, such as switches or storage devices. To specify a device for input, select a writable device type.

### 3.4.2 *I Cannot Change the XGT Panel Type*

When changing the XGT Panel type, the panel must support similar color properties. For example, you cannot export a project that uses color to a panel that supports only black and white. Ensure that the color settings in the project match the capabilities of the XGT Panel.

### 3.4.3 *I Cannot Select a Communication Protocol*

This error occurs when you attempt to select the same communication protocol for multiple XGT Panels. Only one communication protocol can be used for a connected panel. To resolve the problem, select a different communication protocol for different panels. For more information, refer to <2.6.1 Transferring to an XGT Panel>.

### 3.4.4 *I Cannot Save Project Properties after Editing Them*

This error occurs when you attempt to select the same communication protocol for multiple XGT Panels. Only one communication protocol can be used for a connected panel. To resolve the problem, select a different communication protocol for different panels. For more information, refer to <2.6.1 Transferring to an XGT Panel>.

### **3.4.5 Text does not Display Properly**

If text does not display properly when opening the project on another computer or on an XGT Panel, a font used in the project may not be installed on the computer or XGT Panel. In this case, import or export the project font as needed. In XP-Builder, click [Tool] ► [Install Font] or [Export Font], specify a file location, and click [OK].

### **3.4.6 I Cannot Enter Text in another Language**

Your Windows operating system may not be configured to support the language you are using in the project. In this case, you must add the language support from the Control Panel in Windows.

### **3.4.7 I Cannot Invoke Text from a File**

Three possible causes exist for this situation:

- The file is in use. Ensure that the file is not being used by another or programs or users and try again.
- The file structure does not match the structure defined in XP-Builder. Open the file with an editor, such as MS Excel, and correct the file structure. Then, try again.
- The editing language set in XP-Builder is different from the language in the file. Ensure that the correct language is specified in XP-Builder and try again.

### **3.4.8 The Name of a History Alarm Changes When I Copy and Paste It**

History alarms cannot have redundant names. If you copy and paste a history alarm, XP-Builder gives it a unique name automatically. You can edit the name after pasting the alarm.

### **3.4.9 I Cannot Edit the System Alarm**

The system alarm contains information from the XGT Panel and cannot be edited.

### **3.4.10 I Cannot Import a Log or Schedule**

A maximum of 32 logs and schedules can be stored. If you attempt to exceed the limit, an error message will appear. Delete a log or schedule and try again.

### **3.4.11 I Cannot Invoke a Tag from a Tag Table**

Three possible causes exist for this situation:

- The file is in use. Ensure that the file is not being used by another or programs or users and try again.
- An incorrect file is specified for the rule. If you attempt to open a file that does not match the rule specified, the tag cannot be invoked. Open the file in an editor, such as MS Excel, and ensure that the tag information meets the rule requirements. Then, try again.
- The device information stored with the tag does not match the controller specified in the project. Ensure that the correct controller type is specified and then try again.

### **3.4.12 I Cannot Import Common Data Settings**

The file is in use. Ensure that the file is not being used by another or programs or users and try again.

### **3.4.13 I Cannot Transfer a Project (RS-232)**

Three possible causes exist for this situation:

- The wrong connection method is specified in the project. Check the communication settings and specify the correct connection method. For more information, refer to <2.6.1 Transferring to an XGT Panel>.
- The wrong type of cable is connected or the cable is not connected properly. Use the 6-pin RS-232 cable provided with the XGT Panel. Ensure that the cable is securely connected to the TOOL port on the back of the panel. For more information, refer to <2.6.1 Transferring to an XGT Panel>.
- The baud rate is incorrect. The baud rate and COM port settings must match on the XGT Panel and the computer. Ensure that the baud rate in the XP-Builder project properties and the COM port settings in the computer's Device Manager match. For more information, refer to <2.6.1 Transferring to an XGT Panel>.

### **3.4.14 I Cannot Transfer a Project (Ethernet)**

Three possible causes exist for this situation:

- The wrong connection method is specified in the project. Check the communication settings and specify the correct connection method. For more information, refer to <2.6.1 *Transferring to an XGT Panel*>.
- The wrong type of cable is connected or the cable is not connected properly. Use an Ethernet cable and ensure that the cable is securely connected to the Ethernet port on the back of the panel. For more information, refer to <2.6.1.2 *Using an Ethernet Connection*>.
- The IP address or COM port of the XGT Panel is incorrect. The IP addresses and COM ports must match between the XGT Panel and the computer. XP-Builder saves the settings from the previous transfer, so if the IP address or port has changed, you must re-specify the communication settings. For more information, refer to <2.6.1.2 *Using an Ethernet Connection*>.

### **3.4.15 I Cannot Transfer a Project (USB/Serial Converter)**

If communication times out when using a USB to serial converter, try to reconnect and transfer the project again. If communication is not possible at all when using a USB to serial converter, reinstall the USB driver.

### **3.4.16 I Cannot Transfer a Project (Active Sync or Mobile Device Center)**

This error occurs with iXP series XGT Panels only. If you cannot transfer a project using ActiveSync or Windows Mobile Device Center (Windows Vista and Windows 7), two possible causes exist for this situation:

- The wrong type of cable is connected or the cable is not connected properly. Ensure that the cable is securely connected to the mini-USB port on the XGT Panel and that the driver is up to date. If necessary, update the driver from the Device Manager in Windows.
- ActiveSync or Windows Mobile Device Center is not installed properly. These applications are installed automatically when you install XP-Builder on your computer. If you encounter problems, reinstall the appropriate application from the Microsoft Mobile Device Center website.

### **3.4.17 I Cannot Update an XGT Panel**

An error occurs when you try to update an XGT Panel's software while it is not in update mode. On the XGT Panel, touch and hold the screen to open the menu, and then select [Update HMI Engine]. Then, try again.

**3.4.18 I Cannot Receive a Project from an XGT Panel**

Two possible causes exist for this situation:

- The connection settings are incorrect. Ensure that you have selected the correct type of XGT Panel and connection method. For more information, refer to <2.6.1 Transferring to an XGT Panel>.
- No project exists on the XGT Panel. In this case, you cannot upload a project from the XGT Panel. The Include Upload Project File option must be selected when transferring projects to the XGT Panel in order to extract the project later from the XGT Panel. For more information, refer to <2.6.1 Transferring to an XGT Panel>.

**3.4.19 I Cannot Retrieve Backup Data from an XGT Panel**

Two possible causes exist for this situation:

- The connection settings are incorrect. Ensure that you have selected the correct type of XGT Panel and connection method. For more information, refer to <2.6.1 Transferring to an XGT Panel>.
- No backup data exists on the XGT Panel. In this case, you cannot upload data from the XGT Panel.

**3.4.20 I Cannot Select the Path of a Removable Drive**

Two possible causes exist for this situation:

- A removable drive is not connected. Connect a removable drive, such as a USB drive or a CF card, to the XGT Panel or computer and try again.
- The removable drive is not recognized. Remove and reconnect the removable drive and try again. If this does not solve the problem, try updating the driver for the removable driver. Refer to the manufacturer's website for more details.

**3.4.21 I Cannot Download a Project to a Removable Drive**

Three possible causes exist for this situation:

- There is insufficient memory available on the removable drive. Delete files on the removable drive to make at least 10MB of free space available or use another removable drive. Then, try again.
- Write protection is enabled on the removable drive. Disable write protection and try again.
- The removable drive was disconnected improperly. Reconnect the removable drive and try the download again. Ensure that the download is complete before removing the drive. When removing the drive, use the Remove Hardware Safely function in the Windows system tray on your computer.



#### Notes

- Viewing Available Memory Before Sending a Project

View the available memory before you send the project file to ensure the file can be transferred successfully. You can compare Flash and USB memory capacities to the size of the project file before transferring it, as shown below.

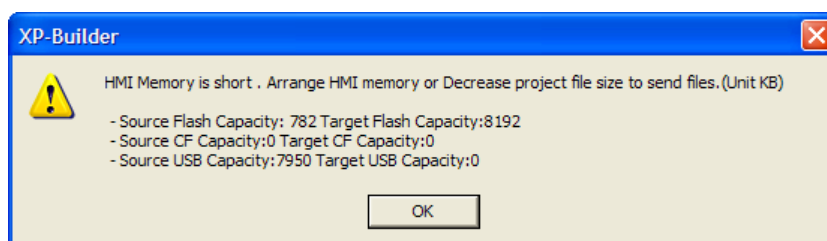
Memory type	Case	Description
Flash memory	Downloading the whole project	Compare the project file size to the entire memory available, because the memory will be erased prior to downloading the project.
	Downloading the revised parts only	Compare the project file size to the available memory.
USB/CF memory	Compare the project file size to the available memory.	

- Downloading the Entire Project

If the available memory on the external device exceeds the size of the project file, you can download the entire project.

- Downloading Only the Revised Parts of a Project

- If the available memory on the external device does not exceed the size of the project file, you must determine if enough memory is available to download only the revised parts.
- If you attempt to transfer a project file when there is insufficient memory, the following popup window appears. It shows the total memory capacity and the size of the project file.



- If the available memory is insufficient to download only the revised part, download the whole project instead to overwrite the memory.

## 4. Reference

### 4.1 Common Data

Common data properties apply to the entire project. The following table describes common data types and their limitations.

Type	Description	Limit
Tag	Allows convenient management of devices when you register device addresses and enter tags for commonly-used functions.	10,000 per tag group (there is no limit on the number of tag groups you can create)
Text Table	Stores commonly used text. You can invoke text from the text table with various objects.	10,001 per text table (there is no limit to the number of text tables you can create)
Logging	Records and saves monitored data in a file.	32
Recipe	Sets write or read values based on the conditions specified.	<ul style="list-style-type: none"> <li>• 10,000 device recipes</li> <li>• 255 basic recipes/5,000 file recipes</li> </ul>
Flow Alarm	Streams text across the bottom of the XGT Panel window when a certain condition is met.	10,000
History Alarm	Saves the device status when a certain condition is met. You can use this function with the special switch object.	10,000
Scheduler	Executes operations at specified times.	32
Script	Controls objects and functions with program commands.	No limitation
Sound	Emits sounds from the XGT Panel.	512

### 4.1.1 Tags

You can use tags to perform various functions. Tags can be input anywhere a device address can be input and, when you change the value for a tag, all devices with the same tag have the same change applied at once.

Type	Description
Object	Set the device address using the tag when you set the object.
Flow Alarm	Set the device address using the tag when you set the flow alarm.
History Alarm	Set the tag to supervise the history alarm. When you set the viewing mode as consecutive, the tag is expressed as "= tag name + number."
Recipe	Recipes are expressed as "= tag name + number."
Etc.	A tag is available everywhere a device can be input. The tag setting is not possible in the project properties information.

To create a tag:

1. In the Project pane, double-click [Tag]. This will open a Tag tab in the editing area.

No	Group	Name	Device Type	Address	Description
1	Default				
2	Default				
3	Default				
4	Default				
5	Default				

2. In the **Tag Group** tree, click the **Default** tag group (System tags cannot be edited).
3. In the tag list, set the tag name, device type, address, and a description for the tag.

Type	Description
Numbers	A name cannot begin with a number (e.g., "3ABCD").
Special Character	The only non-alphanumeric character that can be used is the underscore ("_").
Blank Character	If a blank character appears before or after the name, the tag name will not be recognized.
Device Name	A device address expression cannot be used as a name (e.g., "Doo12," or "%MW123").
Hexadecimal Number	A hexadecimal number cannot be used as a name.

**Notes**

- Tag names must be unique. You cannot use special characters in tag names. The following table describes rules for tag names.
- Tags are stored in the same table. If the properties for a registered tag are modified, all the objects that use the tag are affected.
- Consecutive copying is not performed when you specify a device address with a tag.

Two types of tags are available: system tags and custom tags. The following table describes the system tags available in XP-Builder.

Name	Type	Device	Description
_NVRAM_Low_Battery	BIT	HS0950.0	The voltage of the XGT Panel battery is low.
_NVRAM_Invalid_Data	BIT	HS0950.1	The XGT Panel's SRAM memory is damaged.
_No_Logging_Backup_Storage	BIT	HS0951.0	External memory for logging backup is not available.
_No_Recipe_Backup_Storage	BIT	HS0951.1	External memory for recipe backup is not available.
_No_Screen_Backup_Storage	BIT	HS0951.2	External memory saving the project is not available.
_No_Printer	BIT	HS0951.4	No printer is connected.
_USB_Over_Current_Warning	BIT	HS0950.8	An over-current from the connected USB drive was detected.
_No_Alarm_Backup_Storage	BIT	HS0951.3	External memory for alarm backup is not available.
_ON	BIT	HS0000.0	Always contains the value of ON.
_OFF	BIT	HS0000.1	Always contains the value of OFF.
_T200MS	BIT	HS0000.6	Repeat On and Off on a regular cycle of 200ms.

## 4. Reference

Name	Type	Device	Description
_T1S	BIT	HS0000. 7	Repeat On and Off on a regular cycle of 1 seconds.
_T2S	BIT	HS0000. 8	Repeat On and Off on a regular cycle of 2 seconds.
_T5S	BIT	HS0000. 9	Repeat On and Off on a regular cycle of 5 seconds.
_T10S	BIT	HS0000. A	Repeat On and Off on a regular cycle of 10 seconds.
_T30S	BIT	HS0000. B	Repeat On and Off on a regular cycle of 30 seconds.
_T60S	BIT	HS0000. C	Repeat On and Off on a regular cycle of 60 seconds.
_OSVER_MAJ	WORD	HS0001	Display the OS version info (Major) of the XGT Panel.
_OSVER_MIN	WORD	HS0002	Display the OS version info (Minor) of the XGT Panel.
_YEAR	WORD	HS0004	Time info [Year] for the XGT Panel.
_MON	WORD	HS0005	Time info [Month] for the XGT Panel.
_DAY	WORD	HS0006	Time info [Day] for the XGT Panel.
_HOUR	WORD	HS0007	Time info [Hour] for the XGT Panel.
_MIN	WORD	HS0008	Time info [Minute] for the XGT Panel.
_SEC	WORD	HS0009	Time info [Second] for the XGT Panel.
_BASESCREEN_NO	WORD	HS0010	Display the number of the current basic window.
_GLOBALWNG1_NO	WORD	HS0011	Display the number of the #1 global window.
_GLOBALWNG2_NO	WORD	HS0012	Display the number of the #2 global

Name	Type	Device	Description
			window.
_SECURITY_NO	WORD	HS0013	Display a defined security level.
_ZERO	WORD	HS0014	Always contain the value of zero.
_C500MS	WORD	HS0015	Increase value by 1 every 500 milliseconds.
_C1S	WORD	HS0016	Increase value by 1 every second.
_C2S	WORD	HS0017	Increase value by 1 every two seconds.
_C5S	WORD	HS0018	Increase value by 1 every five seconds.
_C10S	WORD	HS0019	Increase value by 1 every ten seconds.
_Change_to_Screen	WORD	HS0500	The device to change the basic window (operates in window change mode).
_DAY_OF_WEEK	WORD	HS0003	Time info [Day of week] for the XGT Panel (Sun=0 to Sat=6).
_T50MS	BIT	HS0000.4	Repeat On and Off on a regular cycle of 50 milliseconds.
_T100MS	BIT	HS0000.5	Repeat On and Off on a regular cycle of 100 milliseconds.
_No_Memo_Backup_Storage	BIT	HS0951.5	No external backup memory available.
_XPLinkParam_Load_Error	BIT	HS0100.2	Failed to process the parameter uploaded from XP-Manager.
_XP_VNC_Sever_ON	BIT	HS0100.1	XP-VNC server is running.
_Web_Sever_ON	BIT	HS0100.2	Web server is running.
_Size_All_Flash_Low	WORD	HS0027	The total capacity of Flash memory (Low-order, double word).

Name	Type	Device	Description
_Size_All_Flash_High	WORD	HS0029	The total capacity of Flash memory (High-order, double word).
_Size_Available_Flash_Low	WORD	HS0031	The available capacity of Flash memory (Low-order, double word).
_Size_Available_Flash_High	WORD	HS0033	The available capacity of Flash memory (High-order, double word).
_Size_All_USB_Low	WORD	HS0035	The total capacity of USB storage (Low-order, double word).
_Size_All_USB_High	WORD	HS0037	The total capacity of USB memory (High-order, double word).
_Size_Available_USB_Low	WORD	HS0039	The available capacity of USB storage (Low-order, double word).
_Size_Available_USB_High	WORD	HS0041	The available capacity of USB memory (High-order, double word).
_Size_All_CF_Low	WORD	HS0043	The total capacity of CF card (Low-order, double word).
_Size_All_CF_High	WORD	HS0045	The total capacity of CF card (High-order, double word).
_Size_Available_CF_Low	WORD	HS0047	The available capacity of CF card (Low-order, double word).
_Size_Available_CF_High	WORD	HS0049	The available capacity of CF card (High-order, double word).
_USB_Attatched	BIT	HS0051.0	Display whether or not the USB storage is connected.
_CF_Attatched	BIT	HS0051.1	Display whether or not the CF card is connected.
_N1_Token	BIT	HS0070.0	Connected with a token during the N:1 communication.
_N1_Token_Hold	BIT	HS0501.0	Set the panel to hold the token for a specified time.
_N1_Token_Station	WORD	HS0071	Display the station number of the

Name	Type	Device	Description
			node holding the during N:1 communication.
_IDLE_TIME_COUNTER	WORD	HS0502	Increase the count every 1 second when you don't touch the panel or use the mouse pointer.
_XP_VNC_INTERLOCK	BIT	HS0503.0	When turned on, a user connected via XP-VNC cannot make inputs with a mouse or keyboard.
_N1_Token_Count	WORD	HS0072	Display the acquired number of the token during N:1 communication.
_N1_Station	WORD	HS0073	Display the station number of the XGT Panel during N:1 communication.
_1_ON	BIT	HS0000.D	Set to turn on the first time devices are scanned. The tag is skipped on subsequent scans. You can use this tag to initialize a program.
_Enable_XP_Remote	BIT	HS0504.0	Display whether or not it can be operated by XP-Remote.
_Has_Ctrl_Right	BIT	HS0075.0	Display whether or not the XGT Panel has the right to operate. If XP-Remote has the right, it turns off.
_XP_Remote_Count	WORD	HS0076	Display the number of XP-Remote instances that are connected to an XGT Panel.
_Ctrl_Right_XP_Remote_ID	WORD	HS0077	Display the ID of an XP-Remote instance that has the right to operate.
_Ctrl_Right_XP_Remote_IP	WORD	HS0078	Display the IP address of an XP-Remote instance that has the right to operate (32bit).
_RS232C_Over_Current_Warning	BIT	HS0950.9	Over-current detected in an XGT Panel from a PLC connected via RS-



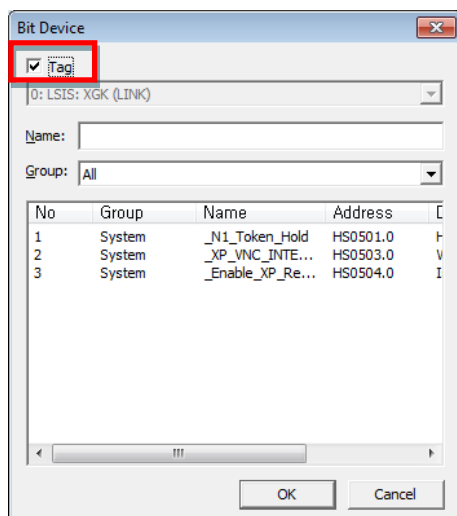
Name	Type	Device	Description
			232C (only for the iXP series).
_VM_Mod_Over_Current_Warning	BIT	HS0950.A	Over-current detected in an XGT Panel from a PLC connected via the VM module (only for the iXP series).
_EXT_Mod_Over_Current_Warning	BIT	HS0950.B	Over-current detected in an XGT Panel from a PLC connected via the expanded mode (only for the iXP series).
_No_Movie_Backup_Storage	BIT	HS0951.6	No external memory for saving the video is available.
_No_Movie_Still_Image_Backup_Storage	BIT	HS0951.7	No external memory for capturing the video is available.
_No_Sound_File_Storage	BIT	HS0951.8	No external memory for saving the sound file is available.
_SD_Attached	BIT	HS0051.2	Display whether or not the SD card is connected.
_Size_All_SD_Low	WORD	HS0058	The total capacity of SD storage (Low-order, double word).
_Size_All_SD_High	WORD	HS0060	The total capacity of SD storage (High-order, double word).
_Size_Available_SD_Low	WORD	HS0062	The available memory of the SD storage (Low-order, double word).
_Size_Available_SD_High	WORD	HS0064	The available memory of the SD storage (High-order, double word).

To set a tag as a device address:

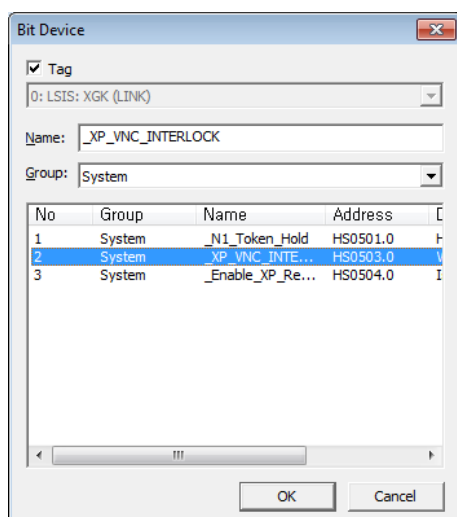
1. Double-click an object to open the properties window.
2. In the device field, enter a tag manually or click the keyboard to the right of the field to specify the tag. When you enter a tag name manually, enter "=" as the first character. The checkmark icon will change to a "T" to indicate a tag.



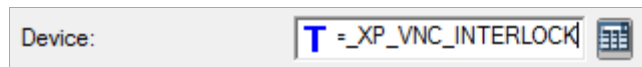
3. Click the checkbox next to **Tag**.



4. Select a tag group and a tag. You can view the available tag list.



- Click [OK]. The tag icon will appear in the device field.



### Notes

- When you enter a new tag name or "=new tag," you can register a new tag.
- Changing the type of a tag (bit or word) can cause errors.

To delete a tag:

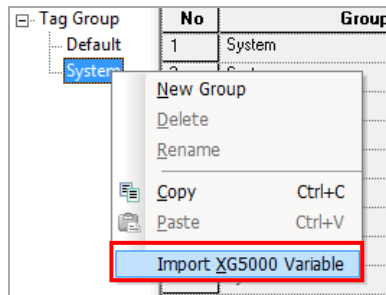
- Select tags in the tag table.

No	Group	Name	Device Type	Address	Description
1	Default	Line1	BIT	P00001	
2	Default	Line2	BIT	P00002	
3	Default	Line3	WORD	P0004	
4	Default				
5	Default				

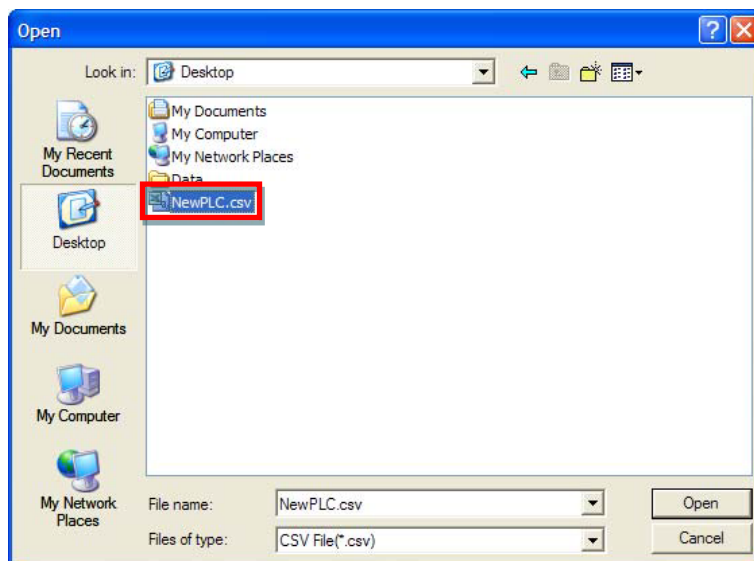
- Press the Delete key on the keyboard.

To import a file of tags from the XG5000:

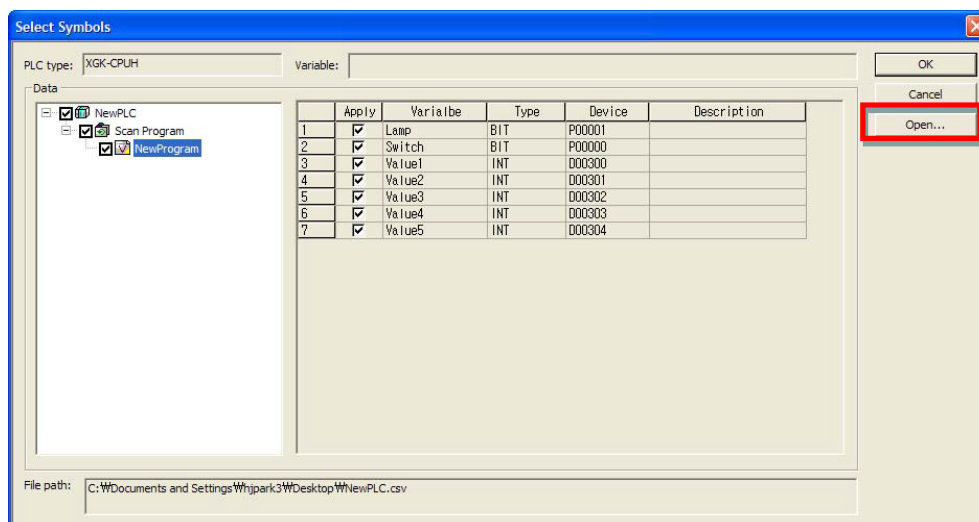
- Right-click a tag group.
- Click [Import XG5000 Variable].



- Click and open a file of tag data (\*.csv).



- Click [Open].



This will create a new tag group ("NewPLC"):

B-1 * Tag #:1						
Tag Group						
Default						
System						
NewPLC						
No	Group	Name	Device Type	Address	Description	
1	NewPLC	NewProgram.Lamp	BIT	P00001		
2	NewPLC	NewProgram.Switch	BIT	P00000		
3	NewPLC	NewProgram.Value1	WORD	D00300		
4	NewPLC	NewProgram.Value2	WORD	D00301		
5	NewPLC	NewProgram.Value3	WORD	D00302		
6	NewPLC	NewProgram.Value4	WORD	D00303		
7	NewPLC	NewProgram.Value5	WORD	D00304		
8	NewPLC					

### Notes

- To export tag data to a CSV file:
  - Run an XG5000 program of version 3.0 or higher.

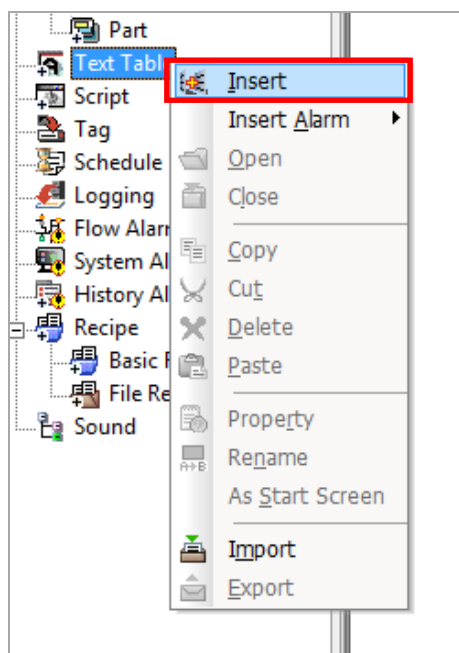
2. Click [Project] ► [Save as Variables/Comment].
  3. Select the variables and click [OK].
- If the PLC type is different when you import the data, an error will occur.
- 

### 4.1.2 Text Tables

Text tables allow you to store and manage text for reuse, translation, and simplified management. The advantage of using text tables is that you can register text strings and then use them throughout the project. For example, you can import text from a text table to use as an object caption and format the color, size, and other font properties. You can also create multilingual interfaces by adding language columns to the text table and registering translations for the text strings.

To create a text table:

1. In the Project pane, right-click [Text Table].
2. Click [Insert].

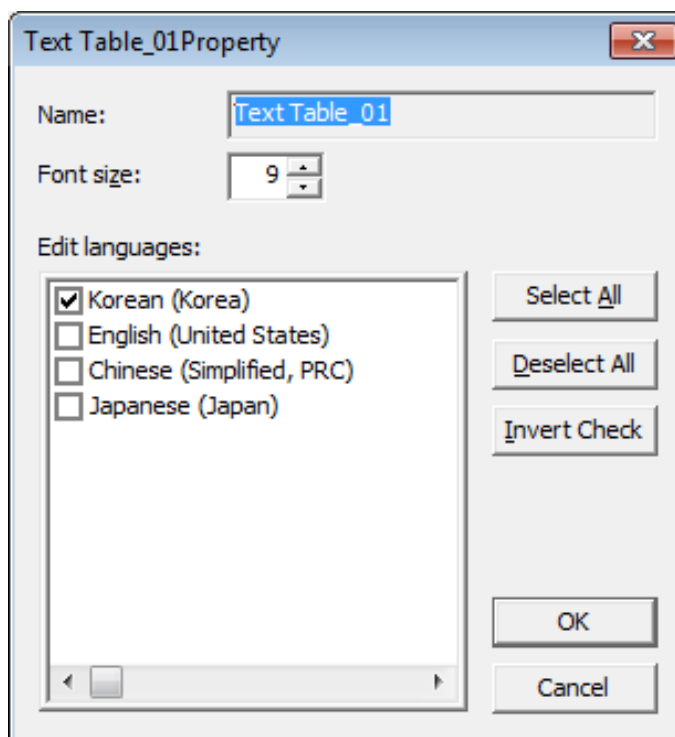


3. Enter text and set properties, such as font color and typeface.

No	Korean (Korea)	Color	Italic	Underline	StrikeOut	Bold
0	Object Sample1		Off	On	On	Off
1						

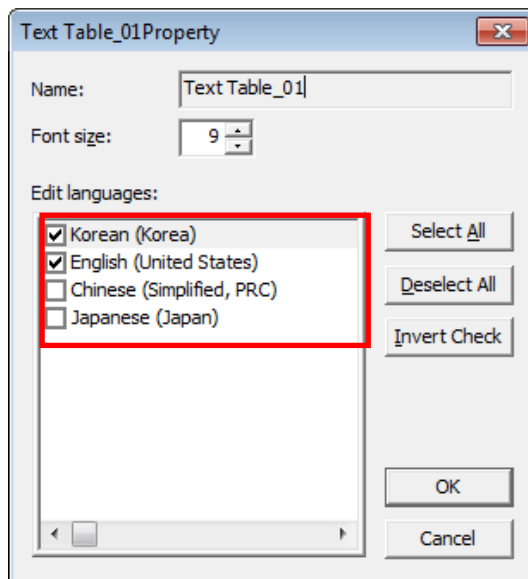
When you enter text in a text table, the text appears in the language currently set in the project properties. To specify languages in a text table:

1. In the Project pane, double-click a text table to open it.
2. Right-click anywhere in the text table and click [Property].



## 4. Reference

- Click languages from the language list and then click [OK]. Columns for alternate text will be added for as many languages as you select in the language list.



Text Table_01 *							
No	Korean (Korea)	English (United States)	Color	Italic	Underline	StrikeOut	Bold
0	라인 #1	Line #1		Off	Off	On	On
1							

- Enter the translated form of the string in the appropriate field.

Text Table_01 *							
No	Korean (Korea)	English (United States)	Color	Italic	Underline	StrikeOut	Bold
0	라인 #1	Line #1		Off	Off	On	On
1							

It will be available for display in objects when the user selects the alternate language from the drop-down list on the XP-Builder toolbar. To add additional languages to the list of supported languages, refer to <2.2.2.6 Changing Languages>.

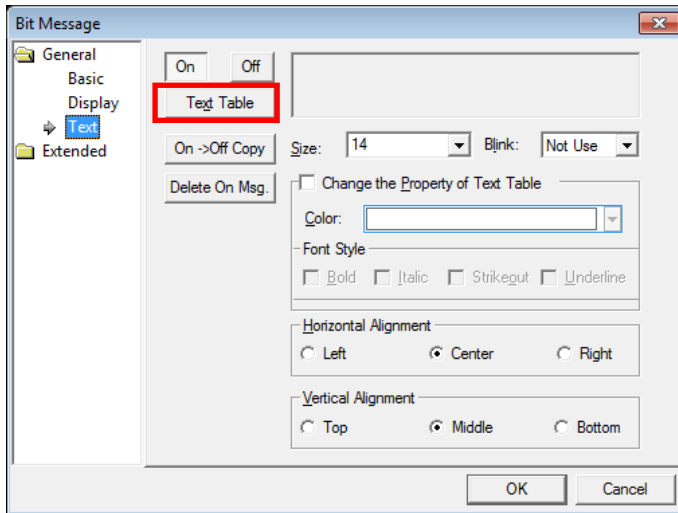
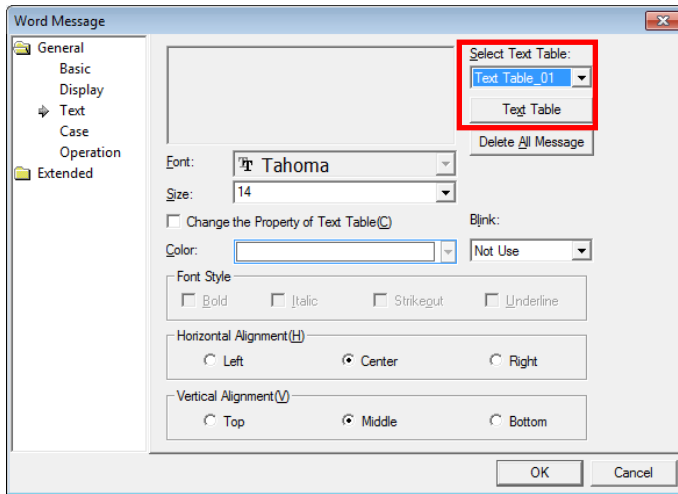


### Note

To support multiple languages, the operating system you are using must support the language as well.

To apply text from a text table:

1. Create an object that supports importing from a text table (see the table that follows).
2. Click [Text] in the object property window or click [Header] for a History Alarm Viewer object. To apply the text table to a Flow Alarm or History Alarm, select one of the text tables from the **TextTable Name** field in the Flow Alarm editing area or the **Text table** field in the History Alarm editing area.
3. Select a text table:

Type	Description
Bit Message	Click [On] or [Off] ► [Text Table]. 
Word Message	Select a text table in the <b>Select TextTable</b> field, and then click [Text Table]. 
Bit Switch Word Switch Change Screen	Click the check box next to <b>Use Caption</b> , click the check box next to <b>From Text Box</b> , and then click [Text Table].



Type	Description
Switch	
Special Switch	
Multi Switch	
Bit Lamp	
Word Lamp	
N-State Lamp	
History Alarm Viewer	Click [From Text Table in Header Edit] and double-click the Title area.

4. Select a text string (if necessary).

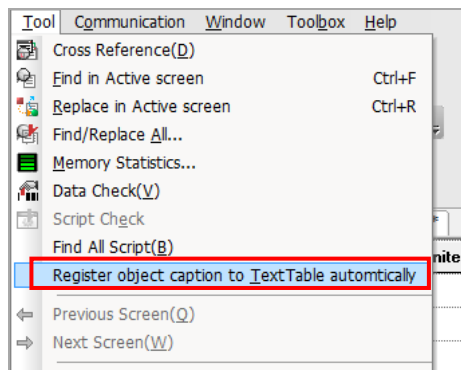
### Note

You can set the text to appear differently based on the value of device.

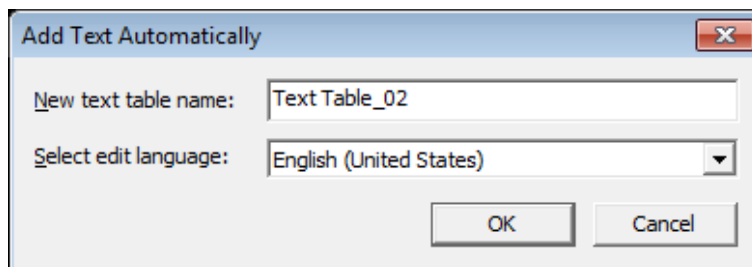
You can automatically add object captions to a text table to facilitate translation and management tasks when using multiple languages in a project. To create a text table of captions:

1. Create objects with text captions on the editing area.

2. Click [Tool] ► [Register Object Caption to Text Table Automatically].



3. Enter a name for the text table, select an editing language, and click [OK]. The text table will appear in the Project pane.



You can double-click the name of the text table in the Project pane to open and edit the translations of the object captions.

B-1 * Text Table_01 Text Table_02							
No	Korean (Korea)	English (United States)	Color	Italic	Underline	StrikeOut	Bold
0							
1		Take2		On	Off	Off	Off
2		Take1		Off	Off	Off	On

### Note

Text tables can contain up to 1,000 entries. When you attempt to add more than 1,000 entries, a new text table is created with an incremental suffix ("\_01," "\_02," etc.).

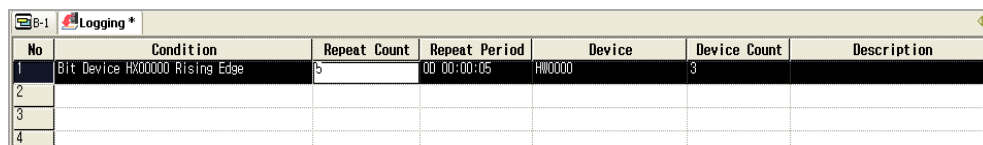
### 4.1.3 Logging

You can use up to 32 logs to record and save device values to a file when specified conditions are met. Logging can be used to trace device trends. You can view the logs in the Logging Viewer or Logging Trend Graph object.

Type	Description
Periodical Logging (Time)	Logging starts on a specified schedule and is repeated periodically, as specified in the schedule. The log can repeat up to 100 times. When the repetition timer reaches the specified limit, the device values are saved in the file.
Periodical Logging (Bit Device)	When the logging device turns on, logging begins.
Conditional Logging (Bit Device)	When the logging device turns on, logging begins. Logging does not repeat, unless the device is turned on again.

To create a log:

1. In the Project pane, double-click [Logging]. This will open a Logging tab in the editing area.



No	Condition	Repeat Count	Repeat Period	Device	Device Count	Description
1	Bit Device HX00000 Rising Edge	5	00:00:00:05	HW0000	3	
2						
3						
4						

2. Double-click anywhere in a field to specify the following settings:

- **Logging Device:**

The screenshot shows a 'Logging' dialog box with the following fields and controls:

- No.:** A text box containing the value '9'.
- Logging Device:** A section containing:
  - Target device:** A dropdown menu showing 'Word' with a red checkmark and a keyboard icon to its right.
  - Device count:** A spinner box set to '1'.
  - Bit selection:** Two radio buttons, '16 Bit' (which is selected) and '32 Bit'.
- Description:** A large empty text area.
- Buttons:** 'OK', 'Cancel', and 'Apply' buttons at the bottom right.

Function	Description
No.	The number of the logging viewer object.
Target Device	Specify the device to read. Enter the device address manually or click the keyboard to the right of the field to specify a device.
Device Count	Specify the number of devices to read consecutively from the start device (maximum of 32).

- **Logging Condition:**

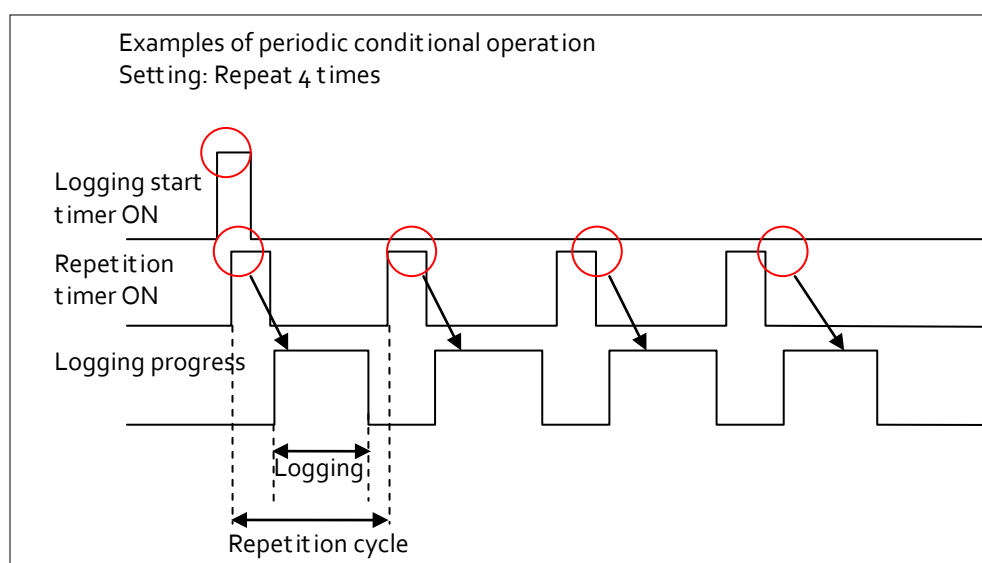
The screenshot shows the 'Logging' dialog box with the 'Logging Condition' tab selected. The 'Periodic logging' section has 'Period' set to 'Every hour' with a value of '16' minutes. 'Device(BIT)' is set to 'D'. 'Repeat by' is '1' and 'Repeat Period' is '0' days, '0' hours, '0' minutes, and '10' seconds. The 'Conditional logging' section has 'Device(BIT)' set to 'D' and 'Rising edge' selected. The 'Control Device (Optional)' section has checkboxes for 'Logging progress', 'Stop logging', 'Logging area full', 'Clear logging area', and 'Logging area clear complete', all of which are checked.

Function	Description
Period	Specify a period for logging: every hour, every day, every week, every month, or once. Use the combo box to the right to set a specific operating interval. For example, if you select "Every hour," you can set the specific minute when the logging will occur. If you do not specify the minute, the logging will occur every hour, on the hour.
Device (BIT)	Specify a bit device and condition to trigger periodic logging (Rising edge or Falling edge).
Repeat By	Set the number of repetitions for the logging operation (max. 100 times). The starting point for repeating the logging operation is when the device condition is met.
Repeat Period	Set the file recording cycle, if logging conditions are met.
Device(BIT) from Conditional Logging	Specify a bit device and condition to trigger conditional logging (Rising edge, Falling edge, or On change).
Logging Progress	Specify the device that will display the logging process. The logging progress is displayed from when the condition is met until the cycle is complete.

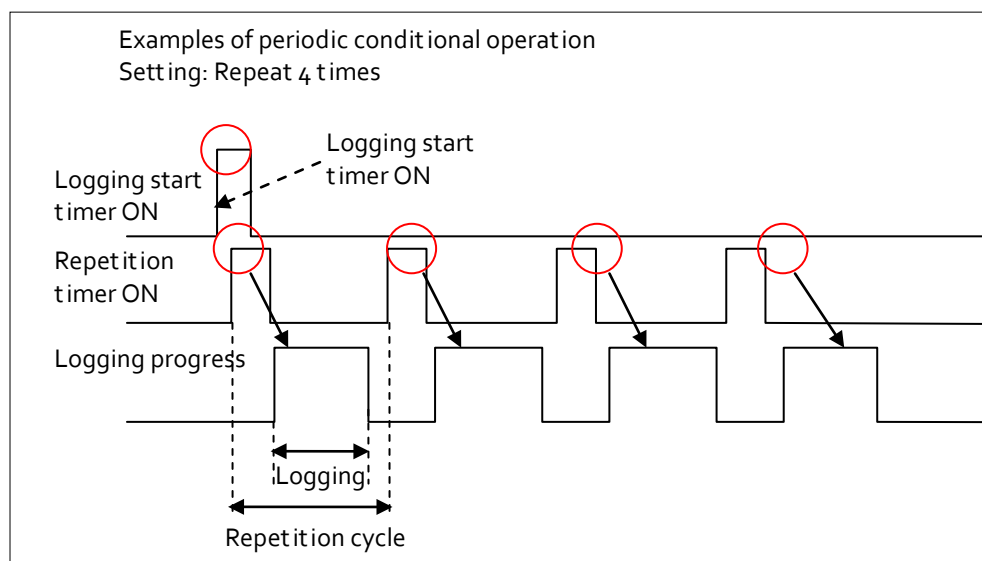
Function	Description
Stop Logging	Specify a device to stop logging. Logging stops when the specified device turns on. Once logging is stopped, it does not continue on the next cycle or repetition. The stop logging device operates on the rising edge.
Logging Area Full	Specify a device to activate when the storage area for logging data is full.
Clear Logging Area	Specify a device to clear the storage area for logging data. When the device turns on, data in the specified area is deleted.
Logging Area Clear Complete	Specify a device to activate when data in the storage area for logging data is deleted.

### Notes

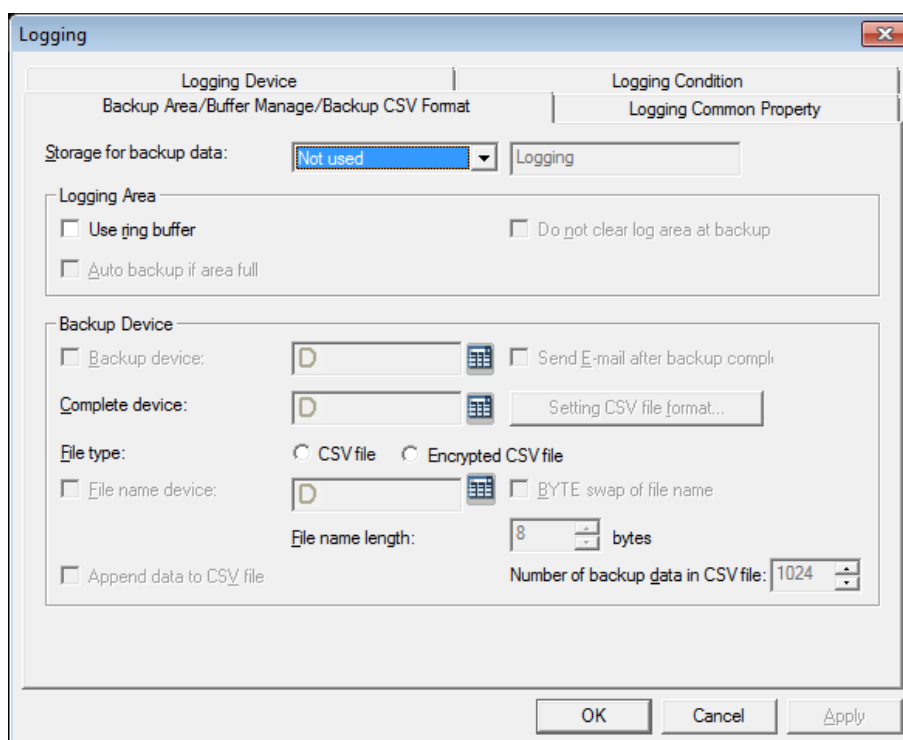
- If you set the periodic logging setting to Period, you can set the logging to repeat up to 100 times. Logging starts at the time you set and repeats as many times as specified, at the designated period.



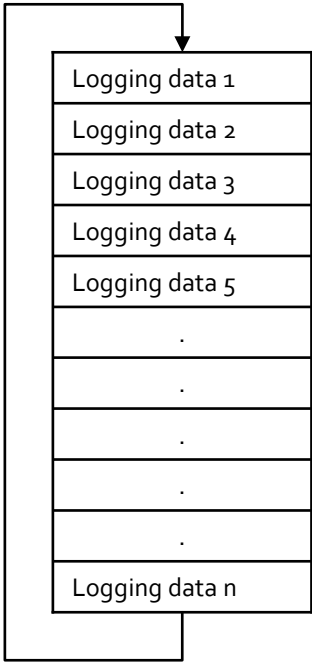
- If you set the periodic logging setting to Device(Bit Device), logging starts when the bit device is turned on or off and repeats as many times as specified at the designated period.



- **Backup Area/Buffer Manage/Backup CSV Format:**



Function	Description
Storage for Backup Data	Set a storage area for logging backup data.
Use Ring Buffer	Set this option to overwrite logging data when the storage area is full. Otherwise logs cannot be saved even if the condition is met. Overwriting occurs from the oldest file.

Function	Description
	<p>Storage location is shifted and the logging data is recorded from the first space.</p>  <p>This option cannot be used in conjunction with the <b>Auto backup if area full</b> option.</p>
Do Not Clear Log Area at Backup	<p>Set to retain logging data when data is backed up to the area specified in the project properties. When logging data is backed up, the data in the internal memory is deleted. However, some specific objects, such as the logging trend object, need to retain data even though it is backed up. At this time, set this option to retain the data. If you set this option, the logging area setting is changed to <b>Use Ring Buffer</b> automatically.</p>
Auto Backup if Area Full	<p>Set to back up logging data automatically when the storage area for logging data is full. This option cannot be used in conjunction with the <b>Use ring buffer</b> option. When the storage for logging data is full, it is backed up to the specified location. After backup, the data is deleted, and then the new data is saved from the first space.</p>

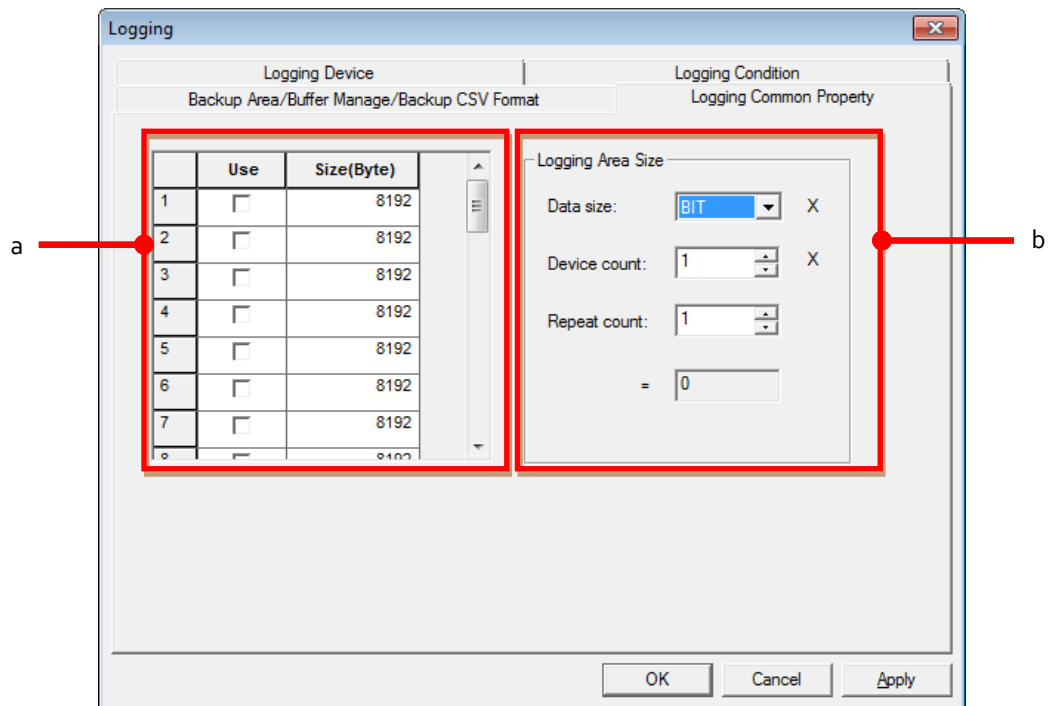


Function	Description
	<p>Area full bit On      Delete after backup      Record from the first</p>
Backup Device	Specify a device to trigger backup of logging data.
Send E-mail after Backup Done	Set to send an email when logging backup is completed.
Complete Device	Specify a device to activate when logging backup is completed.
Setting CSV File Format	Click to specify the layout of backup data in a CSV file.
File Type	Select a backup file type (CSV or Encrypted CSV).
File Name Device	Specify a device to convert the file name for backup data. If the device fails to read the name or cannot locate the string in the text table, the backup file is saved as "noname.CSV."
BYTE Swap of File Name	Set to run a byte swap for the string value when using the file name device.
File Name Length	Set the length (in bytes) of the file name.
Append Data to CSV File	Set to add new backup data to the end of the previous CSV file.
Number of Backup Data in	Set the number of logs to save in a CSV file (maximum of 65,000).

Function	Description
CSV File	

- **Logging Common Property:**

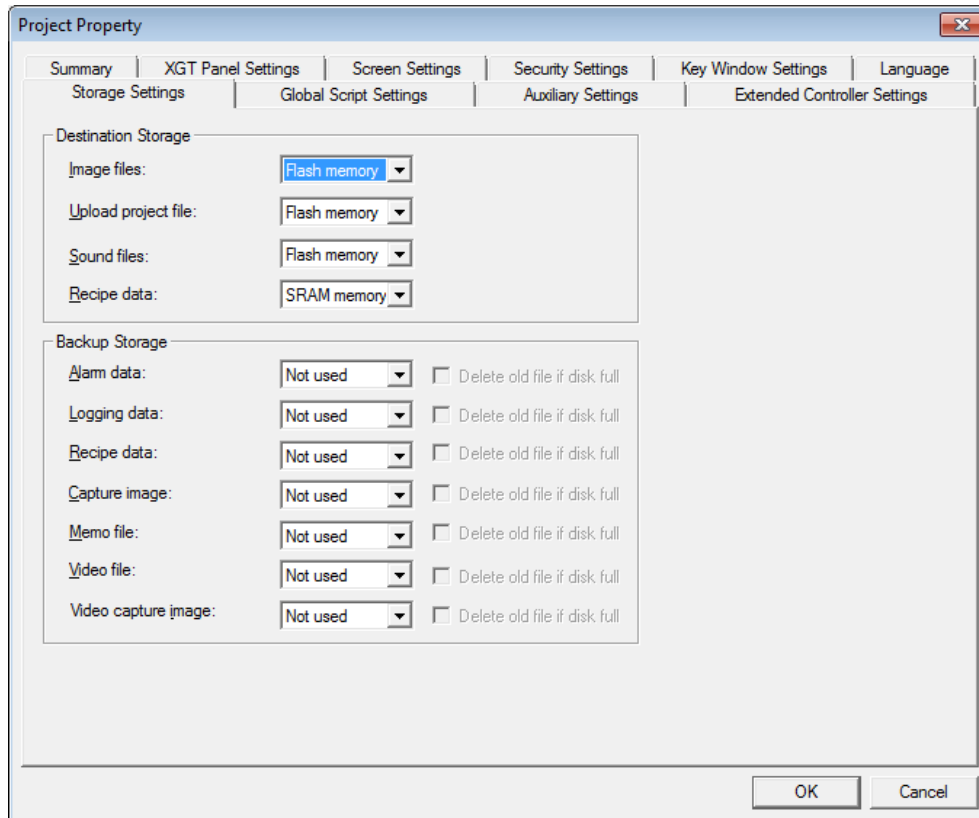
The maximum size for a logging area is 256KB. The total of all logging areas cannot exceed the size of each type of logging area.



Function	Description
a. Logging Area	Set the size of data saving area for each logging. Logging area can be calculated by the number and size, frequency of devices.
b. Logging Area Size	Calculate the size of the area required to save logging data: <ul style="list-style-type: none"> <li>• Bit: <math>[16 \text{ (Header Information)} + 8 \text{ (Fixed size for saving bit)}] * [\text{Frequency} + 1]</math>.</li> <li>• Word: <math>[16 + 2 * \text{Device size}] * [\text{Frequency} + 1]</math>.</li> <li>• Double word: <math>[16 + 4 * \text{Device size}] * [\text{Frequency} + 1]</math>.</li> </ul>

To set an external location for backing up log data:

1. Click [Common] ► [Project Property Setting] ► [Storage Settings].



2. Set the storage location in **Logging data**.

To specify the format for backup data:

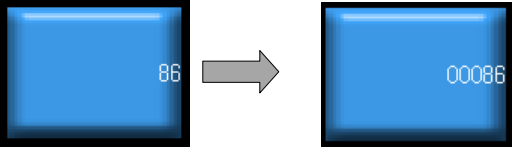
1. In the Project pane, double-click [Logging].
2. Double-click a log entry to open the Logging window.

3. Click [Backup Area/Buffer Manage/Backup CSV Format].

4. Set the location for backup data in the **Storage for backup data** field.
5. Click [Setting CSV file format].
6. Specify the following options:

	No.	Log state	Date/Time	Data1
Header	No.	Status	Date	0
Data format			YYYY/MM/DD HH:MM:SS	Signed Dec
Digits				5
Decimal digits				0
Zero fill			<input type="checkbox"/>	<input type="checkbox"/>

Function	Description
From Text Table	Set to import header information from a text table.
Header	Specify a header for the backup file. If you select the <b>From Text Table</b> option, click [Header] to locate the table.

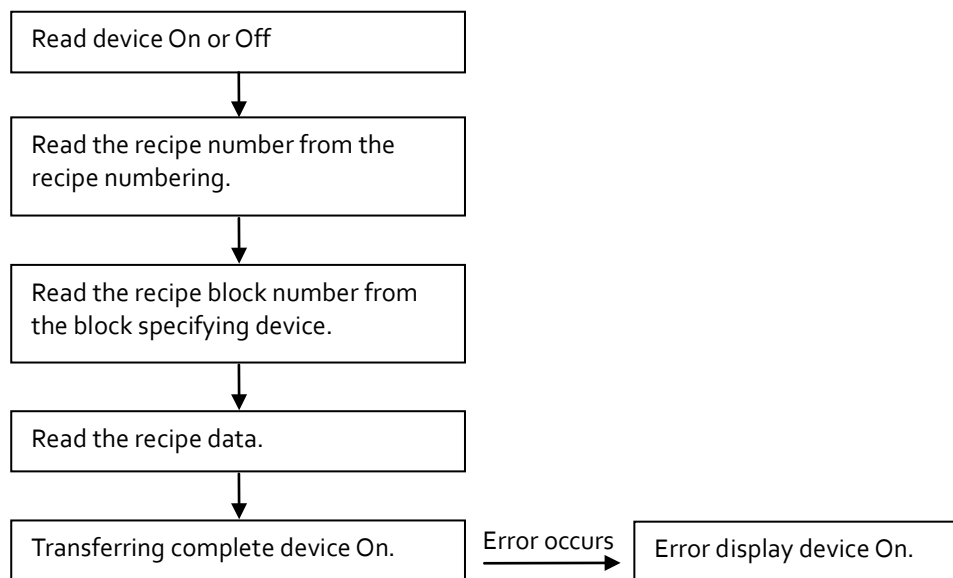
Function	Description
Data Format	Set the format for displaying time and data.
Digits	Set how many digits are used for data.
Decimal Digits	Set how many decimal digits are used for data.
Zero Fill	<p>If you have selected right justification, select this option to insert a 0 before the number.</p> 
Apply all the Logging	Click to change the backup type for all log data.
Close	Save your changes and close the dialog box
Data Information	The number of data columns shown varies based on the number of logging devices specified.

#### 4.1.4 Recipes

You can use recipes to save and reuse process data. You can write or read data to a large number of consecutive controllers with recipes. You must set both read and write devices to execute recipes.

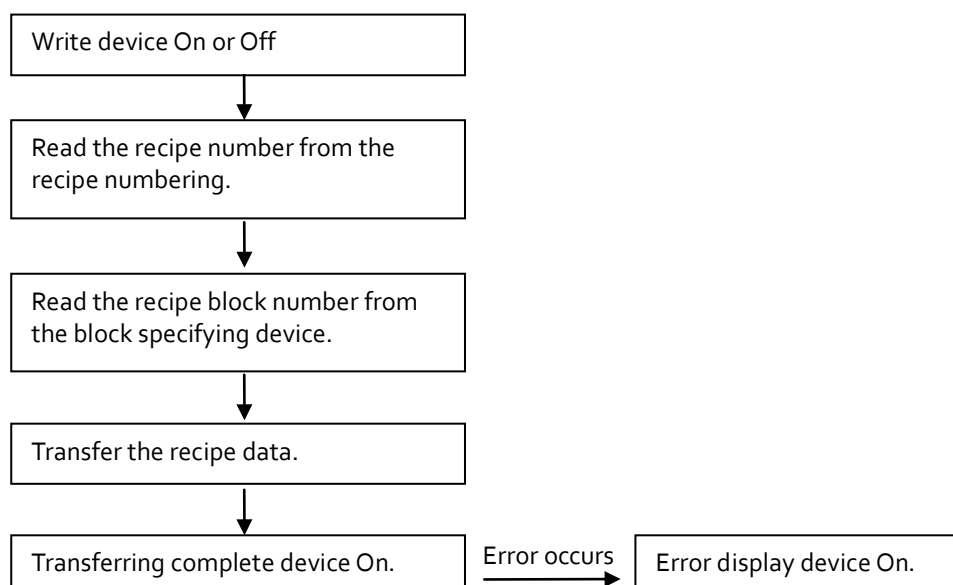
- **Read device**

When the read device is in a rising or falling edge, data is read from the specified starting device address for as many devices as have been specified.



- **Write device**

When the write device is in a rising or falling edge, data is written from the specified starting device address to as many devices as have been specified.



Two types of recipes are available: basic and file recipes.

Type	Description																																				
Basic	Export data to non-volatile internal memory in an XGT Panel. If power is interrupted to the XGT Panel, the most recent data is saved. If you set the <b>Delete all the monitoring data</b> option, all data is deleted when downloading the project to an XGT Panel.																																				
File	<p>Export data to a CSV file. You can download the file to an external device, such as a USB drive or CF card.</p> <p>The name of the file recipe is written as shown below:</p> <ul style="list-style-type: none"><li>• /Storage Card_root/XP_Recipe/XPRooooo.CSV</li><li>• /USB Storage_root/XP_Recipe/XPRooooo.CSV</li></ul> <p>When you open the CSV file, you can view the data as shown below:</p> <table><tr><th></th><th>A</th><th>B</th></tr><tr><td>1</td><td>Date</td><td>2008-09-19 17:10</td></tr><tr><td>2</td><td>Title</td><td>Bread</td></tr><tr><td>3</td><td>Item Count</td><td>100</td></tr><tr><td>4</td><td>3245</td><td></td></tr><tr><td>5</td><td>3</td><td></td></tr><tr><td>6</td><td>6</td><td></td></tr><tr><td>7</td><td>24</td><td></td></tr><tr><td>8</td><td>562</td><td></td></tr><tr><td>9</td><td>64</td><td></td></tr><tr><td>10</td><td>2</td><td></td></tr><tr><td>11</td><td>45</td><td></td></tr></table>		A	B	1	Date	2008-09-19 17:10	2	Title	Bread	3	Item Count	100	4	3245		5	3		6	6		7	24		8	562		9	64		10	2		11	45	
	A	B																																			
1	Date	2008-09-19 17:10																																			
2	Title	Bread																																			
3	Item Count	100																																			
4	3245																																				
5	3																																				
6	6																																				
7	24																																				
8	562																																				
9	64																																				
10	2																																				
11	45																																				

To set recipe properties:

1. In the Project pane, double-click [Recipe]. This will open a Recipe Property tab in the editing area.

The screenshot shows a configuration window with the following fields and options:

- Trigger device to write:** Checked checkbox, device address field with a red checkmark, and a keyboard icon. Radio buttons for **Rising edge** (selected) and **Falling edge**.
- Trigger device to read:** Checked checkbox, device address field with a red checkmark, and a keyboard icon. Radio buttons for **Rising edge** (selected) and **Falling edge**.
- Recipe No.:** Device address field with a red checkmark and a keyboard icon.
- Block No.:** Device address field with a red checkmark and a keyboard icon.
- Recipe type:** Device address field with a red checkmark and a keyboard icon.
- Basic recipe storage:** Dropdown menu set to **SRAM memory**.
- File recipe storage:** Dropdown menu set to **USB Storage**.
- Backup data storage:** Dropdown menu set to **Not used**, with an adjacent **Recipe** field.
- Control Device (Option):** A sub-section containing:
  - Complete device:** Device address field with a red checkmark and a keyboard icon.
  - Error device:** Device address field with a red checkmark and a keyboard icon.
  - Backup trigger device:** Device address field with a red checkmark, a keyboard icon, and radio buttons for **Rising edge** (selected) and **Falling edge**.
  - Backup complete device:** Device address field with a red checkmark and a keyboard icon.

2. Set the following properties:

Option	Description
Trigger Device to Write	Set to specify a device for writing data. Set the condition to trigger the action (Rising edge or Falling edge). Enter the device address manually or click the keyboard to the right of the device field.
Trigger Device to Read	Set to specify a device for reading data. Set the condition to trigger the action (Rising edge or Falling edge). Enter the device address manually or click the keyboard to the right of the device field.
Recipe No.	Specify a word device that will execute the recipe when the condition is met. The recipe is executed by reading the word value (unsigned 16 bit) from the device. Enter the device address manually or click the keyboard to the right of the device field.
Block No.	Specify a word device that the data will be transferred to when the condition is met. The recipe is executed by reading the word value (unsigned 16 bit) from the device. This option can be used only with basic recipes. Enter the device address manually or click the keyboard to the right of the device field.
Recipe Type	Specify the device that will control the recipe type. If the lowest bit of the device is 0, a basic recipe will be executed. If the lowest bit of the device is 1, a file recipe will be executed. Enter the device address manually or click the keyboard to the



Option	Description
	right of the device field.
Basic recipe Storage	Set a storage location for data from a basic recipe (Flash, CF Card, USB, or SD card).
File recipe Storage	Set a storage location for data from a file recipe (CF card, USB, or SD card).
Backup Data Storage	Set the storage for the backup data file to be saved. You can designate CF card, USB storage or SD card.
Complete Device	Specify a bit device to turn on when data transfer is complete. Enter the device address manually or click the keyboard to the right of the device field.
Error Device	Specify a bit device to turn on when a problem occurs with the data transfer. Enter the device address manually or click the keyboard to the right of the device field.
Backup Trigger Device	Specify a device to back up the recipe data saved in a removable drive, such as a USB drive or CF card. Set a condition for backing up the data (Rising edge or Falling edge).
Backup Complete Device	Specify a bit device to turn on when the backup is complete.

### Notes

- Writing and reading cannot execute simultaneously. When two devices meet the same condition simultaneously, writing will be performed first.
- Up to 10,000 recipes (up to 255 basic or file recipes) can be registered in XP Builder.
- Up to 255 data blocks can be registered in each recipe.
- The object device used for recipe data transfer uses signed or unsigned 16 or 32 bit devices.

To create a recipe:

1. In the Project pane, right-click [Basic Recipe] or [File Recipe].
2. Click [Insert].

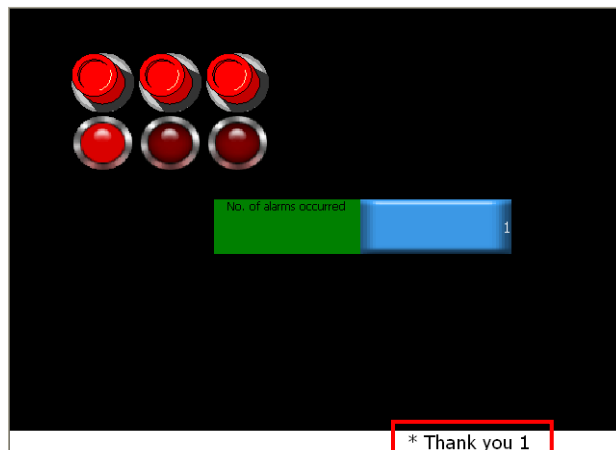
No	Device	Data 0
1	P0100	0
2	P0101	0
3	P0102	0
4	P0103	0
5	P0104	0
6	P0105	0
7	P0106	0
8	P0107	0

3. Set the following properties:

Option	Description
Name	The name of recipe. You can register up to 32 recipes and set the recipe number between 1 and 255. If you want to change the name, right-click the recipe name in the Project pane and click [Rename].
Device	Set the device address to transfer the recipe data.
Data type	View the data type of the device. When you enter the value in the data block, the data type is changed according to the data type.
Description	Enter a description for the recipe.
No. of Device	Set number of devices. Recipe data will be transferred consecutively from as many devices as you specify.
Block count	Set the number of data blocks. A file recipe has only 1 block and it cannot be edited.
a. Device	View the device list. Recipes use consecutive data, so you cannot set each device address.
b. Data	The block number is assigned starting from 0 and you cannot change it. If you reduce the block number, the oldest data is deleted first.

### 4.1.5 Flow Alarms

You can use flow alarms to display text at the bottom of a window in the XGT Panel when the specified condition is met, as shown in the following figure:




To create a flow alarm:

1. In the Project pane, double-click [Flow Alarm].
2. Specify the following properties:

No	Device	Data Type	Bit Condition	TextTable Name	Text Index	Preview
1		BIT	<input checked="" type="radio"/> On <input type="radio"/> Off	Text Table_01		
2		BIT	<input checked="" type="radio"/> On <input type="radio"/> Off			

Option	Description
Device Count	Set the number of alarm devices to monitor.
Alarm Device	Set a range (continuous) or a single device to monitor.
No. of Alarm Occurred	Set a word device to save the number of alarms. It shows the total number of alarms that have occurred.

Option	Description
	
Background color	Set the background color for the flow alarm area
Message position	Set the position of the flow alarm message
Display mode	Set the display option for flow alarm changes. <ul style="list-style-type: none"> <li>• <b>Redraw at occurred:</b> The alarm message is replaced automatically with a new message.</li> <li>• <b>After current display list:</b> The alarm message remains on the screen and new or reset alarms will be shown in subsequent messages.</li> </ul>
Flow speed	Set the renewal frequency of the flow alarm. The lower the number, the faster the renewal frequency.
Move pixel	Set the unit for scrolling the flow alarm. The larger the number, the faster the message scrolls.
Font size	Set the font size for the flow alarm message.
Device	Specify the device to monitor. Only bit devices can be monitored by the flow alarm.
Data type	Set the data type for the flow alarm device. If set to read-only, only the current bit device can be registered as the alarm device.
Bit Condition	Set the condition for alarm occurrence.
Text Table Name	Specify a text table where the flow alarm message is stored.
Text Index	Specify a text string in the text table to use for the flow alarm message.
Preview	A preview of the flow alarm message is shown.

### Notes

---

- Up to 10,000 flow alarms can be added.
  - The specified bit device is monitored continuously by the flow alarm object. When the bit device is “on,” the alarm occurs and when the bit device is “off,” the alarm is cleared.
  - If more than two flow alarms occur simultaneously, the message at the bottom of the window shows the messages in sequence.
  - A flow alarm message invokes text in the language specified in the project settings. The message can be shown an alternate language if the translation exists in the text table.
  - You can set each screen not to execute a specified alarm.
- 

#### 4.1.6 History Alarms

You can use history alarms to monitor or review data about the state of a device. You can view and manage history alarms with the History Alarm Viewer or Alarm Navigator objects. The History Alarm Viewer object displays a list of the alarms that have occurred. It stores the alarm history and allows you to manage it. With the Alarm Navigator, you can view a list of alarms that have occurred. If there are too many alarms to view, you can filter the data to be shown.

History alarms are organized in alarm groups. When an alarm is triggered or restored, the time, device address, and alarm details are saved to non-volatile memory.

To set general properties for history alarms:

1. In the Project pane, double-click [History Alarm]. This will open the History Alarm Property tab in the editing area.

Backup storage path: Not used Alarm

Control Device

☐ Clear alarm area device: D

☐ Clear alarm area complete device: D

☐ No. of alarms occurred: D

☐ Backup start device: D

☐ Backup complete device: D

☐ Send E-mail after backup done

Print Settings

☐ Alarm print

Print start device: D

Print complete device: D

Top margin: 10 Bottom margin: 10

Left margin: 10 Right margin: 10

Acquisition Time Table:

	Time (Sec)
1	1.0
2	2.0
3	3.0
4	4.0
5	5.0
6	6.0
7	7.0
8	8.0
9	9.0
10	10.0

2. Specify the following properties:

Option	Description
Backup Storage Path	Set a location for the history alarm backup.
Clear Alarm Area Device	Specify a device to initialize the history alarm area in the NVRAM.
Clear Alarm Area Complete Device	Specify a device to activate after initializing the history alarm area in the NVRAM is complete.
No. of Alarms Occurred	Specify a device to save the number of alarms occurred.
Backup Start Device	Specify a device to begin backup of alarm data. Backup will only be performed if the backup location in the project properties is set to a USB device or CF card.
Backup Complete Device	Specify a device to activate when backup of alarm data is complete.
Send E-mail After Backup Done	Set to send an email when backup of alarm data is complete. To use this function, you must specify backup start and backup complete devices.
Alarm Print	Set to print history alarm data.
Print Start Device	Specify a device to start printing history alarm data.

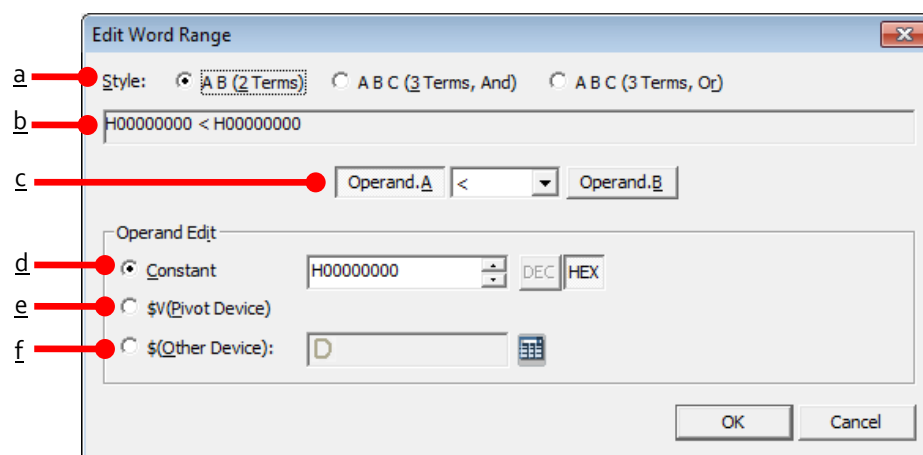
Option	Description
Print Complete Device	Specify a device to activate when printing of history alarm data is complete.
Top, Bottom, Left, and Right margins	Specify margins for printing history alarm data.
Acquisition Time Table	Set intervals for collecting history alarm data.

### Note

About the Acquisition Time Table:

- Set up to 10 different sampling times for collecting history alarm data.
- The sampling time unit is seconds and you can set it to the first decimal place, so the minimum unit scale that can be set is 100 milliseconds.
- In the alarm list, you can select the sampling times you set here, to allow for flexible acquisition cycles for different types of devices.
- An XGT Panel inspects the alarm list and acquisition cycles together. Therefore, a large number of acquisition cycles in a project can cause slowdowns in performance. To prevent significant lags in monitoring, keep the number of history alarms in on acquisition cycle below 500.

To define the range for an alarm expression, specify the following settings:



Symbol	Function	Description
a	Style	<p>Select a form for the expression. Examples for each style are as follows:</p> <ul style="list-style-type: none"> <li>• A B (2 Terms): <math>o &lt; o</math></li> <li>• A B C (3 Terms, And): <math>o \leq \text{Device Value} &lt; 100</math></li> </ul>

Symbol	Function	Description
		<ul style="list-style-type: none"> <li>A B C (3 Terms, Or): <i>10 &gt; Device Value</i> <i>OR Device Value &gt;100</i></li> </ul>
b	Preview Conditional Sentence	Displays a preview of the conditional expression.
c	Conditional expression editing item	Select the operand you want to modify and set the operator.
d	Constant	Set the operand type at a fixed value.
e	\$V (Pivot Device)	Use the current device as an operand in the expression. Displayed as \$V in the preview.
f	\$ (Other Device)	Specify another device value (variable) as an operand in the expression.

### Notes

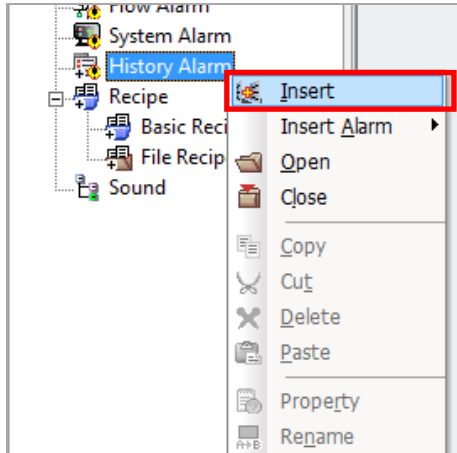
If a word device is set as the alarm monitoring device, the condition must be registered in a text table and linked to the word alarm device. The alarm condition is a single conditional expression consisting of two or three terms, linked by *and* or *or* conditions. Conditional expressions must meet the following requirements:

- Each term should be separated by a blank space.
- The current device address is expressed by "\$V." If "\$V" is entered, it is automatically recognized as the standard device when the project is transferred to an XGT Panel. The current device must be included at least once in the expression.
- Each conditional expression must include at least one device variable.
- The available operators are: < , > , <= , >= , =, and !=



To add an alarm group:

1. In the Project pane, right-click [History Alarm].



2. Click [Insert]. An Alarm Group tab will appear in the editing area.

 A screenshot of a configuration dialog box for an 'Alarm Group'. It contains several input fields and options:
 

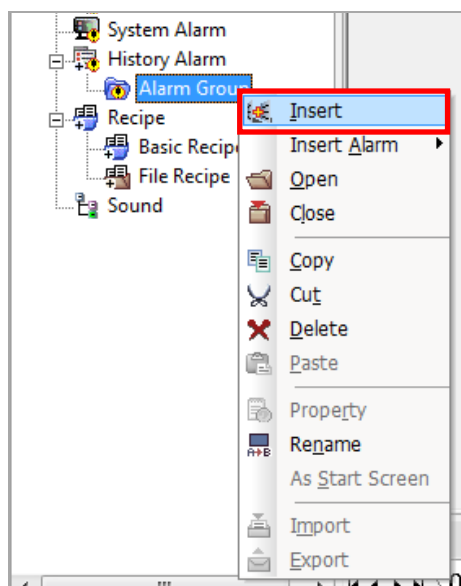
- 'Group name:' field with 'Alarm Group' entered.
- 'Group ID:' field with '16777216' entered.
- 'Display Name' section with two radio buttons: 'From Text table:' (unselected) and 'Manually input:' (selected).
- Next to 'From Text table:' is a dropdown menu and a 'No.:' field with the value '0'.
- A 'Preview:' text field is located below the 'From Text table:' option.
- A text input field is located below the 'Manually input:' option.
- A checkbox at the bottom is labeled 'Synchronize manually input name with History Alarm Group Name of Project tree'.

3. Specify the following properties for the alarm group:

Option	Description
Group Name	The name of the alarm group.
Group ID	The ID number of the alarm group.
Display Name	Click <b>From Text Table</b> to import a group name from a text table or <b>Manually Input</b> to input a group name manually. If you import a name from a text table, set the <b>No.</b> value to identify the correct string in the table. The group name will appear in the <b>Preview</b> field. Click the checkbox next to <b>Synchronize manually input name...</b> to update the alarm group name in the Project pane.

To create a history alarm:

1. In the Project pane, right-click a history alarm group.



2. Click [Insert]. An Alarm List tab will appear in the editing area.

No.	Device	Alarm Condition	Window No.	Text Index	Alarm Count Device	Preview
1	P00001	<input checked="" type="radio"/> On <input type="radio"/> Off	1			
2	P00002	<input checked="" type="radio"/> On <input type="radio"/> Off	2			
3	P00003	<input type="radio"/> On <input checked="" type="radio"/> Off	3			
4	P00004	<input checked="" type="radio"/> On <input type="radio"/> Off	4			
5		<input checked="" type="radio"/> On <input type="radio"/> Off	0			
6		<input checked="" type="radio"/> On <input type="radio"/> Off	0			
7		<input checked="" type="radio"/> On <input type="radio"/> Off	0			
8		<input checked="" type="radio"/> On <input type="radio"/> Off	0			

3. Set the following properties for the alarm list:

Option	Description
Name	The name of the alarm list.
Data Type	Set the device type (bit or word).
No. of alarm	Set the number of alarms (maximum 10,000).
Text Table	Select a text table to import text from.
Sampling Time	Set how often to check for alarm conditions (1 to 10 seconds).
Backup Alarm Log	By default, history alarm data is stored in temporary memory. It is cleared when you exit the Program Monitor or if

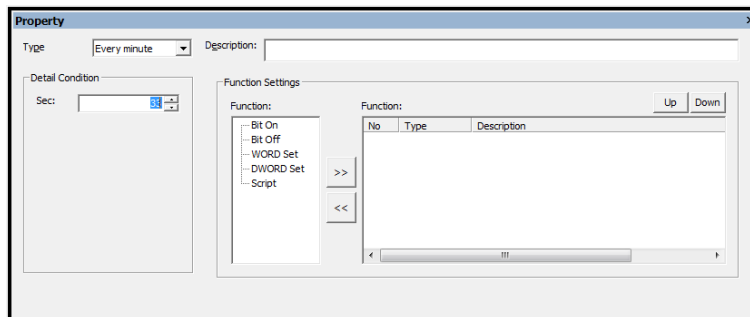
Option	Description
	<p>you check <b>Delete all monitoring data</b> when you download the project. To save history alarm data, set the backup alarm log function. The backup data will be saved in the SRAM, which has a storage capacity of 64KB.</p> <p>If power is interrupted to the XGT Panel, the alarm data is stored as a CSV file. When the power is restored, you cannot view that data via the History Alarm Viewer (it will be shown as "untraceable" in XP-Builder). Instead, you must refer to the CSV file.</p>
Show Current Selected Alarm	Specify a device to display the most recent alarm. You can enter the device address manually or click the keyboard button to the right of the device field.
Send E-mail	Set whether or not to send an email notification for the history alarm. For more details about the email settings, refer to <2.2.2.9 <i>Changing Auxiliary Settings</i> >.
Assign Alarm Device	Set the method for specifying alarm devices.
Text Table Index	Set the method for specifying strings in text tables.
Show Detailed Window	Set whether or not to show detailed information and the method for specifying windows.
Use Alarm Count Device	Set whether or not to use a device to save alarm count data and the method for specifying devices.
Count of Reference Device	Set the number of the reference device (0-10).
Device	Enter alarm device addresses.
Alarm Condition	Set the alarm condition. For bit devices, the condition is either on or off. For word devices, the condition is an expression.
Window No.	The number of the detailed window, if you selected that option.
Text Index	Specify the index of a string from a text table.
Alarm Count Device	The alarm count device, if you selected that option.
Preview	The selected text string for the alarm, if applicable.

### 4.1.7 Schedules

You can use schedules to specify actions in advance. Available functions for schedules include Bit On, Bit Off, Word value setting, script execution, and more. You can create up to 32 schedules and each schedule can specify up to 8 actions.

To create a schedule:

1. Click an object in the editing area.
2. In the Project pane, double-click [Schedule]. This will open a Schedule tab in the editing area.
3. Double-click anywhere in the Schedule tab to open the Property window.



4. Specify the following properties:

Type	Description
Type	Set the operation interval.
Detail Condition	Set the detailed operation time, based on the operation interval.
Description	Enter a description for the schedule.
Function	Click a function and then click [>>] to add the function to the schedule. Click a function and then click [<<] to remove a function from the schedule. You can specify up to 8 functions in a schedule.
Up/Down	Click [Up] or [Down] to prioritize functions.

### 4.1.8 Sounds

You can specify a maximum of 512 WAV or MP3 files to play when conditions are met, but only for iXP series XGT Panels. To hear sounds, you must connect a speaker to the sound output port. To create a sound:

1. In the Project pane, double-click [Sound]. This will open a Sound tab in the editing area.

\* iXP series only

Destination Storage:



Sound Condition:

	Data Type	Device	Condition	File No.	Play
1					
2					
3					
4					
5					
6					
7					
8					

Sound File:

	Size	Sound File
1		
2		
3		
4		
5		
6		
7		
8		

2. Specify the following conditions:

Function	Description
Destination Storage	Select a storage location for the sound file.
Data Type	Enter the data type, such as 16-bit signed.
Device	Enter the device that will activate the sound file.
Condition	Enter a condition for running the sound file. Choose On/Off for bit devices and enter a condition formula for other types of devices.
File No.	Enter the file number of the sound file.
Play	Select a play mode for the sound file.
 / 	Play or stop the sound file.
Size	Display the size of the sound file
Sound File	Enter the sound file name.

#### Notes

- MP3 files may not play if the sound codec is not supported by your PC. Install the proper codecs to play sound files.
- MP3 files must have the following characteristics: MPEG 1, Layer III, Sample rate: 32-48 KHz, Bit rate: 32-320 kbps.
- WAV files must have the following characteristics: Raw PCM Audio, 8/16bit,

signed/unsigned, Stereo/Mono.

- Sound files cannot exceed 10MB.

## 4.2 Scripts

You can program operations by writing scripts, instead of creating objects in the XP-Builder interface.

### 4.2.1 About Scripts

Scripts perform specified actions based on inputs from a user or from the system. You can control the system entirely with figures and objects in the XP-Builder interface, but using scripts can allow you to organize the project more conveniently or effectively. Scripts characteristics include:

- Easy system management
- Control of windows with clearly defined functions and complex mathematical operations
- Simplified programming (based on a limited form of the C language)
- Simplified editing, provided by a general program editor
- Debugging by verifying grammatical errors in scripts
- Using a protocol driver to transfer via a controller

Scripts are executed as shown in the following table:

Script Type	Execution Method
Global	When the script conditions are met, it controls or manages windows in the project.
Display Change	When the current window is closed and before a new window is opened
Local Settings	<ul style="list-style-type: none"> <li>• When the script conditions set in the current window are met</li> <li>• Set the scripts only for the window.</li> </ul>
Scheduler	At the specified time
Objects	Based on the action defined for the object only in the current window

### Notes

- The timeout for scripts is 5 seconds of communication between the PLC and the XGT Panel. It is recommended that you do not use scripts that require longer than 5 seconds to execute.
- If communication fails, script execution will stop.
- If the script attempts to perform an illegal operation (e.g., dividing by 0) script execution will stop.

If an error occurs during script execution, statements after the point where the error occurred will be skipped. If an ERROR control statement is inserted into the script and an error occurs, any statements from that point on will be attempted, as shown in the illustration below. If no ERROR control statement is inserted into the script and an error does not occur, none of the statements after the control statement will be executed.

<pre> 1 // Copyright (c) 2004~2006 2 // All rights reserved. 3 // Visit us: <a href="http://www.lsis.biz">http://www.lsis.biz</a> 4 5 6 // Function Name : GetLastError 7 8 int num = 0; 9 int opnd_A = 10, opnd_B = 0; 10 11 num=opnd_A / opnd_B; 12 @[W:HW10] = num; 13 14 ERROR: 15 { 16     int Error = GetLastError(); 17 }</pre>	<div>● Executed</div> <div>● Executed</div> <div>● Division by 0 error</div> <div>● Not executed</div> <div>● Script execution resumes here.</div> <div>● Executed</div>
--	--

Script errors and explanations are shown in the Output tab at the bottom of the XP-Builder window.

You can add single-line or multi-line comments to your scripts. To add a single-line comment, enter two backslashes (//) in front of the comment. To add a multi-line comment, bracket the comment with backslashes and asterisks (/ \* /), as shown in the following example. You can also add a single-line comment at the end of a line of code.

```
// This is a single line comment.

/* This is line 1 of a multi-line comment.
```

```
This is line 2 of a multi-line comment.
```

```
This is line 3 of a multi-line comment. */
```

#### 4.2.1.1 Understanding Script Commands

Learn how to write commands in scripts. The following table describes the control statements and operators available for programming scripts:

Command	Expression	Description
<b>• Control Statements</b>		
if	<pre>if (Condition) {     Statement; } else {     Statement; }</pre>	This command performs the statement if true (a value other than 0) as a result of judgment of the condition and shifts to the location next to the statement if false.
for	<pre>for(Expression; Condition; Expression) {     Statement; }</pre>	This command repeats the statement if true (a value other than 0) as a result of judgment of the condition and shifts to the location next to the statement if false.
while	<pre>while(Condition) {     Statement; }</pre>	This command repeats the statement if true (a value other than 0) as a result of judgment of the condition and shifts to the location next to the statement if false.
do while	<pre>do {     Statement; } while(Condition);</pre>	This command shifts to the Do location and performs the statement if true (a value other than 0) as a result of judgment of the condition and shifts to another location if false.
return	<pre>return;</pre>	Ends the script.



Command	Expression	Description
break	break;	<ul style="list-style-type: none"> <li>The break statement within the loop gets out of the loop wrapping the break.</li> <li>If the break statement is within the nested loop, it only affects the loop which is furthest inwards in the program.</li> </ul>
continue	continue;	<ul style="list-style-type: none"> <li>Skips the remaining part within the loop and shifts to the next loop execution.</li> <li>The continue statement is within the nested loop, it only affects the internal loop structure containing it.</li> </ul>

### • Logical Operators

&&	<Term 1> && <Term 2>	Provides 1 if both <Term 1> and <Term 2> are true and 0 otherwise.
	<Term 1>    <Term 2>	Provides 1 if both <Term 1> and <Term 2> are false and 0 otherwise.
!	!<Term>	Provides 1 if <Term> is 0 and otherwise 0.

### • Relational Operators

<	<Term 1> < <Term 2>	Provides 1 if <Term 1> is smaller than <Term 2> and otherwise 0.
<=	<Term 1> <= <Term 2>	Provides 1 if <Term 1> is smaller than or equal to <Term 2> and otherwise 0.
>	<Term 1> > <Term 2>	Provides 1 if <Term 1> is larger than <Term 2> and otherwise 0.
>=	<Term 1> >= <Term 2>	Provides 1 if <Term 1> is larger than or equal to <Term 2> and

Command	Expression	Description
		otherwise 0.
!=	<Term 1> != <Term 2>	Provides 1 if <Term 1> is not equal to <Term 2> and otherwise 0.
==	<Term 1> == <Term 2>	Provides 1 if <Term 1> is equal to <Term 2> and otherwise 0.

#### • Mathematical Operators

+	<Term> + <factor>	Adds <Term> to <factor>.
-	<Term> - <factor>	Subtracts <factor> from <Term>.
*	<Term> * <factor>	Multiplies <Term> by <factor>.
/	<Term> / <factor>	Divides <Term> by <factor>.
%	<Term> % <factor>	Divides <Term> by <factor> and takes the residual.

#### • Bit Operators

&	<Term> & <factor>	Performs the bit operation (AND) of <Term> and <factor>.
	<Term>   <factor>	Performs the bit operation (OR) of <Term> or <factor>.
~	~ <bit>	Reverses the <bit> value.
^	<Term> ^ <factor>	Performs the bit operation (EOR) of <Term> or <factor>.
<<	<Term> << <factor>	Shifts <Term> to the left by the value of <factor>.
>>	<Term> >> <factor>	Shifts <Term> to the right by the value of <factor>.

#### • Assignment Operators

=	<Device> = <term>	Assigns the value of <term> to <Device>.
+=	<Device> += <term>	Adds <term> to <Device> and assigns the value of the result of the operation to <Device>.

Command	Expression	Description
<code>_=</code>	<code>&lt;Device&gt; -= &lt;term&gt;</code>	Subtracts <code>&lt;term&gt;</code> from <code>&lt;Device&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>*=</code>	<code>&lt;Device&gt; *= &lt;term&gt;</code>	Multiplies <code>&lt;Device&gt;</code> by <code>&lt;term&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>/=</code>	<code>&lt;Device&gt; /= &lt;term&gt;</code>	Divides <code>&lt;Device&gt;</code> by <code>&lt;term&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>%=</code>	<code>&lt;Device&gt; %= &lt;term&gt;</code>	Divides <code>&lt;Device&gt;</code> by <code>&lt;term&gt;</code> and takes the residue and then assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code> =</code>	<code>&lt;Device&gt;  = &lt;term&gt;</code>	Performs the bit operation(AND) of <code>&lt;term&gt;</code> to <code>&lt;Device&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>&amp;=</code>	<code>&lt;Device&gt; &amp;= &lt;term&gt;</code>	Performs the bit operation(OR) of <code>&lt;term&gt;</code> to <code>&lt;Device&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>^=</code>	<code>&lt;Device&gt; ^= &lt;term&gt;</code>	Performs the bit operation(EOR) of <code>&lt;term&gt;</code> to <code>&lt;Device&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>&lt;&lt;=</code>	<code>&lt;Device&gt; &lt;&lt;= &lt;term&gt;</code>	Shifts <code>&lt;Device&gt;</code> to the left by <code>&lt;term&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .
<code>&gt;&gt;=</code>	<code>&lt;Device&gt; &gt;&gt;= &lt;term&gt;</code>	Shifts <code>&lt;Device&gt;</code> to the right by <code>&lt;term&gt;</code> and assigns the value of the result of the operation to <code>&lt;Device&gt;</code> .

### • Increment/Decrement Operators

Command	Expression	Description
++	++<Device>;	Increases <Device> by 1.
	<Device>++;	
--	--<Device>;	Decreases <Device> by 1.
	<Device>--;	

#### 4.2.1.2 Understanding Device Address Expressions

To express a device address in a script, use this format: @[Device type:Connection number:Station address:tag name or device address], with the data inside the brackets describing the physical address of the device in the PLC. Examples of device address formats are shown in the following table:

##### Notes

- In the sample expressions that follow, "1" refers to the direct device address, which varies by PLC type. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
- Connection numbers range from 0 to 3.

Device	Statement Example	Device Address Examples
Bit (Variable=X)	@[X:Conn#:Add]	@[X:%MX1] @[X:0:%MX1] @[X:#1:%MX1] @[X:0:#1:%MX1]
Short (Variable=S)	@[S: Conn#:Add]	@[S:%MW000] @[S:0:%MW000] @[S:#1:%MW000] @[S:2:#1:%MW000]
Integer (Variable=L)	@[L: Conn#:Add]	@[L:%MW000] @[L:0:%MW000] @[L:#1:%MW000] @[L:2:#1:%MW000]
Unsigned Short (Variable=W)	@[W: Conn#:Add]	@[W:%MW000] @[W:0:%MW000] @[W:#1:%MW000] @[W:2:#1:%MW000]
Unsigned Integer	@[D: Conn#:Add]	@[D:%MW000]

Device	Statement Example	Device Address Examples
(Variable=D)		@[D:0:%MWooo] @[D:#1:%MWooo] @[D:2:#1:%MWooo]
Float (Variable=F)	@[F: Conn#:Add]	@[F:%MWooo] @[F:0:%MWooo] @[F:#1:%MWooo] @[F:2:#1:%MWooo]

### 4.2.1.3 Understanding Constants and Data Types

Scripts employ a systematic expression of data. The following table describes the constants used by scripts in XP-Builder:

Constant	Examples
Decimal Numbers	124, -34, 0, 2334454
Real Numbers	0.123, 10.45E12, 0.0
Hexadecimal Numbers	0x45FA, 0xffff
Binary Numbers	true, false
Characters	'a', '1', '0', '%'

Various types of data can be returned or expressed by script functions. Variables can be added to data types as well. For more information about variables, refer to <4.2.1.4 *Understanding Variables*>.

The following table describes the data types used by scripts in XP-Builder:

Type	Description	Data range	Example
Boolean (1 bit)	<ul style="list-style-type: none"> <li>Expresses either True or False</li> <li>The abbreviation "bool" comes first, followed by the variable name.</li> <li>Initializes as "true" or "false"</li> </ul>	0 to 1	<b>bool</b> bState = true ;
Character (8 bit)	<ul style="list-style-type: none"> <li>Expresses a character</li> </ul>	0 to 255	<b>char</b> cChar = 'a' ;
Short (16 bit)	<ul style="list-style-type: none"> <li>This data type uses less memory than an integer.</li> <li>To initialize variables, place the assignment operator "=" after the variable name and specify a value.</li> </ul>	-32768 to 32767 or 0 to 7FFF	<b>short</b> wValue = -10 ;
Integer (32 bit)	<ul style="list-style-type: none"> <li>This data type is a signed integer. This means that the data must be an integer and can be a positive number, a negative number, or 0.</li> <li>To declare more than one variable, place the abbreviation "int" first, followed by the variables separated by commas.</li> <li>Initialization of a variable assigns the initial value. Place the assignment operator "=" after the variable name and specify a value.</li> </ul>	-2147483648 to 2147483647 or 0 to 7FFFFFFF	<b>int</b> nValue = -100 ;
Unsigned Short (16 bit)	To initialize variables, place the assignment operator "=" after the variable name and specify a value.	0 to 65535 or	<b>unsigned short</b> wValue = 10 ;

Type	Description	Data range	Example
		0 to FFFF	
Unsigned Integer (32 bit)	To initialize variables, place the assignment operator "=" after the variable name and specify a value.	0 to 4294967295 or 0 to FFFFFFFF	<b>unsigned int nValue = 100 ;</b>
Float (32 bit)	To initialize variables, place the assignment operator "=" after the variable name and specify a value to be substituted.	- 3.402823466e+38 to -1.175494351e-38 or 0.0 or 1.175494351e-38 to 3.402823466e+38	<b>float fValue = 10.01 ;</b>

### 4.2.1.4 Understanding Variables

Each data type has a corresponding variable type. The following table describes the variable types available:

Variable Type	Expression	Example
Boolean	\$X	<b>\$X = true;</b>
Short	\$S	<b>\$S = -10 ;</b>
Integer	\$L	<b>\$L = -1;</b>
Unsigned Short	\$W	<b>\$W = 100;</b>
Unsigned Integer	\$D	<b>\$D = 10;</b>
Float	\$F	<b>\$F = 10.01;</b>

#### 4.2.1.5 Viewing the Script Cross Reference

The script cross reference function displays object or common properties used for scripts in the output screen. When a project is executed in the XGT Panel, unexpected computation results may occur and they are likely to stem from scripts. This function allows you to catch errors in script position, without requiring a complicated process like individually opening and checking every item that is affected by global or local scripts.

To view the script cross reference, click [Tool] ► [Find All Script]. Script names, positions, object formats, and explanations will be shown in the output window. All registered scripts will be also shown.

#### Note

If you double-click a result in the cross reference, to affected object or window will open in the editing area.

#### 4.2.2 Creating Scripts

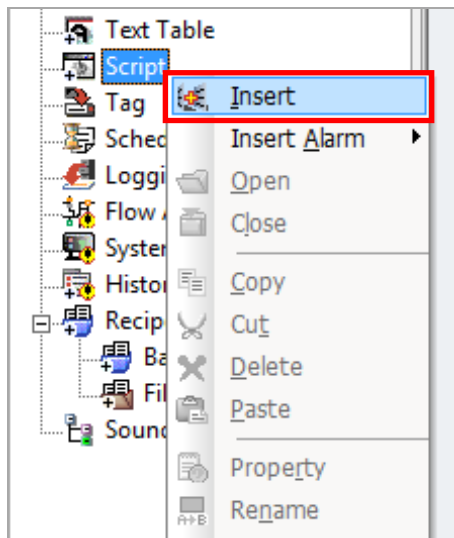
Learn how to create scripts. You can insert scripts from the Project pane or the Script Tool Box and create some scripts from the editing area or objects that you have applied there. To apply global settings to scripts, refer to <2.2.2.8 *Changing Global Script Settings*>.

##### 4.2.2.1 Inserting Scripts

1. To insert a script from the Project pane:
2. In the Project pane, right-click [Script].



3. Click [Insert]. A script tab will open in the editing area.



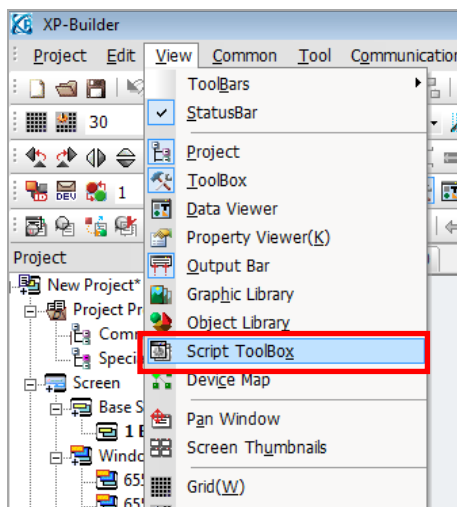
4. Create your script in the editing area. Right-click the script tab and then click [Close] to return to normal window editing.

### 4.2.2.2 Using the Script Tool Box

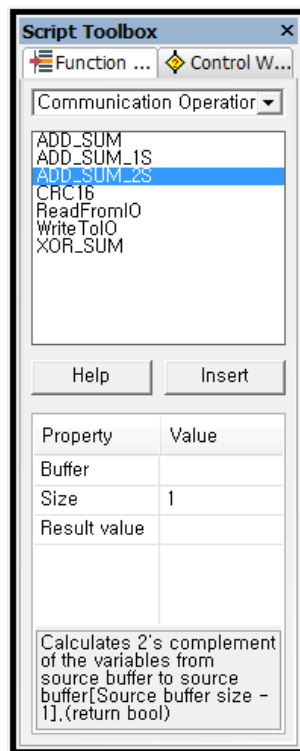
The Script Tool Box allows you to create and manage scripts easily. You can select functions and commands from lists instead of entering them manually.

To register the scripts using the Function List:

1. Insert a script, as described in 4.2.2.1.
2. Click [View] ► [Script ToolBox].



- Click [Function List] to select from lists of pre-defined functions, such as device, screen, and communication operations. Double-click an operation to insert it into the script.



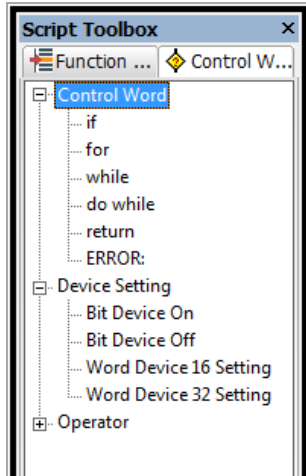
- In the script editing area, enter values for the function, as necessary.

```

1 // Copyright (c) 2004~2006
2 // All rights reserved.
3 // Visit us: http://www.lsis.biz
4
5
6
7
8
9 ERROR:
10 {
11
12 }
13 ADD_SUM_2S ( , 1, );

```

5. In the Script Tool Box, click [Control Word] to select from lists of commands, device settings, and operators. Double-click an item to insert it into the script.

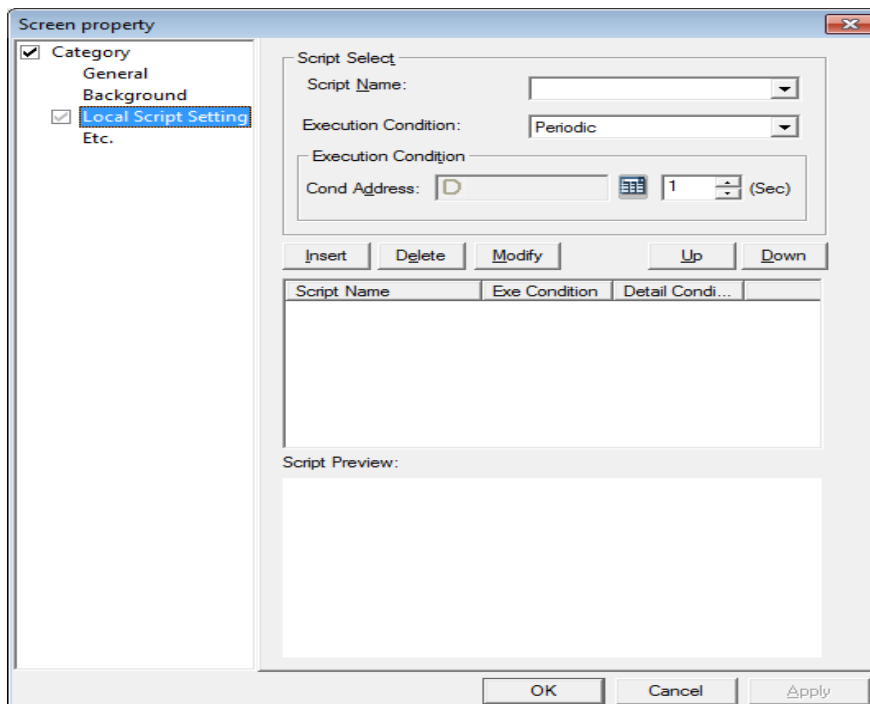


6. In the script editing area, enter values for the control word, as necessary.

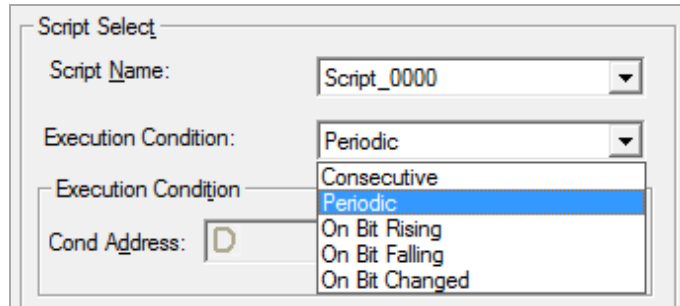
### 4.2.2.3 Specifying Local Scripts

To select a script that will change what is shown on the XGT Panel display:

1. Create a script, as described in 4.2.2.1 or 4.2.2.2.
2. Double-click a window from the Project pane.
3. In the editing area, right-click and then click [Screen Property].
4. Click [Local Script Setting].



5. Select a script and execution condition from the drop-down lists. If you choose an execution condition other than Consecutive or Periodic, specify the device condition address.

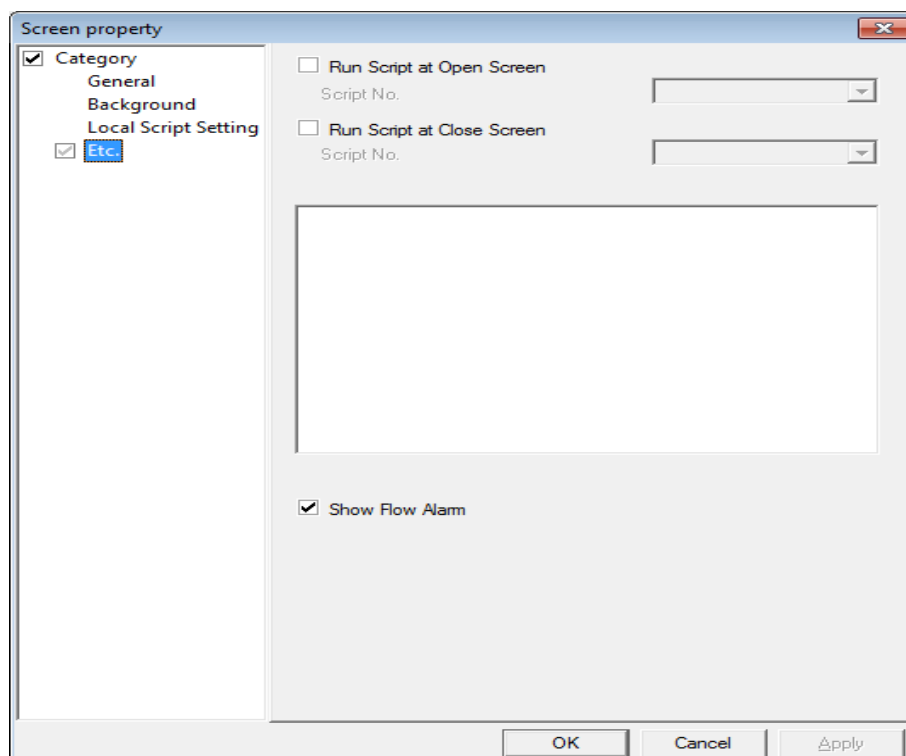


6. Click [Insert] and, if necessary, click [Up] or [Down] to prioritize the script.
7. Click [OK].

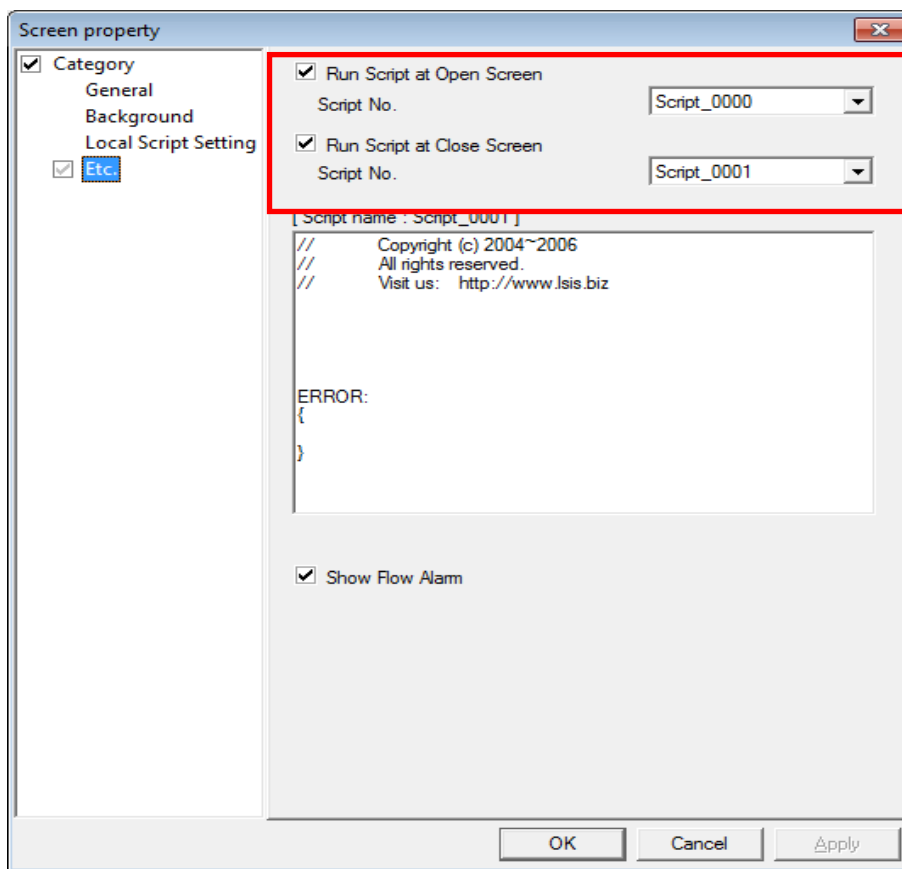
#### 4.2.2.4 Specifying Display Change Scripts

To specify a script that will execute when a window opens or closes:

1. Create a script, as described in 4.2.2.1 or 4.2.2.2.
2. Double-click a window from the Project pane.
3. In the editing area, right-click and then click [Screen Property].
4. Click [Etc.].



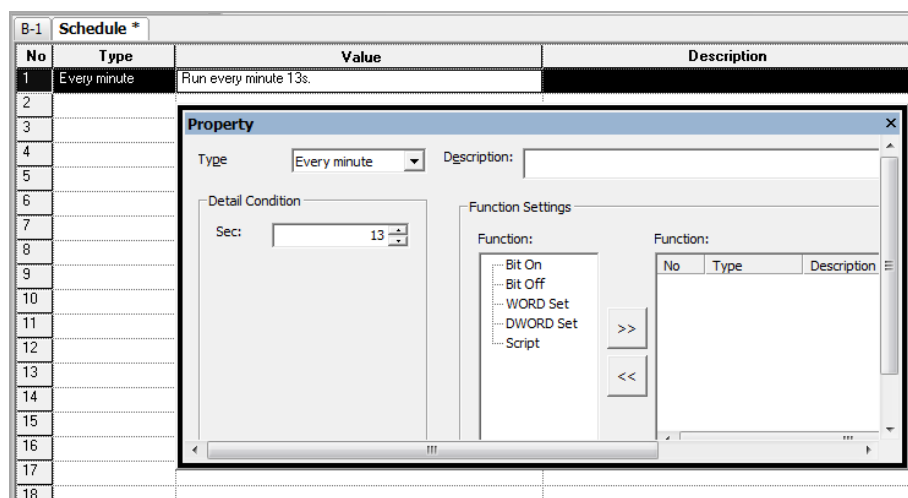
5. If desired, click the check box next to **Run Script at Open Screen** or **Run Script at Close Screen**, and then select a script to execute, based on the window status.



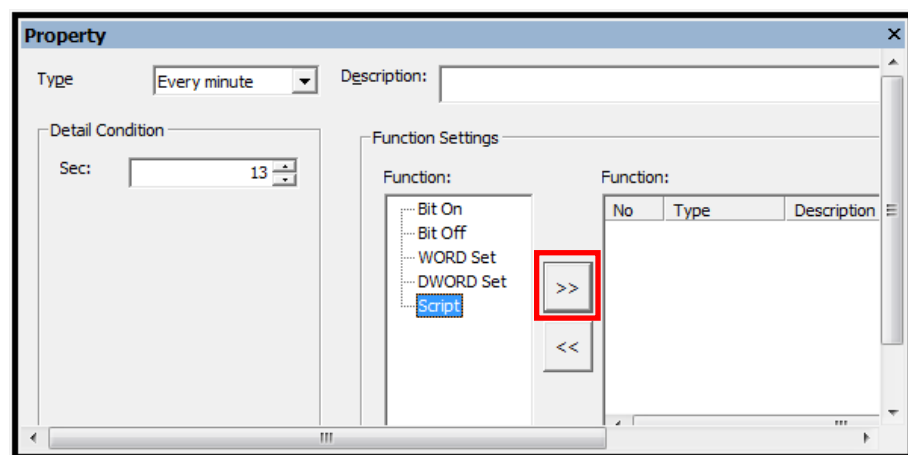
6. Click [OK].

#### 4.2.2.5 Specifying Schedule Scripts

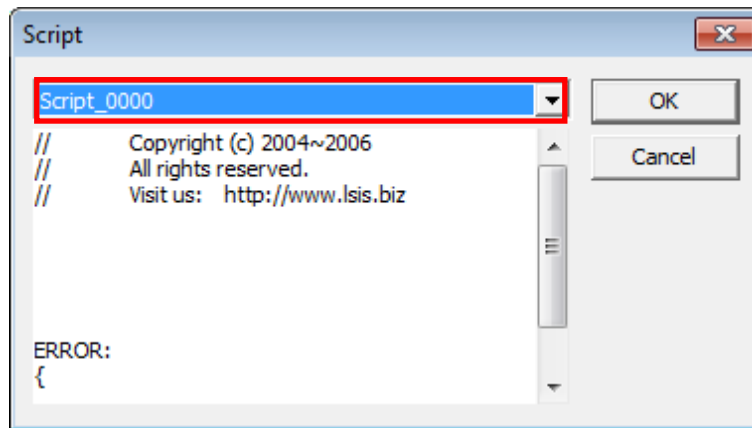
1. To specify scripts that run on specified schedules:
2. Create a script, as described in 4.2.2.1 or 4.2.2.2.
3. In the Project pane, double-click [Schedule].
4. In the editing area, double-click a cell in the Schedule tab.
5. In the Property window, specify the schedule type, detail condition, and description as desired.



6. In the **Function Settings**, click [Script] ► [ >> ].



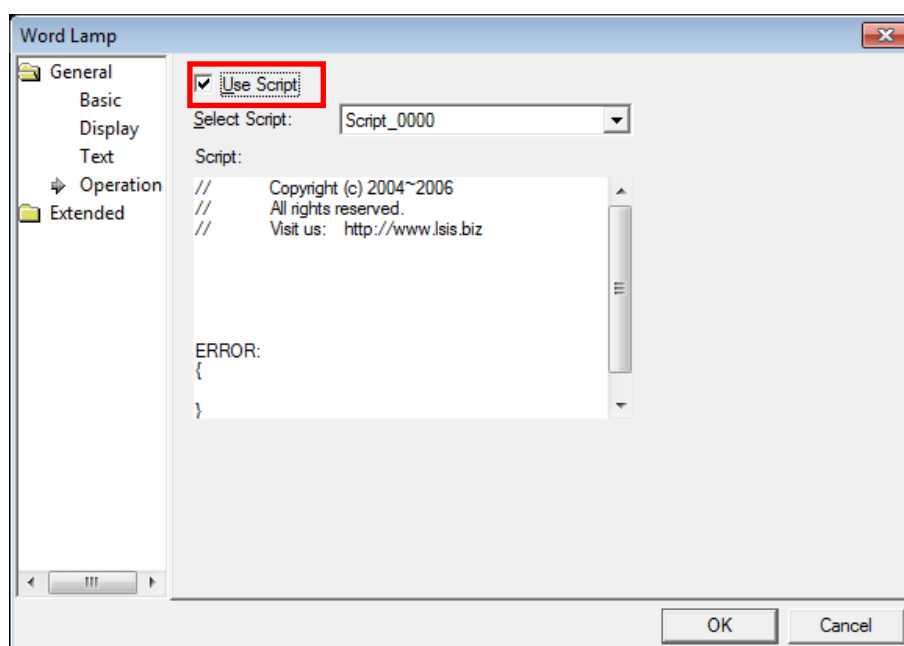
7. Select a script from the drop-down list and click [OK].



8. If necessary, click [Up] or [Down] to prioritize the script.
9. Close the Property window or specify additional schedule scripts, as desired. Your changes are saved automatically.

### 4.2.2.6 Creating Object Scripts

1. Create a script, as described in 4.2.2.1 or 4.2.2.2.
2. Create an object. For more information about creating objects, refer to <2.3.4 *Inserting Figures or Objects*>. After creating an object, the Properties window will appear for the object.
3. Click [Operation] in the Properties window.
4. Click the check box next to **Use Script**.



5. Select a script.
6. Click [OK].

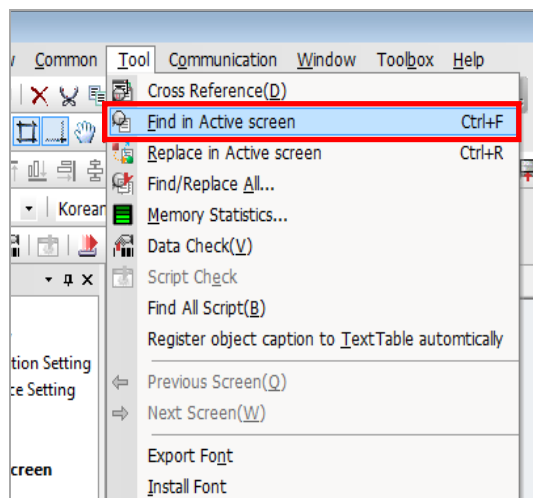
#### Notes

- Scripts cannot be applied to all types of objects. If a script cannot be applied to the object, the function will not be available in the Properties window.
- If you delete a script that is applied to objects in your project, an error will occur during the data check.

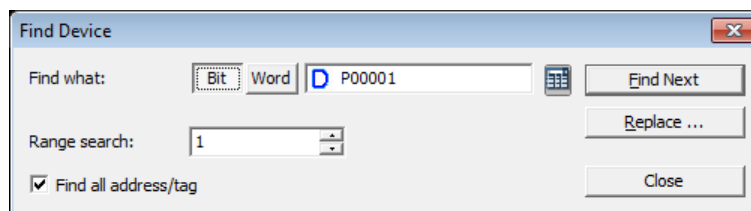
#### 4.2.2.7 Editing Scripts

To find part of a script:

1. With the script tab open in the editing area, click [Tool] ► [Find in Active Screen].



2. Specify the data to find in the pop-up window.

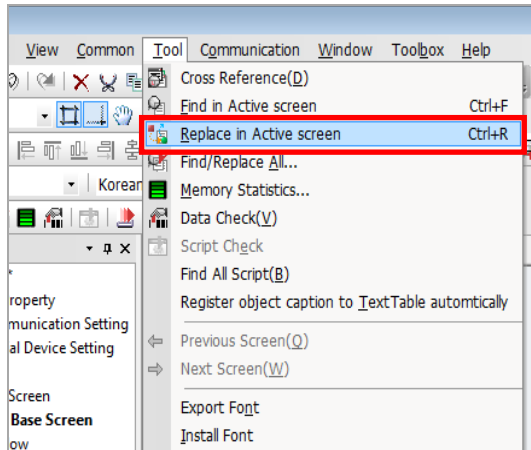


3. Specify matching and direction options, as desired.
4. Click [Find Next] to find the next instance of the data.

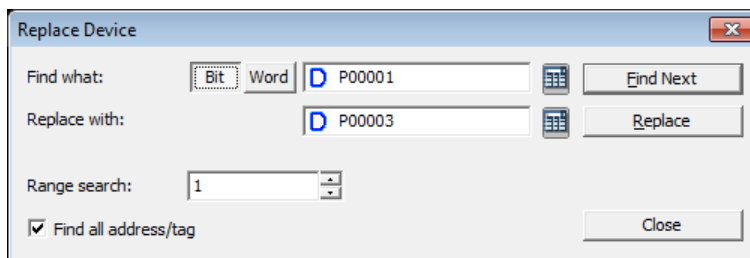


To replace part of a script:

1. With the script tab open in the editing area, click [Tool] ► [Replace in Active Screen].



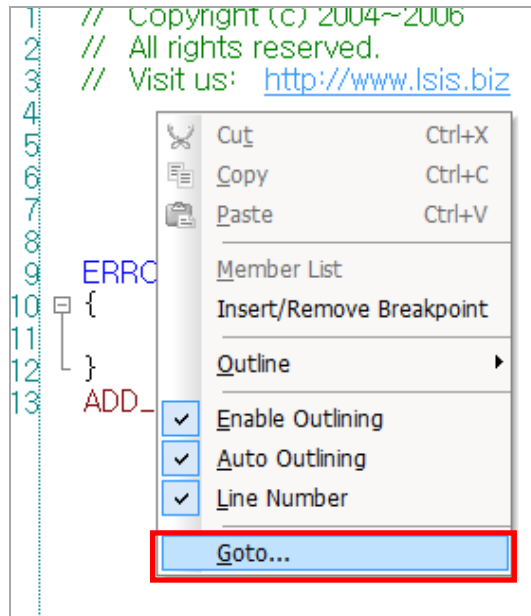
2. Specify the data to find in the pop-up window.



3. Specify matching options, as desired.
4. Click [Replace] to replace data instances one at a time or you can click [Replace All] to replace all data instances that match your search at once.

To move to a specific line in the script:

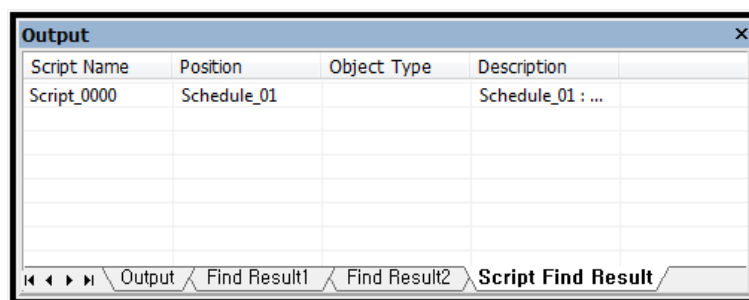
1. With the script tab open, right-click on the script editing area.
2. Click [Goto].



3. Enter a line number and click [Goto].

### Notes

- You can use the Find/Replace All function from the Tool menu to locate and replace data as well, but this function will search all project data at once, unless you click [Find At] and restrict the search to a particular data location.
- If you want to find script information that is applied to objects in the base window, click [Tool] ► [Find All Script].



### 4.2.3 Using Scripts to Control XGT Panel Functions

Several scripts are available for controlling XGT panel functions, including system, print, and device functions.

#### 4.2.3.1 Understanding System Functions

The following table describes script properties for system functions:

Function	Description	Parameters	
HMIExit	XGT Panel ends the monitor and moves to the standby screen. <b>Example:</b> <i>HMIExit();</i>	None	
InitHistoricalAlarm	Initialize the alarm area of the NVRAM. Existing alarm contents will be deleted. <b>Example:</b> <i>InitHistoricalAlarm();</i>	None	
InitLogging	Initialize the logging area of the NVRAM. Logged contents will be deleted. If one of the history alarm numbers is invalid, this function will not work. <b>Example:</b> <i>InitLogging(1);</i>	Return value	None
		Parameter 1	int nLogNum: the logging number to be initialized
SetTime	Change the XGT Panel's clock. <b>Example:</b> <i>SetTime(@[W:%MW1000], @[W:%MW1001], @[W: :%MW1002], @[W: %MW1003], @[W: %MW1004], @[W: %MW1005]);</i>  <i>SetTime(2013, 1, 30, 8, 10, 0);</i>	Return value	None
		Parameter 1	int nYear: Year
		Parameter 2	int nMonth: Month (1-12)
		Parameter 3	int nDay: Day (0-31)
		Parameter 4	Int nTime: Hour (0-23)
		Parameter 5	int nMin: Minute (0-59)
		Parameter 6	Int nSec: Second (0-59)

#### 4.2.3.2 Understanding Print Functions

The following table describes script properties for print functions:

Function	Description	Parameters
PrintAlarm	<p>Print the alarm list.</p> <p><b>Example:</b></p> <pre>if(@[X:%MXo] == true) {     PrintAlarm(); }</pre>	None
PrintScreen	<p>Print the current screen of the XGT Panel. Set the print option in the Auxiliary Settings tab of the project properties.</p> <p><b>Example:</b></p> <pre>if(@[X:%MX1] == true) {     PrintScreen(); }</pre>	None

### 4.2.3.3 Understanding Window Change Functions

Function	Description	Parameters
ChangeBaseScreen	<p>Change the current window to the window number specified by the device. If the window number is not assigned in the Project pane, the window will not be changed.</p> <p><b>Example:</b></p> <pre> if(@[W:%MWooo] &gt;= 0)     ChangeBaseScreen(10); else     ChangeBaseScreen(@[W:%MW10]); //Constant is 10. Device is %MW10. </pre>	<p>int nBaseScreenNumber: Input the window number to change. You can input a real number or designate a word device to provide the value.</p>

### 4.2.3.4 Understanding Script Functions

The following table describes properties for the script function:

Function	Description	Parameters
GetLastError	<p>Return errors that occur during script execution.</p> <p><b>Example:</b></p> <pre> int num = 0, a = 10, b = 0; int error; num = a/b; ERROR: {     error = GetLastError(); } </pre>	See the following table.

The GetLastError function returns the following values:

Value	Description
0: Steady State	Set a steady state.
1: Shut down	The program was shut down normally.
2: Memory error	A stack address value was not properly read or written.
3: Direct Variable Memory error	A direct variable address was not properly read or written.
4: Temporary Variable Memory error	A temporary variable address was not properly read or written.
5: Internal Function Processing	An internal function in XP-Builder did not perform correctly.
6: Data error	A variable data value is invalid (use for debugging).
7: Invalid Data	A data value is invalid when writing for variables (use for debugging).
8: Divide by 0 Error	Illegal operation: division by zero.
9: Opcode Error	Invalid opcode
10: Arrangement Subscript Excess	An arrangement subscript exceeds the max size.
11: Range Excess	Not used
12: Function Error	Not used
13: Semi Error	Not used
14: Watchdog Time Error	The watchdog time has been exceeded.
15: Duplication Function Number Error(10)	More than 10 scripts called
16: Dead lock State	Not used
17: Memory Error	An attempt was made to reference something outside of the global variable area (g_DataBuffer).
18: Memory Error	The pointer's memory exceeds the range of the assigned variable.
19: Memory Error	The pointer's class is incorrect (available only for global variables or stack variables).

Value	Description
20: Memory Error	The wrong type was entered (when a value other than the declared variable was entered).

### 4.2.3.5 Understanding String Functions

The following table describes properties for the string functions:

Function	Description	Parameters	
Strcat	Add original text behind target text. When the target string plus the source string is bigger than the character type's variable, the string is not added (false is returned).  <b>Example:</b> <code>char szSrc[10] = "12345",</code> <code>szDst[10] = "abcd";</code> <code>Strcat(&amp;szDst, &amp;szSrc);</code> //The value of szDst is "abcd12345".	Return value	bool: Whether or not the string is added.
		Parameter 1	char* pszDst: The target string (the address of the character type's variable).
		Parameter 2	char* pszSrc: The source string (the address of the character type's variable).
Strcmp	Compare two texts and, if they are the same, return 0.  <b>Example:</b> <code>char szStr1[10] = "12345";</code> <code>char szStr2[10] = "12345";</code> <code>int nResult;</code> <code>nResult = Strcmp(&amp;szStr1, &amp;szStr2);</code> //The value of nResult is 0.	Return value	int: Return the result of the comparison: <ul style="list-style-type: none"> <li>• <b>Negative:</b> pszString1 &lt; pszString2</li> <li>• <b>0:</b> Same string</li> <li>• <b>Positive:</b> pszString1 &gt; pszString2</li> </ul>
		Parameter 1	char* pszDst: The target string (the address of the character type's variable).
		Parameter 2	char* pszSrc: The source string (the address of the character type's variable).
Strcpy	Copy text from the source string to the target string. If	Return value	bool: Whether or not the string is copied.
		Parameter 1	char* pszDst: The

Function	Description	Parameters	
	<p>the length of the source string is longer than the char type's variable, it cannot be copied (false is returned).</p> <p><b>Example:</b>  <code>char szSrc[10] = "12345",  szDst[10];  Strcpy(&amp;szDst, &amp;szSrc);</code></p>		target string (the address of the character type's variable).
		Parameter 2	char* pszSrc: The source string (the address of the character type's variable).
Strlen	<p>Lengthen the string.</p> <p><b>Example:</b>  <code>char buf[10] = "12345";  int nLen;  nLen = Strlen(&amp;buf);  //The value of nLen is 5.</code></p>	Return value	int: The length of string
		Parameter 1	char* pszString: The address of the character type's variable.



### 4.2.3.6 Understanding Device Functions

The following table describes properties for the device functions:

Function	Description	Parameters	
CopyData	Read data from the source device and inputs them into a destination device. <b>Example:</b> <code>CopyData(@[W:%MW000], @[W:%MW100], 10);</code>	Return value	None
		Parameter 1	DEVICE src: The source device to copy from
		Parameter 2	DEVICE dst: The destination device
		Parameter 3	int nCount: The number of devices
CopyDataEx	Read data from the source device up to the source offset and inputs them into the destination device up to the destination offset. <b>Example:</b> <pre>int index; if(@[X:%IX0.0.0] == true) {     index = 0; } else {     index = 100; } CopyData(@[W:%MW000], 0, @[W:%MW100], index, 10); /* If statement is true, offsets 10 word values, from %MW000 to %MW100. If statement is false, offsets 10 word values from %MW000 to %MW200. */</pre>	Return value	BOOL: If the device address is exceeded, FALSE will be returned.
		Parameter 1	DEVICE src: The source device to copy from
		Parameter 2	int nSrcOffset: Offset of the source device
		Parameter 3	DEVICE dst: The destination device
		Parameter 4	int nDstOffset: Offset of the destination device
		Parameter 5	int nCopyCount: The number of devices
SetData	Input values to a device. <b>Example:</b>	Return value	BOOL: If the device address is exceeded,

Function	Description	Parameters	
GetData	<pre> int nLoop; for(nLoop = 0; nLoop&lt;10; nLoop++) SetData(@[W:%MW100], nLoop, 0); //Set "0" in devices from %MW100 to %MW109. </pre>		FALSE will be returned.
		Parameter 1	DEVICE src: The source device
		Parameter 2	int nSrcOffset: Offset of the source device
		Parameter 3	int nValue: Value
GetData	<p>Retrieve and add values from a device.</p> <p><b>Example:</b></p> <pre> int nLoop, nValue; for(nLoop = 0; nLoop&lt;10; nLoop++) { GetData(@[W:%MW100], nLoop, &amp;nValue); nValue += nValue; } //Retrieve and add values from %MW100 to %MW109. </pre>	Return value	BOOL: If the device address is exceeded, FALSE will be returned.
		Parameter 1	DEVICE src: The source device
		Parameter 2	int nSrcOffset: Offset of the source device
		Parameter 3	int* pRetVal: The value returned from the device.

### Notes

- When copying data, the source and destination devices must be of the same type. Otherwise, communication will fail.
- If a device address exceeds the upper limit, data will not be copied.

## 4.2.3.7 Understanding Communication Functions

The following table describes properties for the communication functions:

Function	Description	Parameters	
ADD_SUM	Calculate and return the sum of entered data.  <b>Example:</b> <code>int nResult;</code> <code>char buf[5] = {1, 2, 3, 4, 5};</code> <code>ADD_SUM(&amp;buf[0], 5,</code> <code>&amp;nResult);</code>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer: The buffer for calculation
		Parameter 2	int nCount: The byte number to be calculated
		Parameter 3	int* nResult: The calculated value
ADD_SUM_1S	Calculate and return the sum of entered data and 1's complement.  <b>Example:</b> <code>int nResult;</code> <code>char buf[5] = {1, 2, 3, 4, 5};</code> <code>ADD_SUM_1S(&amp;buf[0], 5,</code> <code>&amp;nResult);</code>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer: The buffer for calculation
		Parameter 2	int nCount: The byte number to be calculated
		Parameter 3	int* nResult: The calculated value
ADD_SUM_2S	Calculate and return the sum of entered data and 2's complement.  <b>Example:</b> <code>int nResult;</code> <code>char buf[5] = {1, 2, 3, 4, 5};</code> <code>ADD_SUM_2S(&amp;buf[0], 5,</code> <code>&amp;nResult);</code>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer: The buffer for calculation
		Parameter 2	int nCount: The byte number to be calculated
		Parameter 3	int* nResult: The calculated value
CRC16	Calculate and return the 16 bit CRC value of entered data.  <b>Example:</b> <code>int nResult;</code> <code>char buf[5] = {1, 2, 3, 4, 5};</code> <code>CRC16(&amp;buf[0], 5, &amp;nResult);</code>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer: The buffer for calculation
		Parameter 2	int nCount: The byte number to be calculated
		Parameter 3	int* nResult: The calculated value

Function	Description	Parameters	
XOR_SUM	Calculate and return the XOR sum of entered data. <b>Example:</b> <pre>int nResult; char buf[5] = {1, 2, 3, 4, 5}; XOR_SUM(&amp;buf[0], 5, &amp;nResult);</pre>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer: The buffer for calculation
		Parameter 2	int nCount: The byte number to be calculated
		Parameter 3	int* nResult: The calculated value
ReadFromIO	Read data from the I/O device of a designated controller. If the value of nToRead is 0, reading is performed during the time-out of communication setting. <b>Example:</b> <pre>char Response[32]; int ReadSize; memset(&amp;Response[0], 0, 32); ReadSize = ReadFromIO(o, &amp;Response[0], 32 );</pre>	Return value	int: The byte number of the read data
		Parameter 1	int nCtrl: The controller number (0-3)
		Parameter 2	char* pBuffer: The buffer that will store the read data
		Parameter 3	int nToRead: The size of the data to be read
WriteToIO	Transmit data to the I/O device of a designated PLC. <b>Example:</b> <pre>char Command[6] = "ABCDEF"; int nSentSize; nSentSize = WriteToIO(o, &amp;Command[0], 6 );</pre>	Return value	int: The number of byte of the transmitted data
		Parameter 1	int nCtrl: The PLC number (0-3)
		Parameter 2	char* pBuffer: The data buffer to be transmitted.
		Parameter 3	int nSize: The buffer size

## 4.2.3.8 Understanding Memory Functions

The following table describes properties for the memory functions:

Function	Description	Parameters	
HIBYTE	Obtain the upper byte of the entered word values. <b>Example:</b> <i>int nValue = 0x1234;</i> <i>char nResult;</i> <i>nResult = HIBYTE(nValue);</i>	Return value	char: Upper byte
		Parameter 1	int nValue: The entered data
LOBYTE	Obtain the lower byte of the entered word values. <b>Example:</b> <i>int nValue = 0x1234;</i> <i>char nResult;</i> <i>nResult = LOBYTE(nValue);</i>	Return value	char: Lower byte
		Parameter 1	int nValue: The entered data
MAKEWORD	Obtain word values with two entered byte values. <b>Example:</b> <i>char cLow = 0x12, cHigh = 0x34;</i> <i>int nResult;</i> <i>nResult = MAKEWORD(cLow, cHigh);</i> <i>//The result is 0x3412.</i>	Return value	int: Word Value
		Parameter 1	char cLow: Lower byte
		Parameter 2	char cHigh: Upper byte
Memcpy	Copy the data from the source buffer to the destination buffer. <b>Example:</b> <i>char src[9] = "123456789",</i> <i>dst[4];</i> <i>Memcpy(&amp;src[2], &amp;dst[0], 4);</i>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char * pDstData: The destination buffer
		Parameter 2	char * pSrcData: The source buffer to be copied
		Parameter 3	int nDataSize: The number of data to be copied (char number)

Function	Description	Parameters	
Memset	Initialize the buffer with a designated value. <b>Example:</b> <pre>char src[9]; Memset(&amp;src[0], 0, 10);</pre>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char * pSrcData: The source buffer to be copied
		Parameter 2	char byData: Value to be initialized
		Parameter 3	int nDataSize: The number of data to be initialized (char number)
Memcmp	Compare two buffers to each other. <b>Example:</b> <pre>char src[9] = "123456789", dst[4] = "3456"; int nResult; Memcmp(&amp;src[2], &amp;dst[0], 4, &amp;nResult);</pre>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pBuffer1: buffer 1
		Parameter 2	char* pBuffer2: buffer 2
		Parameter 3	int nDataSize: The number of data to be compared (char number)
SwapWord	Swap upper and lower word data values of WORD data. <b>Example:</b> <pre>int nSrc = 0x1234, nResult; nResult = SwapWord(nSrc); //The value of nResult is 0x3412.</pre>	Return value	int: The swapped data value
		Parameter 1	int nSrcData: The data value to be swapped

Function	Description	Parameters	
SwapDWord	Swap upper and lower word data values of fDWORD data. <b>Example:</b> <pre>int nSrc = 0x12345678, nResult; nResult = SwapDWord(nSrc); //The value of nResult is 0x56781234.</pre>	Return value	int: The swapped data value
		Parameter 1	int nSrcData: The data value to be swapped

### 4.2.3.9 Understanding Data Conversion Functions

The following table describes properties for the data conversion functions:

Function	Description	Parameters	
ASCII2HEX	Convert ASCII data to hexadecimal data. <b>Example:</b> <pre>char buf[4] = "1234"; int nResult; ASCII2HEX(&amp;buf[0], nResult, 4); //The value of nResult is 0x1234.</pre>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pSrcBuffer: The source buffer to be converted
		Parameter 2	int* pRetVal: The variable that will store the data to be converted
		Parameter 3	int nCount: The number of bytes to be converted (1-8)
HEX2ASCII	Convert hexadecimal data to ASCII data. <b>Example:</b> <pre>char buf[4]; int nSrc = 0x1234; HEX2ASCII(nSrc, &amp;buf[0], 4);</pre>	Return value	BOOL: If the number of data to be converted is not between 1 and 8 or the size of pDstBuffer is lower than that number, FALSE is returned.
		Parameter 1	int nValue: The value to be converted
		Parameter 2	char* pDstBuffer: The destination buffer that will store the data to be converted
		Parameter 3	int nCount: Number of bytes to be converted (1-8)

Function	Description	Parameters	
ASCII2DEC	Convert ASCII data to decimal data. <b>Example:</b> <pre>char buf[4] = "1234"; int nResult; ASCII2HEX(&amp;buf[0], nResult, 4); //The value of nResult is 1234.</pre>	Return value	BOOL: If the number is beyond the range of the buffer, FALSE is returned.
		Parameter 1	char* pSrcBuffer: The source buffer to be converted
		Parameter 2	int* pRetVal: The variable that will store the data to be converted
		Parameter 3	int nCount: The number of bytes to be converted (1-10)
DEC2ASCII	Convert decimal data to ASCII data. <b>Example:</b> <pre>char buf[4]; int nSrc = 1234; HEX2ASCII(nSrc, &amp;buf[0], 4);</pre>	Return value	BOOL: If the number of data to be converted is not between 1 and 8 or the size of pDstBuffer is lower than that number, FALSE is returned.
		Parameter 1	int nValue: The value to be converted
		Parameter 2	char* pDstBuffer: The destination buffer that will store the converted data
		Parameter 3	int nCount: The number of bytes to be converted (1-10)

**Note**

If data that cannot be converted is encountered in the buffer, data conversion will stop. For example, when converting {'1','A','B','3','K','2','8'} from ASCII to hexadecimal, the result is {0x1AB3}, because the conversion cannot be completed.

**4.2.3.10 Understanding Other Functions**

The following table describes properties for other functions:

Function	Description	Parameters
BacklightOn	Turn the XGT Panel LCD on or off. <b>Example:</b> <pre>if(@[X:HX100] == true)   BacklightOn(true);</pre>	Bool bOn: Backlight is turned on or off



Function	Description	Parameters
Buzzer	<p>Sound the buzzer for a specified time (50ms).</p> <p><b>Example:</b></p> <pre>if(@[X:HX100] == true)     Buzzer();</pre>	None
SetBuzzerEnable	<p>Turn the buzzer On/Off.</p> <p><b>Example:</b></p> <pre>if(@[X:HX100] == true) {     SetBuzzerEnable(true);     Buzzer(); }</pre>	Bool bEnable: buzzer is turned on or off.
ShowStatusbar	<p>Show or hide the Status Bar. The status bar appears and then disappears automatically after a specified time.</p> <p><b>Example:</b></p> <pre>if(@[X:HX100] == true)     ShowStatusbar();</pre>	Bool bShow: Show the status bar.
Sleep	<p>Pause scripts for a specified time.</p> <p><b>Example:</b></p> <pre>int nLoop; for(nLoop = 0; nLoop&lt;10; nLoop++) {     Buzzer();     Sleep(500); }</pre>	int nSleepTime: Time to be stopped temporally (ms)

#### 4.2.3.11 Understanding the Script Watchdog

The watchdog function exists to avoid infinite loops or prevent scripts that are too long from hanging up processes. When a script exceeds the default time allotted (5 seconds), the watchdog function is activated automatically and forces the script to end.

Script execution takes longer than any other action, so use conditional statements with care. Pay special attention to statements for which the run time is hard to predict, such as *for*, *while*, and *do-while* statements.

### 4.3 Objects

Objects can change appearance, based on monitored data values. The subsections that follow explain what each object in XP-Builder can do and how to change their settings. For more information about drawing objects, refer to <2.3.4.2 *Drawing Objects*>.

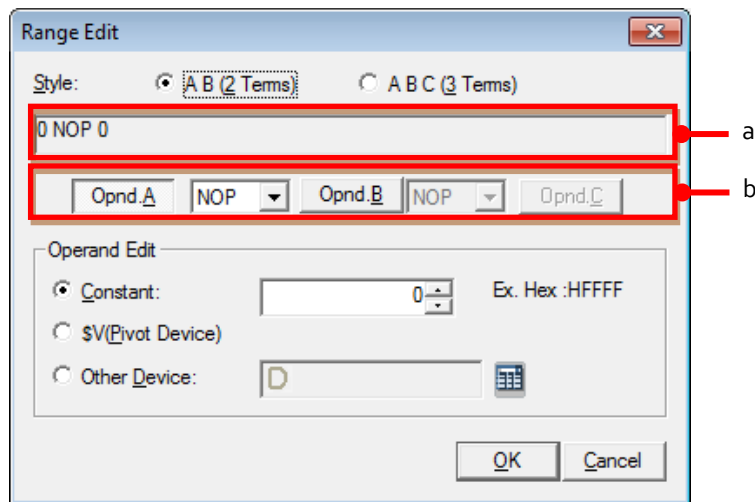
You can set conditional settings for objects to change properties, such as background color, frame color, outline, text display, and more, as shown below:

Object	Settings
Switch Object	Operation condition, Lamp condition
Word Lamp	Image and text properties
Word Message	Image color, Image background color, Text color, Text
Numeric Input Numeric Display	Image background color, Text color, Flashing
Word Window	The window number to move
Word Part	The part number move
Bar Graph	The background color to be filled, The color to be filled
Pie Graph	The background color to be filled, The color to be filled
Meter Graph	The pointer color
Closed Graph	The background color to be filled, The color to be filled

To set a conditional expression, click  in the object property window to register it.



The Range Edit window will appear, as shown below. The window may look different for each object.



Function	Description
Style	Select a format for inputting conditional expressions (2 terms or 3 terms).
a. Preview Expressions	Preview the conditional expression.
b. Operand	Set the operand and operator to set the range.
Constant	Set the number directly for the operand.
\$V(Pivot Device)	Set the pivot device value that the object is monitoring as the operand.
Other Device	Set the other device value as the operand.

### 4.3.1 Lamp Objects

Lamp objects change shape or form based on the state of the PLC devices that they are connected to. Lamp objects come in three types: bit lamps, word lamps, and N-state lamps. Bit lamps change based on the on/off state, word lamps change based on the text value, and N-state lamps change based on up to five device statuses.

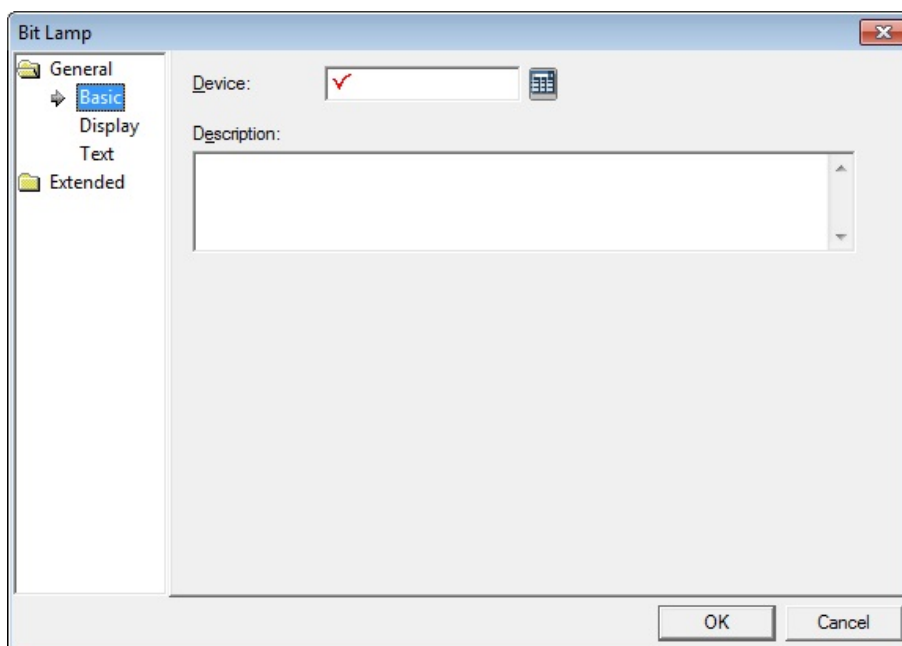
#### Notes

- If a lamp object is not connected to a PLC device, the lamp is not displayed on the XGT Panel.
- Do not overlay lamps on top of other objects. They may not be displayed correctly.

#### 4.3.1.1 Bit Lamp

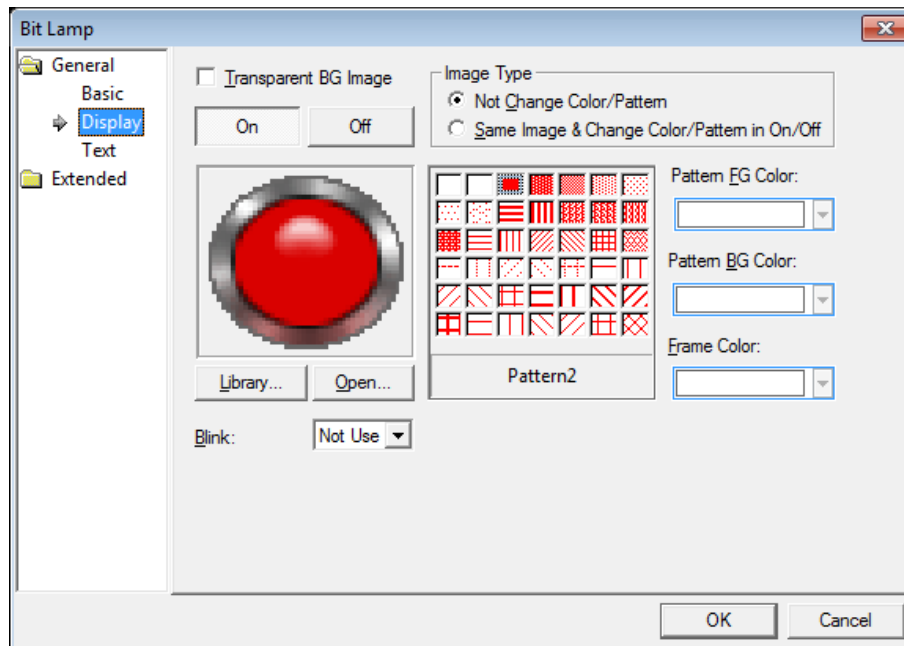
The form of a bit lamp changes based on the on/off state of the connected device. This section describes available settings for bit lamp objects.

- **Basic:** The basic settings for bit lamp objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Description:** Enter a description for the object.

- **Display:** The display settings for bit lamp objects include the following:

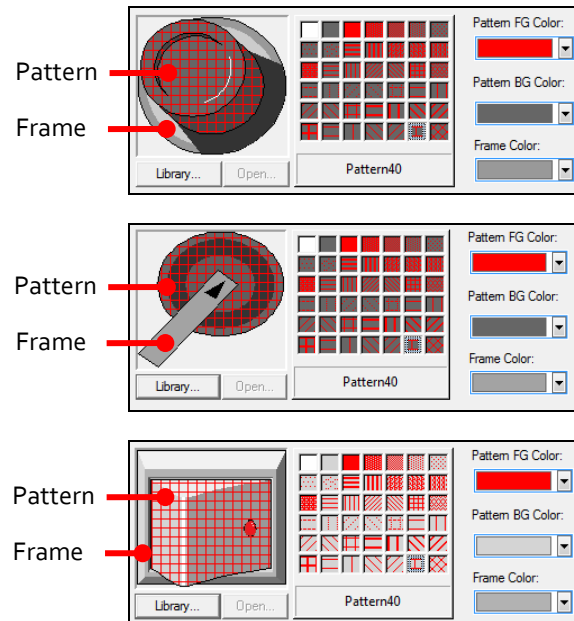


- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 Managing Image Libraries>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with “\_V”, and the raster image category ends with “\_R”. Patterns can be applied only to the images.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.

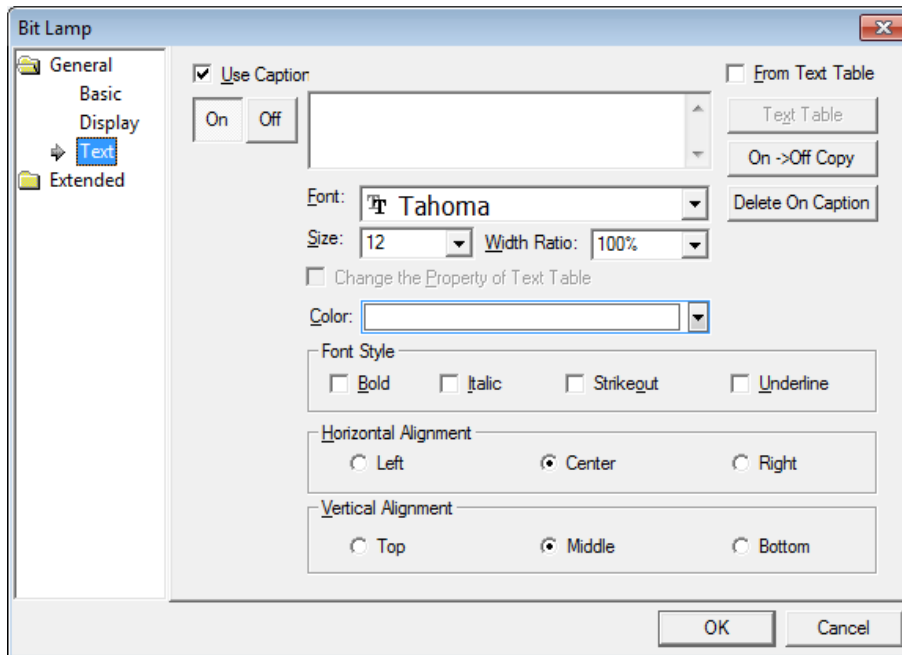
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.
- **Blink:** Set a blink speed for the object:

<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

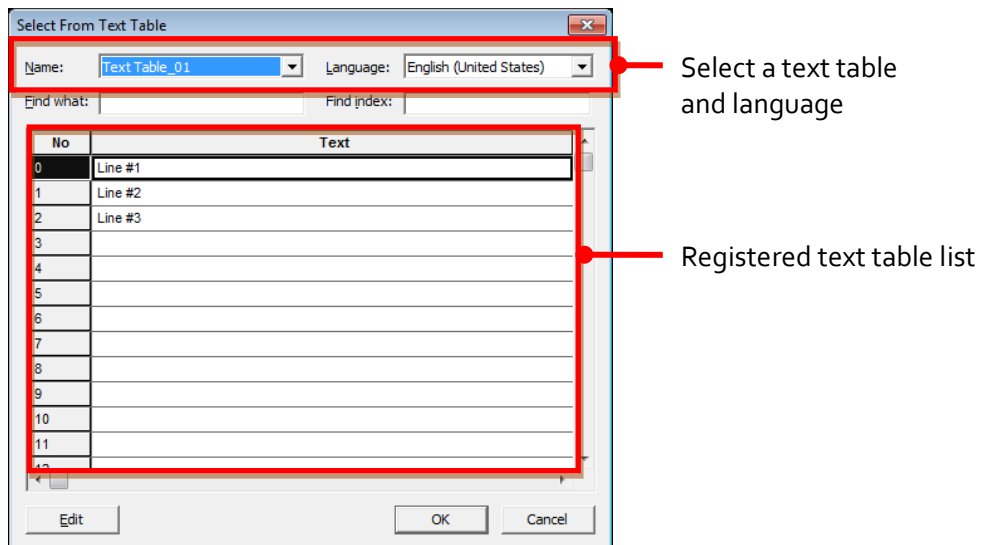
- **Text:** The text settings for bit lamp objects include the following:



- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the "on" state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the "off" state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the "on" and "off" states from the same text table.

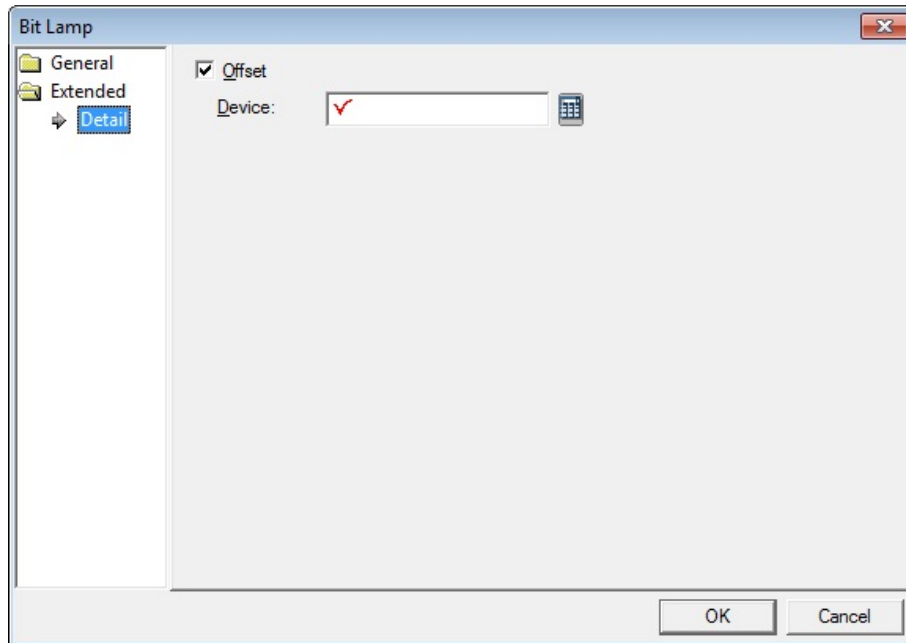


- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the "on" state to the "off" state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for bit lamp objects include the following:

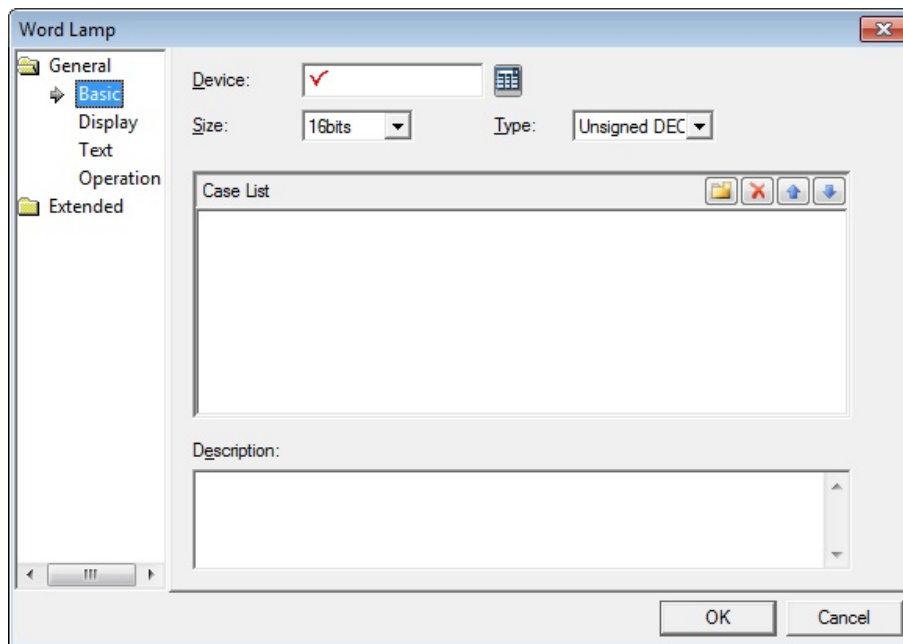


- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.





### 4.3.1.2 Word Lamp

The form of a word lamp changes based on the text value of the connected device. This section describes available settings for word lamp objects.

- **Basic:** The basic settings for word lamp objects include the following:

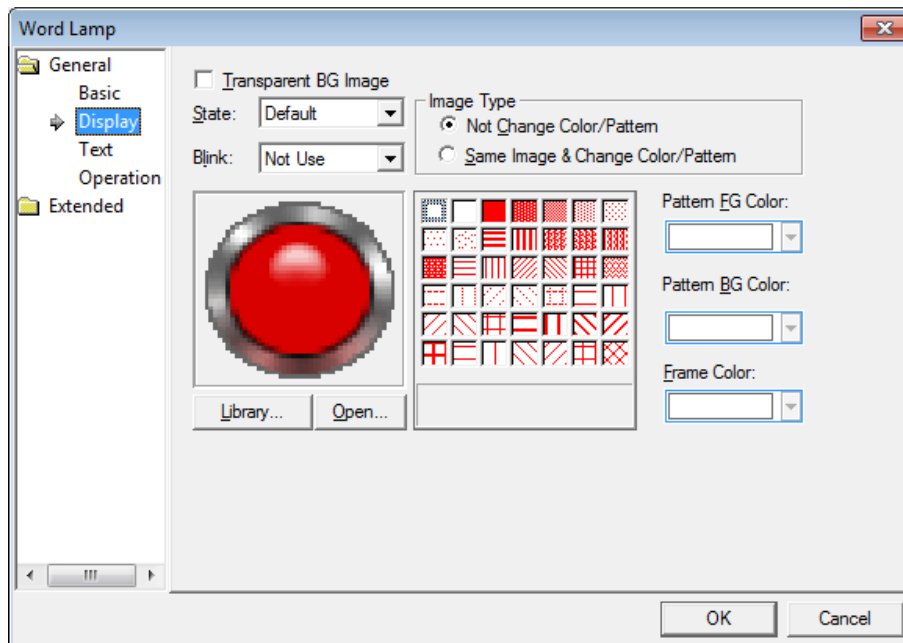


- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Size:** Set the data size for the device (16 bit or 32 bit).
- **Type:** Set the data type for the device (signed decimal, unsigned decimal, BCD, or float).
- **Case List:** Create, delete, or reorganize conditional expressions:

 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in

the list.

- **Description:** Enter a description for the object.
- **Display:** The display settings for word lamp objects include the following:



- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **State:** Select a state from the drop-down list to configure options for the option in each state.
- **Blink:** Set a blink speed for the object:

<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

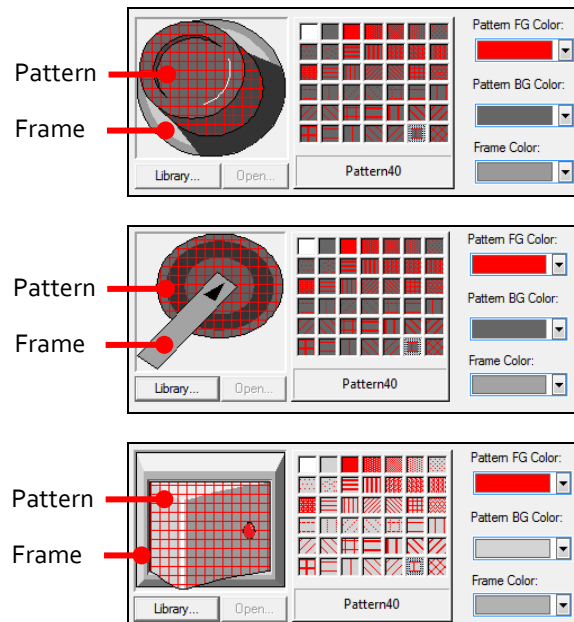
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 Managing Image Libraries>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change</b>	Select a vector image. You cannot select a raster

### Color/Pattern in On/Off

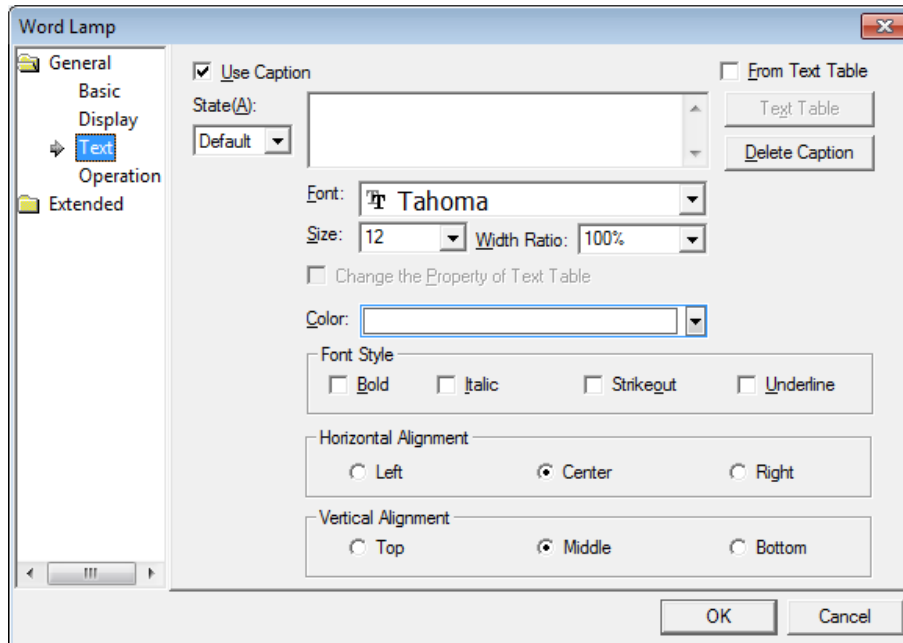
image. Apply a pattern or color to the image.

- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with "\_V", and the raster image category ends with "\_R". Patterns can be applied only to the images.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:

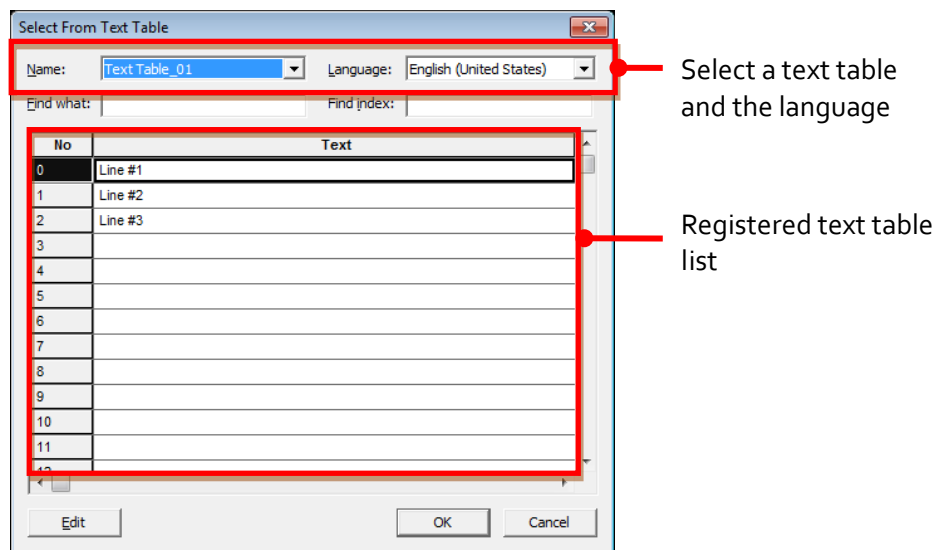


- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

- **Text:** The text settings for word lamp objects include the following:

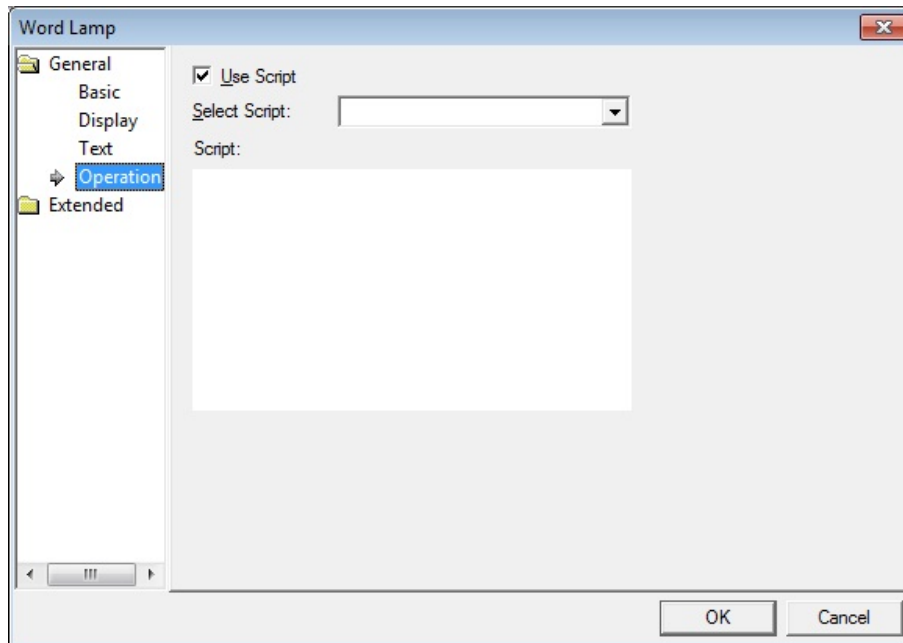


- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.
- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **Delete Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

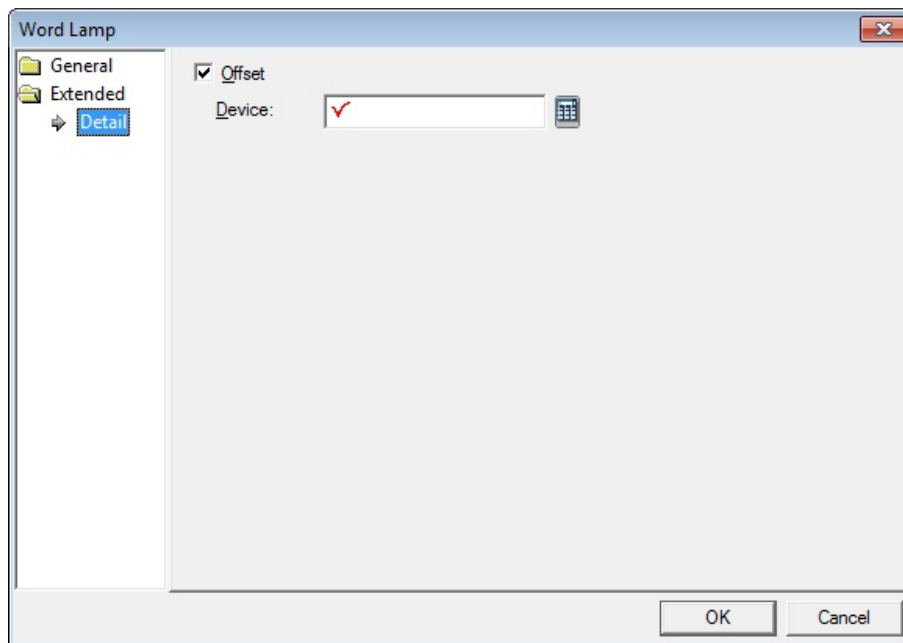
- **Operation:** Operation settings for word lamp objects include the following:



- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.



- **Detail:** The detail settings for word lamp objects include the following:




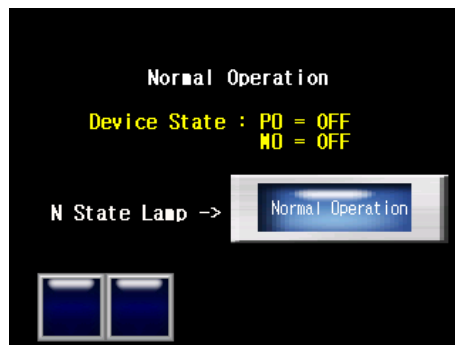
- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

### 4.3.1.3 N-State Lamp

This section describes available settings for N-State lamp objects. The form of an N-State lamp changes based on the statuses of up to five controllers. Refer the following examples:

- Monitoring device (Bit device): Poooo, Moooo

Priority	Status No.	Bit Device Status	Image Color	Displayed Text	Flashing Speed
High 	Status 0	Poooo: OFF Moooo: OFF	Blue	Normal operation	No flashing
	Status 1	Poooo: ON Moooo: OFF	Red	Stop	Fast
	Status 2	Poooo: OFF Moooo: ON	Yellow	Caution	Slow
Low	Status 3	Poooo: ON Moooo: ON	Purple	Alarm	Normal



Poooo: OFF / Moooo: OFF



Poooo: ON / Moooo: OFF

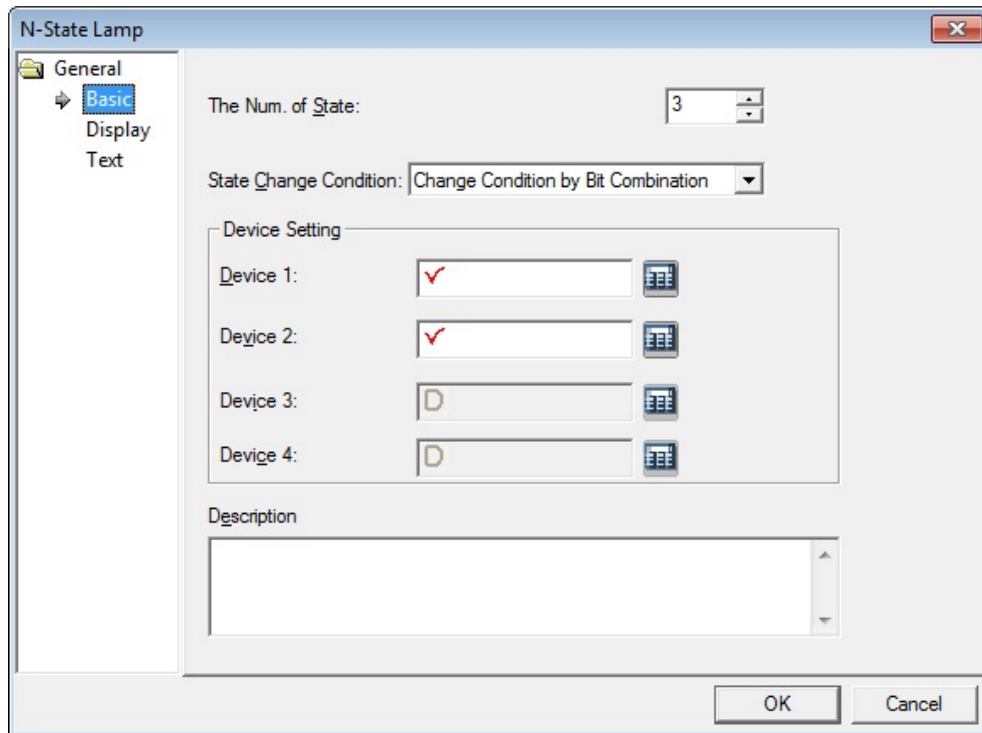


Poooo: OFF / Moooo: ON



Poooo: ON / Moooo: ON






- **Basic:** The basic settings for N-State lamp objects include the following:



- **The Num. of State:** Select the number of statuses to display for the object (from 3 to 16).
- **State Change Condition:** Set a method for changing device statuses.
  - **Change Condition by Bit:** Display the on/off status for up to four controllers with one lamp. The maximum number of statuses is five. Refer to the following example:

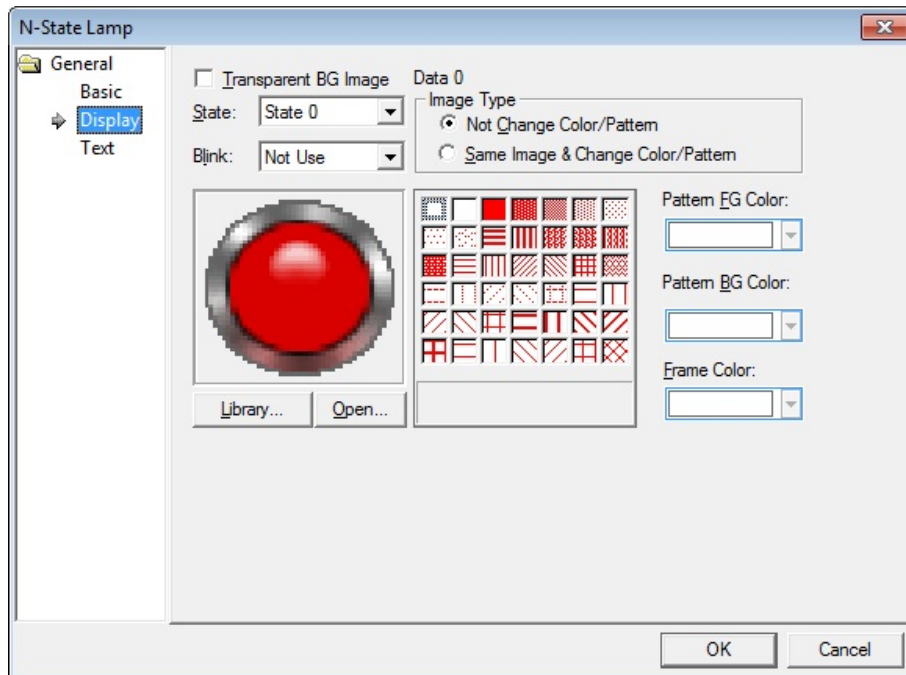
Type	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Display example
Status 1	OFF	OFF	OFF	OFF	
Status 2	ON	OFF	OFF	OFF	
Status 3	OFF	ON	OFF	OFF	
Status 4	OFF	OFF	ON	OFF	
Status 5	OFF	OFF	OFF	ON	

- **Change Condition by Bit Combination:** Displays the combined on/off status for up to four controllers with one lamp. The maximum number of statuses is 16. Refer to the following example:

Type	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Display example
Status 1	OFF	OFF	OFF	OFF	
Status 2	ON	OFF	OFF	OFF	
Status 3	OFF	ON	OFF	OFF	
Status 4	ON	ON	OFF	OFF	
Status 5	OFF	OFF	ON	OFF	

- **Device Setting:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Description:** Enter a description for the object.

- **Display:** The display settings for word lamp objects include the following:



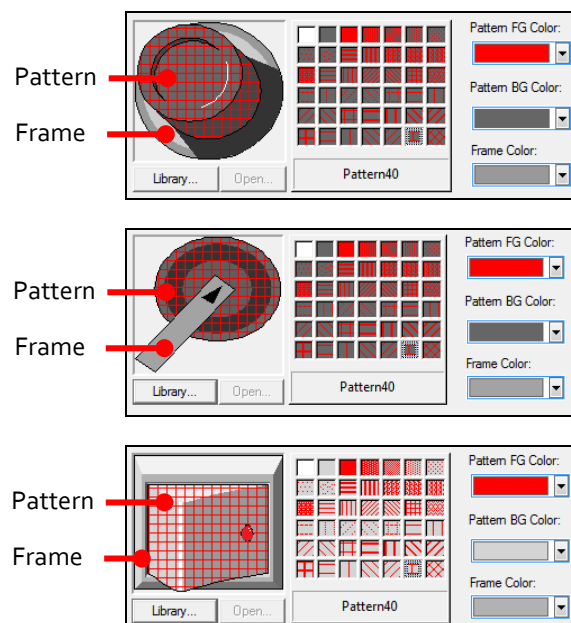
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **State:** Select a state from the drop-down list to configure options for the option in each state.
- **Blink:** Set a blink speed for the object:

<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 *Managing Image Libraries*>.

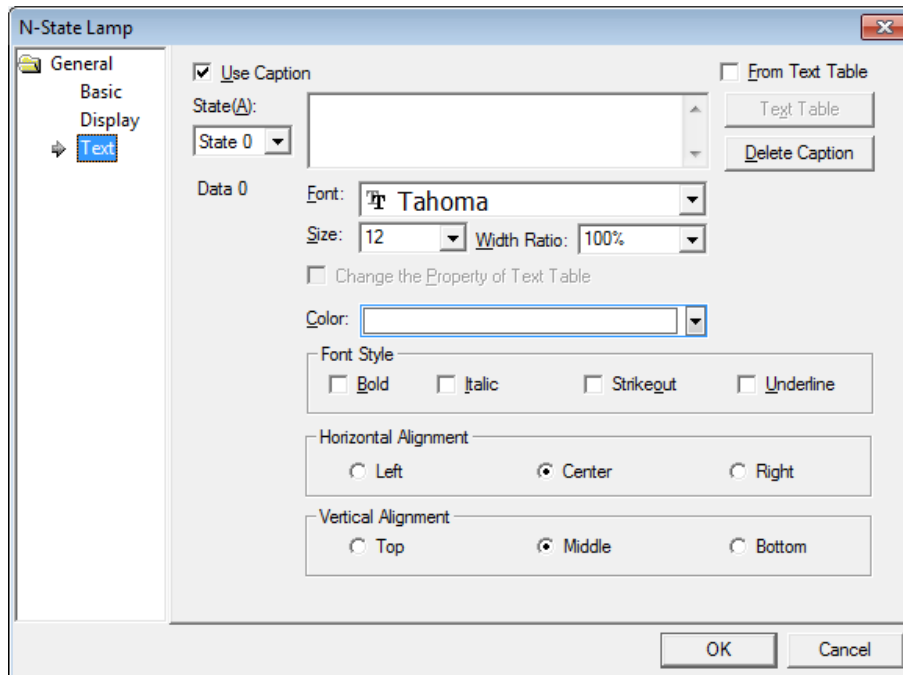
<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with "\_V", and the raster image category ends with "\_R". Patterns can be applied only to the images.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



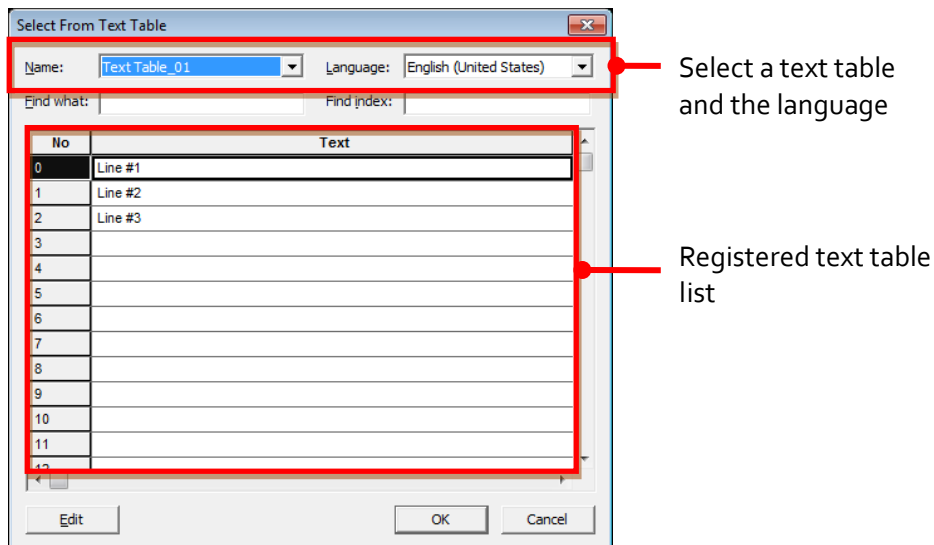
- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

- **Text Settings:** The text settings for word lamp objects include the following:



- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **Delete Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).



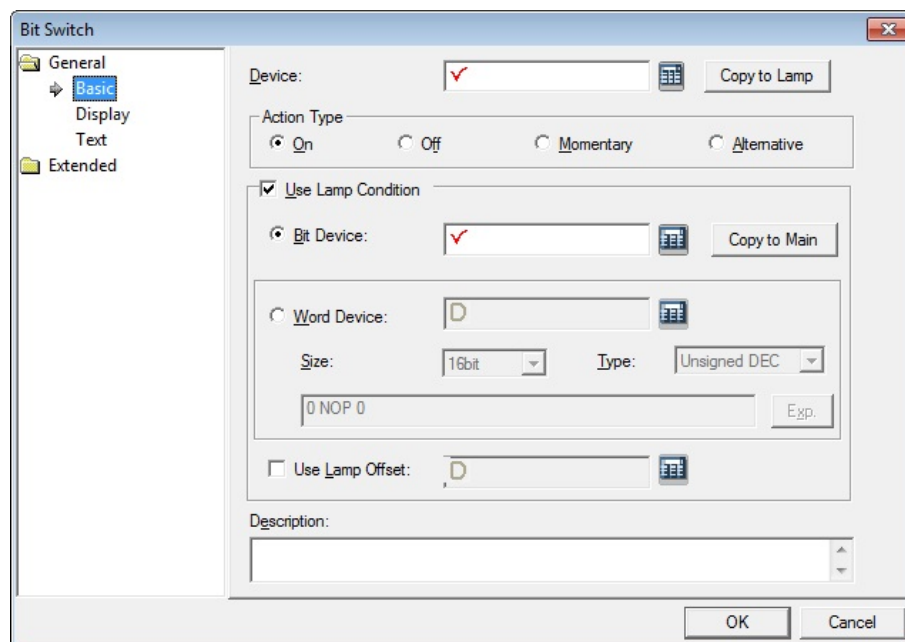
### 4.3.2 Switch Objects

Switches execute one or more functions, based on the switch type. Five switch types are available: bit, word, change screen, special, and multi. Bit switches control on/off states, word switches execute scripts or change values, change screen switches change windows in the XGT Panel interface, special switches perform storage-related actions, and multi switches carry out multiple functions.

#### 4.3.2.1 Bit Switch

Bit switches control on/off states of bit devices. This section describes available settings for bit switch objects.

- **Basic:** The basic settings for bit switches include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Copy to Lamp:** Click to copy the device address from a bit switch to a lamp object.

- **Action Type:** Set an operation to perform when the switch is activated.

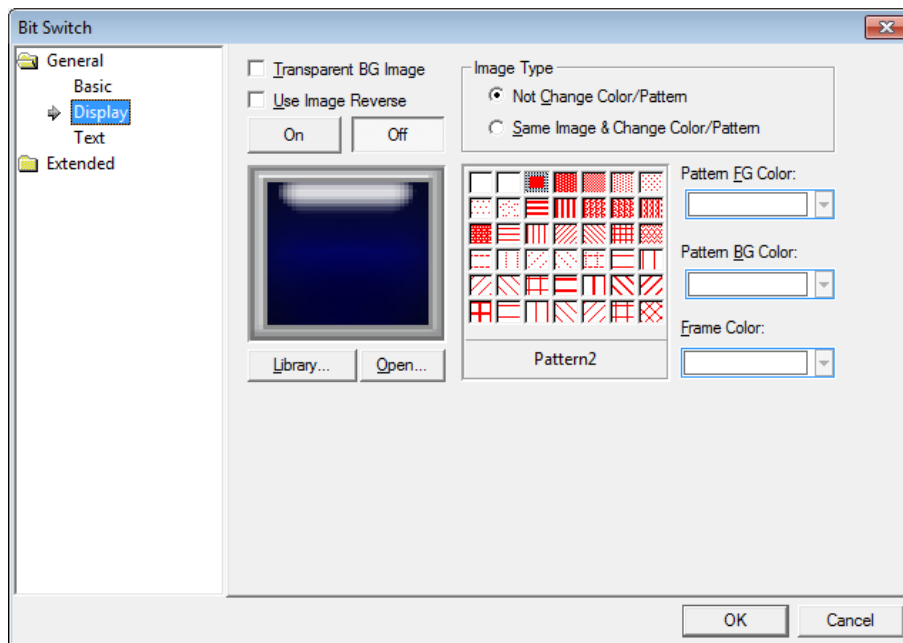
<b>On</b>	Turns on the relevant bit device in the PLC when the switch is activated. The state is preserved until changed by another action.
<b>Off</b>	Turns off the relevant bit device in the PLC when the switch is activated. The state is preserved until changed by another action.
<b>Momentary</b>	Turns on the relevant bit device in the PLC only while the switch object is held. The state returns to off when the switch is released.
<b>Alternative</b>	Switches the relevant bit device value to the opposite state when the switch is activated. If the object is on when the switch is activated, it will turn off and vice versa.

- **Use Lamp Condition:** If you want to control a lamp with a method other than simply turning it on when the switch is activated, you can select a different action.

<b>Bit Device</b>	When the device state is on, the lamp is on.
<b>Copy to Main</b>	Lamp conditions' bit device address is copied to the basic device of bit switch.
<b>Word Device</b>	When the condition is met, the lamp is on.
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Use Lamp Offset:** Click to set an offset for the lamp.
- **Description:** Enter a description for the object.

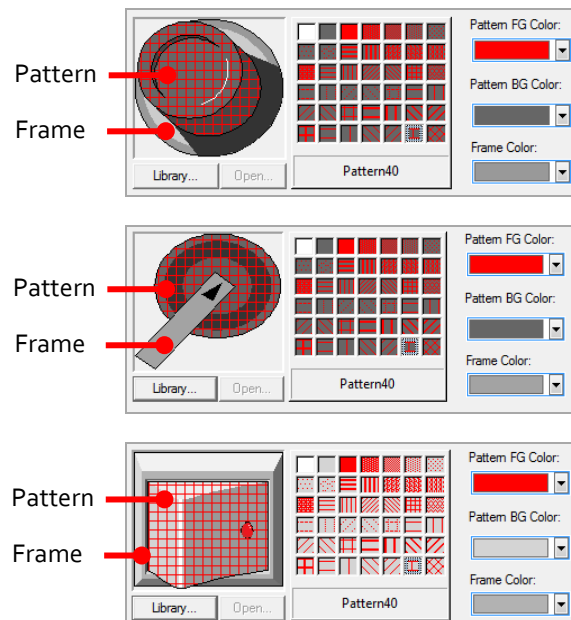
- **Display:** The display settings for bit switch objects include the following:



- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Use Image Reverse:** The switch image is reversed when you tap the object or a condition is met. If you set this option, you cannot use the **Transparent BG Image** option or the On/Off image. If you set the **Transparent BG Image** option, you cannot use this option.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 Managing Image Libraries>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

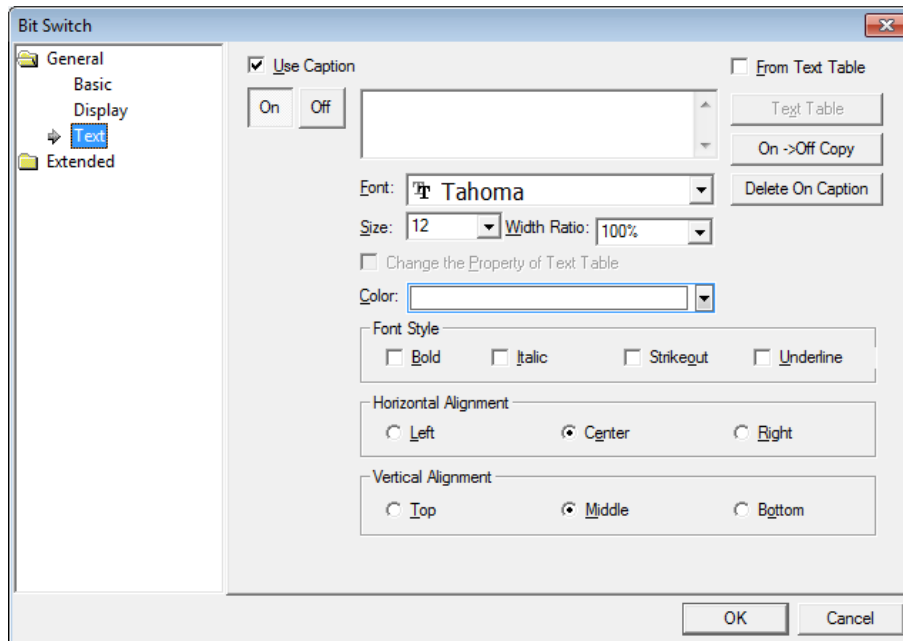
- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with "\_V", and the raster image category ends with "\_R". Patterns can be applied only to the images.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.
- **Blink:** Set a blink speed for the object. To use the blink function, you must set the Use Lamp Condition option in the basic settings.

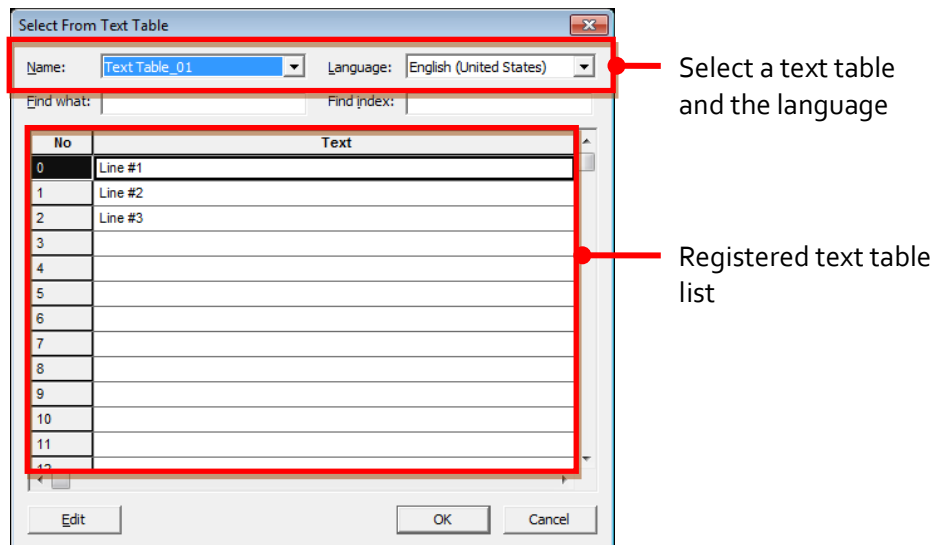
<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Text:** The text settings for bit switch objects include the following:



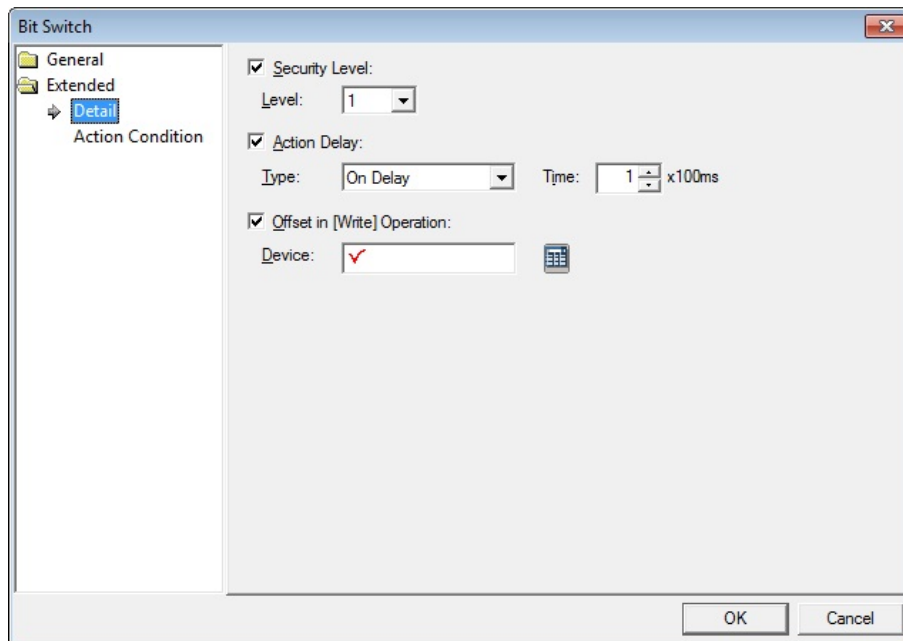
- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the “on” state to the “off” state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for bit switch objects include the following:

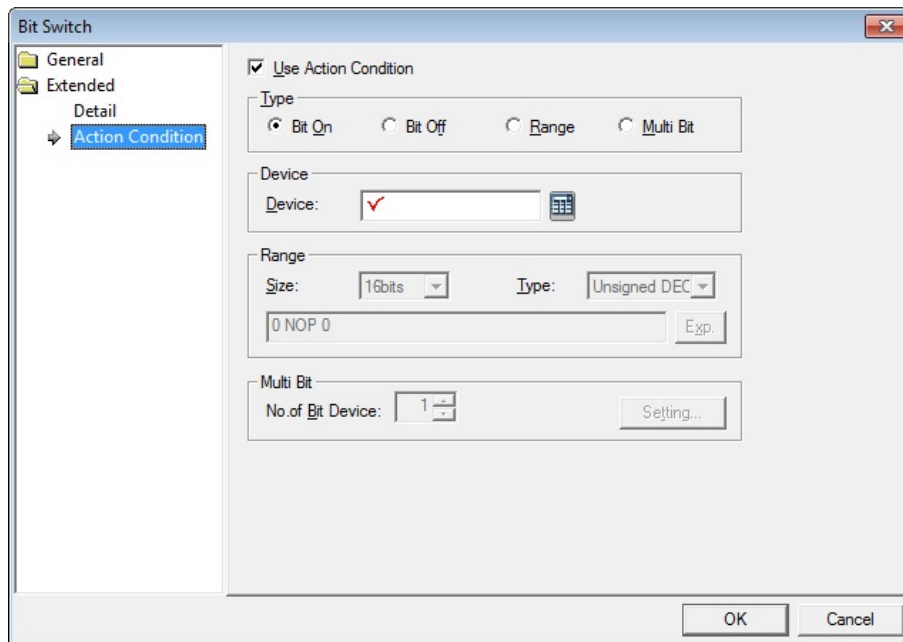


- **Security Level:** Set whether or not to require a password to use the object.
- **Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Action Delay:** Set to delay the action triggered by the switch by a specified time.
- **Type:** Set the type of action delay.

<b>On Delay</b>	When the switch is activated, the action is performed after the delay time that you specify.
<b>Off Delay</b>	When the switch is released, the action is performed after the delay time that you specify.
<b>Press Twice</b>	When the switch is activated once, a dialog box is invoked to allow the user to verify the operation. When the switch is activated a second time, the action is performed after the delay time that you specify.

- **Time:** Set the length of time for the action delay.
- **Offset in [Write] Operation:** Set to use the offset function.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Action Condition:** The action condition settings for bit switch objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

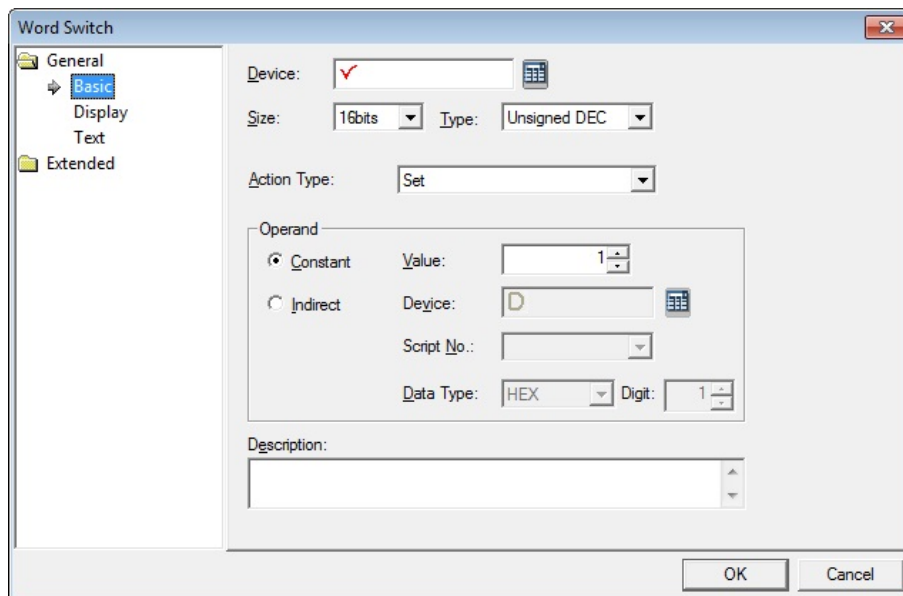
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.



## 4.3.2.2 Word Switch

Word switch executes the script, enters a fixed value, adds or reduces the value. This section describes available settings for word switch objects.

- **Basic:** The Basic settings for word switch objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Size:** Set the data size of the device (16 bit, 32 bit).
- **Type:** Set the data form of the device (signed decimal, unsigned decimal, or BCD).
- **Action Type:** Set the type of the action to perform.

<b>Set</b>	Write the specified value in the device.
<b>Add</b>	Add the specified value to the device value.
<b>Sub</b>	Subtract the specified value from the device value.
<b>Script</b>	Execute a script.
<b>Digit Add</b>	Increase the bit value of a specific location in a word device. The value is added to the current value with as many operands as you specify, but the bit value of the location increases only by the value specified here.
<b>Digit Sub</b>	Decrease the bit value of a specific location in a word device. The value is subtracted from the current value with as many operands as you specify, but the bit value of the location decreases only by the value specified here.

- **Operand:** Set the value to write to the device. The operand can be set as one of the following types:

<b>Constant</b>	Set a fixed value to use as an operand in the expression.
<b>Indirect</b>	Set to use the device value as an operand in the expression.
<b>Script No.</b>	Specify a script when performing actions other than adding, subtracting, writing a specific device value, or writing a fixed value.
<b>Data Type</b>	Set the data type to be increased or decreased. When you select BCD as the data type, if the value returned by the specified device exceeds the numeric range of BCD data (0-9), the word switch will not execute.
<b>Digit</b>	Set the number of digit to increase or decrease. For 16 bit devices, you can set it from 1-4. For 32 bit devices, you can set it from 1-8.

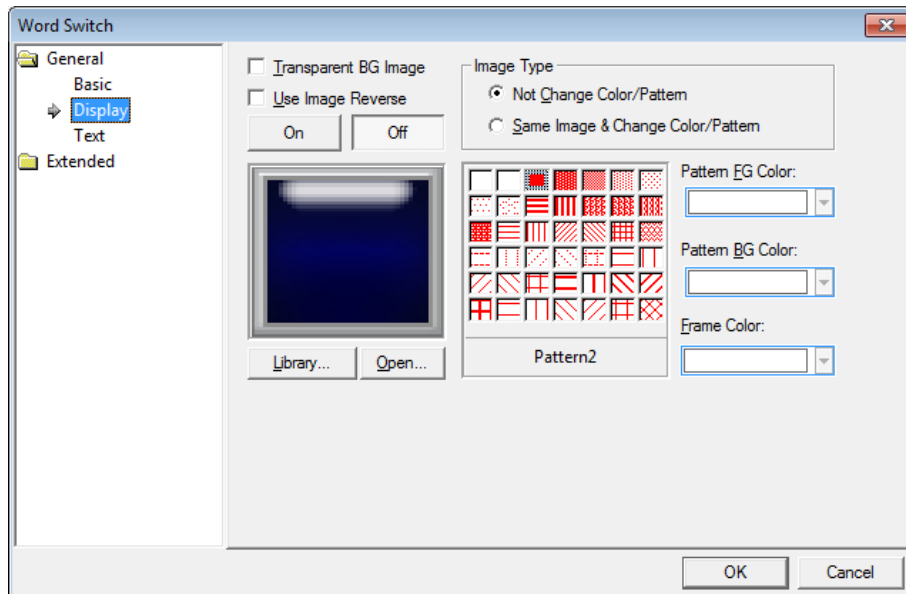
#### Note

If you set a fixed constant operand, the range of the constant varies based on the size and type of the device, as described in the following table.

Device Size	Device Type	Minimum	Maximum
16bit	Signed decimal	-32768	32767
	Unsigned decimal	0	65535
	BCD	0	9999
32 bit	Signed decimal	-2147483648	2147483647
	Unsigned decimal	0	4294967295
	BCD	0	99999999

- **Description:** Enter a description for the object.

- **Display:** The display settings for word switch objects include the following:

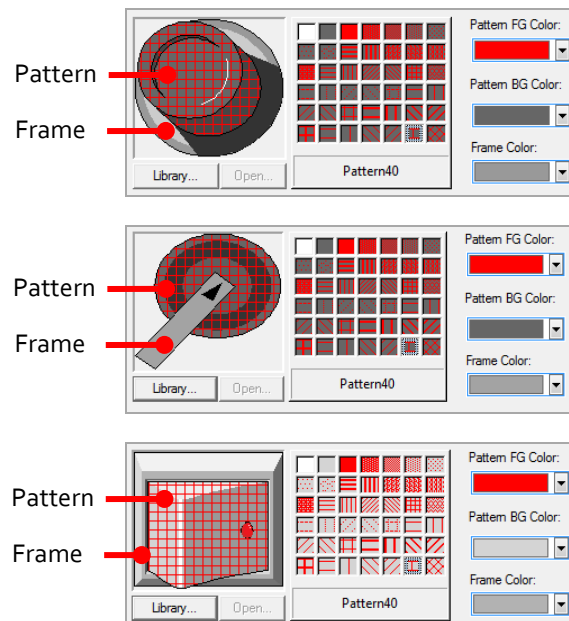


- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Use Image Reverse:** The switch image is reversed when you tap the object or a condition is met. If you set this option, you cannot use the **Transparent BG Image** option or the On/Off image. If you set the **Transparent BG Image** option, you cannot use this option.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 *Managing Image Libraries*>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

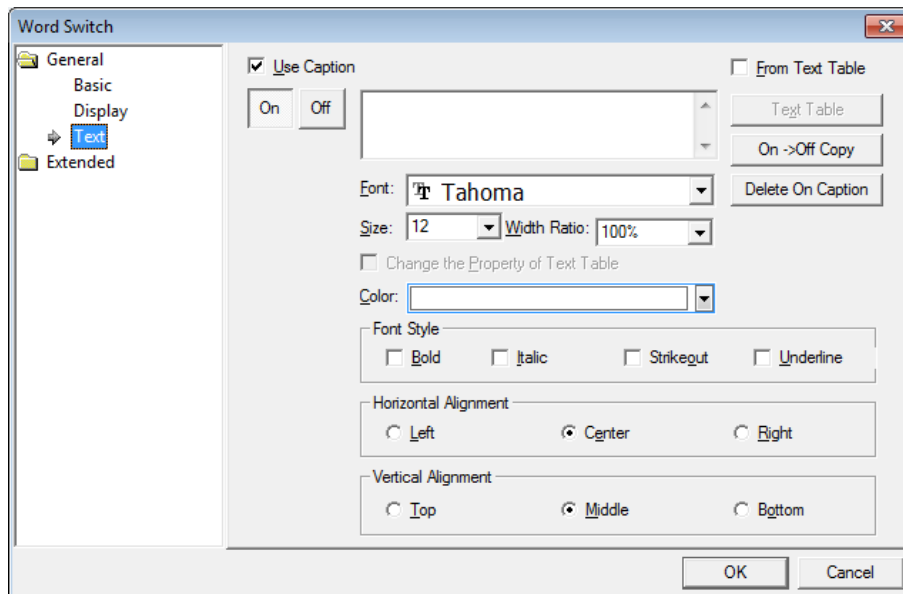
- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with “\_V”, and the raster image category ends with “\_R”. Patterns can be applied only to the images.

- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



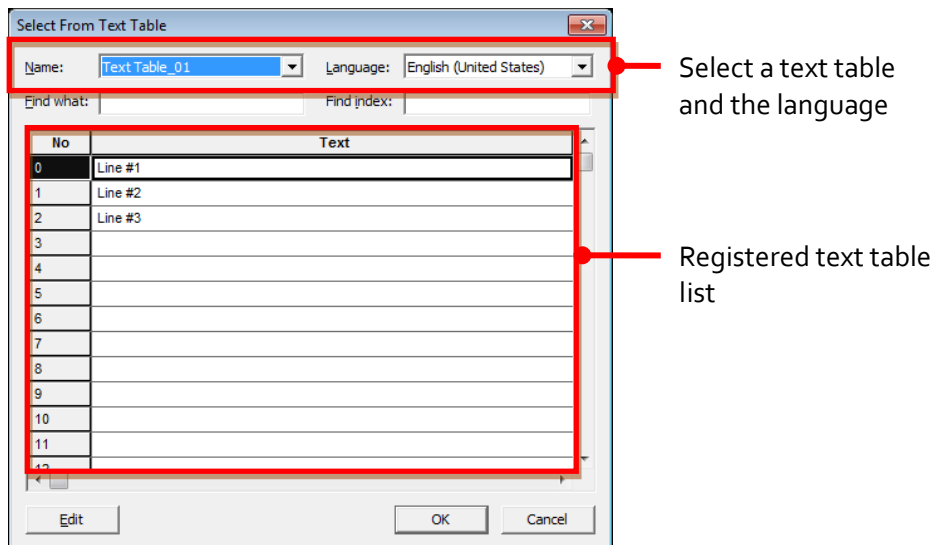
- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

- **Text:** The text settings for word switch objects include the following:



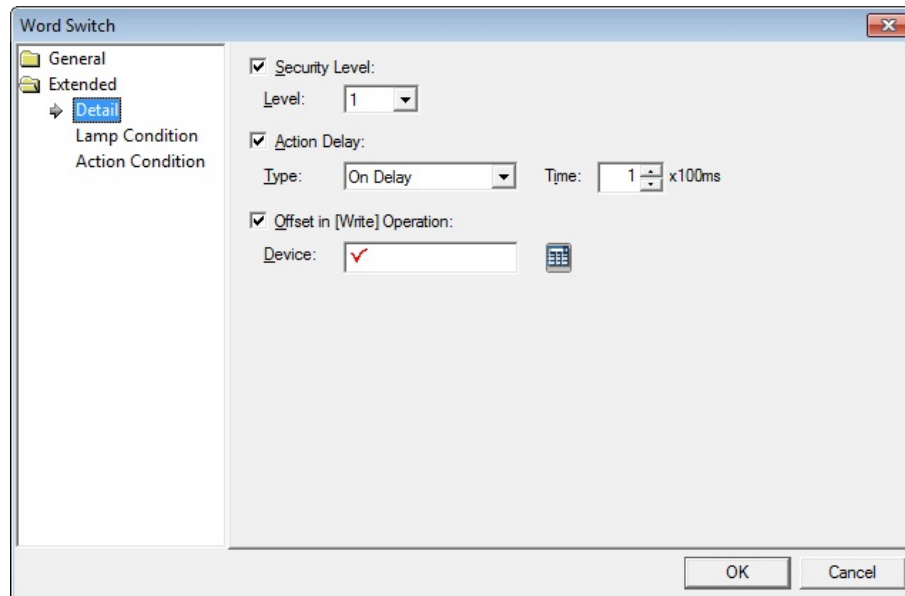
- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the "on" state to the "off" state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for word switch objects include the following:

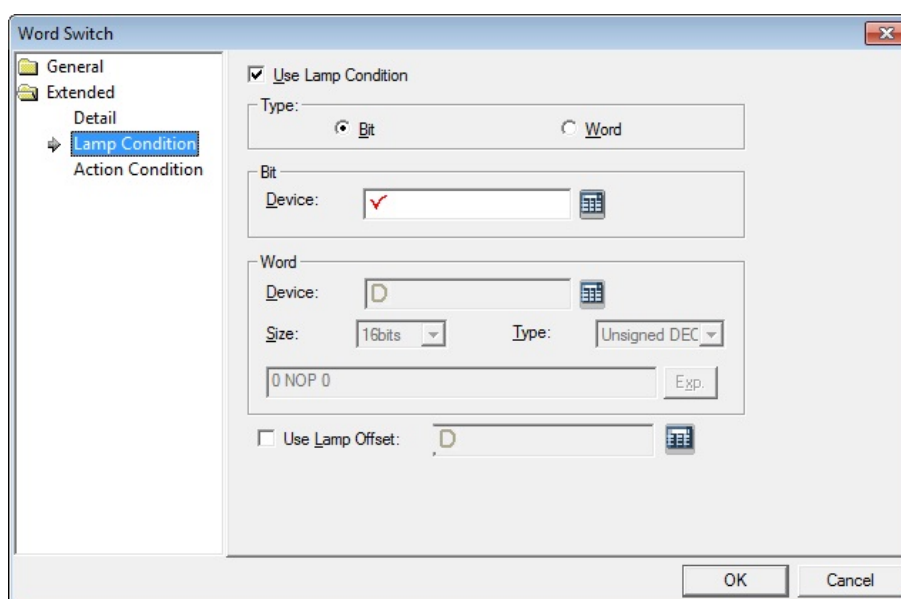


- **Security Level:** Set whether or not to require a password to use the object.
- **Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Action Delay:** Set to delay the action triggered by the switch by a specified time.
- **Type:** Set the type of action delay.

<b>On Delay</b>	When the switch is activated, the action is performed after the delay time that you specify.
<b>Press Twice</b>	When the switch is activated once, a dialog box is invoked to allow the user to verify the operation. When the switch is activated a second time, the action is performed after the delay time that you specify.

- **Time:** Set the length of time for the action delay.
- **Offset in [Write] Operation:** Set to use the offset function.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Lamp Condition:** The lamp condition settings for word switch objects include the following:



- **Use Lamp Condition:** If you want to control a lamp with a method other than simply turning it on when the switch is activated, you can select a different action.
- **Type:** Select a condition for lamp control.

<b>Bit</b>	When the device state is on, the lamp is on.
<b>Word</b>	When the condition is met, the lamp is on.

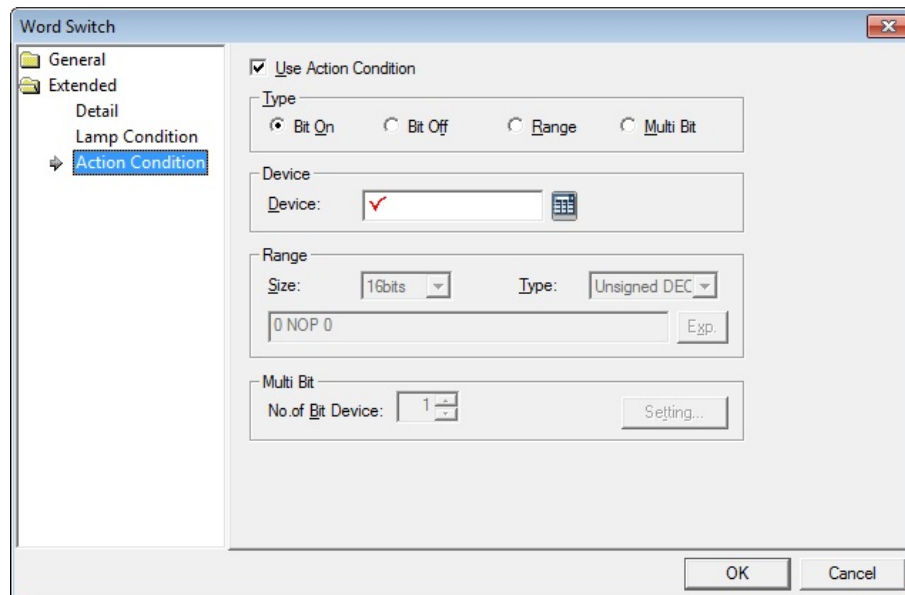
- **Bit:** If you selected the bit condition type, specify a bit device.
  - **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Word:** If you selected the word condition type, specify a word device.

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Use Lamp Offset:** Click to set an offset for the lamp.



- **Action Condition:** The action condition settings for word switch objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

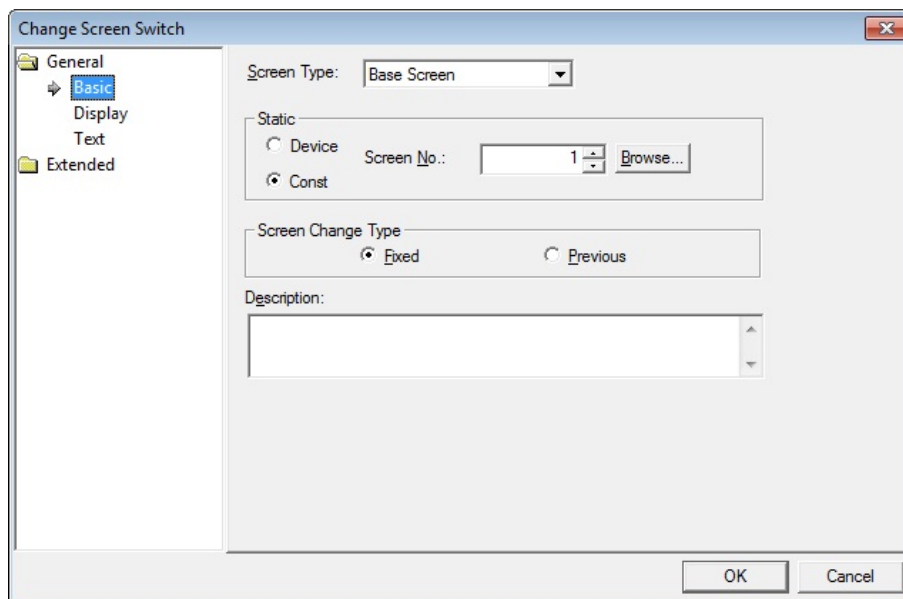
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.2.3 Change Screen Switch

The Change screen switch allows the user to switch windows in the interface. You can specify the type of window to change to when the switch is activated. This section describes available settings for change screen switch objects.

- **Basic:** The basic settings for change screen switch objects include the following:



- **Screen type:** Select a type of window to change to.
- **Static:** Set how the window changes.

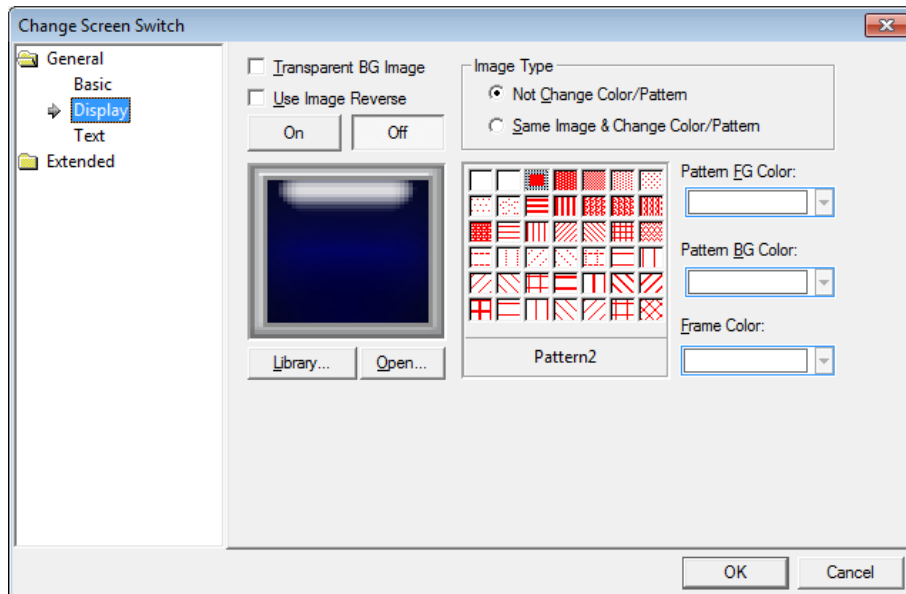
<b>Device</b>	The window switches to the window number that matches the device value. If no window matches the device value, the window does not change.
<b>Const</b>	The window switches to a specified window, regardless of the device value.
<b>Screen No.</b>	Set the window number or click [Browse] to locate a window.

- **Screen Change Type:** Select a method for changing windows.

<b>Fixed</b>	The window switches to a specified window.
<b>Previous</b>	The window switches to the previous window.

- **Description:** Enter a description for the object.

- **Display:** The display settings for change screen switch objects include the following:

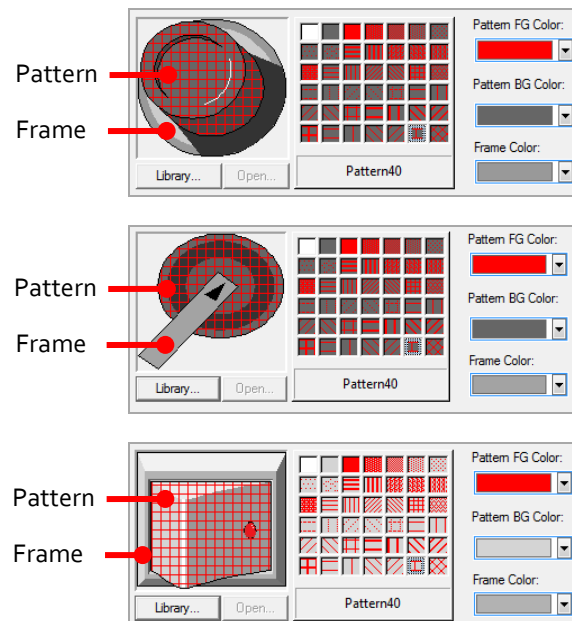


- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Use Image Reverse:** The switch image is reversed when you tap the object or a condition is met. If you set this option, you cannot use the **Transparent BG Image** option or the On/Off image. If you set the **Transparent BG Image** option, you cannot use this option.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 *Managing Image Libraries*>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

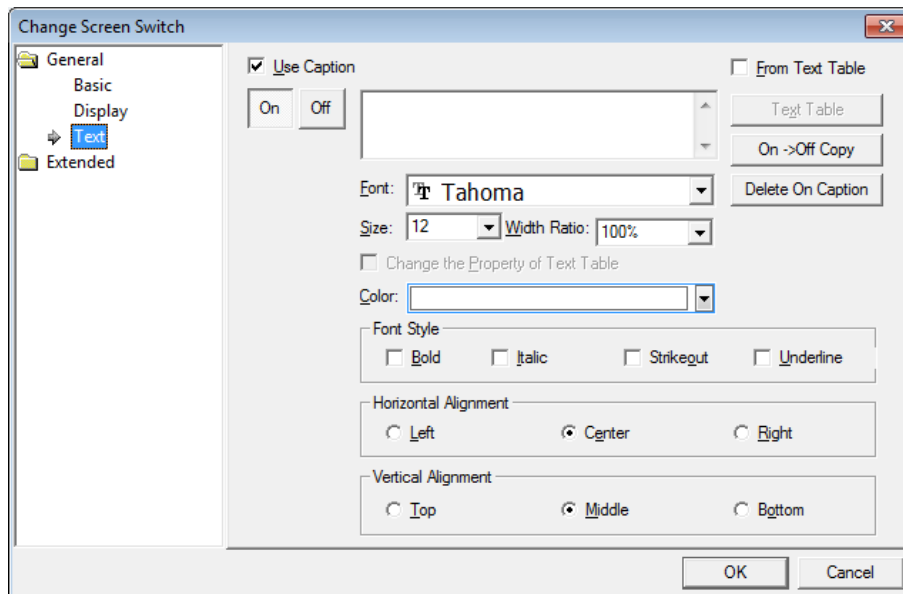
- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with “\_V”, and the raster image category ends with “\_R”. Patterns can be applied only to the images.

- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



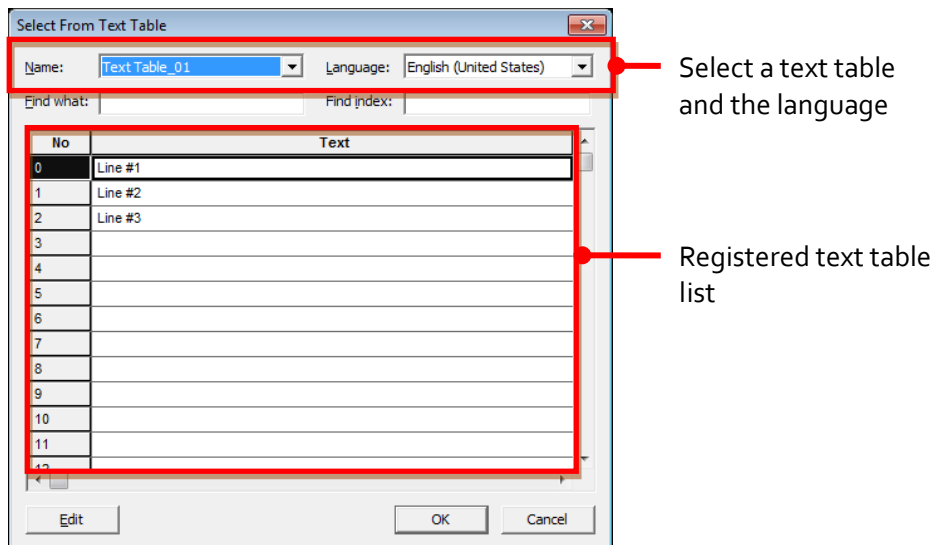
- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

- **Text:** The text settings for screen change object include the following:



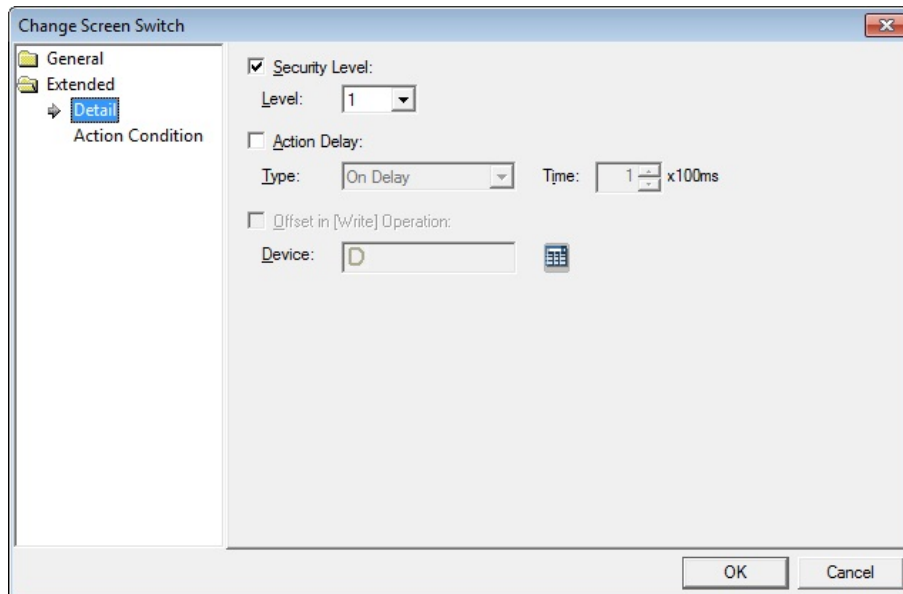
- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the “on” state to the “off” state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for change screen switch objects include the following:

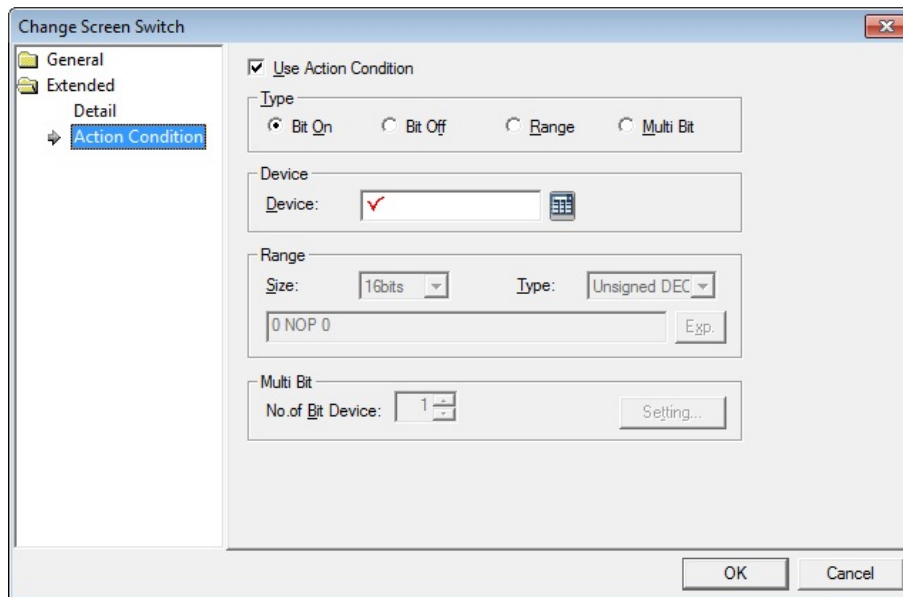


- **Security Level:** Set whether or not to require a password to use the object.
- **Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Action Delay:** Set to delay the action triggered by the switch by a specified time.
- **Type:** Set the type of action delay.

<b>On Delay</b>	When the switch is activated, the action is performed after the delay time that you specify.
<b>Press Twice</b>	When the switch is activated once, a dialog box is invoked to allow the user to verify the operation. When the switch is activated a second time, the action is performed after the delay time that you specify.

- **Offset in [Write] Operation:** Set to use the offset function.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Action Condition:** The action condition settings for change screen switch objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

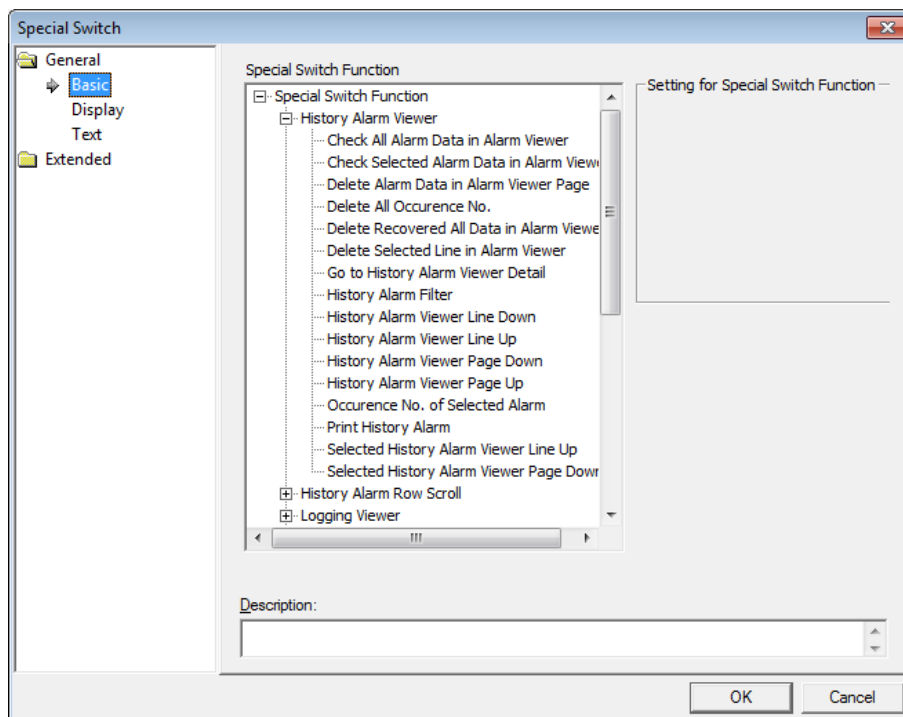
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.





### 4.3.2.4 Special Switch

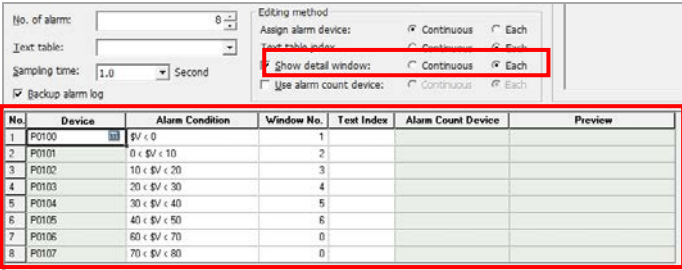
This switch is for carrying out key code, alarm, logging, printing, language switching, script operation, and other storage-related actions. This section describes available settings for special switch objects.

- **Basic:** The basic settings for special switch objects include the following. You can select the function for the special switch and set the properties in the **Special Switch Function** settings.

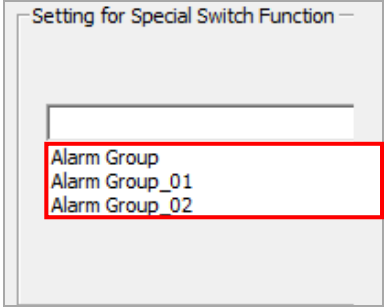


## – History Alarm Viewer

Function	Description																																																																																																																								
Check All Alarm Data in Alarm Viewer	Set to view all alarm data or only specified alarm data by selecting the alarm. The view time is recorded for both cases.																																																																																																																								
Check Selected Alarm Data in Alarm Viewer	<ul style="list-style-type: none"><li>When checking all data</li></ul> <table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table>  <table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr></tbody></table> <ul style="list-style-type: none"><li>When checking the selected alarm data</li></ul> <table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table>  <table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table>	Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1			2007/07/19	Thank you2	Thank you1			2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1			2007/07/19	Thank you5	Thank you1			Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1		2007/07/19	2007/07/19	Thank you2	Thank you1		2007/07/19	2007/07/19	Thank you3	Thank you1		2007/07/19	2007/07/19	Thank you4	Thank you1		2007/07/19	2007/07/19	Thank you5	Thank you1		2007/07/19	Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1		2007/07/19	2007/07/19	Thank you2	Thank you1			2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1			2007/07/19	Thank you5	Thank you1			Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1		2007/07/19	2007/07/19	Thank you2	Thank you1		2007/07/19	2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1			2007/07/19	Thank you5	Thank you1		
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Delete Alarm Data in Alarm Viewer Page	Set to delete all data on the current page, except for unrecovered alarm data, when the switch is activated.																																																																																																																								
Delete All Occurrence No.	Set to delete data for triggered alarms when the switch is activated.																																																																																																																								

Function	Description								
Delete Recovered All Data in Alarm Viewer	Set to delete all recovered data when the switch is activated.								
Delete Selected Line in Alarm Viewer	Set to delete the specified data, except for unrecovered alarm data, when the switch is activated.								
Go to History Alarm Viewer Detail	<p>When an alarm occurs, additional information related to the alarm may be required to solve the problem. In that case, a window can be invoked with information from other objects. Set this function to see detailed history alarm data when the switch is activated.</p> <p>To set the function to show detailed data:</p> <ol style="list-style-type: none"> <li>1. Edit the detailed window screen.</li> <li>2. Check the box next to <b>Show detail window</b>.</li> <li>3. In History Alarm Viewer, set options under <b>Use Detailed Window Position</b>.</li> <li>4. In the XGT panel, select an alarm, and then tap the special switch.</li> </ol> 								
History Alarm Filter	<p>Set to filter history alarm data and display it with the history alarm viewer object. There are five types of filters: Occurrence, Check, Restoration, Uncheck, and Unrestoration (unrestored alarms).</p> <table border="1"> <thead> <tr> <th>Type</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Occurrence</td><td>View the every history alarm data occurred.</td></tr> <tr> <td>Check</td><td>View the checked history alarm data with the special switch.</td></tr> <tr> <td>Restoration</td><td>View the restored history alarm data.</td></tr> </tbody> </table> <p>Example of checked history alarm data</p>	Type	Description	Occurrence	View the every history alarm data occurred.	Check	View the checked history alarm data with the special switch.	Restoration	View the restored history alarm data.
Type	Description								
Occurrence	View the every history alarm data occurred.								
Check	View the checked history alarm data with the special switch.								
Restoration	View the restored history alarm data.								

Function	Description																																																												
	<div><table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table><div></div><table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td>2007/07/19</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></tbody></table></div>	Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1			2007/07/19	Thank you2	Thank you1		2007/07/19	2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1		2007/07/19	2007/07/19	Thank you5	Thank you1			Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you2	Thank you1		2007/07/19	2007/07/19	Thank you4	Thank you1		2007/07/19															
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2007/07/19	Thank you4	Thank you1		2007/07/19																																																									
History Alarm Viewer Line Down	Set to scroll history alarm data in the specified direction when the switch is activated.																																																												
History Alarm Viewer Line up	<div><table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you1</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table><div></div><table><thead><tr><th>Occurrence</th><th>Message</th><th>Group</th><th>Recovery</th><th>Acknowledge</th></tr></thead><tbody><tr><td>2007/07/19</td><td>Thank you2</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you3</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you4</td><td>Thank you1</td><td></td><td></td></tr><tr><td>2007/07/19</td><td>Thank you5</td><td>Thank you1</td><td></td><td></td></tr></tbody></table></div>	Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you1	Thank you1			2007/07/19	Thank you2	Thank you1			2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1			2007/07/19	Thank you5	Thank you1			Occurrence	Message	Group	Recovery	Acknowledge	2007/07/19	Thank you2	Thank you1			2007/07/19	Thank you3	Thank you1			2007/07/19	Thank you4	Thank you1			2007/07/19	Thank you5	Thank you1							
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History Alarm Viewer Page Down																																																													
History Alarm Viewer Page Up																																																													
Occurrence No. of Selected Alarm	Set to show the number of alarms that have been triggered when the switch is activated.																																																												
Print History Alarm	Set to print the selected history alarm data when the switch is activated. An alarm group can be chosen from the history alarm list.																																																												

Function	Description
	 <p>The image shows a dialog box titled "Setting for Special Switch Function". Inside, there is a list box containing three items: "Alarm Group", "Alarm Group_01", and "Alarm Group_02". The "Alarm Group" item is highlighted with a red rectangular border.</p>
Selected History Alarm Viewer Line Up	Set to change the line or page of the history alarm data when the switch is activated.
Selected History Alarm Viewer Page Down	

### – History Alarm Row Scroll

Function	Description
Next Row	Set to move to the specified area of the history alarm data when the switch is activated. If the number of data rows exceeds the rows supported by the XGT panel, this function allows you to view more data.
Pre. Row	
First Page	
Last Page	

### – Logging Viewer

Function	Description
Logging Viewer Line Down	Set to scroll logging data up or down when the switch is activated.
Logging Viewer Line Up	
Logging Viewer Page Down	
Logging Viewer Page Up	

### – Logging Row Scroll

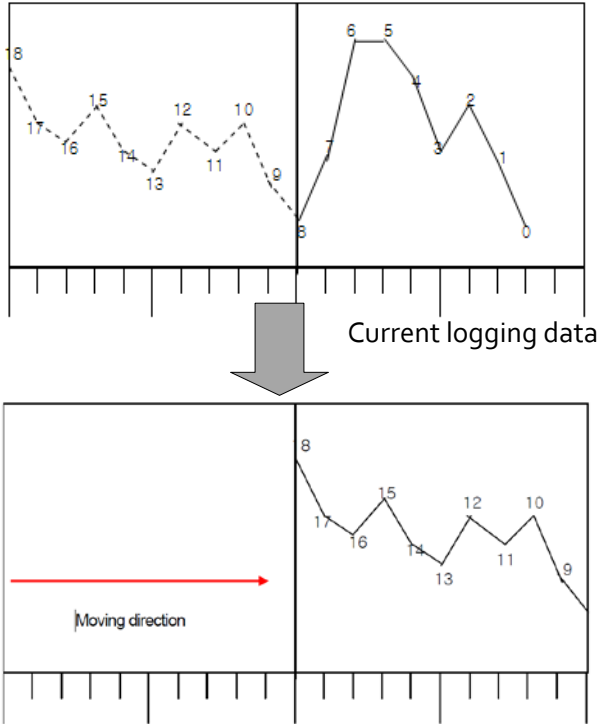
Function	Description
First Column	Set to move to the specified area of the history alarm data when

Function	Description																				
Last Column	the switch is activated. If the number of data rows exceeds the rows supported by the XGT panel, this function allows you to view more data.																				
Next Column																					
Previous Column	As the following example illustrates, fixed columns never move, but the unfixed areas can be moved, so that you can view more data.																				
Next Page																					
Previous Page	<div><div>Fixed</div><div>Unfixed</div><table><thead><tr><th>Time</th><th>Location</th><th>Process 3</th><th>Process 4</th></tr></thead><tbody><tr><td>2013/03/29</td><td>Line 1</td><td>21</td><td>31</td></tr><tr><td>2013/03/30</td><td>Line 2</td><td>22</td><td>32</td></tr><tr><td>2013/03/31</td><td>Line 3</td><td>23</td><td>33</td></tr><tr><td>2013/04/01</td><td>Line 4</td><td>24</td><td>34</td></tr></tbody></table></div> <p>If the total object area is greater than the width of the rows, the part that exceeds the width of the rows is shown in gray.</p>	Time	Location	Process 3	Process 4	2013/03/29	Line 1	21	31	2013/03/30	Line 2	22	32	2013/03/31	Line 3	23	33	2013/04/01	Line 4	24	34
Time	Location	Process 3	Process 4																		
2013/03/29	Line 1	21	31																		
2013/03/30	Line 2	22	32																		
2013/03/31	Line 3	23	33																		
2013/04/01	Line 4	24	34																		

#### – Alarm Navigator

Function	Description
Alarm Navigator Viewer Line Down	Set to move up or down a line in the alarm search results when the switch is activated.
Alarm Navigator Viewer Line Up	

### – Logging Trend

Function	Description
Next Log Trend Data	<p>View the next log. You can set the number of logs to show. For example, if the number is set to 8, the graph will display the trend for the next 8 logs.</p>  <p>The diagram illustrates the 'Next Log Trend Data' function. It consists of two vertically aligned graphs. The top graph shows a dashed line representing historical data points (labeled 8, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8) and a solid line representing the current logging data (labeled 8, 7, 6, 5, 4, 3, 2, 1, 0). A vertical line separates the two data series, with the label 'Current logging data' positioned below the solid line. A large downward-pointing arrow indicates the transition to the bottom graph. The bottom graph shows the next 8 logs as a solid line, with data points labeled 8, 17, 16, 15, 14, 13, 12, 11, 10, 9. A red arrow labeled 'Moving direction' points to the right, indicating the direction of the trend.</p>
Previous Log Trend Data	<p>View the previous log. You can set the number of logs to show. For example, if the number is set to 8, the graph will display the trend for the previous 8 logs.</p>
The First Log Trend Data	<p>View the first or last logged data.</p>
The Last Log Trend Data	

## – Memo Pad

Function	Description
Change Memo Mode	Set to switch the memo mode when the switch is activated. In active mode, memo input is allowed. In non-active mode, only memo viewing is allowed. When switching from active to non-active mode, any unsaved memo inputs are discarded. Then, the first saved memo is displayed.
Delete All Memo	Set to delete all or selected memos. The third bit of the memo pad status device indicates whether or not the memos were deleted successfully.
Delete Memo	
Next Memo	
Previous Memo	Set to move to the next or previous memo when the switch is activated.
Pen Setting	Set the color and thickness of the pen to be used for memos. You can also set a special switch to apply the color and line thickness you specify.
Redo Memo	Set to restore a recently-canceled memo when the switch is activated.
Reset Memo	Set to delete all memo files from storage devices when the switch is activated. The third bit of the memo pad status device indicates whether or not the memos were deleted successfully.
Storage of Memo	Set to save memos in a storage location when the switch is activated. The storage location must be designated in the project properties.
Undo Memo	Set to undo the last action in a memo when the switch is activated.



### – Movie Player

Function	Description
Play	Set to show video from a connected camera ([Camera capture file display]) or from a storage device (Play recorded video or [Video capture file display]). If a file order device is set in the Video Player object, the applicable file will play. If no file order device is set, the most recently created video will play.
Stop	Set to stop video playback when the switch is activated.
Pause/Restart	Set to pause or resume video playback when the switch is activated.
Fast Forward	Set to fast forward video playback when the switch is activated. Set the interval for fast forwarding in the video player status settings.
Rewind	Set to rewind video playback when the switch is activated. Set the interval for rewinding in the video player status settings.
Next File Previous File	<p>It displays the next or previous movie capture image among the images saved in the storage device. To use this function, in the movie player object, click [Basic] ► [Display Camera Capture File]. Or, in the special switch function, click [Basic] ► [Movie Player] ► [Change Mode] ► [Camera capture file display].</p> <p>If a file order device is set in the Video Player object, the applicable file will play. If no file order device is set, the most recently created video will play.</p>
Movie Capture	Set to capture a still image from a video when the switch is activated. Video captures are saved in the MovieStill folder. If the video player is in [Camera input display] or [Play recorded file] mode a JPG file will be captured. A still image cannot be captured while the video is paused or during recording. Only one still image can be captured per second. If the start time for the section recording is greater than 0, you cannot play the video and take a screenshot.
Change Mode	<p>Set to change the movie player mode when the switch is activated.</p> <ul style="list-style-type: none"> <li>Whenever it is pressed change display: When you tap the</li> </ul>

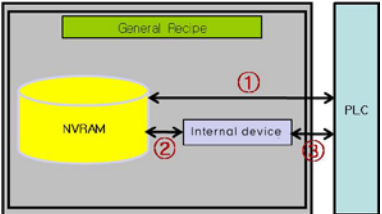
Function	Description
	<p>special switch, the movie player status changes (Camera input display &gt; Video capture image display &gt; Recorded file play).</p> <ul style="list-style-type: none"> <li>• Video display: The recorded file (.avi) saved in the storage device is displayed. If the playback is stopped, the latest file is played.</li> <li>• Camera input display: The video from a connected camera is displayed.</li> <li>• Camera capture file display: The video capture image (.jpg) from a storage device is displayed.</li> </ul>

**Note**


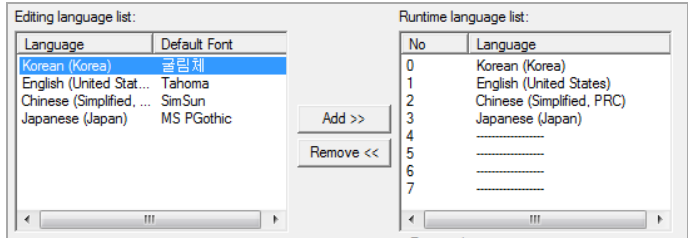
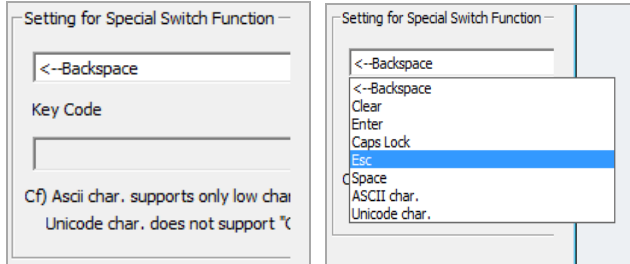
Only TTM series panels support the movie player function with the special switch object (iXP70-TTM, iXP80-TTM, and iXP90-TTM). If you attempt to use the movie player function with other panels, an error may occur.

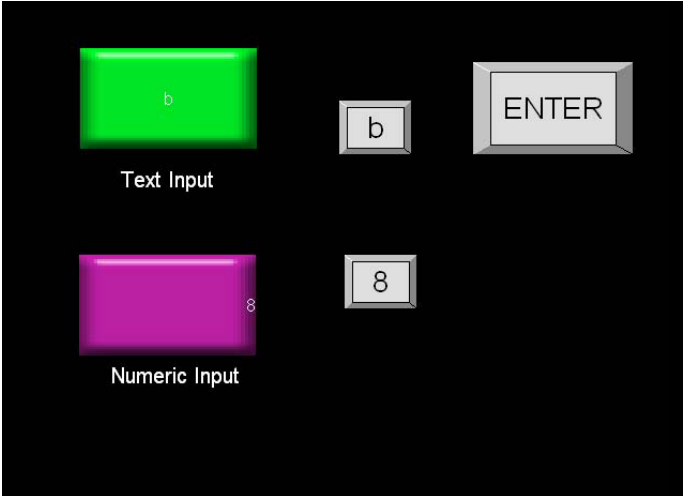
## – Recipe

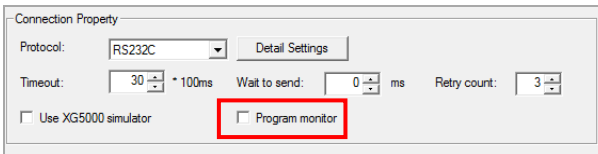
Function	Description						
File Recipe Manager and Transfer	<ul style="list-style-type: none"> <li>• Set to transfer recipe data from the PLC to the XGT Panel or vice versa when the switch is activated.</li> </ul> <table border="1"> <thead> <tr> <th>Method</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Transfer from PLC &gt; XP</td><td>The recipe data in the controller is transferred to the file recipe editor of XGT Panel.</td></tr> <tr> <td>Transfer XP &gt; PLC</td><td>The recipe data in the file recipe manager is transferred to the controller.</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Set to move to the specified area of the file recipe data when the switch is activated.</li> <li>• You can also set to show the specific data in the file recipe editor when the switch is activated.</li> </ul>	Method	Description	Transfer from PLC > XP	The recipe data in the controller is transferred to the file recipe editor of XGT Panel.	Transfer XP > PLC	The recipe data in the file recipe manager is transferred to the controller.
Method	Description						
Transfer from PLC > XP	The recipe data in the controller is transferred to the file recipe editor of XGT Panel.						
Transfer XP > PLC	The recipe data in the file recipe manager is transferred to the controller.						
General Recipe Manager	<p>Set to view selected recipe data when the switch is activated or to select a transfer method:</p> <table border="1"> <thead> <tr> <th>Method</th><th>Description</th></tr> </thead> <tbody> <tr> <td>NVRAM &gt; PLC</td><td>Transfer backed up data from</td></tr> </tbody> </table>	Method	Description	NVRAM > PLC	Transfer backed up data from		
Method	Description						
NVRAM > PLC	Transfer backed up data from						

Function	Description
	<p>NVRAM to the PLC.</p>  <p>If you tap the special switch, the data is transferred via method 1. To specify method 1, select the recipe data to transfer, and then tap [PLC &lt;- NVRAM].</p>
	<p>PLC &gt; NVRAM</p> <p>Transfer basic data from the PLC to NVRAM. If you tap the special switch, the data is transferred via method 1. To specify method 1, select the recipe data to transfer, and then tap [PLC -&gt; NVRAM].</p>
	<p>NVRAM &gt; Internal Device</p> <p>Transfer backed up data from NVRAM to an internal device for editing. The data is transferred via method 2. To edit the backed up recipe, move the data saved in NVRAM to the internal device.</p>
	<p>Internal Device &gt; NVRAM</p> <p>Transfer data from an internal device to NVRAM. The transferring method is 2.</p>
	<p>Internal Device &gt; PLC</p> <p>Transfer data from an internal device to the PLC. The transferring method is 3.</p>
	<p>PLC &gt; Internal Device</p> <p>Transfer from the PLC to an internal device. The transferring method is 3.</p>
Recipe Editor	Set to view and edit recipe data when the switch is activated.

## - ETC

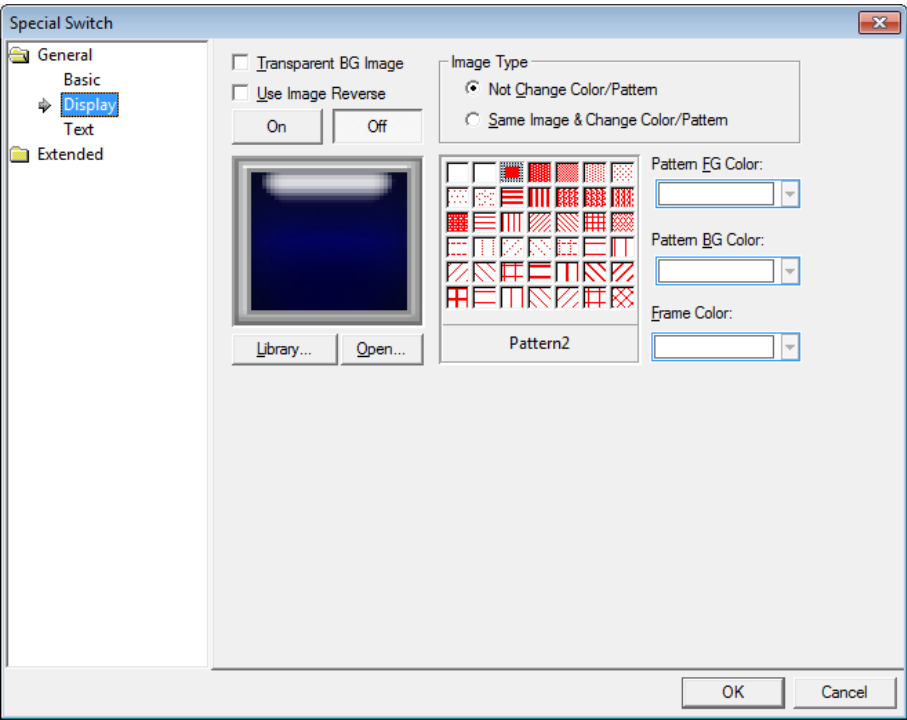
Function	Description
Change Runtime Language	<p>Set to change a new runtime language when the switch is activated. Select a language in <b>Settings for Special Switch Function</b>.</p>  <p>You can specify runtime languages in the project properties. Click [Common] ► [Project Property Setting] ► [Language] and edit the available runtime language.</p> 
Close Popup Window	Set to close the current pop-up window when the switch is activated.
Data List Editor	Set to view additional data lists when the switch is activated. You can set an option to view the data, such as Line Up/Down or Page Up/Down.
Key Switch	<p>Set to open an input window when the switch is activated. Select the function and set a key code in <b>Setting for Special Switch Function</b>.</p>  <p>You can apply text, numbers, or special functions (clear, space, enter, caps lock, and more). When you select the special switch in the XGT Panel, the key code is entered to the numeric or text input device.</p>

Function	Description
	 <p>When you enter ASCII characters or Unicode characters, you can input the value from each table only via a keyboard.</p> <p>When you set the text input object, if you set the multilingual option to English, the Unicode value is changed according to code page 1252 (OEM United States) and saved to the device. If you set the multilingual option to Korean, the Unicode value is changed according to code page 949 (ANSI/OEM Unified Hangul) and saved to the device.</p> <p><b>Note</b></p> <p>To enter upper case characters:</p> <ul style="list-style-type: none"> <li>• ASCII: You cannot input upper case characters directly. To input upper case characters, set the caps lock switch and the letter input switch (A= the caps lock switch + the "a" input switch).</li> <li>• UNICODE: Set the upper case character in advance. You need only one switch.</li> </ul>
Next Cursor	Set to move the cursor in numeric or text input objects to the next or pervious field.
Previous Cursor	
Print Screen	Set to print a screen capture of the XGT Panel when the switch is activated. The file can be printed to a file or to a printer, as specified in the project properties. To set the

Function	Description						
	<p>properties, click [Common] ► [Project Property Setting] ► [Auxiliary Settings] and set a print method from the <b>Output</b> drop-down list under <b>Screen Capture</b>:</p> <table border="1"> <thead> <tr> <th>Method</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Save as File</td><td>Save the image as a Bitmap file. You can set the route in [Common] ► [Project Property Setting] ► [Storage Setting] ► [Capture image].</td></tr> <tr> <td>Save and Print</td><td>Print the screen to a printer connected via USB. If a printer is not connected to the XGT Panel, a system alarm will occur. If an alarm occurs, connect a printer and try again.  To set the system alarm, click [Common] ► [Project Property Setting] ► [Auxiliary Settings] and click the checkbox next to <b>Alarm window pop-up</b>.</td></tr> </tbody> </table>	Method	Description	Save as File	Save the image as a Bitmap file. You can set the route in [Common] ► [Project Property Setting] ► [Storage Setting] ► [Capture image].	Save and Print	Print the screen to a printer connected via USB. If a printer is not connected to the XGT Panel, a system alarm will occur. If an alarm occurs, connect a printer and try again.  To set the system alarm, click [Common] ► [Project Property Setting] ► [Auxiliary Settings] and click the checkbox next to <b>Alarm window pop-up</b> .
Method	Description						
Save as File	Save the image as a Bitmap file. You can set the route in [Common] ► [Project Property Setting] ► [Storage Setting] ► [Capture image].						
Save and Print	Print the screen to a printer connected via USB. If a printer is not connected to the XGT Panel, a system alarm will occur. If an alarm occurs, connect a printer and try again.  To set the system alarm, click [Common] ► [Project Property Setting] ► [Auxiliary Settings] and click the checkbox next to <b>Alarm window pop-up</b> .						
Program Monitoring	<p>Set to launch the program monitor when the switch is activated. To run the program monitor, use the XGT, XGI, or XGB series.</p> <p>Specify the program monitor settings in the project properties. Click [Common] ► [Project Property Setting] ► [XGT Panel Settings] ► [Program monitor].</p> 						
Run Other Application	<p>Set to launch an application on the XGT Panel. XGT Panels support Windows CE operating systems (5.0 Core, 5.0 ProPlus, and 6.0). In Windows CE 5.0 Core, this function cannot launch the following executable files: pdfviewer.exe, presviewer.exe, docviewer.exe, imageviewer.exe, and xls.exe.</p>						
Runtime Exit	<p>Set to quit program monitoring when the switch is activated.</p>						
XP-Remote	<p>Set to enable remote monitoring of the XGT Panel. You</p>						

Function	Description
	can specify functions for obtaining and terminating authorization for remote monitoring.

- **Display:** The display settings for special switch objects include the following:

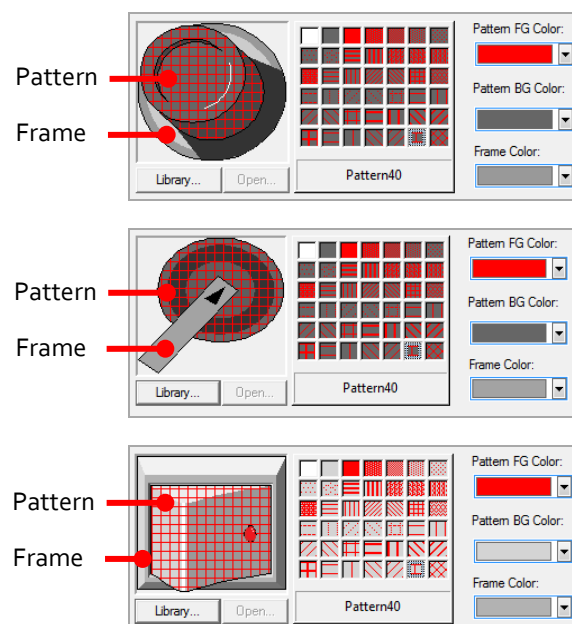


- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Use Image Reverse:** The switch image is reversed when you tap the object or a condition is met. If you set this option, you cannot use the **Transparent BG Image** option or the On/Off image. If you set the **Transparent BG Image** option, you cannot use this option.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 Managing Image Libraries>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user
---------------------------------	--

	registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

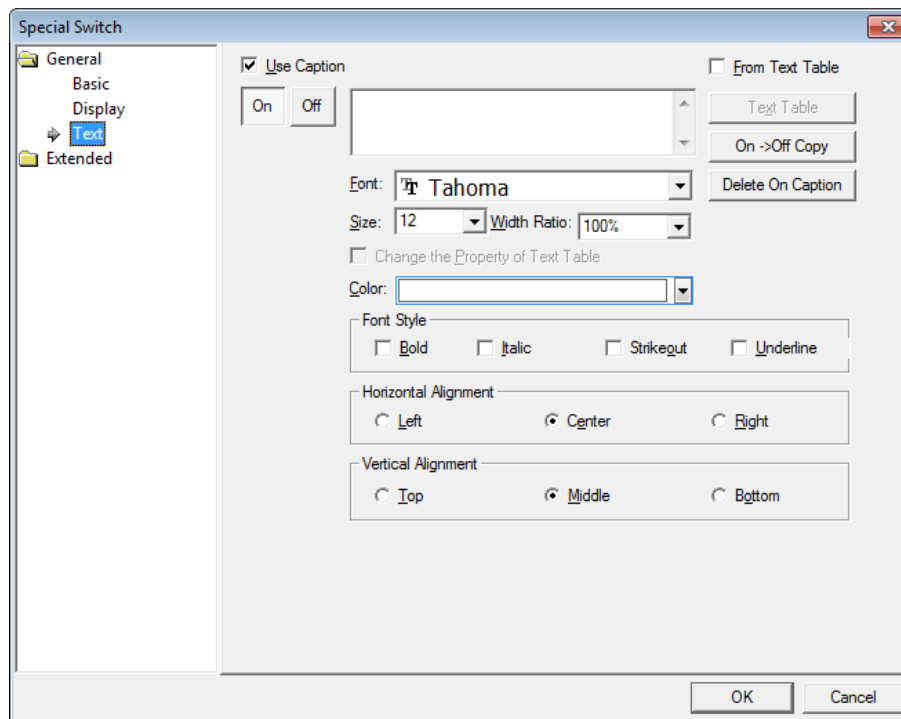
- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image category ends with "\_V", and the raster image category ends with "\_R". Patterns can be applied only to the images.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

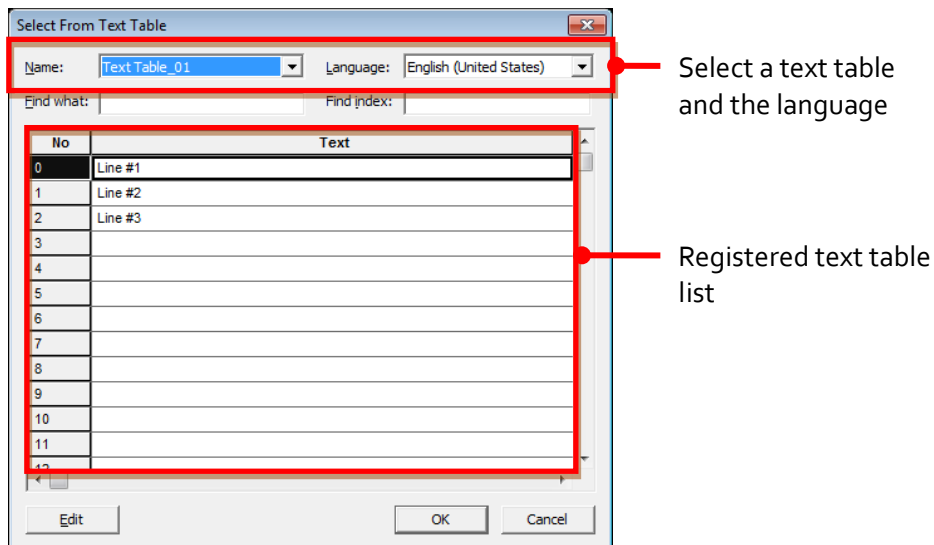


- **Text:** The text settings for special switch objects include the following:



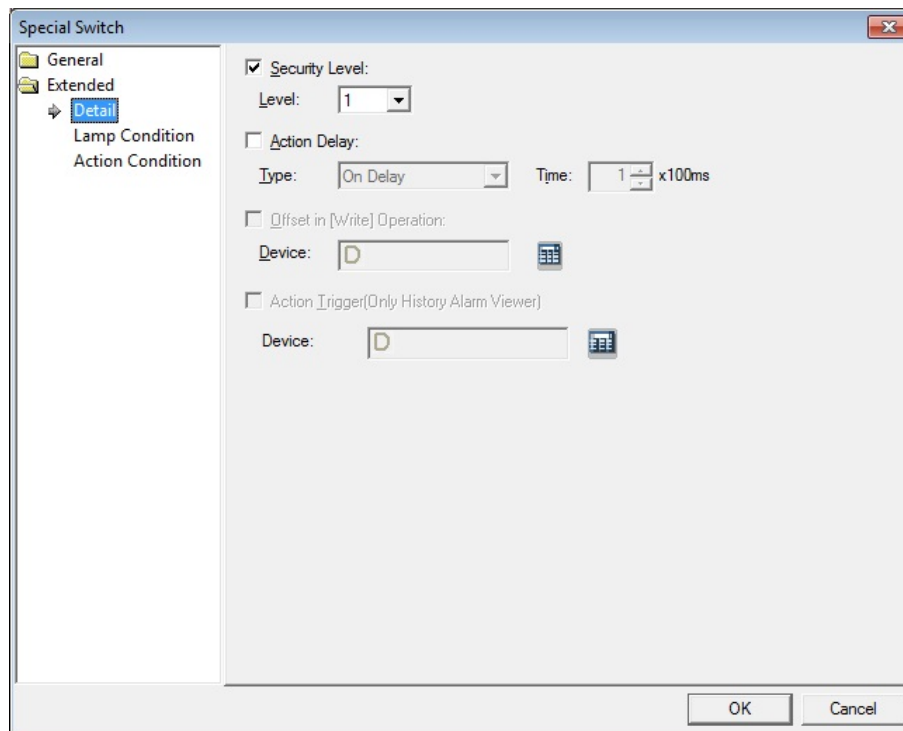
- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the “on” state to the “off” state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for special switch include the following:

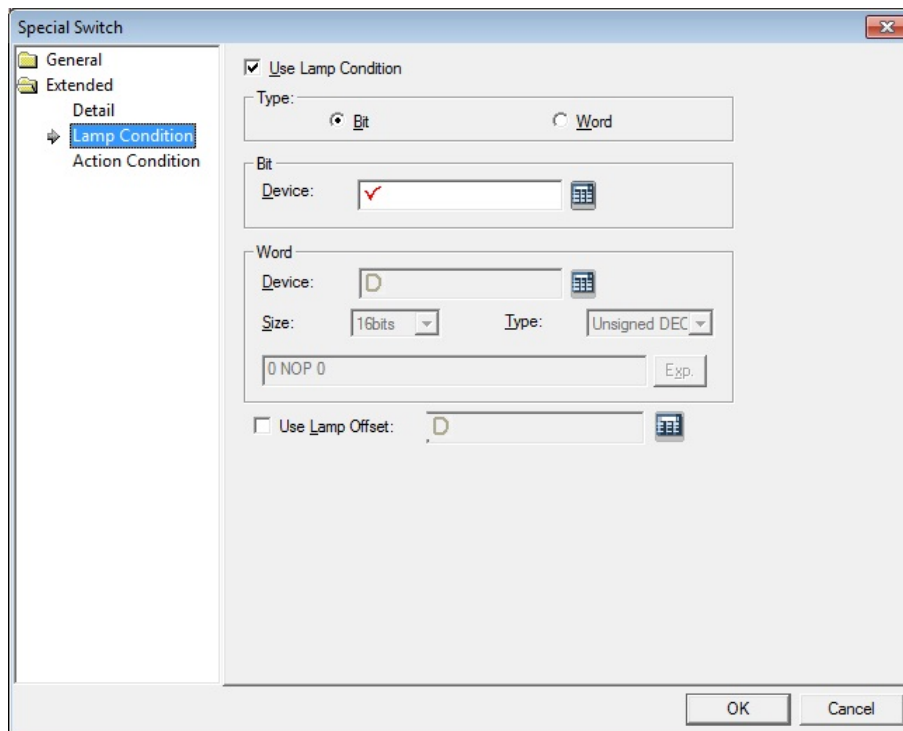


- **Security Level:** Set whether or not to require a password to use the object.
- **Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Action Delay:** Set to delay the action triggered by the switch by a specified time.
- **Type:** Set the type of action delay.

<b>On Delay</b>	When the switch is activated, the action is performed after the delay time that you specify.
<b>Press Twice</b>	When the switch is activated once, a dialog box is invoked to allow the user to verify the operation. When the switch is activated a second time, the action is performed after the delay time that you specify.

- **Time:** Set the length of time for the action delay.
- **Offset in [Write] Operation:** Set to use the offset function.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Action Trigger (Only History Alarm Viewer):** Set whether or not to use an action trigger with a history alarm viewer object. The special switch function is activated when the special switch is touched on the XGT Panel or when the specified device is turned on.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Lamp Condition:** The lamp condition settings for special switch objects include the following:



- **Use Lamp Condition:** If you want to control a lamp with a method other than simply turning it on when the switch is activated, you can select a different action.
- **Type:** Select a condition for lamp control.

<b>Bit</b>	When the device state is on, the lamp is on.
<b>Word</b>	When the condition is met, the lamp is on.

- **Bit:** If you selected the bit condition type, specify a bit device.
  - **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Word:** If you selected the word condition type, specify a word device.

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, or BCD.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Use Lamp Offset:** Click to set an offset for the lamp.

- **Action Condition:** The action condition settings for special switch objects include the following:

The screenshot shows the 'Special Switch' dialog box with the 'Action Condition' tab selected. The 'Use Action Condition' checkbox is checked. Under 'Type', 'Bit On' is selected. The 'Device' field has a checkmark icon. Under 'Range', 'Size' is set to '16bits' and 'Type' is 'Unsigned DEC'. The 'Range' field contains '0 NOP 0'. Under 'Multi Bit', 'No. of Bit Device' is set to '1'. There are 'OK' and 'Cancel' buttons at the bottom right.

- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

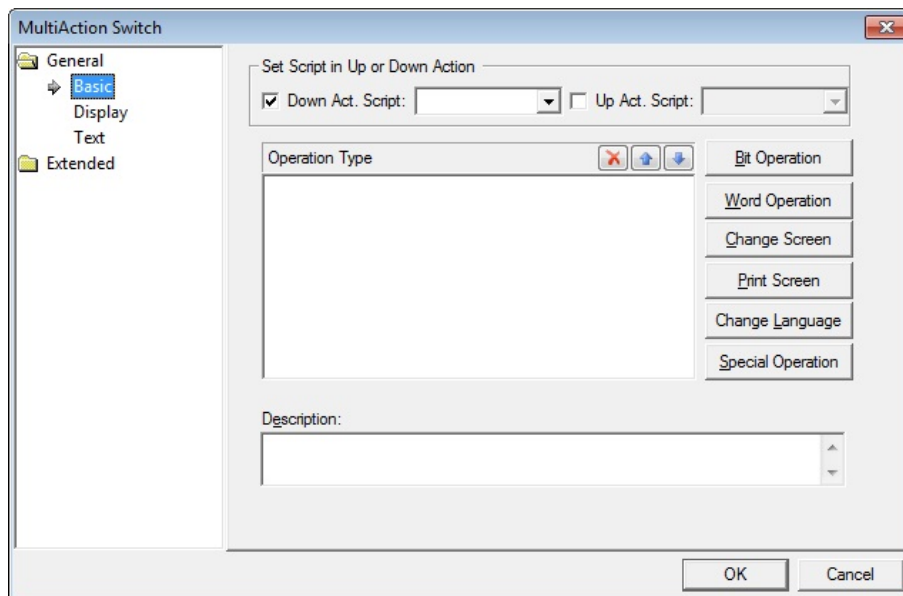
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.2.5 Multi Switch

A multi switch object is a switch that can operate a combination of functions of the bit switch, word switch, change screen switch and special switch. You can set the sequence of each operation and up to 8 functions can be carried out at a time. This section describes available settings for multi switch objects.




- **Basic:** The basic settings for multi switch objects include the following:



- **Set Script in Up or Down Action:** Set scripts for up or down states of the switch.

<b>Down Act. Script</b>	Select a script to execute when the switch is depressed.
<b>Up Act. Script</b>	Select a script to execute when the switch is released.

- **Operation Type:** Select and manage operations.

 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Bit Operation:** Click to set a condition for a bit switch. For more information about bit switches, refer to <4.3.2.1 Bit Switch>.
- **Word Operation:** Click to set a condition for a word switch. For more information about word switches, refer to <4.3.2.2 Word Switch>.
- **Change Screen:** Click to set a condition for a window change switch. For more information about window change switches, refer to <4.3.2.3 Change Screen Switch>.

#### Note

The change window switch must be the last switch when using multiple switches. This switch will be moved to the end of the operation list automatically.

- **Print Screen:** Click to set a condition for a print screen switch. For more information about print screen, refer to <4.3.2.4 Special Switch>.
- **Change Language:** Click to set a condition for a change language switch. For more information about change language, refer to <4.3.2.4 Special Switch>.
- **Special Operation:** Click to set a condition for a special operation switch. For more information about special switch, refer to <4.3.2.4 Special Switch>.

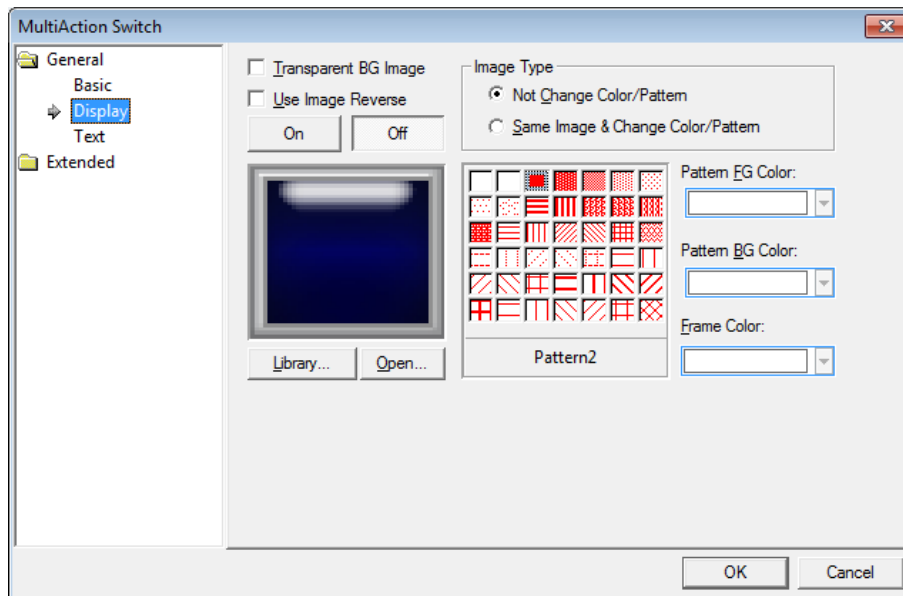
#### Note

Language and window switching operate independently, even though both are special switches.

- **Description:** Enter a description for the object.



- **Display:** The display settings for multi switch objects include the following:



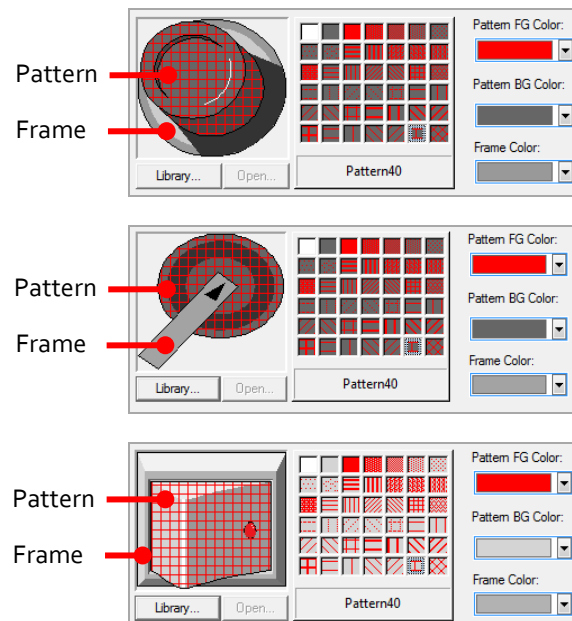
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Use Image Reverse:** The switch image is reversed when you tap the object or a condition is met. If you set this option, you cannot use the **Transparent BG Image** option or the On/Off image. If you set the **Transparent BG Image** option, you cannot use this option.
- **On:** Click to configure options for the object in the “on” state.
- **Off:** Click to configure options for the object in the “off” state.
- **Image Type:** Set whether or not to change colors and patterns when switching between “on” and “off” states. If you select the change color or pattern option, you must select a vector image for the object. To view characteristics of raster or vector images, refer to <2.3.6.4 Managing Image Libraries>.

<b>Not Change Color/Pattern</b>	Use the original image. You can apply the pattern or color to the image. Select the image to display for On or Off status from raster, vector, or user registered images.
<b>Same Image &amp; Change Color/Pattern in On/Off</b>	Select a vector image. You cannot select a raster image. Apply a pattern or color to the image.

- **Library:** Click to select an image from the library. In the library list, image categories are distinguished by the ends of their names. The vector image

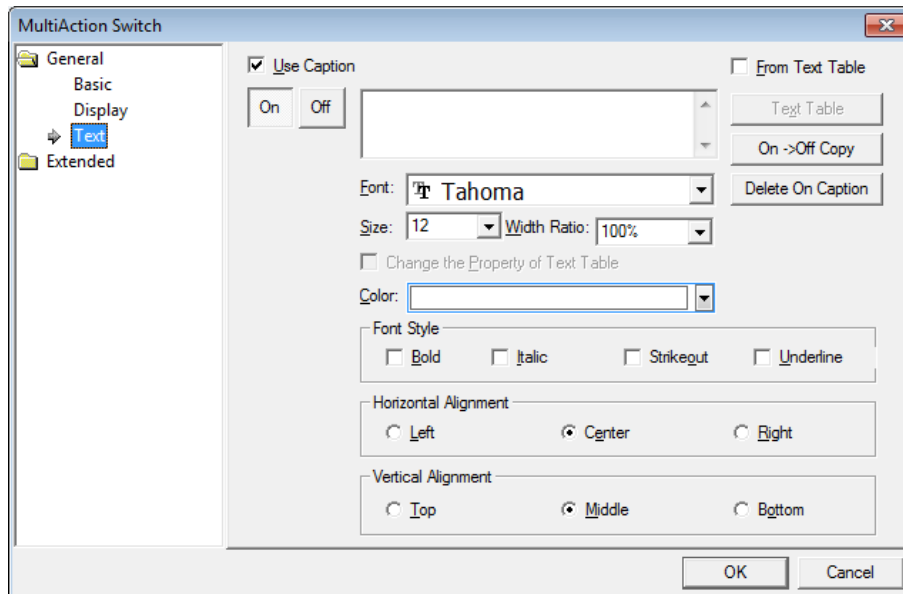
category ends with "\_V", and the raster image category ends with "\_R". Patterns can be applied only to the images.

- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Pattern:** Click a pattern to apply to the image. This option is available only when you select the change color or pattern option in **Image Type**. Patterns are applied to specific parts of objects, but not to the frames. The frames are different for each image. Refer the following examples:



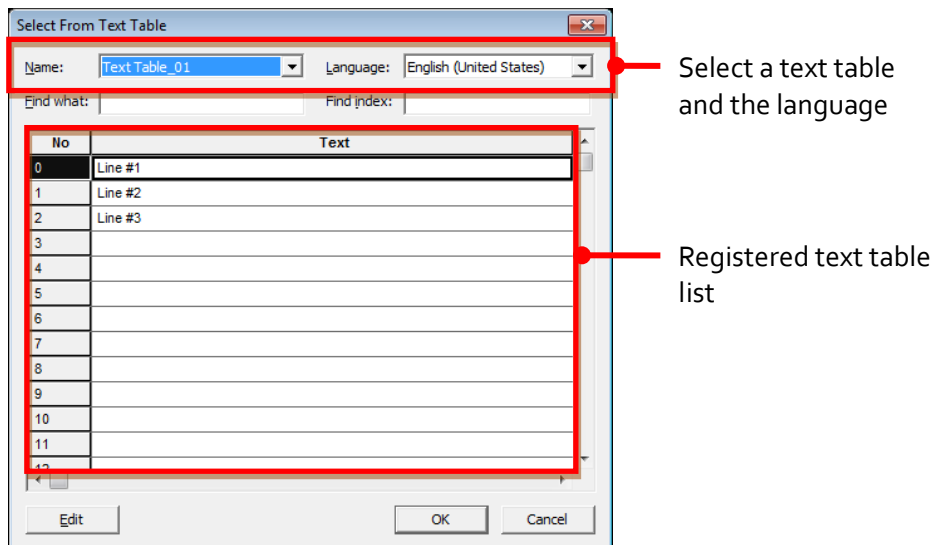
- **Pattern FG Color:** Set a color for the foreground pattern.
- **Pattern BG Color:** Set a color for the background pattern.
- **Frame Color:** Set a frame color.

- **Text:** The text settings for multi switch objects include the following:



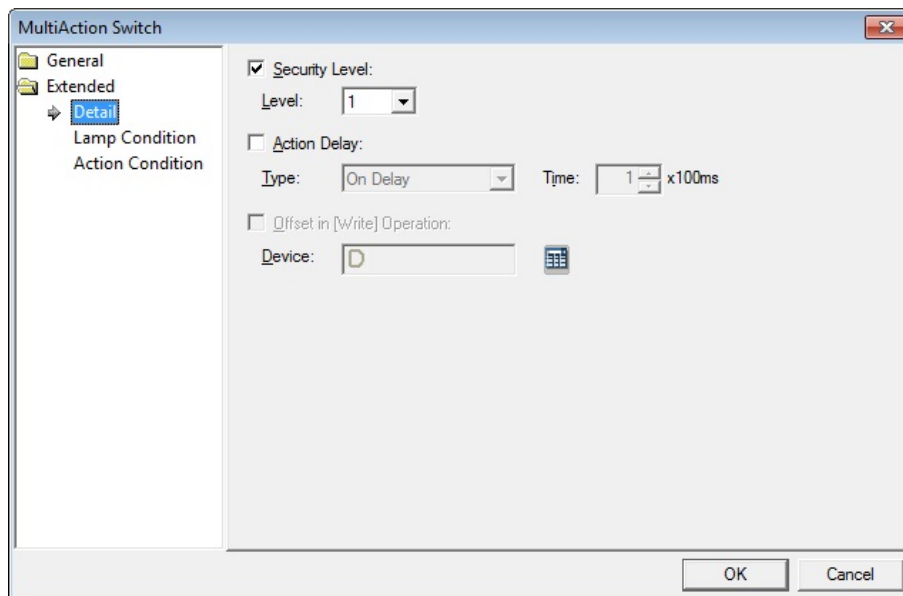
- **Use Caption:** Click the checkbox to use a text caption with the object. When you select this option, you can input text from a Text Table.
- **On:** Click to configure options for the object in the “on” state. You must input the text in a text table.
- **Off:** Click to configure options for the object in the “off” state. You must input the text in a text table.
- **From Text Table:** Click the checkbox to add text from a text table. The Text Table option will be activated and the text input area will close. Add the required text to the text table before editing the object. You must select text for the “on” and “off” states from the same text table.

- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.



- **On <-> Off Copy:** Click to copy the text and formatting from the “on” state to the “off” state or vice versa.
- **Delete On/Off Caption:** Click to clear text settings for the current state.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for multi switch objects include the following:

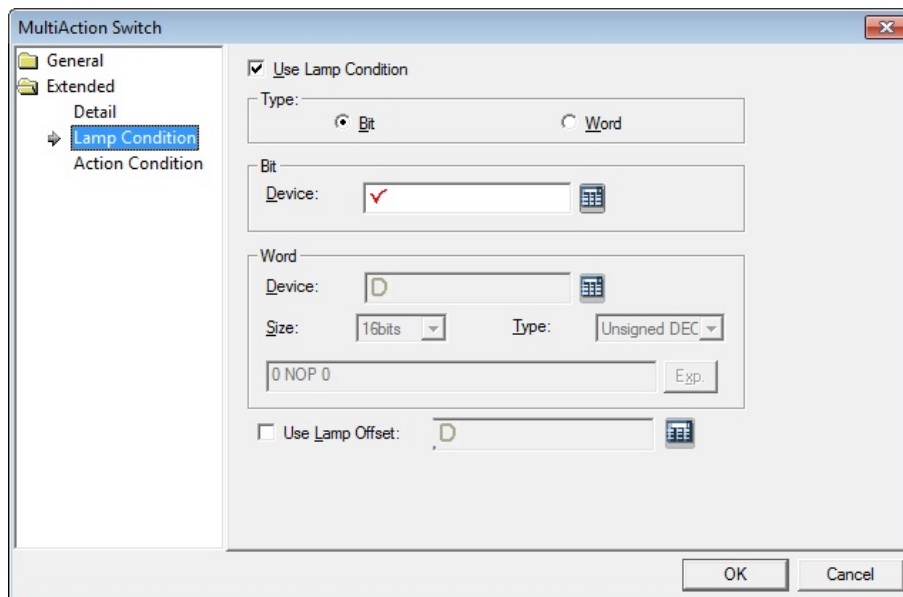


- **Security Level:** Set whether or not to require a password to use the object.
- **Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Action Delay:** Set to delay the action triggered by the switch by a specified time.
- **Type:** Set the type of action delay.

<b>On Delay</b>	When the switch is activated, the action is performed after the delay time that you specify.
<b>Press Twice</b>	When the switch is activated once, a dialog box is invoked to allow the user to verify the operation. When the switch is activated a second time, the action is performed after the delay time that you specify.

- **Time:** Set the length of time for the action delay.
- **Offset in [Write] Operation:** Set to use the offset function.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Lamp Condition:** The lamp condition settings for multi switch objects include the following:



- **Use Lamp Condition:** If you want to control a lamp with a method other than simply turning it on when the switch is activated, you can select a different action.
- **Type:** Select a condition for lamp control.

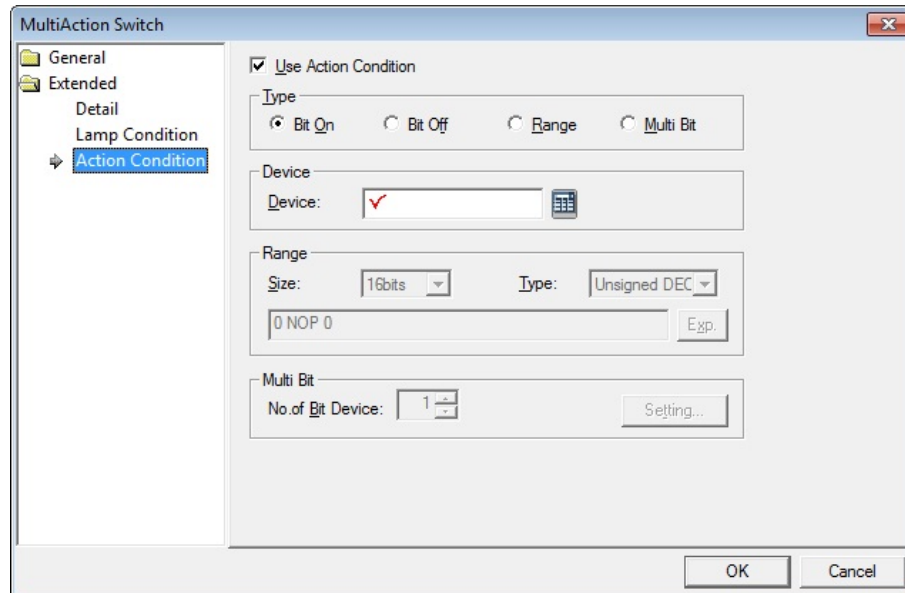
<b>Bit</b>	When the device state is on, the lamp is on.
<b>Word</b>	When the condition is met, the lamp is on.

- **Bit:** If you selected the bit condition type, specify a bit device.
  - **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Word:** If you selected the word condition type, specify a word device.

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, or BCD.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Use Lamp Offset:** Click to set an offset for the lamp.

- **Action Condition:** The action condition settings for multi switch objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

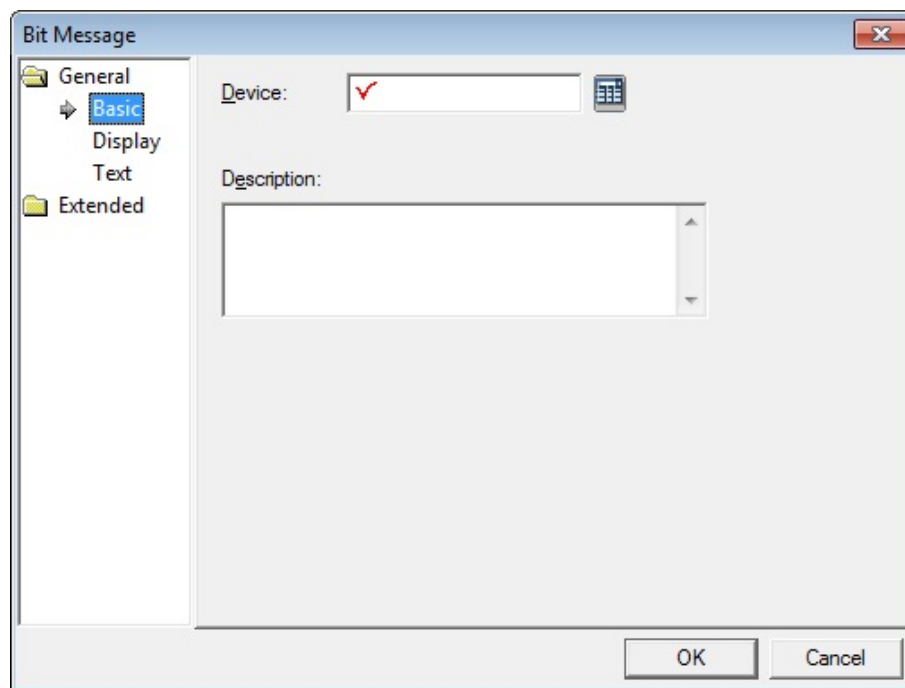
### 4.3.3 Message Objects

You can use message objects to display messages based on specified conditions of bit or word devices. You must add the messages to a text table to invoke them with a message object.

#### 4.3.3.1 Bit Message

This section describes available settings for bit message objects.

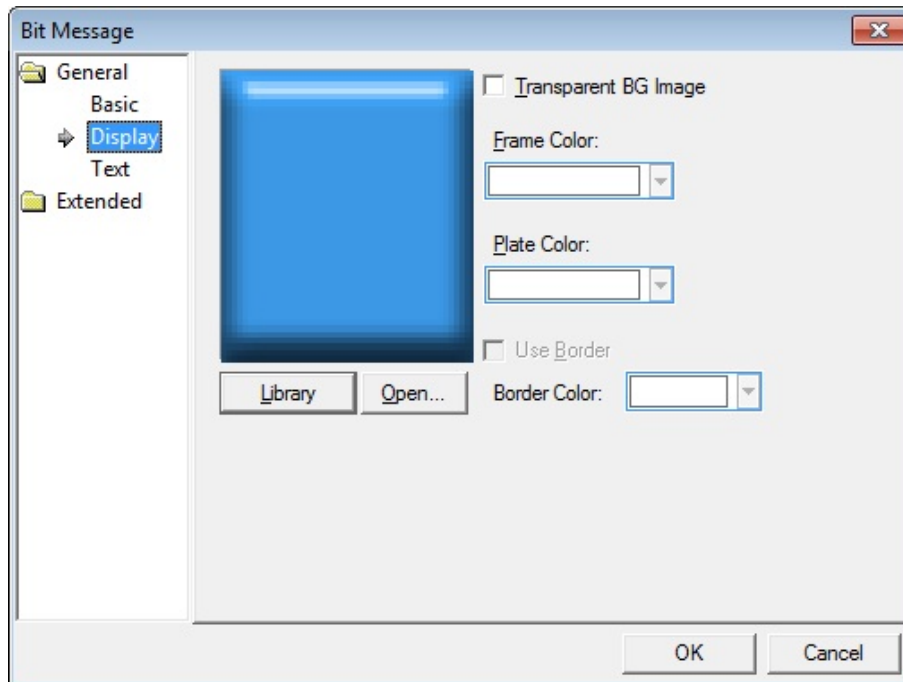
- **Basic:** The basic settings for bit message objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Description:** Enter a description for the object.

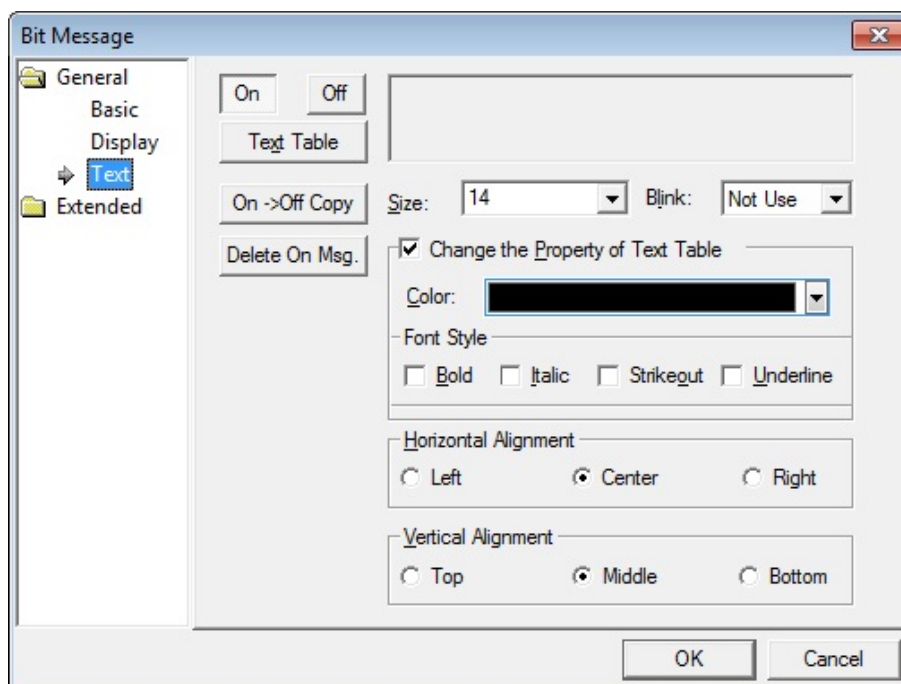


- **Display:** The display settings for bit message objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Frame Color:** Set a frame color.
- **Plate Color:** Set a plate color.
- **Use Border:** Set whether or not to use apply a border to the message area.
- **Border Color:** Set a border color.

- **Text:** The text settings for bit message objects include the following:



- **On:** Click to configure options for the object in the “on” state. You can input text only from a text table.
- **Off:** Click to configure options for the object in the “off” state. You can input text only from a text table.
- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.
- **On <-> Off Copy:** Click to copy the text and formatting from the “on” state to the “off” state or vice versa.
- **Delete On/Off Msg.:** Click to delete the text for the selected state.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Blink:** Set a blink speed for the object:

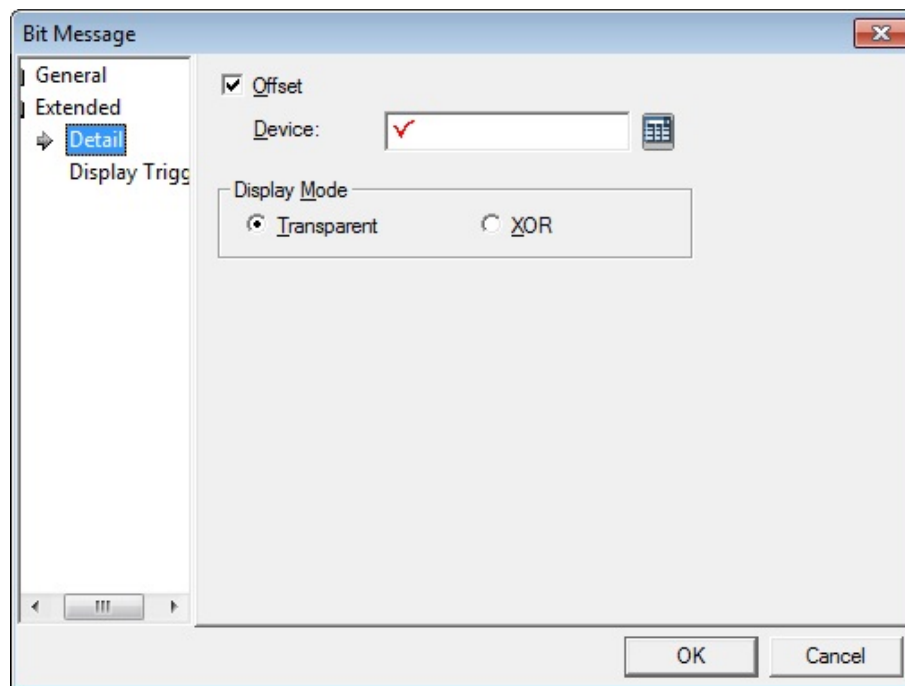
<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.

<b>Color</b>	Set a font color.
<b>Font Style</b>	Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.

- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).

- **Detail:** The detail settings for bit message objects include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	Display the message transparently, in contrast to the background image.
<b>XOR</b>	Display the message in a color that is easily distinguished from the background image.

- **Display Trigger:** The display trigger settings for bit message objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

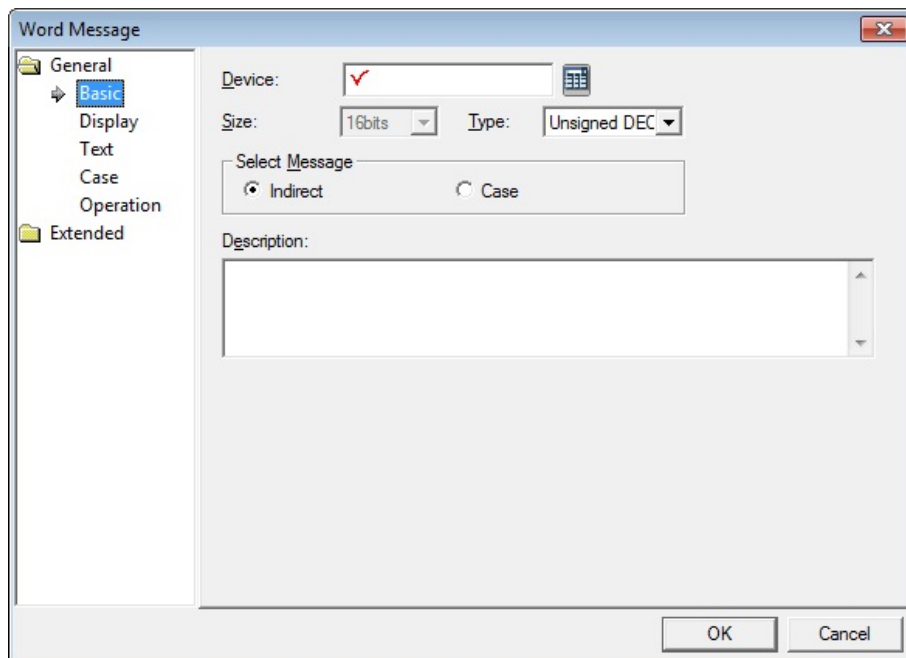
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.3.2 Word Message

This section describes available settings for word message objects.

- **Basic:** The basic settings for word message objects include the following:

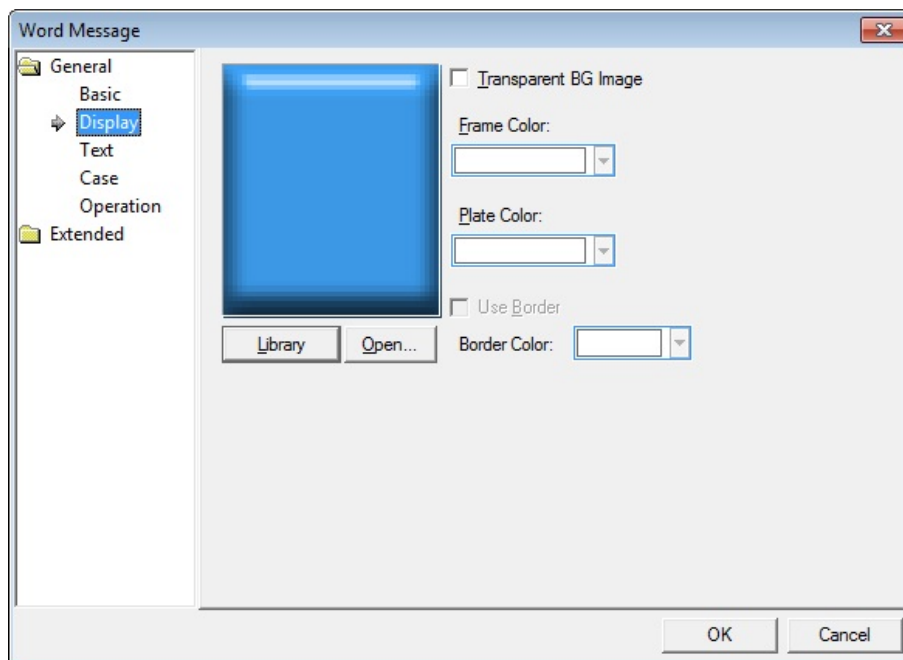


- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Size:** Select a data size (16 bit or 32 bit). Changing the data size for an existing object will delete the conditions specified in the case settings.
- **Type:** Select a data type (Signed decimal number, Unsigned decimal number, or BCD).
- **Select Message:** Set the message type. Changing the message type for an existing object will delete the conditions specified in the case settings.

<b>Indirect</b>	A value is read from the referenced device to invoke the message from the table.
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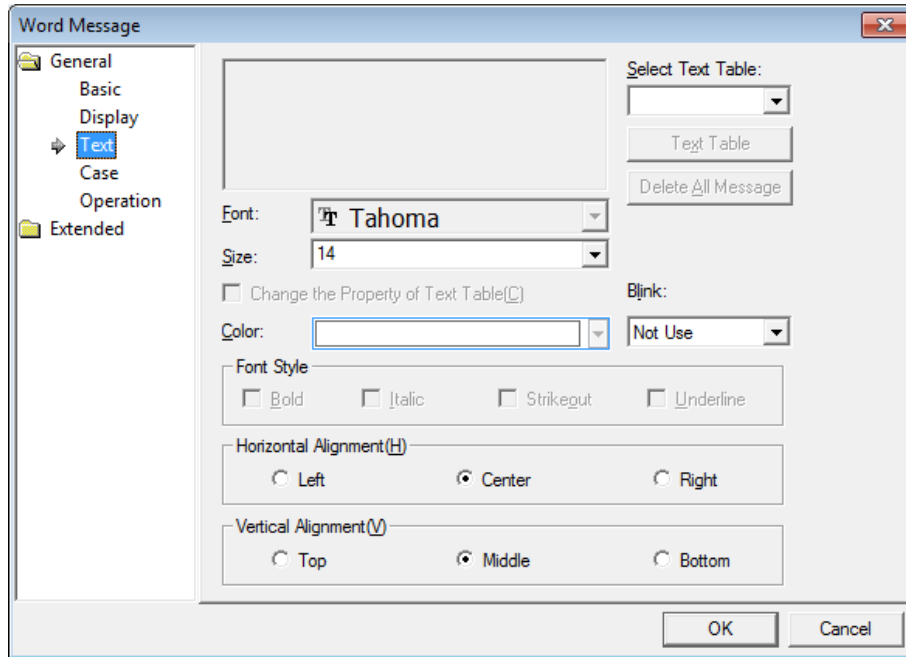
<b>Case</b>	If the reference device meets the conditions specified in the case settings, the message is invoked.
-------------	--

- **Description:** Enter a description for the object.
- **Display:** The display settings for word message objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Frame Color:** Set a frame color.
- **Plate Color:** Set a plate color.
- **Use Border:** Set whether or not to apply a border to the message area.
- **Border Color:** Set a border color.

- **Text:** The text settings for word message objects include the following:

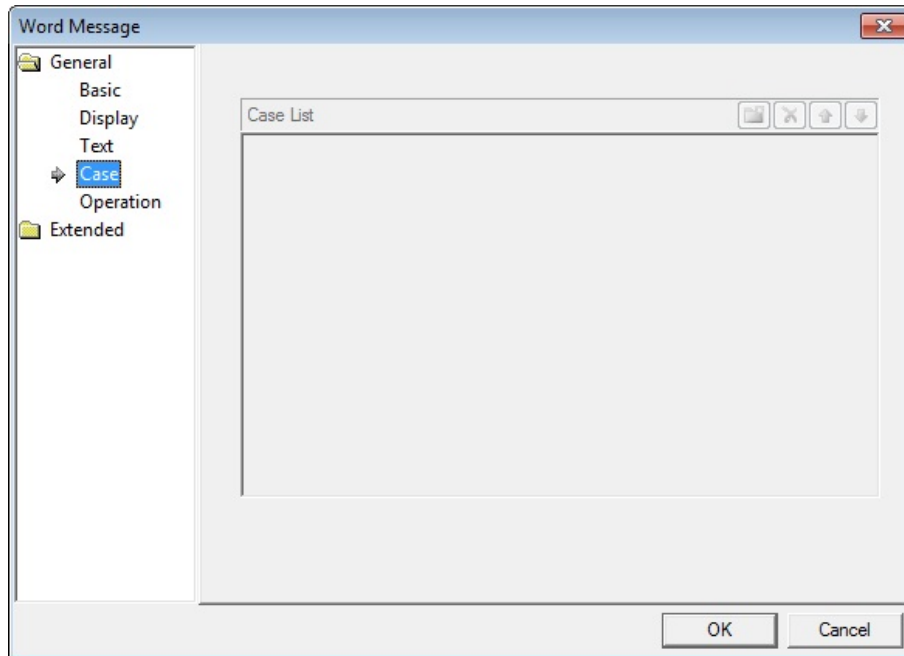


- **Select Text Table:** Select a text table for specifying message text.
- **Text Table:** Click to open the text table and select text. The color and font properties set in the text table will be imported with the text.
- **Delete All Message:** Delete any existing messages assigned to the object.
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Change the Property of Text Table:** Click to use different color and font properties for the text than what is specified in the text table. This option is active only when you import text from the text table.
- **Color:** Set a font color.
- **Blink:** Set a blink speed for the object:





<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

- **Vertical Alignment:** Set the vertical alignment (Top, Middle, or Bottom).
- **Case:** The case settings for word message objects include the following:

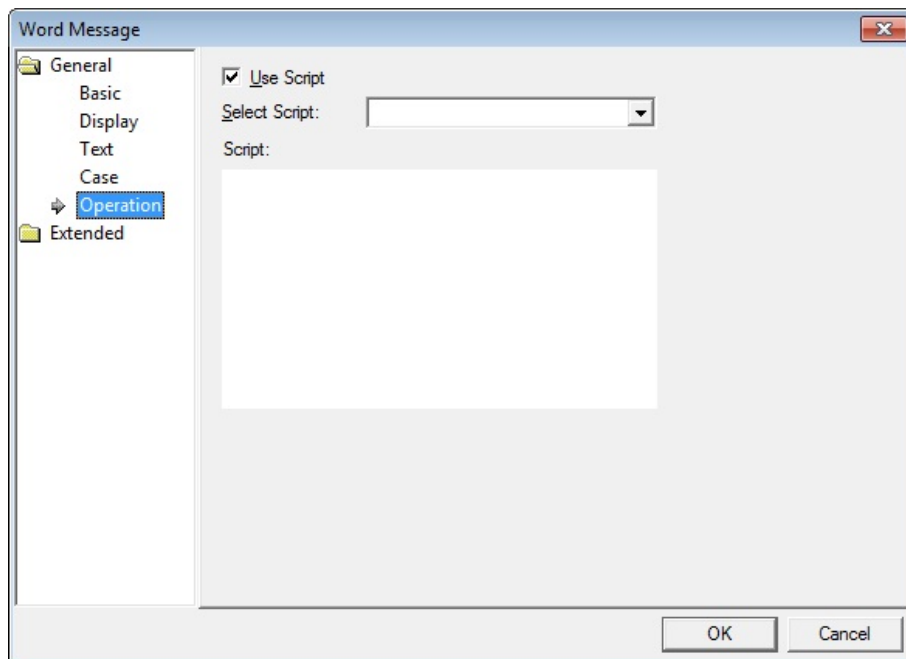


- **Case List:** Create, delete, or reorganize conditional expressions:

 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

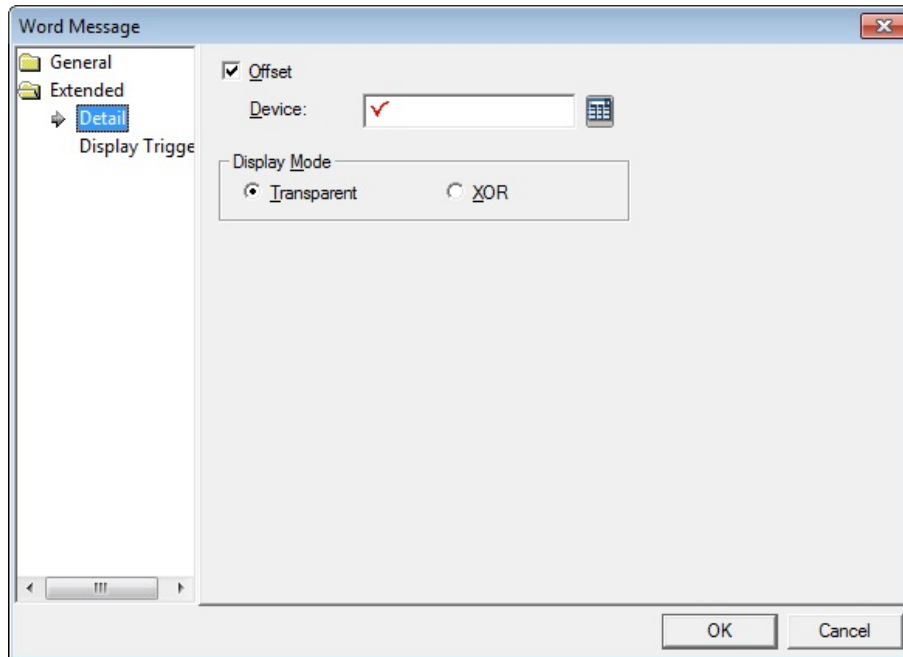


- **Operation:** The operation settings for word message objects include the following:



- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

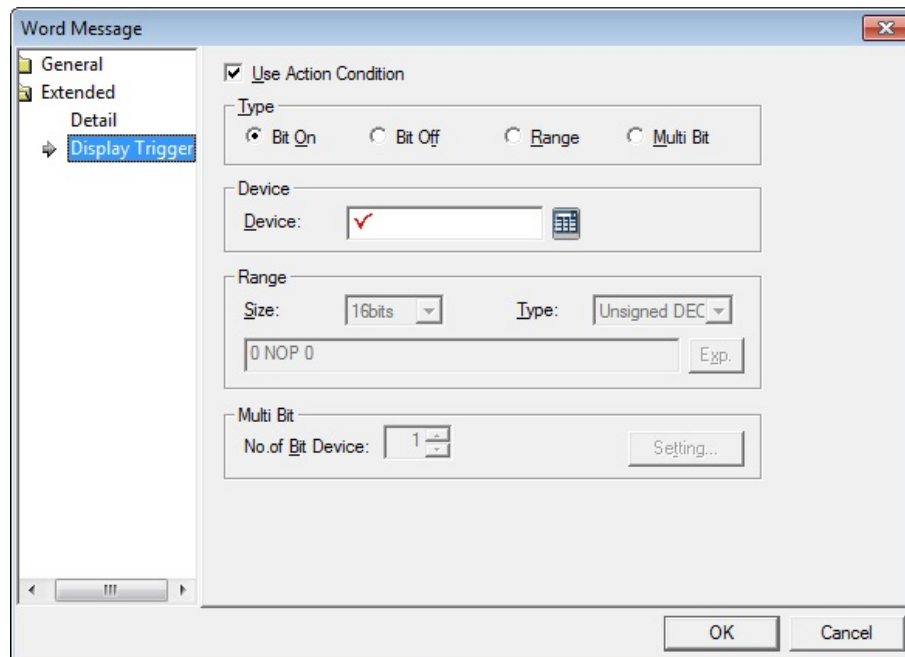
- **Detail:** The detail settings for word message objects include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	Display the message transparently, in contrast to the background image.
<b>XOR</b>	Display the message in a color that is easily distinguished from the background image.

- **Display Trigger:** The display trigger settings for word message objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.4 Numeric/Text Objects

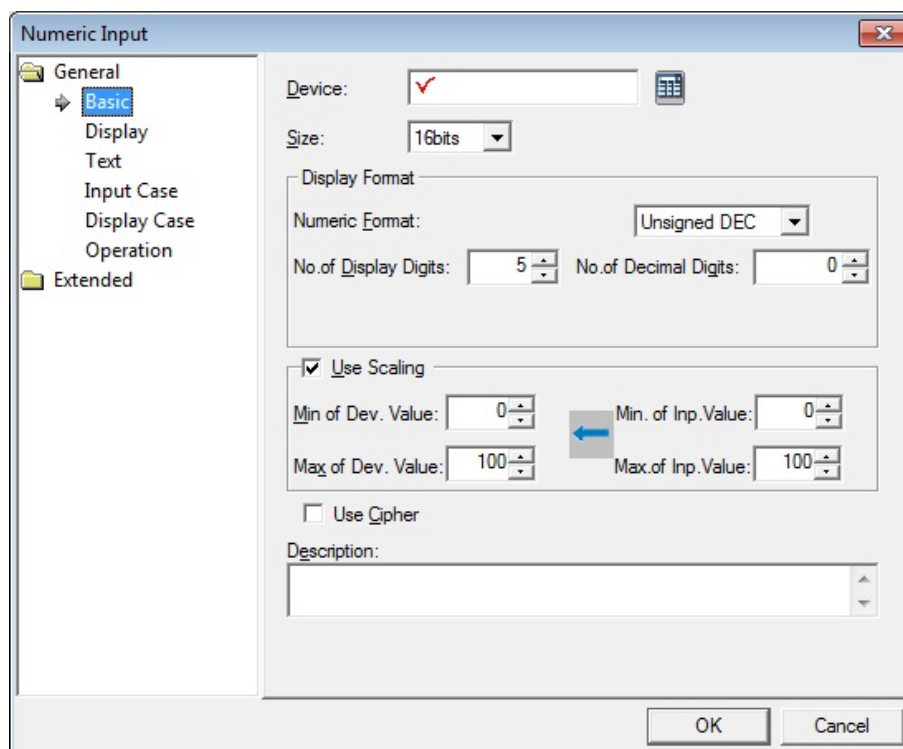
Numeric and text objects show values from devices or input values from keypads to devices. Four types of numeric/text objects are available, as described by the following table:

Type	Description
Numeric Input	Enters and displays the value in the word device connected to the PLC in XGT Panel.
Numeric Display	Displays the word device data connected to the PLC in numbers in XGT Panel.
Text Input	Writes the entered texts in the word device in ASCII code.
Text Display	Displays the text recognizing the data saved in the word device as the ASCII code value.

#### 4.3.4.1 Numeric Input

You can use numeric input devices to enter values in word devices. This section describes available settings for numeric input objects.

- **Basic:** The basic settings for numeric input objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Size:** Set a data size (16 bit or 32 bit). If you change the data size of an existing object, input and display conditions will be deleted.
- **Display Format:** Set the display format.

<b>Numeric Format</b>	Set the number format (Signed decimal, Unsigned decimal, Octal, Hexadecimal, Binary, BCD, or float).
<b>No. of Display Digits</b>	Set how many digits to display (up to 64). If the number of digits is less than the capacity of the device, empty spaces are filled with placeholders ("*"). If the device value cannot be displayed in BCD format, it is expressed as "~".
<b>No. of Decimal Digits</b>	Set how many places to put to the right of the decimal point when you select formats other than binary, octal, and hexadecimal numbers.

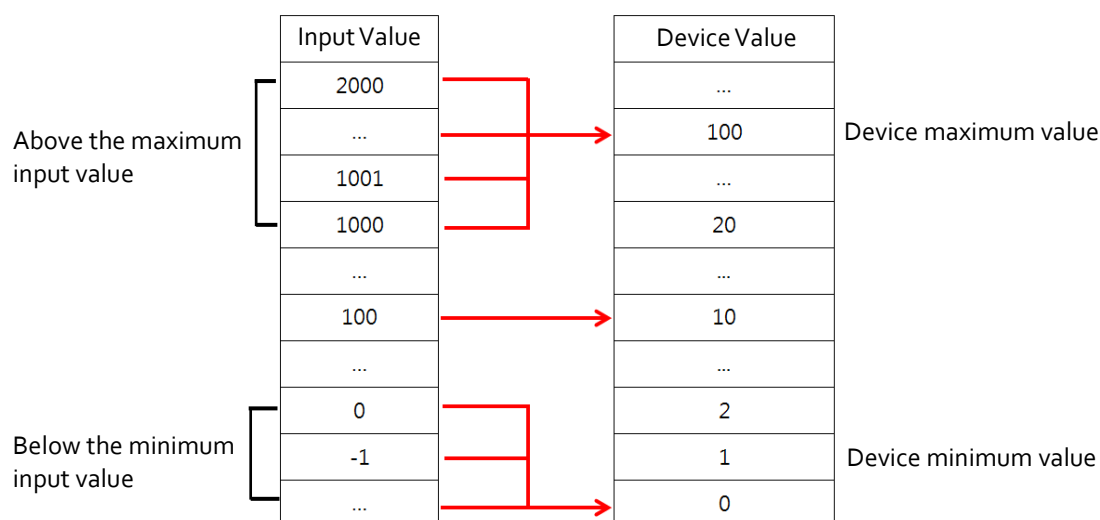
- **Use Scaling:** When a user scales and inputs random values to an established PLC device address, this function can be applied. Actual PLC values and displayable values differ by data size and display type. If the value input by a user exceeds the maximum value, the maximum value is input to the device instead. If the value input by a user is lower than the minimum value, the minimum value is input to the device instead.

<b>Min of Dev. Value</b>	Input the minimum device value to allow.
<b>Max of Dev. Value</b>	Input the maximum device value to allow.
<b>Min. of Inp. Value</b>	Input the minimum data value to be displayed at scale.
<b>Max. of Inp Value</b>	Input the maximum data value to be displayed at scale.

For example, set the maximum input value and the maximum device value to 1000 and 100 respectively, then suppose the actual input value is 2000.

☒ Use Scaling  
 Min of Dev. Value: 0    Min. of Inp. Value: 0  
 Max of Dev. Value: 100    Max. of Inp. Value: 1000

Any value above the maximum input value is recognized as the maximum value (1000), the device value becomes 100. Likewise, if you enter an input value under 0, the value is recognized as 0 and the device value becomes 0.



### Notes

- The available device value range and displayable data value range differ by the size and type of the device, as described in the following table.

Device Size	Device Type	Minimum	Maximum
16bit	Signed decimal	-32768	32767
	Unsigned decimal	0	65535
	BCD	0	9999
32 bit	Signed decimal	-2147483648	2147483647
	Unsigned decimal	0	4294967295
	BCD	0	99999999

- When you input a number, the following errors can occur:

Message	Condition	Solution
Can't Write Data	When the communication fails between the controller and XGT Panel.	Check the cable connection or the power of XGT Panel.
Exceeded The	When you input a value that	Input an exact value. Refer

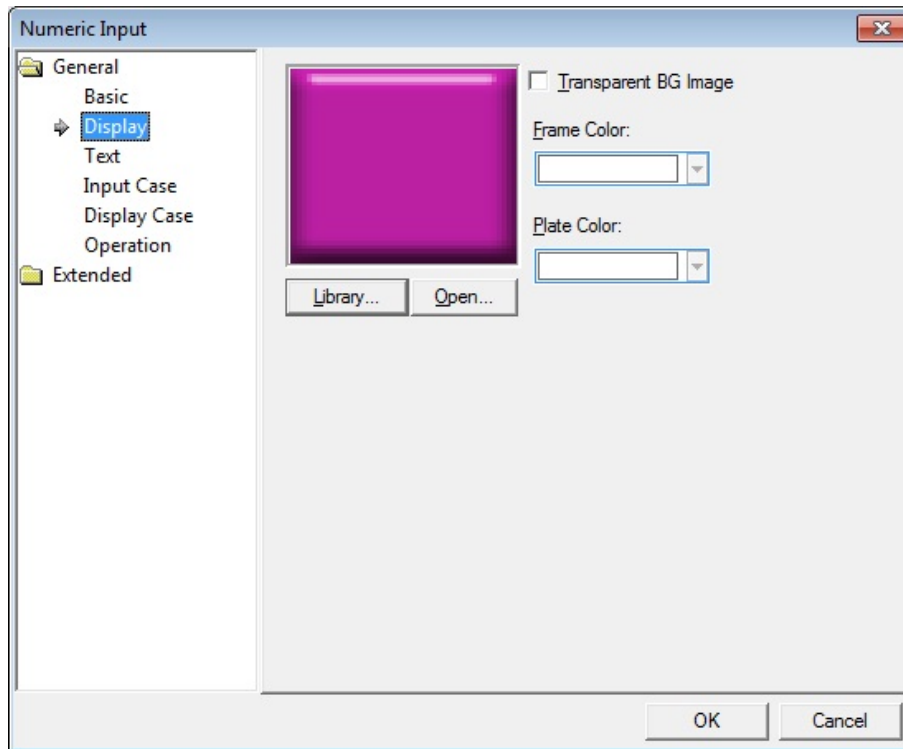
Maximum Value!	exceeds the device size or data limit.	to the available device value range.
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- If the device size is changed, the existing input condition and display condition are deleted.
  - If the communication with the controllers fails while inputting or reading the data, only the background image is displayed on the XGT Panel. The number is not displayed.
  - If you want to enter a decimal place, press the period on the keyboard and then enter the numbers.
- 

- **Use Cipher:** Set to encode the numeric value that a user inputs. The input value will appear as "\*" in the interface.
- **Description:** Enter a description for the object.

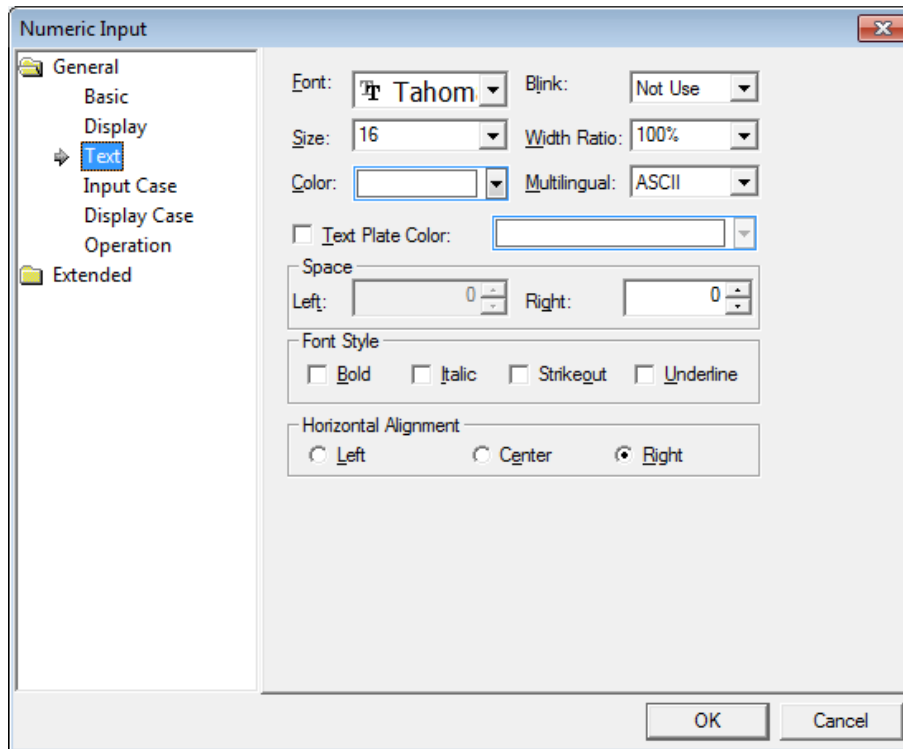
- **Display:** The display settings for numeric input objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Frame Color:** Set a frame color.
- **Plate Color:** Set a plate color.



- **Text:** The text settings for numeric input objects include the following:

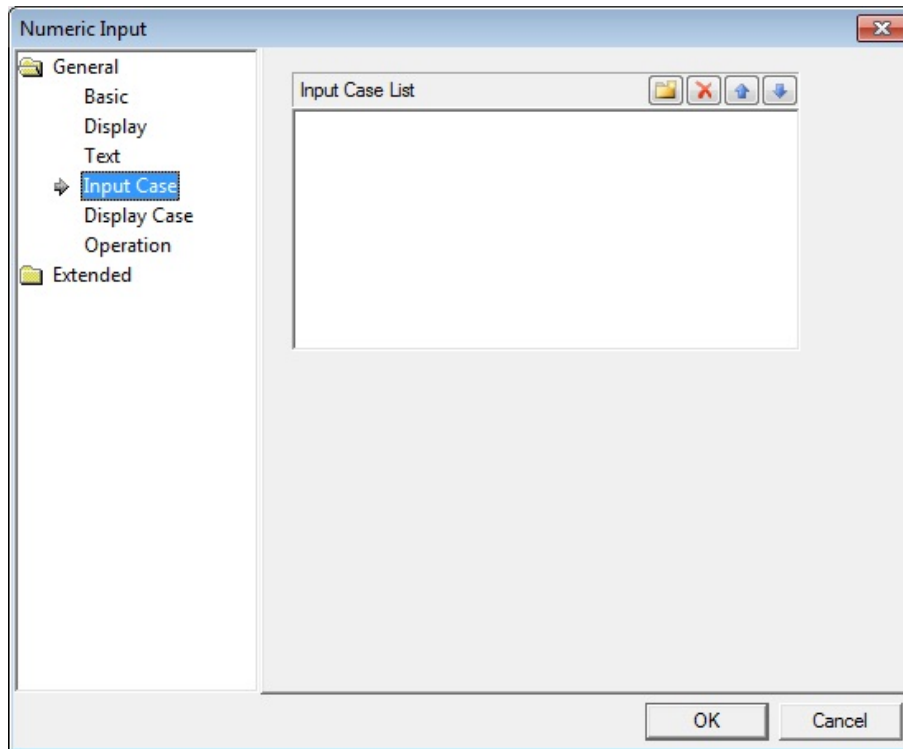


- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Blink:** Set a blink speed for the object:





<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Text Plate Color:** Click to set the background color for figures.
- **Space:** Set the indent from the margin of the object. If you select left alignment, you can set the left indent. If you select right alignment, you can set the right indent.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

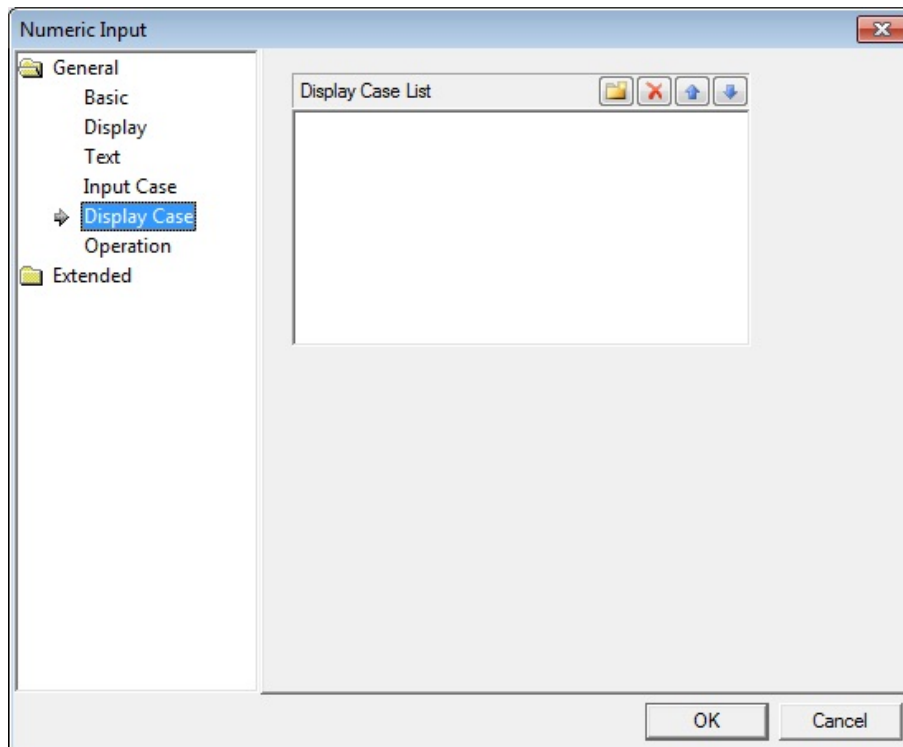
- **Input Case:** The input case settings for numeric input objects include the following:







- **Input Case List:** Create, delete, or reorganize conditional expressions. You can create only one condition for numeric input.

 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

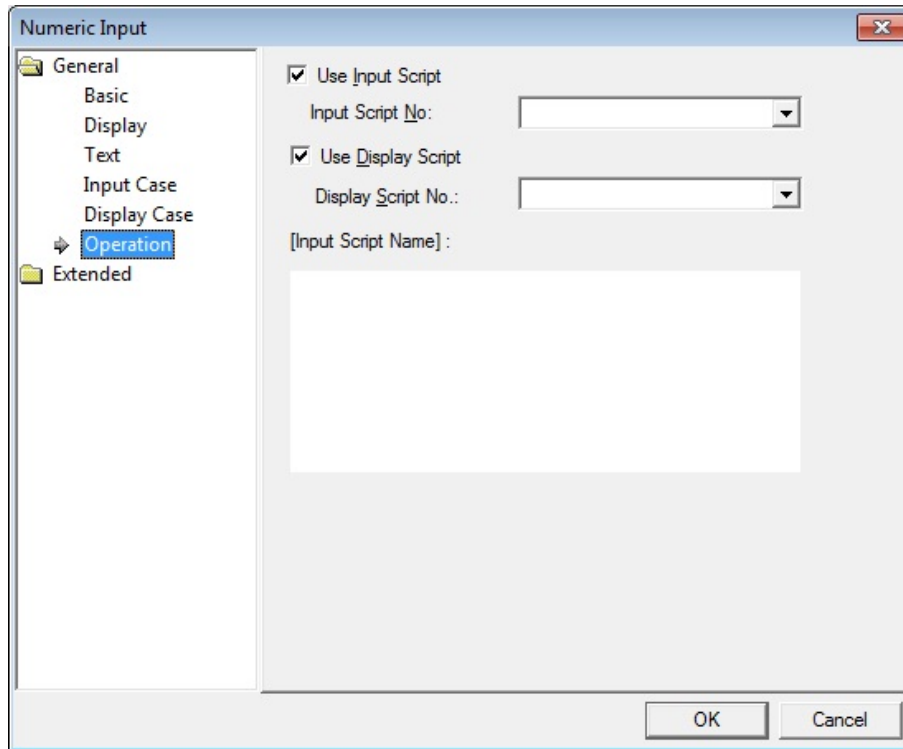
- **Display Case:** The display case settings for numeric input objects include the following:



- **Display Case List:** Create, delete, or reorganize conditional expressions. If the device value meets multiple conditions, the display settings will be based on the first condition met.

 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

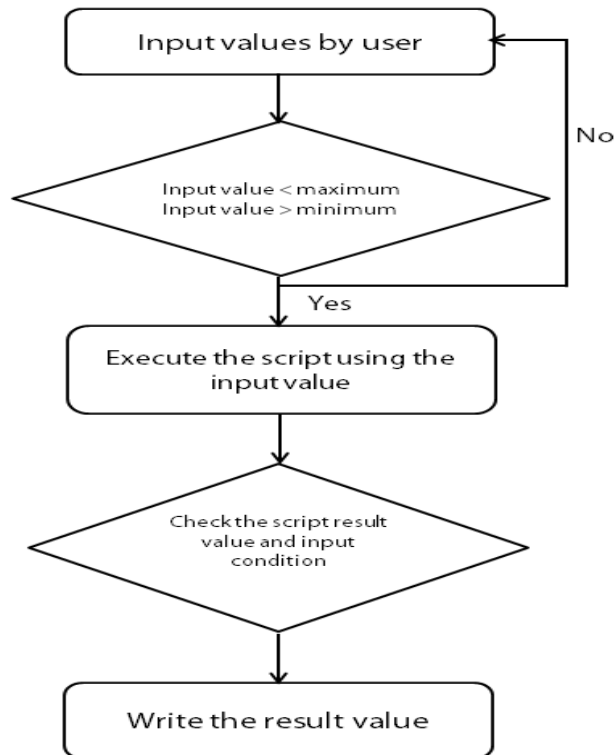
- **Operation:** The operation settings for numeric input objects include the following:



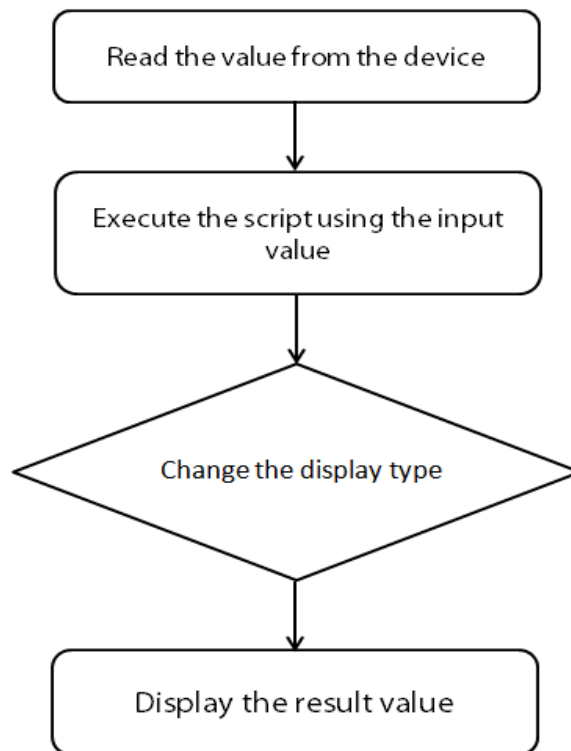
- **Use Input Script:** Set whether or not to use a script for numeric input.
- **Input Script No.:** Select a script for numeric input.
- **Use Display Script:** Set whether or not to use a script for numeric display.
- **Display Script No.:** Select a script for numeric display.
- **Input Script Name:** Expresses the most recent selected script contents.

### Notes

- Input Script Process:

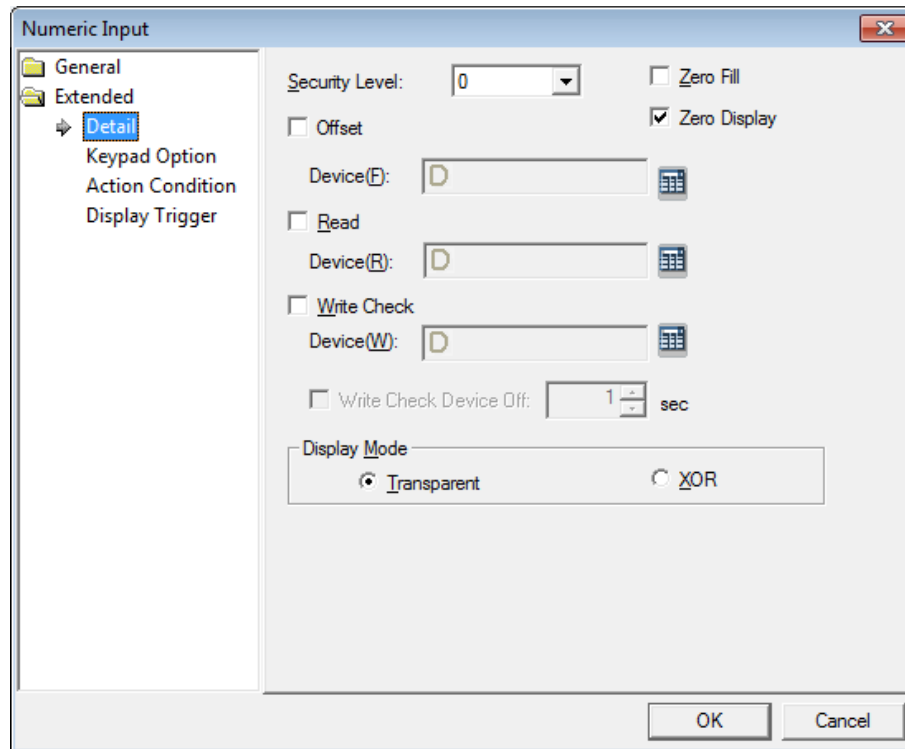


- Values entered by the user are always regarded as decimal numbers, so they are not converted.
  - The maximum and minimum values differ according to the size and type of the device.
  - When an action fails during script execution, the next action in the sequence is carried out.
  - When an action fails during script execution and a temporary variable (\$ variable) is changed at the point of failure, the next step is carried out with the changed value.
  - If a script result value does not meet the specified condition, the message "Invalid at Input Case" appears and the action fails.
  - If communication fails while writing a value, the message "Can't Write Data" appears and the action fails.
- Output Script Process:



- If communication fails when a value is read from a device, the next action in a sequence is not performed.
- If an action fails during execution of the script, the next action in the sequence is carried out.
- When an action fails during script execution and a temporary variable (\$ variable) is changed at the point of failure, the next step is carried out with the changed value.
- If the device type does not match the BCD style, the type is replaced with a tilde (~).
- If the result value exceeds the number of figures you set, the extra numbers on the left are displayed are replaced with asterisks (\*).
- If communication fails while writing a value, the message "Can't Write Data" appears and the action fails.

- **Detail:** The detail settings for numeric input objects include the following:



- **Security Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Zero Fill:** If you have selected right justification, select this option to insert zeroes (o) before the number.



- **Zero Display:** Set whether or not to show zeroes. If you do not set this option, the object displays nothing when the device value is 0.

- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.

The offset function behaves differently if a read device is set. When a read device is set, the offset is only applied to the writing device. If a read device is not set, the offset is applied to both read and write devices.

<Reading device set>

<Reading device not set>

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Read:** Set whether or not to use a separate device for reading data. When you set the read device, even if it is same as the reference device in the Basic setting, the offset is only applied to the write device. If the read device is different from the reference device, the value is written to the write device during the input process. In contrast, when the input process is stopped, the value is read from the read device and the data is displayed.

For example, if the device value is as follows:

Type	Device address	Device value
Reference Device	D10	100
Read Device	D20	200

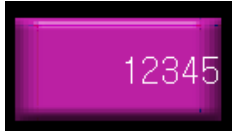



The result of writing 500 to the numeric input object is as follows:

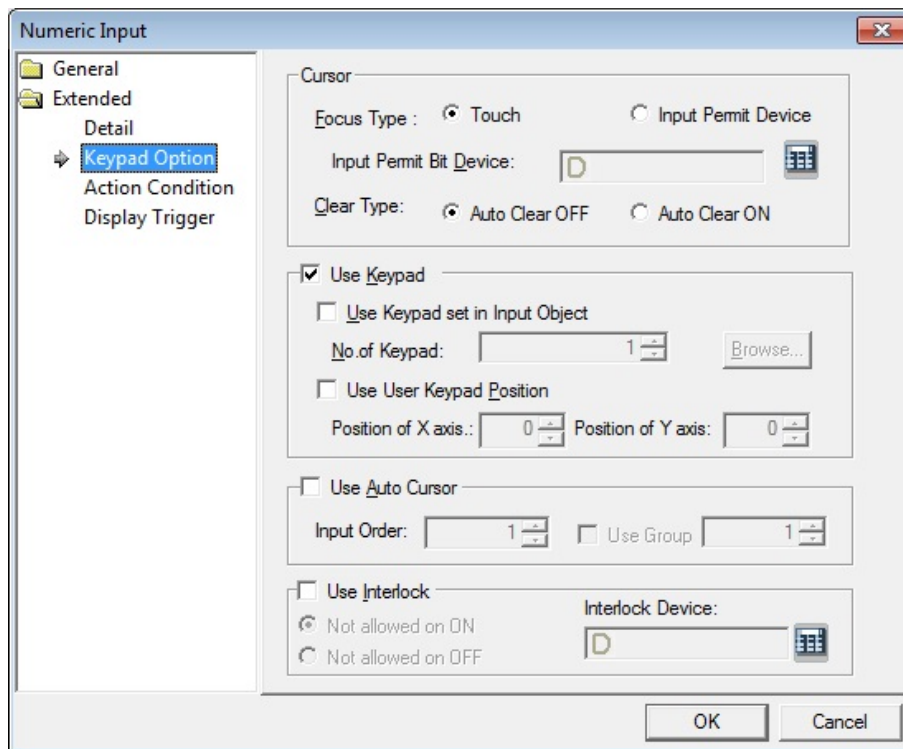
Condition	Value from controller		Value displayed in XGT Panel
Read not set	D10	500	500
	D20	200	
Read set	D10	500	200
	D20	200	

The values in the controller are same, but the data displayed in the XGT Panel is different.

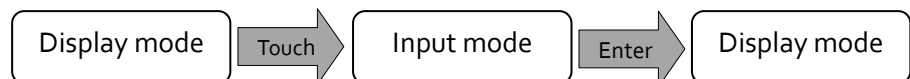
- **Write Check Device:** Set a device to verify the returned device value. Set this option when the bit device is On after inputting the number.
- **Write Check Device Off:** Set when to turn off the write check device, if the data cannot be verified.
- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	<p>Display the message transparently, in contrast to the background image.</p> 
<b>XOR</b>	<p>Display the message in a color that is easily distinguished from the background image.</p> 

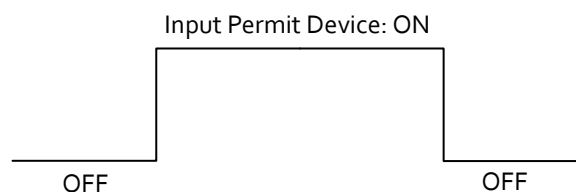
- **Keypad Option:** The keypad options settings for numeric input objects include the following:



- **Cursor:** Set the movement type for using the automatic cursor.
- **Focus Type:** Set a method for moving the cursor. If you select **Touch**, the user must touch the input field to move the cursor. The flow for the **Touch** method is as follows:



If you select **Input Permit Device**, the cursor moves only when the **Input Permit Bit Device** is on.

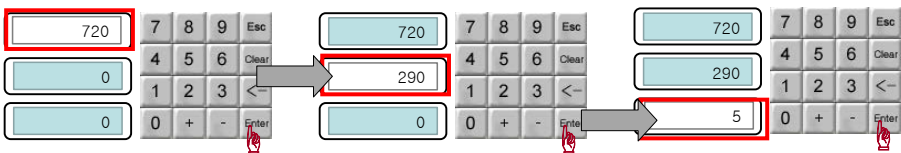


- **Input Permit Bit Device:** Set to move the cursor only when the bit device is switched on.
- **Clear Type:** Set whether or not to clear input data automatically when switching to input mode.

- **Use Keypad:** Set whether or not to use a key window for data input. If you don't use the keypad, you can also use the key switch option from the special switch object.

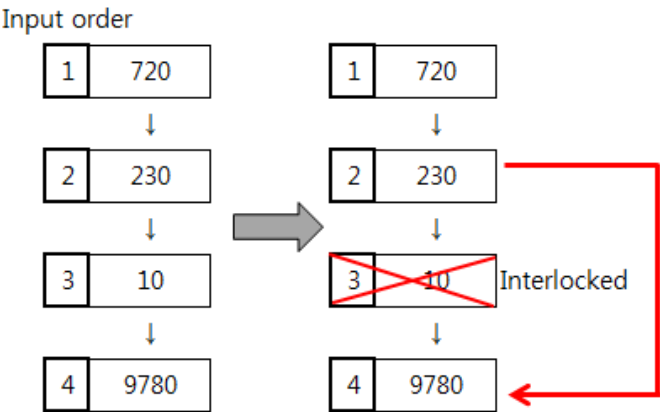
<b>Use Keypad set in Input Object</b>	Set whether or not to use the keypad specified in the key window settings. Enter the number of the key window or click [Browse] to locate the key window.
<b>Use User Keypad Position</b>	Set whether or not to specify a location for the key window. Set the coordinates for the X and Y axes. If you do not specify the location, the key window will appear at the upper left or upper right of the screen.

- **Use Auto Cursor:** Set whether or not to use the auto cursor function. When the user touches [Enter] while entering data in a key window, the cursor moves to the next input field automatically.

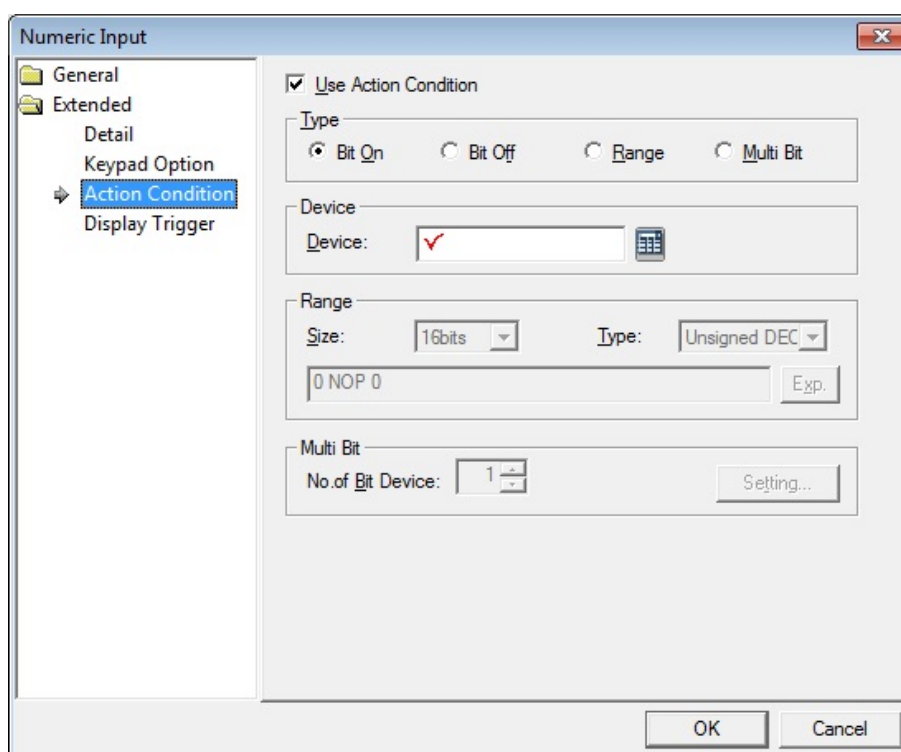


<b>Input Order</b>	Specify the sequence number of the window to control cursor movement.
<b>Use Group</b>	Specify the same sequence number of a group of windows to control cursor movement.

- **Use Interlock:** Set to prevent input when the interlock device meets the specified condition. The input cursor will skip the locked unit and move automatically to the next unit in the sequence.



- **Action Condition:** The action condition settings for numeric input objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

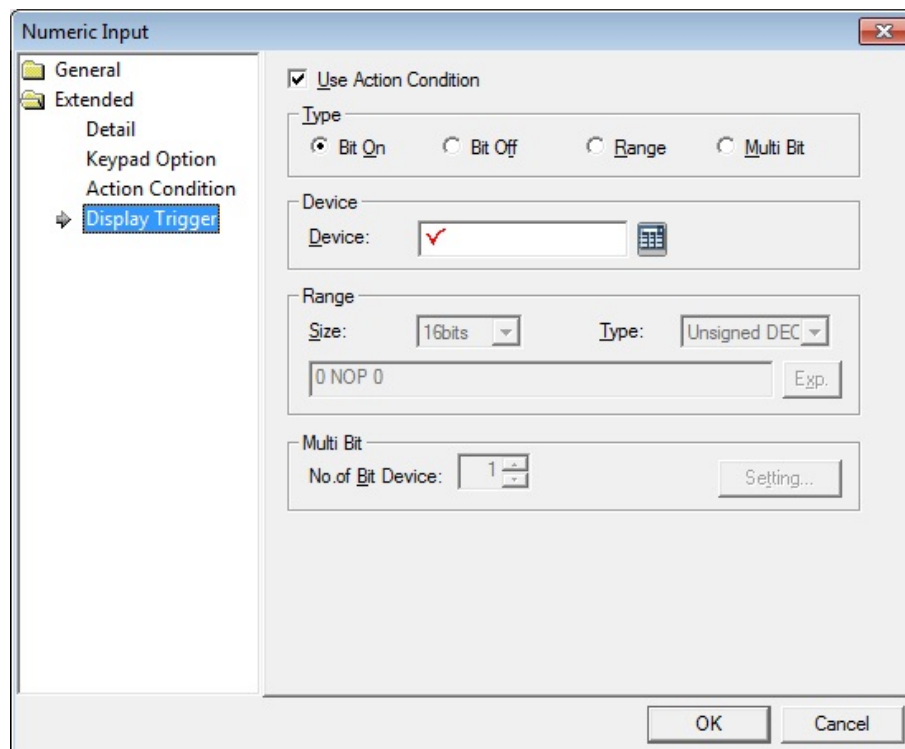
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

- **Display Trigger:** The display trigger settings for numeric input objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

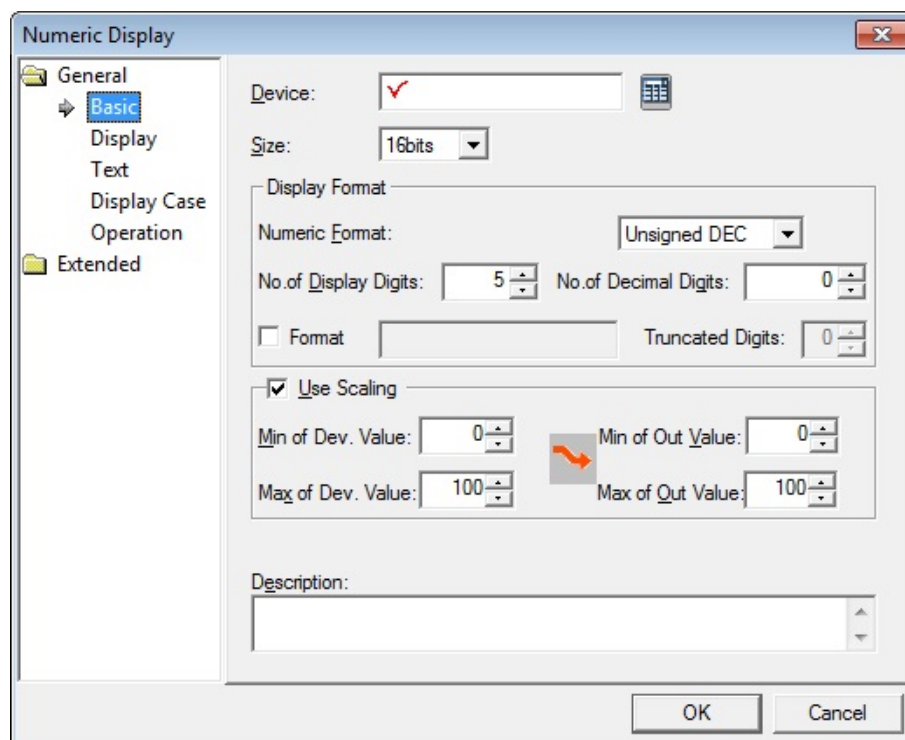
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.4.2 Numeric Display

This section describes available settings for numeric display objects.

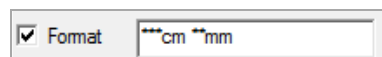
- **Basic:** The basic settings for numeric display objects include the following:



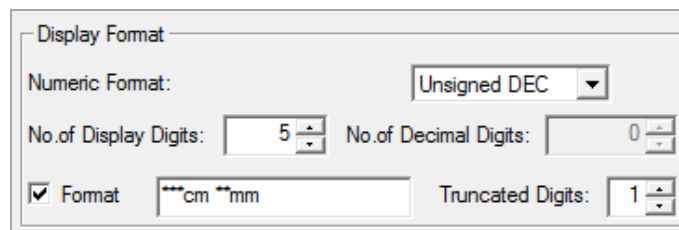
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Size:** Set a data size (16 bit or 32 bit). If you change the data size of an existing object, input and display conditions will be deleted.

– **Display Format:** Set the display format.

- **Numeric Format:** Set the number format (Signed decimal, Unsigned decimal, Octal, Hexadecimal, Binary, BCD, or float).
- **No. of Display Digits:** Set how many digits to display (up to 64). If the number of digits is less than the capacity of the device, empty spaces are filled with placeholders ("\*"). If the device value cannot be displayed in BCD format, it is expressed as "~".
- **No. of Decimal Digits:** Set how many places to put to the right of the decimal point when you select formats other than binary, octal, and hexadecimal numbers.
- **Format:** Set the formats for both the numeric and text displays. If you want to input text, enter it directly. Numbers, however, appears as asterisks (\*).

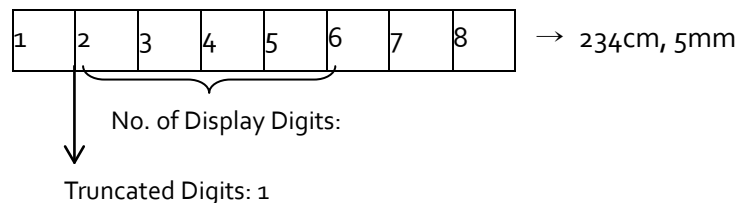


The number of asterisks you can input depends on the **No. of Decimal Digits – Truncated Digits** setting. For example:

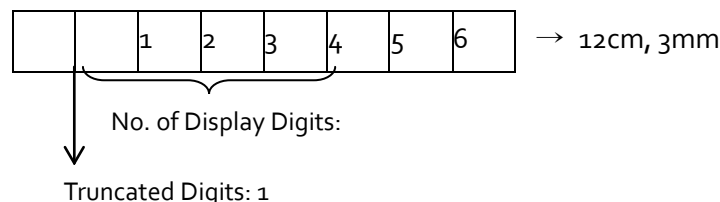


The displayed result in the XGT Panel differs by device:

Device



Device



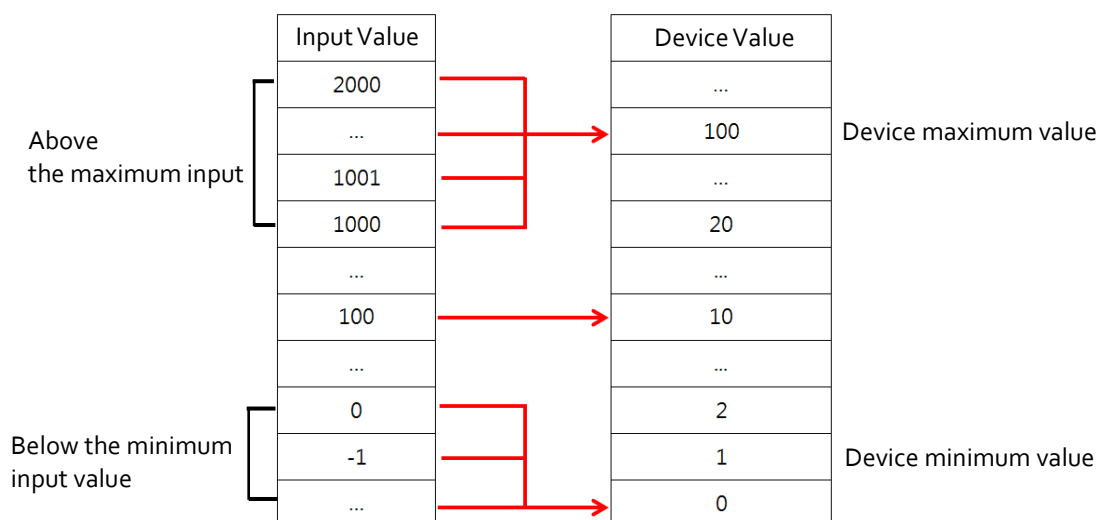
- **Truncated Digits:** Set a number of digits to truncate from the numerical value. Truncation occurs in order from the most significant bit (MSB) to the least significant bit (LSB).
- **Use Scaling:** When a user scales and inputs random values to an established PLC device address, this function can be applied. Actual PLC values and displayable

values differ by data size and display type. If the value input by a user exceeds the maximum value, the maximum value is input to the device instead. If the value input by a user is lower than the minimum value, the minimum value is input to the device instead.

<b>Min of Dev. Value</b>	Input the minimum device value to allow.
<b>Max of Dev. Value</b>	Input the maximum device value to allow.
<b>Min. of Out Value</b>	Input the minimum data value to be displayed at scale.
<b>Max. of Out Value</b>	Input the maximum data value to be displayed at scale.

For example, set the maximum input value and the maximum device value to 1000 and 100 respectively, then suppose the actual input value is 2000.

Any value above the maximum input value is recognized as the maximum value (1000), the device value becomes 100. Likewise, if you enter an input value under 0, the value is recognized as 0 and the device value becomes 0.



### Notes

- The available device value range and displayable data value range differ by size and type of the device, as described in the following table.

Device Size	Device Type	Minimum	Maximum
16bit	Signed decimal	-32768	32767



32 bit	Unsigned decimal	0	65535
	BCD	0	9999
	Signed decimal	-2147483648	2147483647
	Unsigned decimal	0	4294967295
	BCD	0	99999999

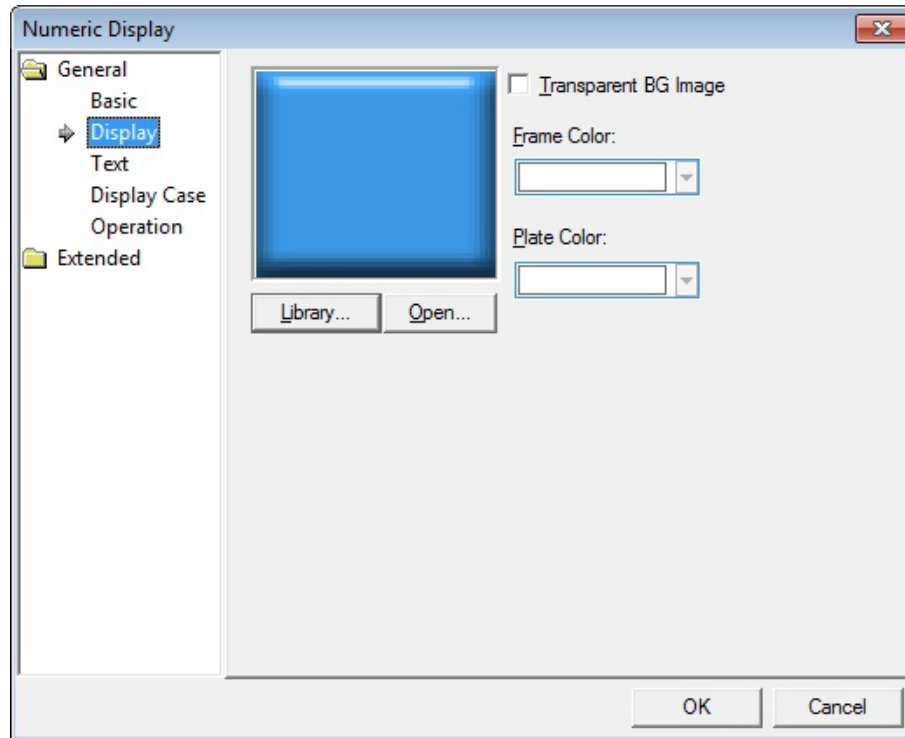
- When you input a number, the following errors can occur:

Message	Condition	Solution
Can't Write Data	When the communication fails between the controller and XGT Panel.	Check the cable connection or the power of XGT Panel.
Exceeded The Maximum Value!	When you input a value that exceeds the device size or data limit.	Input an exact value. Refer to the available device value range.

- If the device size is changed, the existing input condition and display condition are deleted.
- If the communication with the controllers fails while inputting or reading the data, only the background image is displayed on the XGT Panel. The number is not displayed.
- If you want to enter a decimal place, press the period on the keyboard and then enter the numbers.

- 
- **Description:** Enter a description for the object.

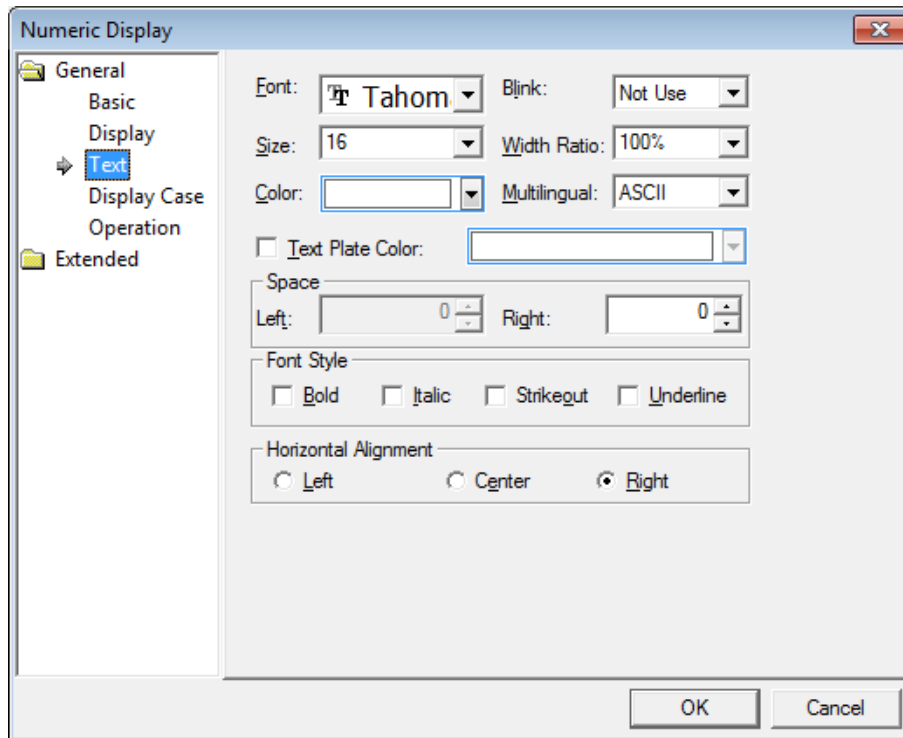
- **Display:** The display settings for numeric display objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.

<b>Frame Color</b>	Set a frame color.
<b>Plate Color</b>	Set a plate color.

- **Text:** The text settings for numeric display objects include the following:

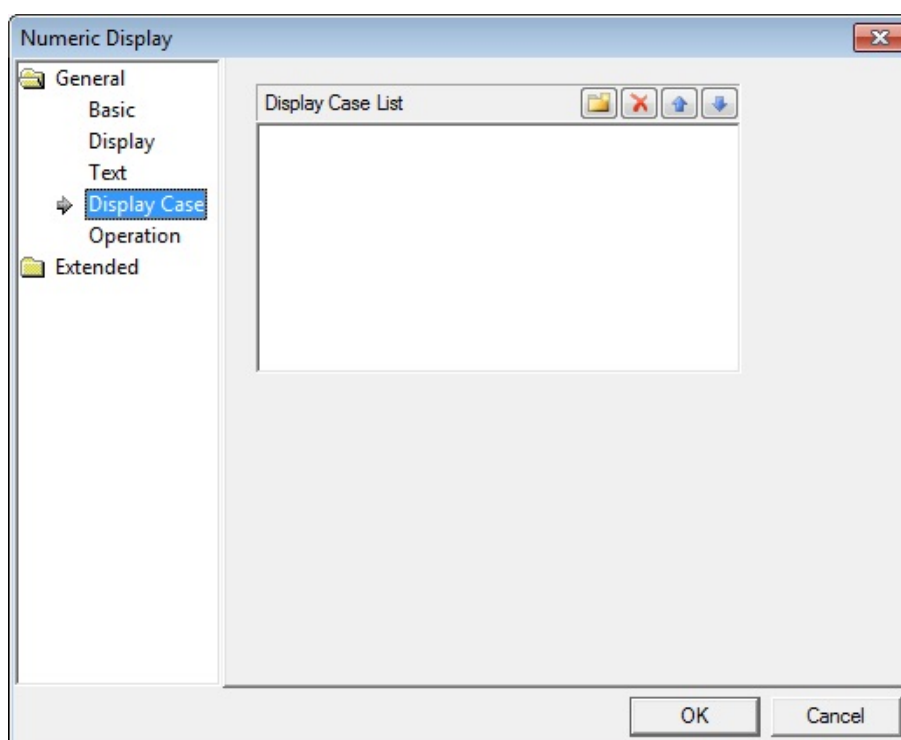


- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Blink:** Set a blink speed for the object:





<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Text Plate Color:** Click to set the background color for figures.
- **Space:** Set the indent from the margin of the object. If you select left alignment, you can set the left indent. If you select right alignment, you can set the right indent.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

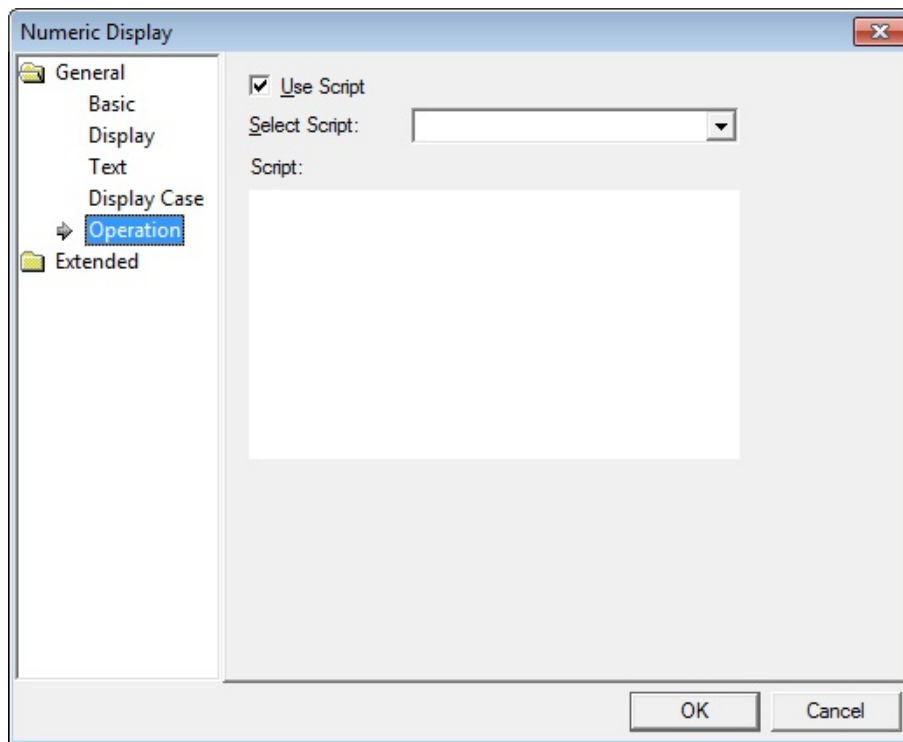
- **Display Case:** The display case settings for numeric display objects include the following:



- **Display Case List:** Create, delete, or reorganize conditional expressions. If the device value meets multiple conditions, the display settings will be based on the first condition met.

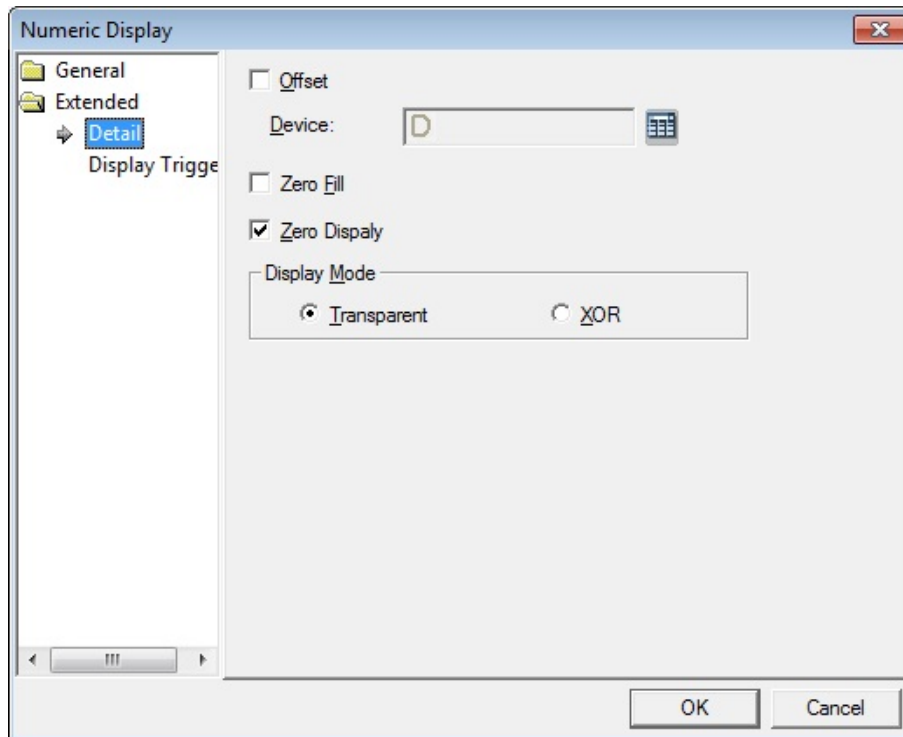
 (Create)	Click to create a new range condition. You can create up to eight conditions. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for numeric display objects include the following:

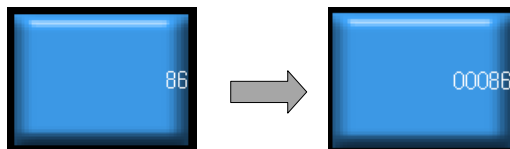


- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for numeric display objects include the following:




- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Zero Fill:** If you have selected right justification, select this option to insert zeroes (o) before the number.

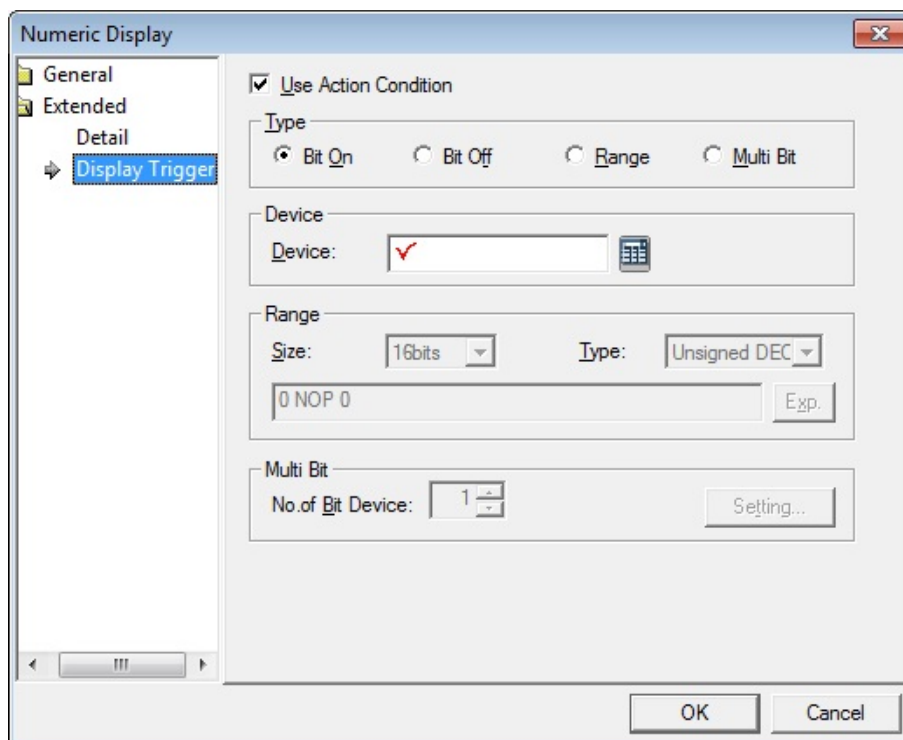


- **Zero Display:** Set whether or not to show zeroes. If you do not set this option, the object displays nothing when the device value is 0.

- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	Display the message transparently, in contrast to the background image. 
<b>XOR</b>	Display the message in a color that is easily distinguished from the background image. 

- **Display Trigger:** The display trigger settings for numeric display objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.

- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

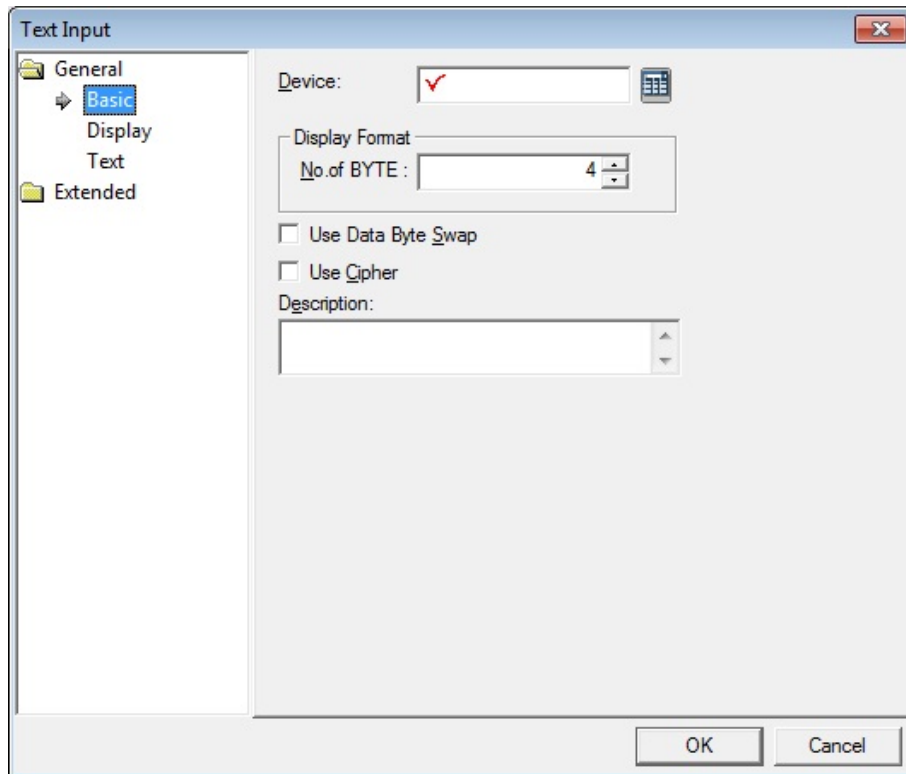
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.



### 4.3.4.3 Text Input

You can write the entered texts in the word device in ASCII code. This section describes available settings for text input objects.

- **Basic:** The basic settings for text input objects include the following:



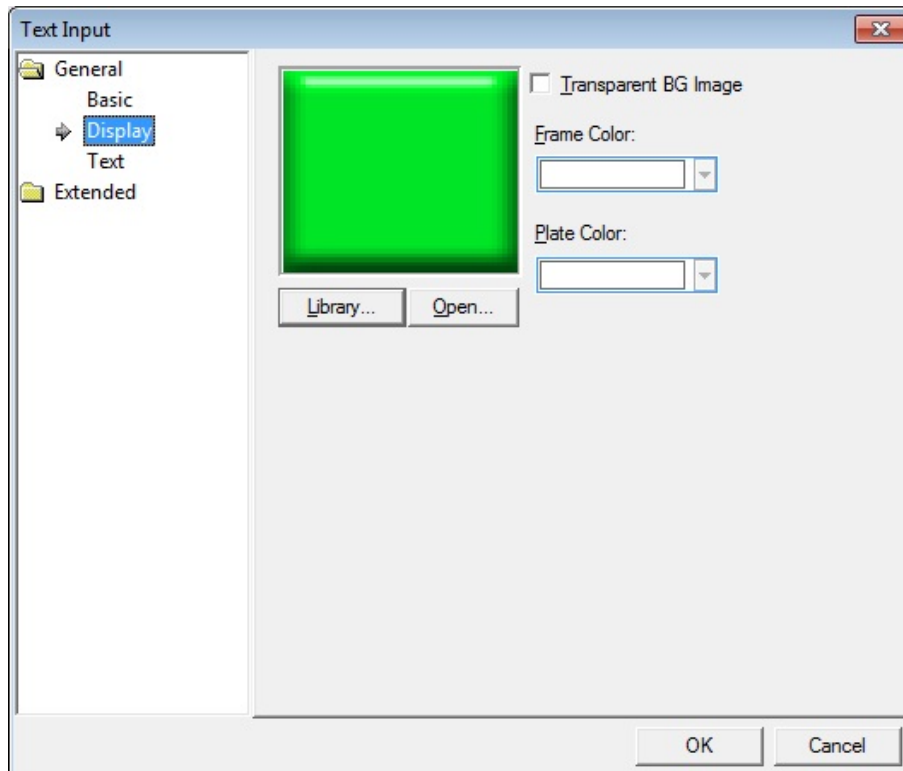
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Display Format:** Set the display format.
  - **No. of BYTE:** Set the number of characters to display (2 to 64).
- **Use Data Byte Swap:** Set to change output data into word form.
- **Use Cipher:** Set to encode the numeric value that a user inputs. The input value will appear as "\*" in the interface.
- **Description:** Enter a description for the object.

#### Notes

- Spaces are counted in the number of bytes allowed for text input.

- 16 bit word devices allow entry of double-byte characters.
- The starting address of the specified reference device is the memory location for text input. The amount of text that can be input is the same as the volume of the memory location.

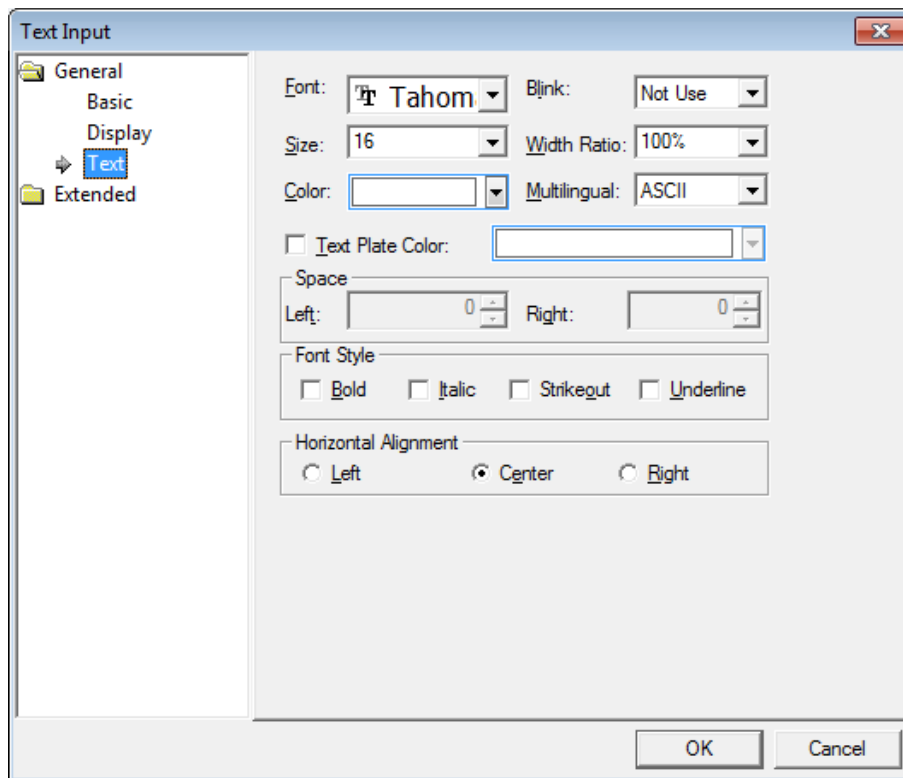
- **Display:** The display settings for text input objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.

<b>Frame Color</b>	Set a frame color.
<b>Plate Color</b>	Set a plate color.

- **Text:** The text settings for text input objects include the following:

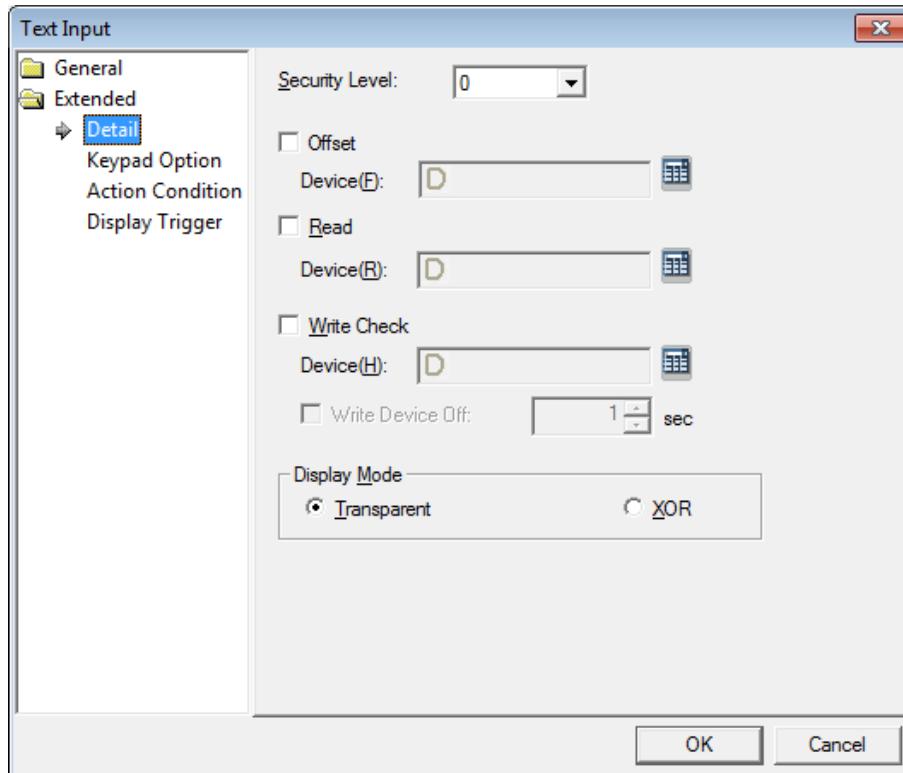


- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Blink:** Set a blink speed for the object:

<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

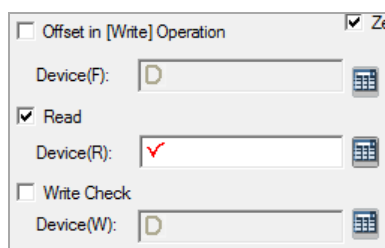
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Text Plate Color:** Click to set the background color for figures.
- **Space:** Set the indent from the margin of the object. If you select left alignment, you can set the left indent. If you select right alignment, you can set the right indent.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.

- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Detail:** The detail settings for text input objects include the following:

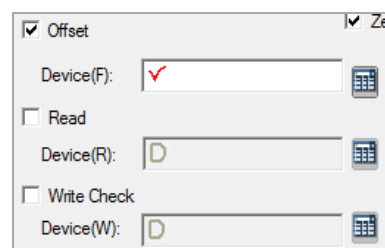


- **Security Level:** Set the security level for the object. The higher the security level, the shorter the authorization time when the password is entered. When the authorization time expires, the user must enter the password again to use the object.
- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.

The offset function behaves differently if a read device is set. When a read device is set, the offset is only applied to the writing device. If a read device is not set, the offset is applied to both read and write devices.



<Read device set>



<Read device not set>

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Read:** Set whether or not to use a separate device for reading data. When you set the read device, even if it is same as the reference device in the Basic setting, the offset is only applied to the write device. If the read device is different from the reference device, the value is written to the write device during the input process. In contrast, when the input process is stopped, the value is read from the read device and the data is displayed.

For example, if the device value is as follows:

Type	Device address	Device value
Reference Device	D10	0 (0x00)
Reading Device	D20	CD (0x4443)



The result of writing AB(0x4241) to the numeric input object is as follows:

Condition	Value from controller		Value displayed in XGT Panel
Read not set	D10	AB(0x4241)	AB(0x4241)
	D20	CD(0x4443)	
Read set	D10	AB(0x4241)	CD(0x4443)
	D20	CD(0x4443)	

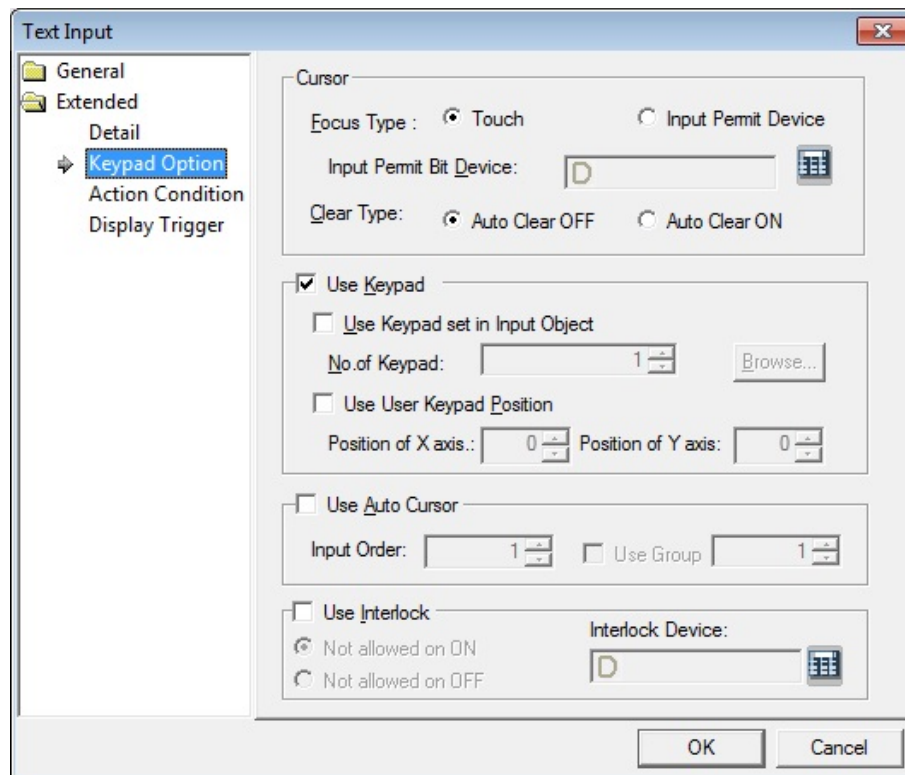
The values in the controller are same, but the data displayed in the XGT Panel is different.

- **Write Check Device:** Set a device to verify the returned device value. Set this option when the bit device is On after inputting the number.

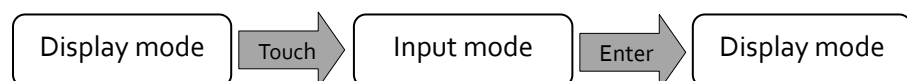
- **Write Check Device Off:** Set when to turn off the write check device, if the data cannot be verified.
- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	Display the message transparently, in contrast to the background image. 
<b>XOR</b>	Display the message in a color that is easily distinguished from the background image. 

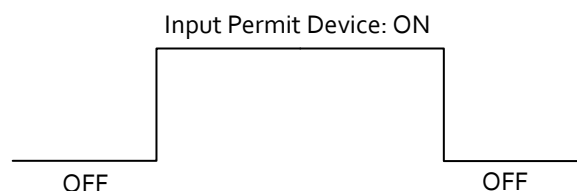
- **Keypad Option:** The keypad options settings for text input objects include the following:



- **Cursor:** Set the movement type for using the automatic cursor.
- **Focus Type:** Set a method for moving the cursor. If you select **Touch**, the user must touch the input field to move the cursor. The flow for the **Touch** method is as follows:



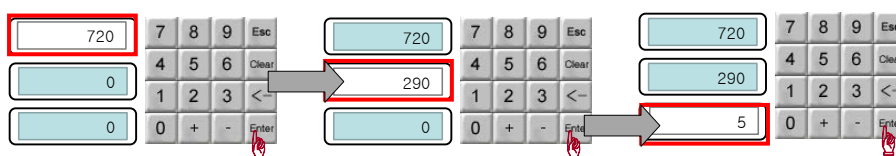
If you select **Input Permit Device**, the cursor moves only when the **Input Permit Bit Device** is on.



- **Input Permit Bit Device:** Set to move the cursor only when the bit device is switched on.
- **Clear Type:** Set whether or not to clear input data automatically when switching to input mode.
- **Use Keypad:** Set whether or not to use a key window for data input.

<b>Use Keypad set in Input Object</b>	Set whether or not to use the keypad specified in the key window settings. Enter the number of the key window or click [Browse] to locate the key window.
<b>Use User Keypad Position</b>	Set whether or not to specify a location for the key window. If you do not specify the location, the key window will appear at the upper left or upper right of the screen.

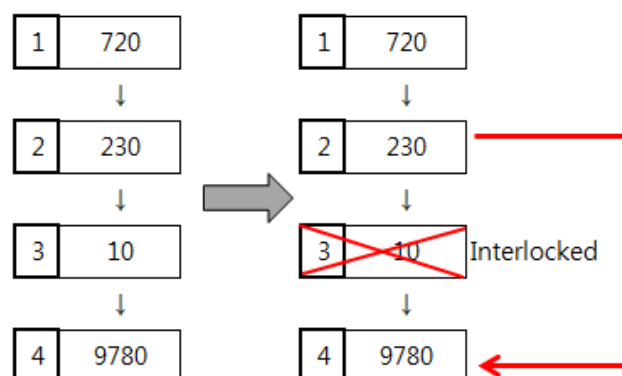
- **Use Auto Cursor:** Set whether or not to use the auto cursor function. When the user touches [Enter] while entering data in a key window, the cursor moves to the next input field automatically.



<b>Input Order</b>	Specify the sequence number of the window to control cursor movement.
<b>Use Group</b>	Specify the same sequence number of a group of windows to control cursor movement.

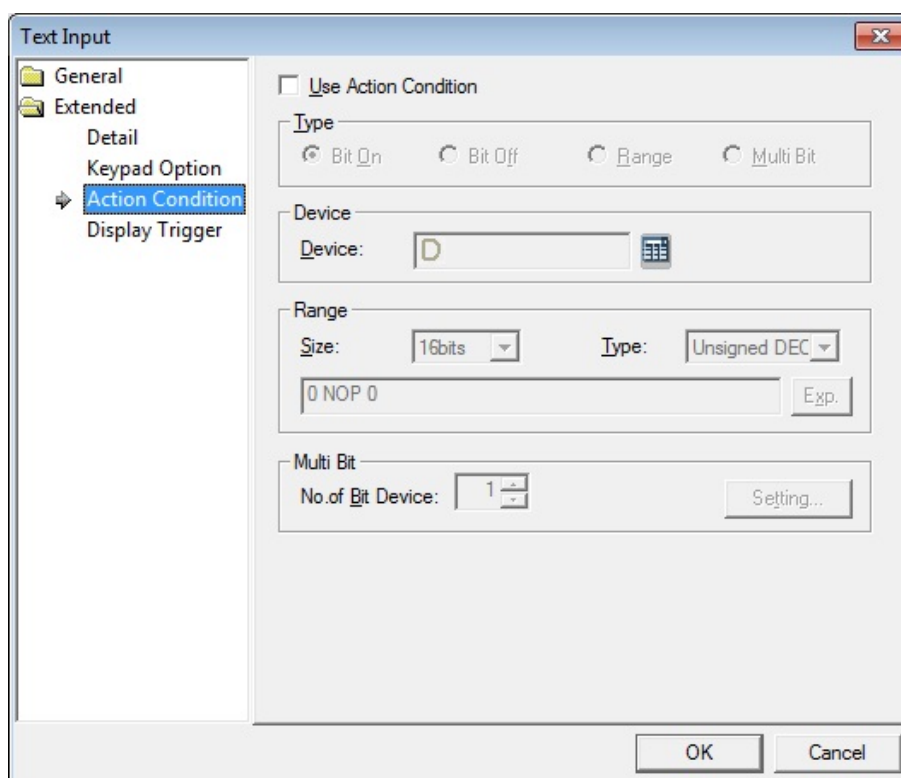
- **Use Interlock:** Set to prevent input when the interlock device meets the specified condition. The input cursor will skip the locked unit and move automatically to the next unit in the sequence.

Input order



- **Action Condition:** The action condition settings for text input objects include the following:





- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

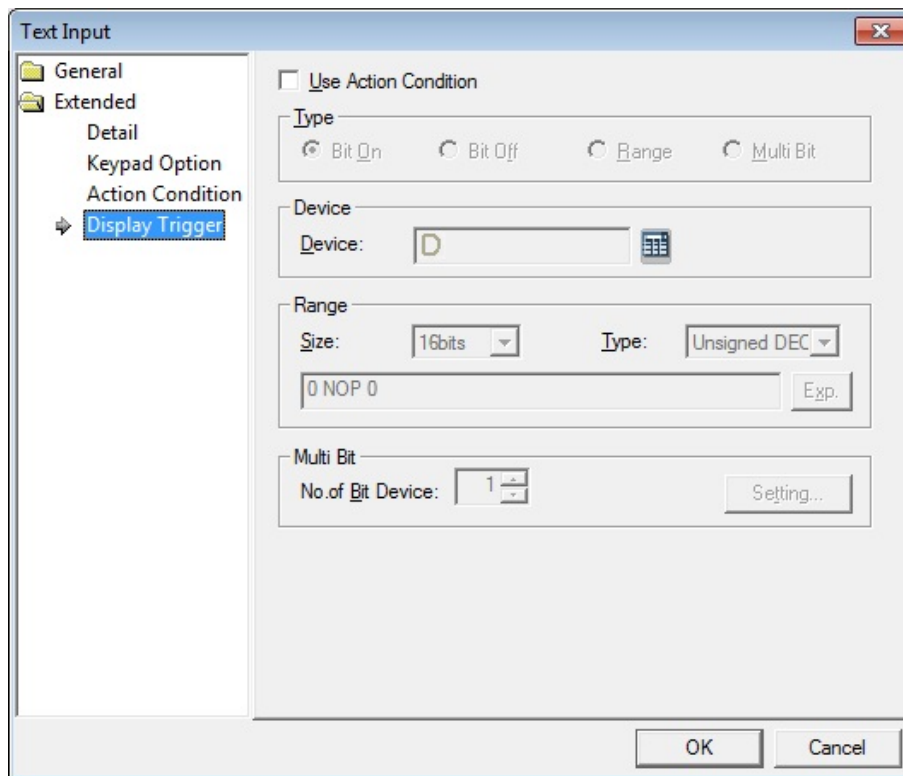
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

- **Display Trigger:** The display trigger settings for text input objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.

- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

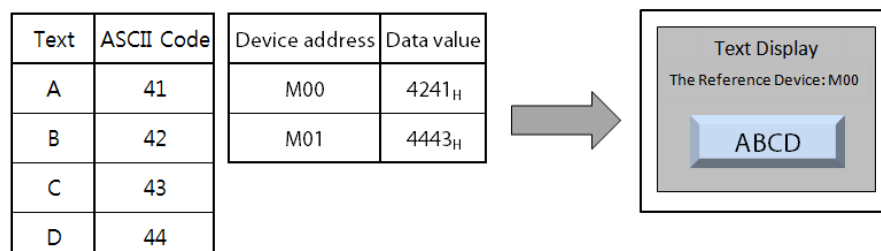
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

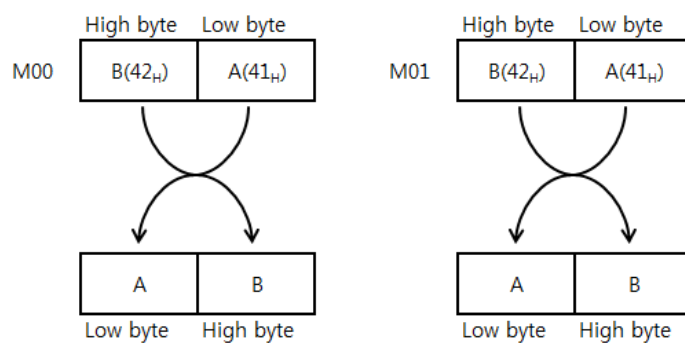
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.4.4 Text Display

You can display text from a word device that is saved in ASCII code. For example, you can display four letters with the M00 device as the reference device, as shown here:



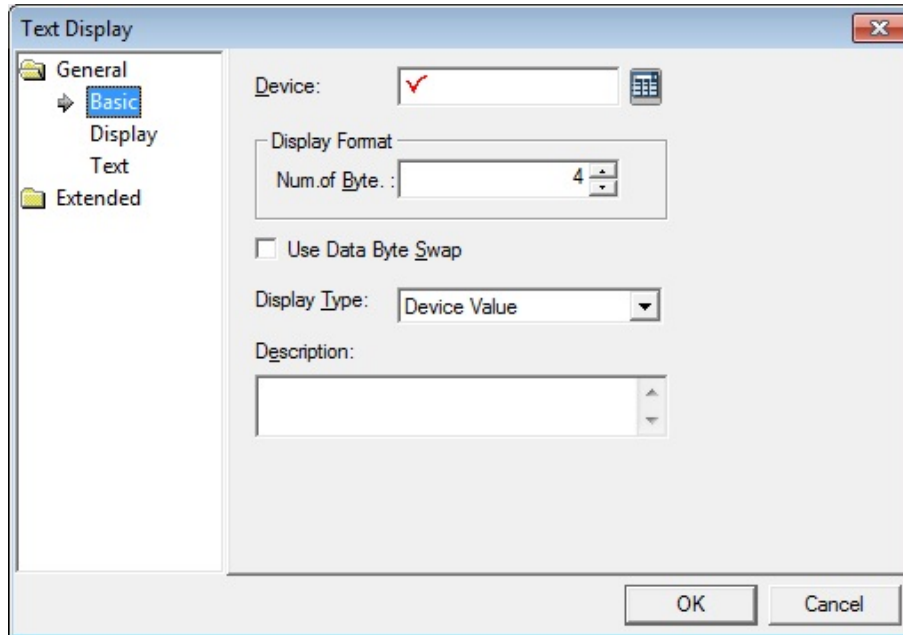
The data is read by word unit, with the low byte of the device value read first and the high byte read next:



When you input the four-letter ASCII code, the value is displayed in the four bytes of the reading range from the device address.

This section describes available settings for text display objects.

- **Basic:** The basic settings for text display objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Display Format:** Set the display format.
  - **Num. of Byte:** Set the number of characters to display (2 to 64).
- **Use Data Byte Swap:** Set to change output data into word form.

- **Display Type:** Set the display type.

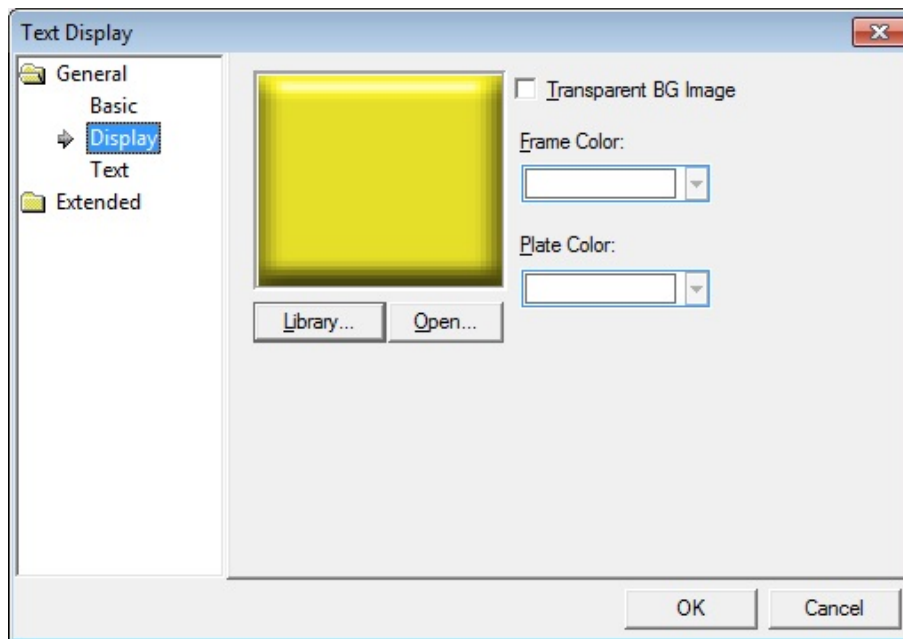
<b>Device Value</b>	Use the value from the device address set in the Basic settings.
<b>Input Value</b>	Display the value entered with the keypad on the current screen. If you set this option, you cannot use the <b>Device</b> , <b>Display Format</b> , and <b>Use Data Byte Swap</b> options.
<b>Input Max. Value</b>	Display the maximum value entered with the keypad on the current screen. If you set this option, you cannot use the <b>Device</b> , <b>Display Format</b> , and <b>Use Data Byte Swap</b> options.
<b>Input Min. Value</b>	<p>Display the minimum value entered with the keypad on the current screen. If you set this option, you cannot use the <b>Device</b>, <b>Display Format</b>, and <b>Use Data Byte Swap</b> options.</p> <p>The range of the maximum and minimum input values differ by device size and the shape of the object generated by the pop-up keypad. Furthermore, if the input condition is set, the maximum and minimum values also differ, depending on the ranges of the input condition.</p>

- **Description:** Enter a description for the object.

#### Notes

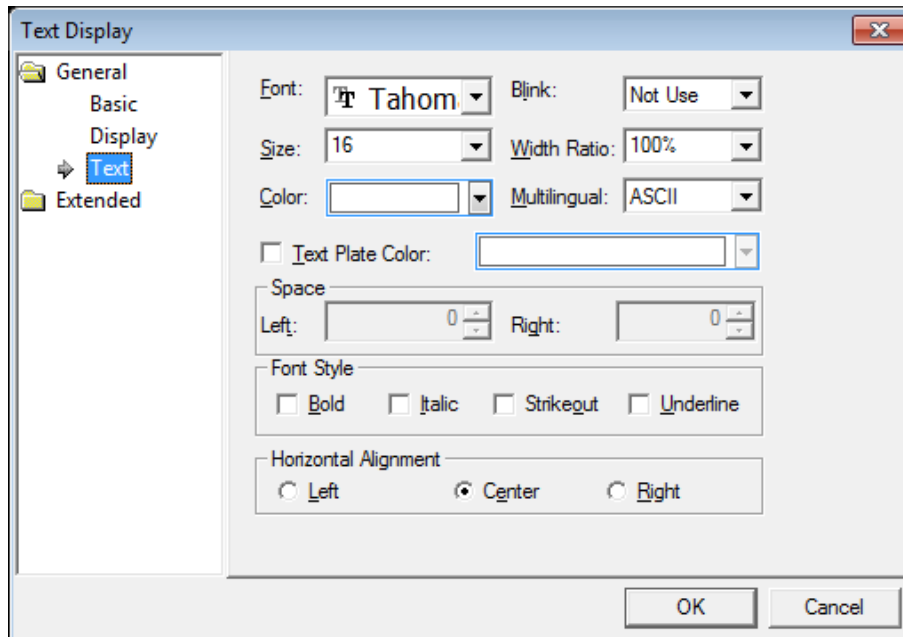
- Spaces are counted in the number of bytes allowed for text input.
- 16 bit word devices allow entry of double-byte characters.
- The starting address of the specified reference device is the memory location for text input. The amount of text that can be input is the same as the volume of the memory location.

- **Display:** The display settings for text display objects include the following:



- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Click the checkbox to make the image background transparent. You cannot use a transparent background and the reverse image setting at the same time.
- **Frame Color:** Set a frame color.
- **Plate Color:** Set a plate color.

- **Text:** The text settings for text display objects include the following:



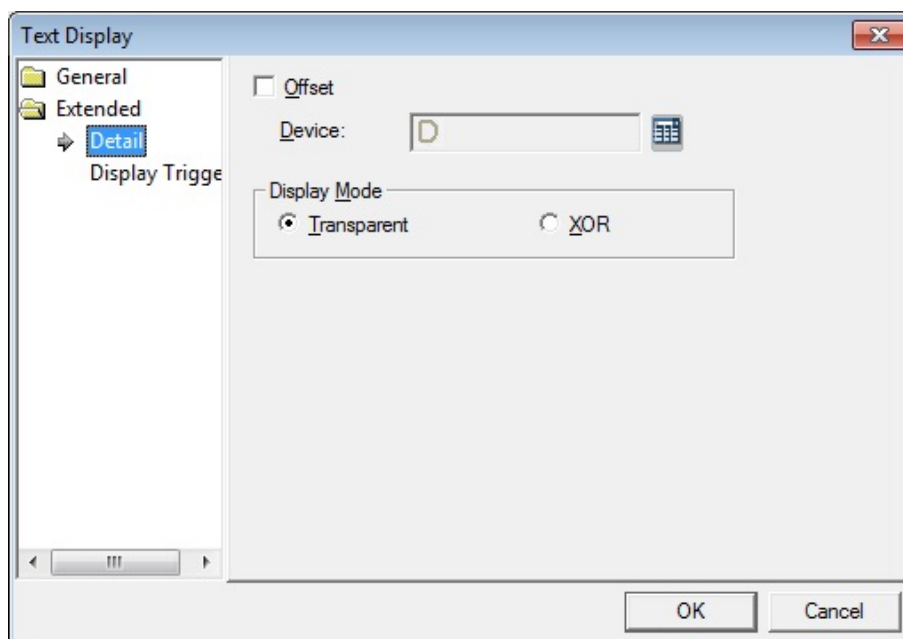
- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Blink:** Set a blink speed for the object:

<b>Not use</b>	The object will not blink.
<b>Slow</b>	The object will blink every three seconds.
<b>Normal</b>	The object will blink every two seconds.
<b>Fast</b>	The object will blink every second.

- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Multilingual:** Set an option for a second language (ASCII). If you select a language other than English, you cannot change the font. Fonts for other languages are displayed as set in the Language option of the Project Property settings.
- **Text Plate Color:** Click to set the background color of the figures at XGT Panel.





- **Space:** Set the indent from the margin of the object. If you select left alignment, you can set the left indent. If you select right alignment, you can set the right indent.
  - **Font Style:** Set a font style (bold, italic, strikethrough, or underline). You can apply more than one option at a time.
  - **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).
- **Detail:** The detail settings for text display objects include the following:

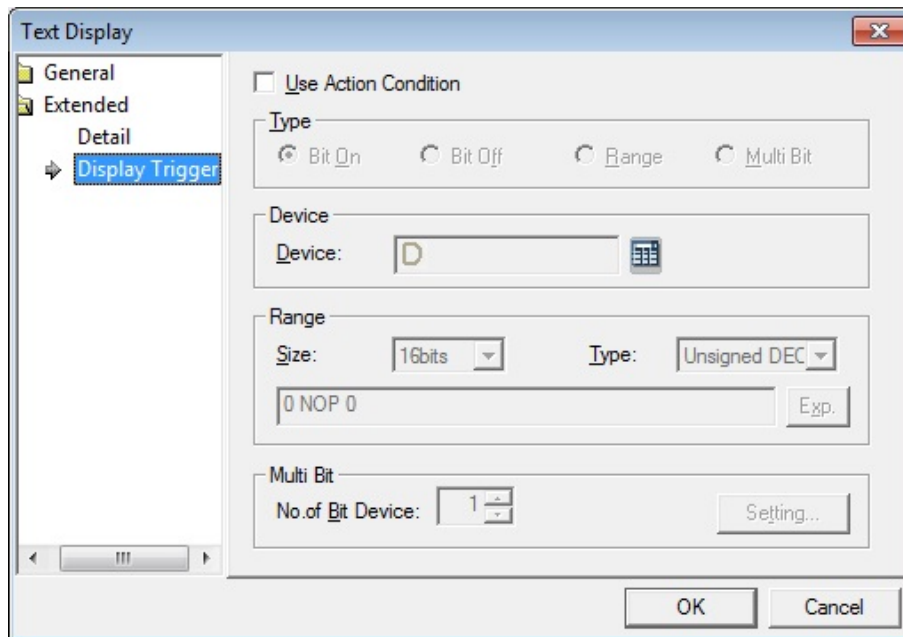


- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

- **Display Mode:** Set an option for the color of the message based on the background color.

<b>Transparent</b>	<p>Display the message transparently, in contrast to the background image.</p> 
<b>XOR</b>	<p>Display the message in a color that is easily distinguished from the background image.</p> 

- **Display Trigger:** The display trigger settings for text display objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

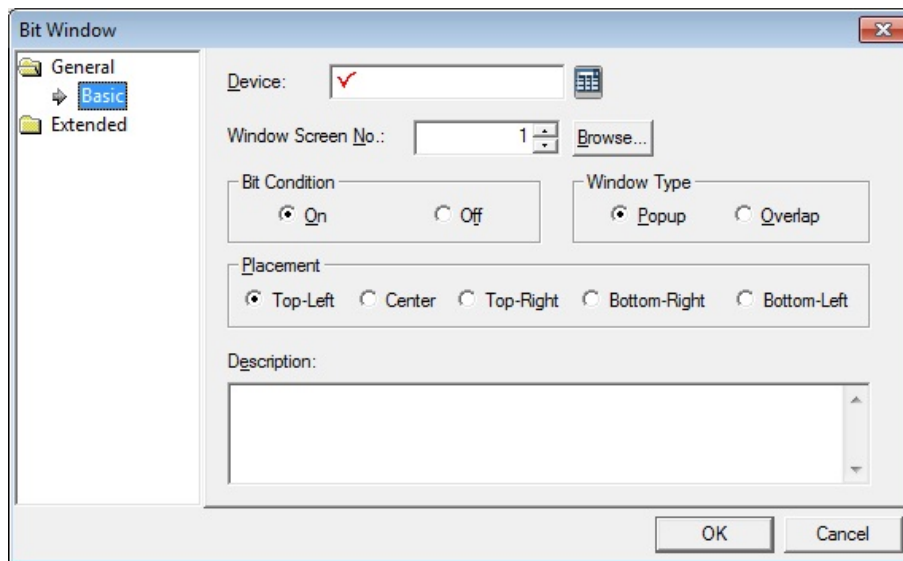
### 4.3.5 Window Objects

Window objects allow you to invoke windows based on the conditions of the device.

#### 4.3.5.1 Bit Window

This section describes available settings for bit window objects.

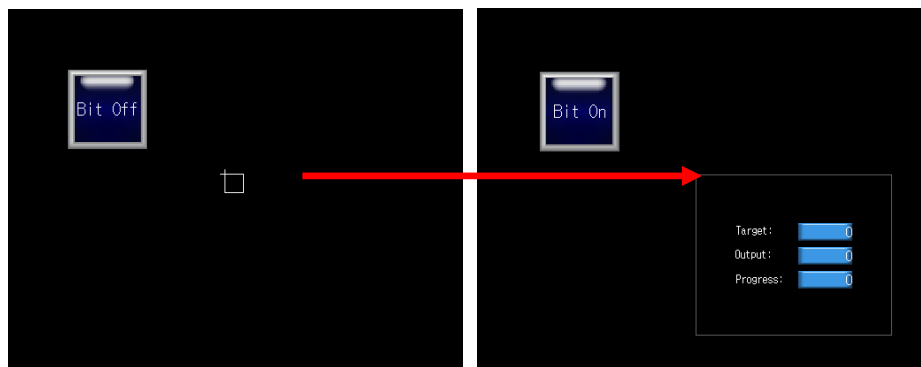
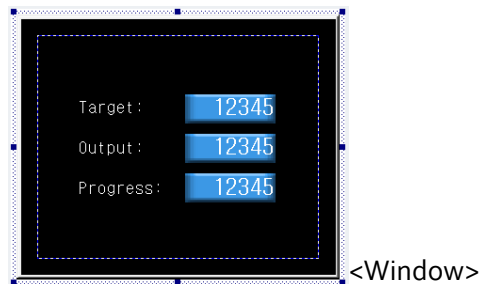
- **Basic:** The basic settings for bit window objects include the following:



- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **Window Screen No.:** Set the window number to invoke or click [Browse] to locate the window.
- **Bit Condition:** Set the bit condition for invoking the window (on or off).
- **Window Type:** Set the type of window to invoke.

<b>Popup</b>	Set to open a new window on top of the existing window.
<b>Overlap</b>	Set to overlay a new window in an area where no figures or objects exist on the base window, so that the base window can still be seen.

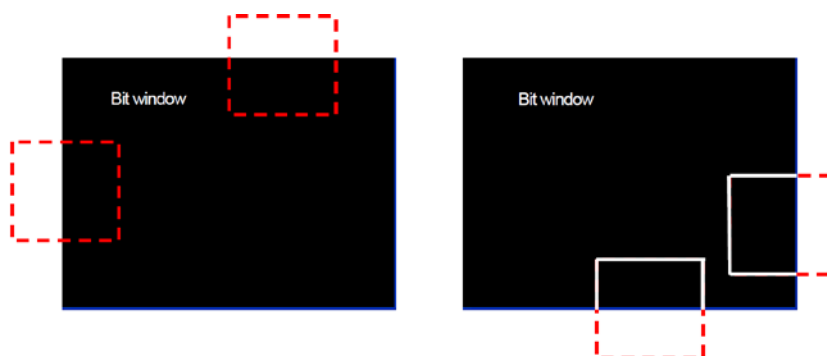
- **Placement:** Set the location where the new window will appear on the screen (Top-Left, Center, Top-Right, Bottom-Right, or Bottom-Left). For example, if you set the location to Top-Left, the window will appear in the upper-left corner of the object.



<E.g. Top-Left>

### Notes

- If the input window area exceeds the borders of the basic window, it is not displayed in the XGT Panel. In this case, the project download will not start. If the window object area partially extends beyond the right or bottom of the basic window, the portion of the object that is inside the borders will be displayed.



<The top or left side is out>

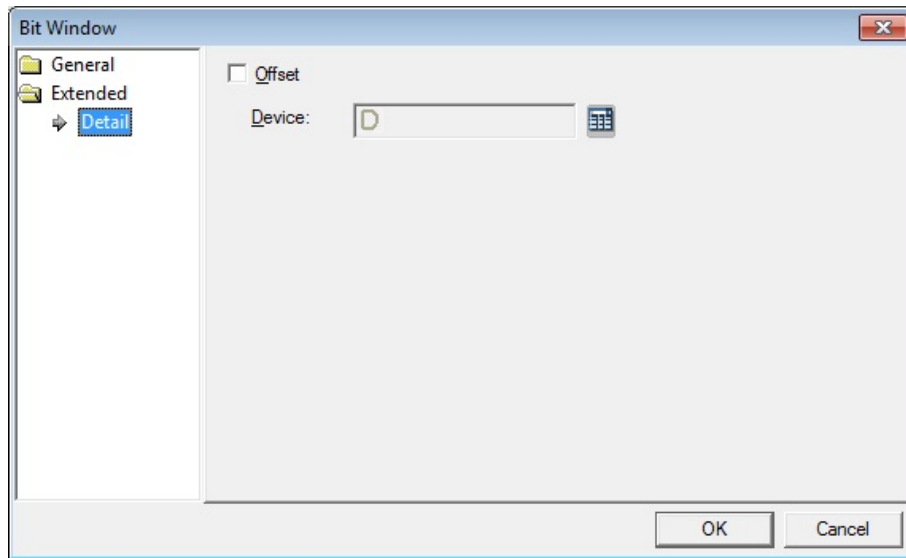
<The right or bottom side is out>

- There are two ways to close the bit window when the condition is met:
  1. Convert the reference device status.
  2. For a Pop-up window, click the close button. The device status is converted automatically. If the windows overlap, the close button is not displayed.
- The placement points for Window and Part objects are as follows:

Object	Placement Point
Window Object	The start point of the edited window screen
Part Object	The start point where the parts are drawn in the edited part screen.

- **Description:** Enter a description for the object.

- **Detail:** The detail settings for bit window objects include the following:

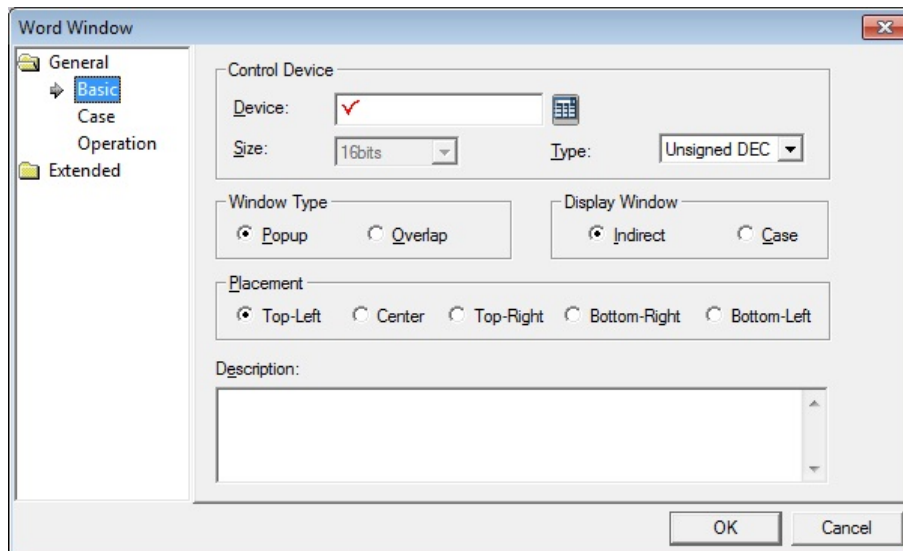


- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

### 4.3.5.2 Word Window

This section describes available settings for word window objects.

- **Basic:** The basic settings for word window objects include the following:



– **Control Device:**

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
<b>Size</b>	Set the data size for the object (16 or 32 bit).
<b>Type</b>	Set the data type for the object (Signed decimal, Unsigned decimal, or BCD).

– **Window Type:** Set the type of window to invoke.

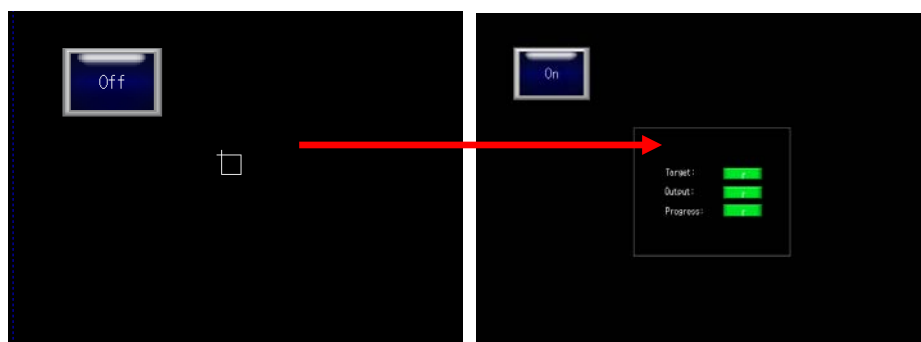
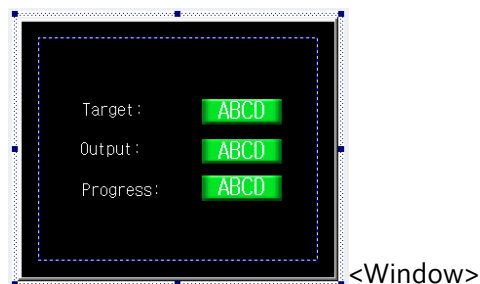
<b>Popup</b>	Set to open a new window on top of the existing window.
<b>Overlap</b>	Set to overlay a new window in an area where no figures or objects exist on the base window, so that the base window can still be seen.



- **Display Window:** Set the method for invoking the window.

<b>Indirect</b>	Invoke the window based on the device value.
<b>Case</b>	Invoke the window when the condition is met.

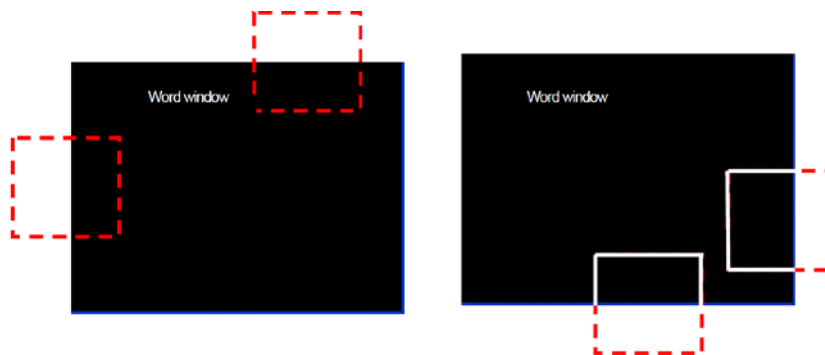
- **Placement:** Set the location where the new window will appear on the screen (Top-Left, Center, Top-Right, Bottom-Right, or Bottom-Left). For example, if you set the location to Top-Left, the window will appear in the upper-left corner of the object.



<E.g. Top-Left>

### Notes

- If the data size or type are changed, the input and display condition are deleted.
- If the Display Window setting changes to Indirect, the input and display condition are deleted.
- If the input window area exceeds the borders of the basic window, it is not displayed in the XGT Panel. In this case, the project download will not start. If the window object area partially extends beyond the right or bottom of the basic window, the portion of the object that is inside the borders will be displayed.



<The top or left side is out>

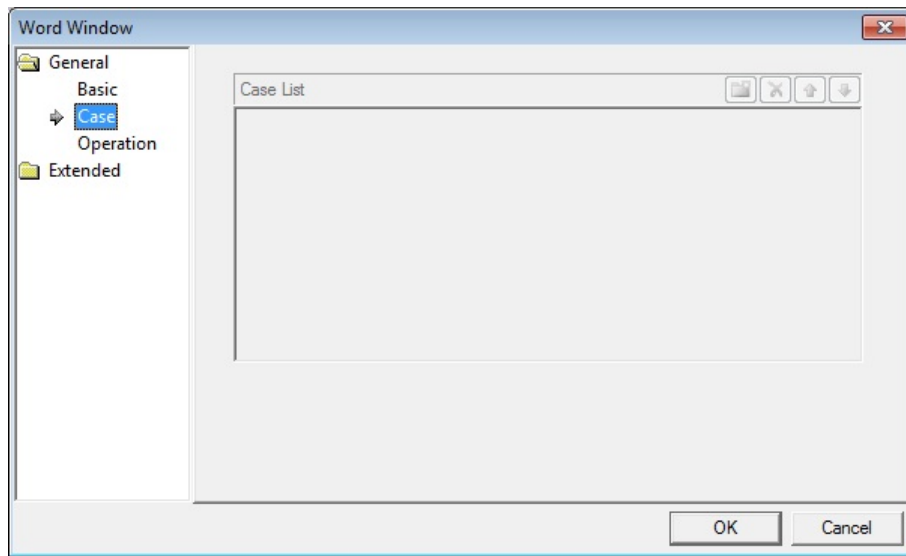
<The right or bottom side is out>

- The Word Window object is always displayed on the basic screen and you cannot close the window, as there is no close button. The Word Window object can be allotted to two or more states, so it cannot be determined how the reference device state should change even if the present window screen is closed.
- The placement points for the Window and Part objects are as follows:





Object	Placement Point
Window Object	The start point of the edited window screen.
Part Object	The start point where the parts are drawn in the edited part screen.

- **Description:** Enter a description for the object.

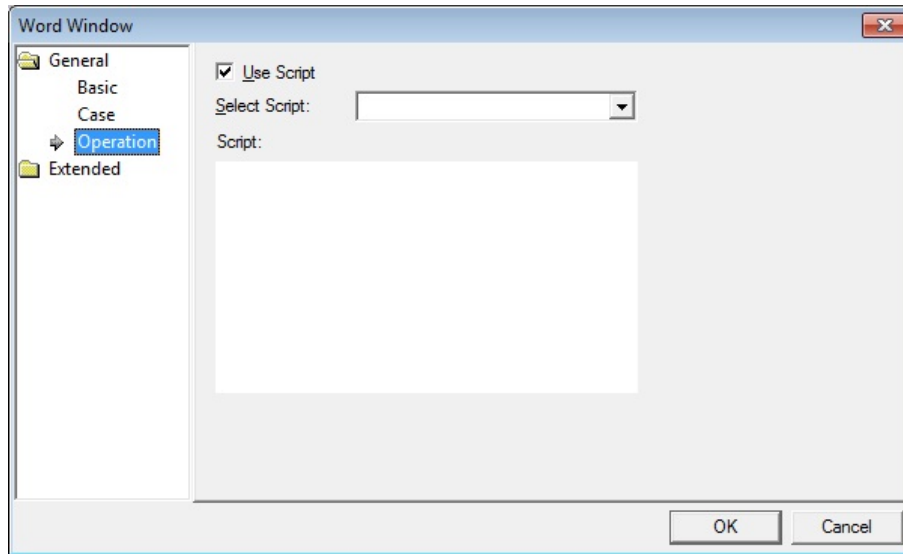
- **Case:** The case settings for word window objects include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

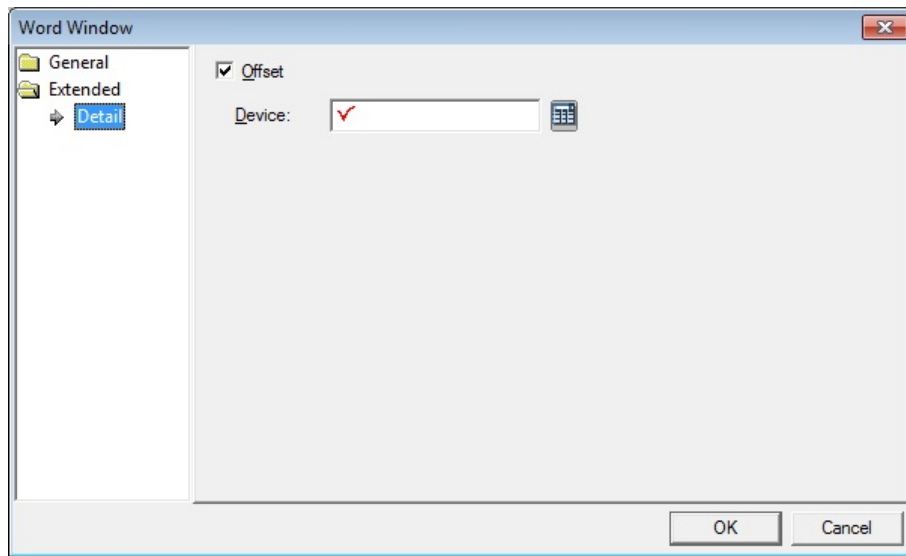
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 <i>Understanding Constants and Data Types</i> >.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for word window objects include the following:



- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for word window objects include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.

The offset function behaves differently if a read device is set. When a read device is set, the offset is only applied to the writing device. If a read device is not set, the offset is applied to both read and write devices.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

### 4.3.6 Part Objects

You can use part objects to invoke parts based on the device condition. There are four movement types of the part objects: Fixed, XY, Line, and Route.

- **Fixed:** Display the part according to the registered location condition in XP-Builder.
- **XY:** Display the movement of the object followed by the dot registered as the device value. The XY coordinates are set based on the device value regardless of the current XY coordinates that object is located.

Position

Device: ☒ P100

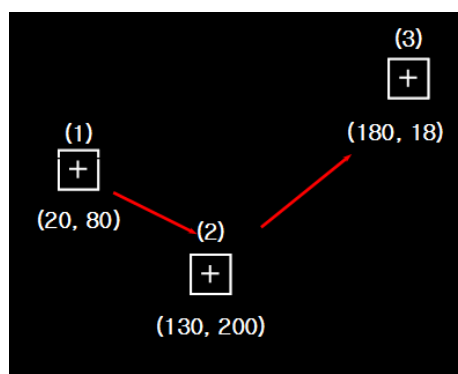
Type: Unsigned DEC

X Position : P0100 Device Value      Y Position : P0101 Device Value

In this case, the X location value is same as the device address (P100) and the Y location value is the device address plus 1 (P101). For example, if the device value is like below,

Device	(1)	(2)	(3)
X coordinate (P100)	20	130	180
Y coordinate (P101)	80	200	18

The bit object movement is like below:



- **Line:** Display the movement of the object through the straight line. Set the minimum value as the starting point, and the maximum value as the ending point.

Position

Device: ☒ P0200

Type: Unsigned DEC

Min.: 0

Max.: 100

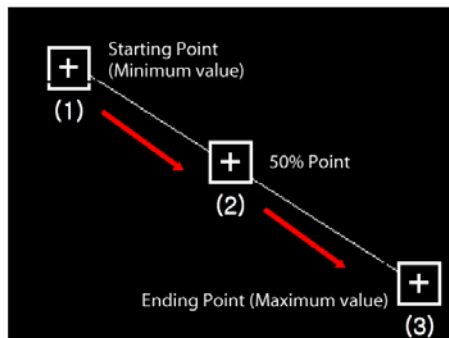
## 4. Reference

In this case, the X and Y location are relative based on the maximum and minimum value. The X location value is same as the device address (P100) and the Y location value is the device address plus 1 (P101).

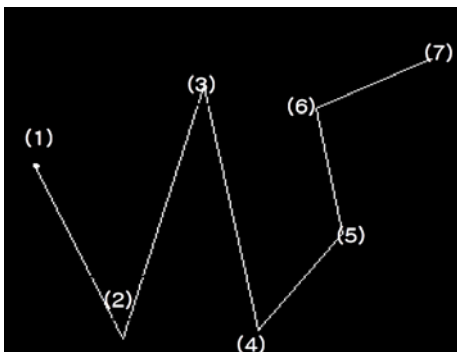
If the XY device value is like below:

Device	(1)	(2)	(3)
Device Value	0	50	100

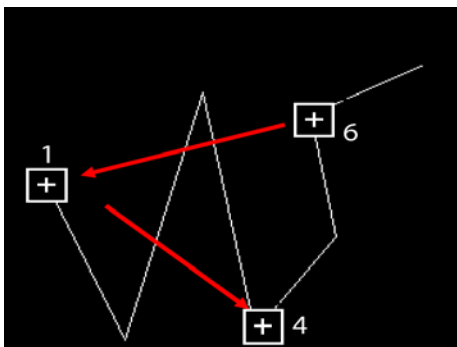
The bit object movement is like below:



- **Route:** Display the movement of the object according to the point you set in advance. You can set the point to display the part.



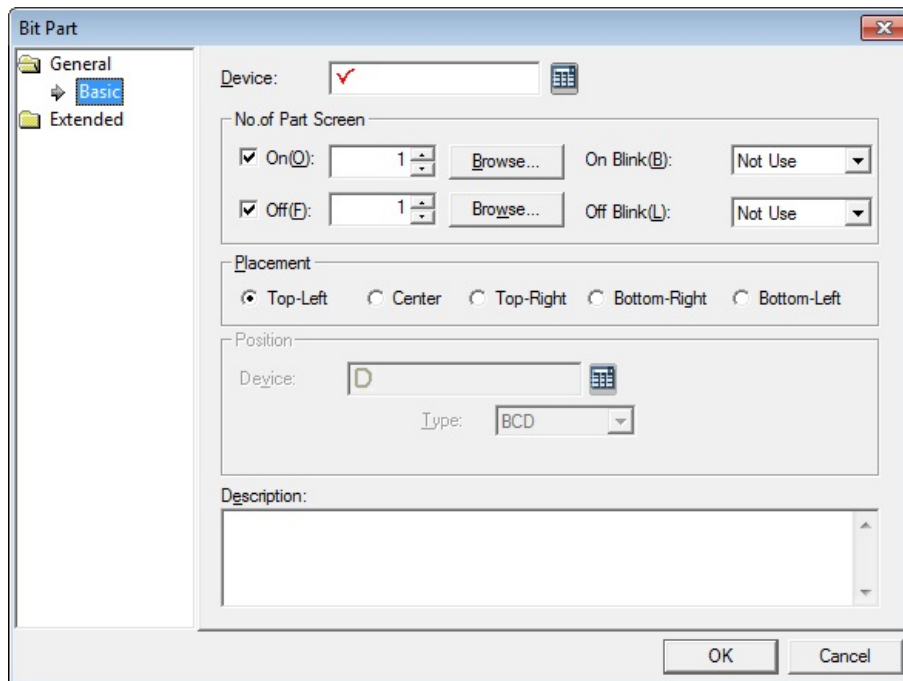
If the location device value is 6, the part moves along the path (6). If the location device value is 1 and 4, it moves along the path (1) and (4) respectively.



#### 4.3.6.1 Bit Part

This section describes available settings for bit part objects.

- **Basic:** The basic settings for bit part objects include the following:

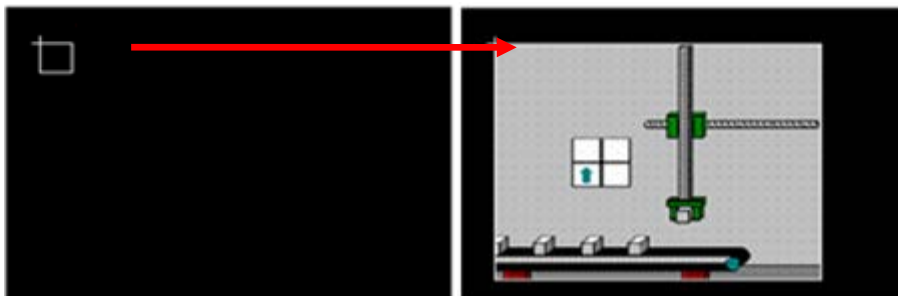
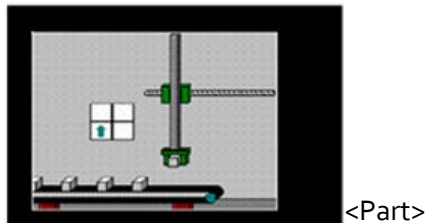


- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
- **No. of Part Screen:** Set the parts to invoke.

<b>On</b>	Set the part to invoke when the device is set to on.
<b>Off</b>	Set the part to invoke when the device is set to off.
<b>On Blink</b>	Set the part to blink when the device is set to on (Not Use, Slow, Normal, and Fast).
<b>Off Blink</b>	Set the part to blink when the device is set to off (Not Use, Slow, Normal, and Fast).



- **Placement:** Set the location where the new part will appear on the screen (Top-Left, Center, Top-Right, Bottom-Right, or Bottom-Left). For example, if you set the location to Top-Left, the part will appear in the upper-left corner of the object.

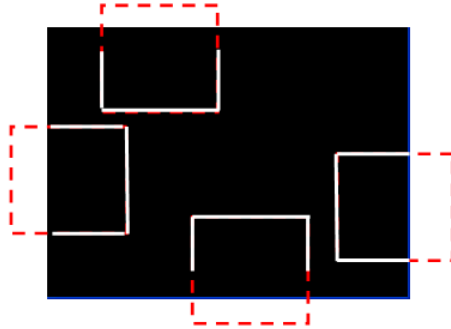


<E.g. Top-Left>

Type	Description
Top-Left	Align the upper-left corner of the part with the upper-left corner of the object.
Center	Center the part over the object.
Top-Right	Align the upper-right corner of the part with the upper-right corner of the object.
Bottom-Right	Align the lower-right corner of the part with the lower-right corner of the object.
Bottom-Left	Align the lower-left corner of the part with the lower-left corner of the object.

### Notes

- If an area of the part extends beyond the borders of the basic window, only the area inside the window borders will be displayed.

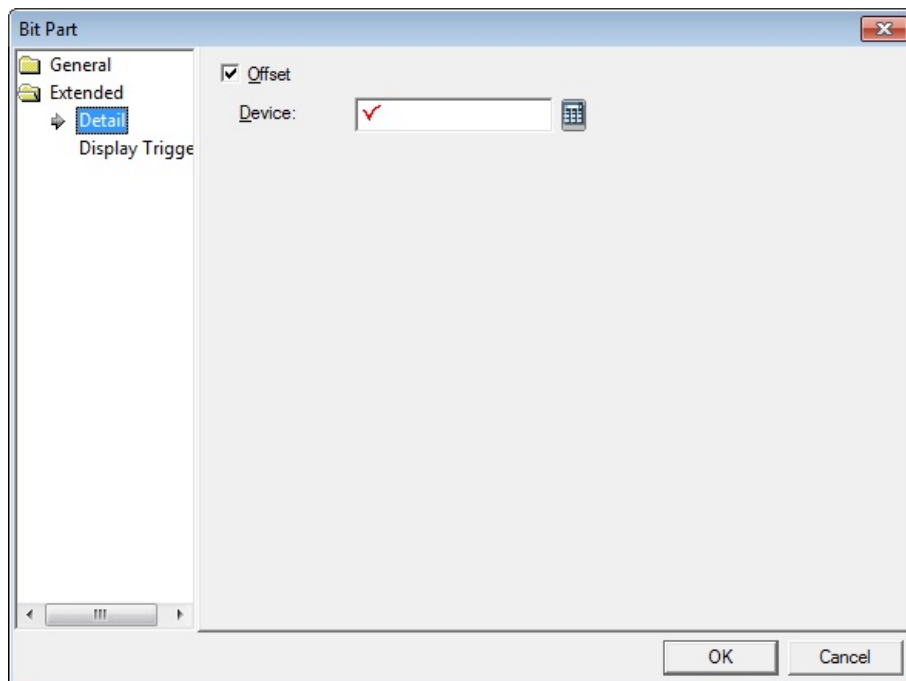


- The placement points for Window and Part objects are as follows:

Object	Placement Point
Window Object	The start point of the edited window screen.
Part Object	The start point where the parts are drawn in the edited part screen.

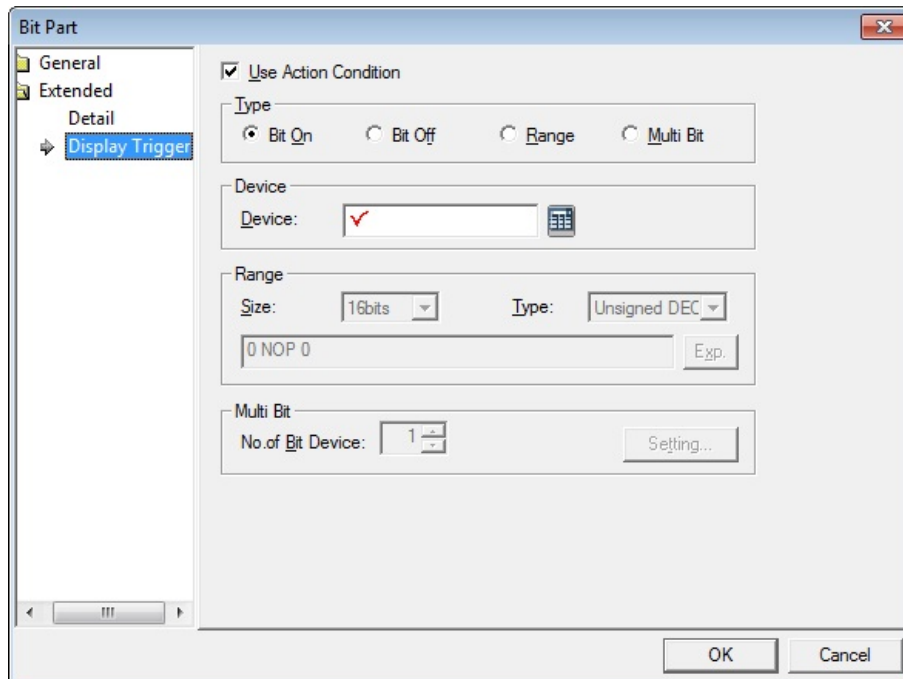
- **Position:** Set a device to control values for relative location of the part for Fixed, XY, Line, and Route paths. The size of the path position device is fixed at 16 bit. The maximum and minimum values restrict the path of a part, based on the device value (only for line paths).
- **Description:** Enter a description for the object.

- **Detail:** The detail settings for text bit part objects include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for bit part objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.6.2 Word Part

This section describes available settings for bit part objects.

- **Basic:** The basic settings for word part objects include the following:

– **Control Device:**

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
<b>Size</b>	Set the data size for the object (16 or 32 bit).
<b>Type</b>	Set the data type for the object (Signed decimal, Unsigned decimal, BCD, or float).

– **Screen Type:** Set the type of part to invoke.

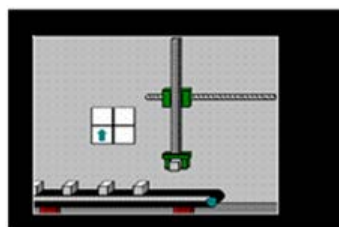
<b>Part Screen</b>	Set to invoke a part.
<b>Storage Image</b>	Set to invoke an image from a storage location, such as a CF card or USB device. Images can only be invoked from a folder titled "XP_User Image." Image filenames must be formatted as "ImgXXXXX.bmp" or "ImgXXXXX.jpg." If the filename is "Img00000" or "img00000," or if the device value is "o," the image will not be invoked. You can use the device value to

	specify the image to invoke. For example, if the device address is "P0000" and the device value is "5," the value will invoke the file "Img00005."
--	--

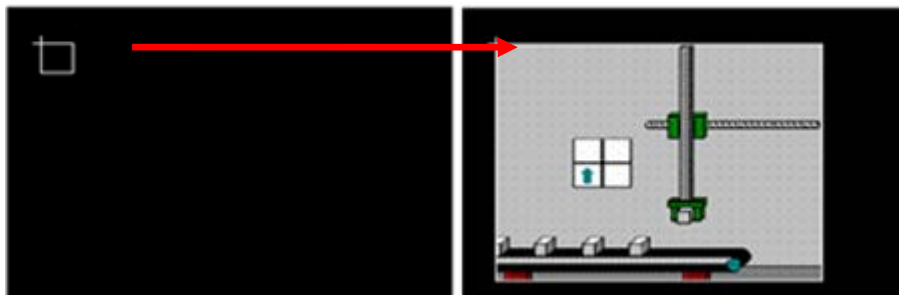
- **Display Part Screen:** Set the method for invoking the window.

<b>Indirect</b>	Invoke the window based on the device value.
<b>Case</b>	Invoke the window when the condition is met.

- **Placement:** Set the location where the new part will appear on the screen (Top-Left, Center, Top-Right, Bottom-Right, or Bottom-Left). For example, if you set the location to Top-Left, the part will appear in the upper-left corner of the object.



<Part>

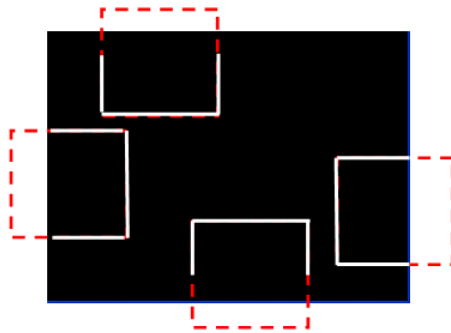


<E.g. Top-Left>

Type	Description
Top-Left	Align the upper-left corner of the part with the upper-left corner of the object.
Center	Center the part over the object.
Top-Right	Align the upper-right corner of the part with the upper-right corner of the object.
Bottom-Right	Align the lower-right corner of the part with the lower-right corner of the object.
Bottom-Left	Align the lower-left corner of the part with the lower-left corner of the object.

### Notes

- If the data size or type are changed, the input and display condition are deleted.
- If the Display Part Screen setting changes to Indirect, the input and display condition are deleted.
- If an area of the part is extends beyond the borders of the basic window, only the area inside the borders will be displayed.






- The placement points for the Window and Part objects are as follows:

Object	Placement Point
Window Object	The start point of the edited window screen.
Part Object	The start point where the parts are drawn in the edited part screen.

- When the Screen Type setting is Storage Image and the Display Part Screen setting is Indirect, the image from the storage device that corresponds to the current control device is displayed.

- **Position:** Set a device to control values for relative location of the part for Fixed, XY, Line, and Route paths. The size of the path position device is fixed at 16 bit. The maximum and minimum values restrict the path of a part, based on the device value (only for line paths).

- **Storage Image Setting:** Set options for using images from a storage location.

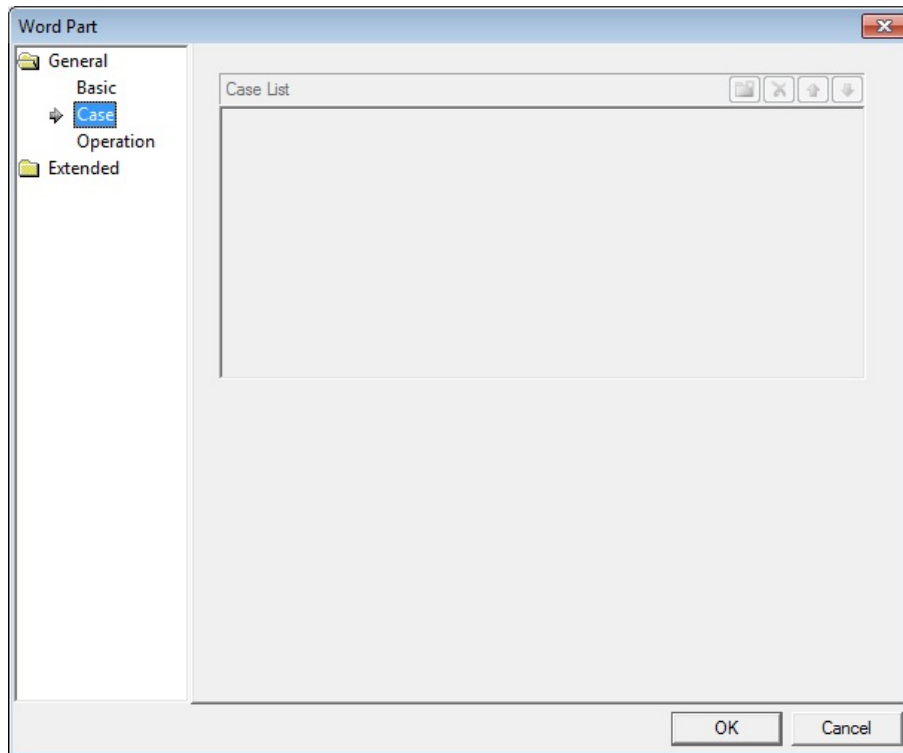
<b>Width</b>	Set the width of the image when you import an image from the storage device. You can view as much of the original image as fits within the width you set. When you set the Original size option, the image size is reduced or expanded to fit the width you set.
<b>Height</b>	Set the height of the image when you import an image from the storage device. You can view as much of the original image as fits within the height you set. When you set the Original size option, the image size is reduced or expanded to fit the width you set.
<b>Storage Path</b>	Select the storage location for the image.
<b>Original size</b>	<p>Set to show the image in its original size. If the image size is larger than the basic window, only as much of the image as fits within the basic window will be displayed, as shown below.</p>  <p>&lt;Original Image&gt;</p>  <p>&lt;Maintain the original size&gt;</p> <p>If you don't set this option, the image will be reduced to the width and height you set. When you set the width and height to 640x480, the image is shown as follows:</p> 
<b>Image Type</b>	Select the image type (BMP or JPG).
<b>Moving Pixel</b>	When an image is too large to be shown on the







screen in its entirety, set the number of pixels to scroll when the user scrolls up, down, left, or right to see another part of the image. Use this option when you set the Original Size option.



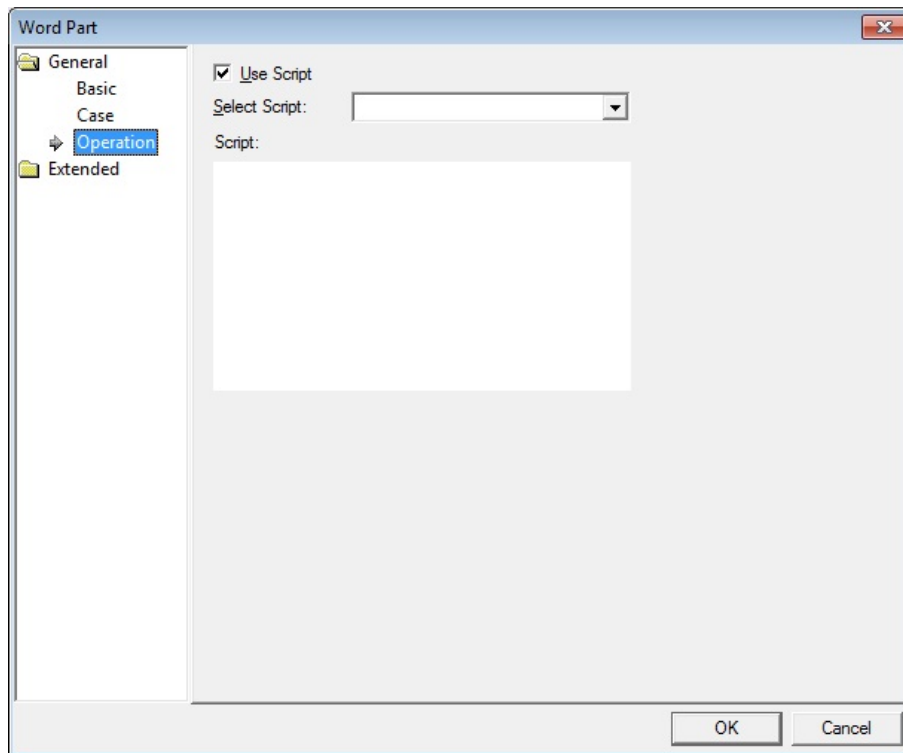
- **Case:** The case settings for word part objects include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

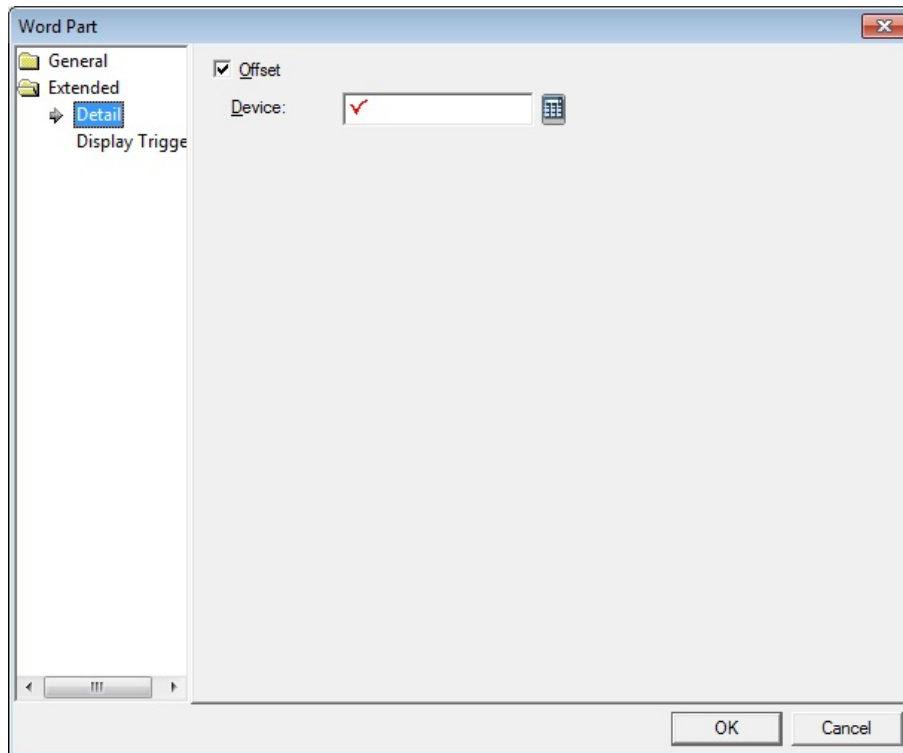
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for word part objects include the following:



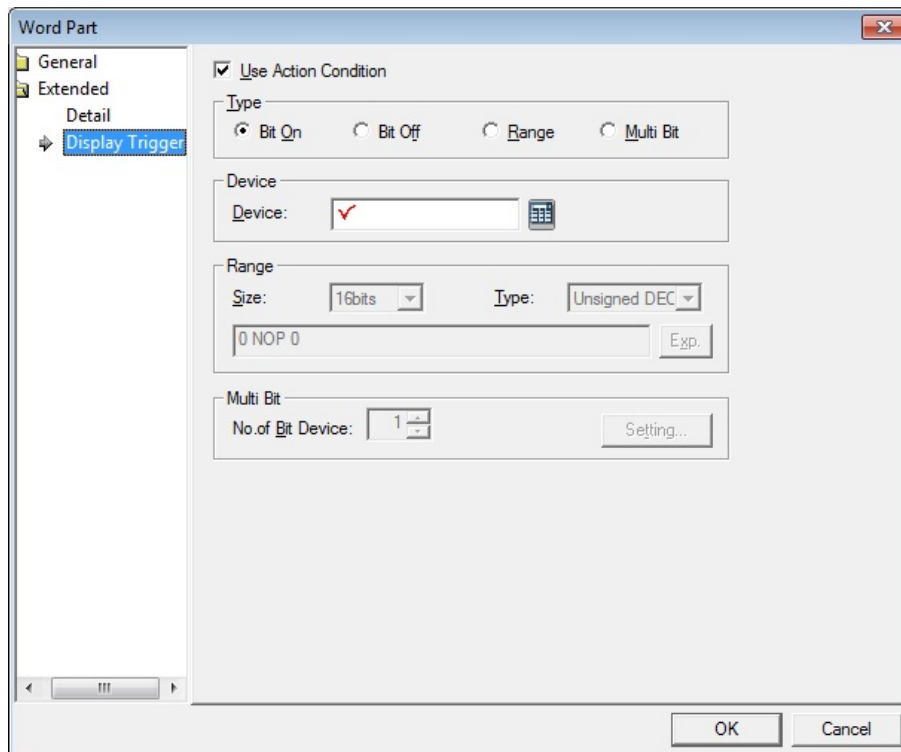
- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for word part objects include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for word part objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

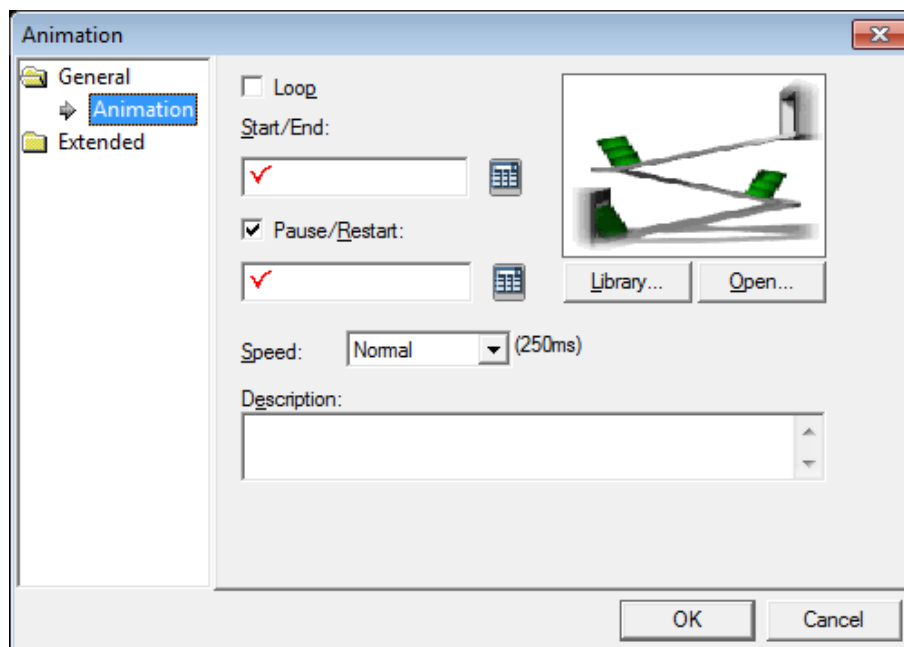
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.7 Animation Object

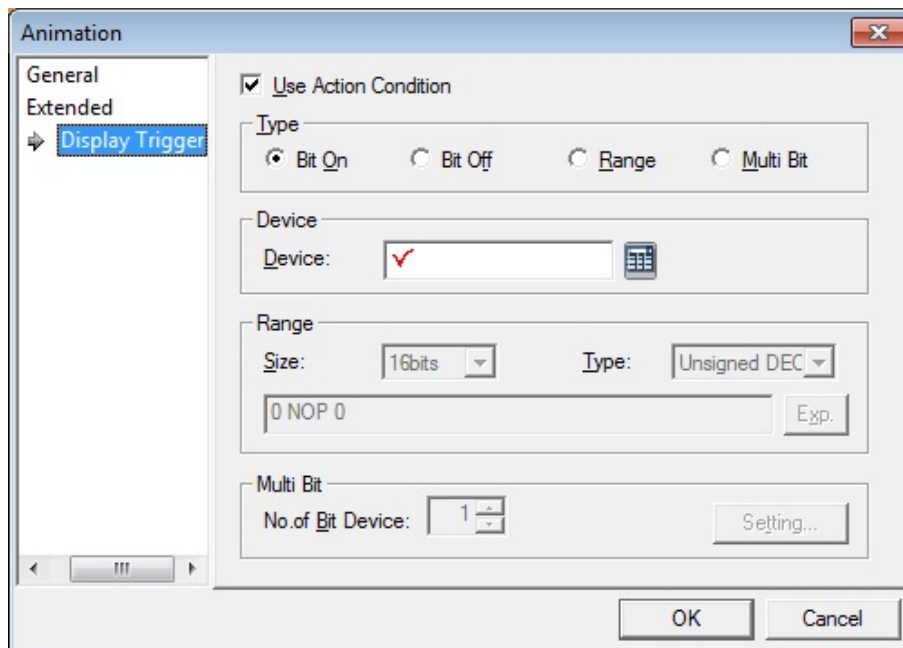
Animation objects allow you to display moving images (GIFs) based on the device conditions.

- **Animation:** The animation settings for animation objects include the following:



- **Loop:** Set whether or not to repeat the animation. If you set this option, you cannot set Start/End or Pause/Restart devices.
- **Start/End:** Set a bit device to start and end the animation.
- **Pause/Restart:** Set a device to pause or resume the animation halfway.
- **Library:** Click to select an animation from the user or system graphic libraries.

- **Open:** Click to select a GIF file from your computer.
- **Speed:** Set the speed of the animation.
  - **Slow:** 400ms
  - **Normal:** 250ms
  - **Fast:** 100ms
- **Description:** Enter description in the relevant object.
- **Display Trigger:** The display trigger settings for animation objects include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

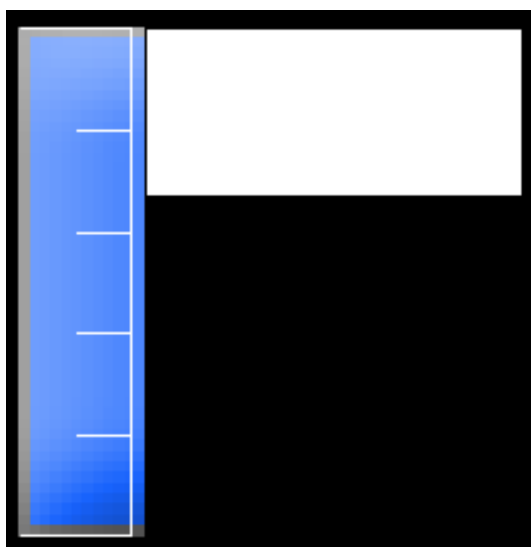
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.8 Graph Objects

You can use graph objects to express various device values. Eight types of graphs are available, including bar, pie, meter, closed, trend, logging trend, logging scatter, and real-time scatter graphs.

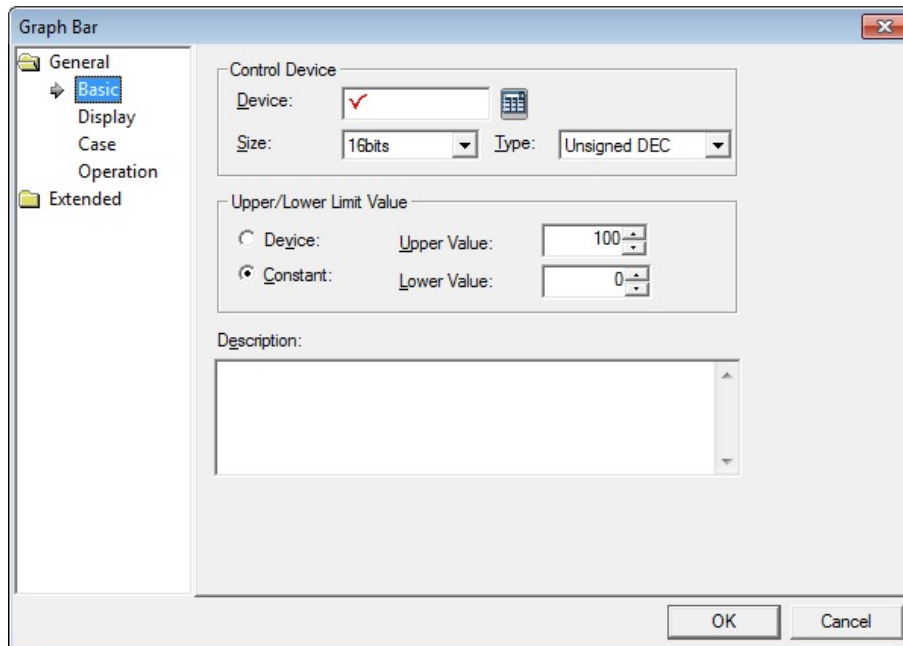
#### 4.3.8.1 Bar Graph

The following sections describe options available for bar graphs.





- **Basic:** The basic settings for bar graph objects include the following:



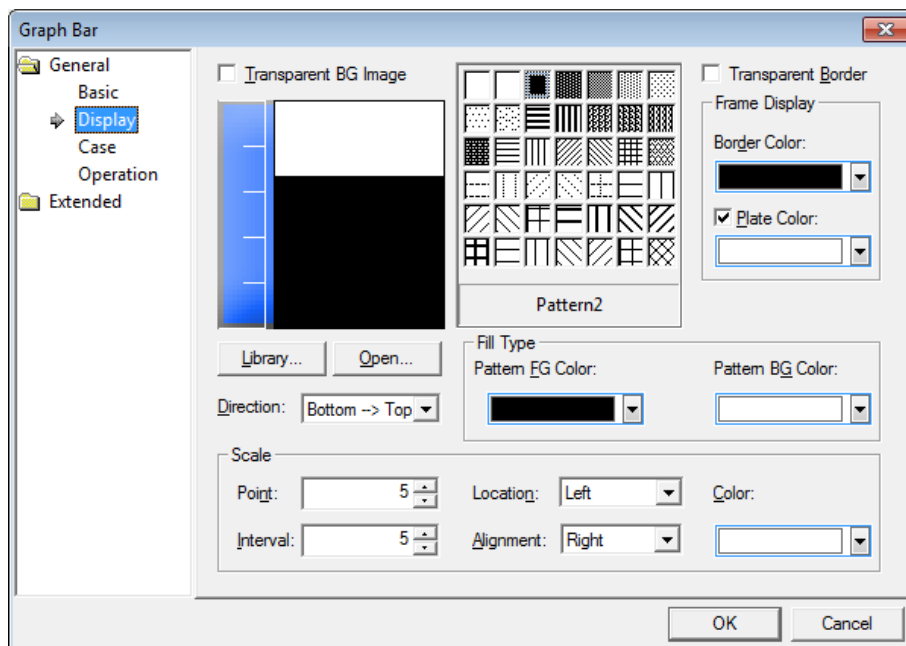
- **Control Device:** Specify the following options for the control device.

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.

- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.

<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.

- **Description:** Enter description in the relevant object.
- **Display:** The display settings for bar graph object include the following:



- **Transparent BG Image:** Set whether or not to make the background of the graph transparent.
- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Direction:** Set the direction for the graph (Top > Bottom, Bottom > Top, Left > Right, or Right > Left).
- **Pattern:** Set a pattern for the ranges in the graph.
- **Transparent Border:** Set whether or not to use a transparent border for the graph.
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

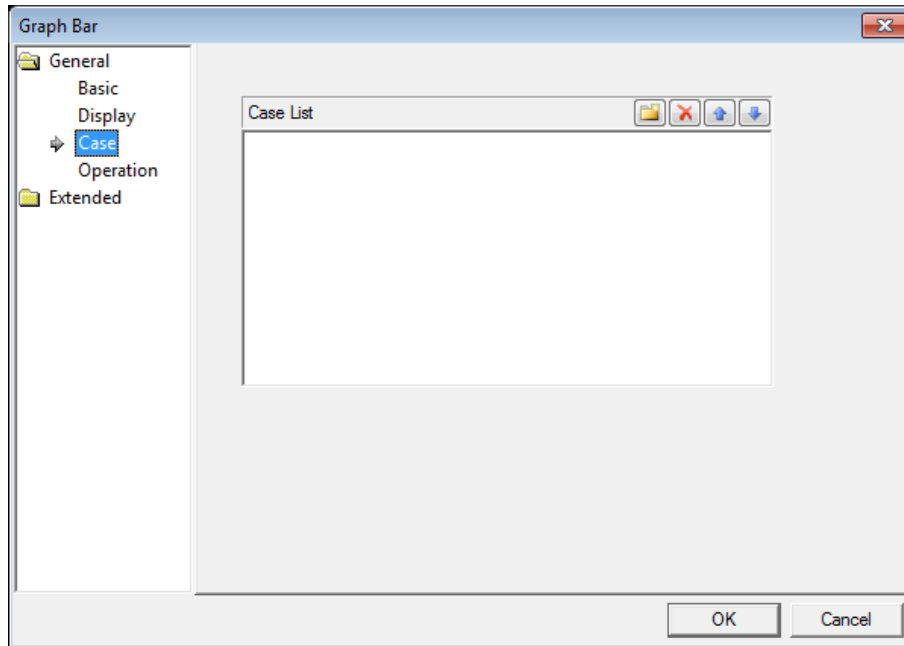
- **Fill Type:** Specify the following options for the fill.

<b>Pattern FG Color</b>	Set a foreground color for the pattern.
<b>Pattern BG Color</b>	Set a background color for the pattern.





- **Scale:** Specify the following options for the scale.

<b>Point</b>	Set the number of points in the scale.
<b>Interval</b>	Set the space between points on the graph (0 to 10).
<b>Location</b>	Set the location of the scale in the graph.
<b>Alignment</b>	Set the alignment of labels in the scale.
<b>Color</b>	Set the color of the scales.

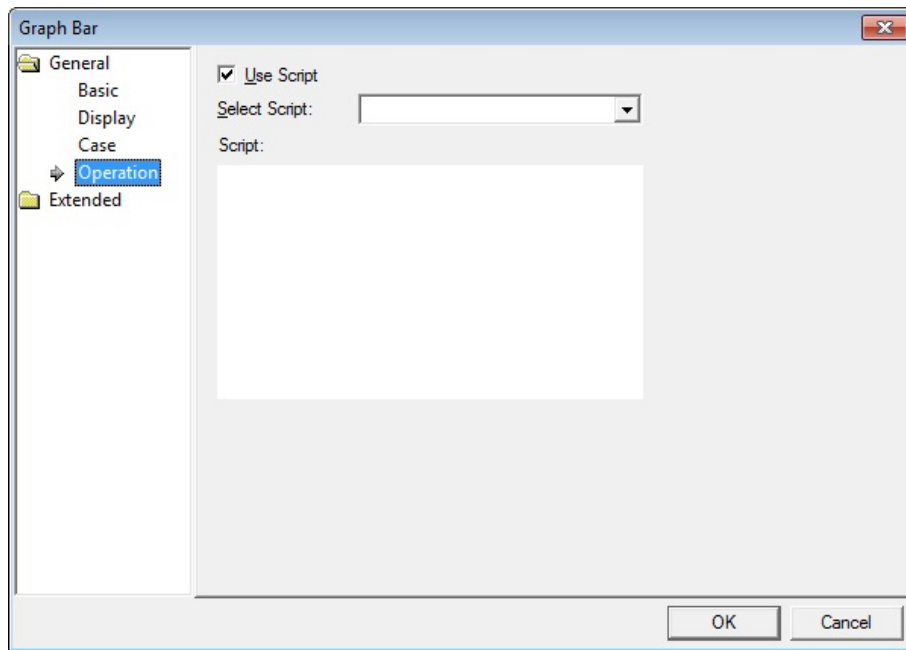
- **Case:** The case settings for bar graph object include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

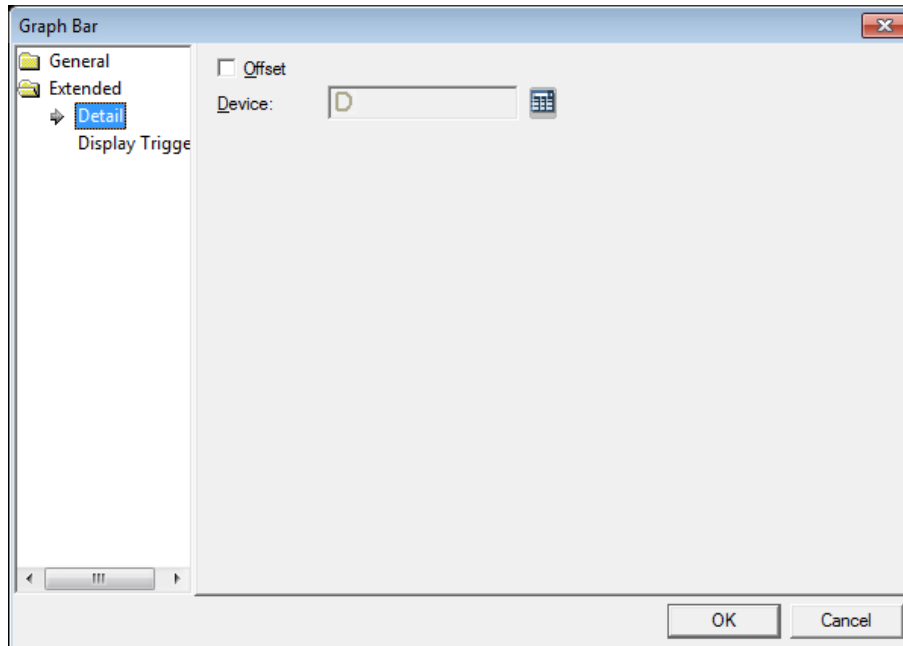
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for bar graph object include the following:



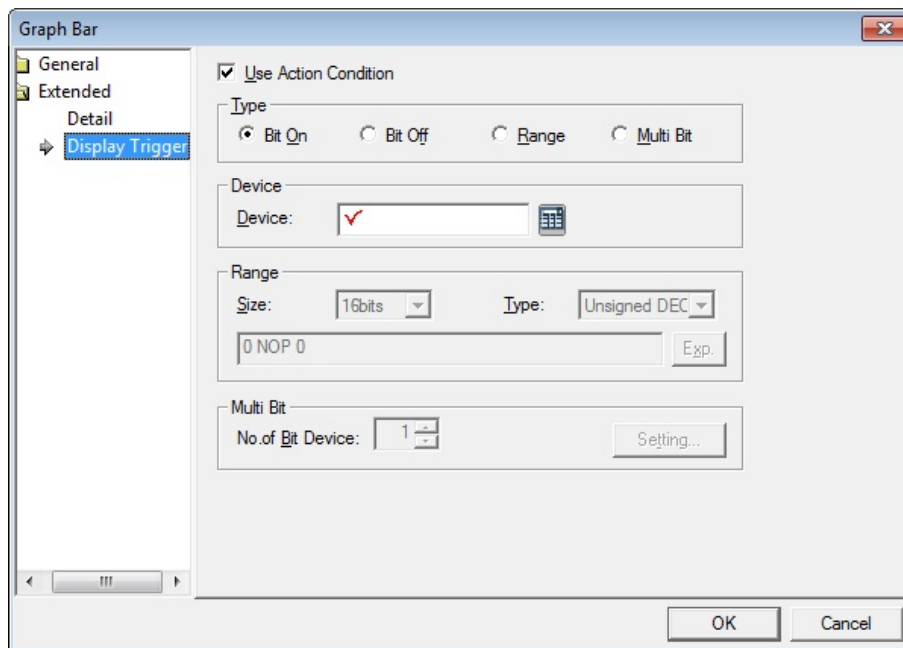
- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for bar graph object include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for the bar graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

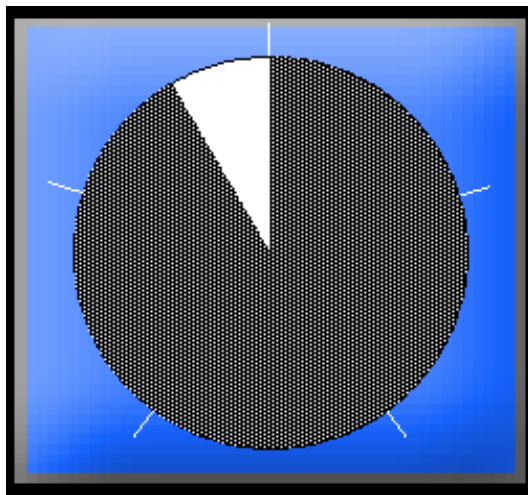
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

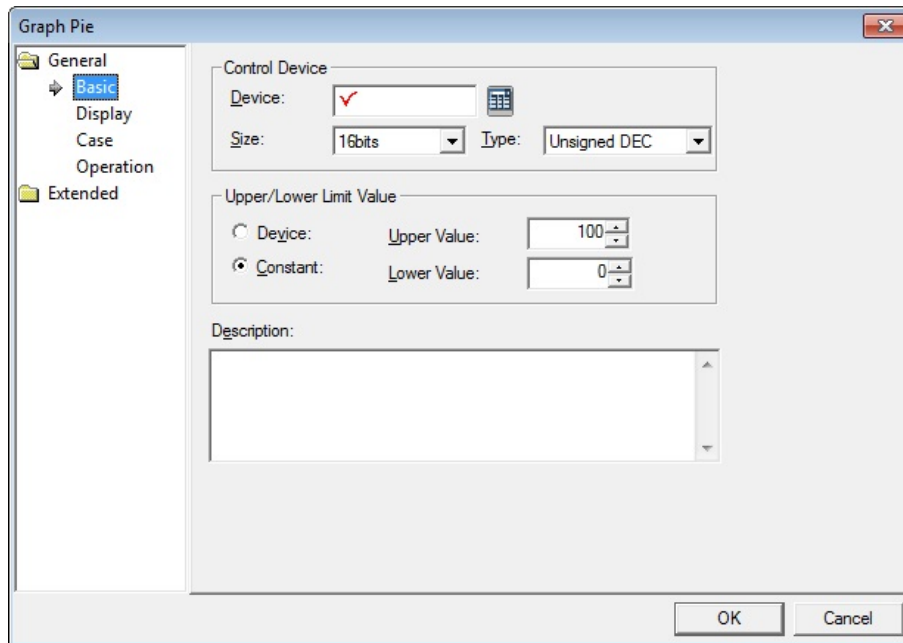
#### 4.3.8.2 Pie Graph

The following sections describe the available options for pie graph objects.





- **Basic:** The basic settings for pie graph objects include the following:



- **Control Device:** Specify the following options for the control device.

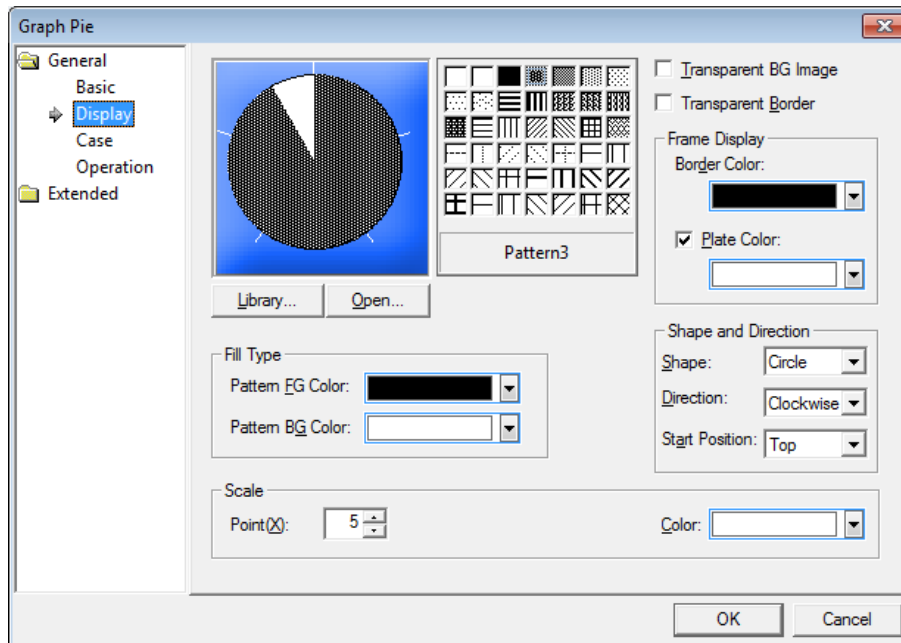
<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.

- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.

<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.

- **Description:** Enter description in the relevant object.

- **Display:** The display settings for pie graph objects include the following:



- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Pattern:** Set a pattern for the ranges in the graph.
- **Transparent BG Image:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border for the graph.
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

- **Fill Type:** Specify the following options for the fill.

<b>Pattern FG Color</b>	Set a foreground color for the pattern.
<b>Pattern BG Color</b>	Set a background color for the pattern.

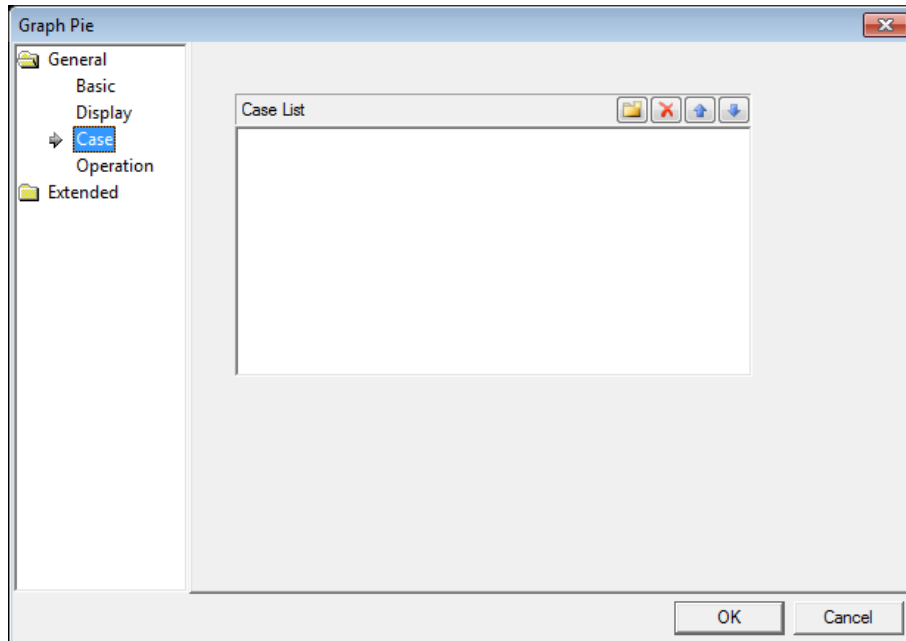
- **Shape and Direction:** Specify the following options for the shape and direction.

<b>Shape</b>	Set the shape of the pie chart.
<b>Direction</b>	Set the direction for filling the pie graph.
<b>Start Position</b>	When using a circle shape, set the start position of the pointer.





- **Scale:** Specify the following options for the scale.

<b>Point</b>	Set the number of points in the scale.
<b>Color</b>	Set the color of the scales.

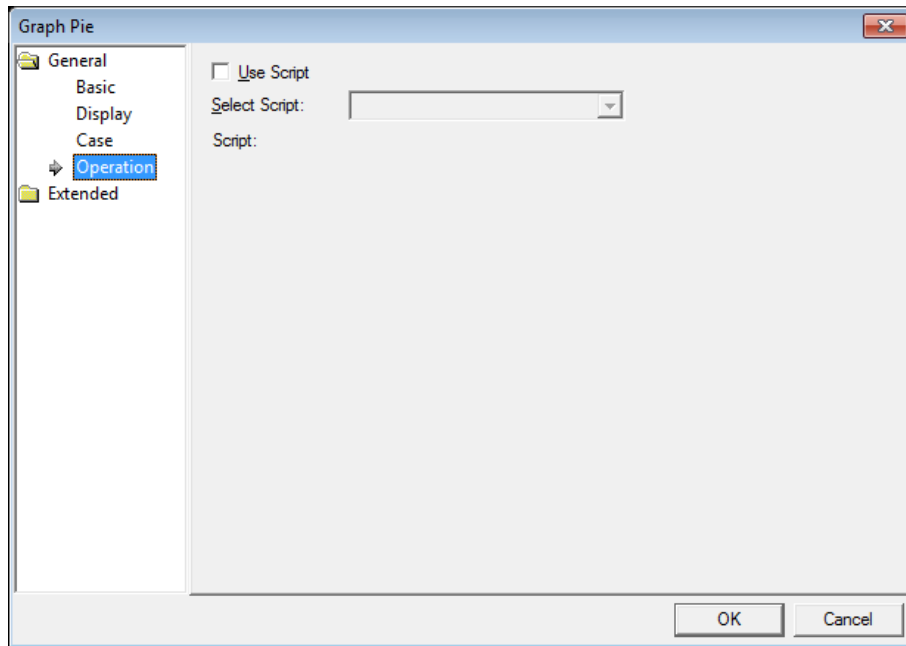
- **Case:** The case settings for pie graph objects include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

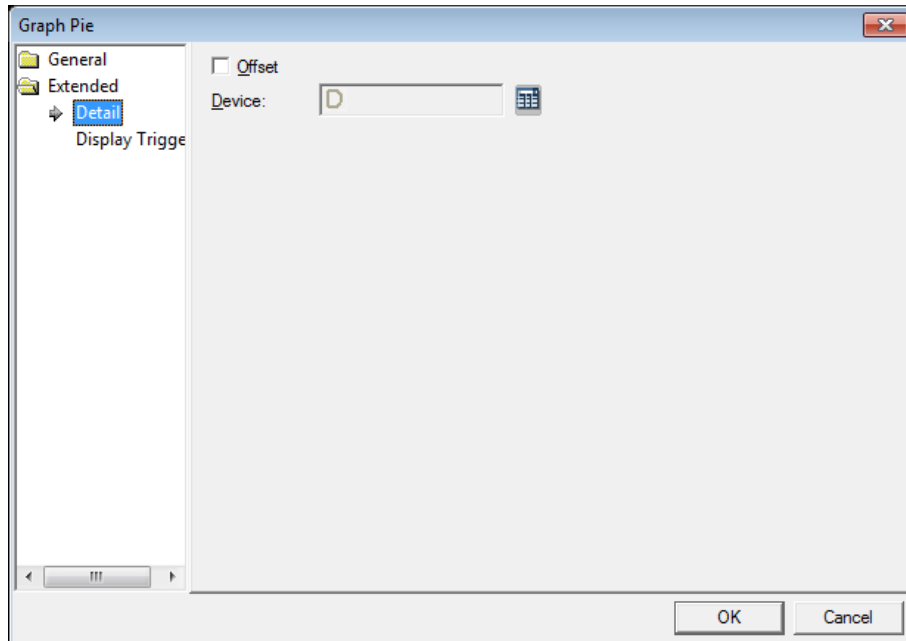
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 <i>Understanding Constants and Data Types</i> >.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for pie graph objects include the following:



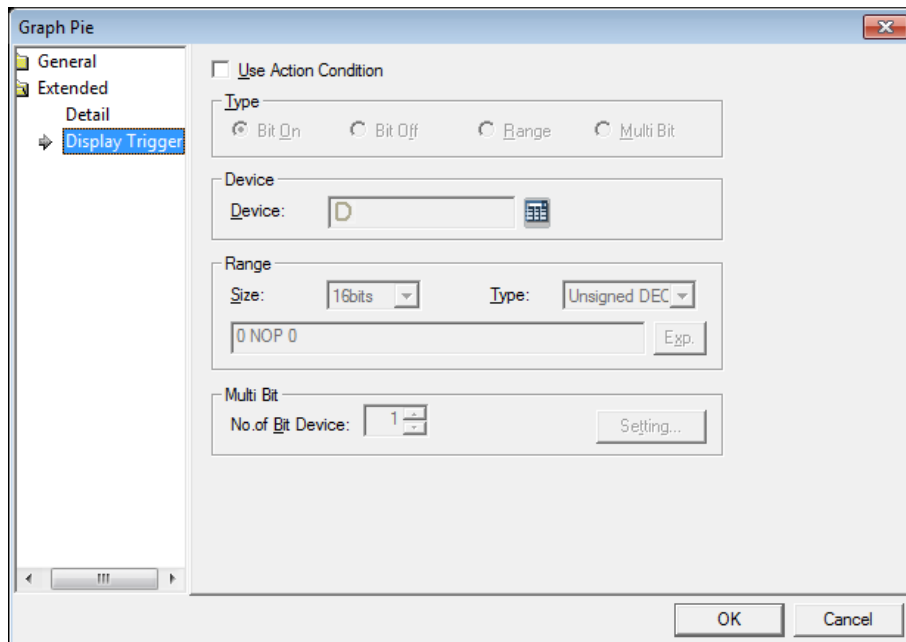
- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for pie graph object include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for the pie graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

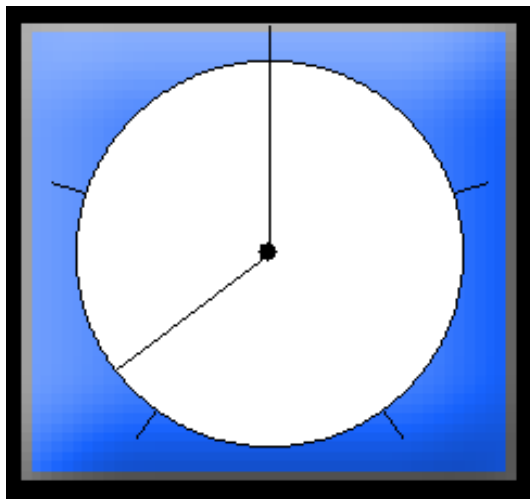
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

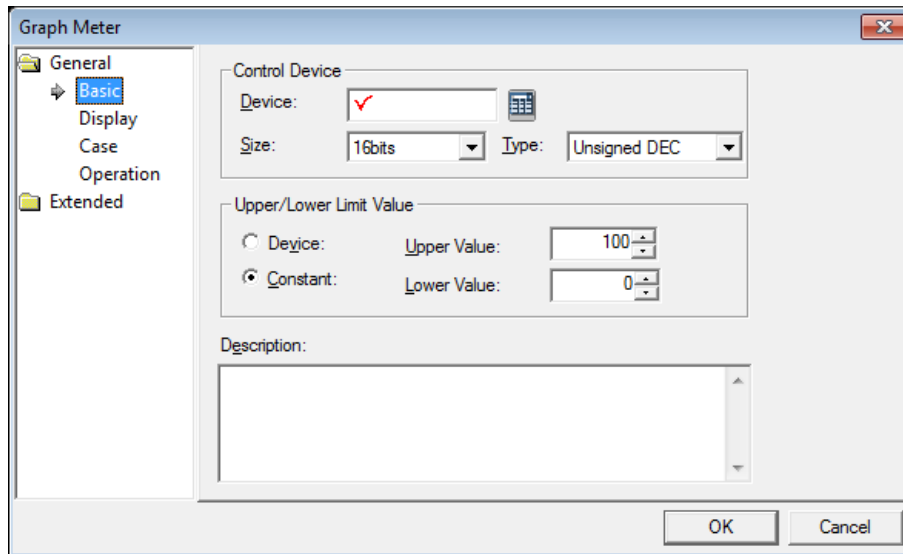
#### 4.3.8.3 Meter Graph

The following sections describe available options for meter graphs.





- **Basic:** The basic settings for meter graph objects include the following:



- **Control Device:** Specify the following options for the control device.

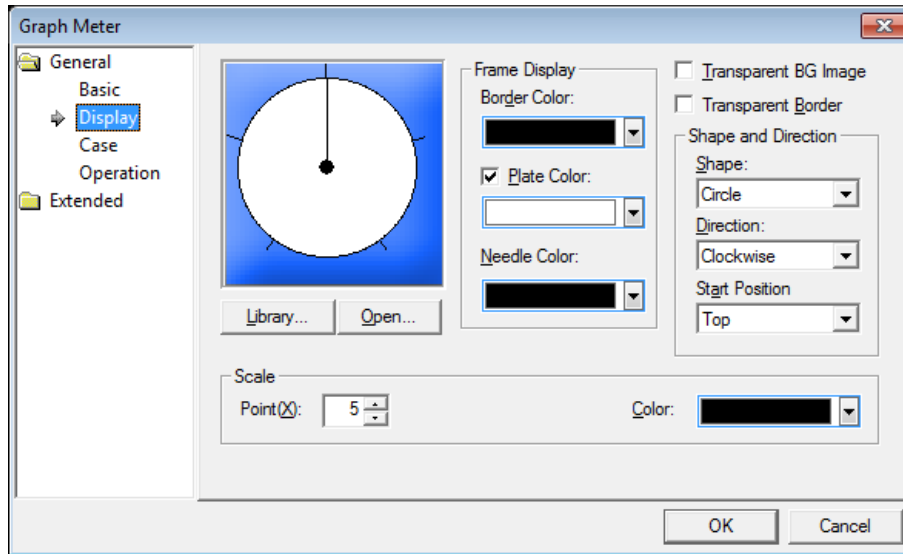
<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.

- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.

<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.

- **Description:** Enter description in the relevant object.

- **Display:** The display settings for meter graph objects include the following:



- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.
<b>Needle Color</b>	Set the pointer color.

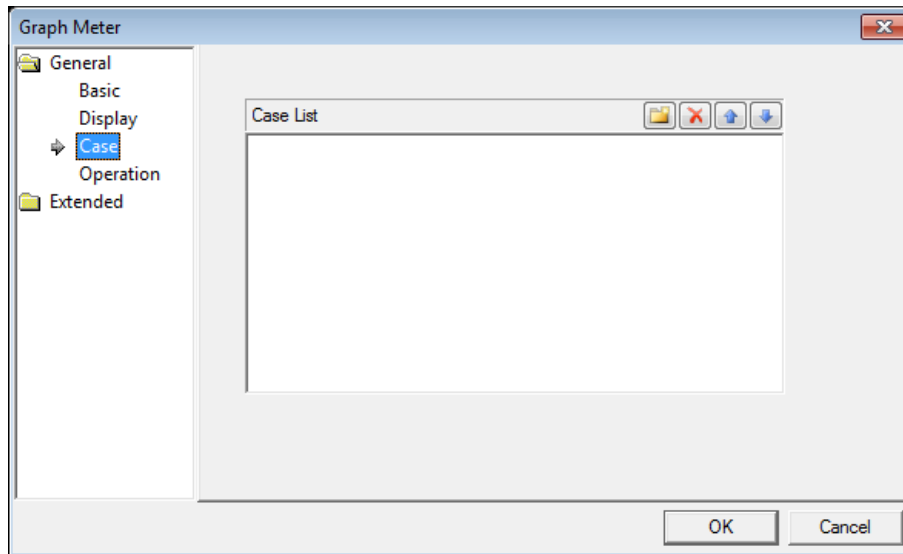
- **Transparent BG Image:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border.
- **Shape and Direction:** Specify the following options for the shape and direction.

<b>Shape</b>	Set the shape of the graph.
<b>Direction</b>	Set the direction for filling the graph.
<b>Start Position</b>	When using a circle shape, set the start position of the pointer.





- **Scale:** Specify the following options for the scale.

<b>Point</b>	Set the number of points in the scale.
<b>Color</b>	Set the color of the scales.

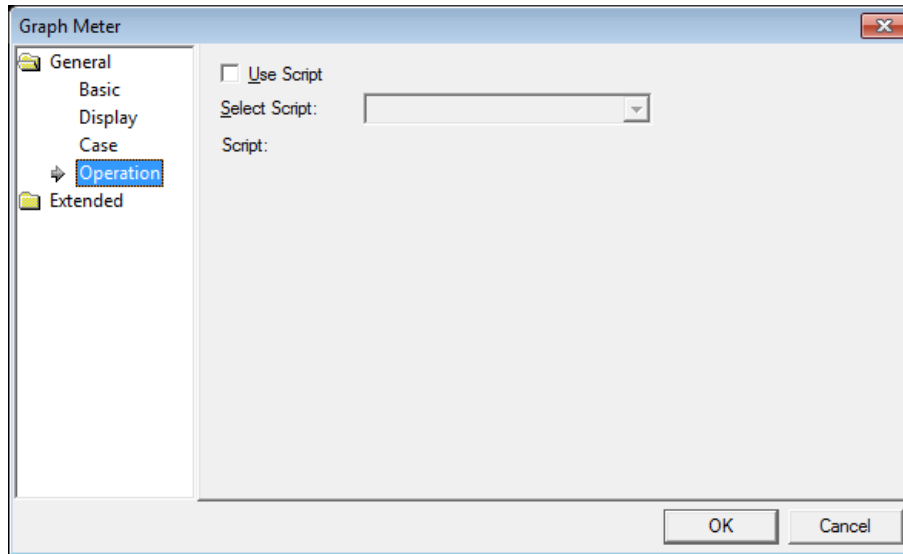
- **Case:** The case settings for meter graph object include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

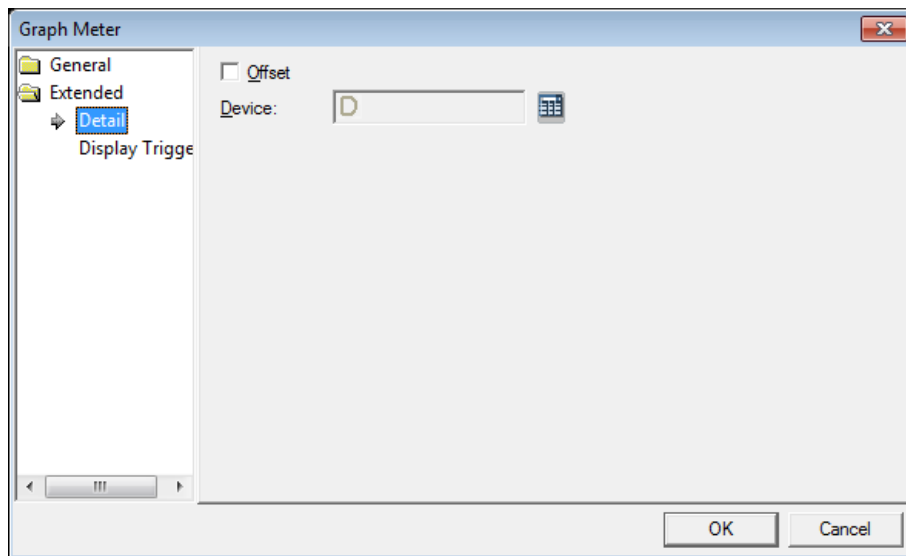
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for meter graph object include the following:



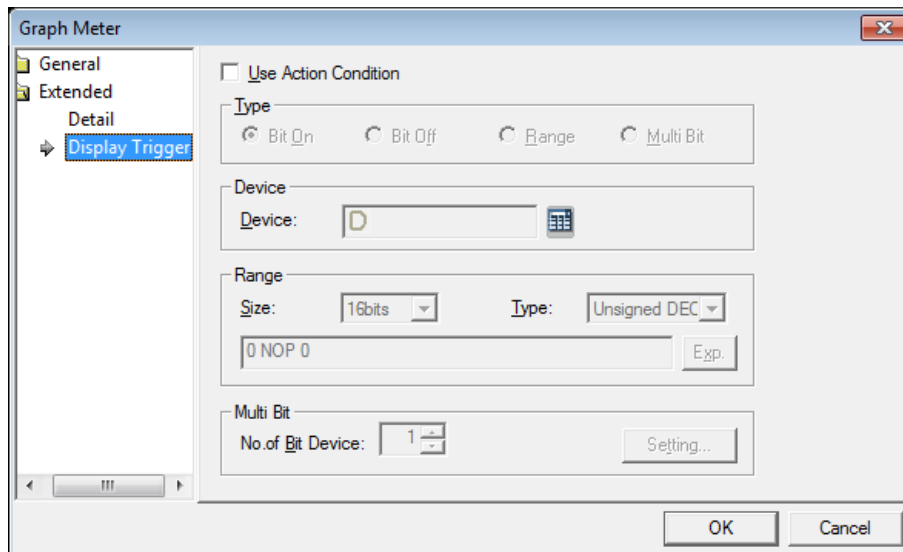
- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for meter graph object include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for the meter graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

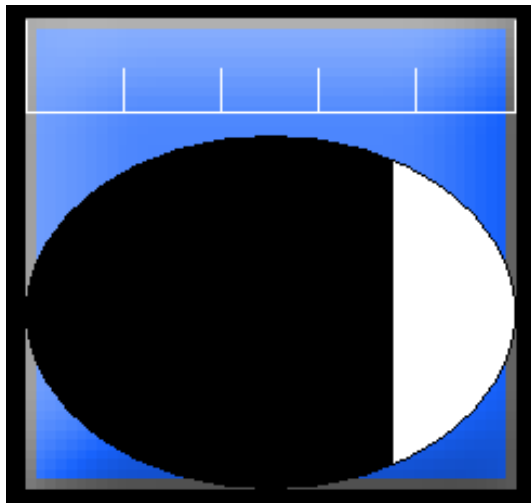
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

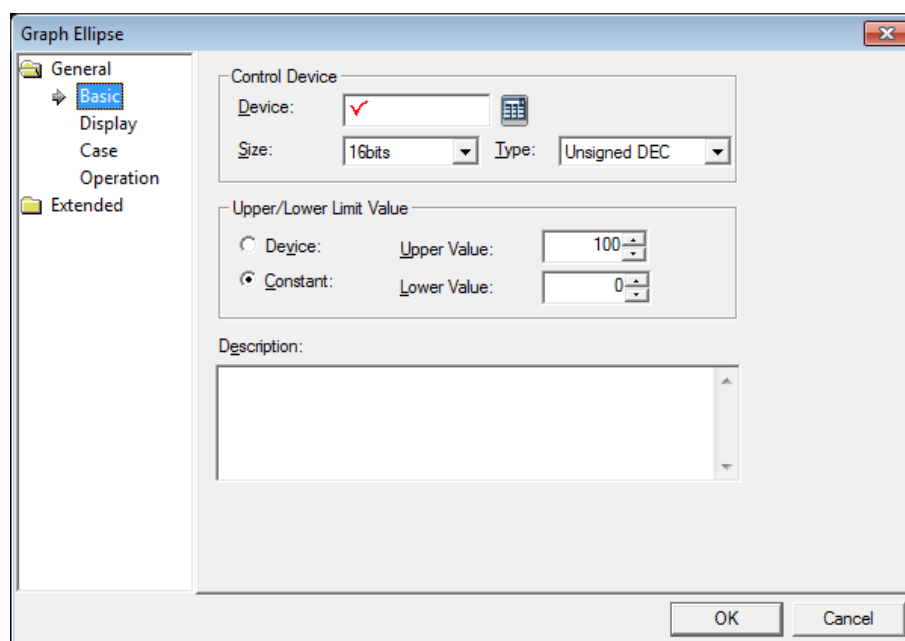
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.8.4 Closed Graph

The following sections describe the options available for closed graph objects.



- **Basic:** The basic settings for closed graph objects include the following:



- **Control Device:** Specify the following options for the control device.

<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.

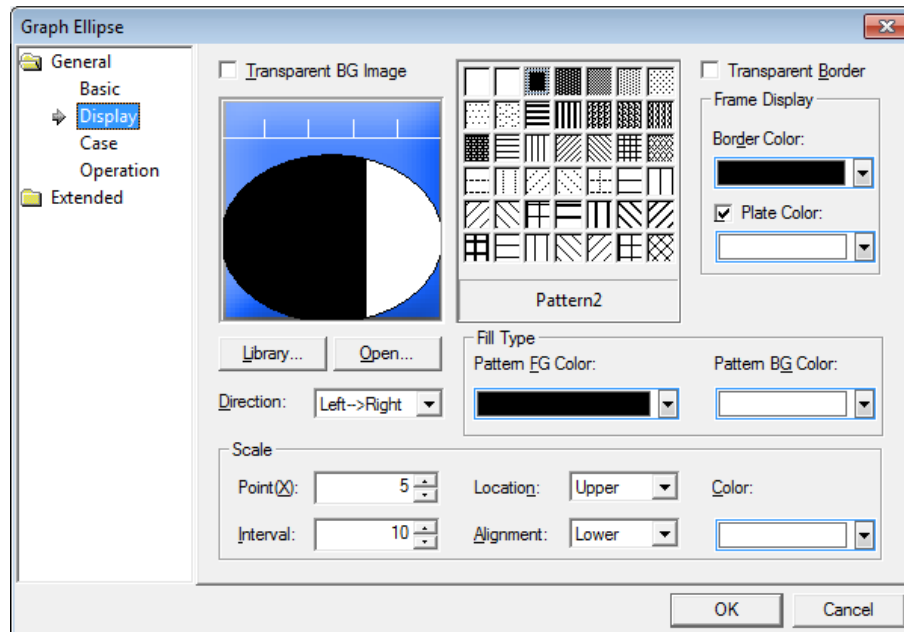
- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.

<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.

- **Description:** Enter description in the relevant object.



- **Display:** The display settings for closed graph objects include the following:



- **Transparent BG Image:** Set whether or not to make the background of the graph transparent.
- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Direction:** Set the direction for filling the graph (Top > Bottom, Bottom > Top, Left > Right, or Right > Left).
- **Pattern:** Select the pattern for the filled areas of the graph.
- **Transparent Border:** Set whether or not to use a transparent border.
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

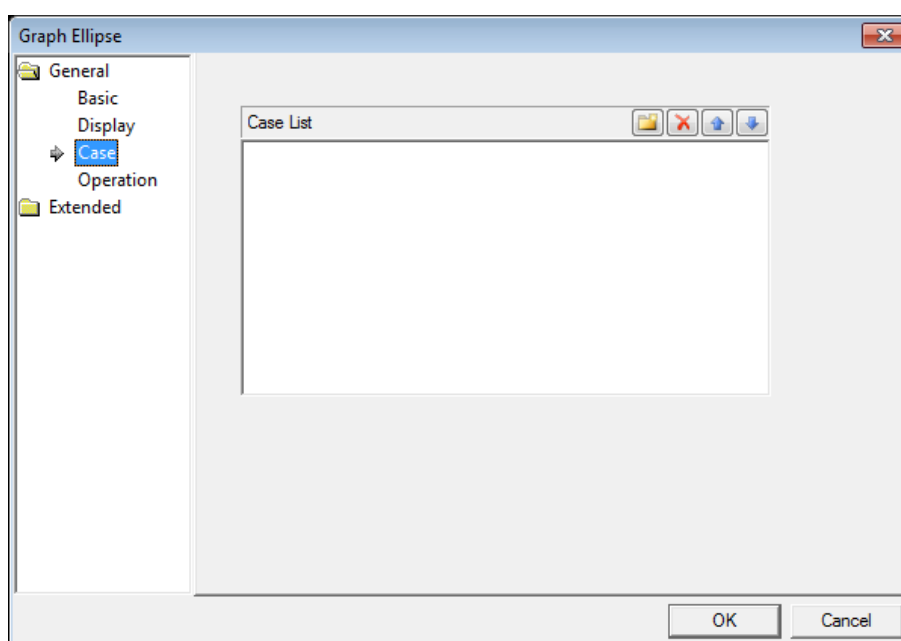
- **Fill Type:** Specify the following options for the fill.

<b>Pattern FG Color</b>	Set the foreground color for the pattern.
<b>Pattern BG Color</b>	Set the background color for the pattern.





- **Scale:** Specify the following options for the scale.

<b>Point</b>	Set the number of points in the scale.
<b>Interval</b>	Set the space between the points in the graph (0 to 10).
<b>Location</b>	Set the location of the scales.
<b>Alignment</b>	Set the alignment for labels in the scales.
<b>Color</b>	Set the color of the scales.

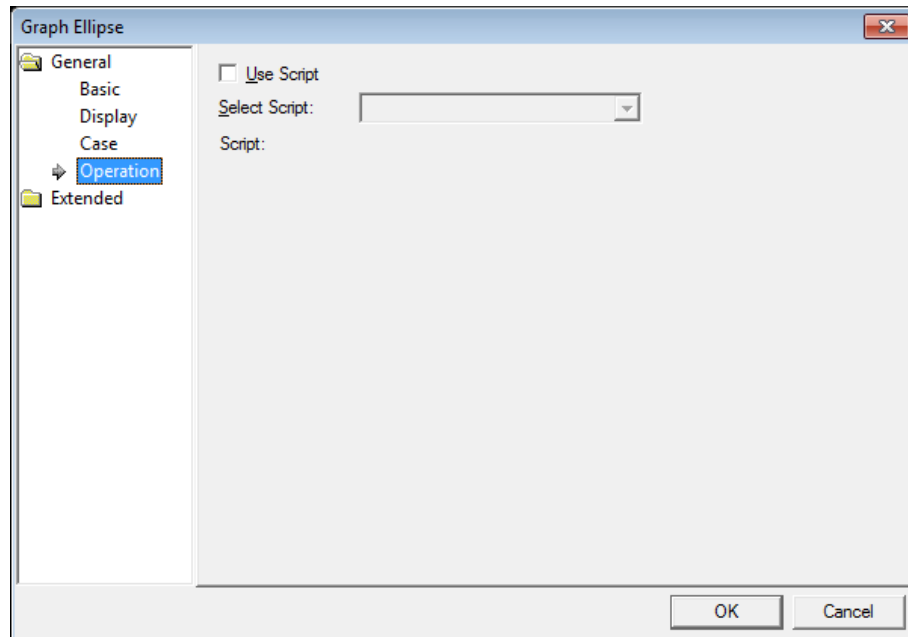
- **Case:** The case settings for closed graph object include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

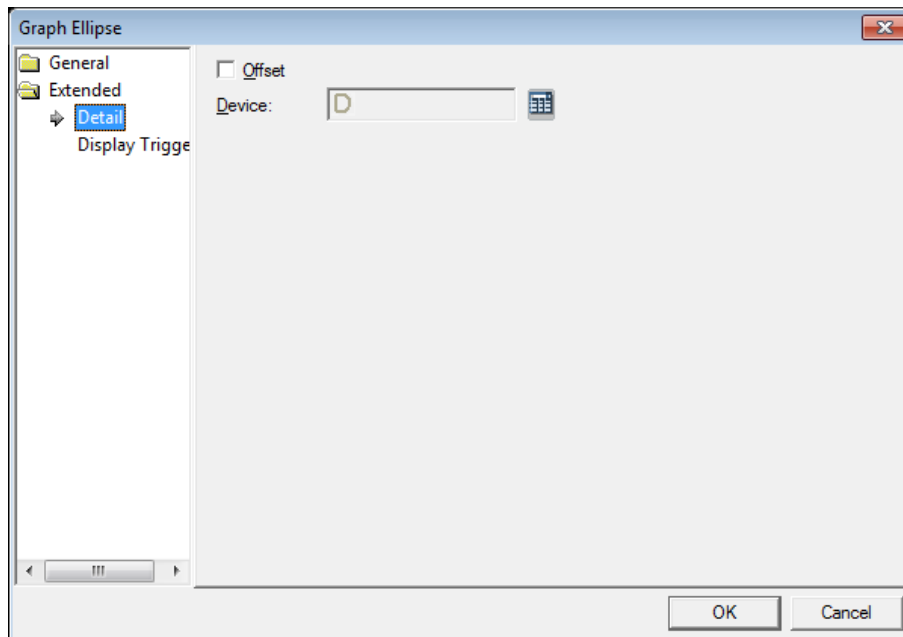
 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Operation:** The operation settings for closed graph object include the following:



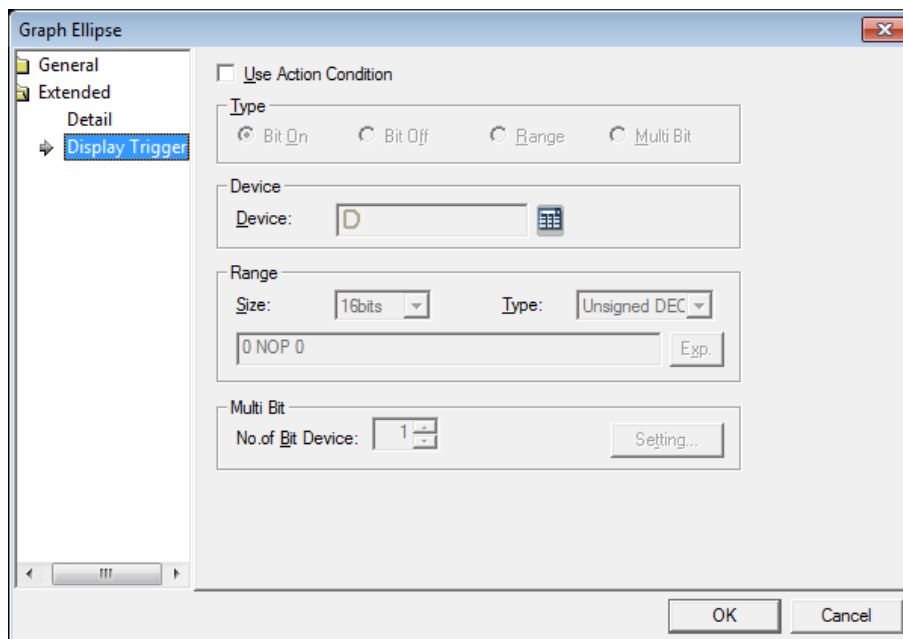
- **Use Script:** Click the checkbox to use a script with the object.
- **Select Script:** Select a script from the drop-down list.
- **Script:** When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for closed graph object include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for the closed graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

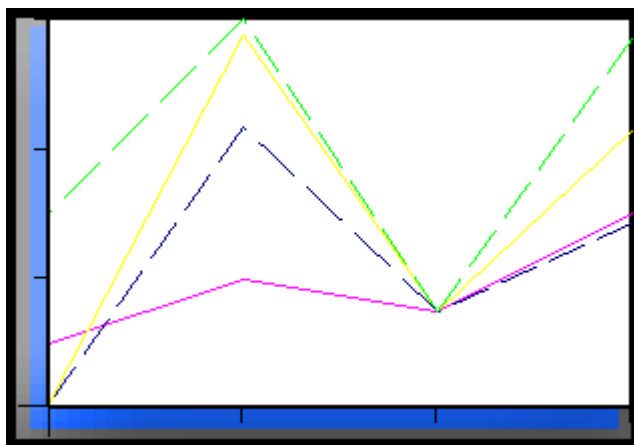
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

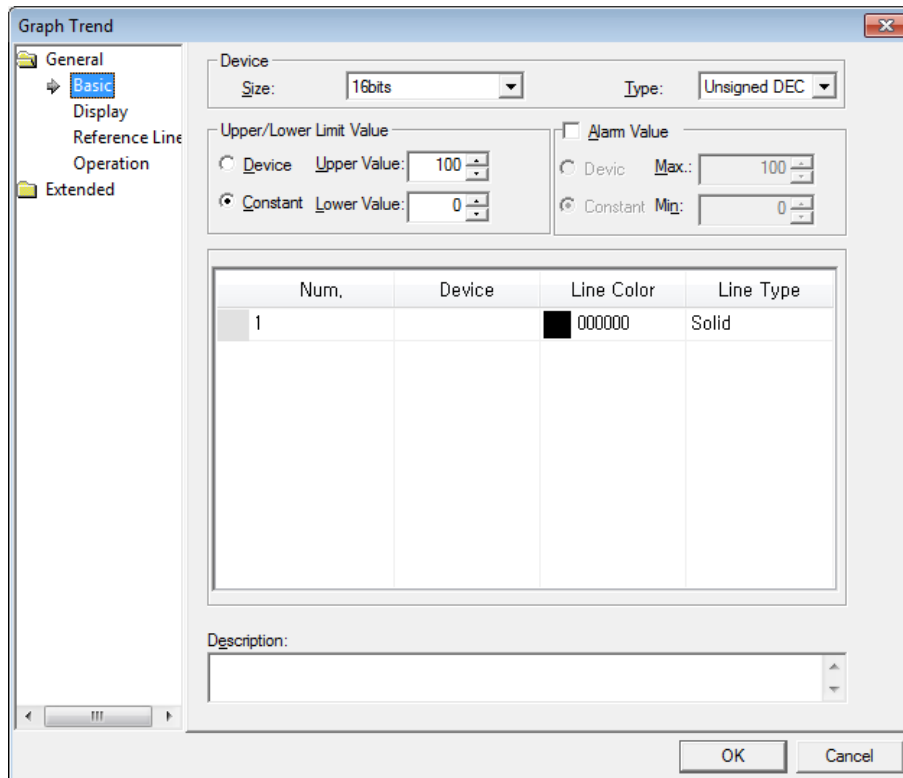
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.8.5 Trend Graph

The following sections describe available options for trend graphs.



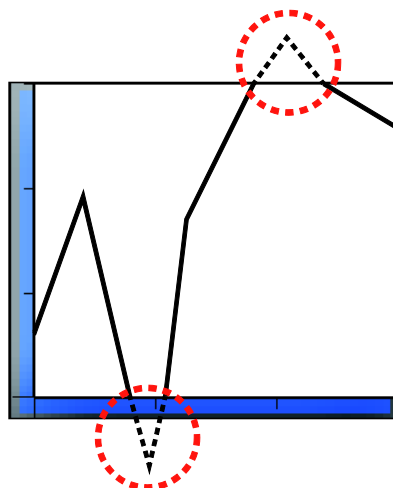
- **Basic:** The basic settings for the trend graph object include the following:



- **Device:** Specify the following options for the device.

<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.

- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.



<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.

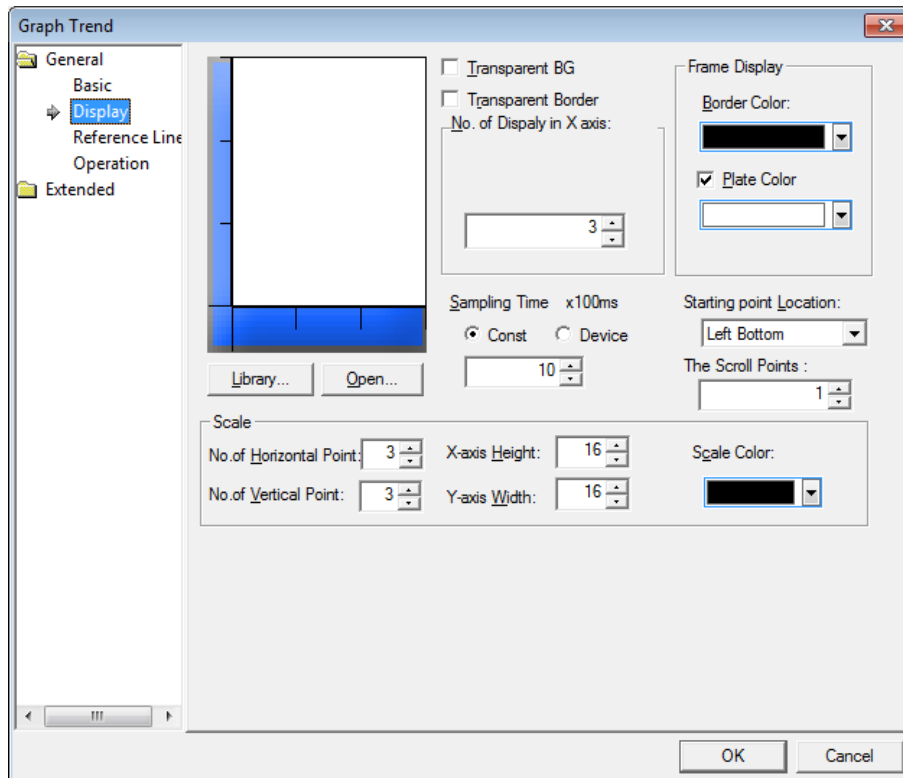
- **Alarm Value:** Set whether or not to trigger an alarm if the data value exceeds the maximum or minimum limits.

<b>Device</b>	Set the specified device value as the alarm limit.
<b>Constant</b>	Set the specified fixed value as the alarm limit.

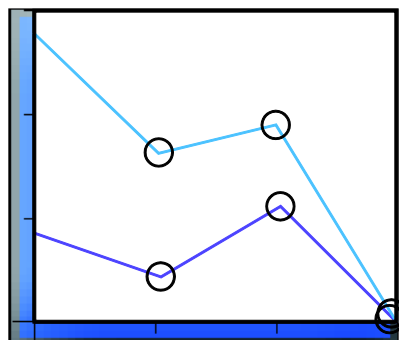
- **Device:** Click to specify a device to be referenced by the object or enter the device address. When you specify a device, a new device input row will be created automatically, where you can specify more devices to be referenced (up to 8). To remove a device, click the row number and press Delete on the keyboard.
- **Line Color:** Set the line color for the graph.
- **Line Type:** Set the line type (dash or solid).



- **Display:** The display settings for the trend graph object include the following:



- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Transparent BG:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border.
- **No. of Display in X axis:** Set the number of data points to be displayed on the graph (3 to 120).



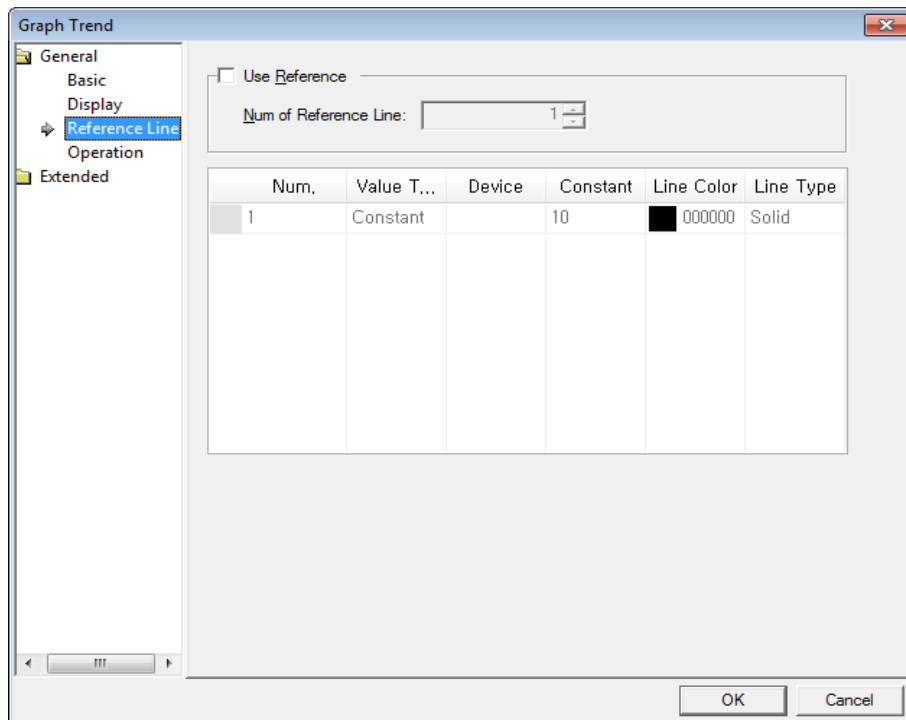
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

- **Sampling Time x100ms:** Set the cycle for collecting the data, in milliseconds (1 to 6,000).
- **Starting Point Location:** Set a starting point for the scales (left bottom or right bottom).
- **The Scroll Points:** Set the speed that the graph will scroll across the screen, by setting the number of points that the graph will scroll each time. The higher the number, the faster the graph will scroll.
- **Scale:** Specify the following options for the scale.

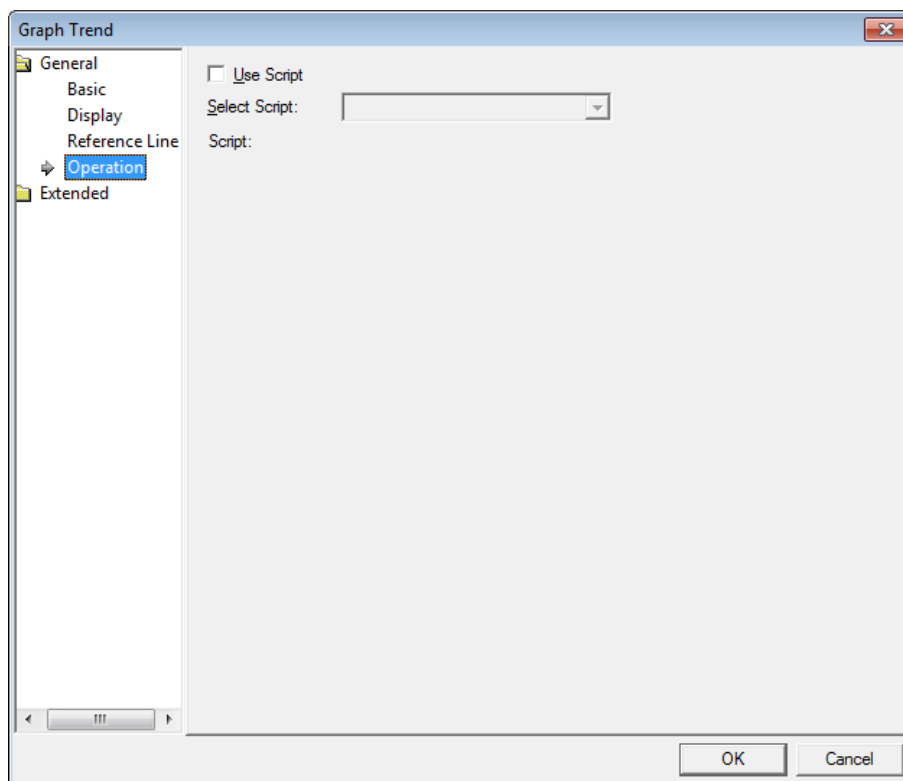
<b>No. of Horizontal Point</b>	Set the number of points on the X axis.
<b>No. of Vertical Point</b>	Set the number of points on the Y axis.
<b>X-axis Height</b>	Set the height of the X axis scale.
<b>Y-axis Width</b>	Set the width of the Y axis scale.
<b>Scale Color</b>	Set the color of the scales.

- **Reference Line:** The reference line settings for the trend graph object include the following:



- **Use Reference:** Set whether or not to use a reference line in the graph.
  - **Num of Reference Line:** Set how many reference lines to use.
- **Setting property of reference line:** When you set to use a reference line, the properties window appears.

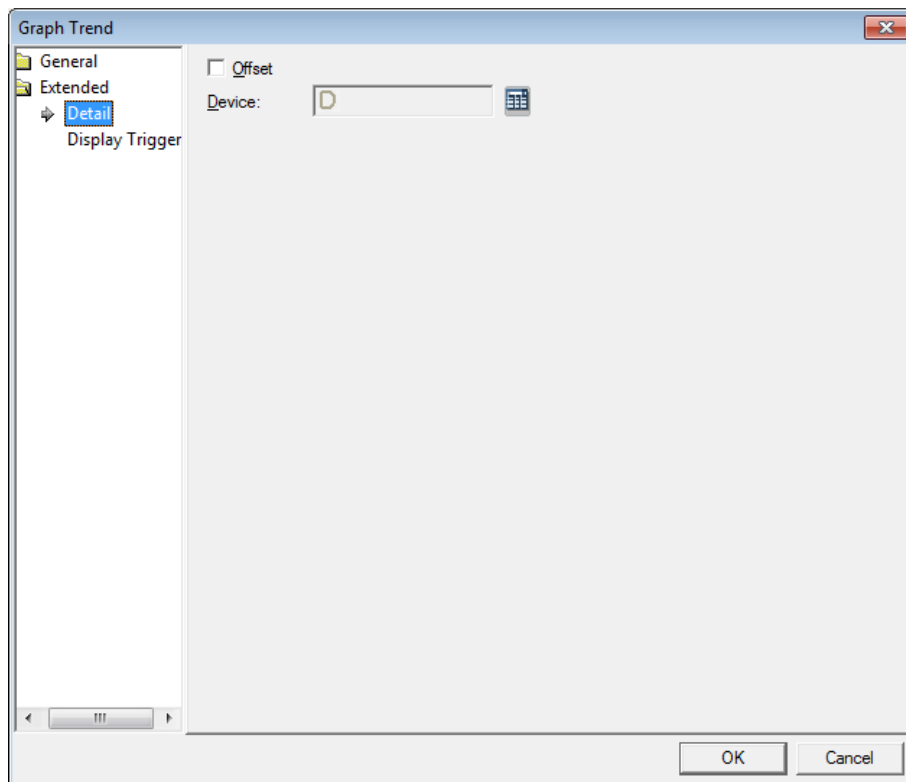
- **Operation:** The operation settings for trend graph object include the following:



- **Use Script:** Click the checkbox to use a script with the object.

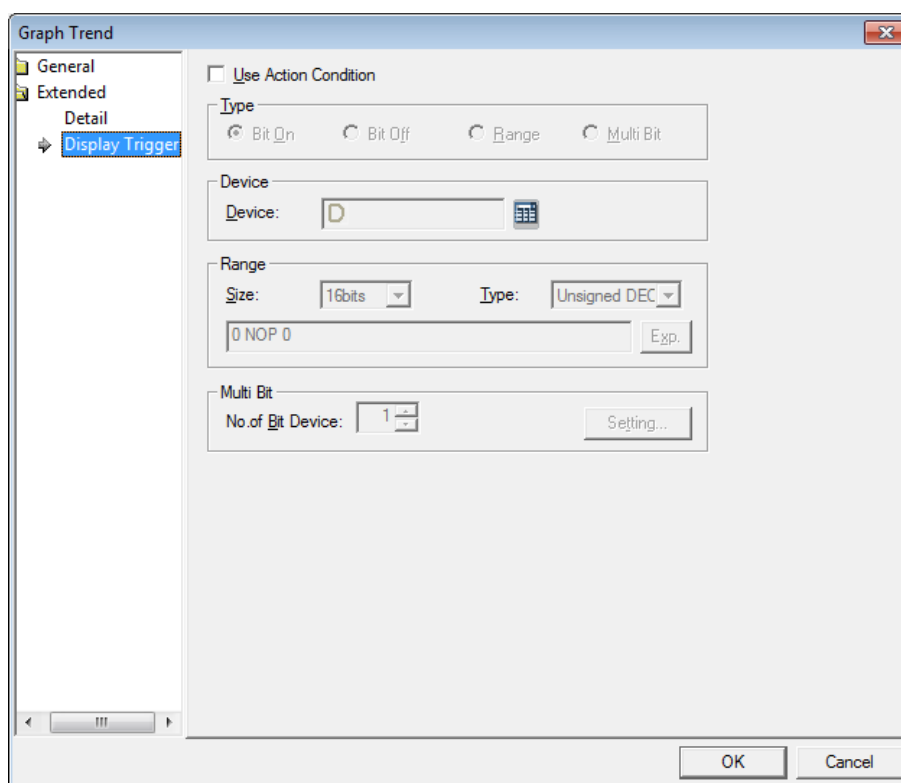
<b>Select Script</b>	Select a script from the drop-down list.
<b>Script</b>	When you select a script, it appears here. To modify a script, refer to <4.2 Scripts>.

- **Detail:** The detail settings for trend graph object include the following:



- **Offset:** Click the checkbox to use the offset function. You can offset the device address based on the value of the offset device. For example, if the starting device address is P100, XP-Builder reads the value from the offset device and offsets the address by that value. If the offset value is 10, for example, then the referenced device address is P110.
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Display Trigger:** The display trigger settings for the trend graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

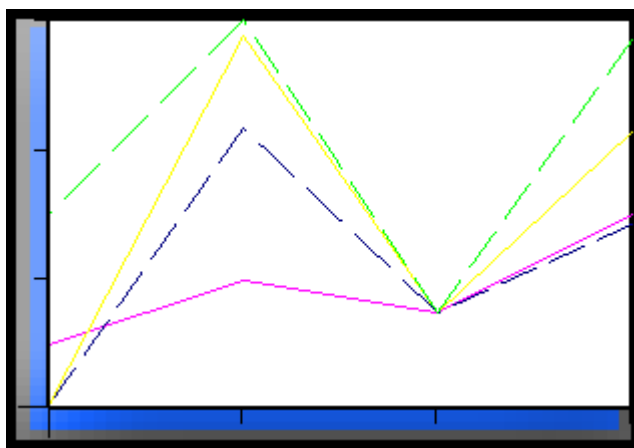
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.8.6 Logging Trend Graph

The following sections describe available options for logging trend graph objects.



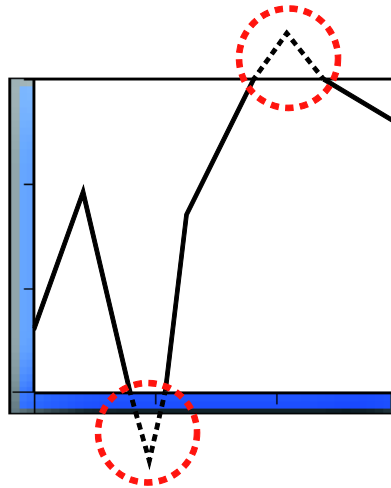
- **Basic:** The basic settings for the logging trend graph object include the following:

- **Logging Device:** Specify the following options for the logging device.

<b>Size</b>	Set the data size of the device (16 bit or 32 bit). You can change the data size only in the Logging data from the project pane.
<b>Type</b>	Set the data form of the device (signed decimal, unsigned decimal, BCD, or float). If you change the data type of an existing object, the conditional statement will be deleted.



- **Upper/Lower Limit Value:** Set the maximum and minimum values of the data to display. The maximum and minimum values must be within the range supported by the device type. Otherwise, only the minimum or maximum value supported by the device will be displayed.



<b>Device</b>	Set the specified device value as the maximum and minimum Value.
<b>Constant</b>	Set the specified fixed value as the maximum and minimum Value.





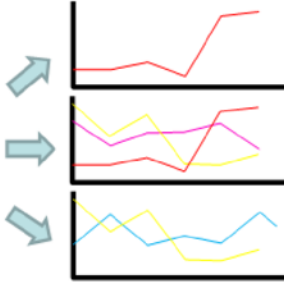








- **Alarm Value:** Set whether or not to trigger an alarm if the data value exceeds the maximum or minimum limits.

<b>Device</b>	Set the specified device value as the alarm limit.
<b>Constant</b>	Set the specified fixed value as the alarm limit.

- **Logging Group:** Set the number of the logging group, which is set in the Logging.

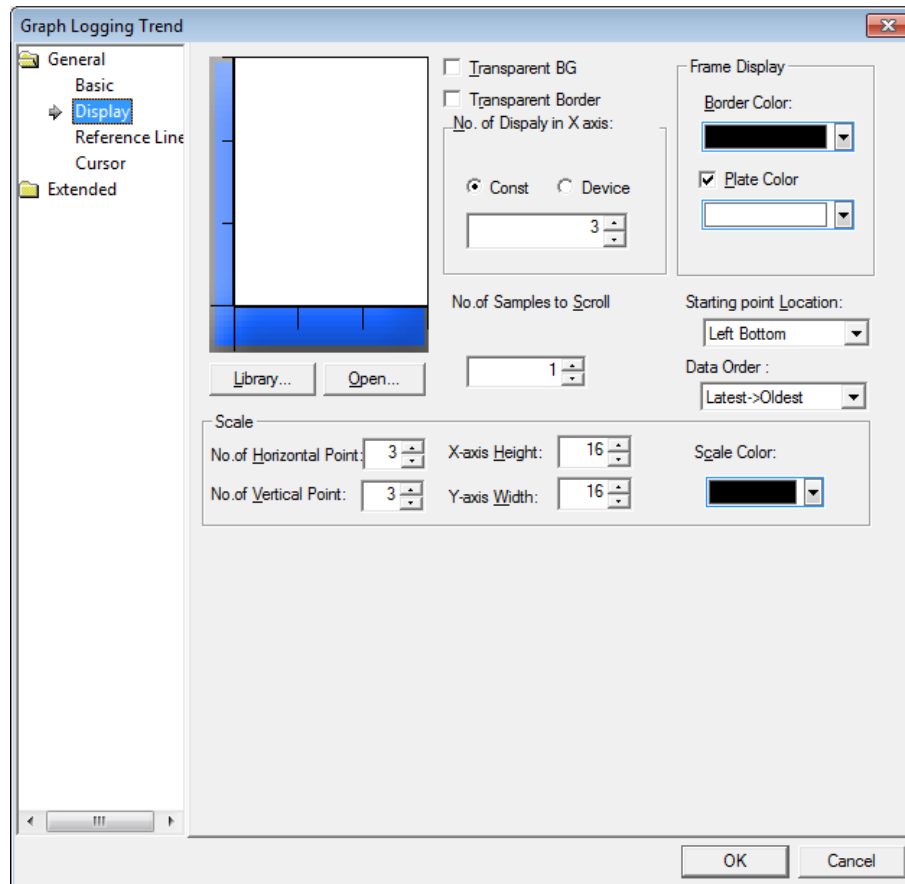
No	Condition	Repeat Count	Repeat Period	Device	Device Count
1	Bit Device P00100 Rising Edge	100	0D 00:00:10	P0100	1
2	Every hour at 39m	1	0D 00:00:10		1
3	Once at 2013Y 4M 8D 00:39	30	0D 00:00:10		1

- **Display Condition:** Set the condition for displaying the graph.

<b>Always Display</b>	Set to display always.																																									
<b>Display when Bit On/Off</b>	<p>Set to display the specific index data when the bit is on. For example, if you set the four indexes and the conditional device to P0100,</p> <table><thead><tr><th>Num.</th><th>Index</th><th>Device Add.</th><th>Line Color</th><th>Line Type</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>P0100</td><td> 0000ff</td><td>Dash</td></tr><tr><td>2</td><td>3</td><td>P0102</td><td> #00ff</td><td>Solid</td></tr><tr><td>3</td><td>5</td><td>P0104</td><td> 00ffff</td><td>Dash</td></tr><tr><td>4</td><td>6</td><td>P0105</td><td> ffff00</td><td>Solid</td></tr></tbody></table> <p>The graph appears as shown, based on the device status:</p> <table><thead><tr><th>P0100</th><th>P0102</th><th>P0104</th><th>P0105</th></tr></thead><tbody><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr></tbody></table> 	Num.	Index	Device Add.	Line Color	Line Type	1	1	P0100	 0000ff	Dash	2	3	P0102	 #00ff	Solid	3	5	P0104	 00ffff	Dash	4	6	P0105	 ffff00	Solid	P0100	P0102	P0104	P0105	ON	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	ON	ON
Num.	Index	Device Add.	Line Color	Line Type																																						
1	1	P0100	 0000ff	Dash																																						
2	3	P0102	 #00ff	Solid																																						
3	5	P0104	 00ffff	Dash																																						
4	6	P0105	 ffff00	Solid																																						
P0100	P0102	P0104	P0105																																							
ON	OFF	OFF	OFF																																							
ON	ON	ON	OFF																																							
OFF	OFF	ON	ON																																							

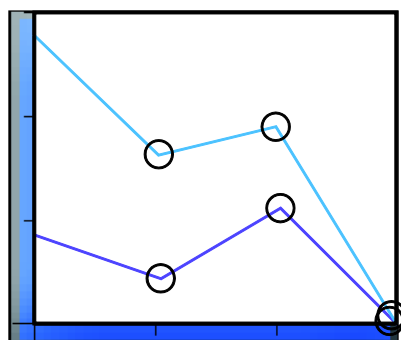
- **Sort:** Set a sort option (oldest first or latest first).
- **Cont. Add:** Click to enter a starting index and range.
- **Delete All:** Click to delete all input data at once.
- **Index:** Shows the index number of the device.
- **Device Add.:** Shows the device address.
- **Line Color:** Set the line color for the graph.
- **Line Type:** Set the line type (dash or solid).
- **Description:** Enter a description for the object.

- **Display:** The display settings for the logging trend graph object include the following:



- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Transparent BG:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border.

- **No. of Display in X axis:** Set the number of data points to be displayed on the graph (3 to 120).



<b>Device</b>	Set the specified device value as the X axis point.
<b>Constant</b>	Set the specified fixed value as the X axis point.

- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

- **No. of Samples to Scroll:** A user can refer to the data of his intended position with the special switch; Previous Data/Next Data View. However, in the below two cases (The latest data tracking mode/the oldest data tracking mode), a window is automatically updated and it displays the data since the present time. Through this option, you can set how many data unit will be applied to transfer a screen.

<b>The latest data tracking mode</b>	When you edit and download logging trend graph after setting Preferred View Mode as the latest data tracking mode, logging trend is set as the latest data tracking mode and it updates a screen every time logging is performed newly and then, it tracks and shows the latest logging data.
<b>The oldest data tracking mode</b>	The logging type linked to logging trend graph is set as circular buffer, the data displayed at the current screen will be removed someday with continuous logging process. Then, the equipment updates a screen automatically and displays the oldest data.

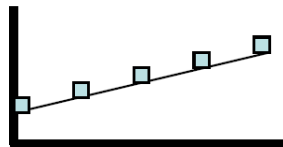
- **Starting Point Location:** Set a starting point for the scales (Left Bottom, Right Bottom, Left Top, or Right Top).

## 4. Reference

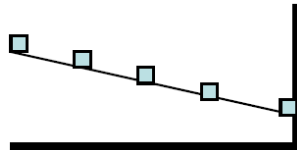
- **Data Order:** Specify the following options for the data order, for example:

Time	Data
8:10	10
8:20	20
8:30	30
8:40	40
8:50	50

- **Latest -> Oldest:** Show data in order from most recent to oldest. The starting point is on the left:

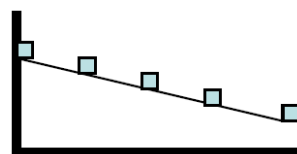


The Starting Point Location is on the right:

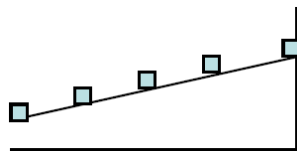


- **Oldest -> Latest:** Show data in order from oldest to most recent.

The Starting Point Location is on the left:



The Starting Point Location is on the right:

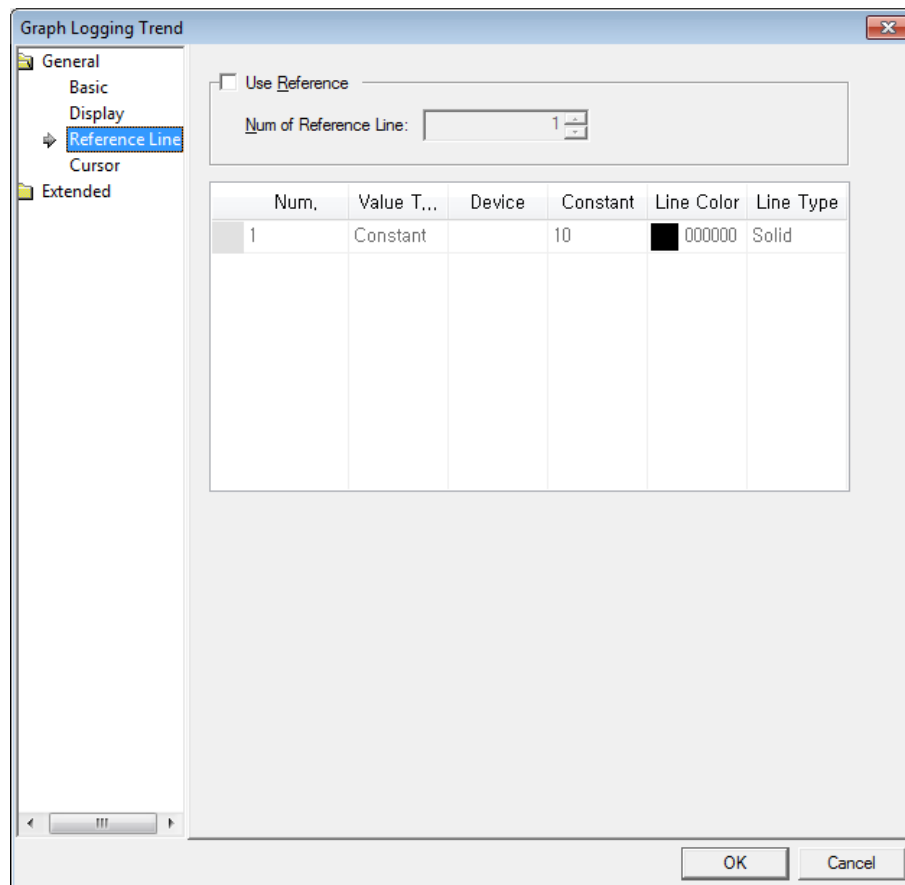


- **Scale:** Specify the following options for the scale.

No. of Horizontal Point	Set the number of points on the X axis.
No. of Vertical Point	Set the number of points on the Y axis.

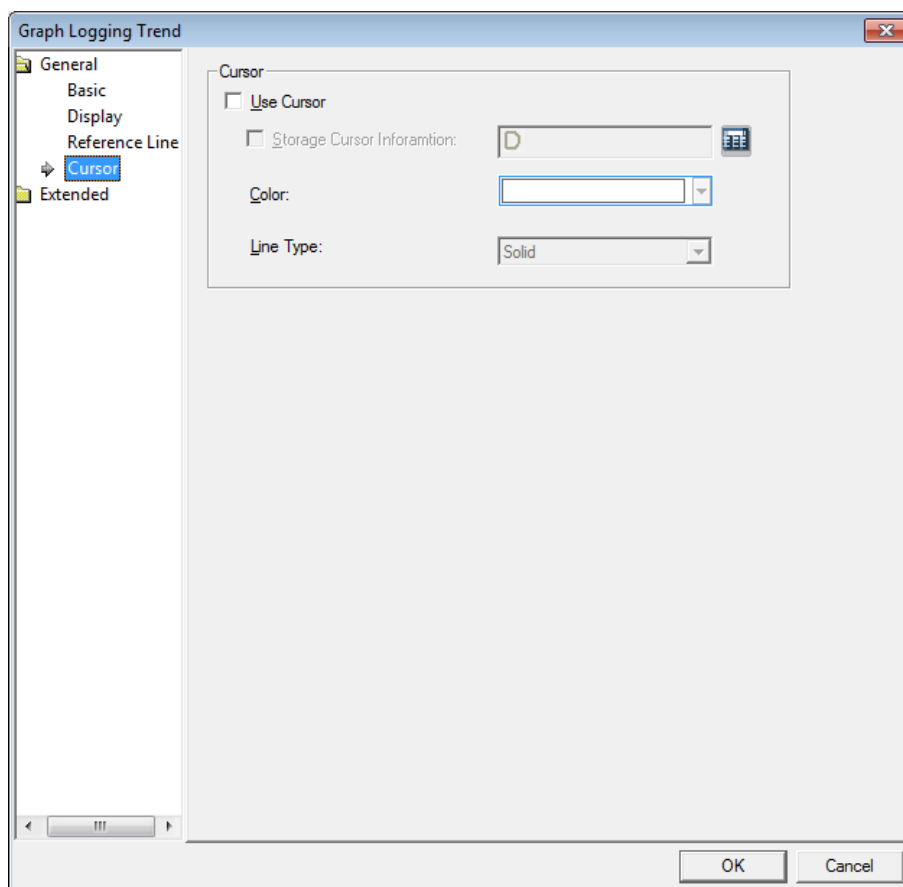
<b>X-axis Height</b>	Set the height of the X axis scale.
<b>Y-axis Width</b>	Set the width of the Y axis scale.
<b>Scale Color</b>	Set the color of the scales.

- **Reference Ling:** The reference line settings for the logging trend graph object include the following:

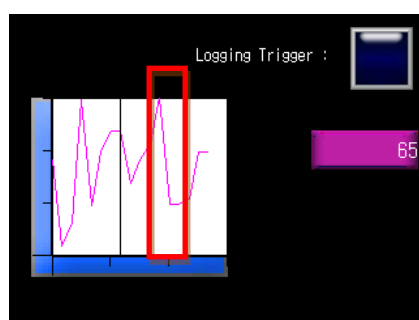


- **Use Reference:** Set whether or not to use a reference line in the graph.
  - **Num of Reference Line:** Set how many reference lines to use.
- **Setting property of reference line:** When you set to use a reference line, the properties window appears.

- **Cursor:** The cursor settings for logging trend graph object include the following:

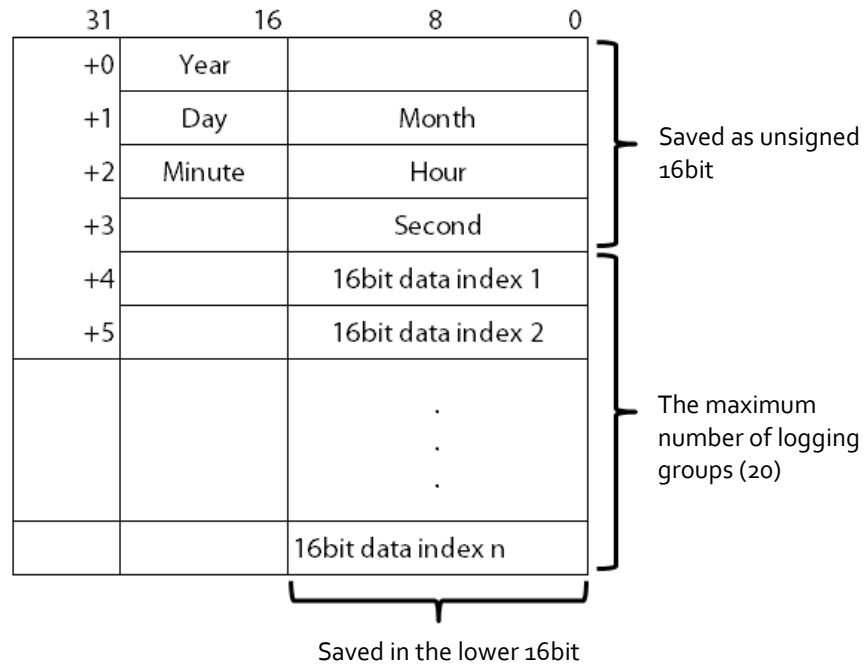


- **Cursor:** Specify the following options for the cursor.
  - **Use Cursor:** Set whether or not to display the cursor on the XGT screen, as illustrated below.

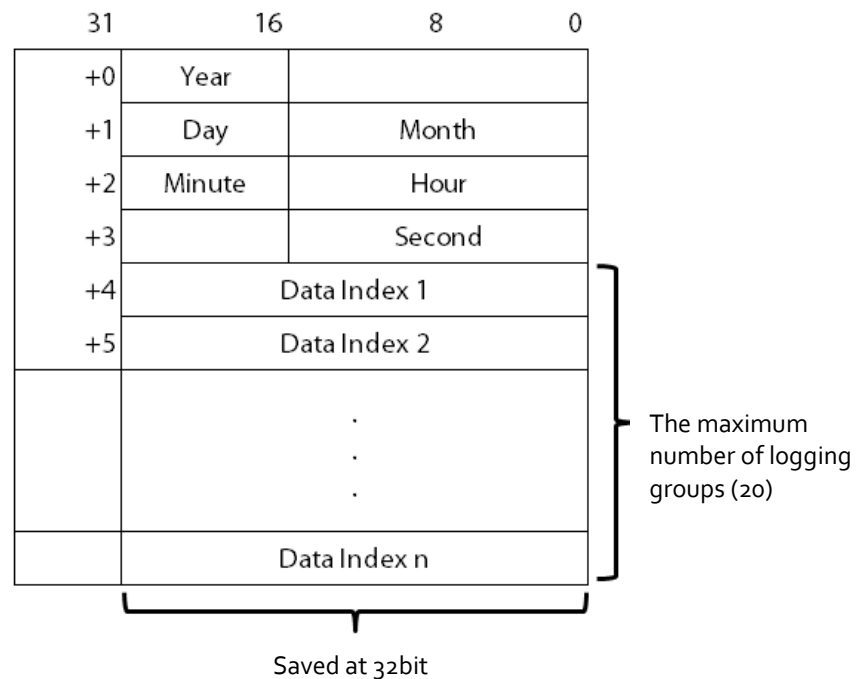


- **Storage Cursor Information:** Set whether or not to save cursor data (logging time of the current cursor position and related values). Cursor data is saved at device and the size of the device is always 32 bit. The cursor information is saved as follows, based on the device set:

<Logging device size: 16bit>



<Logging device size: 32bit>



The cursor information is saved in the specified device whenever the data from the current location of the cursor is changed or the cursor is moved.

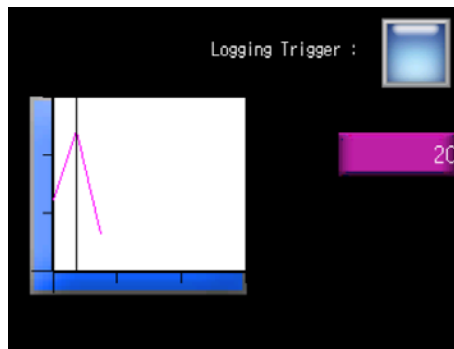
- **Color:** Set a color for the cursor.



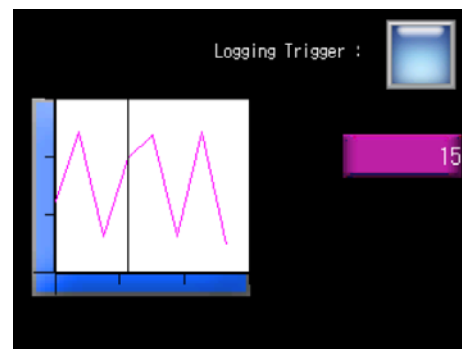
- **Line Type:** Set a line type for the cursor (solid or dash).

### Notes

- To show or hide the cursor, click the Logging Trend Graph area.
- The location of the cursor is at the center of the current data.



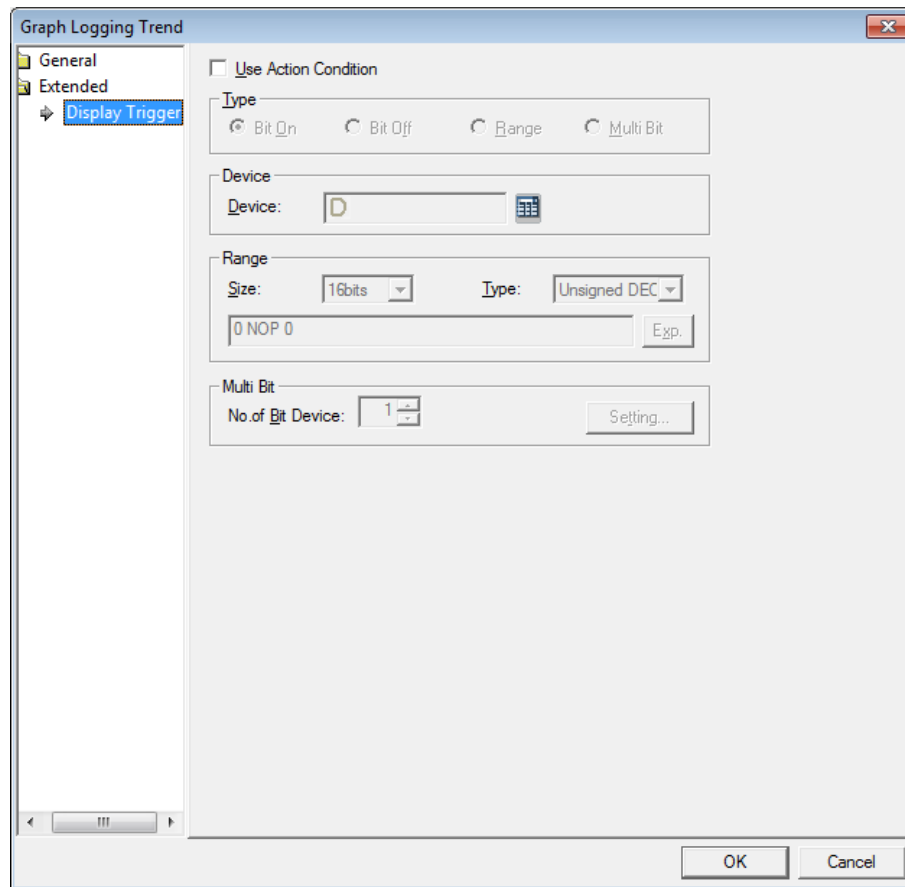
< The current data value: 3>



< The current data value: 8>

- If the data to be displayed is deleted, because the area is deleted in the cursor display mode, the cursor will also disappear. When the logging is restarted, the cursor will reappear.
- The cursor cannot be moved. To move the cursor, use the Next Log Trend Data or Previous Log Trend Data option from the Special Switch object.
- If there is no data before or after the current data, the cursor is moved to the previous or next data.

- **Display Trigger:** The display trigger settings for the logging trend graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

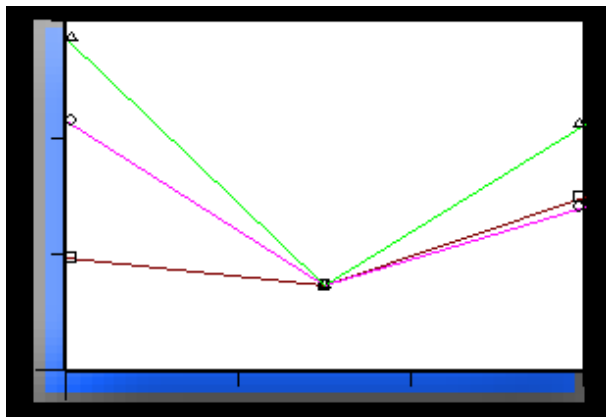
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

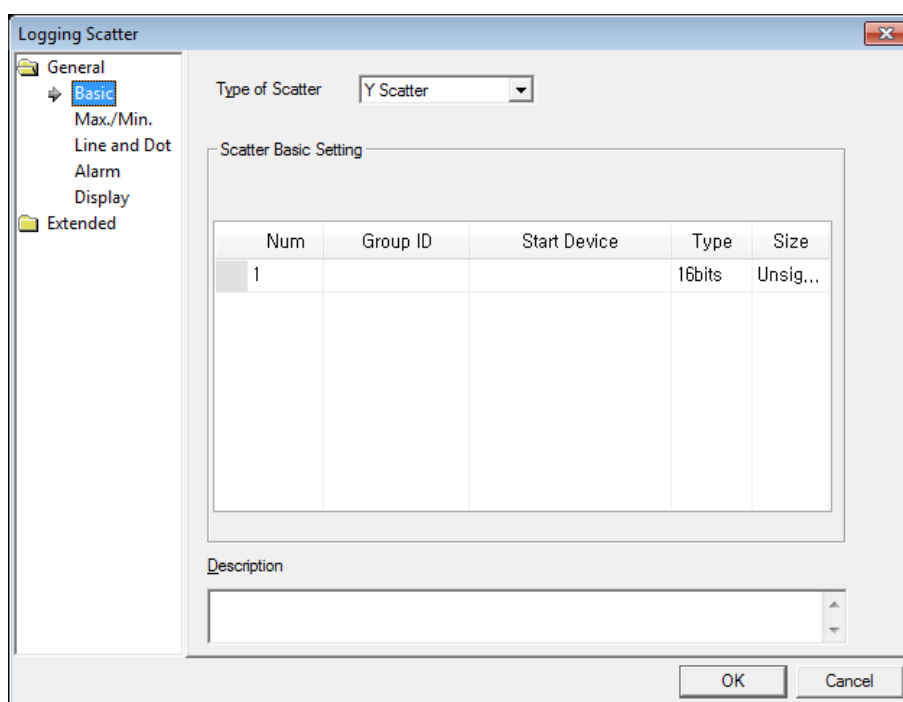
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.8.7 Logging Scatter Graph

The following sections describe available options for logging scatter graph objects.

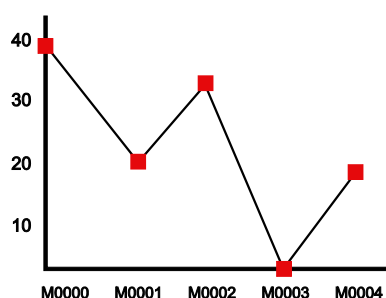


- **Basic:** The basic settings for the logging scatter graph objects include the following:

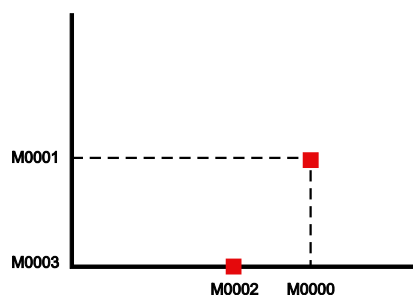


– **Type of Scatter:** Set the type of scatter chart.

- **Y Scatter:** Shows device addresses, including the logging start device, in order along the X-axis. The data displays in a loop, so you do not need to designate the minimum or maximum value.



- **X-Y Scatter:** For two continuous device addresses from starting device, shows the previous device value along the X-axis and the next device value along the Y-axis and displays dot or value where the two coordinates intersect. You must designate a minimum and maximum value for the axes.

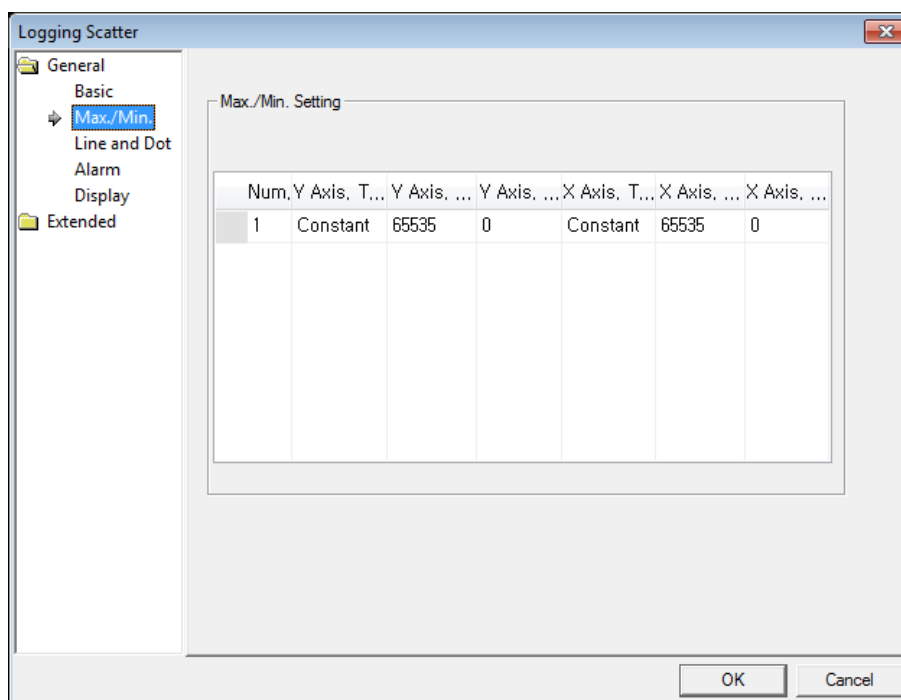


– **Scatter Basic Setting:** Specify the following options for the scatter chart.

<b>Group ID</b>	The logging group No. to be displayed can be established among 1~32. You can fix the logging group number from Logging in the Project pane. To add a new item to logging scatter chart, input logging group number to logging group window and press the Enter key. If a new item is added, the screen for logging group number is added to the next row and you can also add another item up to 20. To delete the item, select the number of item and press the Delete key.
<b>Start Device</b>	It displays a starting device that is applicable to input logging group number. Register the start device from the Logging in the Project pane. Each control device data is

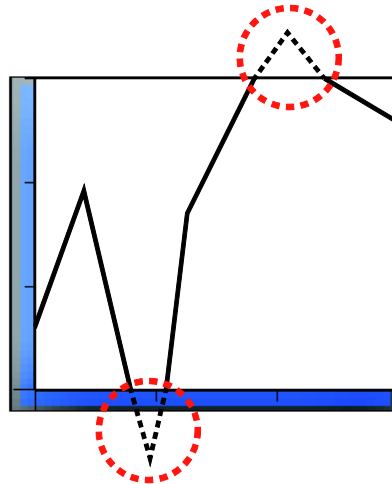
	initialized as 0 after completing each operation.
<b>Type</b>	It sets the data type of device.
<b>Size</b>	It displays the size of device to be logged. The value established at logging of common data is applied to the size of logging device and you cannot set it up.

- **Description:** Enter a description for the object.
- **Max./Min.:** The maximum and minimum value settings for the logging scatter graph object include the following:

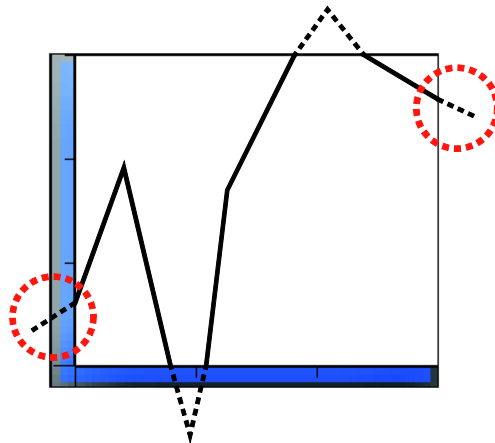


- **Max./Min. Setting:** Specify the following options for the maximum/minimum setting.
  - **Y Axis Type / X Axis Type:** You can set the minimum and maximum value as many as the items of logging distribution charts added at Basic Settings. Namely, you cannot add or delete the items on the minimum and maximum value. The type of the minimum and maximum value can be established as Constant or Device.

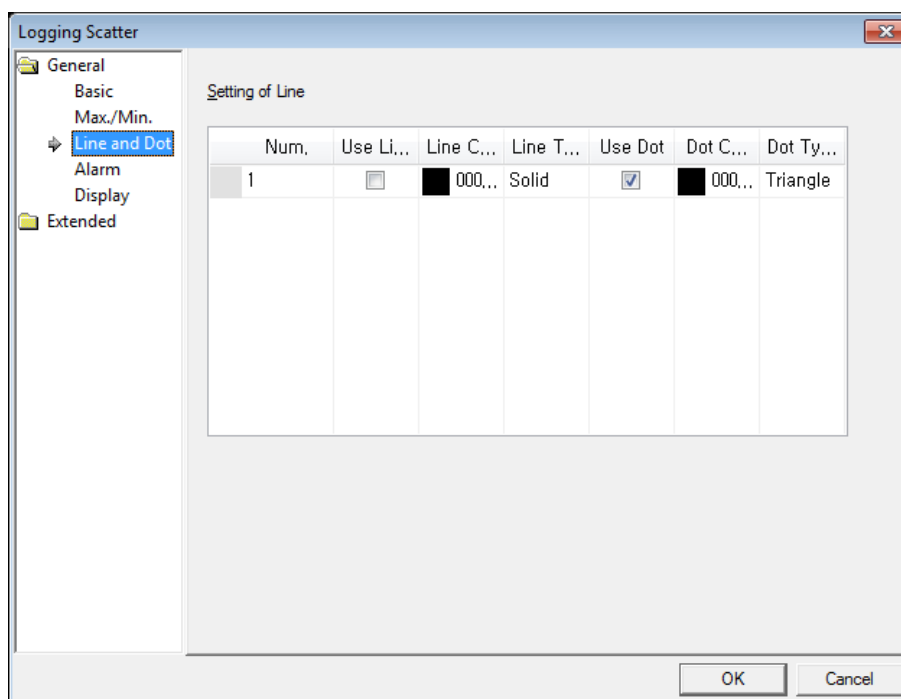
- **Y Axis. Max / Y Axis. Min:** You can set the minimum and maximum values of data to be displayed on the Y-axis. You can use a device value or a constant. If the device value exceeds the minimum or maximum, it is displayed as the minimum or maximum value of the graph.



- **X Axis. Max / X Axis. Min:** You can set the minimum and maximum values of data to be displayed on the X-axis. You can use a device value or a constant. If the device value exceeds the minimum or maximum value, it is displayed as the minimum or maximum value of the graph. The X-axis displays the device values in order, so you do not need to designate a minimum or maximum value.



- **Line and Dot:** The line and dot settings for the logging scatter graph object include the following:

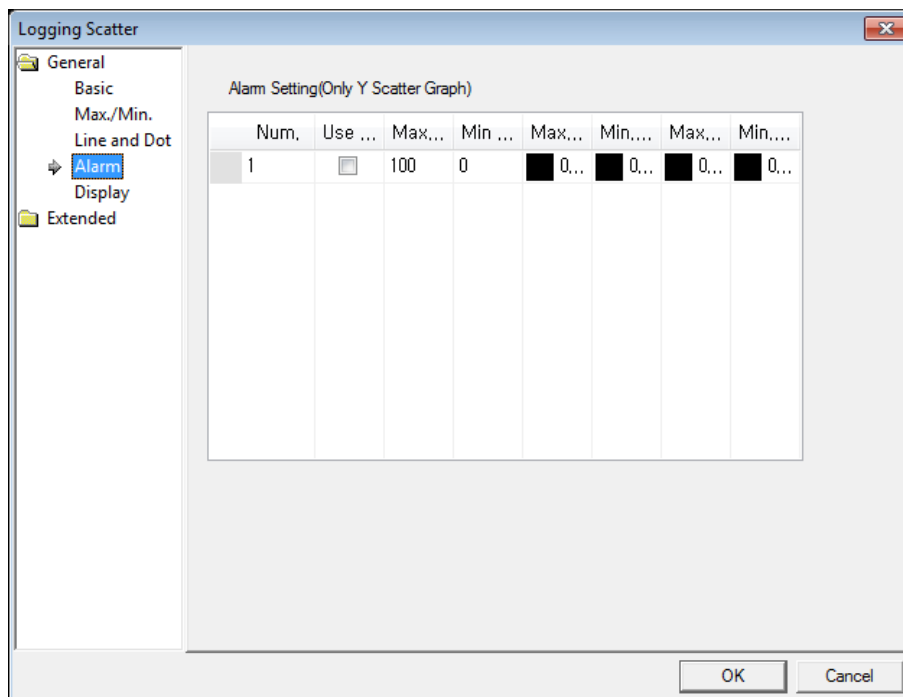


- **Setting of Line:** Specify the following options for the line.

<b>Use Line</b>	Set to use a line to display the data.
<b>Line Color</b>	Set the color of the line.
<b>Line Type</b>	Set the type of the line (solid or dash).
<b>Use Dot</b>	Set to use dots for displaying the data.
<b>Dot Color</b>	Set the color of the dots.
<b>Dot Type</b>	Set the type of the dots.



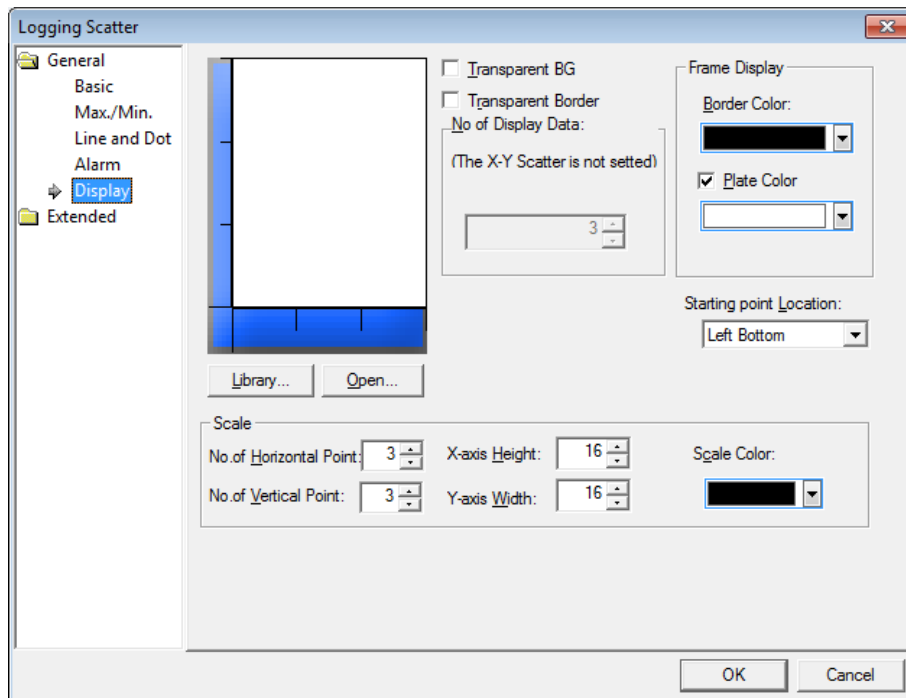
- **Alarm:** The alarm settings for the logging scatter graph object include the following:



- **Alarm Setting (Only Y Scatter Graph):** Specify the following options for the alarm.

<b>Use Alarm</b>	Set whether using warning value or not. It is only available for the Y Scatter graph.
<b>Max Value / Min Value</b>	It establishes warning upper bound and warning lower bound for logging trend graph. If the device value is more than warning upper bound, it is not shown as established line or dot color but displayed as upper bound line or dot color. On the other hand, if the device value is less than lower bound, it is displayed as established lower bound line or dot color.
<b>Max Line / Min Line</b>	You can set the color of a line to be applied when it is more or less than the warning upper bound of logging distribution graph. If the device value exceeds warning upper bound, it is displayed as upper bound line color. On the other hand, if it is less than warning upper bound, it is displayed as lower bound line color.
<b>Max. Dot / Min. Dot</b>	You can set the color of a dot to be applied when it is more or less than the warning upper bound of logging distribution graph. If the device value exceeds warning upper bound, it is displayed as upper bound dot color. On the other hand, if it is less than warning upper bound, it is displayed as lower bound dot color.

- **Display:** The display settings for the logging scatter graph object include the following:



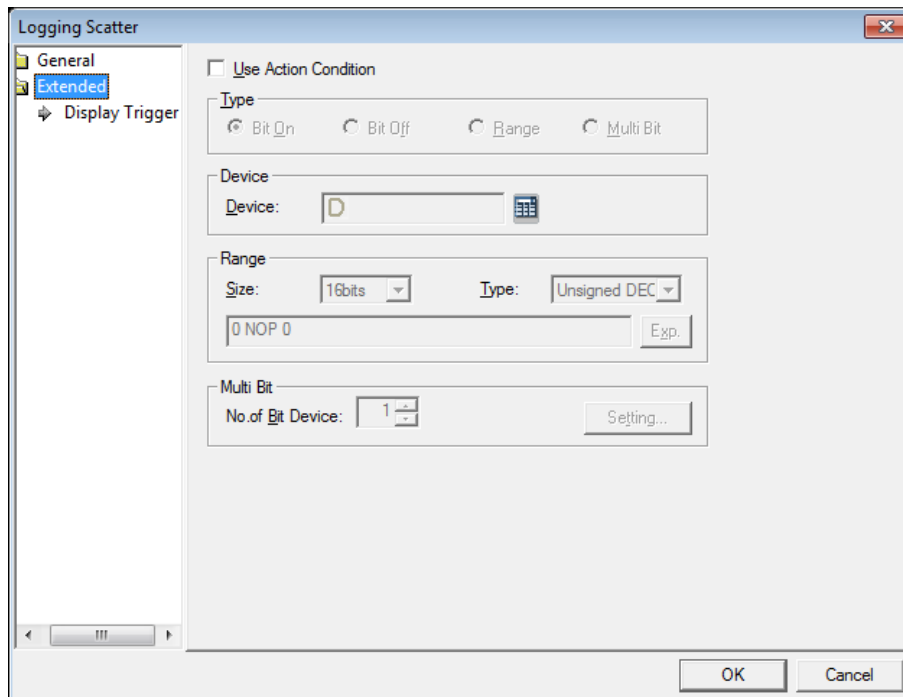
- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Transparent BG:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border.
- **No. of Display data:** It fixes the number of dots to be displayed at a screen.
  - X-Y Scatter indicates a dot as two device values.
  - Y Scatter indicates respectively each device value with a dot.
- **Frame Display:** Specify the following options for the frame.

<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

- **Starting Point Location:** Set a starting point for the scales (Left Bottom or Right Bottom).
- **Scale:** Specify the following options for the scale.

<b>No. of Horizontal Point</b>	Set the number of points on the X axis.
<b>No. of Vertical Point</b>	Set the number of points on the Y axis.
<b>X-axis Height</b>	Set the height of the X axis scale.
<b>Y-axis Width</b>	Set the width of the Y axis scale.
<b>Scale Color</b>	Set the color of the scales.

- **Display Trigger:** The display trigger settings for the logging scatter graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.

- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

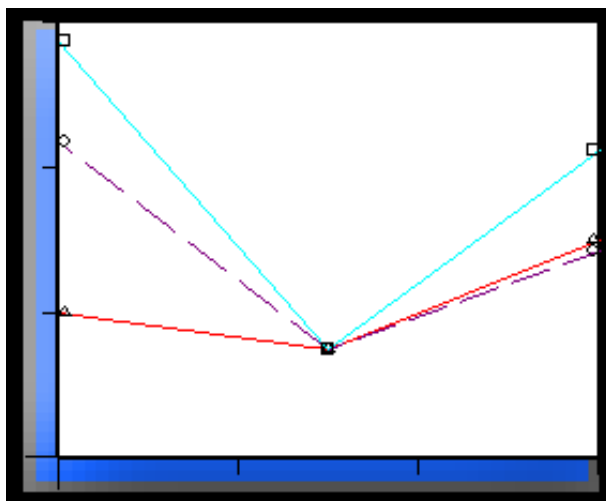
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.8.8 Realtime Scatter

The following sections describe available options for realtime scatter objects.



- **Basic:** The basic settings for the realtime scatter graph object include the following:

Real-Time Scatter

General

Basic

Max./Min.

Line and Dot

Alarm

Display

Extended

Type of Scatter: Y Scatter

Scatter Basic Setting

☒ Setting of Device num.

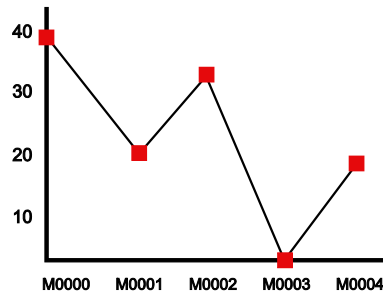
Num.	Control Device	Size	Type	Device Num.	Offset
1		16...	Uns...	1	<input type="checkbox"/>
2		16...	Uns...	1	<input type="checkbox"/>

Description

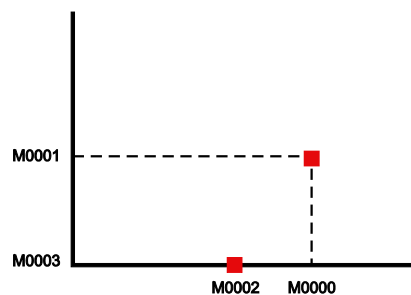
OK Cancel

– **Type of Scatter:** Set the type of scatter chart.

- **Y Scatter:** Shows device addresses, including the logging start device, in order along the X-axis. The data displays in a loop, so you do not need to designate the minimum or maximum value.



- **X-Y Scatter:** For two continuous device addresses from starting device, shows the previous device value along the X-axis and the next device value along the Y-axis and displays dot or value where the two coordinates intersect. You must designate a minimum and maximum value for the axes.



– **Scatter Basic Setting:** Specify the following options for the scatter.

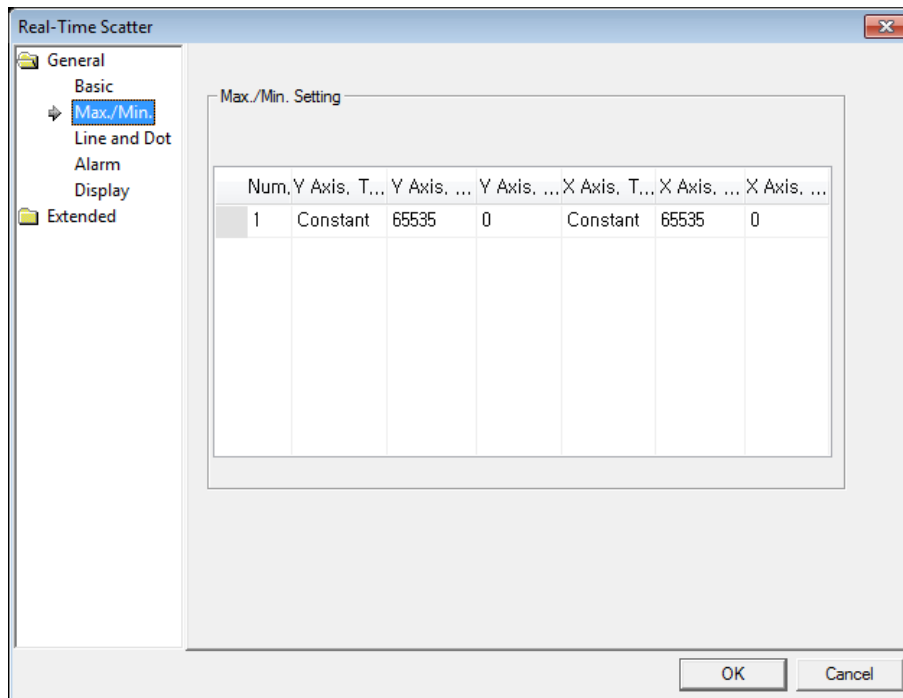
- **Setting of Device num.:** Set the number of devices to be monitored (1 to 1,000). You can specify device numbers individually or designate a control device to specify device addresses.
- **Control Device:** If the first bit of word control device is On, it displays the number of continuous devices from a starting device at a graph. If the second bit is On, it removes the current graph area. Each control device data is initialized into 0 after completing each operation. If a new item is added, the blank control device window is created to next row and you can add another item up to 8.
- **Size:** Set the data size of the object.
- **Type:** Set the data type of the object.
- **Device Num.:** Set the device number.

- **Offset:** Click the checkbox to use the offset function. When you use the offset function, the control device you specify offsets the starting device address by 2, to address M5. When you do not use the offset function, the starting device address begins at M2. Address M1 is reserved, as shown in the following illustration.

When Using the Offset Function			When Not Using the Offset Function		
Address	Designation	Explanation	Address	Designation	Explanation
M0	Control (C)		M0	Control (C)	C
M1	Reserved	C+1	M1	Reserved	C+1
M2	Offset Device (M)	C+2	M2	Starting Device	C+2
	...			...	
M5	Starting Device	C + 3 + M		Device n	C + (n-1)
	...				
	Device n	C + 3 + M + (n-1)			

- **Description:** Enter a description for the object.

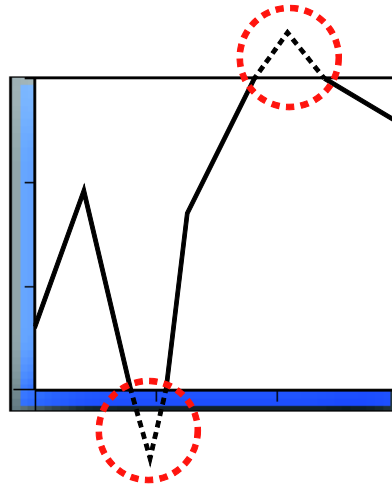
- **Max./Min.:** The maximum and minimum value settings for the realtime scatter graph object include the following:



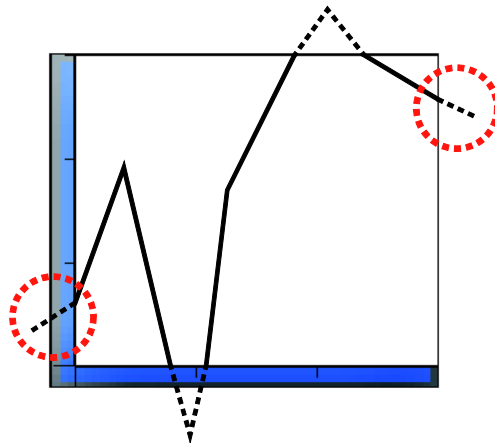
- **Max./Min. Setting:** Specify the following options for the maximum/minimum setting.
  - **Y Axis Type / X Axis Type:** You can set the minimum and maximum value as many as the items of logging distribution charts added at Basic Settings. Namely, you cannot add or delete the items on the minimum and maximum value. The type of the minimum and maximum value can be established as Constant or Device.



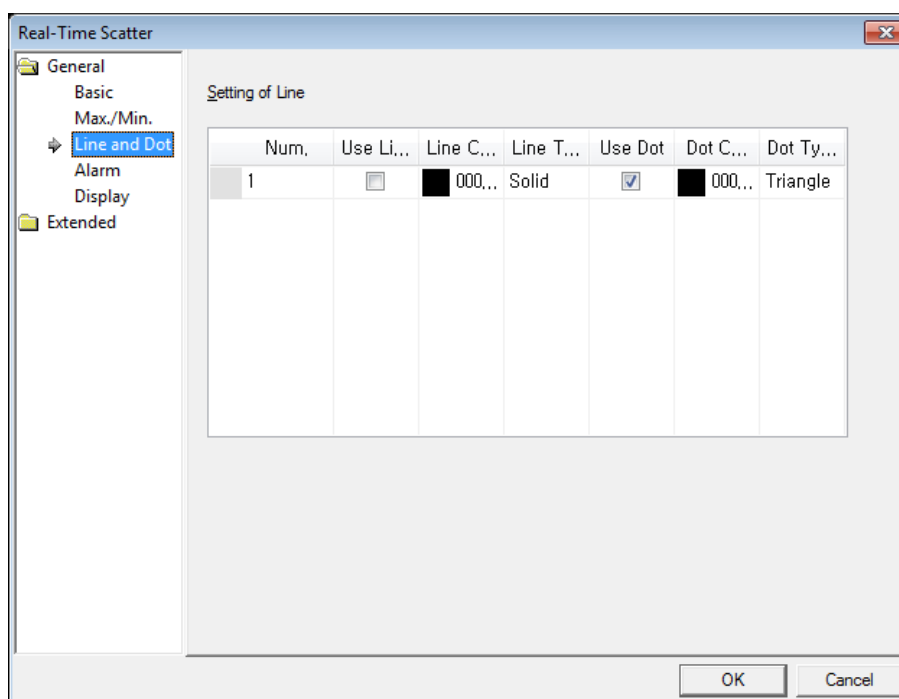
- **Y Axis. Max / Y Axis. Min:** You can set the minimum and maximum values of data to be displayed on the Y-axis. You can use a device value or a constant. If the device value exceeds the minimum or maximum, it is displayed as the minimum or maximum value of the graph.



- **X Axis. Max / X Axis. Min:** You can set the minimum and maximum values of data to be displayed on the X-axis. You can use a device value or a constant. If the device value exceeds the minimum or maximum value, it is displayed as the minimum or maximum value of the graph. The X-axis displays the device values in order, so you do not need to designate a minimum or maximum value.



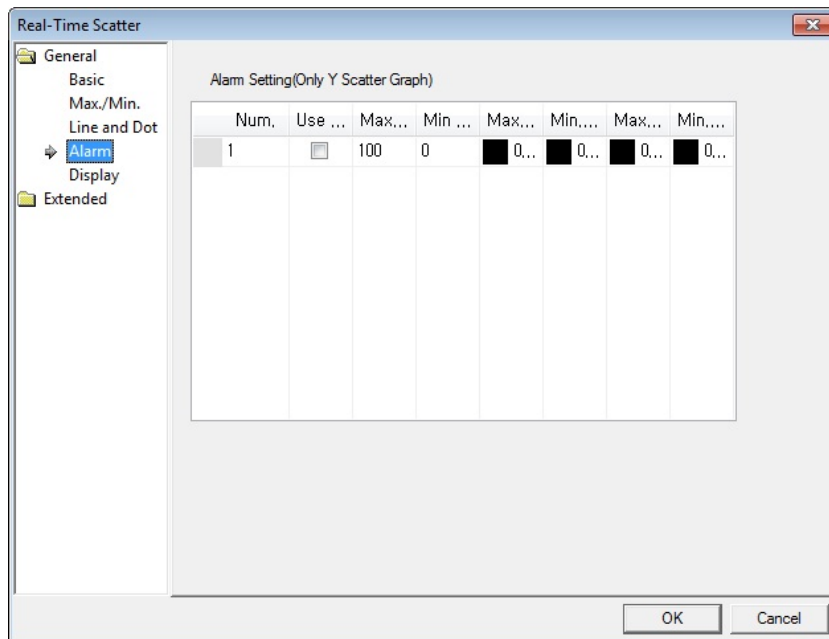
- **Line and Dot:** The line and dot settings for the realtime scatter graph object include the following:



- **Setting of Line:** Specify the following options for the line.

<b>Use Line</b>	Set to use a line to display the data.
<b>Line Color</b>	Set the color of the line.
<b>Line Type</b>	Set the type of the line (solid or dash).
<b>Use Dot</b>	Set to use dots for displaying the data.
<b>Dot Color</b>	Set the color of the dots.
<b>Dot Type</b>	Set the type of the dots.

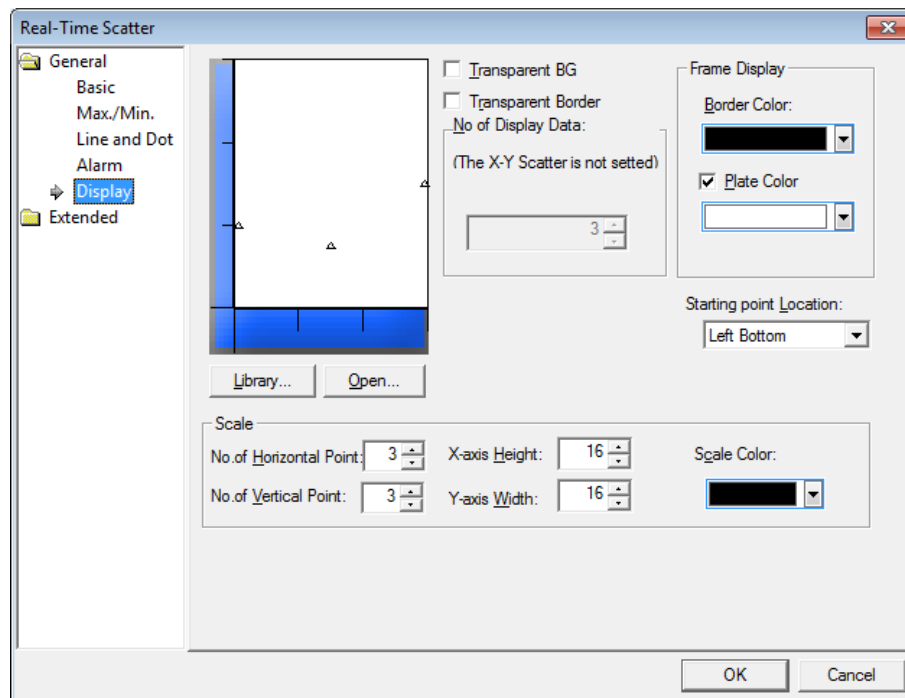
- **Alarm:** The alarm settings for the realtime scatter graph object include the following:



- **Alarm Setting (Only Y Scatter Graph):** Specify the following options for the alarm.

<b>Use Alarm</b>	Set whether using warning value or not. It is only available for the Y Scatter graph.
<b>Max Value / Min Value</b>	It establishes warning upper bound and warning lower bound for logging trend graph. If the device value is more than warning upper bound, it is not shown as established line or dot color but displayed as upper bound line or dot color. On the other hand, if the device value is less than lower bound, it is displayed as established lower bound line or dot color.
<b>Max Line / Min Line</b>	You can set the color of a line to be applied when it is more or less than the warning upper bound of logging distribution graph. If the device value exceeds warning upper bound, it is displayed as upper bound line color. On the other hand, if it is less than warning upper bound, it is displayed as lower bound line color.
<b>Max. Dot / Min. Dot</b>	You can set the color of a dot to be applied when it is more or less than the warning upper bound of logging distribution graph. If the device value exceeds warning upper bound, it is displayed as upper bound dot color. On the other hand, if it is less than warning upper bound, it is displayed as lower bound dot color.

- **Display:** The display settings for the realtime scatter graph object include the following:



- **Library:** Click to select a background image for the graph from a library.
- **Open:** Click to locate background image for the graph on your computer.
- **Transparent BG:** Set whether or not to make the background of the graph transparent.
- **Transparent Border:** Set whether or not to use a transparent border.
- **No of Display data:** It fixes the number of dots to be displayed at a screen.
  - X-Y Scatter indicates a dot as two device values.
  - Y Scatter indicates respectively each device value with a dot.
- **Frame Display:** Specify the following options for the frame.

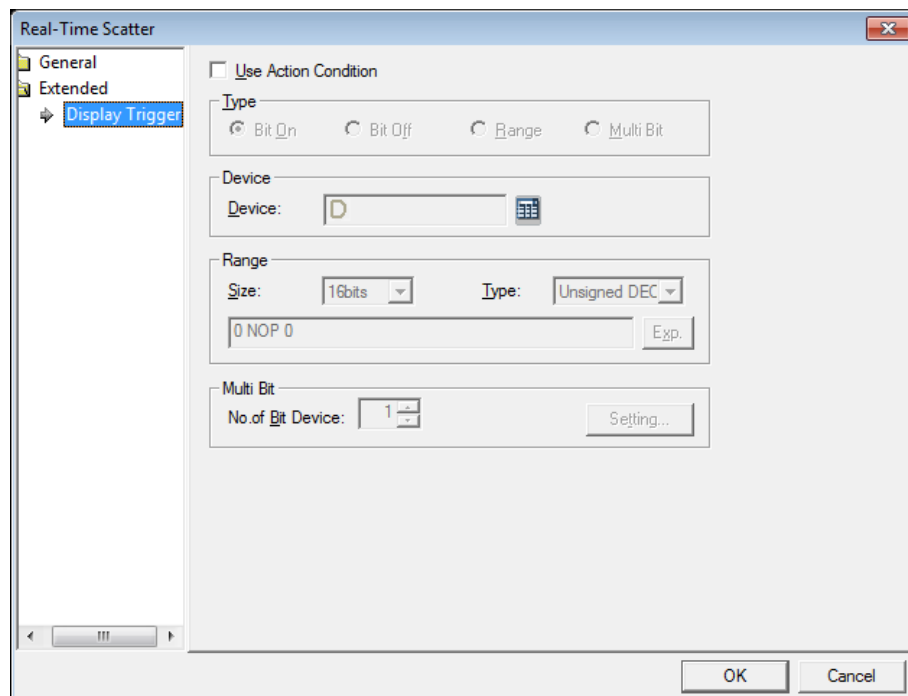
<b>Border Color</b>	Set a border color.
<b>Plate Color</b>	Set the background for areas not filled by value ranges.

- **Starting Point Location:** Set a starting point for the scales (Left Bottom or Right Bottom).

- **Scale:** Specify the following options for the scale.

<b>No. of Horizontal Point</b>	Set the number of points on the X axis.
<b>No. of Vertical Point</b>	Set the number of points on the Y axis.
<b>X-axis Height</b>	Set the height of the X axis scale.
<b>Y-axis Width</b>	Set the width of the Y axis scale.
<b>Scale Color</b>	Set the color of the scales.

- **Display Trigger:** The display trigger settings for the realtime scatter graph object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the

keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.9 History Alarm Viewer Object

This section describes available settings for the history alarm viewer object.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/25			2013/04/25	2013/04/25	
2013/04/25			2013/04/25	2013/04/25	
2013/04/25			2013/04/25	2013/04/25	
2013/04/25			2013/04/25	2013/04/25	
2013/04/25			2013/04/25	2013/04/25	

- **Basic:** The basic settings for history alarm viewer object include the following:

- **Alarm Form:** Set the form of the alarm.

<b>No. of Row</b>	Set the number of rows to be displayed.
<b>Sort</b>	Set a sort method for the logging data (oldest first or newest first).

- **Use Detailed Window Position:** Specify the location of the details window.
- **Frame Display:** Specify options for the frame of the alarm viewer.
- **Line:** Set the color and width of the line.

- **Initial Filtering Type:** Click the checkboxes to select the types of filters to use for the alarm data:

- **Restoration:** Set to show history data for restored alarms.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1	2013/04/08		
2013/04/08	Message 2	Group2	2013/04/08		
2013/04/08	Message 3	Group3	2013/04/08		

- **No Restoration:** Set to show history data for unrestored alarms.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1			
2013/04/08	Message 2	Group2			
2013/04/08	Message 3	Group3			

- **Check:** Set to show history data for checked alarms.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1		2013/04/08	
2013/04/08	Message 2	Group2		2013/04/08	
2013/04/08	Message 3	Group3		2013/04/08	

- **Uncheck:** Set to show history data for unchecked alarms.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1			
2013/04/08	Message 2	Group2			
2013/04/08	Message 3	Group3			



- **Initial Alarm Group:** Set to show history data for a specific alarm group. After clicking the checkbox, select an alarm group from the drop-down list. If you select an alarm navigator group, history data for all alarms will be shown.

Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1	2013/04/08		
2013/04/08	Message 2	Group1	2013/04/08		
2013/04/08	Message 3	Group1	2013/04/08		
2013/04/08	Message 4	Group2		2013/04/08	
2013/04/08	Message 8	Group2		2013/04/08	

<All occurred alarms>

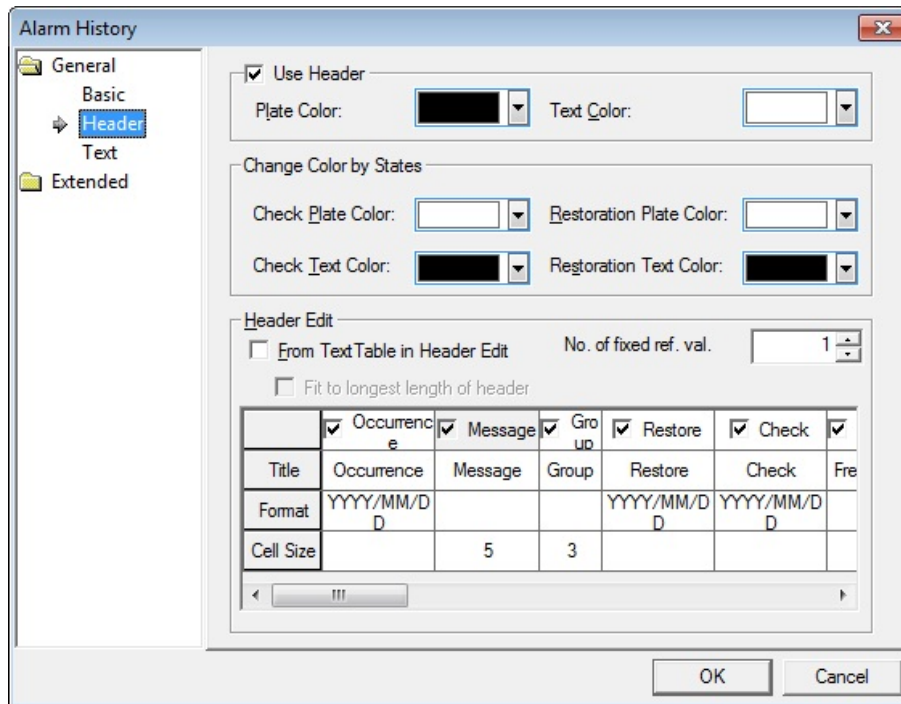


Occurrence	Message	Group	Restore	Check	Frequency
2013/04/08	Message 1	Group1	2013/04/08		
2013/04/08	Message 2	Group1	2013/04/08		
2013/04/08	Message 3	Group1	2013/04/08		

<Alarm Group1 filtered>

- **Description:** Enter a description for the object.

- **Header:** The header settings for the history alarm viewer object include the following:



- **Use Header:** Set whether or not to use a header.

<b>Plate Color</b>	Set the background color for the header.
<b>Text Color</b>	Set the text color for the header.

- **Change Color by States:** Set the color for the rows based on the device state.

<b>Check Plate Color</b>	Set a background color for rows of checked alarms. If you don't set this option, the rows are displayed with the default color set in the Frame Color option from the Basic setting.
<b>Check Text Color</b>	Set a text color for rows of checked alarms. If you don't set this option, the rows are displayed with the default color set in the Color option from the Text setting.
<b>Restoration Plate Color</b>	Set a background color for rows of restored alarms. If you don't set this option, the rows are displayed with the default color set in the Plate Color option from the Basic setting.

- **Restoration Text Color:** Set a text color for rows of restored alarms. If you don't set this option, the rows are displayed with the default color set in the Color option from the **Text** setting.

Occurrence	Message	Group	Restore	Check	Frequency
2010/04/19	alarm#1	Group1		2010/04/19	1
2010/04/19	alarm#2	Group1			1
2010/04/19	alarm#4	Group1	2010/04/19		1
2010/04/19	alarm#3	Group1			1
2010/04/19	alarm#5	Group1			1

<All occurred alarms>



Occurrence	Message	Group	Restore	Check	Frequency
2010/04/19	alarm#3	Group1			1
2010/04/19	alarm#1	Group1	2010/04/19		1
2010/04/19	alarm#2	Group1			1
2010/04/19	alarm#5	Group1		2010/04/19	1
2010/04/19	alarm#4	Group1			1

<Different colored alarms>

- **Header Edit:** Set additional header options.
- **From Text Table in Header Edit:** Set to import header labels from a text table. When you set this option, the Title row is shown. Double-click the title area to select the appropriate text string from a text table.

Header Edit						
<input checked="" type="checkbox"/> From Text Table in Header Edit		No. of fixed ref. val.		1		
<input type="checkbox"/> Fit to a max. header length						
	<input checked="" type="checkbox"/> Occurrence	<input checked="" type="checkbox"/> Message	<input checked="" type="checkbox"/> Group	<input checked="" type="checkbox"/> Restore	<input checked="" type="checkbox"/> Check	<input checked="" type="checkbox"/>
Title						
Format	YYYY/MM/DD			YYYY/MM/DD	YYYY/MM/DD	
Cell Size		5	3			

- **No. of fixed ref. val.:** Set the number of reference value rows to show at one time on the XGT Panel display. To see additional rows, use the History Alarm Row Scroll function provided by a Special Switch. For example, if you set the options as follows:

Header Edit

☐ From Text Table in Header Edit

☐ Fit to a max. header length

No. of fixed ref. val.

	<input checked="" type="checkbox"/> Ref.1	<input checked="" type="checkbox"/> Ref.2	<input checked="" type="checkbox"/> Ref.3	<input checked="" type="checkbox"/> Ref.4
Title	Ref.1	Ref.2	Ref.3	Ref.4
Format				
Cell Size	5	5	5	5

You can view 2 reference rows at one time on the XGT Panel display:

Occurrence	Message	Group	Restore	Check	Frequency	Ref.1	Ref.2
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			

### Notes

To view the next rows, you can use a special switch. Create the special switch to the editing area, and click [History Alarm Row Scroll] ► [Next row]. The rows are moved to the next rows like below:

Occurrence	Message	Group	Restore	Check	Frequency	Ref.3	Ref.4
2013/05/22			2013/05/22	2013/05/22			
2013/05/22			2013/05/22	2013/05/22			
2013/05/22			2013/05/22	2013/05/22			
2013/05/22			2013/05/22	2013/05/22			
2013/05/22			2013/05/22	2013/05/22			

If the each size of reference rows is different, some row can be cut off as below:

Occurrence	Message	Group	Restore	Check	Frequency	Ref.1	Ref.2	Tank n
2013/05/22			2013/05/22	2013/05/22				
2013/05/22			2013/05/22	2013/05/22				
2013/05/22			2013/05/22	2013/05/22				
2013/05/22			2013/05/22	2013/05/22				
2013/05/22			2013/05/22	2013/05/22				

To view the total data in the row, use the special switch again. Create the special switch to the editing area, and click [History Alarm Row Scroll] ► [Next row].

- **Fit to a max. header length:** Set to fit the longest header length when you use the text table to input header titles. If you don't set this option, the header length changes whenever the runtime language is changed.

## 4. Reference

- **Cell Size:** You can set the length of the Message and Group columns. The rest of the columns differ by header type and font. When you change the size of the History Alarm Viewer object, the Message and Group columns are changed based on the value you set in Cell Size. If you set the Message and Group column size as follows:

	<input checked="" type="checkbox"/> Occurrence	<input checked="" type="checkbox"/> Message	<input checked="" type="checkbox"/> Group	<input checked="" type="checkbox"/> Restore	<input checked="" type="checkbox"/> Check	<input checked="" type="checkbox"/>
Title	Occurrence	Message	Group	Restore	Check	Fre
Format	YYYY/MM/DD			YYYY/MM/DD	YYYY/MM/DD	
Cell Size		5	3			

The cell sizes of the Message and Group columns are changed to 5 and 3, respectively:

Occurrence	Message	Group	Restore	Check	Frequency	Ref.1	Ref.2
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			
2013/04/08			2013/04/08	2013/04/08			

5 : 3

### Notes

- You can change the order of headers (Occurrence, Message, Group, Restore, Check, and more). Drag and drop a header to the desired place.

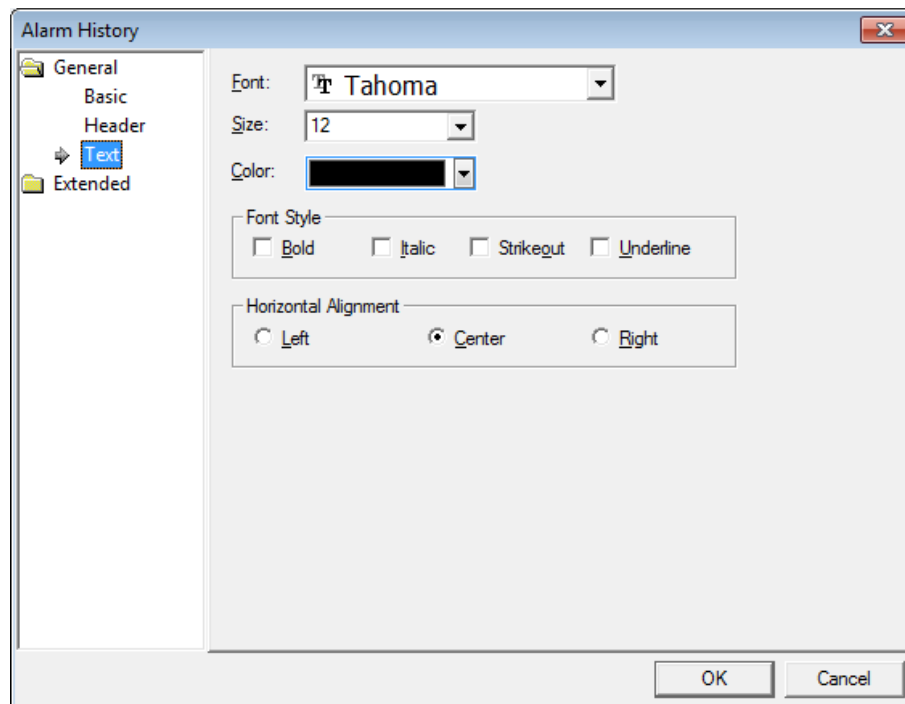
	<input checked="" type="checkbox"/> Occurrence	<input checked="" type="checkbox"/> Message	<input checked="" type="checkbox"/> Group	<input checked="" type="checkbox"/> Restore	<input checked="" type="checkbox"/> Check	<input checked="" type="checkbox"/>
Title	Occurrence	Message	Group	Restore	Check	Fre
Format	YYYY/MM/DD			YYYY/MM/DD	YYYY/MM/DD	
Cell Size		5	3			



	<input checked="" type="checkbox"/> Restore	<input checked="" type="checkbox"/> Occurrence	<input checked="" type="checkbox"/> Message	<input checked="" type="checkbox"/> Group	<input checked="" type="checkbox"/> Check	<input checked="" type="checkbox"/>
Title	Restore	Occurrence	Message	Group	Check	Fre
Format	YYYY/MM/DD	YYYY/MM/DD			YYYY/MM/DD	
Cell Size			5	3		

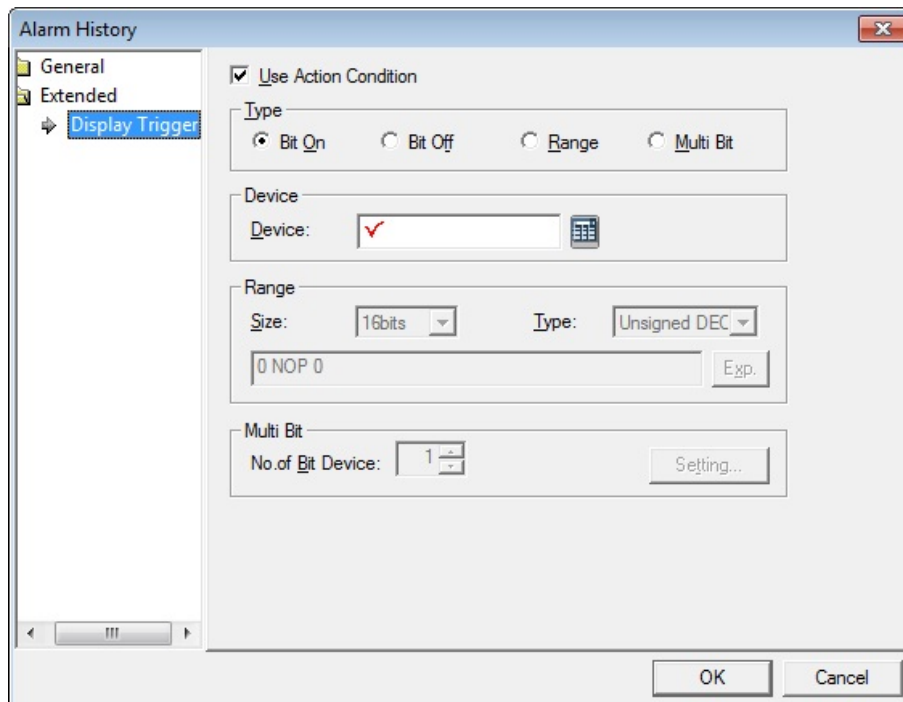
- You cannot reduce the row size below the size of the header text. The minimum row size is same as the header text length.
- The height of each cell is fixed by the font and text size.

- **Text:** The text settings for the history alarm viewer object include the following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

- **Display Trigger:** The display trigger settings for the history viewer alarm object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

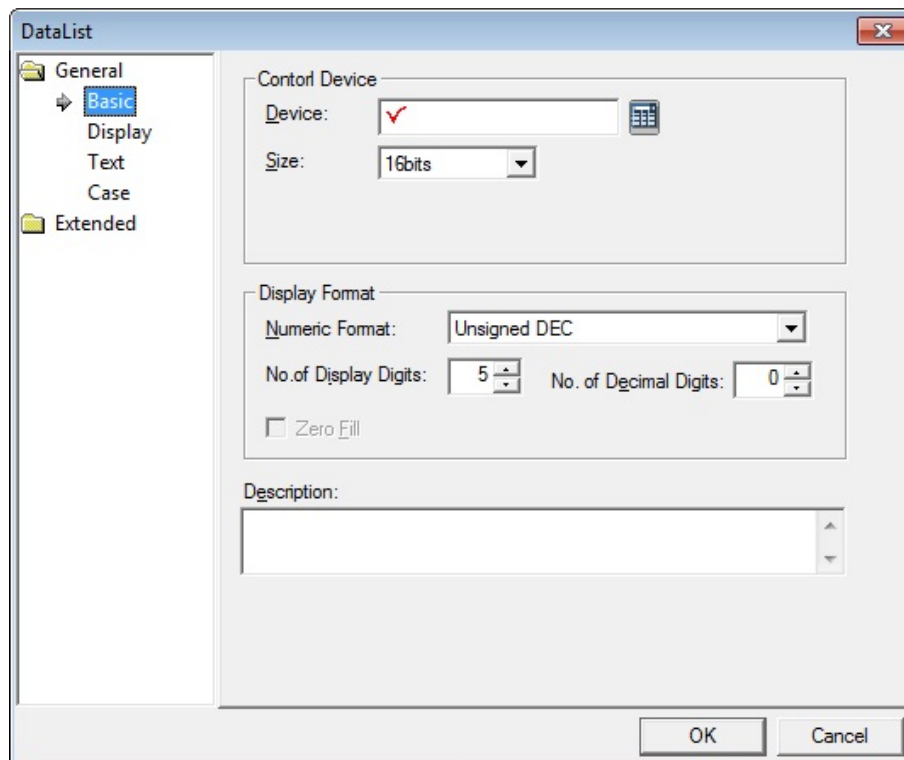
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.10 Data List Object

The data list object allows you to read consecutive values and display them in a table. This section describes available settings for the data list object.

- **Basic:** The basic settings for data list object include the following:

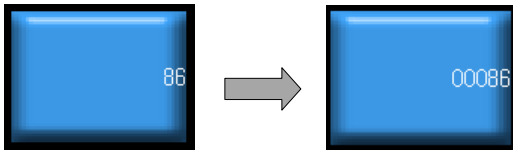




- **Control Device:** Specify the following options for the control device.

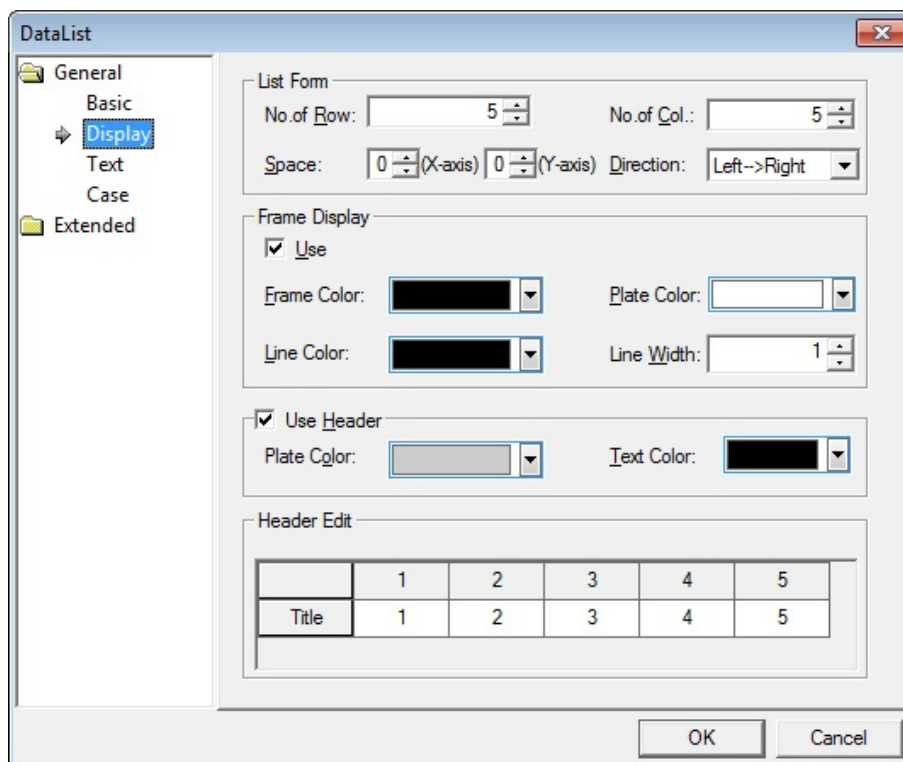
<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
<b>Size</b>	Set the data size of the device (16 bit or 32 bit). If you change the data size of an existing object, the conditional statement will be deleted.

- **Display Format:** Set the display format.

<b>Numeric Format</b>	Set the number format (Signed decimal, Unsigned decimal, Octal, Hexadecimal, Binary, BCD, or float).
<b>No. of Display Digits</b>	Set how many digits to display (up to 64). If the number of digits is less than the capacity of the device, empty spaces are filled with placeholders (" "). If the device value cannot be displayed in BCD format, it is expressed as "~".
<b>No. of Decimal Digits</b>	Set how many places to put to the right of the decimal point when you select formats other than binary, octal, and hexadecimal numbers.
<b>Zero Fill</b>	<p>If you have selected right justification, select this option to insert zeroes (0) before the number.</p> 

- **Description:** Enter a description for the object.

- **Display:** The display settings for data list object include the following:



- **List Form:** Specify the form of the list.

<b>No. of Row</b>	Set the number of rows.
<b>No. of Col.</b>	Set the number of columns.
<b>Space</b>	Specify the size of the area where the data will be shown (0 to 32 for each axis)
<b>Direction</b>	Set the direction to display the data (Top > Bottom or Left > Right).

- **Frame Display:** Set whether or not to use a frame.

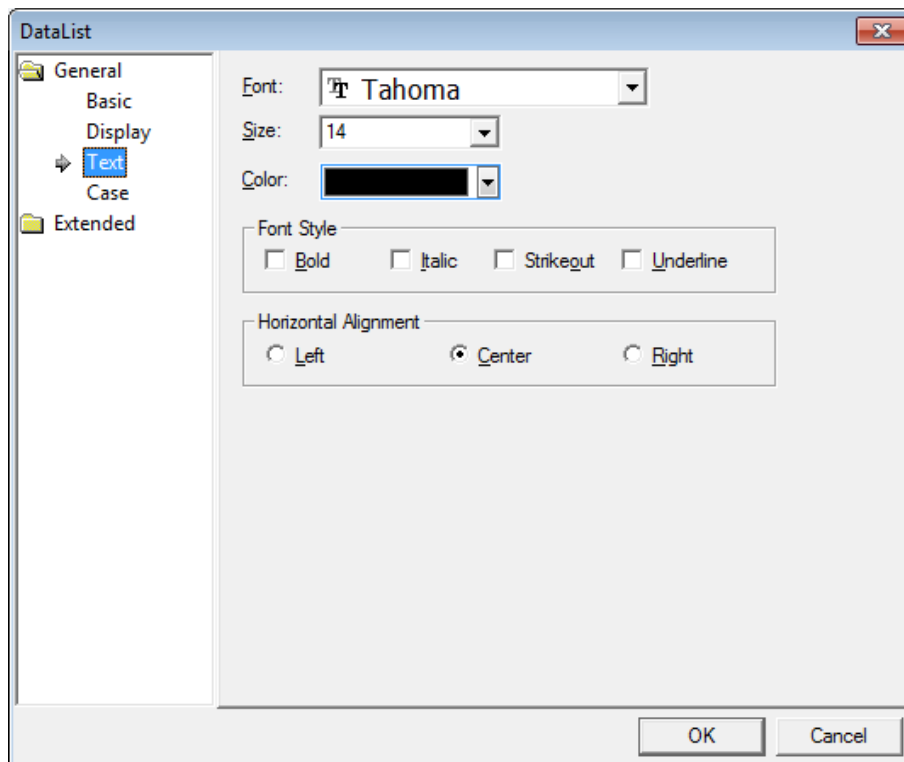
<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color for the table.
<b>Line Color</b>	Set the line color for the frame.
<b>Line Width</b>	Set the line width for the frame.

- **Use Header:** Set whether or not to use a header.

<b>Plate Color</b>	Set the background color for the header.
<b>Text Color</b>	Set the text color for the header.

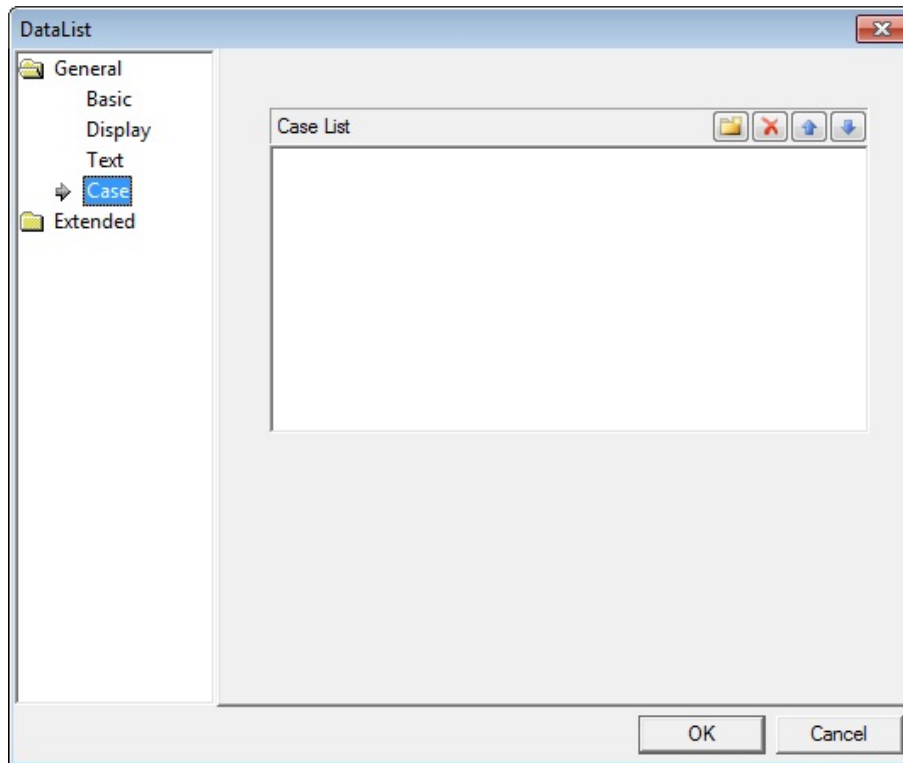
- **Header Edit:** Click column headers to select text strings from a text table.

- **Text:** The text settings for data list object include the following:







- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

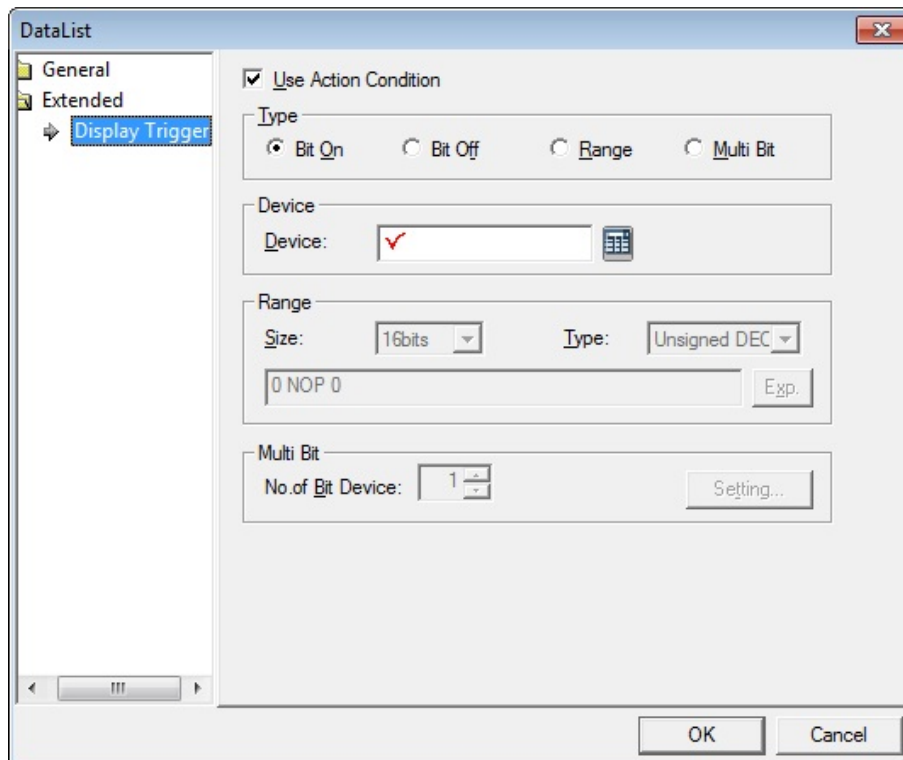
- **Case:** The case settings for data list object include the following:



- **Case List:** Create, delete, or reorganize conditional expressions:

 (Create)	Click to create a new range condition. You can create up to eight conditions. Clicking this button opens the Range Edit window, which allows you to create a condition. For more information, refer to <4.2.1.3 Understanding Constants and Data Types>.
 (Delete)	Click a condition and then click this icon to delete the condition.
 (Up)	Click a condition and then click this icon to move it higher in the list.
 (Down)	Click a condition and then click this icon to move it lower in the list.

- **Display Trigger:** The display trigger settings for data list object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.

- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

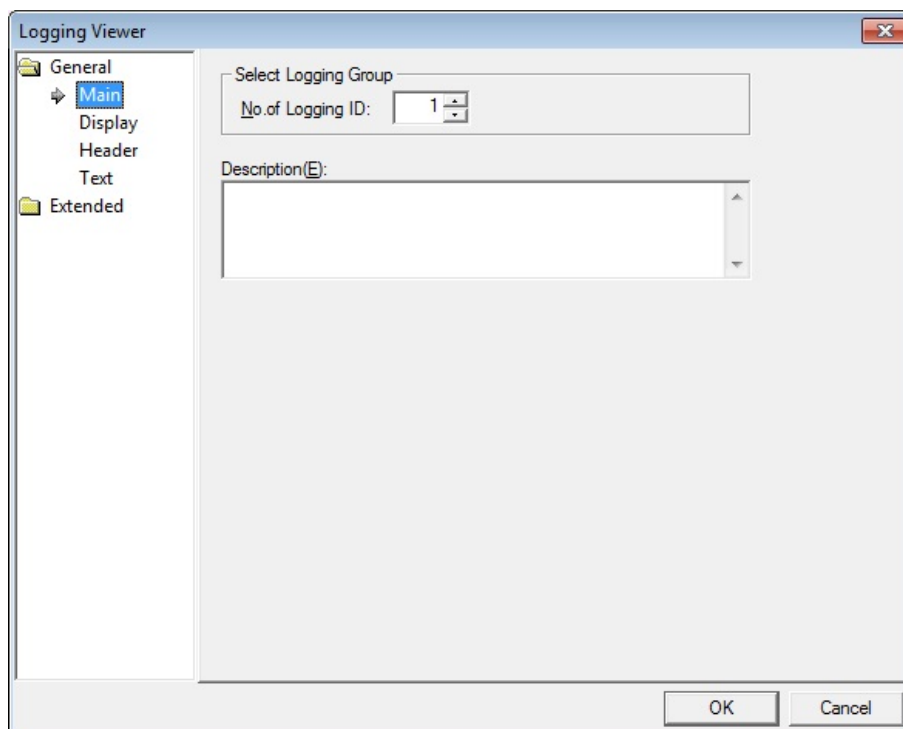
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

#### 4.3.11 Logging Viewer Object

This section describes available settings for the logging viewer object.

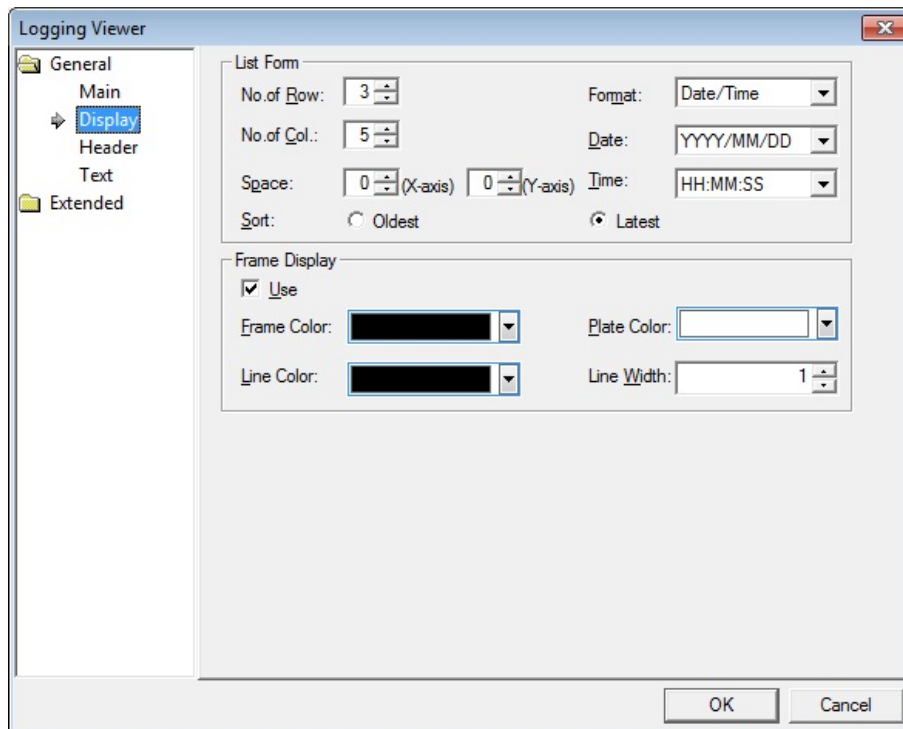
Number	Date	Value	Value...
100000	2013/4/25 13:11:52	12345	12345
100000	2013/4/25 13:11:52	12345	12345
100000	2013/4/25 13:11:52	12345	12345

- **Main:** The main settings for the logging viewer object include the following:



- **Select Logging Group:** Set the number of the logging group to monitor.
- **Description:** Enter a description for the object.

- **Display:** The display settings for logging viewer object include the following:



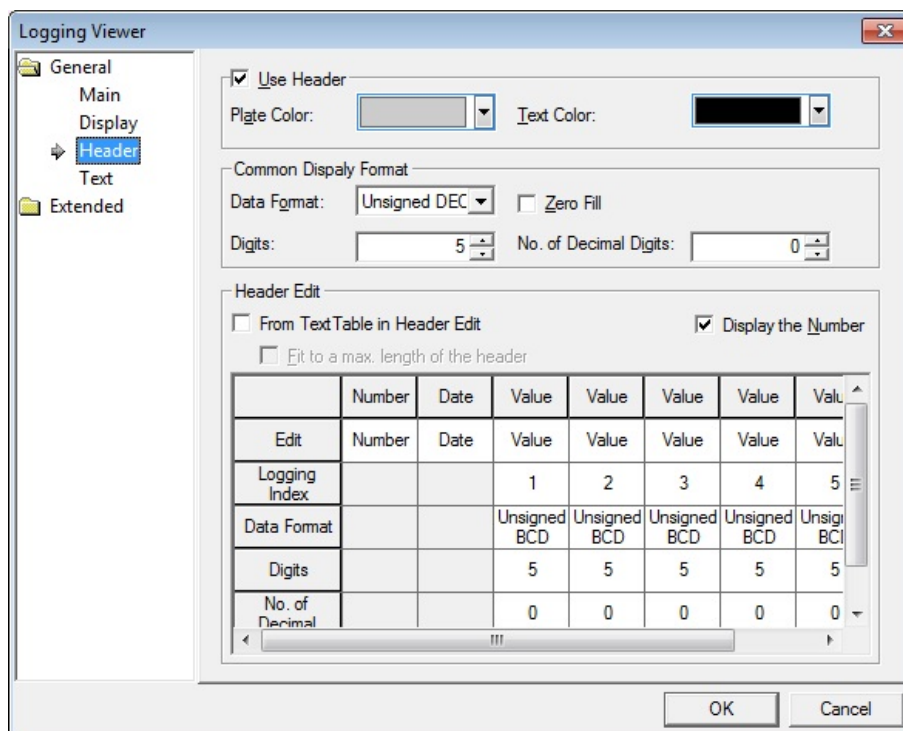
- **List Form:** Specify the form of the list.

<b>No. of Row</b>	Set the number of rows.
<b>No. of Col.</b>	Set the number of columns.
<b>Space</b>	Specify the size of the area where the data will be shown (0 to 32 for each axis).
<b>Format</b>	Set the data format.
<b>Date</b>	Set the date format.
<b>Time</b>	Set the time format.
<b>Sort</b>	Set a sort method (oldest data first or most recent data first).

- **Frame Display:** Set whether or not to use a frame.

<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color for the table.
<b>Line Color</b>	Set the line color for the frame.
<b>Line Width</b>	Set the line width for the frame.

- **Header:** The header settings for the logging viewer object include the following:

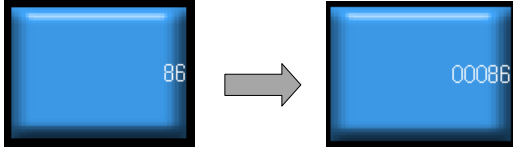


- **Use Header:** Set whether or not to use a header.

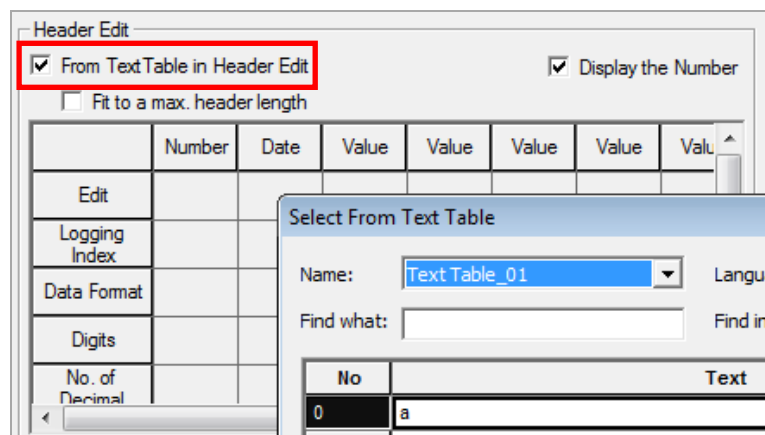
Plate Color	Set the background color for the header.
Text Color	Set the text color for the header.



- **Common Display Format:** Set this option to apply the settings to all index data. To change the data, use the Header Edit option.

<b>Data Format</b>	Set the display type.
<b>Digits</b>	Set how many digits to display (up to 64). If the number of digits is less than the capacity of the device, empty spaces are filled with placeholders ("*"). If the device value cannot be displayed in BCD format, it is expressed as "~".
<b>Zero Fill</b>	<p>If you have selected right justification, select this option to insert zeroes (0) before the number.</p> 
<b>No. of Decimal Digits</b>	Set how many places to put to the right of the decimal point when you select formats other than binary, octal, and hexadecimal numbers.

- **Header Edit:** Click column headers to select text strings from a text table.
  - **From Text Table in Header Edit:** Set to import header labels from a text table. Click a column header to select the appropriate text string from a text table.



- **Display the Number:** Set to show logging numbers, with respect to logging data.

Header Edit

☒ From Text Table in Header Edit ☒ Display the Number

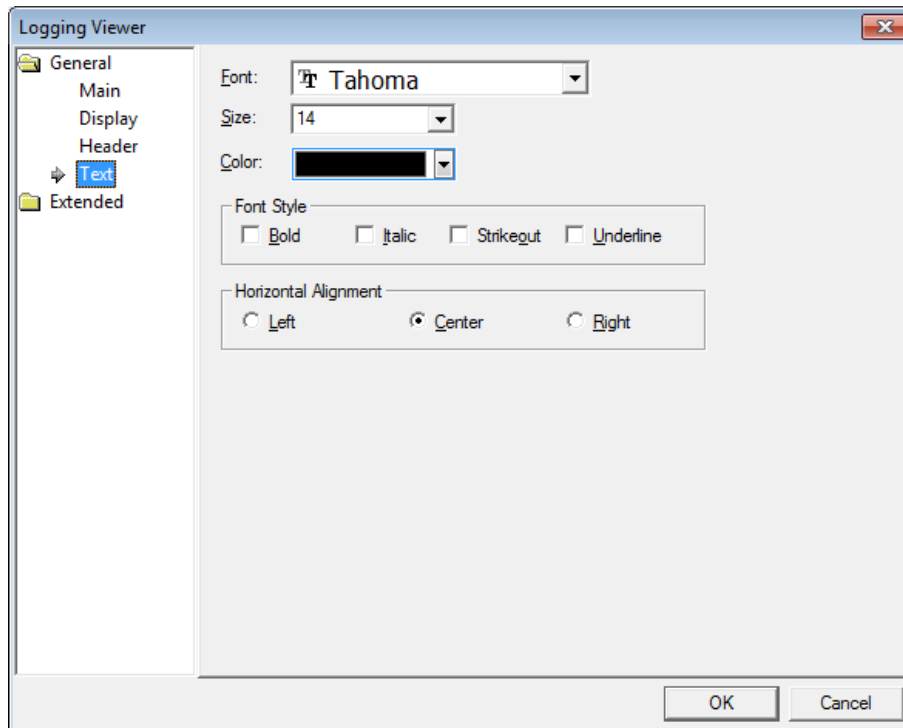
☒ Fit to a max. header length

	Number	Date	Value	Value	Value	Value	Value
Edit							
Logging Index			1	2	3	4	5
Data Format			Unsigned DEC	Unsigned DEC	Unsigned DEC	Unsigned DEC	Unsigned DEC
Digits			5	5	5	5	5
No. of Decimal			0	0	0	0	0

When you set this option, you can edit the header for the Number option.

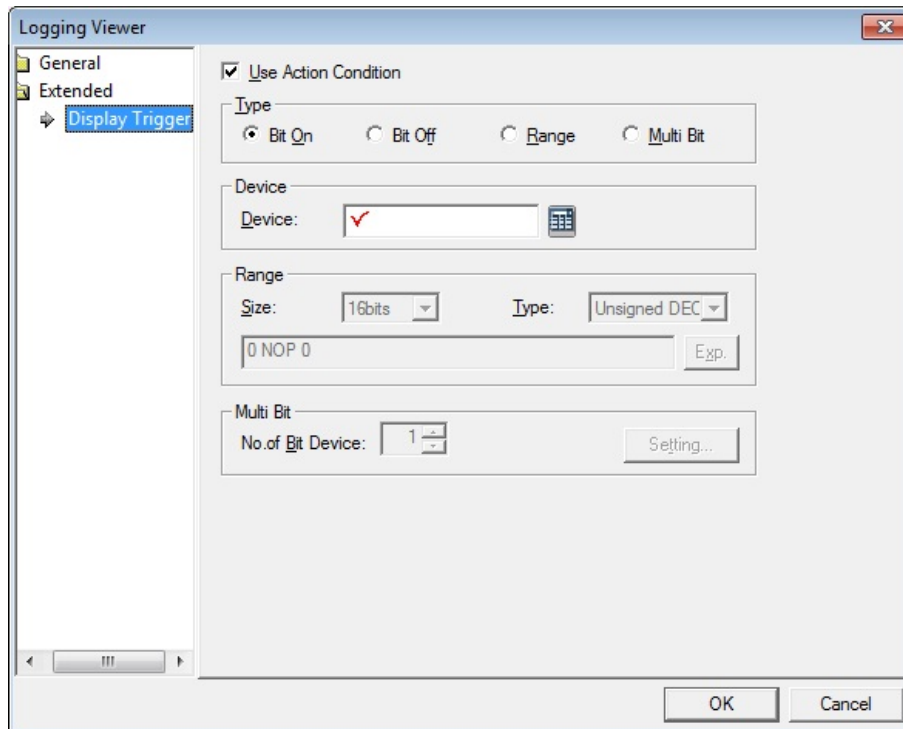
- **Fit to a max. header length:** Set to fit the longest header length when you use the text table to input header titles. If you don't set this option, the header length changes whenever the runtime language is changed.

- **Text:** The text settings for logging viewer object include the following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

- **Display Trigger:** The display trigger settings for the logging viewer object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

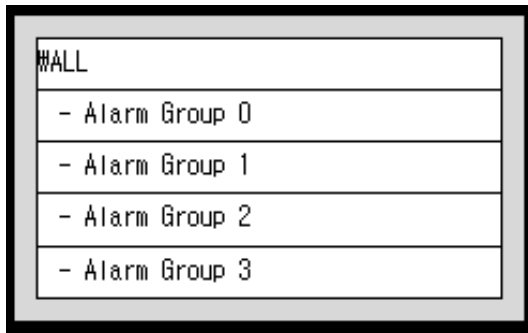
- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

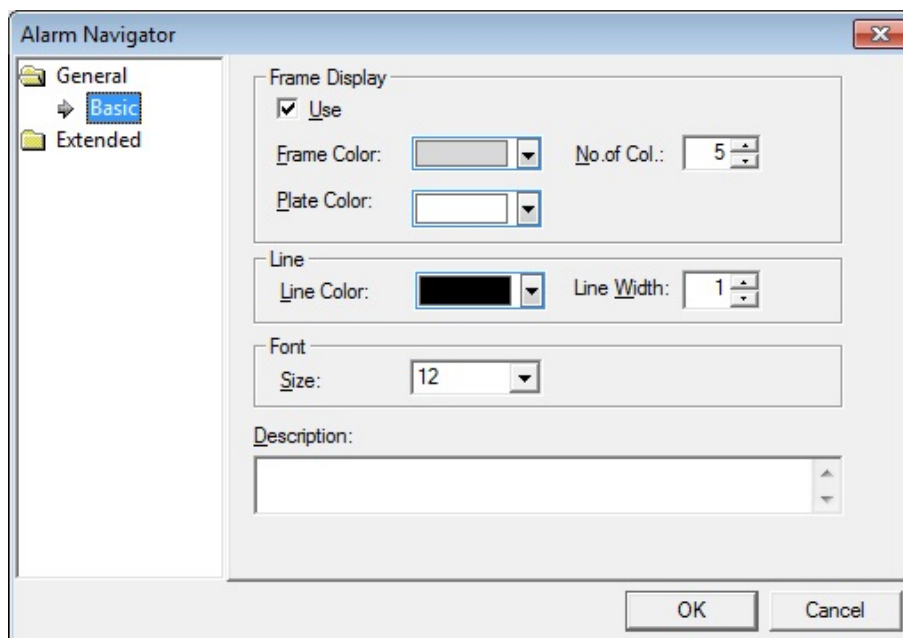
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.12 Alarm Navigator Object

The alarm navigator object allows you to view alarm history conveniently. This section describes available settings for the alarm navigator object.



- **Basic:** The basic settings for alarm navigator object include the following:

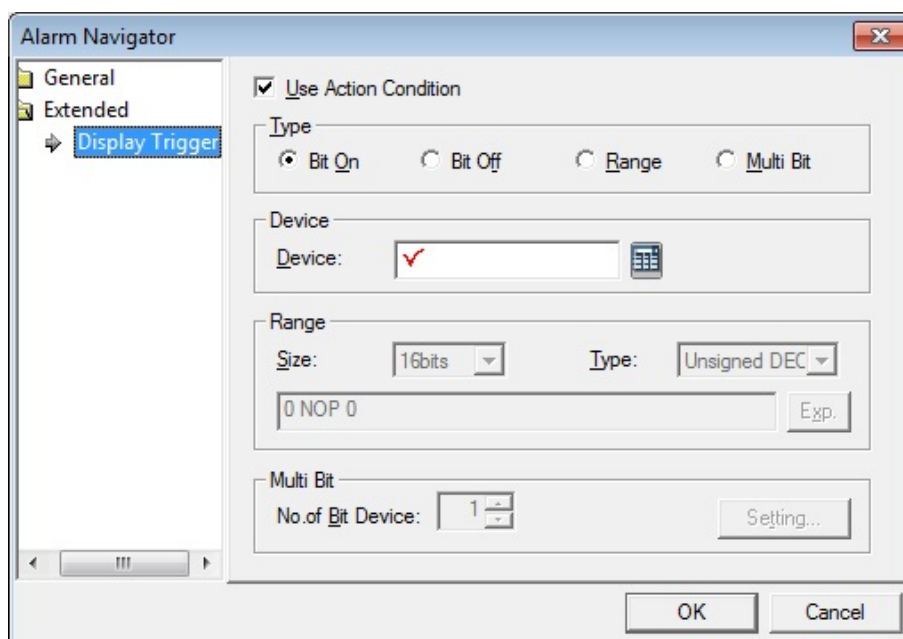


- **Frame Display:** Set whether or not to use a frame.

<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color for the table.
<b>No. of Col.</b>	Set the number of columns to show.

- **Line:** Set the line properties.
- **Font:** Set the font size.
- **Description:** Enter a description for the object.

- **Display Trigger:** The display trigger settings for recipe navigator include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

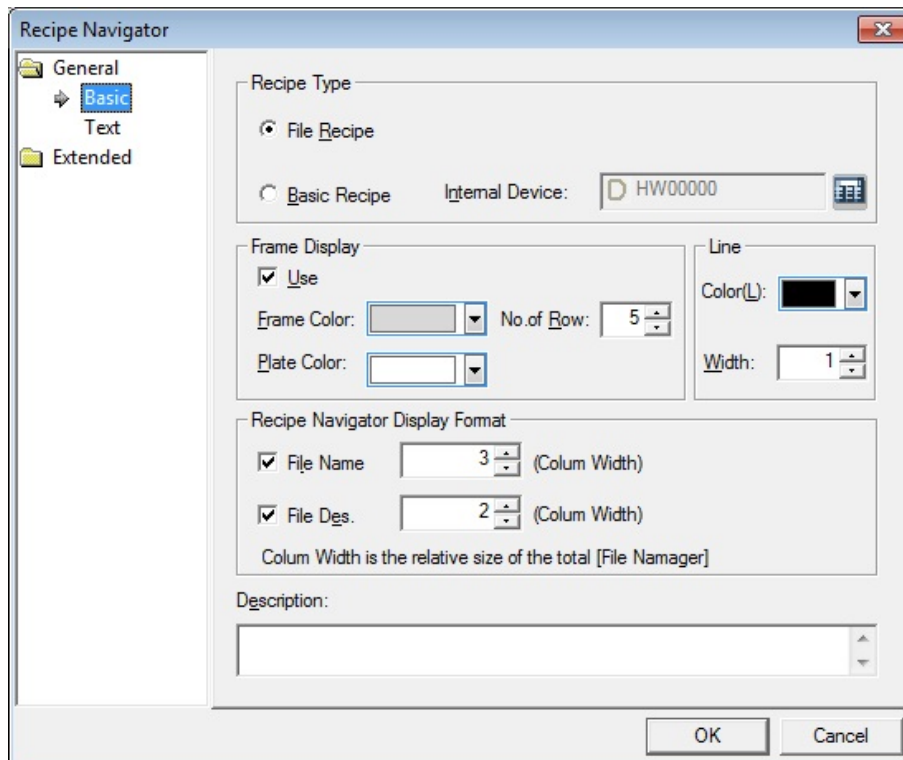
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.13 Recipe Navigator Object

This object displays a list of the file recipes saved in the storage device (USB, CF Card) or the basic recipes edited in XP-Builder. You can write the recipe data shown in the Recipe Navigator object directly to the controller. This section describes available settings for the recipe navigator. For more details about recipes, refer to <4.1.4 Recipes>.

- **Basic:** The basic settings for recipe navigator include the following:



- **Recipe Type:** Set the type of recipe to display.

<b>File Recipe</b>	Set to show the XPRXXXXX.csv list in the recipe folder on a storage device, such as a USB drive, CF card, or SD card.
<b>Basic Recipe</b>	Set to show the basic recipe list.
<b>Internal Device</b>	Specify the internal device that is used for transferring edited basic recipes from NVRAM.

- **Frame Display:** Set whether or not to use a frame.

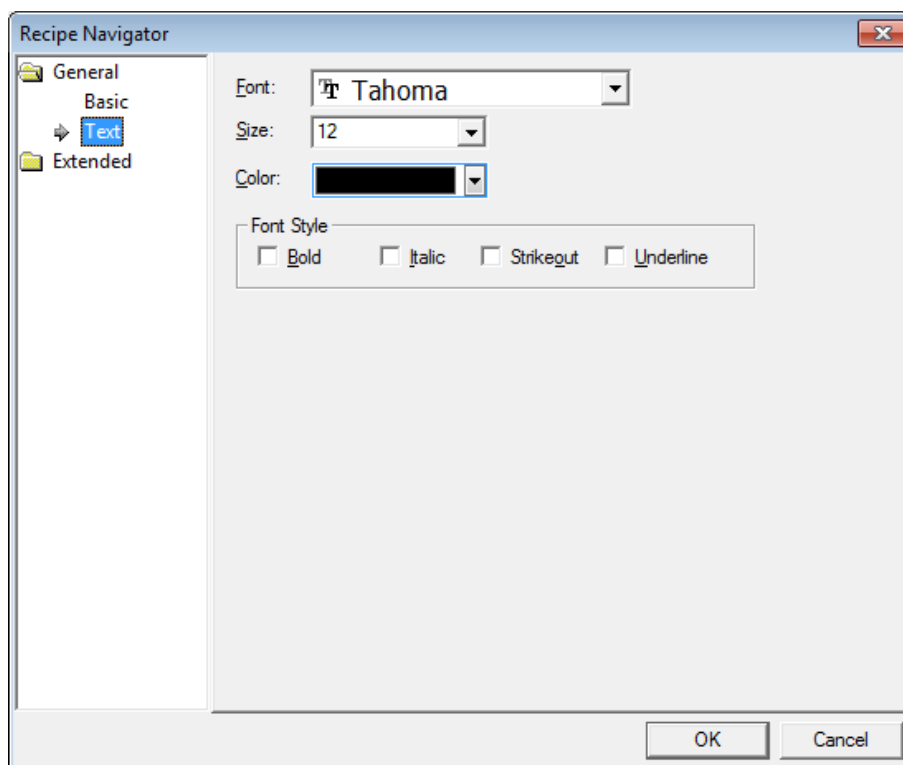
<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color for the table.
<b>No. of Col.</b>	Set the number of columns to show.

- **Line:** Set the line properties.

- **Recipe Navigator Display Format:** Set the data format for the recipe navigator.

<b>File Name</b>	Set to show the recipe file name. The file recipe displays the name of the CSV file saved in the storage device. The basic recipe displays the data generated in XP-Builder in order. For example, <RCP 1>, <RCP2>, and so on.
<b>File Des.</b>	Set to show the recipe file description. The description of the file recipe is the title of the CSV file or the name of the edited recipe in XP-Builder.

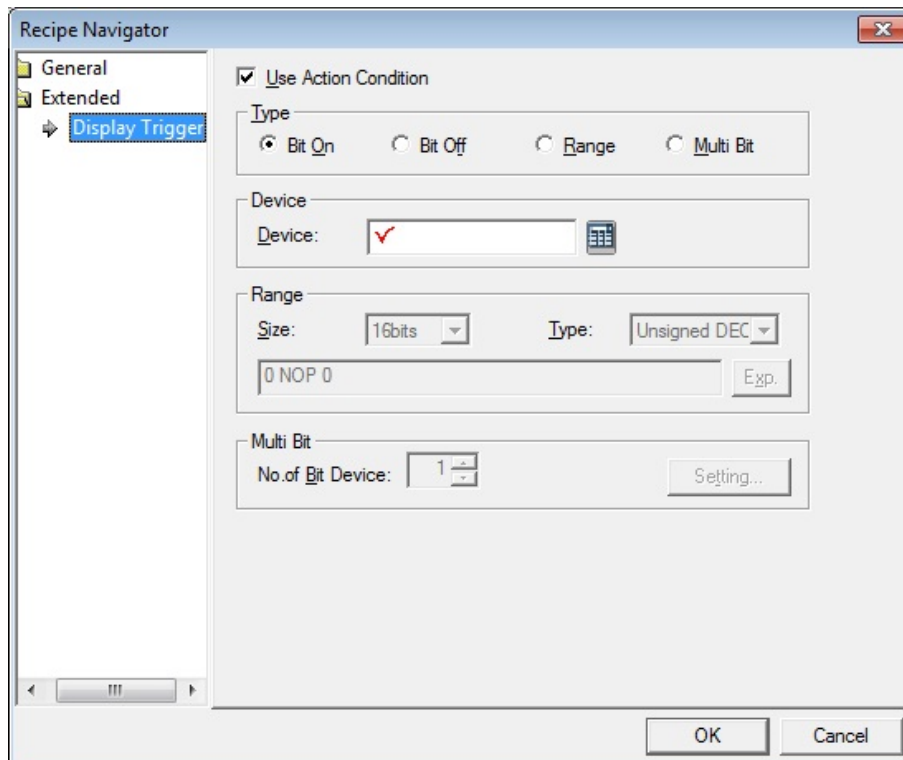
- **Description:** Enter a description for the object.
- **Text:** The text settings for recipe navigator include following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.



- **Display Trigger:** The display trigger settings for recipe navigator include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

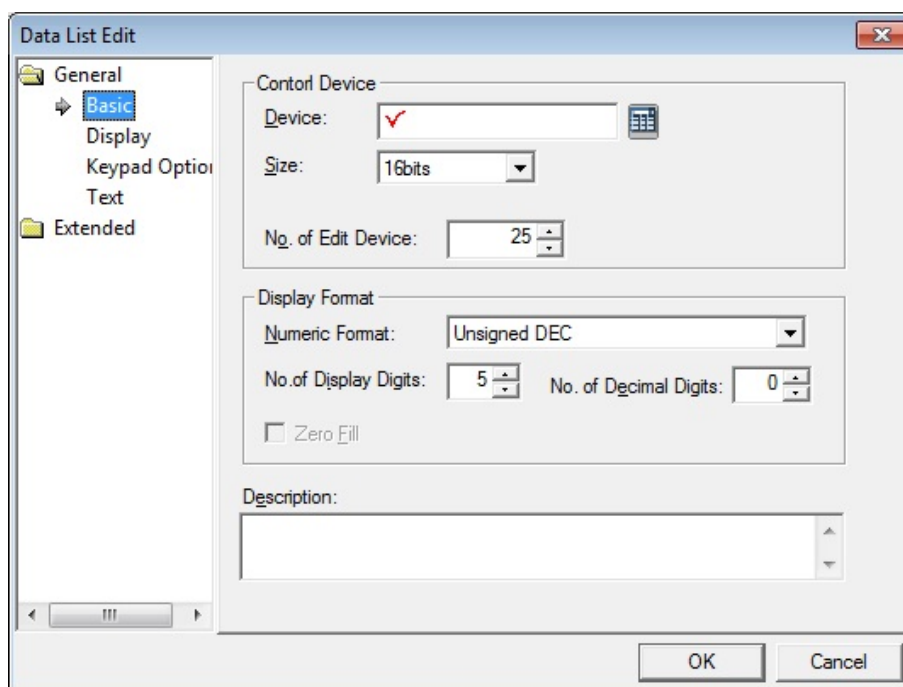
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.14 Data List Editor Object

The Data List Editor Object interprets PLC device values continuously and displays them in a table for editing. This section describes available settings for the data list editor object.

- **Basic:** The basic settings for data list editor include the following:

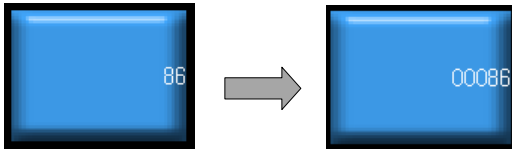


- **Control Device:** Specify a device to monitor values.

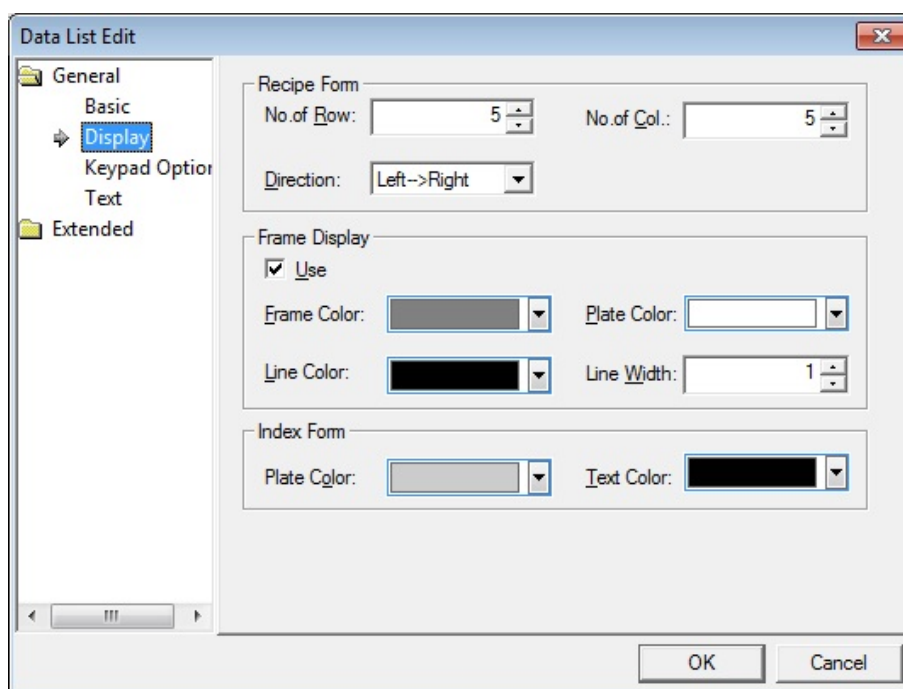
<b>Device</b>	Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window you can also specify network settings, if necessary.
<b>Size</b>	Set the data size for the device (16 bit or 32 bit).
<b>No. of Edit Device</b>	Set the number of devices to be shown (up to 255).

- **Display Format:** Set the display format.

<b>Numeric Format</b>	Set the number format (Signed decimal, Unsigned decimal, Octal, Hexadecimal, Binary, BCD, or float).
<b>No. of Display Digits</b>	Set how many digits to display (up to 64). If the number of digits is less than the capacity of the device, empty spaces are filled with placeholders (" "). If the device value cannot be displayed in BCD format, it is expressed as "~".
<b>No. of Decimal Digits</b>	Set how many places to put to the right of the decimal point when you select formats other than binary, octal, and hexadecimal numbers.

<b>Zero Fill</b>	<p>If you have selected right justification, select this option to insert zeroes (o) before the number.</p> <div style="text-align: center;">  </div>
------------------	---

- **Description:** Enter a description for the object.
- **Display:** The display settings for the data list editor object include the following:



- **Recipe Form:** Set the display options for the recipe data.

<b>No. of Row</b>	Set the number of rows to display.
<b>No. of Col.</b>	Set the number of columns to display.
<b>Direction</b>	Set the display direction (Top > Bottom or Left > Right).

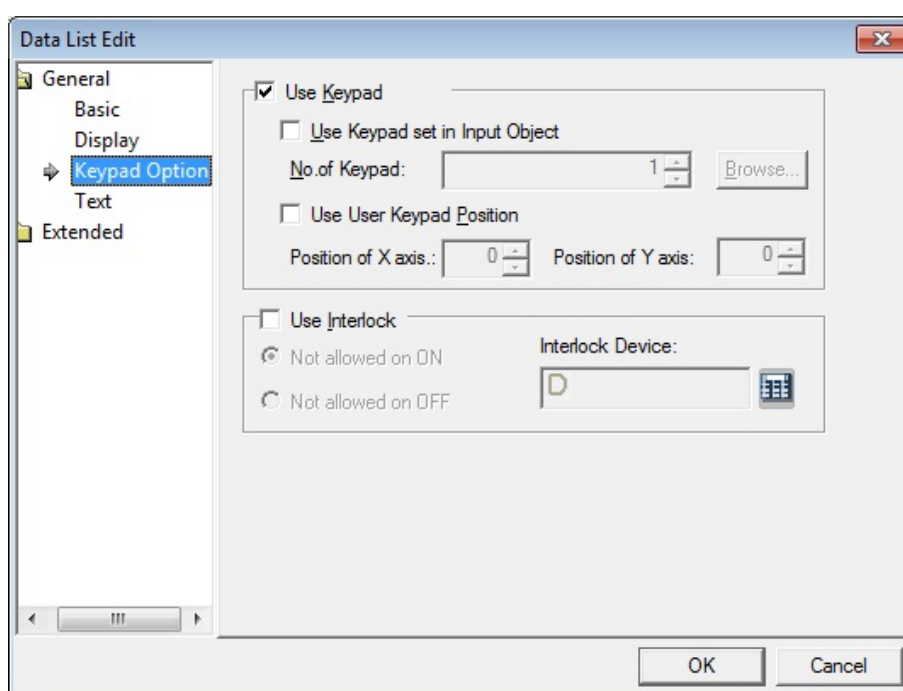
- **Frame Display:** Set the display options for the frame.

<b>Use</b>	Set whether or not to use a frame.
<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color.
<b>Line Color</b>	Set the line color.
<b>Line Width</b>	Set the line width.

- **Index Form:** Set the header format for the data list.

<b>Plate Color</b>	Set the background color.
<b>Text Color</b>	Set the text color.

- **Keypad Option:** The keypad option settings for the data list editor object include the following:



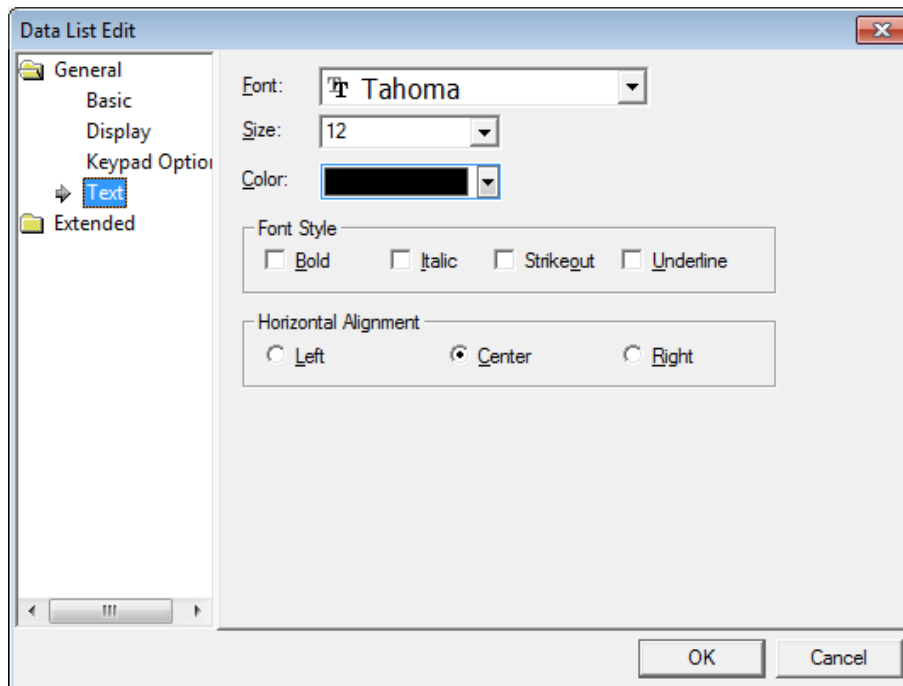
- **Use Keypad:** Set whether or not to use a keypad.

<b>Use Keypad set in Input Object</b>	Set whether or not to use a keypad specified in an object. Enter the key window number or click [Browse] to locate the window.
<b>Use User Keypad Position</b>	Set whether or not to specify the location of the keypad on the screen.

- **Use Interlock:** Set to prevent input when the interlock device meets the specified condition. The input cursor will skip the locked unit and move automatically to the next unit in the sequence.

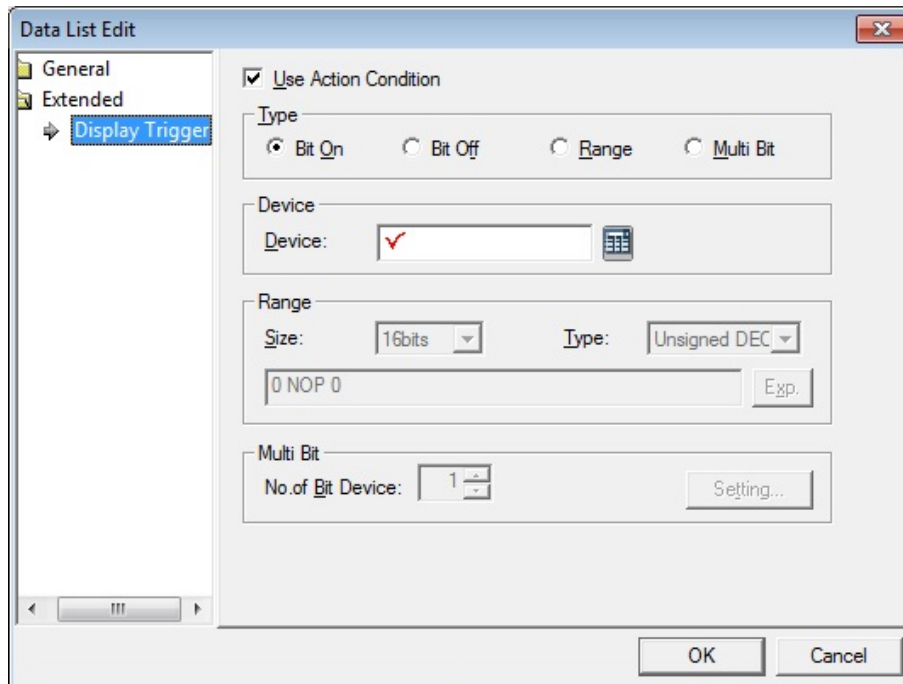
<b>Not allowed on ON</b>	When the device is on, input is not allowed.
<b>Not allowed on OFF</b>	When the device is off, input is not allowed.

- **Text:** The text settings for the data list editor object include the following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

- **Display Trigger:** The display trigger settings for the data list editor object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.15 File Recipe Editor Object

The file recipe editor object allows you to view and edit recipes. This section describes available settings for the file recipe editor object.

- **Display:** The display settings for the file recipe editor object include the following:

- **Recipe Form:** Set the display options for the recipe data.

<b>No. of Row</b>	Set the number of rows to display.
<b>No. of Col.</b>	Set the number of columns to display.
<b>Direction</b>	Set the display direction (Top > Bottom or Left > Right).

- **Frame Display:** Set the display options for the frame.

<b>Use</b>	Set whether or not to use a frame.
<b>Frame Color</b>	Set the frame color.
<b>Plate Color</b>	Set the background color.
<b>Line Color</b>	Set the line color.
<b>Line Width</b>	Set the line width.

- **Index Form:** Set the header format for the data list.

<b>Plate Color</b>	Set the background color.
<b>Text Color</b>	Set the text color.

- **Description:** Enter a description for the object.
- **Keypad Option:** The keypad option settings for the file recipe editor object include the following:



- **Use Keypad:** Set whether or not to use a keypad.

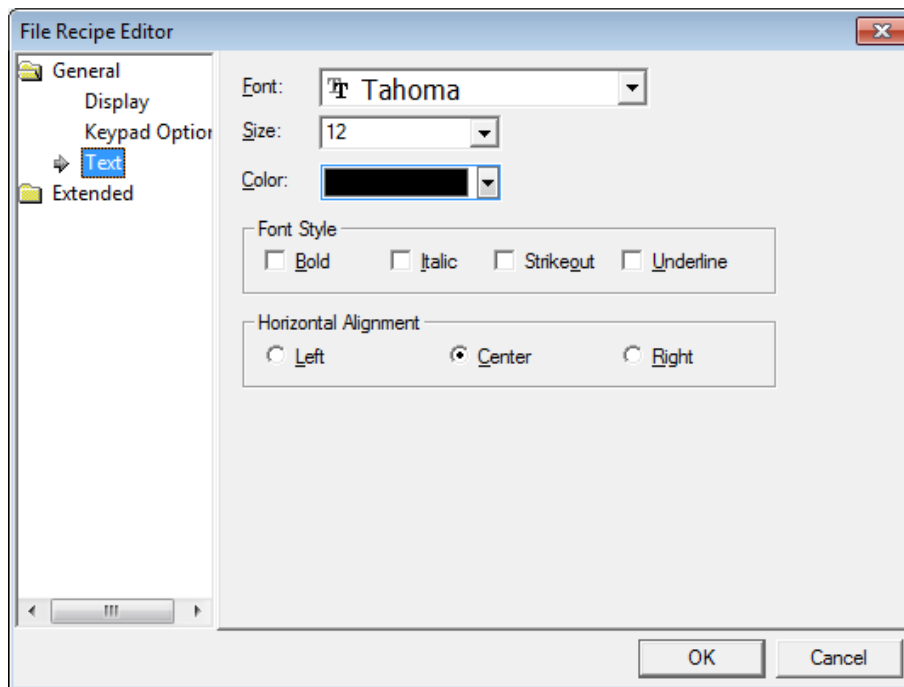
<b>Use Keypad set in Input Object</b>	Set whether or not to use a keypad specified in an object. Enter the key window number or click [Browse] to locate the window.
<b>Use User Keypad Position</b>	Set whether or not to specify the location of the keypad on the screen.

- **Use Interlock:** Set to prevent input when the interlock device meets the specified condition. The input cursor will skip the locked unit and move automatically to the next unit in the sequence.

<b>Not allowed on ON</b>	When the device is on, input is not allowed.
<b>Not allowed on OFF</b>	When the device is off, input is not allowed.

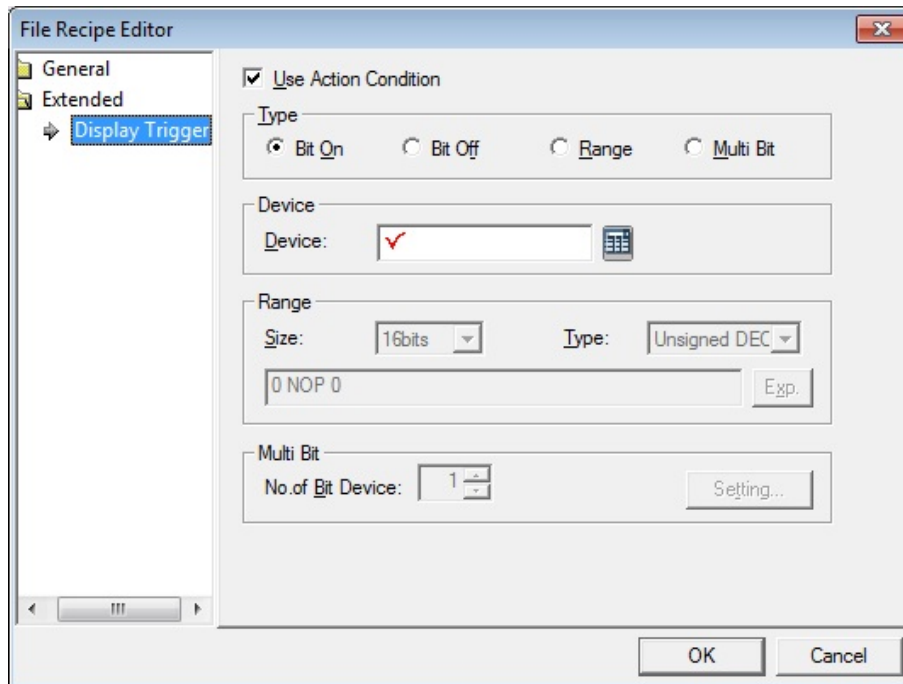


- **Text:** The text settings for the file recipe editor object include the following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.
- **Horizontal Alignment:** Set the horizontal alignment (Left, Center, or Right).

- **Display Trigger:** The display trigger settings for the file recipe editor object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range. Constants are based on device size.

<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

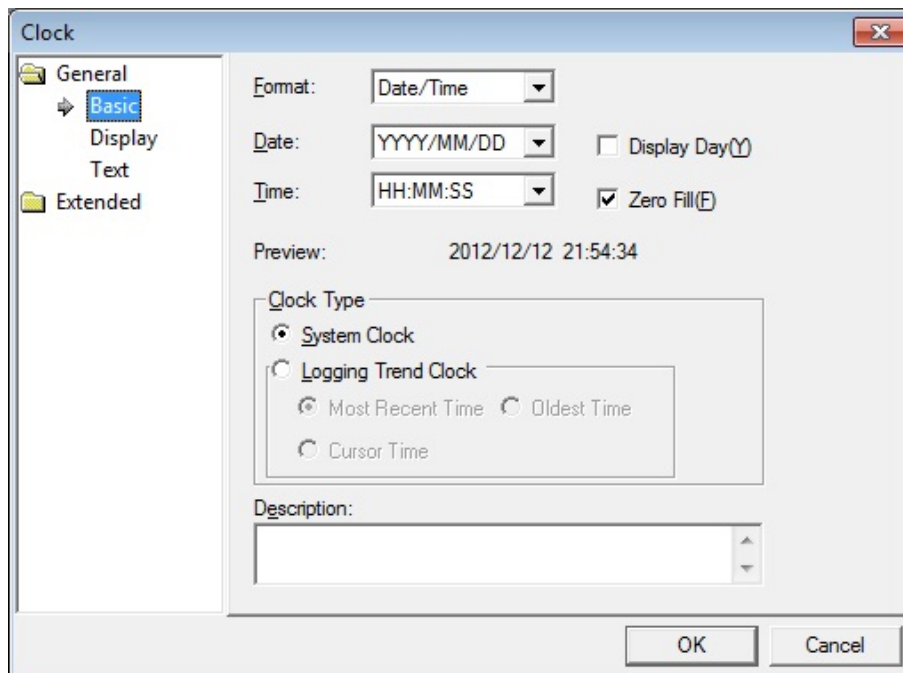
- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.16 Clock Object

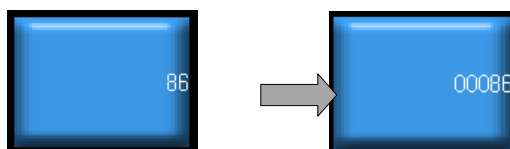
This section describes available settings for the clock object.



- **Basic:** The basic settings for the clock object include the following:



- **Format:** Set the data format.
- **Date:** Set the date format.
- **Time:** Set the time format.
- **Display Day:** Set whether or not to show the day of the week.
- **Zero Fill:** If you have selected right justification, select this option to insert zeroes (o) before the number.



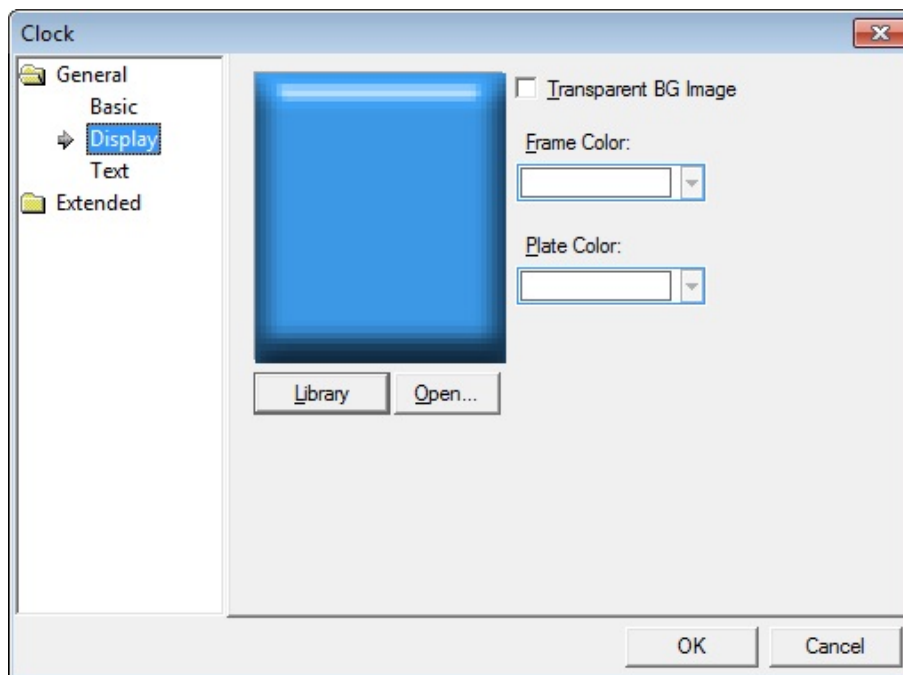
- **Preview:** Shows a preview of the data format.

- **Clock Type:** Set a clock type.

<b>System Clock</b>	Set to show the system time in the clock.
<b>Logging Trend Clock</b>	Set to show logging data in the clock. Set a logging trend option (most recent time, oldest time, or cursor time).

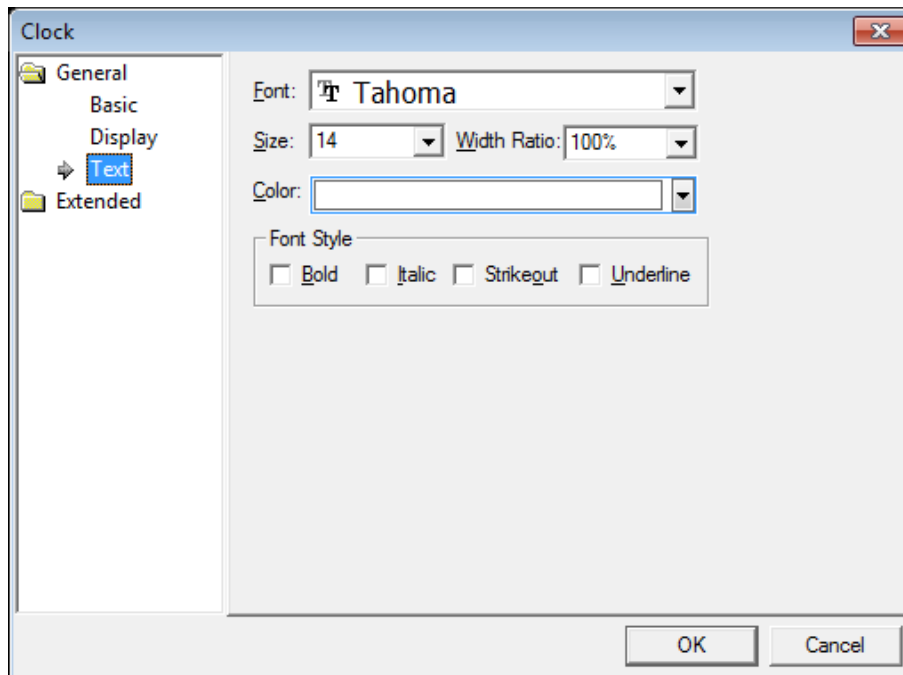
- **Description:** Enter a description for the object.

- **Display:** The display settings for the clock object include the following:



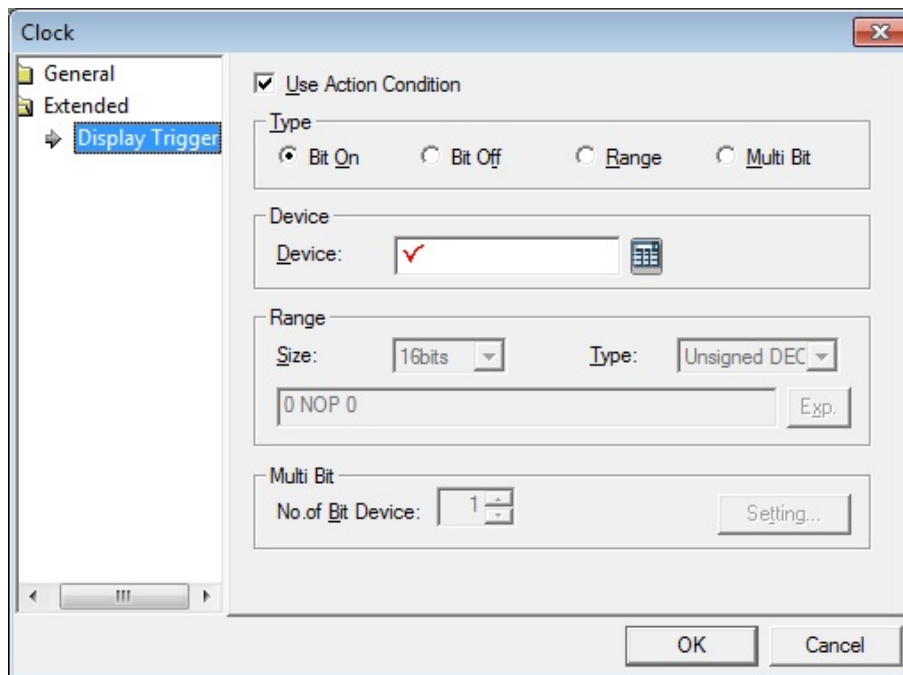
- **Library:** Click to select an image from the library.
- **Open:** Click to browse for images on your computer. When you select an image from your computer, it will be added to the image library automatically.
- **Transparent BG Image:** Set whether or not to make the background transparent.
- **Frame Color:** Set a frame color (only available with vector images).
- **Plate Color:** Set a background color from the image.

- **Text:** The text settings for the clock object include the following:



- **Font:** Select a font from the drop-down list.
- **Size:** Set a text size from the drop-down list or enter a value directly into the field.
- **Width Ratio:** Expand or condense the text by selecting a ratio from the drop-down list or entering a value directly in to the field. You can set a ratio of 1-600%.
- **Color:** Set a font color.
- **Font Style:** Set a font style (bold, italic, strikeout, or underline). You can apply more than one option at a time.

- **Display Trigger:** The display trigger settings for the clock object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range. Constants are based on device size.

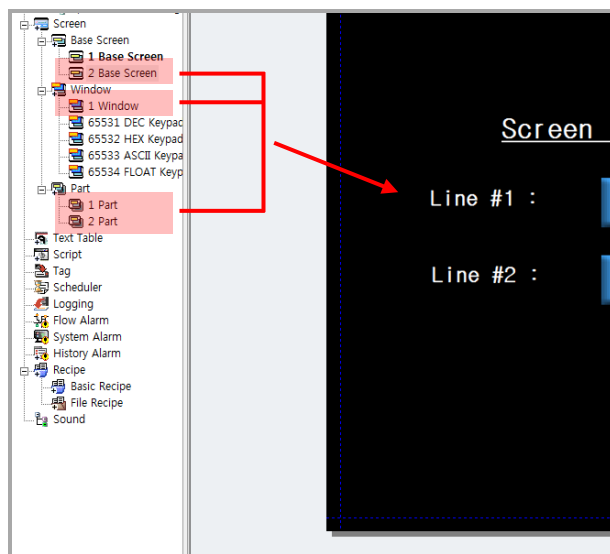
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

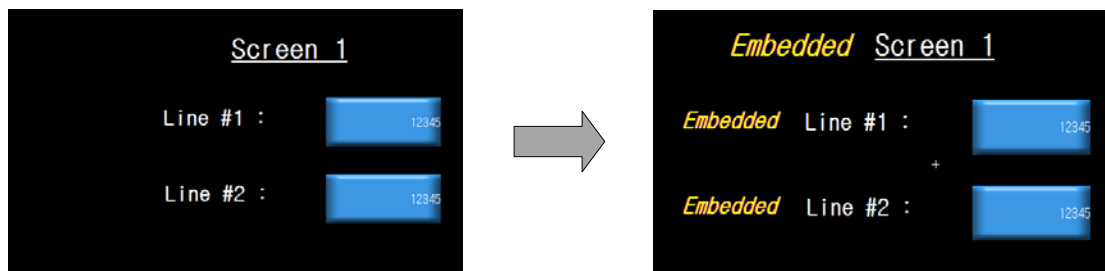
### 4.3.17 Embedded Screen Object

You can use the embedded screen object to open other windows on the base window. You can insert a frequently-used page without additional editing through this object. This section describes available settings for embedded screen object.

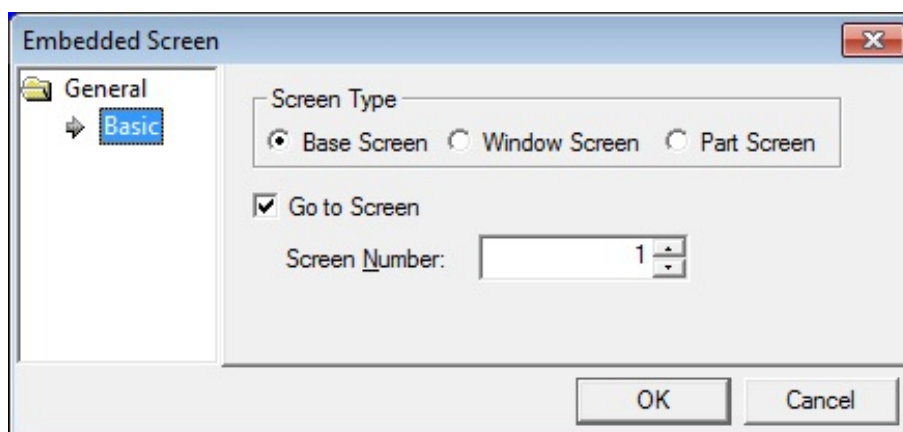
To embed a screen into the base window, in the Project pane, drag and drop a window (base window, window, or part window) onto the editing area.



The window will be embedded as follows:



- **Basic:** Basic settings for the embedded screen object include the following:



- **Screen Type:** Set the type of window to be opened.
- **Go to screen:** Set whether or not to open an existing window.
- **Screen Number:** Set the window number to open.

#### Notes

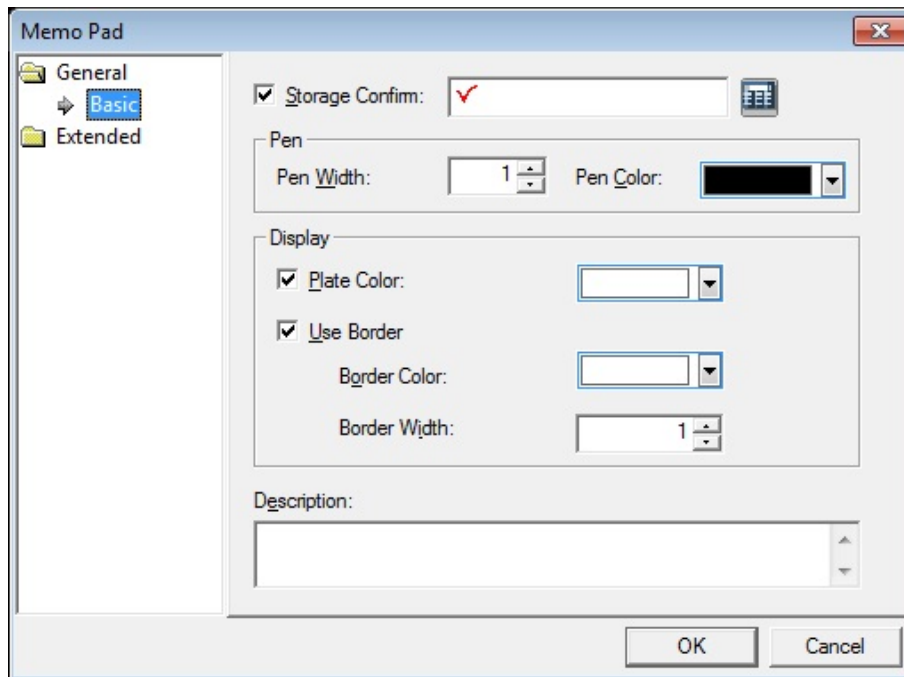
- When you insert a base window into another base window:
  - Background settings will not be applied.
  - Set scripts cannot be used.
  - The inserted base window cannot be imported from another base window to itself.
  - The same number base window cannot be inserted.
- You can also insert the base window into another base window by dragging it.
- When you try to insert a base window that is already embedded in another base window, the embedded window is not inserted. Only the base window itself is inserted.



### 4.3.18 Memo Pad Object

This section describes available settings for the memo pad object.

- **Basic:** The basic settings for the memo pad object include the following:



- **Storage Confirm:** Set whether or not to use a device to view current memo status. Enter the device address in the field or click the icon to the right of the field to specify a device address. The first three bits of the device address specify the function of the memo pad.

Device Bit	Description
00	Indicates the status of the object (on in active mode; off in non-active mode).
01	Shows whether or not the memo was saved successfully.
02	Shows whether or not the memo was deleted successfully.

- **Pen:** Set the pen options.

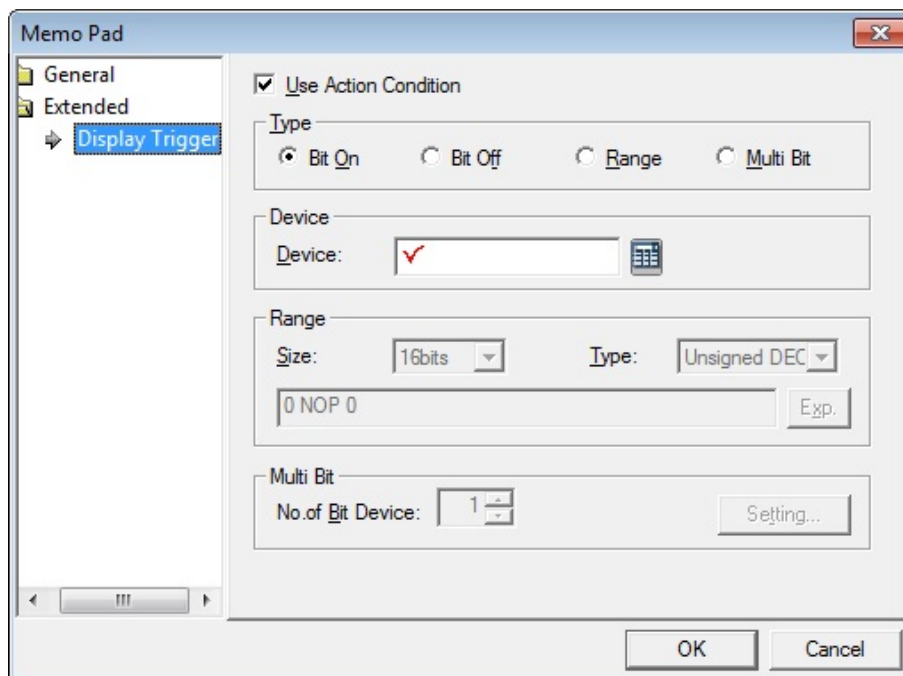
<b>Pen Width</b>	Set the pen width (1 to 30).
<b>Pen Color</b>	Set the pen color.

- **Display:** Set the display options.

<b>Plate Color</b>	Set the background color of the memo pad.
<b>Use Border</b>	Set whether or not to use a border.
<b>Border Color</b>	Set the border color.
<b>Border Width</b>	Set the border width.

- **Description:** Enter a description for the object.

- **Display Trigger:** The display trigger settings for the memo pad object include the following:



- **Use Action Condition:** Set whether or not to specify a condition for the action.
- **Type:** Set a type of condition to specify.

<b>Bit On</b>	The action is performed when the device is switched on.
<b>Bit Off</b>	The action is performed when the device is switched off.
<b>Range</b>	The action is performed when the value falls within the specified range.
<b>Multi Bit</b>	The action is performed when the logical operation result of multiple devices is met.

- **Device:** Enter a device or tag address directly in the input field or click the keyboard button to the right to specify a device or tag address. When you click the keyboard button to open the Device window, you can also specify network settings, if necessary.
- **Range:** If you select the range condition, specify the range. Constants are based on device size.

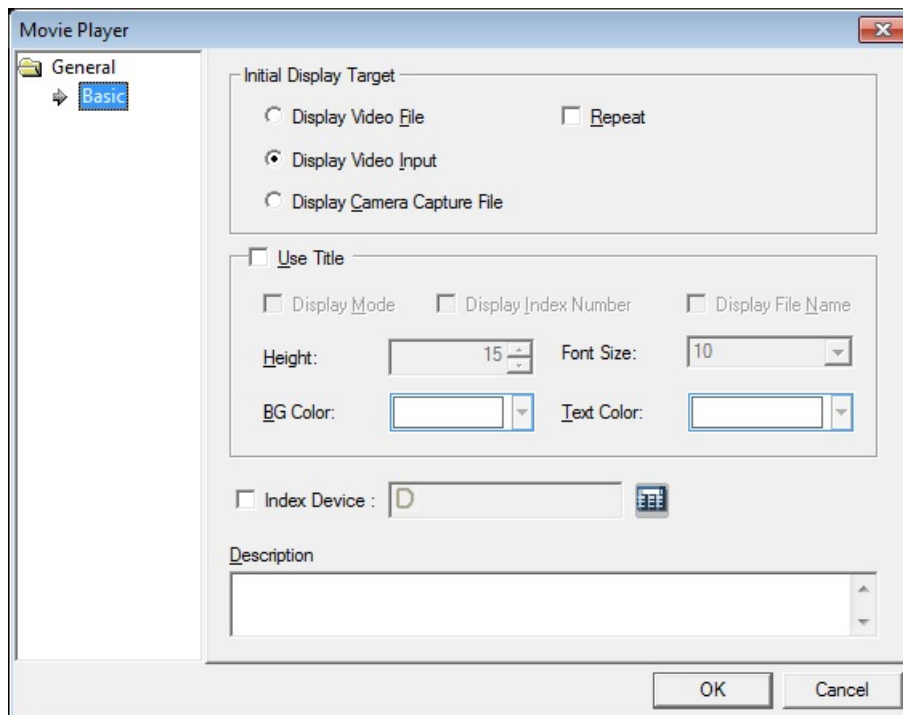
<b>Size</b>	16 bit or 32 bit.
<b>Type</b>	Signed decimal, unsigned decimal, BCD, or float.
<b>Exp.</b>	Click to designate the expression as conditional.

- **Multi Bit:** If you select the multi bit condition, specify the number of bits and click [Setting] to specify the bit conditions.

### 4.3.19 Movie Player Object

This section describes available settings for movie player object. This object is available only with TTM series XGT Panels ( iXP70-TTM, iXP80-TTM, and iXP90-TTM). For more information about the movie player object, refer to <4.3.2.4 Special Switch>.

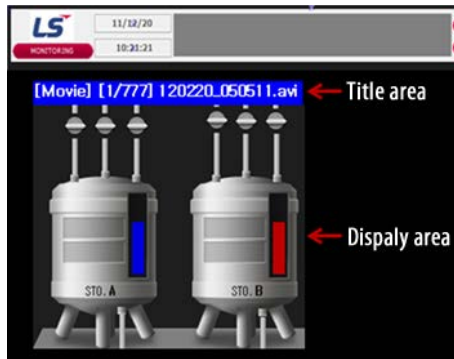
- **Basic:** The basic settings for the movie player object include the following:



- **Initial Display Target:** Set the default target for the movie player object.

<b>Display Video File</b>	Set to play a video file (.avi) on a storage device (CF card, USB device, or SD card).
<b>Display Video Input</b>	Set to show the feed from a camera connected to the XGT Panel.
<b>Display Camera Capture File</b>	Set to show an image file (.jpg) on a storage device (CF card, USB device, or SD card).
<b>Repeat</b>	Set to loop the display target.

- **Use Title:** Set whether or not to display video information. The title area is shown above the display area.

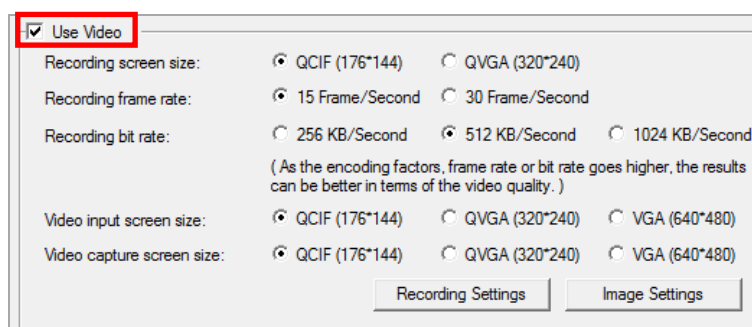


<b>Display Mode</b>	Set to show the mode.
<b>Display the Index Number</b>	Set to show the index numbers of files being played.
<b>Display File Name</b>	Set to show the names of files being played.
<b>Height</b>	Set the height of the title.
<b>BG Color</b>	Set the background color of the title.
<b>Font Size</b>	Set the font size of the title
<b>Text Color</b>	Set the text color of the title.

- **Index Device:** When playing recorded files, specify a device to control playback order. If you do not select this option, the most recently-created file will be played first.
- **Description:** Enter a description for the object.

### Notes

- If you select an XGT Panel that is not a TTM series panel, an error can occur when you execute the Movie Player object.
- Even if you create the Movie Player object, if you don't set the option in [Common] ► [Project Property Setting] ► [Use Video], you cannot use the object.



- To change the object size, set the option in [Common] ► [Project Property

Setting] ► [Use Video] ► [Video input screen size].

- You can take a screenshot of the current screen in JPG format in **Display Video File** or **Display Video Input**. But, if the video playback is stopped, the captured file is not generated.
- You cannot play a currently-recording video and capture a screenshot when you have designated the event recording trigger device and an event recording time greater than 0. If you set **Stop device of event recording device** from the Project Property setting, you cannot use the event recording function. You must use the video playing and capture file function, instead.
- You cannot set the Display Video File or Display Video Input option in the two screens at the same time.
- You cannot use video functions while creating a list of stored video files and video capture files. The process of creating a file list may take several seconds to several minutes. While the video file list is being created, the 4th bit of the status device stays "On" and the 5th bit of the status device stays "On". During this time, you can watch the camera input screen and even start or stop monitoring the screen.
- You can creating a file list of video and video capture when:
  - Starting the monitoring
  - Connecting a computer and XGT Panel to ActiveSync and then canceling the connection
  - The storage device is installed
- When the safe removal switch is turned on, the switch lamp will be turned off after the applicable actions are completed in the following situations:
  - If the safe removal switch is turned on while the file list was being created, the switch will be turned off when the file list is completed.
  - If the safe removal switch is turned on while recording, the switch will be turned off when the recording is completed.
  - If the safe removal switch is turned on while playing the video, the switch will be turned off when the file was played in its entirety.

### 4.4 Using Program Monitor

The Program Monitor allows you to check the status of the system and diagnose PLC errors.

#### 4.4.1 About Program Monitor

The Program Monitor works with PLCs that support the monitoring function, as described in <4.4.1.1 PLCs that Support Monitoring>. The function shows the ladder diagrams for each PLC that can be monitored, as described in <4.4.1.2 The Program Monitor Window>.

##### 4.4.1.1 PLCs that Support Monitoring

You can only monitor PLCs that use the ladder diagram (LD) language. If a program uses the IL language, it will be converted to LD for display in the Program Monitor window. The following table describes PLC types manufactured by LSIS that support monitoring:

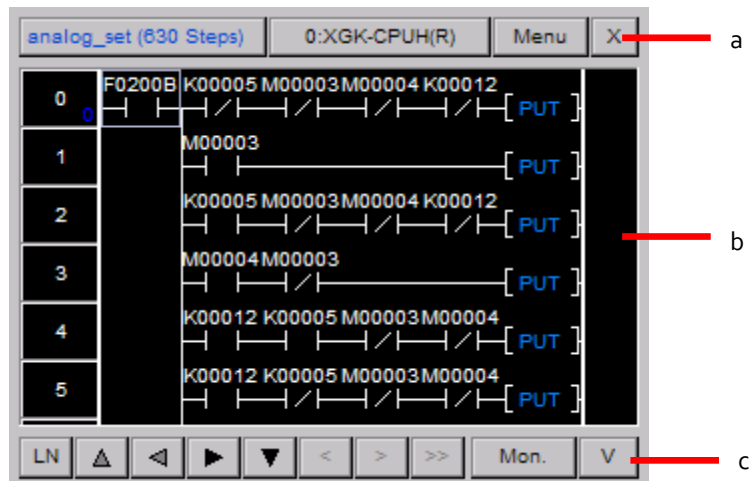
Series	PLC Type	Maximum Program Capacity (Steps)
XGK	XGK-CPUA	32K
	XGK-CPUE	16K
	XGK-CPUH	64K
	XGK-CPUS	32K
	XGK-CPUU	128K
XGB	XGB-DR16C3	10K
	XGB-XBCH	15K
	XGB-XBMS	10K

#### Note

Refer to the PLC's user manual to determine the supported connection types, device sizes, and properties.

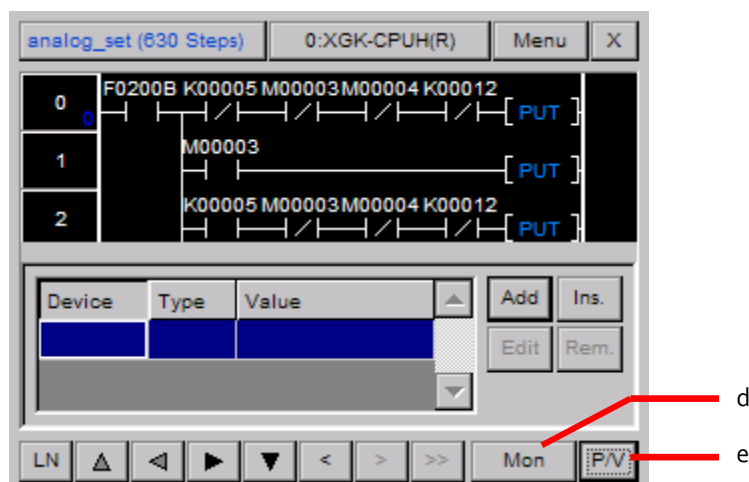
#### 4.4.1.2 The Program Monitor Window

The basic Program Monitor window appears below.



Item	Description
a	The top row shows fundamental information about the program and the connected PLC.
b	The monitoring area shows the LD program.
c	The bottom row contains navigation buttons and controls for reviewing other types of information.

When you click the program/variable switch, you can monitor variables in the program as well:





Item	Description
d	Click to start or stop monitoring
e	Program/Variable Switch
LN	Click to toggle page scrolling

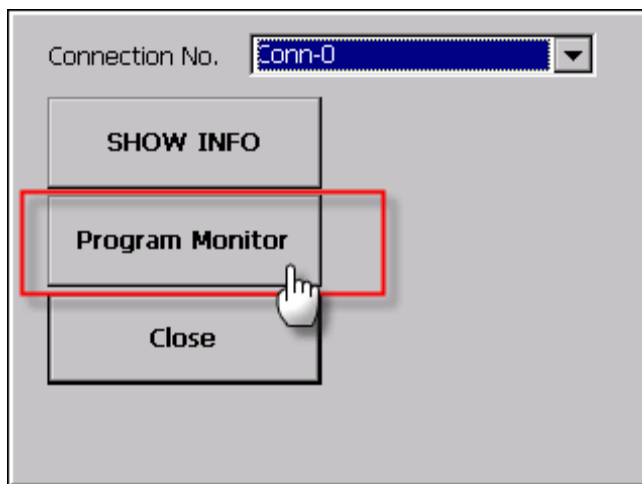
### 4.4.2 Monitoring Program

You can monitor programs manually from the XGT Panel's menu or via a special switch object on a UI window.

#### 4.4.2.1 Monitoring Programs from the XGT Panel Menu

To start the Program Monitor from the XGT Panel menu:

1. Touch and hold the XGT Panel screen to open the main menu.
2. Touch [PLC Information].
3. Select a connection number from the drop-down list and touch [Program Monitor].



#### Note

If you have not selected the program monitor function in the XP-Builder project, the Program Monitor function will not be active. For more information, refer to <2.2.2.2 Changing XGT Panel Settings>.

To stop the program monitor,

1. Touch [XGT Property] ► [XGT Panel Setting].

2. Touch the checkbox next to **Program Monitor**.

#### 4.4.2.2 Monitoring Programs with a Special Switch Object

To start the Program Monitor with a special switch object:

1. Create a special switch object in XP-Builder and transfer the project to the XGT Panel.  
For more information about special switch objects, refer to <2.3.4 Inserting Figures or Objects> and <4.3.2.4 Special Switch>.
2. On the XGT Panel, access the window that contains the special switch.
3. Touch the special switch to activate the Program Monitor.

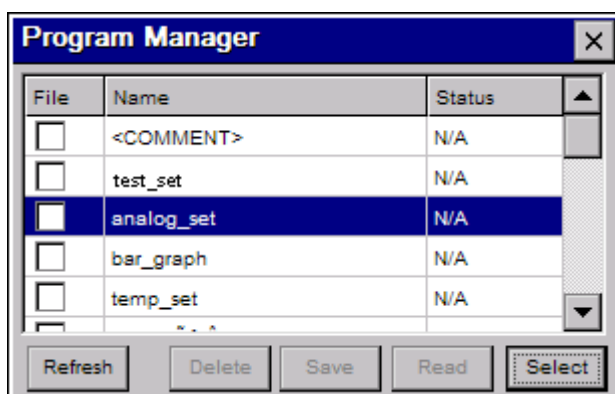
#### Note

While the Program Monitor is active, objects on the current screen cannot be monitored, but scripts and logging functions will work normally.

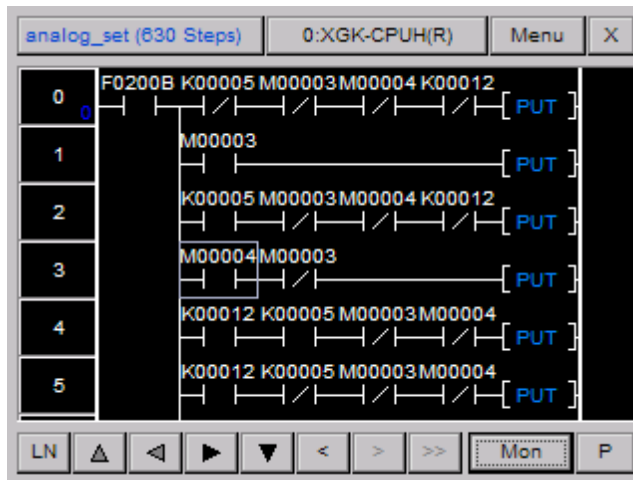
#### 4.4.2.3 Selecting Programs to Monitor

Once you activate the Program Monitor, you must select which programs to monitor. To select programs:

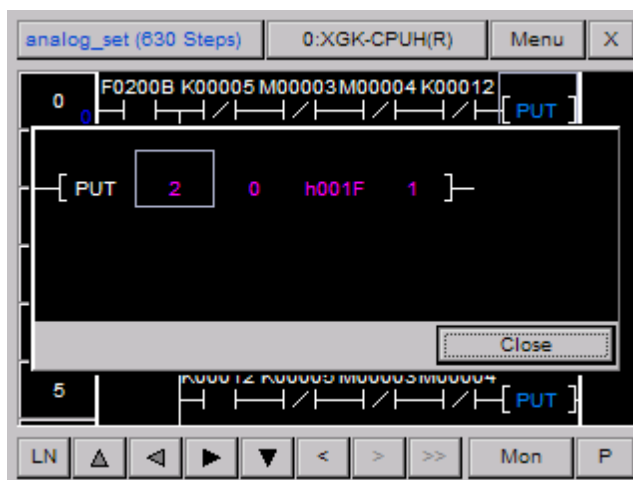
1. In the Program Monitor window, touch a program from the program list and then touch [Select].



- To begin monitoring the program, touch [Mon]. The LD program will appear in the monitoring area of the window.



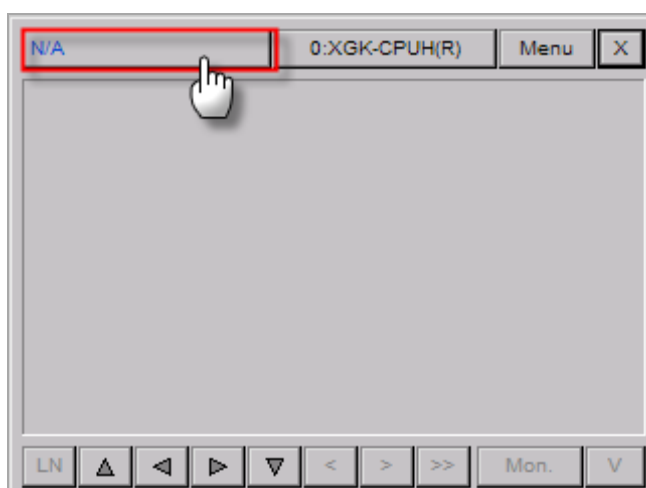
- If the command is longer than the window can display, you can double-tap [PUT] to the right of the command to expand it. Tap [Close] to return to normal monitoring.



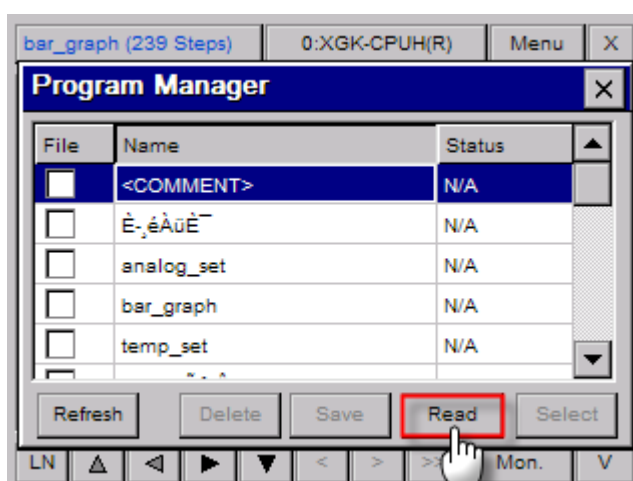
### 4.4.2.4 Managing Programs

You can save or delete programs from the Program Monitor. To manage programs:

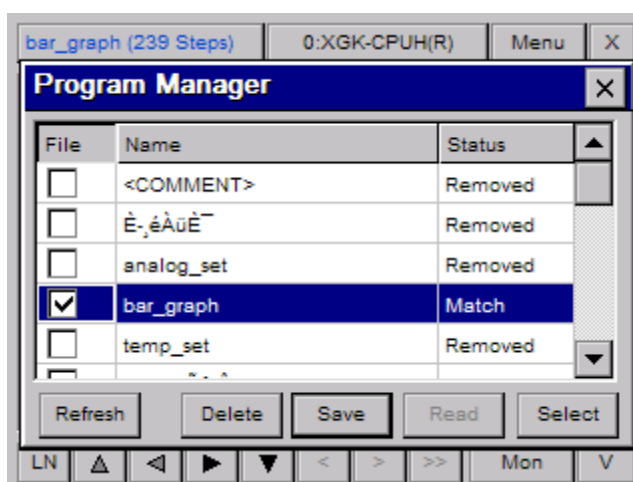
- Touch the program list button at the top left of the window. To update the program list, touch [Update].



2. Touch a program to monitor ► [Select] to move to the monitoring window.
3. To read comments, touch [Comment] ► [Read].



4. To save a program as a file, touch a program and then touch [Save]. When the program is saved "Match" appears in the Status column. If the file cannot be saved to the PLC, "Mismatch" appears in the Status column.



5. To delete a file, touch a program and then touch [Delete]. When the program is deleted, "Removed" appears in the Status column.

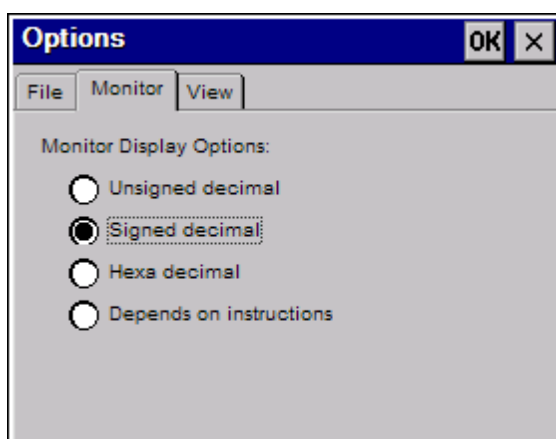
### 4.4.2.5 Changing the Display Format

In the Program Monitor, you can choose from four display formats for data, as described in the following table.

Format	Description
Unsigned decimal	Displays the current device value as an unsigned decimal number.
Signed decimal	Displays the current device value as a signed decimal number.
Hexadecimal number	Displays the current device value as a hexadecimal number.
Depending on command	Displays the current value based on the command properties.

To change the display format:

1. On the XGT Panel, touch and hold the screen to open the main menu.
2. Touch [Option] ► [Monitor].
3. In the Options window, touch a display format:



4. Touch [OK] to save your changes.

#### Note

Real number and string data types are displayed as real numbers and strings,

respectively, of display format you choose. For more information about data types for each PLC command, refer to the PLC user manual.

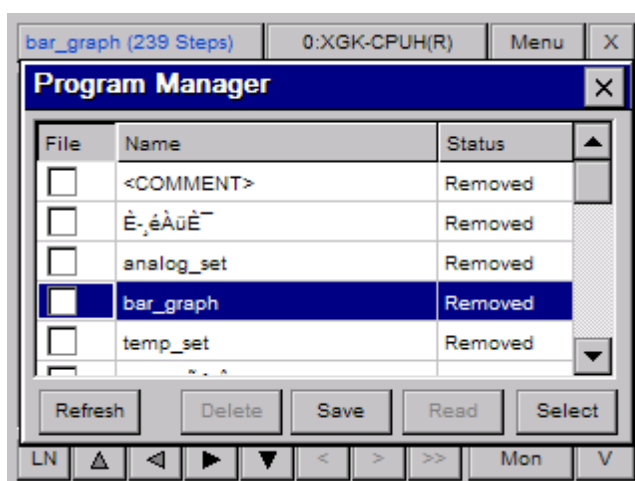
#### 4.4.2.6 Changing the Current Device Value

You can change the current device value from the Program Monitor. To change the current value of a PLC device:

1. From the Program Monitor window, select a device.
2. Touch [Menu] to display a menu dialog box.
3. Press [Test] to change the value.
4. Press [OK].

#### Note

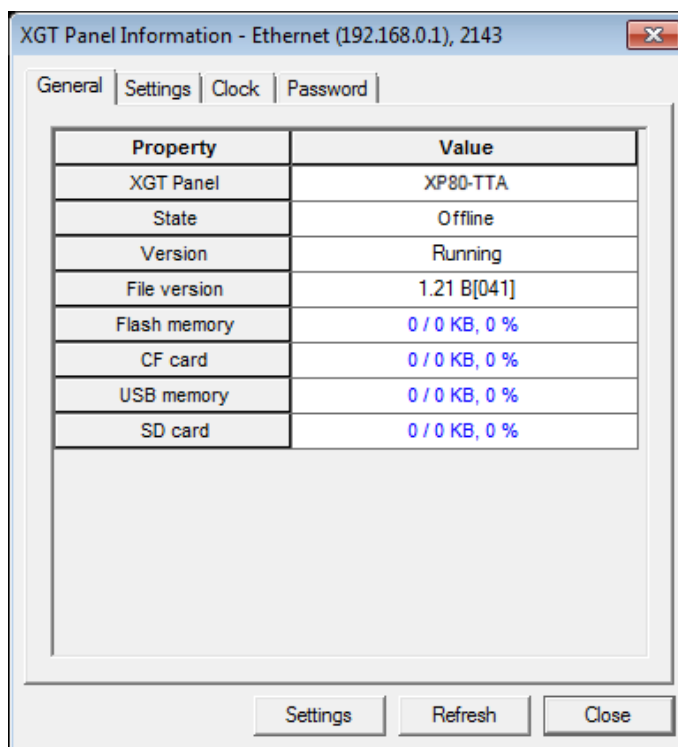
When you selecting bit type device, the dialog box to select ON/OFF will be displayed. Number input unit or string input unit will be displayed depending on the inputted data type. After selecting the device to be changed, you can select the current device value.



### 4.5 Viewing or Changing XGT Panel Information

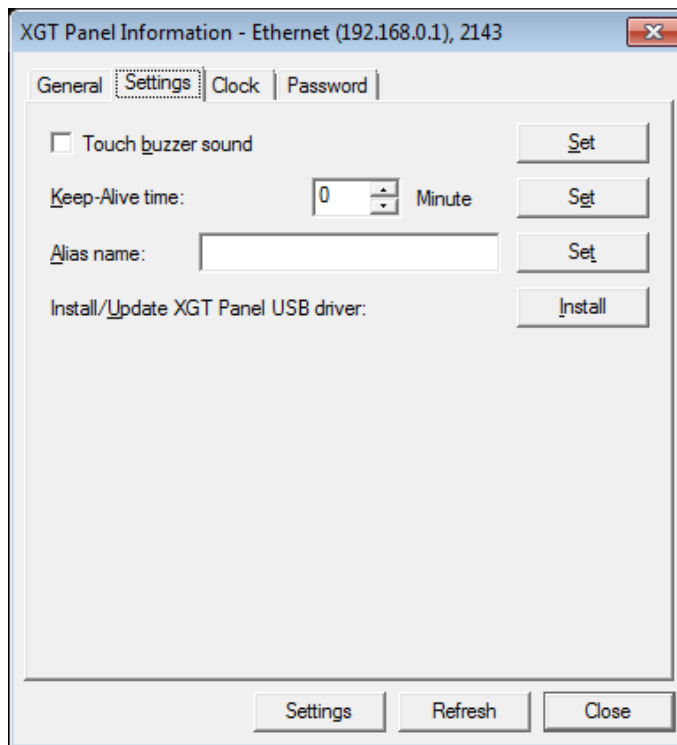
To view or change XGT Panel information:

1. Touch and hold the XGT Panel screen to access the menu.
2. Touch [Communication] ► [XGT Panel Information].
3. Touch a tab to view or change the following information:
  - **General:** The General tab allows you to view properties for the XGT Panel.



- **XGT Panel:** The XGT Panel model number.
- **State:** The operational state of the XGT Panel.
- **Version:** The XGT Panel version.
- **File version:** The file version.
- **Flash memory:** Used and available flash memory.
- **CF Card:** Used and available memory on an installed CF card.
- **USB Memory:** Used and available memory on an installed USB device.
- **SD Card:** Used and available memory on an installed SD card.

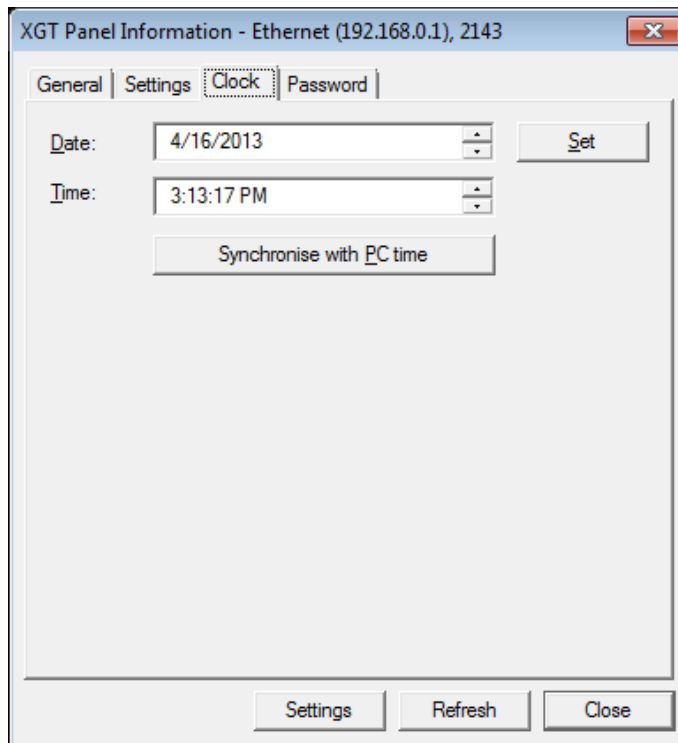
- **Settings:** The Settings tab allows you to specify the following settings:



- **Touch Buzzer Sound:** Set whether or not to use audible feedback when a user touches the XGT Panel screen.
- **Keep-Alive Time:** Set how long the server will keep the communication port open if there is no response from the XGT Panel.
- **Alias Name:** Specify an alias to use when scanning for or connecting to the XGT Panel.
- **Install/Update XGT Panel USB Driver:** Click [Install] to update the XGT Panel's USB driver.



- **Clock:** The Clock tab allows you to specify the following settings:



- **Date:** Specify the date. Click [Set] to apply your settings to the XGT Panel.
- **Time:** Specify the time. Click [Set] to apply your settings to the XGT Panel.
- **Synchronise with PC Time:** Click to apply the computer's time to the XGT Panel.

- **Password:** The Password tab allows you to specify or delete the password that is required when transferring a project to the XGT Panel.

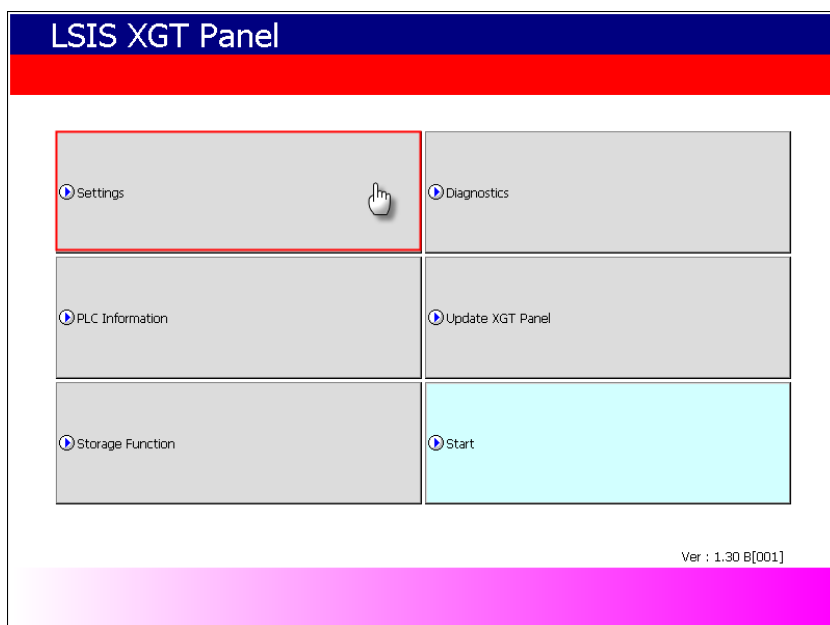
The screenshot shows a dialog box titled "XGT Panel Information - Ethernet (192.168.0.1), 2143". It has four tabs: "General", "Settings", "Clock", and "Password". The "Password" tab is selected. Inside the tab, there are three input fields: "Previous password:", "New password:", and "Confirm password:". To the right of the "Previous password:" field is a "Delete" button. To the right of the "New password:" field is a "Set" button. Below the "Confirm password:" field is the text "(Maximum 10 characters)". At the bottom of the dialog box, there are three buttons: "Settings", "Refresh", and "Close".

- **Previous Password:** Enter the current password and click [Delete] to delete it.
- **New Password:** Enter a new password and click [Set].
- **Confirm Password:** Re-enter the new password and click [Set].

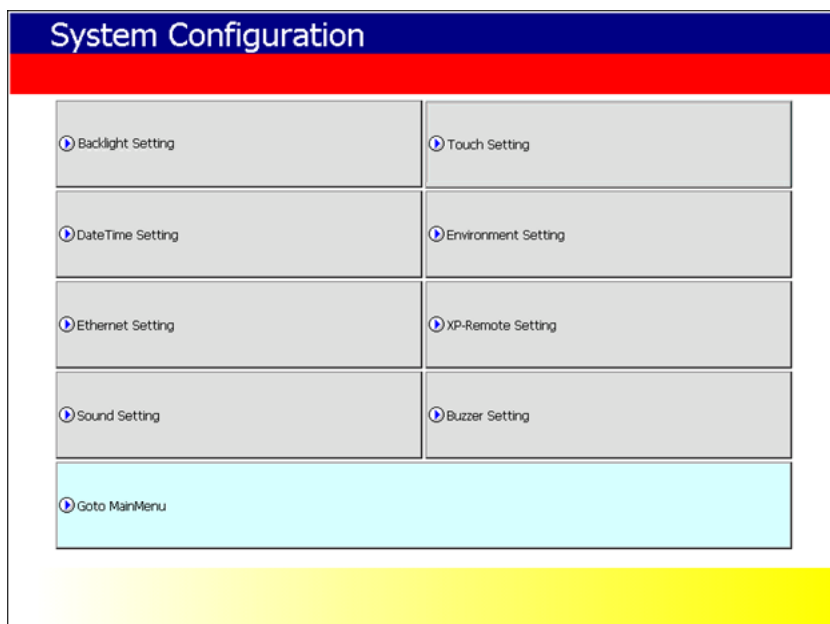
# 5. Managing an XGT Panel

## 5.1 Configuring System Options

This section covers configuring XGT Panel system settings, including date and time, Ethernet connection, backlight, and sound. To configure the system, touch [Settings] in the XGT Panel main menu as shown below:



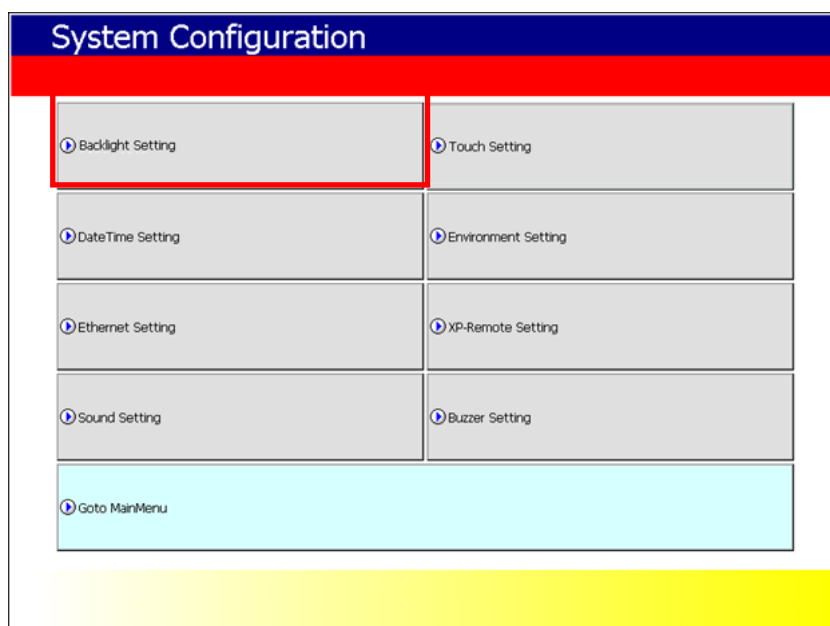
The configuration screen is displayed.



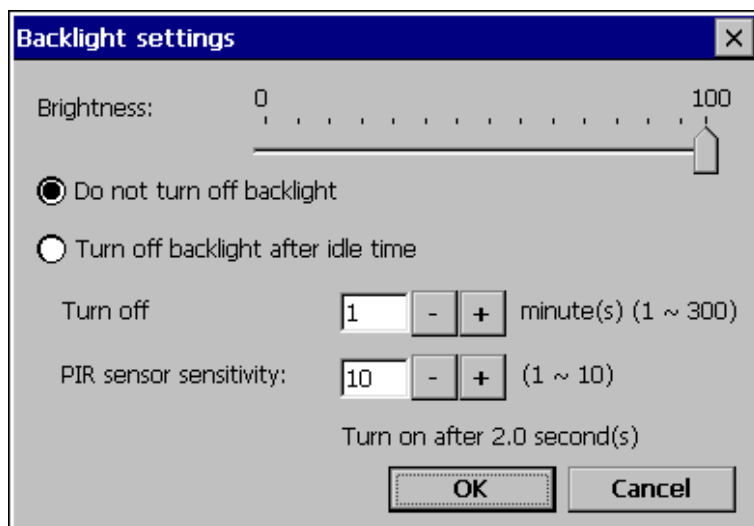
### 5.1.1 Backlight Settings

Backlight options are able to be adjusted for the XGT panel. You can adjust the brightness, screen power-off time, and other settings to suit your requirements.

1. Touch [Backlight Setting].



2. Specify your backlight settings by adjusting the options shown below:



Function	Description
Brightness	Adjust the backlight level.
Do Not Turn Off Backlight	Continuous backlight.

## 5. Managing an XGT Panel

Function	Description
Turn Off Backlight After Idle Time	Automatically turn off the backlight after a specified time.
Turn Off	Set the time to turn off the backlight.
PIR Sensor Sensitivity	Set the sensitivity level for the PIR (Passive Infrared) sensor. The lower the value, the quicker the backlight will turn on. When set to the lowest value, the backlight will turn on immediately when the screen is touched.

### Notes

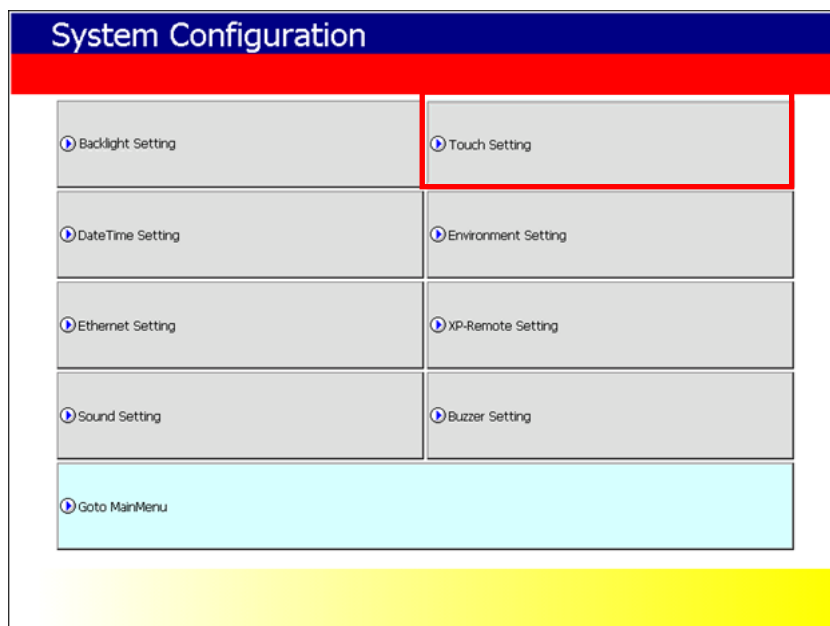
- The XGT Panel's backlight is activated by detecting movement around the XGT Panel. If you approach the XGT Panel when the display is off, movement around the XGT Panel from the left, right or front, is detected and turns on the backlight. The XGT Panel has a detection range of 1-1.5m from both sides or 40-50cm from the front (in a direct line from the XGT Panel to you).



- The detection distance may vary depending on temperature and location.
- This option is available only with iXP series.

### 5.1.2 Touch Function Settings

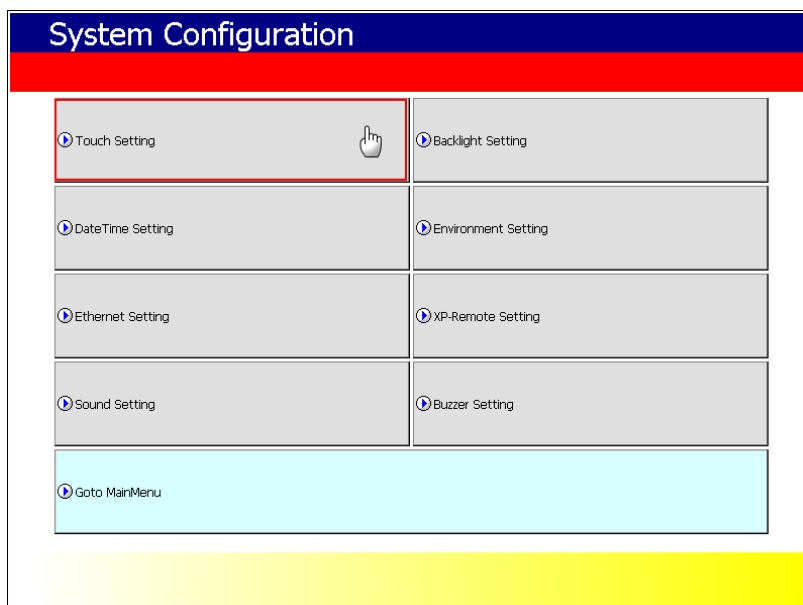
You can adjust touch sensitivity and calibrate the touch point in the System Configuration menu. To adjust the touch function, touch [Touch Setting] in the XGT Panel System Configuration menu.



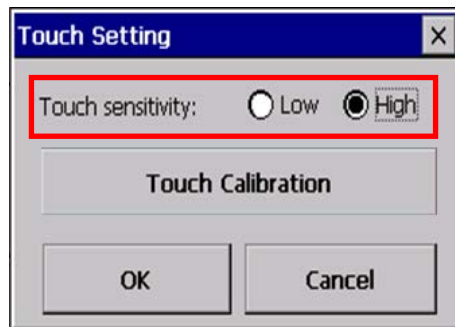
#### 5.1.2.1 Setting Touch Sensitivity

You can increase or reduce touch sensitivity.

1. Touch [Touch Setting].



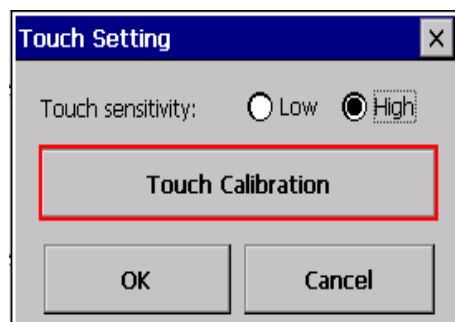
2. Select [Low] or [High] in the **Touch sensitivity** field. When you select **High**, touch sensitivity is faster. Selecting **Low** reduces pointing errors when you select items on the screen.



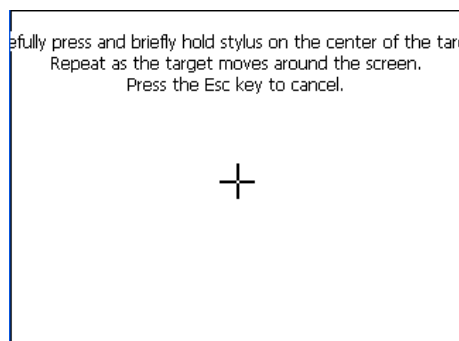
### 5.1.2.2 Touch Calibration

Adjust the touch point to improve the accuracy of your touch on the XGT Panel.

1. Touch [Touch Setting] ► [Touch Calibration].



2. A target will appear on the screen in random positions. Touch the target five times to complete calibration.



### Notes

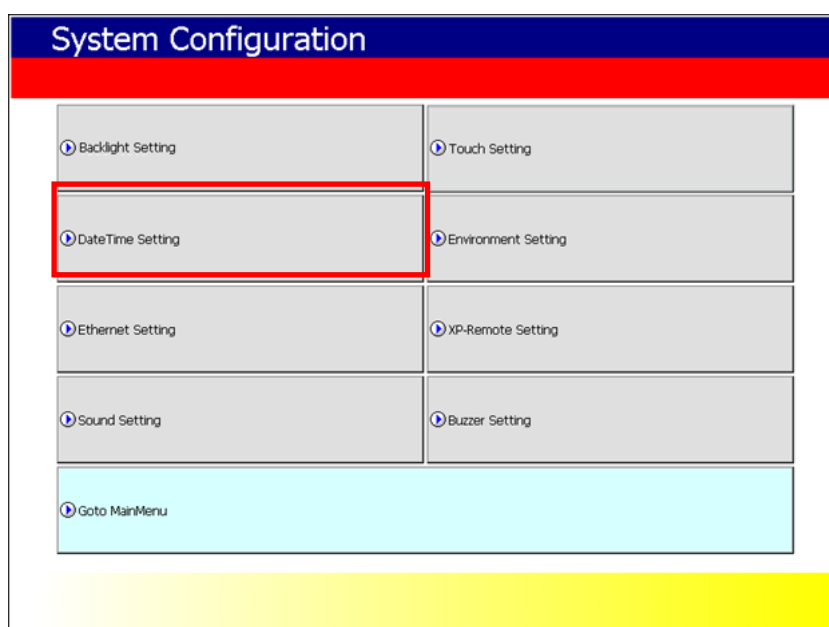
- Take care during calibration to make single point contact with the screen. If multiple

points are touched simultaneously, the wrong point may be recognized.

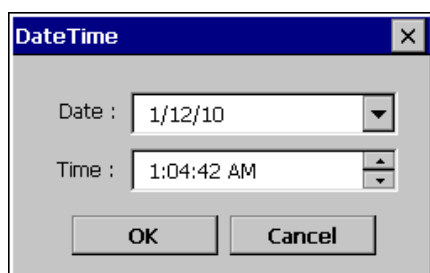
- Touch control is the default setting for XGT Panel. A USB connected mouse can also be used.
- To access the Touch Setting screen, touch an empty space in the menu screen five times.

### 5.1.3 Adjusting Date and Time

1. Touch [DateTime Setting].



2. Adjust the date and time.



#### Note

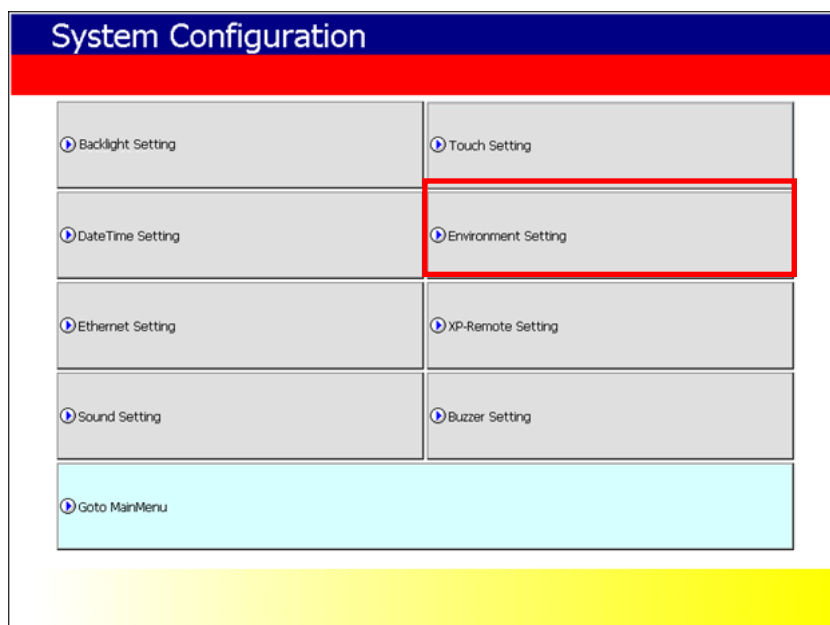
The date and time can also be adjusted from XP-Builder using **Communication ► XGT Panel Information**.



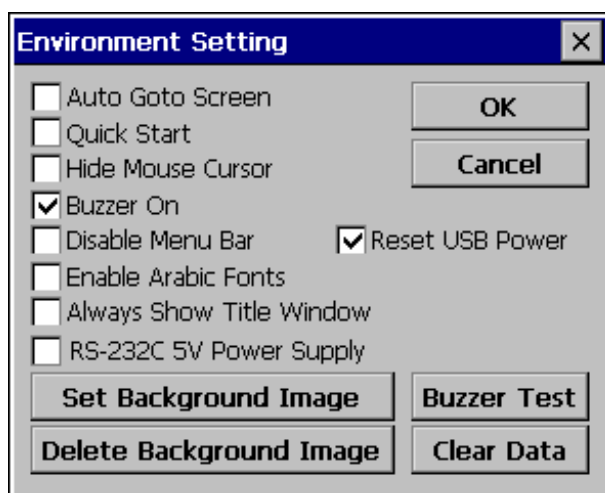
### 5.1.4 Environment Settings

Use these settings to configure the operating environment for your XGT Panel.

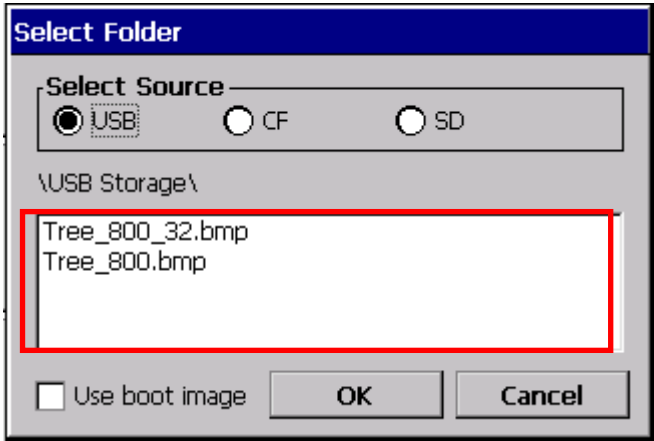
1. Touch [Environment Setting].



2. You can select from the following options:



Function	Description
Auto Goto Screen	The work screen will be displayed automatically if the XGT Panel is rebooted or completes data download. If this option is not selected, you can manually display the work screen by touching the Start button on the main menu.
Quick Start	When this option is not selected, the display is shown immediately

Function	Description
	and the progress bar does not appear. By selecting this option, caching is disabled and images on the first page will be displayed following a delay. Longer delays will be experienced if there are animations to be displayed.
Hide Mouse Cursor	This option hides the cursor.
Buzzer On	Select this option to use the buzzer.
Disable Menu Bar	This option disables the menu bar at the bottom of the screen while the display is idle during monitoring. To return to the idle screen, activate the special switch to close the screen.
Reset USB Power	The XGT Panel resets connected devices by rebooting the USB power when it starts. This is a default setting. If USB devices are not recognized easily, clear this function and reboot the Panel.
Enable Arabic Fonts	Select this option to use fonts that are written from right to left.
Always Show Title Window	Use this option to continuously display the title bar in a pop up window. The title bar in the pop up window can be selected to enable you to move the window.
RS-232C 5V Power Supply	Select this option and when the monitor is on and the [Start] button on the XGT panel is touched, a 5V power supply will be available from the 9 pin, RS-232C port. When the XGT Panel monitor is off and the display returns to the menu screen, the 5V power supply will be shut down.
Set Background Image	<p>This option sets the background image for the XGT Panel. It is displayed on the idle and background screens.</p>  <p>If the <b>Use boot image</b> option is checked, you can only use the</p>

Function	Description
	image with 32 bit and other specified resolutions.
Delete Background Image	Enables you to delete the background image from the XGT Panel screen.
Buzzer Test	Selecting this option allows you to test the buzzer.
Clear Data	This option erases all of the downloaded files stored in the XGT Panel. If a password is set, enter the preset password (the same password used when downloading a project). The password is set in XP-Builder. Deleted data includes project data, web server, VNC activation module, option card driver, RAPIEnet communication setting data, XP-Manager settings, and other downloaded data. System settings will be saved.

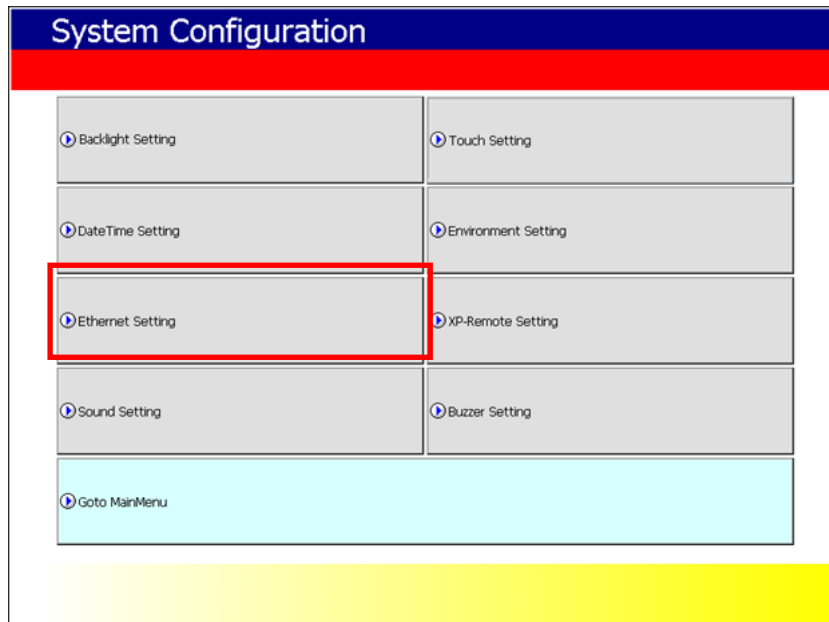
### Note

You can also set buzzer options in **Communication ► XGT Panel Information** from XP-Builder.

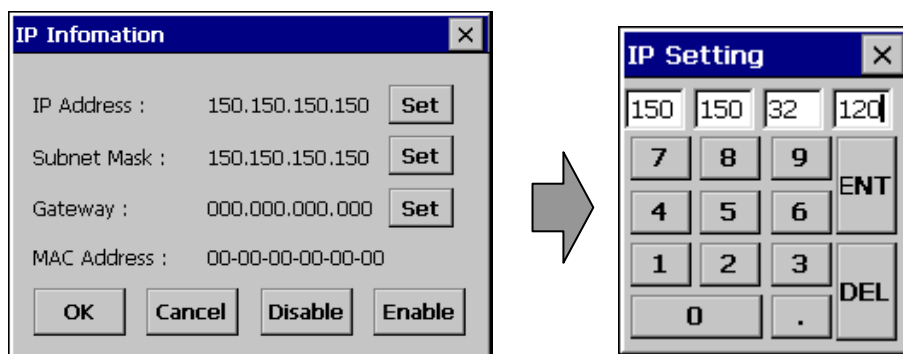
### 5.1.5 Ethernet settings

This section describes the configuration of Ethernet communication settings.

1. Touch [Ethernet Setting].



2. Touch [Set] to specify IP settings, including IP address, subnet mask, and gateway.



If you select **Disable**, the XGT Panel will not use the Ethernet connection and booting speed will be fast. If the Ethernet connection has been disabled, touch [Enable] to resume the connection.

#### Note

The following settings are recommended when connecting via 1:1 connection:

- XGT Panel settings
  - IP Address: 192.168.0.10

## 5. Managing an XGT Panel

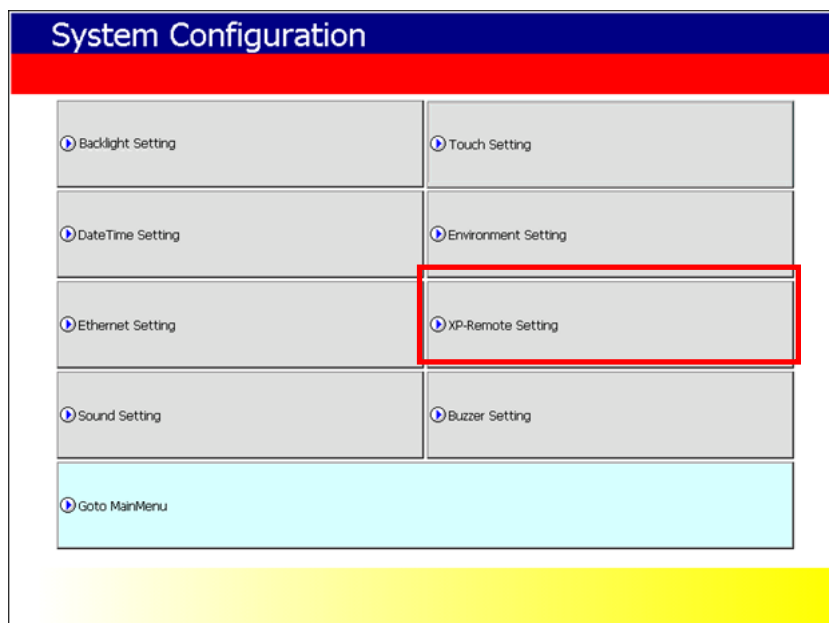
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.0.1

- PC settings
  - IP Address: 192.168.0.11
  - Subnet Mask: 255.255.255.0
  - Gateway: 192.168.0.1

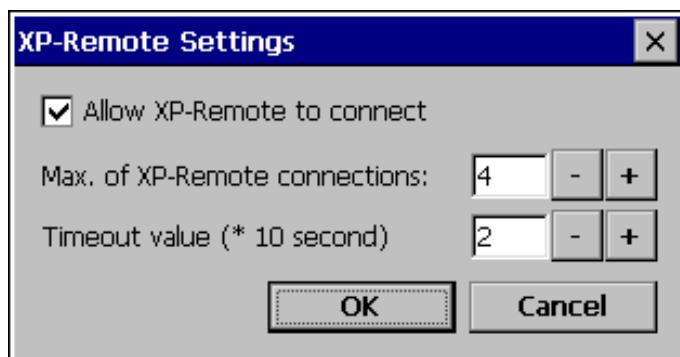
### 5.1.6 XP-Remote settings

Adjust the settings for XP-Remote to control the XGT Panel remotely.

1. Touch [XP-Remote Setting].



2. Specify the options as shown below:

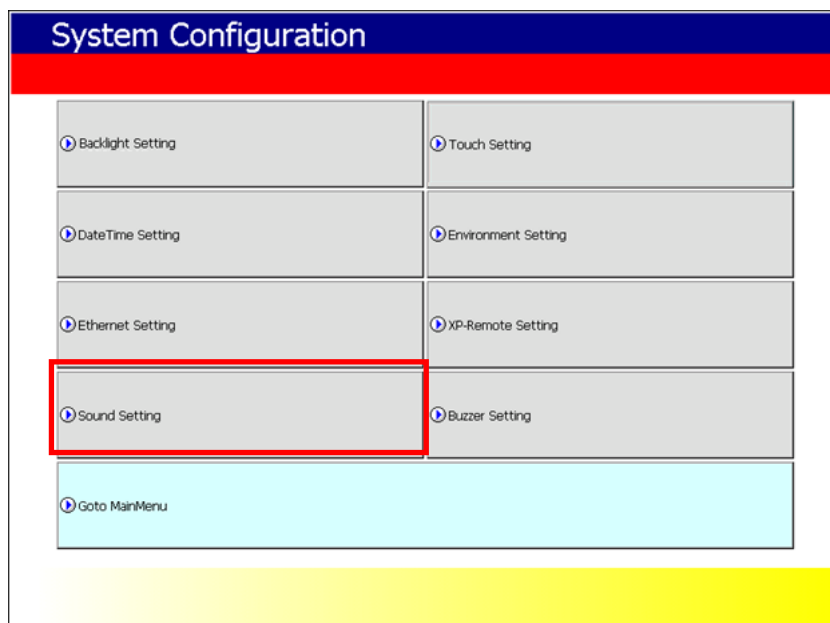


Function	Description
Allow XP-Remote to Connect	Select this to allow a remote terminal to connect to XR-Remote.
Max. number of XP-Remote Connections	Select the maximum number of XP-Remote connections that have access to the XGT Panel.
Timeout Value (* 10 second)	Select the time limit to end the connection when there has been no communication within a specific time. If XP-Remote has control authority, the value can be adjusted between 10-300 sec.

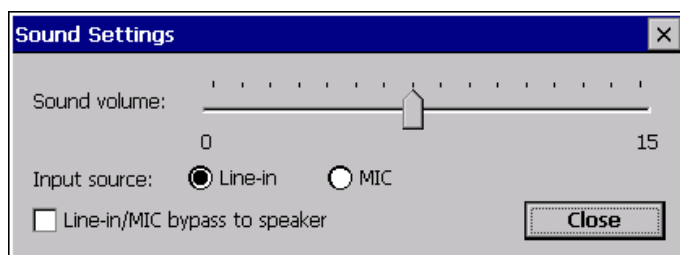
### 5.1.7 Sound settings

This section outlines the adjustments to volume that can be made.

1. Touch [Sound Setting].



2. Specify the options as shown below:



Function	Description
Sound Volume	Adjusts the volume.
Input Source	Select the sound input type, either <b>Line-in</b> or <b>MIC</b> . This function is only supported by XGT Panels that support multimedia.
Line-In/MIC Bypass to Speaker	Sound input is directed to connected speakers. This function is only supported by XGT Panels that support multimedia.

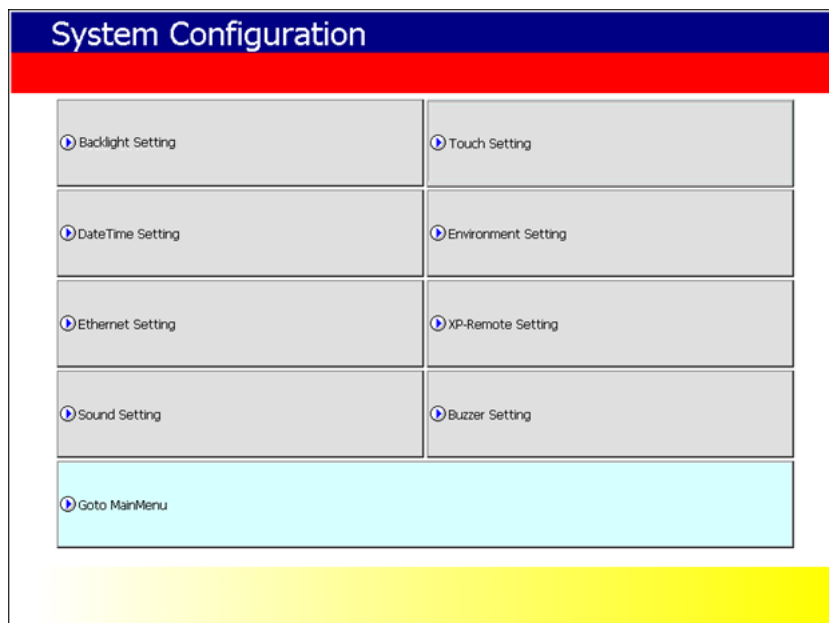
**Notes**

- Microphones without a power source, for example combined ear and microphone devices, cannot input sound.
- Line-out sound, recorded from the speakers without volume or amplification control, may be affected by interference.
- This option is available only with iXP series.

**5.1.8 Buzzer settings**

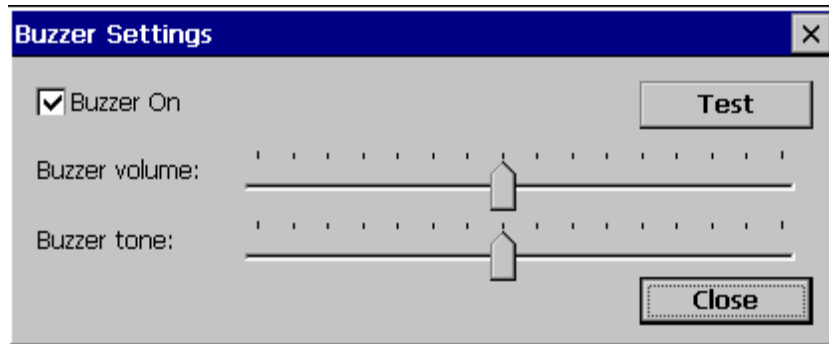
Set the buzzer's sound level.

1. Touch [Buzzer Setting].





2. Specify the options as shown below:



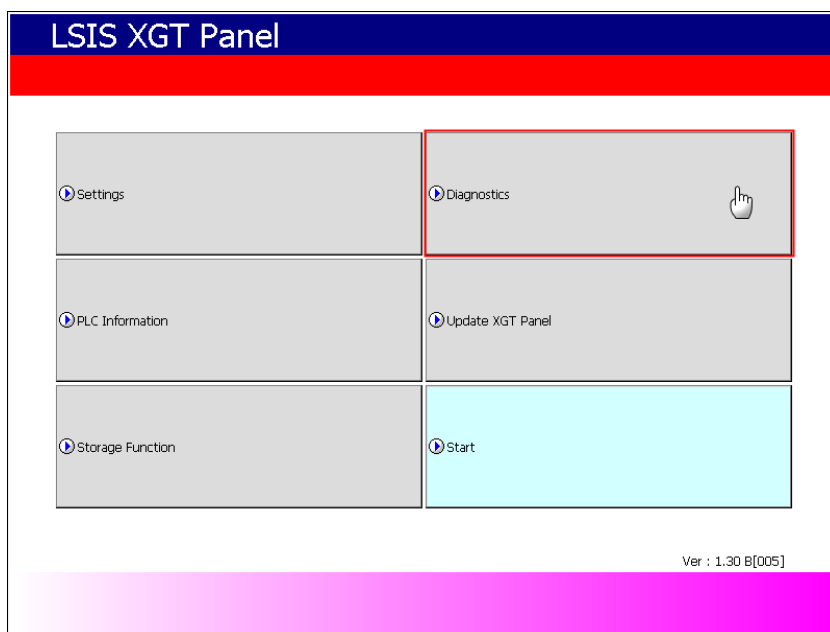
Function	Description
Buzzer On	Select to make the buzzer sound.
Buzzer Volume	Adjust the buzzer volume.
Buzzer Tone	Adjust the buzzer tone.

### Notes

This option is available only with iXP series.

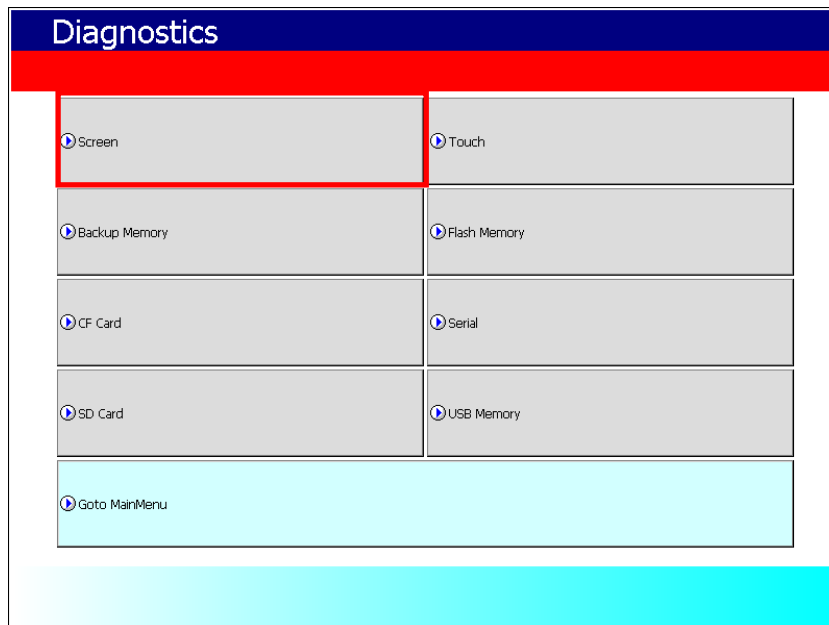
## 5.2 XGT Panel Function Diagnostics

You can diagnose the functions for iXP series, including screen and touch function, external memory status, or serial communication method. To diagnose functions, touch [Diagnostics] in the XGT Panel main menu.



### 5.2.1 Checking Screen Function

You can view and check the screen's functions, for example screen color and graph performance by touching [Screen].



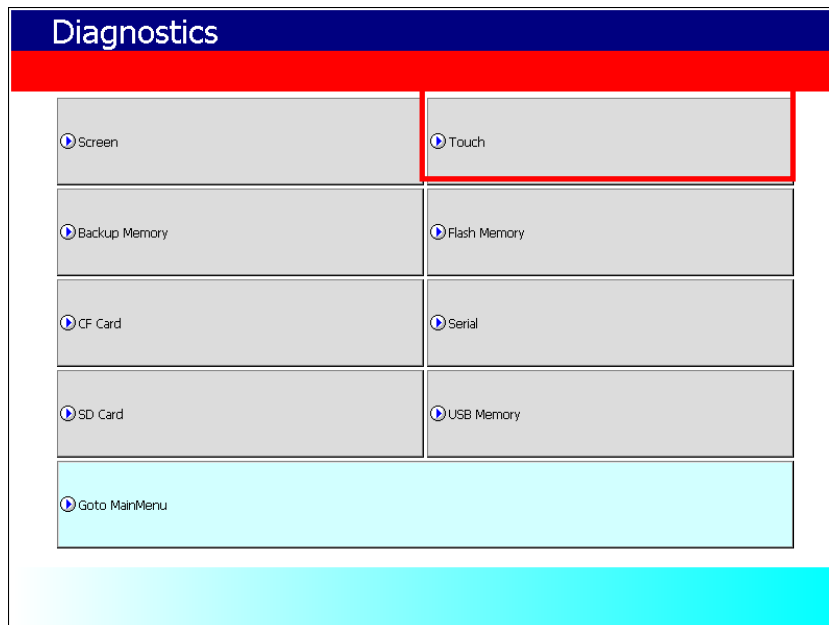
To change the screen color, keep touching the screen to change from red to green, blue, black, and white. Then you can view graph performance by touching the screen consecutively.

To end screen diagnosis, touch [Close] in the graph screen.

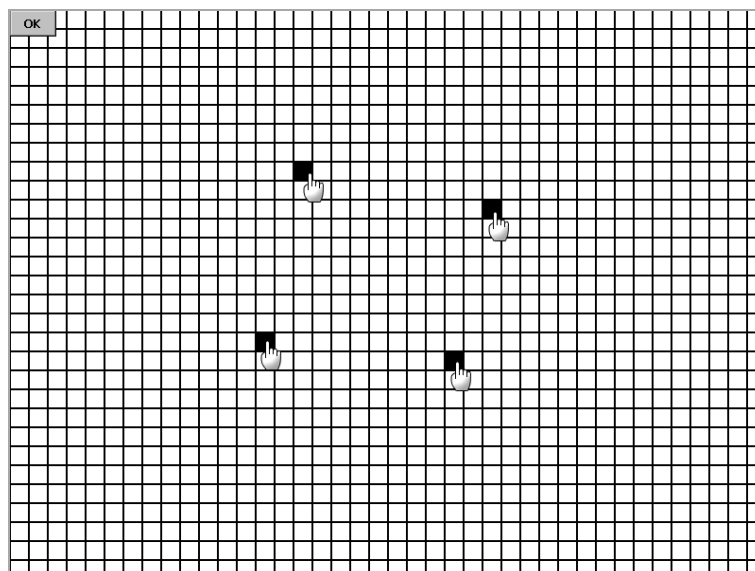
### 5.2.2 Checking Touch Function

Check the touch spot to verify touching accuracy.

1. Touch [Touch].



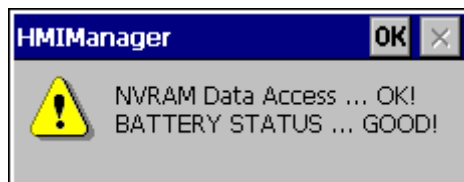
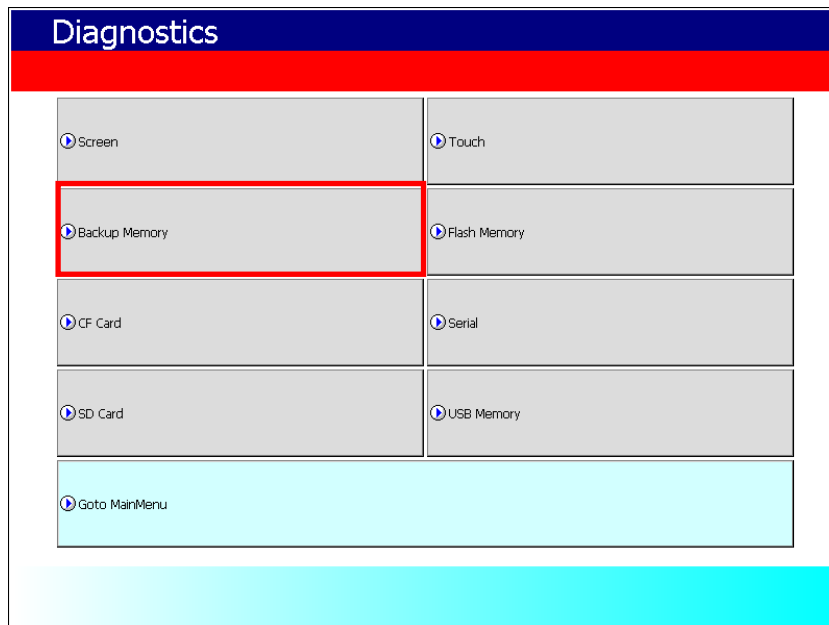
2. Touch the screen on the highlighted squares to check touch accuracy.



If the touch spot is incorrect, adjust the calibration in **Settings ► Touch Setting**. For more details, refer to <5.1.2 Touch Function Settings>.

### 5.2.3 Checking Backup Memory

Touch [Backup Memory] to view backup memory status. You can check the available NVRAM and battery status.

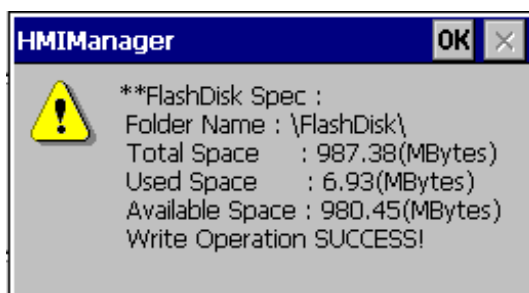
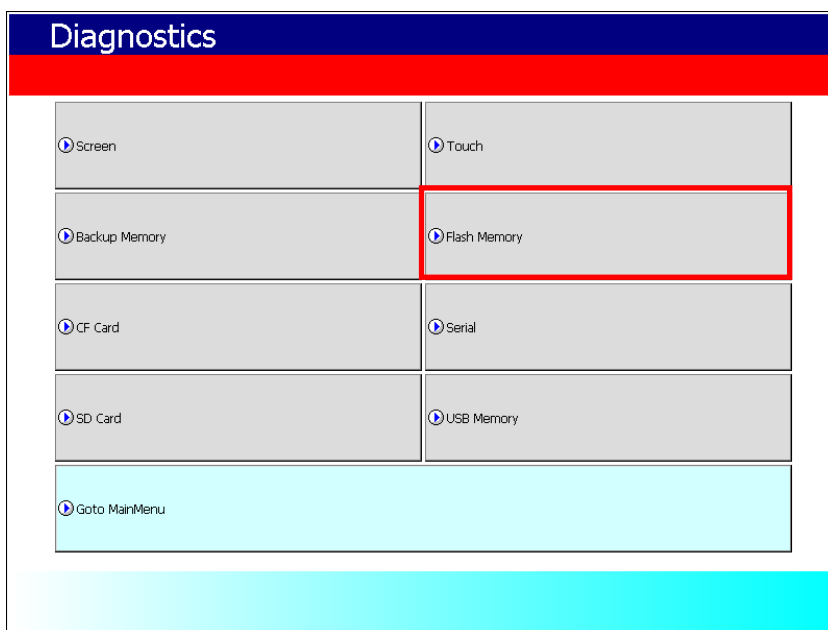


#### Notes

- If access to NVRAM data fails, contact the A/S center.
- If the battery status is bad, replace the battery. Contact the A/S center.

### 5.2.4 Checking Flash Memory

You can check flash memory information, including folder name, total space, used and available memory. To view flash memory information, touch [Flash Memory].

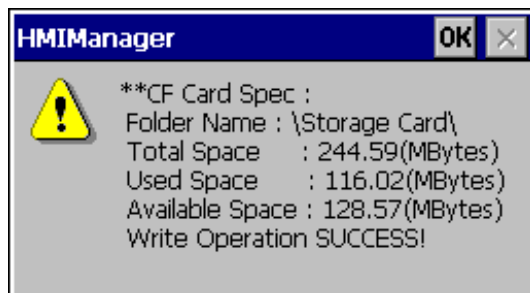
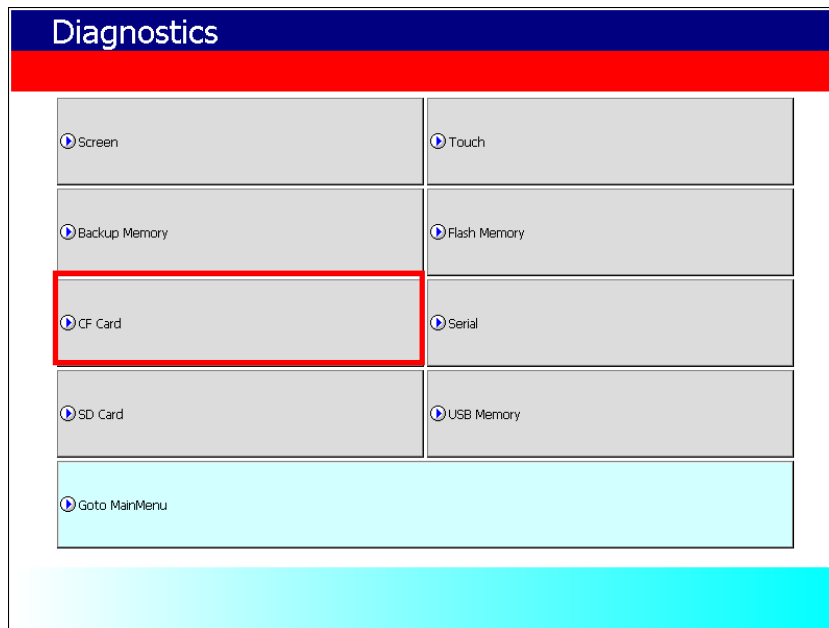


#### Note

If *ReadDisk Information Error!*, is displayed, contact the A/S center.

### 5.2.5 Checking CF Card

You can check CF card information, including folder name, total space, used and available memory. To view CF card information, touch [CF Card].



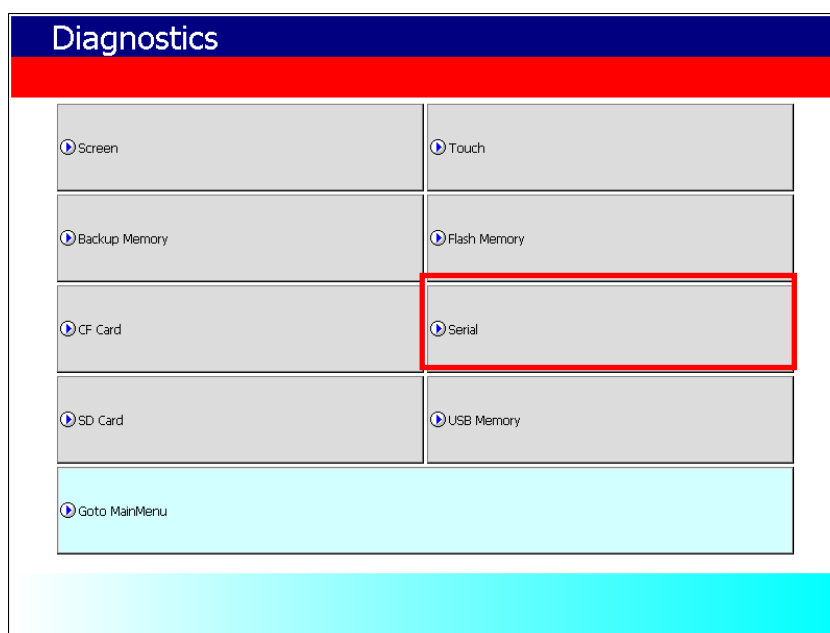
#### Note

When the CF card is inserted, and a *ReadDisk Information Error!*, message is displayed, reinsert the card. If the error message repeats, contact the A/S center.

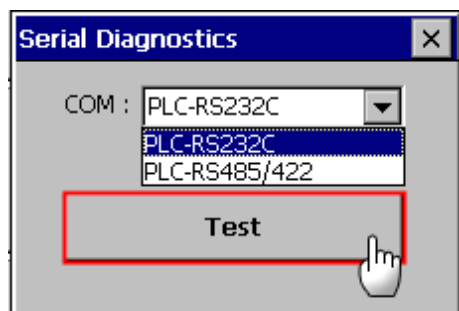
### 5.2.6 Checking Serial Port

This function allows you to diagnose the serial ports connected to the XGT Panel. In order to diagnose the serial ports, a loop back terminal should be connected to each port. To check the serial ports:

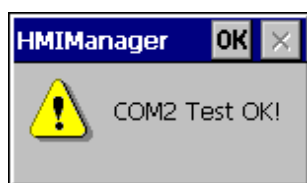
1. Touch [Serial].



2. Select a port and touch [Test].



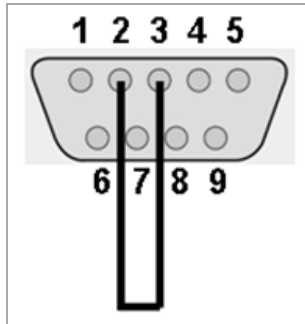
Review the test result.





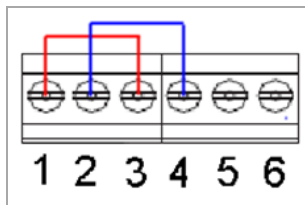
### Notes

- Connect the loop back terminal to the RS232C port as shown below:



Connect pin2 to pin3.

- Connect RS485/422 ports as shown below:



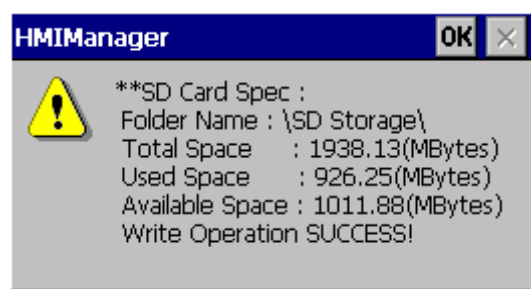
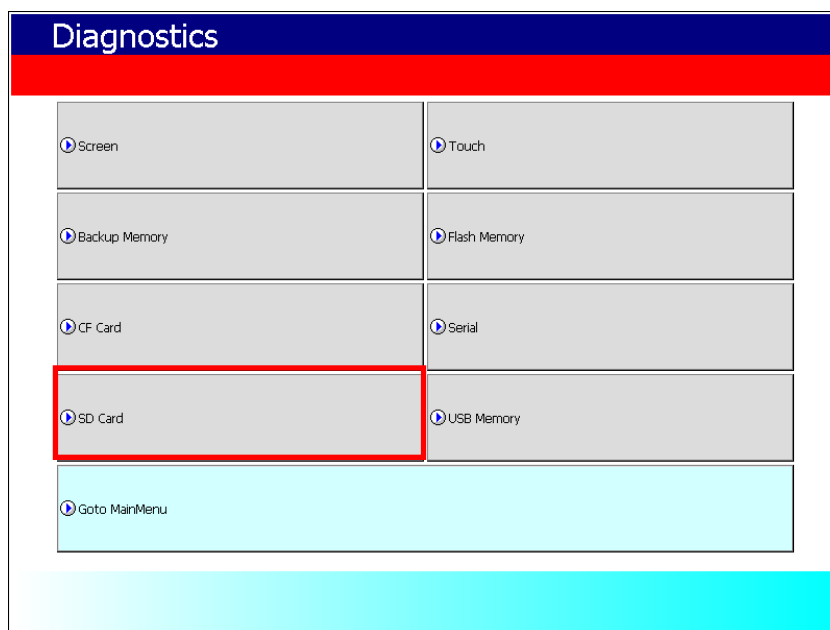
Connect pin1 to pin3, and pin2 to pin4.

Pin	Name	Function
1	TX+	Send Data
2	TX-	Send Data
3	RX+	Receive Data
4	RX-	Receive Data
5	SG	Signal Ground
6	FG	Frame Ground

- These connections illustrations are based on iXP series. For more illustrations about XP series, refer to XP series XGT Panel user's manual.

### 5.2.7 Checking SD Card

You can check SD card information, including folder name, total space, used and available memory. To view SD card information, touch [SD Card].

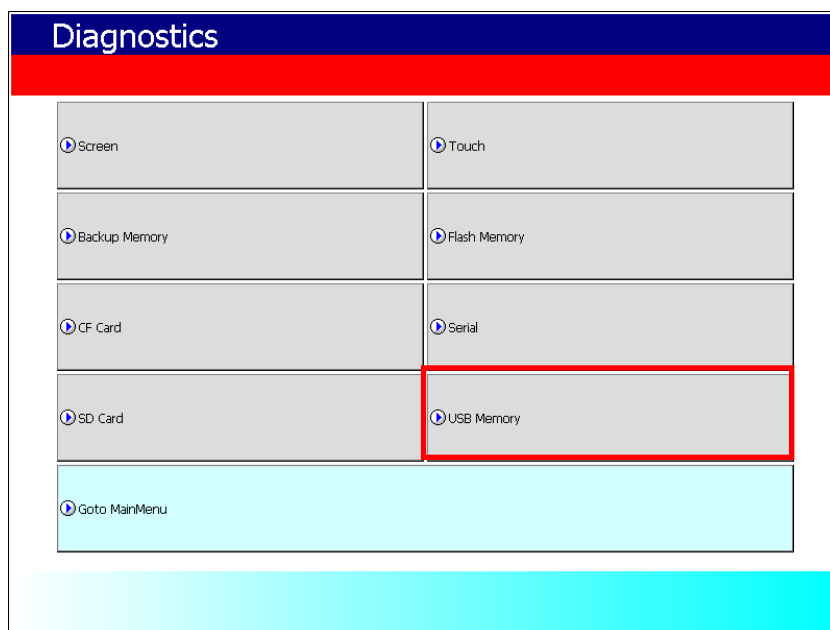


#### Note

- When an SD card is inserted and an error message, *ReadDisk Information Error!*, is displayed, reinsert the card. If the error message repeats, contact the A/S center.
- This option is available only with iXP series.

### 5.2.8 Checking USB Memory

You can check USB memory information, including folder name, total space, used and available memory. To view USB memory information, touch [USB Memory].

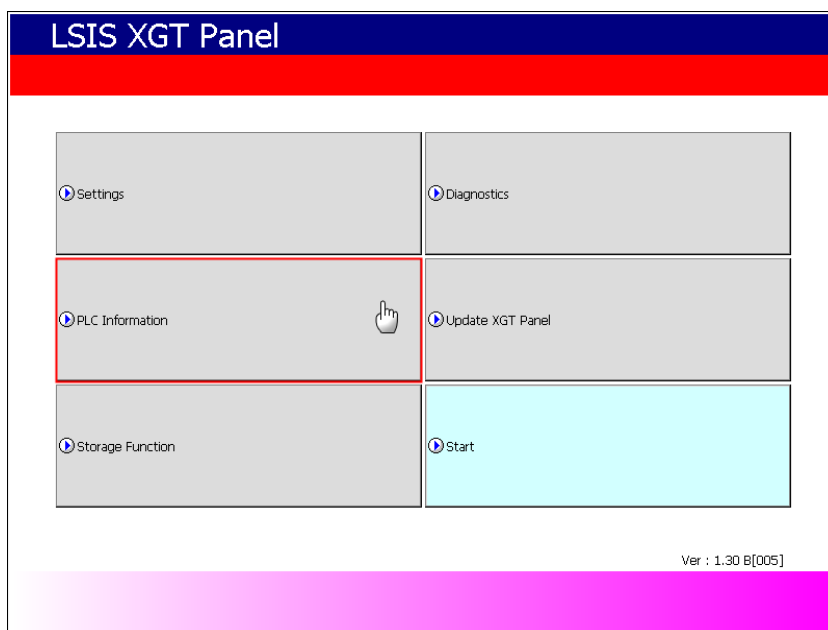


#### Note

When a USB memory device is inserted, and an error message, *ReadDisk Information Error!*, is displayed, reinsert the USB memory device. If the error message repeats, contact the A/S center.

### 5.3 Viewing Controller Information

You can check the connected controller information to the XGT Panel and historical data. To view controller information, touch [PLC Information] in the XGT Panel main menu.



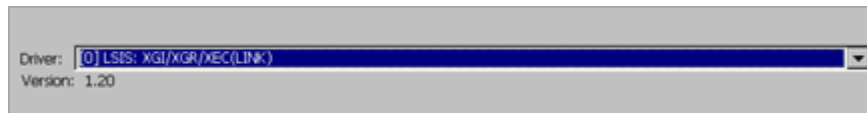
#### Note

You can view the status of a connected controller only after project data is downloaded to the XGT Panel.

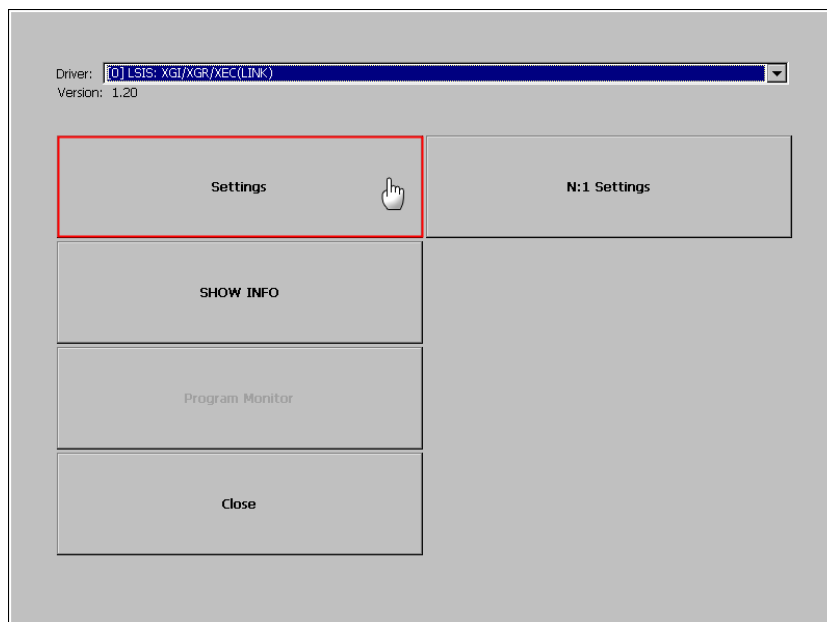
### 5.3.1 Changing Settings

You can change the controller's communication settings. To make changes:

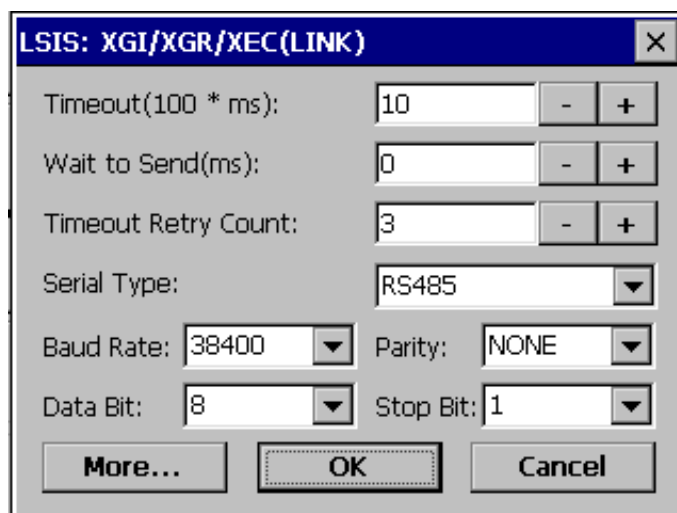
1. Select a driver from the **Driver** list.



2. Touch [Settings].



3. Specify the settings.



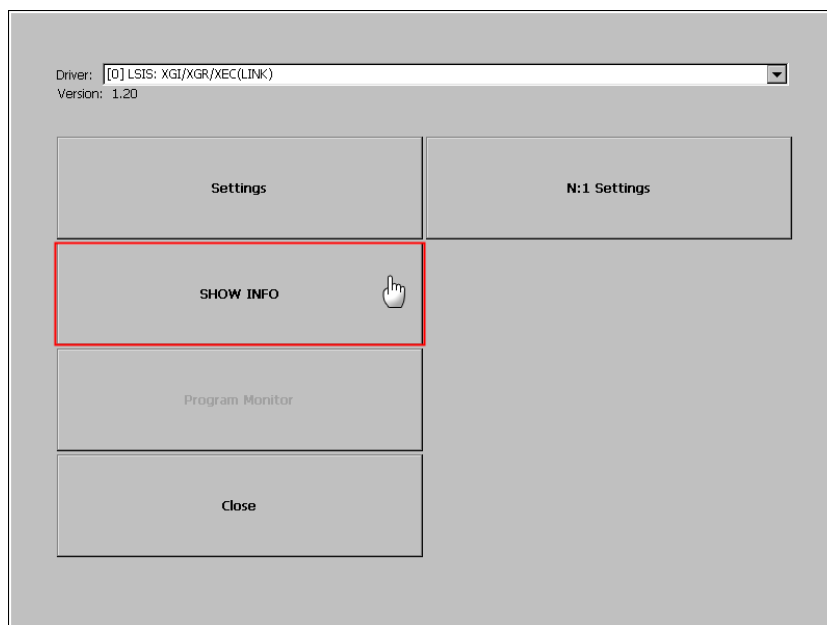
### Notes

- The setting window displayed may vary depending on the selected driver.
- Refer to the controller's manual for information about the communication settings.

### 5.3.2 Viewing Connection Information

View information about the connection, including the connection number, the controller type, and the connection type. To view the information:

1. Touch [SHOW INFO].



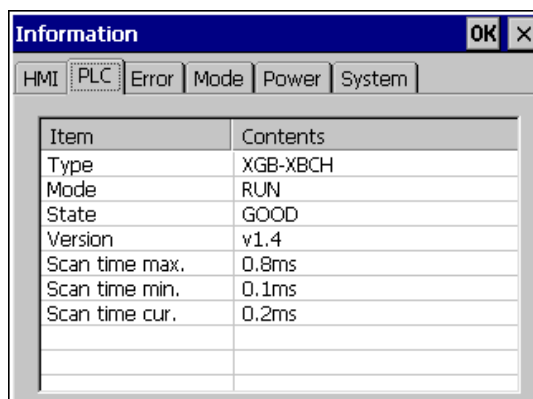
2. Select a tab to view.

- HMI:

Item	Contents
Connection No.	0
Vendor	LS Industrial Systems
Target device	LSIS:XGB(CPU)
Connection type	RS232C
Timeout value	3000msec
Send wait value	0msec
Retry value	3

Function	Description
Connection No.	Displays the connect ion number (between 0 and 15).
Vendor	Displays the target device manufacturer.
Target Device	Displays the target device.
Connection Type	Displays the connect ion type.
Timeout Value	Displays the timeout sett ing.
Send Wait Value	Displays the wait ing time to send.
Retry Value	Displays the number of retries before timeout.

- **PLC:** You can view the CPU type, running mode, version, or scan time for LSIS controllers.

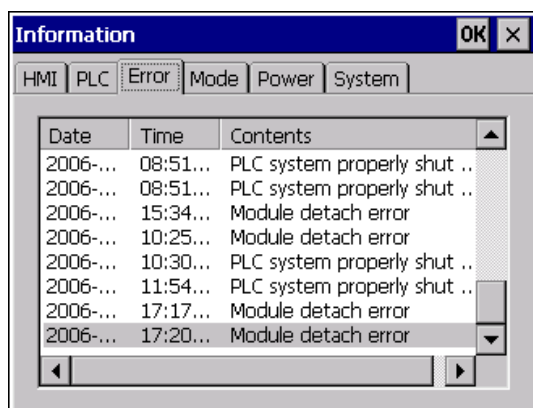


#### Note

Controllers that can view this option are:

- MASTER-K CPU, FEnet, Cnet
- GLOFA-GM CPU, FEnet, Cnet
- XGK/XGB/XGI/XGR CPU, FEnet, Cnet

- **Error:** Allows you to review the error history.

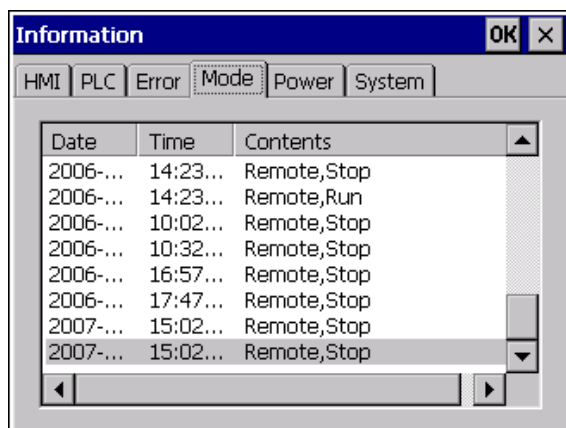


#### Notes

- Controllers that can view this option are:
  - GLOFA-GM CPU, FEnet, Cnet
  - XGK/XGB/XGI/XGR CPU, FEnet, Cnet
- The MASTER-K CPU model does not have the error history option.



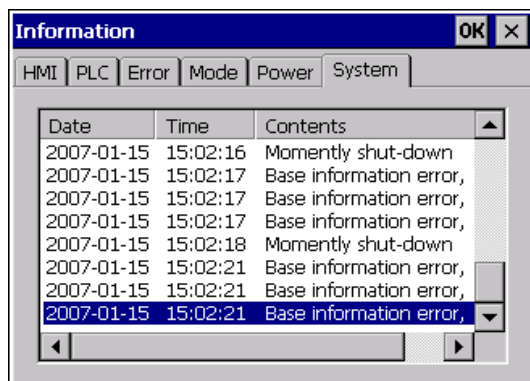
- **Mode:** You can review the run and stop history of LSIS controllers.



### Notes

- Controllers that can view this option are:
  - GLOFA-GM CPU, FEnet, Cnet
  - XGK/XGB/XGI/XGR CPU, FEnet, Cnet
- The MASTER-K CPU model does not have the run or stop history option.

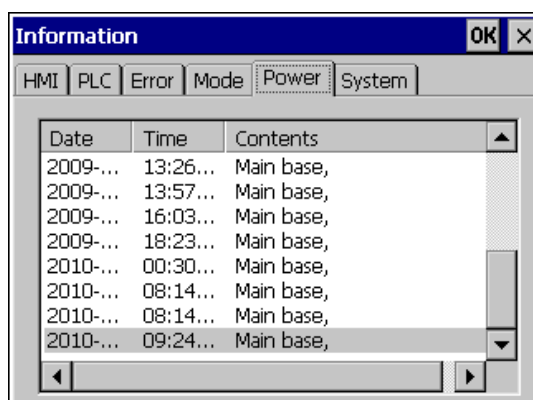
- **System:** You can review the system history of LSIS controllers.



### Notes

- Controllers that can view this option are:
  - GLOFA-GM CPU(GM4C)
  - XGK/XGB/XGI/XGR CPU, FEnet, Cnet
- The MASTER-K CPU model does not have the system history option.

- **Power:** You can review the power-off history of LSIS controllers.

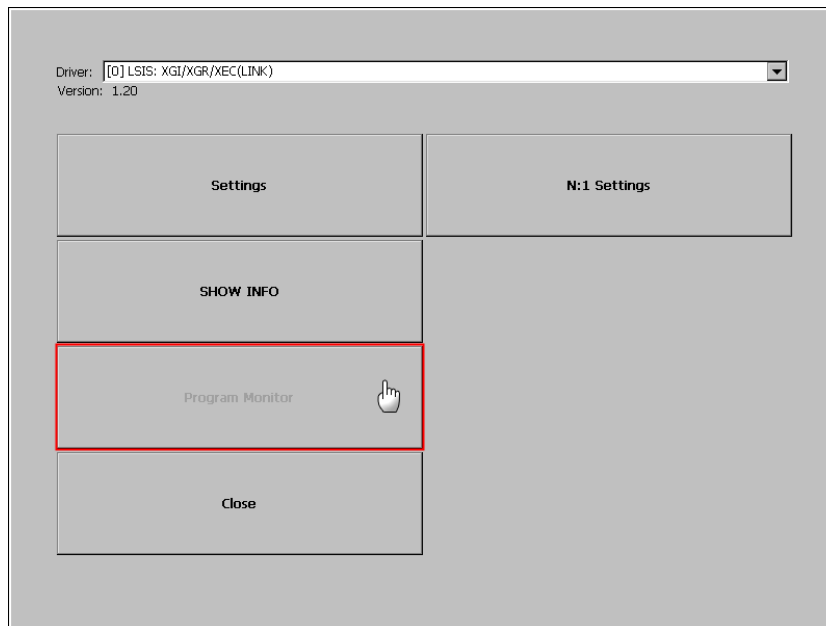


#### Notes

- Controllers that can view this option are:
  - GLOFA-GM CPU, FEnet, Cnet
  - XGK/XGB/XGI/XGR CPU, FEnet, Cnet
- The MASTER-K CPU model does not have the power-off history option.

### 5.3.3 Ladder Program Monitoring

The XGK series allows ladder program monitoring. To monitor the ladder program, touch [Program Monitor].



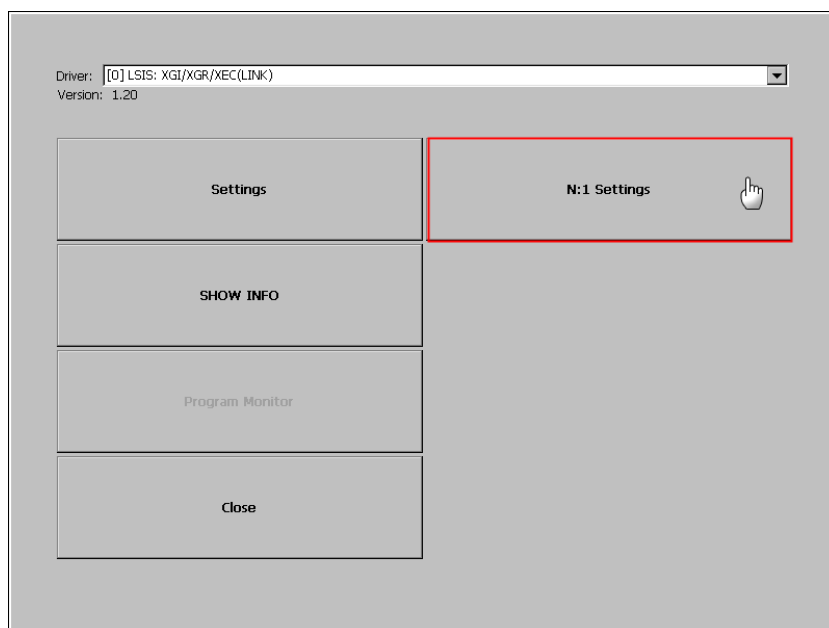
#### Notes

- The Program Monitor modules are installed in the XGT Panel through XP-Manager.
- Set the driver as *LSIS:XGK/XGB CPU, Cnet, Enet*.

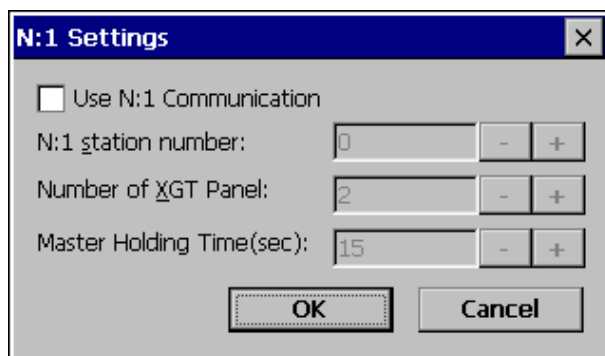
### 5.3.4 Setting Up N:1 Communication

This option sets up the XGT Panel to connect with multiple controllers. For more details, refer to <2.7.3 Using N:1 Communication>. To set-up N:1 Communication:

1. Touch [N:1 Settings].



2. Specify the options below:



Function	Description
Use N:1 Communication	Select to use N:1 Communication.
N:1 Station Number	Select the station number for N:1 Communication.
Number of XGT Panels	Select the number of XGT Panels to connect.

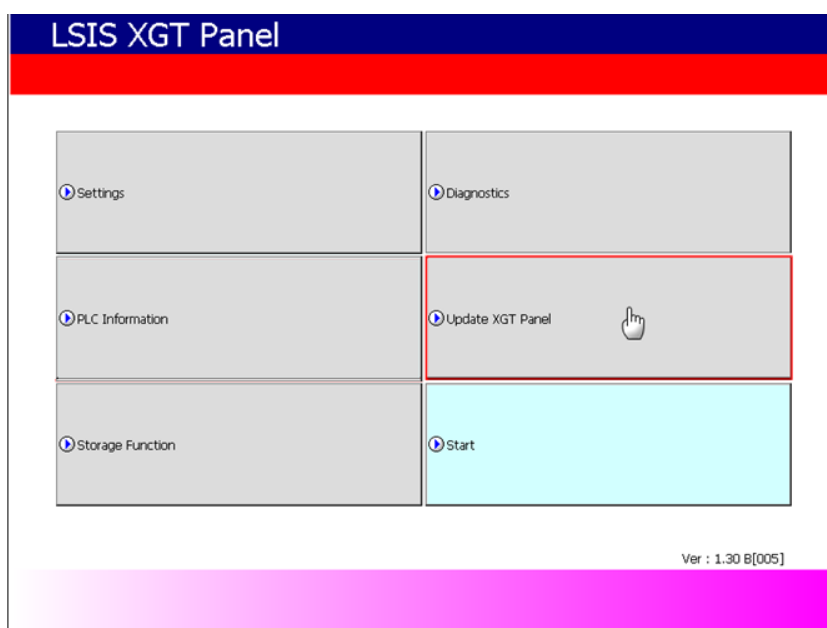
## 5. Managing an XGT Panel

Function	Description
Master Holding Time(sec)	Set the master holding time (sec).

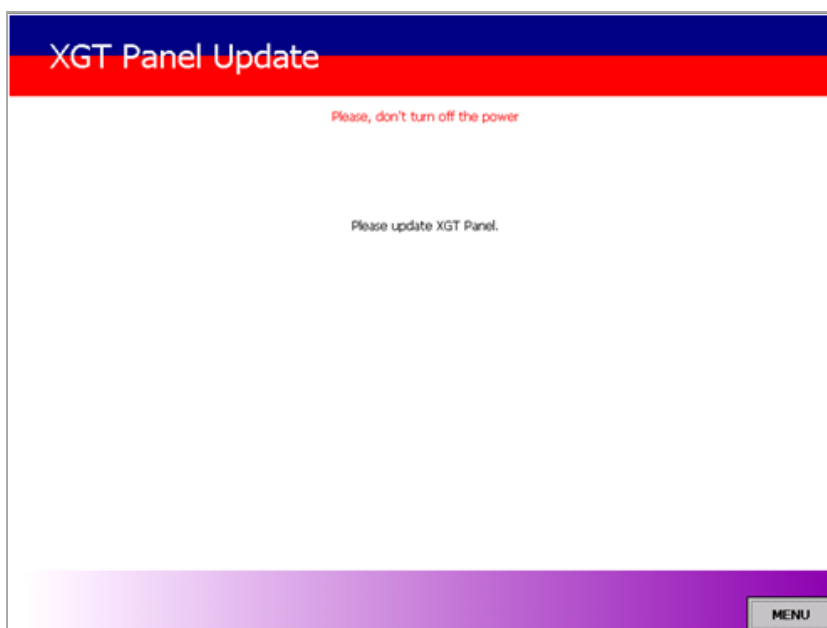
## 5.4 Updating the XGT Panel

You can update the XGT Panel software even when a project file is downloaded. Whenever new functions are added or improved, you are able to update the XGT Panel. To update:

1. In the XGT Panel main menu, touch [Update XGT Panel].



The display automatically changes to the update screen as shown below:

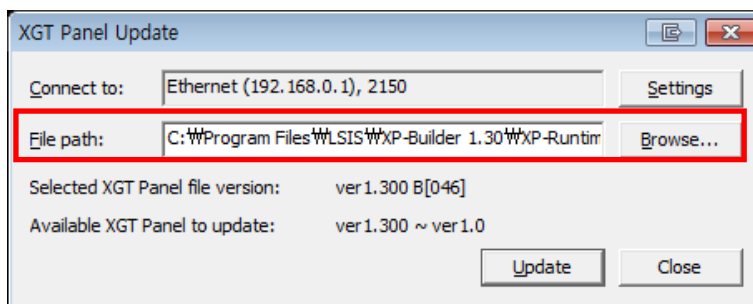


## 5. Managing an XGT Panel

### Note

To go back to the main menu, touch [Menu] on the bottom-right of the screen or touch and hold the screen for approximately 6 seconds.

2. Download the update file from the website.
3. In XP-Builder, click [Communication] ► [XGT Panel Update].
4. Click [Browse] and specify the location for the downloaded update file.



5. Click [Update].

### Note

When updating XGT Panel software, do not turn off the device or disconnect the communication cable as it may interrupt the update and create faults.

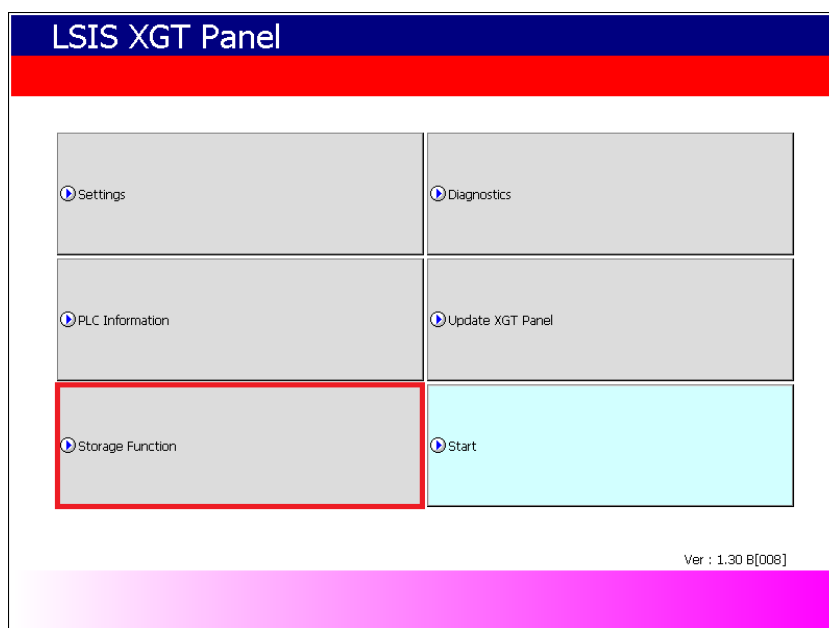
## 5.5 Managing Storage Devices

Storage devices, for example CF cards or USB drives can be used to download project files from XP-Builder and then upload them to your PC, or update XGT Panel software. If for any reason you are unable to use the serial port or Ethernet connection, you can use this function to transfer data.

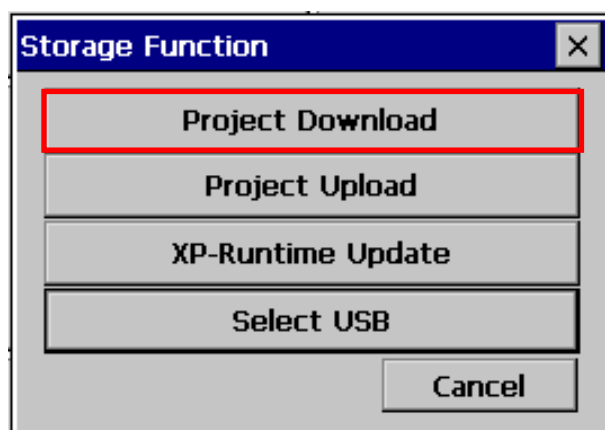
### 5.5.1 Downloading Projects

This enables you to download a project file from an external storage device to the XGT Panel. To download the file from an external storage device:

1. In the XGT Panel main menu, touch [Storage Function].

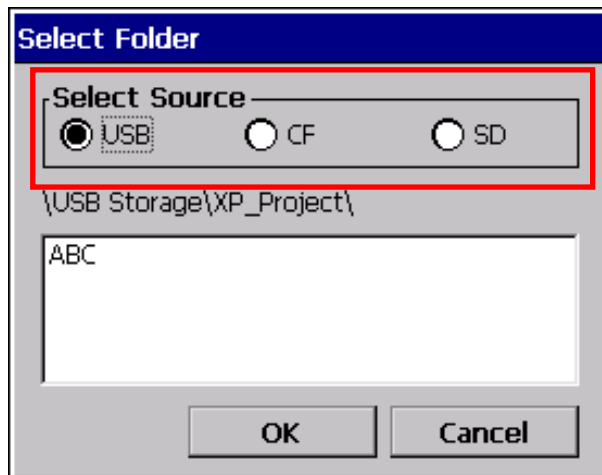


2. Touch [Project Download].

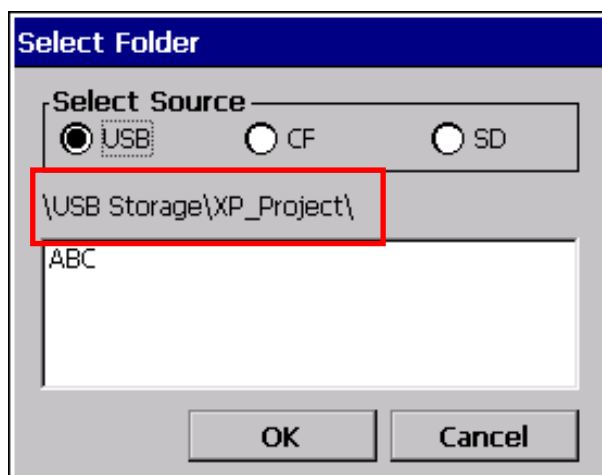




3. Select an external storage source.



The storage path will be displayed as shown below:



- USB: \USB Storage\XP\_Project\
- CF: \Storage Card\XP\_Project\
- SD: \SD Storage\XP\_Project\

### Note

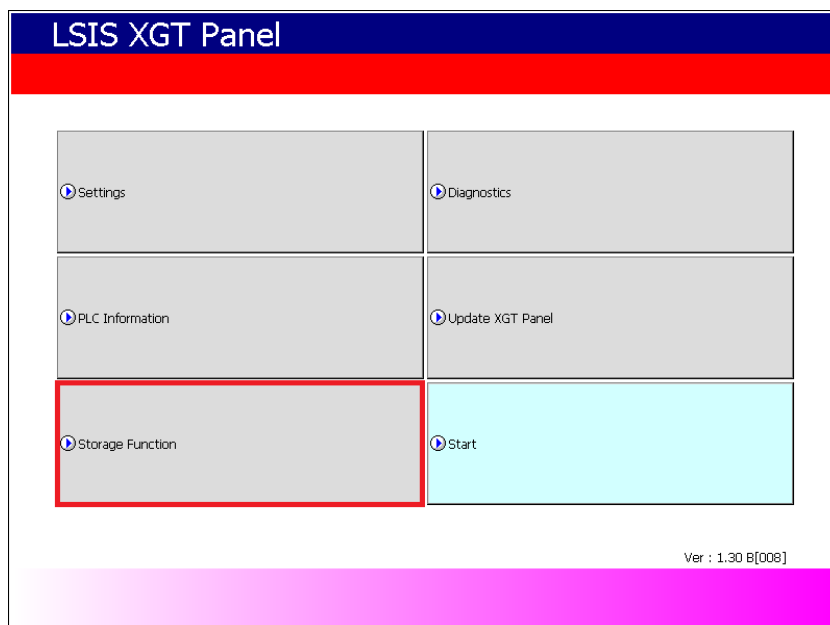
When you download a project file from an external storage source, the file should be saved in a subdirectory.

4. Touch [OK].

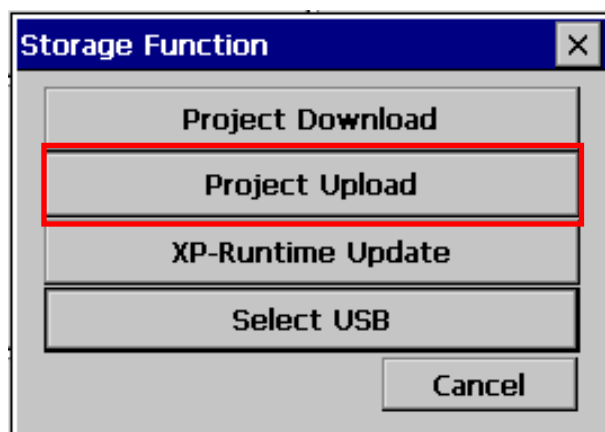
### 5.5.2 Uploading Projects

This section describes how to upload a backed up project file to an external storage source. To upload a backup project file:

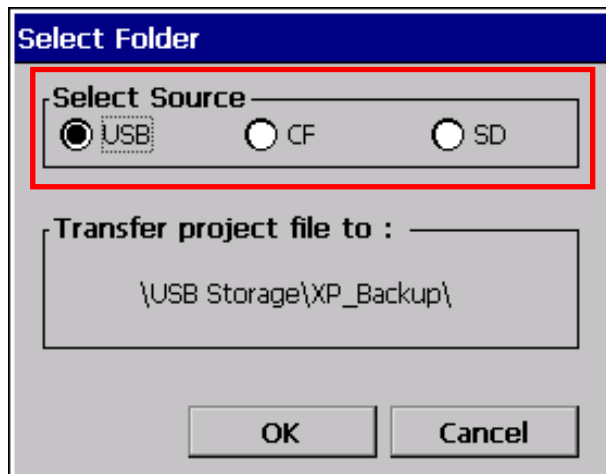
1. In the XGT Panel main menu, touch [Storage Function].



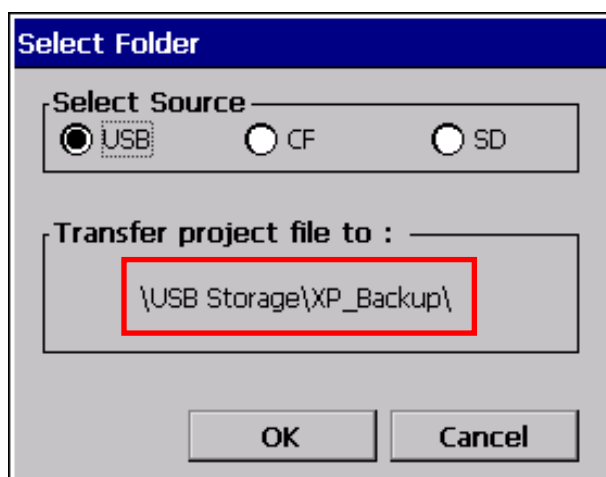
2. Touch [Project Upload].



3. Select an external storage source.



The storage path will be displayed as shown below:

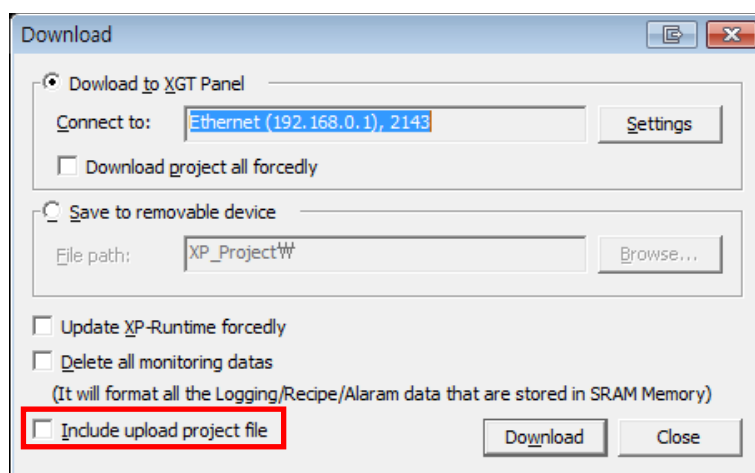


- USB: \\USB Storage\\XP\_Backup\\
- CF: \\Storage Card\\XP\_Backup\\
- SD: \\SD Storage\\XP\_Backup\\

4. Touch [OK]. The backed up project file will be transferred to the selected storage source.

### Note

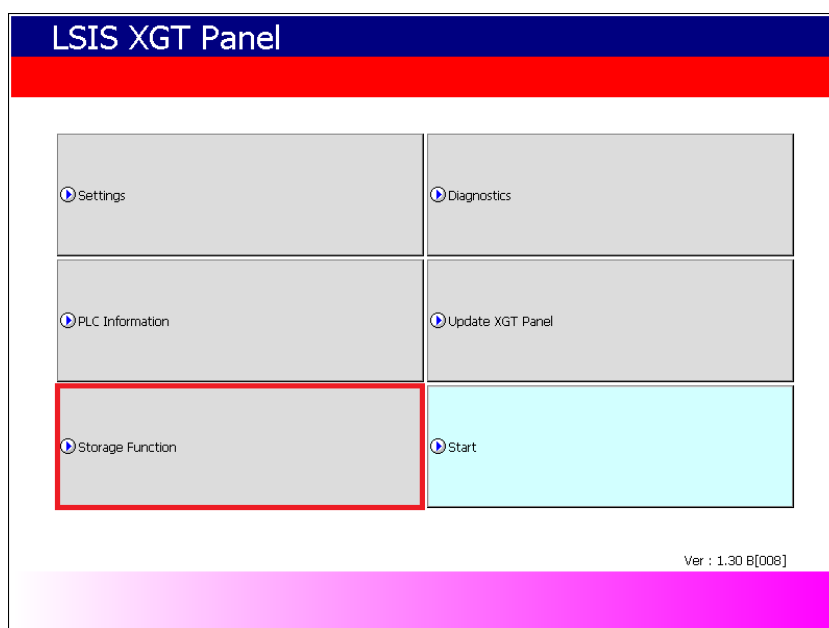
You should select the **Include upload project file** option when you download a project file in XP-Builder. If you do not select this option, the backup file will not be created.



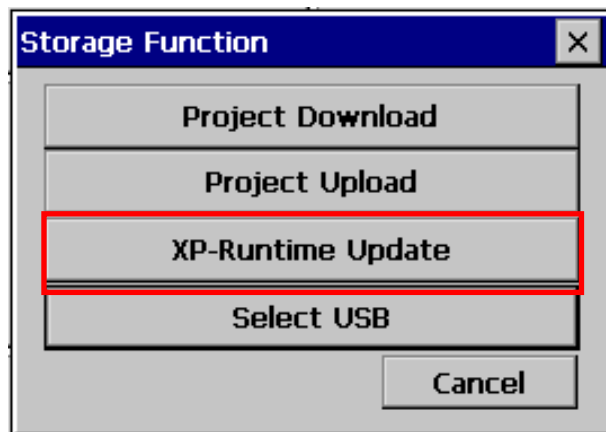
### 5.5.3 Updating XGT Panel

This section describes how to update the XGT Panel software from an external storage source:

1. In the XGT Panel main menu, touch [Storage Function].



2. Touch [XP-Runtime Update].



3. Select an external storage source to use. The storage path will be displayed as shown below:
  - USB: \USB Storage\XP\_Software\
  - CF: \Storage Card\XP\_Software\
  - SD: \SD Storage\XP\_Software\
4. Touch [OK]. The update will start.

### Notes

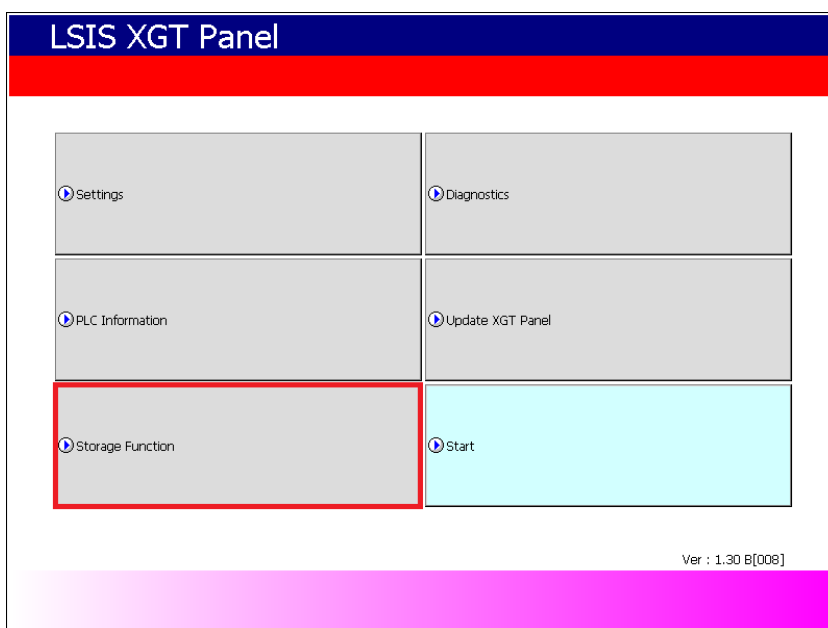
- When updating XGT Panel software, do not turn off the device or disconnect the external storage source as it may interrupt the update and create faults. Do not delete or move any subdirectories unless there are copies held on external storage sources. Deleting or moving subdirectories may create faults.
- Only remove external storage sources when the safe removal switch has been used and the removal lamp has been turned off. Unsafe removal of storage sources may result in the device being unable to be recognized.
- When reconnecting storage sources, wait at least 3 seconds after removing the storage source. Reconnecting storage sources too soon may result in the device being unable to be recognized.

#### 5.5.4 Select a USB Storage Device

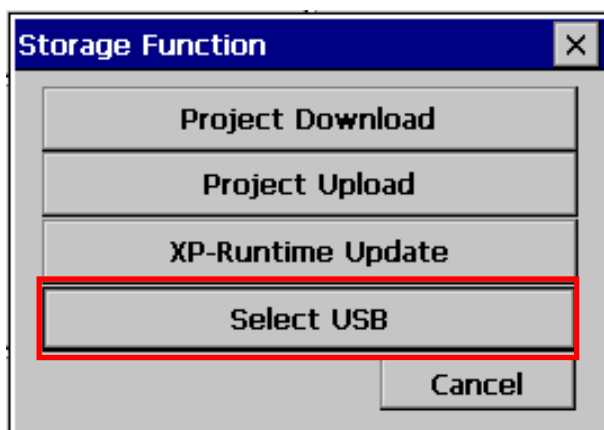
When multiple USB devices are connected to the XGT Panel, you must select a device for uploading, downloading, or backing up projects. You can change your selection at any point during a project.

To select a USB storage device:

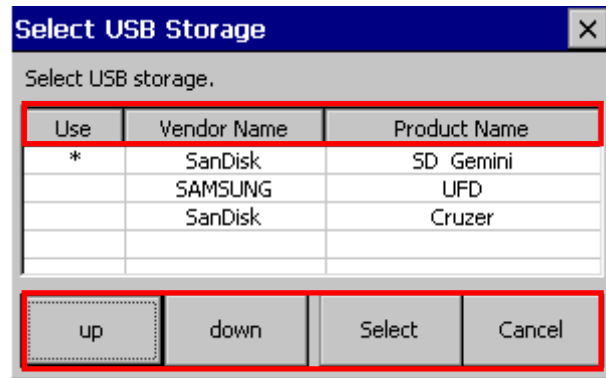
1. In the XGT Panel main menu, touch [Storage Function].



2. Touch [Select USB].



3. Select a device from the list of connected devices.



Function	Description
Use	The selected device is indicated with an asterisk (*).
Vendor Name	The device manufacturer
Product Name	The device name
Up/down	Move to the next or previous item.
Select	Save your selection.
Cancel	Exit without saving changes.

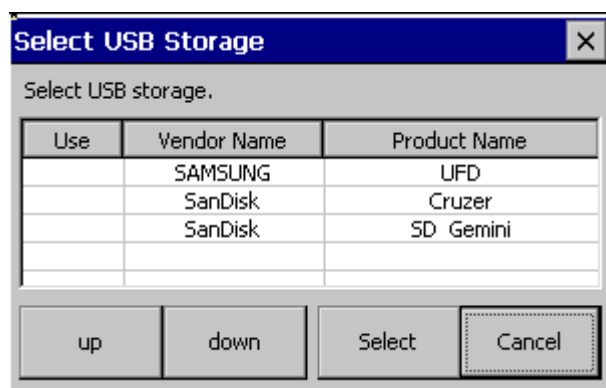
#### 4. Touch [Select].

To select a storage device while monitoring a project, on the XGT Panel, touch [Start] to open the **Select USB Storage** window. Select a USB device and touch [Select].



#### Note

If the selected device is disconnected or if another device is connected, the Select USB Storage window appears again.



To select a storage device from the status bar, touch [USB].



#### Notes



- Do not remove or turn off the selected USB device while running a project. Project data may be corrupted and cause the project to malfunction.
  - Do not erase or move the directory or folders on the USB device. Doing so may cause data to be corrupted or the project to malfunction.
  - When removing an SD or CF storage device, turn on the safe removal switch on the back of the panel and remove the device only after the switch lamp turns off. Failure to do so may cause the device to be unrecognized when you reconnect it.
  - When you reconnect a device, allow at least three (3) seconds to establish the connection. Failure to do so may cause the device to be unrecognized when you reconnect it.
  - When one USB device is connected, turning on the power to the panel will set the USB device as the main storage device automatically.
  - When connecting multiple devices, the first device connected is set as the main storage device automatically. However, removing devices does not change the selected storage device automatically. You must reselect the main storage device.
-

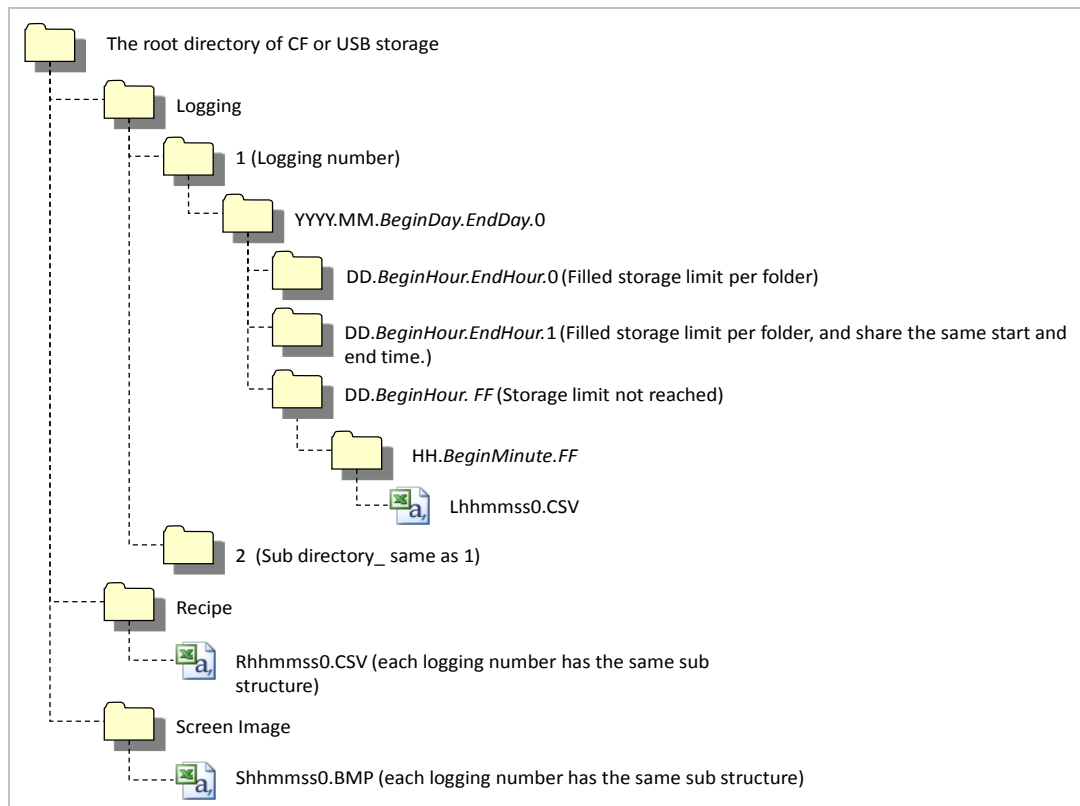
## 5.6 Managing External Storage Sources for Backup

This section describes how to control external storage sources when making file backups, such as logging, recipe, and screen image data. You can manage the backup data in this way:

- You can back up data, such as logging, recipe, and screen image data by saving them to a CF card, SD card, or a USB storage source, according to the settings contained in XP-Builder.
- If there is insufficient memory in the external storage source, the data will be deleted and the backup process will stop. Settings that control this situation are adjusted in XP-Builder.
- You can monitor if the external backup storage source has been recognized or not.
- When you are backing up data make sure that external storage sources are only removed when the safe removal switch is turned on and after the LED lamp turns off. Failure to observe these precautions may result in backup failure.

### 5.6.1 Managing the File Path for Backup Files

The file path shown below describes how backup files are routed:



### 5.6.1.1 File Path for Logging Backup

- The 'Logging' subdirectory will be created under the root directory of the USB/CF/SD storage source.
- Under the 'Logging' directory, a subdirectory will be created with a filename generated by the logging number.
- Under the logging number directory, a subdirectory will be created with a filename by Year/Month.
  - The date directory will be included as a subdirectory.
  - Up to 500 date directories can be created.
  - The 'Year/Month' directory will not only contain year and month information, but will also record the date the directory was created.
    - As an example, the name of a directory created in October 2010 with subdirectories created since 15 October would be: *2010.10.15.FF*. The FF at the end of the directory name represents that there is more data space to store for October, 2010. (This means that the subdirectory currently holds less than 500 date directories).
  - When there is a change of Month, the directory name will be changed and saved to the last date in the month when information was logged.
    - As an example, if the directory contains date directories created between October 15 and October 30, and was created in October 2010, the directory name would be *2010.10.15.30.0* when the month changes to November 2010.
  - If a month directory is carrying more than 500 date subdirectories before the month ends, the directory name will change to the last date in the sub directory.
    - For example, if the number of date sub directories created from 1 October to 15 October 2010 is greater than 500 the file name will be: *2010.10.01.15.0*.
  - If the month ends or the total number of sub directories exceeds 500, or the directory has the same starting/ending date name, then the last index number is added to identify the directories.
    - As an example, if the directory created in October 2010 has 3 directories each holding 500 sub directories, then the directory names would be:
      - : *2010.10.01.01.0*
      - : *2010.10.01.01.1*
      - : *2010.10.01.01.2*
- Under the Year-/Month directory, a subdirectory with a date name will be created.
  - The date directory contains an hour subdirectory.
  - The date directory can hold up to 500 hour subdirectories.
  - The filenames of date directories contain date and hour information, for the first subdirectory that was created.

- The rest of the directory creation procedure is identical to the Year/Month directory creation procedure.
- Under the Date directory, a directory will be created that will store time information created.
  - The Hour directory will contain backup files.
  - Each Hour directory can hold up to 500 backup files.
  - The Hour directory contains hour and minute information for the first file that was created.
  - The rest of the directory creation procedure is identical to the Year/Month directory creation procedure.
- Logging backup files have hour, minute, and second information as their file names.
  - Backup files will be created in CSV format.
  - The names of the files will begin with 'L', representing 'logging', and the rest of the name will contain hour, minute, and second index information.
  - If the backup files are created simultaneously in the same second, additional index information will be added at the end of the file name.

### 5.6.1.2 Path for Recipe Backup

- A directory named 'Recipe' will be created under the USB/CF/SD storage root directory.
- A subdirectory will be created with filenames identified by Year/Month under the logging number directory.
- The rest of the directory structure is the same as the logging backup file structure.
- Logging backup files have hour, minute, and second information as their file name.
  - Backup files will be created in CSV format.
  - The filenames will begin with 'L', representing 'logging', and the rest of the name will contain hour, minute, and second index information.
  - If backup files are created simultaneously in the same second, additional index information will be added at the end of file name.

### 5.6.1.3 Path for Screen Backup

- A directory named 'Screen Image' will be created in the USB/CF/SD storage directory.
- A subdirectory named by Year/Month will be created in the Screen Image directory.
- The rest of the directory structure is the same as the logging backup file structure.
- Screen Image backup files use hour, minute, and second information as their file names.
  - The backup files will be created in bitmap format.
  - The file names will begin with 'S', representing 'Screen Image', and the rest of the name will contain hour, minute, and second index information.

- If backup files are created simultaneously in the same second, additional index information will be added at the end of filename.

### **5.6.1.4 Path for Memo Backup**

- A directory named 'Memo' will be created in the USB/CF/SD storage directory.
- A subdirectory named by Year/Month will be created in the Memo directory.
- The rest of the directory structure is the same as the logging backup file structure.
- Memo back up files use hour, minute, and second information as their file name.
  - The backup files will be created in bitmap format.
  - The filenames will begin with 'M', representing 'Memo', and the rest of the name will contain hour, minute, and second index information.
  - If backup files are created simultaneously in the same second, additional index information will be added at the end of the filename.

### **5.6.1.5 Path for Movie Records Backup**

- A directory named 'Movie' will be created in the USB/CF/SD storage directory.
- Recorded movie clips will be saved in the Movie directory.
- Movie clip backup files will use hour, minute, and second information as their filename.
  - Backup files will be created in AVI format. The codec used for Video is H.264, and for Audio is Mp3.
  - The filenames will begin with 'MOV', representing 'Movie', and the rest of the name will contain hour, minute and second index information.
  - Movie clip files can hold up to 1000 files, and the number of files can be set in XP-Builder's special device configuration.

### **5.6.1.6 Path for Still Image Backup (Camera and Movie Still Images)**

- A directory named 'Movie Still' will be created in the USB/CF/SD storage directory.
- Recorded movie clips will be saved in the Movie Still directory.
- Saved still frame image files have hour, minute, and second information as their filename.
  - Backup files will be created in JPG format.
  - Filenames will begin with 'STL' representing 'Still', and the rest of the name will contain hour, minute and second index information.
  - Movie clip files can hold up to 1000 files, and the number of files can be set in XP-Builder's special device configuration.

## Notes

- If time is set ahead of present time, normal operation is guaranteed. However, if time is set behind present time, normal operation is not guaranteed. If this situation arises, hour unit directories and all subdirectories should be deleted to resume normal operation. For example, if the date setting had been changed from 10th December to 5th December, Year/Month directories including 5th December will have to be deleted to enable normal operation to resume.
- Logging, Recipe, Screen Image, and Memo functions do not support project classification. For instance, if Project A has logging groups numbered 1,2 and 3, and each logging group creates a file backup, 1,2,3 directory will be created and each file will be saved in a subdirectory. Then, if Project B has logging groups numbered 1 and 2, downloads the projects and creates file backups, these files can be mixed with Project A's backed up files. In this situation, the operator should classify Project A's and Project B's backup files by their download time.

### 5.6.2 Managing Memory for Backups

If there is insufficient memory in the external storage sources, data is deleted or backup processes stop depending on XP-Builder's configuration.

Using XP-Builder to delete the oldest data for backup, click [Common] ► [Project Property Setting] ► [Storage Settings], set the Backup Storage location for each file, and then click the checkbox next to **Delete old file if disk full**.

Backup Storage		
Alarm data:	CF card	<input type="checkbox"/> Delete old file if disk full
Logging data:	USB memory	<input checked="" type="checkbox"/> Delete old file if disk full
Recipe data:	CF card	<input type="checkbox"/> Delete old file if disk full
Capture image:	USB memory	<input checked="" type="checkbox"/> Delete old file if disk full
Memo file:	SD card	<input type="checkbox"/> Delete old file if disk full
Video file:	SD card	<input checked="" type="checkbox"/> Delete old file if disk full
Video capture image:	SD card	<input checked="" type="checkbox"/> Delete old file if disk full

When you backup the file by erasing the oldest files:

- If there is insufficient backup space, look for the earliest Year/Month subdirectories in Logging, Recipe, and Screen Image directories. When looking at Logging, look for subdirectories under the current back up logging number. For example, if Logging number 2 is on the current back up list but does not have data in the file's directory, data in logging number 1 directory will remain untouched.
- Look for the earliest date directory in the earliest Year/Month directory.

- Look for the earliest hour directory in the earliest date directory.
- Delete the earliest backed up files from the earliest hour directory.
- If more data space is needed, repeat the above steps and check available data space.
- When deleting files, if the whole hour directory has been cleared, remove the hour directory.
- When deleting hour directories, if a whole date directory has been cleared, remove the date directory.
- When deleting date directories, if a whole month directory has been cleared, remove the month directory.

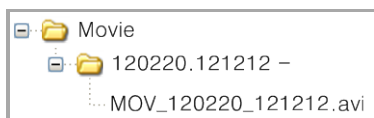
### Notes

- If an unreadable directory or file (operator file or directory) is found, leave the directory or file and locate normal backup files.
- If the current directory contains only operator data, it will cause a backup failure. The XGT Panel cannot delete operator data, therefore it will stop any further action.

### 5.6.3 File Path for Video File and Video Capture File Backup

#### 5.6.3.1 When the File Is Added

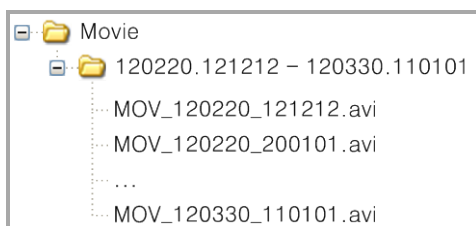
- If created file name is *MOV\_120220\_121212.avi*, the directory shown below will be created.



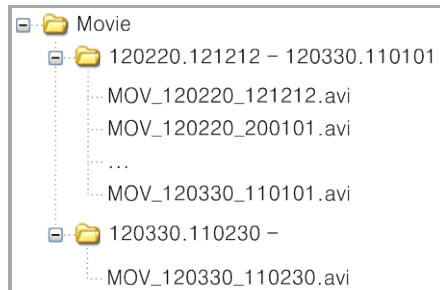
- If another file name, *MOV\_120220\_200101.avi* is created, it will be added to the directory shown below and will be repeated until it reaches 100.



- When the directory contains its hundredth file *MOV\_120330\_110101.avi*, the name of the directory will be changed as shown below.



- When the hundred and first file, *MOV\_120330\_110230.avi* is created, a new directory will be created as shown below.



#### 5.6.3.2 When There is Insufficient Memory or Exceeds the Limit

- Storage properties are configured in XP-Builder, project properties. By checking **Delete old file if disk full**, the earliest video files will be automatically located and deleted. If **Delete old file if disk full** is unchecked, then XP-Builder will stop and prompt the user with an error message.
- When the total number of files reaches 1000, delete the earliest created file from the earliest created directory. As files are deleted and the directory is emptied, the directory will then be deleted.
- When there is insufficient storage space, delete the earliest created file from the earliest created directory. To save Movie clips, a minimum of 10MB free memory is required. To save Video files, a minimum of 1MB free memory is required. The earliest saved files will be deleted until sufficient space is obtained. As files are deleted and the directory is emptied, the directory will then be deleted.

#### 5.6.3.3 ActiveSync Related Actions

- When ActiveSync is connected, no other actions are completed. If the files in the storage unit are deleted or moved after ActiveSync is connected, these changes would not be made.
- When ActiveSync is disconnected, the list of saved video files and video captured files will be refreshed. While the list of video files is refreshed, recording or playing files cannot be completed. File creation requests will be monitored with a status device.

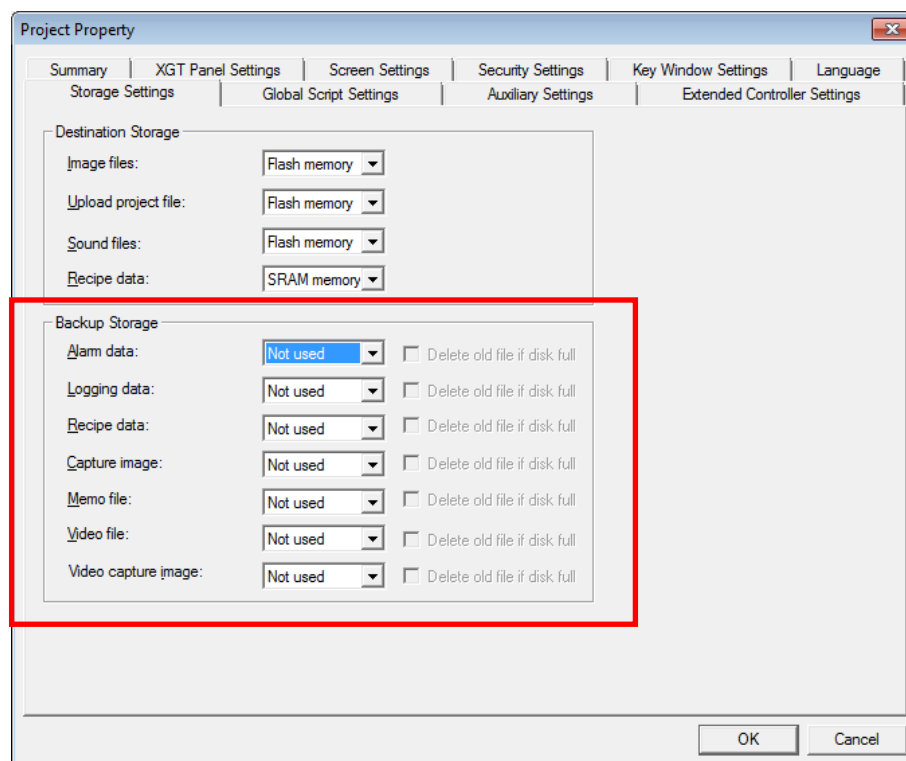
#### 5.6.3.4 When a Storage Device Is Removed

When a storage device is connected, all of the video file and the video captured files are scanned and the number of files will be counted and listed. While the files are scanned, recording or playing cannot be started. File creation requests will be monitored with a status device.

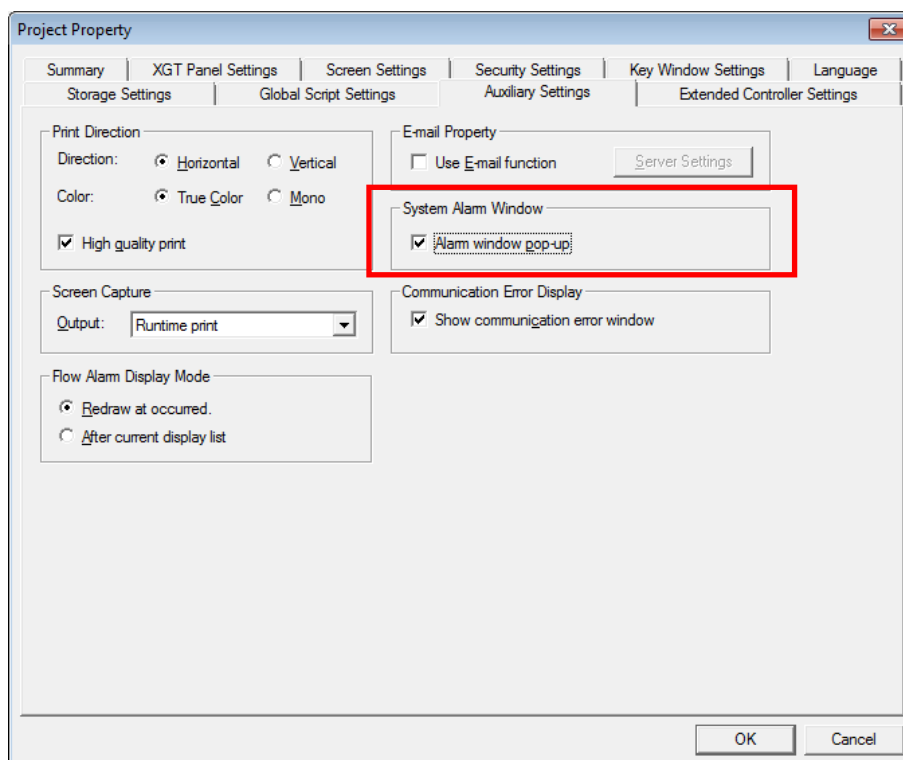


### 5.6.4 Monitoring External Storage Connection

XGT Panel monitors connections with external storage devices. Storage monitoring is set up in XP-Builder as shown below:



To use the monitoring function, you should select the **Alarm window pop-up** option, when you download the project file.



When the external storage device for logging, recipe, and screen image backup is removed from XGT Panel while the device is running, a system alarm is set off. The alarm is reset when an external storage device is reconnected to the XGT Panel.

You can check system alarms and their device addresses in the System Alarm menu located in XP-Builder as shown below:

B-1 System Alarm			
	Device	Data Type	Description
1	HS950.0	BIT	NVRAM Low Battery Warning
2	HS950.1	BIT	NVRAM Invalid Data Warning
3	HS951.0	BIT	No Logging Backup Storage
4	HS951.1	BIT	No Recipe Backup Storage
5	HS951.2	BIT	No Screen Backup Storage
6	HS951.4	BIT	No Printer
7	HS950.8	BIT	USB Over Current Warning
8	HS951.3	BIT	No Alarm Backup Storage
9	HS951.5	BIT	No Memo Backup Storage
10	HS100.2	BIT	Failed to load XPLink parameter

### 5.6.5 Safe Removal Switch

The safe removal switch is used to remove external storage devices without any loss of backup data.

When the safe removal switch is on, and the storage device is not processing data, the LED lamp will turn off. If the storage device is processing data, the LED lamp will turn off after the backup is completed, automatically disengaging the storage device. This means that when the LED lamp is turned off no backup action will be completed and the data in the storage device is inaccessible.

When the safe removal switch is activated and the LED lamp is off, the storage device must be removed and reconnected to ensure that it is recognized. The minimum time delay for removing and reconnecting storage devices after their safe removal is 5 seconds for SD cards and 3 seconds for CF cards.

The actions listed below describe situations where the LED lamp will not turn off even if the safe removal switch is turned on. The LED lamp will only go off after the described actions are fully completed:

- While a backup file is being created or XP-Builder is reading data
- If the images stored in the XP\_User Image from an external storage device is being used as a part image and being loaded in the program
- While reading or writing a file recipe
- While reading backup data from the XP-server through an XP-Link connection
- While browsing backup lists to upload from XP-Builder
- While loading a sound file or an image that belongs to a project
- While transferring project backup data to a storage device or from XP-Builder
- While downloading a project using XP-Builder or a storage device
- While changing an image in the start menu

While ladder program monitoring is being saved in a storage device

Function	Sub Classification	Action
Data Backup	Alarm	Writing
	Logging	Writing
	Recipe	Writing
	Screen	Writing
	Memo	Writing

Function	Sub Classification	Action
	Video	Writing
	Still Shot	Writing
Data Upload	Alarm	Reading
	Logging	Reading
	Recipe	Reading
	Screen	Reading
	Memo	Reading
	Video	Reading
	Still Shot	Reading
Data by Function	Part Image	Reading
	Edit File Recipe	Reading/Writing
	Send File Recipe	Reading/Writing
	Create Webpage	Writing
Web Server		
Sending XP-Link File		Reading
Inquire file list		Reading
Project Upload	Project Backup Communication	Reading
	Project Backup - Storage	Writing
Download Project	Image	Writing
	Sound	Writing
	Project Backup	Writing
Ladder Monitor	Download	Writing
	Execute	Reading
Change Start Menu Image		Reading
Download Storage	Project Data	Reading

### 5.7 Installing and Wiring

#### 5.7.1 Installing an XGT Panel

Prior to installing the XGT Panel, check the proposed location for the installation to ensure that the panel will be adequately protected from excessive heat or dust.

##### 5.7.1.1 Surrounding Condition

- Install the XGT Panel in a position free from water and dust ingress.
  - The XGT Panel is designed to comply with IP (Ingress Protection) Standard. The front of XGT Panel is rated IP65, and the rear is rated IP20.

#### Notes

- Ingress Protection (IP) is based on the IEC 60529 Standard for degrees of protection provided by enclosures. It includes the degree of protection against solid objects and of protection against water ingress.
  - IP65 rating guarantees the enclosure is dust proof (6) and protected against jets of water (5).
  - IP20 rating guarantees protection from solid foreign objects of 12mm diameter and greater (2), but it does not guarantee protection from water ingress.

Element	Numerals or letters	Meaning for the protection of equipment	Meaning for the protection of persons
Code letters	IP		
First characteristic numeral	0 1 2 3 4 5 6	Against ingress of solid foreign objects (non-protected) ≥ 50 mm diameter ≥ 12.5 mm diameter ≥ 2.5 mm diameter ≥ 1.0 mm diameter Dust-protected Dust-tight	Against access to hazardous parts with (non-protected) Back of hand Finger Tool Wire Wire
Second characteristic numeral	0 1 2 3 4 5 6 7 8	Against ingress of water with harmful effects (non-protected) Vertically dripping Dripping (15° tilted) Spraying Splashing Jetting Powerful jetting Temporary immersion Continuous immersion	
Additional letter (optional)	A B C D		Against access to hazardous parts with back of hand Finger Tool Wire
Supplementary letter (optional)	H M S W	Supplementary information specific to: High-voltage apparatus Motion during water test Stationary during water test Weather conditions	

<Source: IEC60529>

- The XGT Panel is designed to mount on the panel, so that the front side meets the standard. However, it does not guarantee the installation environment.
  - The product may malfunction or break down if the installation environment is not suitable for the protection rating.
  - The standard is only for protection from dust and water. Use care to protect against oil, corrosives, or metal particles.
  - If the gasket breaks down due to exposure to chemicals or continuous vibration, the protection from dust and water may be weakened.
  - When you install or mount the XGT Panel, be careful not to damage the product.
- 

- The XGT Panel should be installed in a location that is free from physical impact and vibration.
  - XGT Panel is designed to comply with IEC 61131-2.
- Avoid installing the XGT panel where it is exposed to direct sunlight.
- Avoid exposing the XGT panel to severe temperature changes.
  - The product may malfunction or break down due to condensation forming during rapid temperature movement.
- The XGT panel is designed to operate in a temperature range of 0-50 °C.
  - Operating the XGT panel in conditions outside of the specified temperature range may result in screen color changes or malfunction may occur.
- The XGT panel is designed to operate in relative humidity range of 10-85%.
  - Operating the XGT panel in conditions outside of the specified relative humidity range may result in malfunction or break down due to moisture damage during high humidity.
- Avoid exposure to corrosive or inflammable gases.

### 5.7.1.2 Installation Safety

- When making fixing holes or wiring penetrations, avoid small particles entering into the XGT Panel.
- Install the XGT Panel in a location and height that makes control and operation comfortable.
- Do not install the XGT Panel in the same location as high voltage devices.
- Maintain a minimum clearance of 100mm around the XGT panel from wiring ducts and other devices.
- Install the XGT Panel away from excessive noise.

### 5.7.1.3 XGT Panel – Thermal Control Considerations

- If the XGT Panel is installed in a sealed location, consider the heat generated by other devices as well as the heat generated by the XGT Panel itself. If fans or a ventilating system are used to circulate the air, carefully consider any particulates that may be blown through the air towards the XGT panel. Dust accumulation may result in the device malfunctioning or affect the performance of the system.
- It is recommended to use air filters or a heat exchanger for sealed plant rooms where equipment is located.

#### Note

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Be careful when handling the XGT Panel while unpacking it and getting it ready for installation.

- Do not drop or cause impact to the device.
  - Do not disassemble or repair XGT Panel. Unauthorized repairs and disassembly will invalidate the device's warranty and LSIS will not accept responsibility for any damage.
  - During installation and wiring take extreme care to prevent dust and debris entering the XGT panel.
-

### 5.7.2 Panel Design and Installation

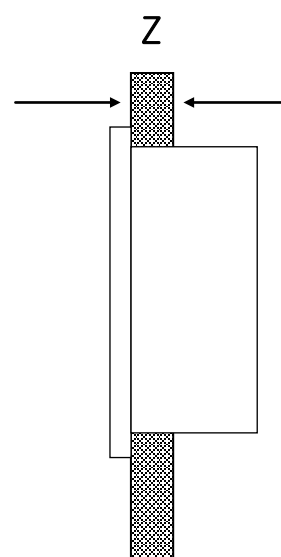
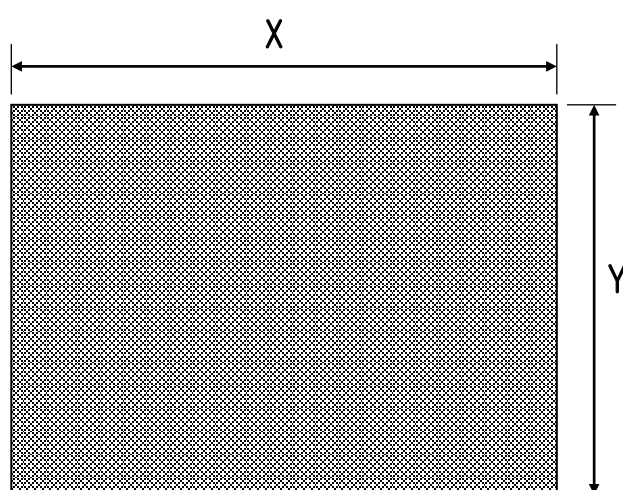
When you install the XGT Panel, a panel, designed to mount the XGT Panel inside should be specified and allowed for. This chapter describes how to construct the panel and mount the XGT Panel in it.

#### 5.7.2.1 Building a Panel

When you construct the panel, the panel cutout dimensions need to be:

<Unit: mm>

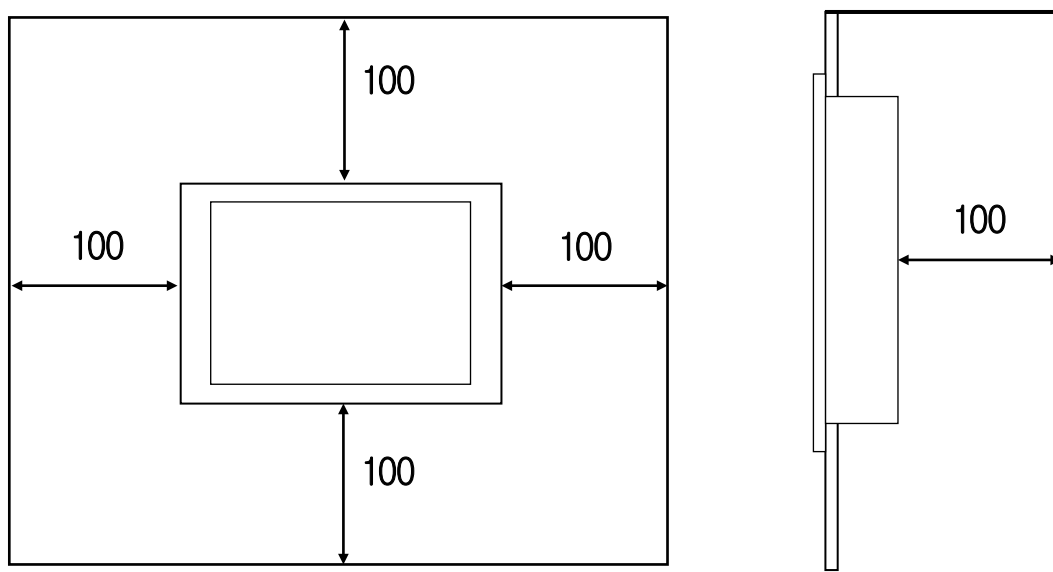
Model	X (Width)		Y (Height)		Z (Thickness)
iXP70-TTA	259.0	+1	201.0	+1	1.6~9.5
		-1		-1	
iXP80-TTA	301.5	+1	227.5	+1	
		-1		-1	
iXP90-TTA	383.5	+1	282.5	+1	
		-1		-1	





### 5.7.2.2 Mounting XGT Panel

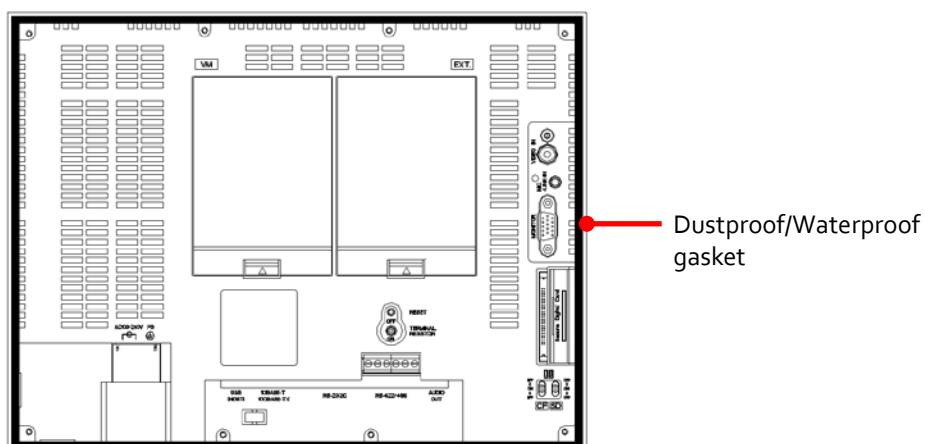
Ensure that there is 100mm clearance around all sides of the panel to prevent electromagnetic interference or heat from other equipment installed nearby. When you mount the XGT Panel inside a panel, consider access for power and communication wiring.



#### Note

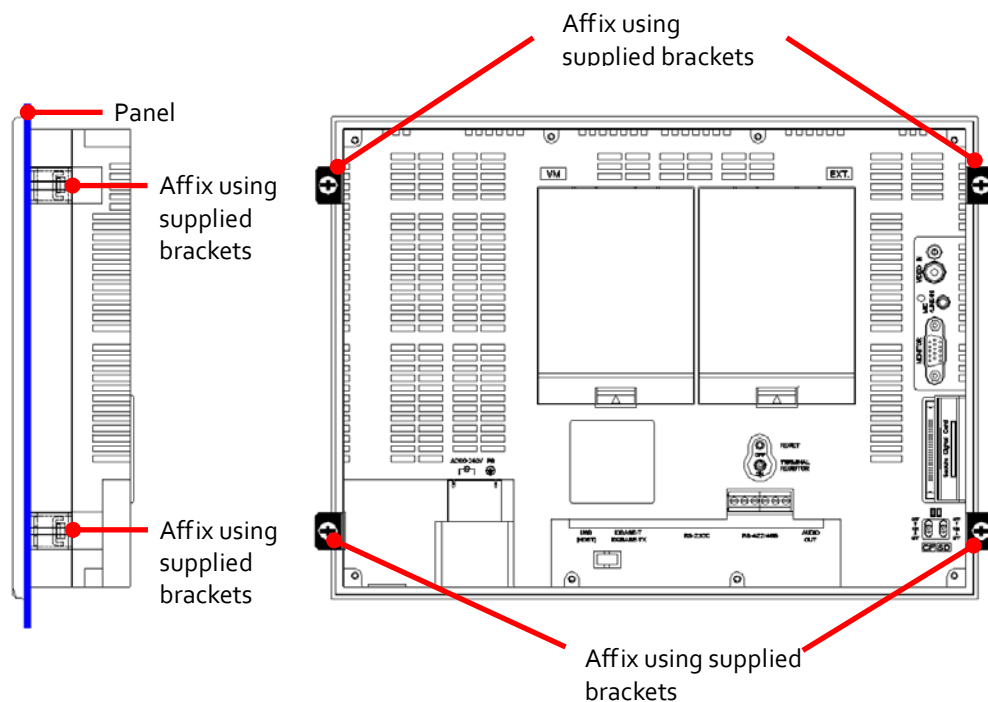
If the size of the panel cutout dimensions are beyond the error range (0-1mm), the contact surface between the gasket and the panel may be reduced. This may weaken the protection from water and dust ingress.

- When mounting the XGT Panel inside a panel, ensure that you use the gasket to protect against dust or water ingress.



### Notes

- Use the gasket to prevent dust or other contaminant ingress.
  - When you mount the XGT Panel on the panel, if the surface of panel is uneven, water or dust can enter the product through the gaps. This can be caused by the quality of the material (iron, aluminum, or acrylic) or the thickness, so check the installation environment carefully. Moreover, be sure to adhere the gasket and panel.
  - If the gasket is damaged when you install the product or is deteriorated after a long period of use, it may weaken the protection from water and dust ingress. If you need to replace it, contact the agency or a service center.
- 
- Fix XGT Panel to the panel using the supplied brackets provided in the OEM packaging.



### Notes

- Affix the brackets on four sides of the product to prevent ingress by water and dust.
- Affix the brackets top to bottom and right to left to prevent gaps.
- Align the brackets vertically with the panel. The screw torque of the brackets is 6.42kgf/cm. The screw torque may vary by the quality of the panel, but it should follow the standard screw torque value for a bolt. If you apply excessive force when affixing the brackets, the XGT Panel can be damaged. This may result in touch

screen errors or weaken the protection against water and dust ingress.

- After mounting the XGT Panel on the panel, remove the screen protection film. Touch screen errors may result if the film is not removed. To protect the screen, use the exclusive protection sheet. To purchase a protection sheet, contact the agency or a sales office.

### 5.7.3 XGT Panel Wiring Specifications

#### 5.7.3.1 Power Wiring

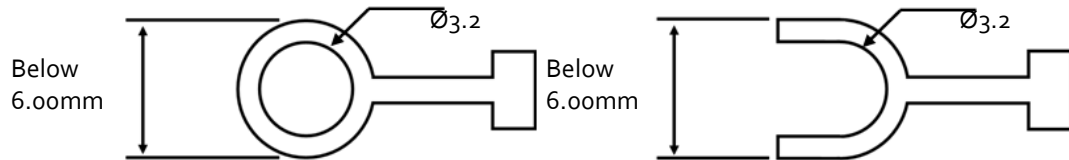
The XGT Panel has models that can operate with both Direct Current (DC) and Alternating Current (AC) power supplies. The model list below details the models and power supplies they are designed for.

Voltage	Model
DC 12/24V	iXP70-TTA/DC
	iXP80-TTA/DC
	iXP90-TTA/DC
AC 100-240V	iXP70-TTA/AC
	iXP80-TTA/AC
	iXP90-TTA/AC

#### Notes

- Do not use an AC power supply for an XGT panel designed for a DC power supply. An incorrect power supply could result in serious equipment damage or fire.
- Confirm the power supply by checking the power supply ratings on the rear panel of the XGT Panel.

- Use the following standard power socket.



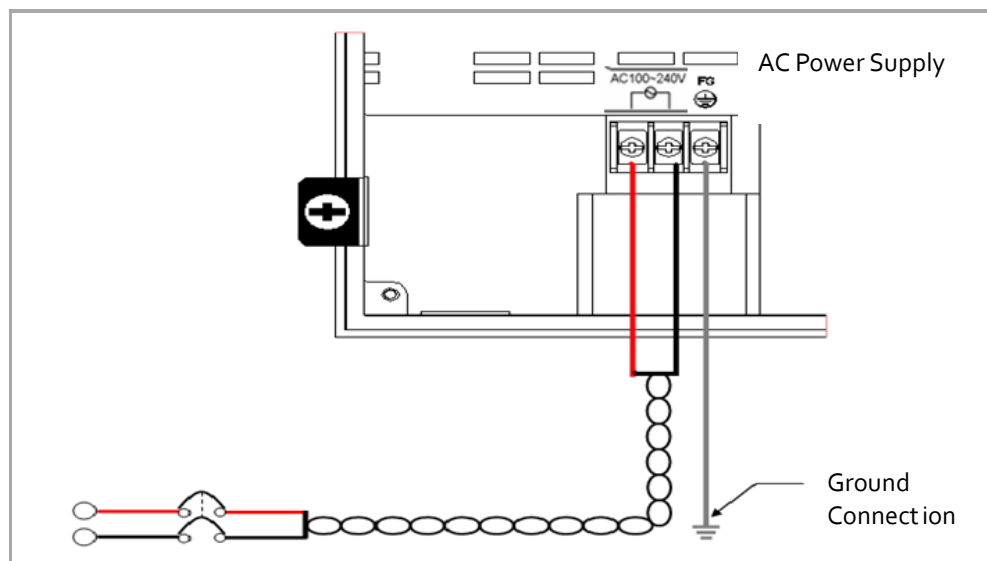
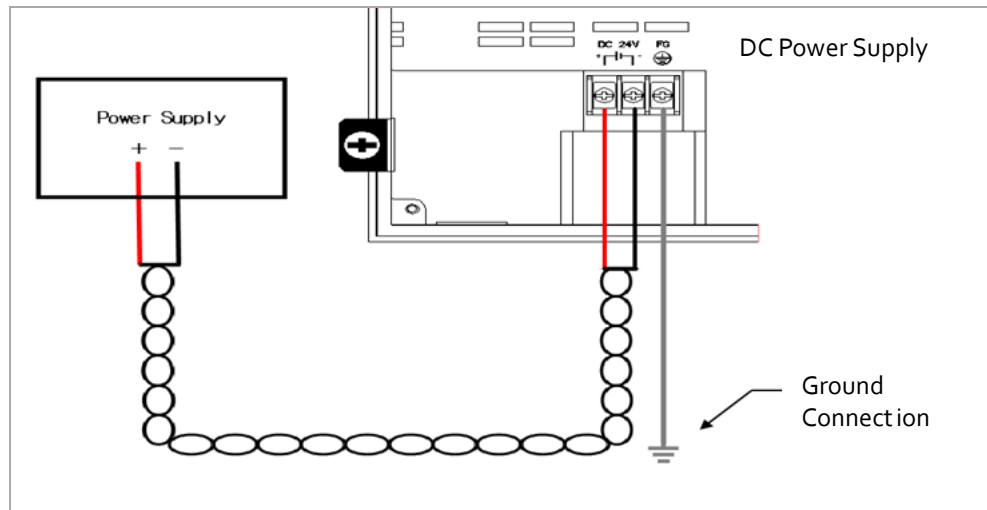
- Cable size for power lead and protective grounding cables is between 1.5 mm<sup>2</sup>(AWG16) and 2.5 mm<sup>2</sup>(AWG12).

### Notes

- For installations where there is voltage drop, it is recommended to use stranded wire with a cross sectional area greater than 2.0 mm<sup>2</sup>.
- It is recommended that cable connections are twisted and secure. Short cable runs are also recommended between the point of supply and the XGT panel.
- For safety reasons it is recommended that you use color coded outer sheaths on the conductors to aid safe terminations. Follow local regulations when making electrical connections.

## 5. Managing an XGT Panel

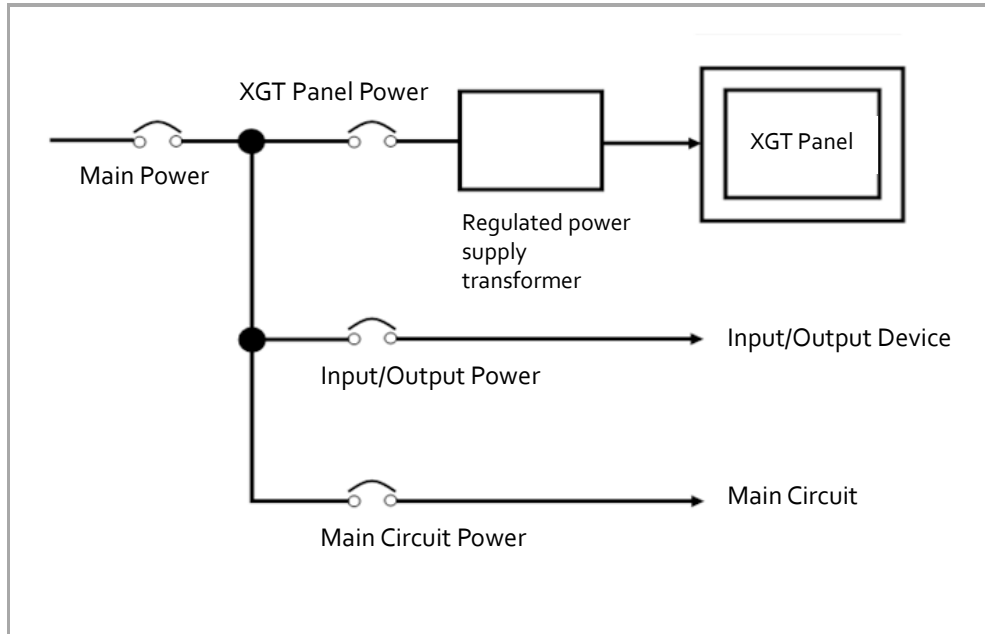
- Connect the power supply as shown below.



### Notes

- Use a regulated power supply transformer when the power fluctuation is bigger than the standard.
- If electromagnetic interference is experienced or expected use an insulation transformer to protect the XGT Panel from interference.

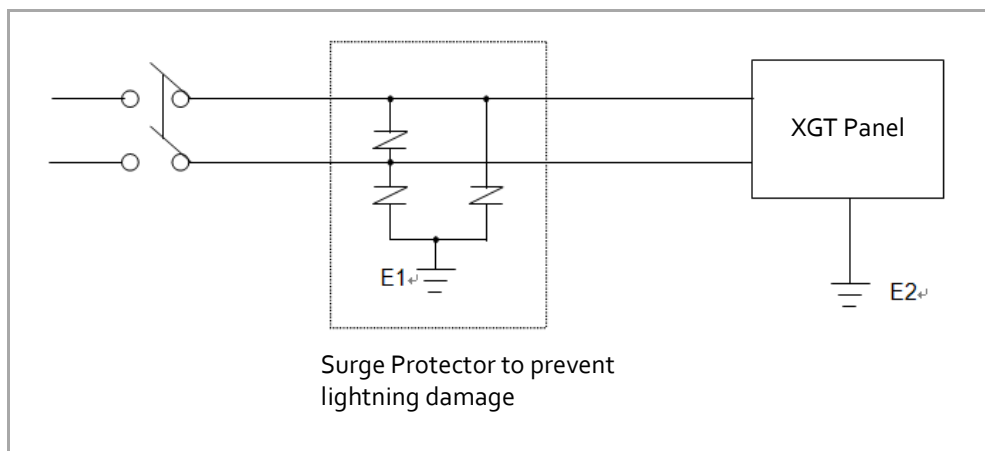
- Separate the power source for the XGT Panel power, input and output device, and the power device as shown below:



### Note

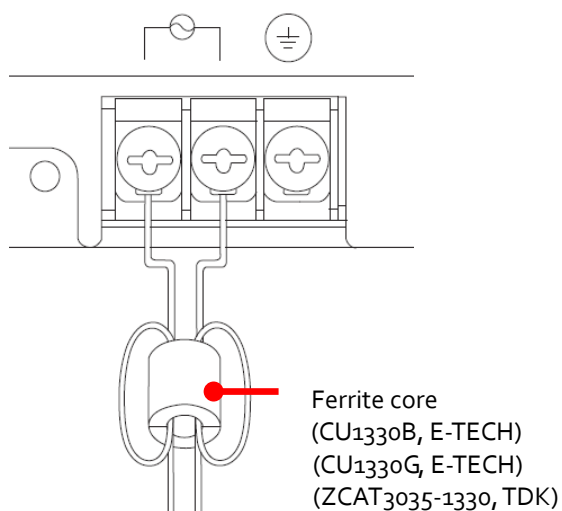
Separate the XGT Panel power supply cable from the main circuit cable (high voltage and current) and input/output cable. Maintain a minimum separation of 100mm between cables.

- Use a lightning surge protector to prevent damage from lightning strikes.



### Notes

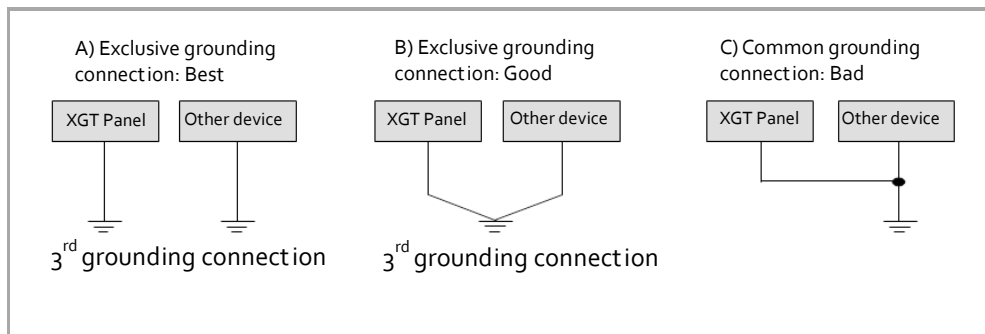
- Separate E1, the ground connection for lightning surge protector, and E2, the ground connection for XGT Panel.
  - Set lightning surge protector to below the allowable surge voltage to provide protection if the voltage increases to its maximum.
- 
- Use an insulation shielding transformer or noise filter when the electromagnetic interference occurs. Keep the stripped ends of the terminated cables twisted and as short as possible. When running the wiring avoid running the cables for the insulation shielding transformer or noise filter pass through the cable duct.
  - When you use the magnetic lighting contactor (MC) for AC/DC, it is recommended to use a ferrite core close to the power terminals as shown below:



### 5.7.3.2 Ground Connection Wiring

When you use the ground connection, refer to the following information.

- Use the exclusive ground connection. When you install the ground connection, use the third grounding resistance (less than  $100\Omega$ ).
- If you cannot use the exclusive ground connection, use the common ground connection like below.



- Use cables for grounding/earth connections by using cable with a cross sectional area greater than  $2.0 \text{ mm}^2$ . Install the ground connection as close as possible to the XGT Panel.

#### Note

- Check and test the grounding connection. If the connection is bad or in case of (B) above, the XGT Panel may malfunction or the communication signals may fail.
- Illustrations and specifications shown this chapter (5.7 Installing and wiring) are based on iXP series. For more information about the XP series, refer to XP series XGT Panel user's manual.



# Glossary

Term	Description
1:1	"one to one" communication; a communication mode; in 1:1 communication, one panel is used to send commands to one controller
1:N	"one to many" communication; a communication mode; in 1:N communication, one panel is used to send commands to multiple controllers
ActiveSync	a mobile data synchronization app developed by Microsoft; it synchronizes data with handheld devices and desktop computers
baud	baud and bits per second are not necessarily the same, so do not use "bits per second" or "bps" as a synonym for baud; modems are conventionally designated by bits per second or kilobits per second; a 28.8 kbps modem runs at a different baud, depending on how events are coded for transmission
bit object	an object in an XP-builder project that is controlled by a bit device
bitmap	refers to a specific file format for online art
case	a selection control mechanism that exists in most imperative programming languages, such as Pascal, C/C++, C# and Java; it allows the value of a variable or expression to control the flow of program execution via a multi-way branch (or "goto," one of several labels)
condition	a Boolean expression used to control conditionals and loops; it affects the programming or operating of control statements, such as WHILE, FOR, and IF
controller	the physical unit that delivers instructions to machinery; XP-Builder supports numerous types of controllers; see also <i>programmable logic controller</i>
DEC keypad	a pop-up window for user input of decimal characters
editing area	the main part of the XP-Builder interface, where objects can be placed to create a project

Term	Description
Ethernet	a connect ion method; the maximum throughput for an Ethernet connect ion is 100mbps
falling edge	the bit at which the device turns off is the falling edge
FLOAT keypad	a pop-up window for user input of float characters
HEX keypad	a pop-up window for user input of hexadecimal characters
IL language	intermediate language; the language of an abstract machine designed to aid in the analysis of computer programs
inverter	an electrical power converter that changes direct current (DC) to alternat ing current (AC); the converted AC can be delivered at any required voltage and frequency with the use of appropriate transformers, switching, and control circuits
log	the mathematical operation that is the inverse of exponentiat ion
N:1	“many to one” communication; a communicat ion mode; in N:1 communication, multiple panels are used to send commands to the same controller; this is an atypical configurat ion.
offset funct ion	a funct ion to specify a device address by referencing an “offset” from the start ing address
operator	a symbol used to connect expressions; <i>logical operators</i> are used to create a test expression that controls <i>program</i> flow; relational operators test or define some kind of relat ion between two ent ities
PIR sensor	an electronic sensor that measures infrared (IR) light radiat ing from objects in its field of view. They are most often used in PIR-based mot ion detectors.
range	the set of values to be included in a funct ion
raster image	a bitmap image with a dot matrix data structure representing a generally-rectangular grid of pixels or points of color; a raster image can be in varying formats, such as GIF, JPG, and BMP
rising edge	the bit at which the device turns on is the rising edge
RS232	a series of standards for serial binary single-ended data and control signals connect ing between data terminal equipment (DTE) and data circuit-terminat ing equipment (DCE). The maximum throughput for

Term	Description
	an RS232 connection is 115Kbps.
RS485	a standard for defining the electrical characteristics of drivers and receivers for use in balanced digital multipoint systems. RS485 offers data transmission speeds of 35 Mbit/s up to 10 m and 100 kbit/s at 1200 m.
screen	the physical component of a computer monitor or XGT panel display
script	a small program written for a command interpreter or another scripting language
servo	servomechanism; a device used for control of a desired operation through the use of feedback; the term correctly applies only to systems where the feedback or error-correction signals help control mechanical position, speed, or other parameters.
token	a credential used to control usage rights; the node that holds the token has the current usage rights
toolbar	part of the XP-Builder interface where menu shortcuts are designated by icons and buttons
unsigned decimal	a system for expressing negative numbers
vector image	an image based on paths or strokes, for the representation of geometrical primitives, such as points, lines, curves, and shapes or polygons; because vector-based images are not made up of a specific number of dots, they can be scaled to a larger size without losing image quality
window	either the windows of the operating system (MS Windows) or the windows being created in XP-builder; does not refer to the "screen:" the screen is part of the hardware (e.g., the physical part of the XGT Panel display or the computer monitor
word object	an object in an XP-builder project that is controlled by a word device
XG5000 Simulator	a simulator for testing project files before downloading them to an XGT panel; the simulator allows for debugging or verification of project files

## List of Acronyms

Acronym	Definition
A/V	audio/video
ASCII	American standard code for information interchange
BCD	binary code decimal
CF	compact flash
CMY	cyan-magenta-yellow
CMYK	cyan-magenta-yellow-black
COM	communications
CPU	central processing unit
DEC	decimal
GIF	graphic interchange format
GUI	graphical user interface
H/W	hardware
HEX	hexadecimal
I	used in device expressions to represent input
IB	used in device expressions to represent byte input
IEC	International Electrotechnical Commission
IL	intermediate language
IP	internet protocol
IP	ingress protection
IW	used in device expressions to represent word input
JPEG	joint photographic experts group
LAN	local area network
LC	liquid crystal display

## List of Acronyms

Acronym	Definition
LD	ladder diagram
LED	light emitting diode
M	metadata
MPEG	moving picture experts group
PC	personal computer
PDF	portable document format
PIN	personal identification number
PIR	passive infrared
PLC	programmable logic controller
Q	output
QB	bit output
QCIF	quarter common intermediate format
QVGA	quarter video graphics
QW	word output
RAM	random access memory
RGB	red-green-blue
ROM	read-only memory
S/W	software
SD	secure digital
SDK	software development kit
SMTP	simple mail transfer protocol
SRAM	static random access memory
TCP	transmission control protocol
TIFF	tagged image file format
UDP	user datagram protocol

Acronym	Definition
UI	user interface
URL	uniform resource locator
USB	universal serial bus
VGA	video graphics array
VM	virtual memory
VSP	virtual serial port
WAN	wide area network

# Safety and Legal Information

Read this manual carefully before installing, wiring, operating, servicing or inspecting this equipment. After reading the information, keep this manual within easy reach for quick reference. The following illustrations on the product and in the manual represent situations where you should use caution:

### Caution: Wiring and Installation

- Disconnect all power supplies to the HMI before making wiring connections. Failure to do so may result in electric shock or damage to the product.
- Verify each component's rated voltage and terminal layout before making wiring connections. Failure to do so may result in electric shock or damage to the product.
- Ensure that all terminal screws are tightened to their specified torque ratings. Failure to do so may result in short circuits, fire, or erroneous operation.
- Use only HMI 3-type grounding for the FG terminal. Failure to do so may result in erroneous operation.
- Install a safety circuit external to the HMI to protect the whole control system in case of external power supply disruption. The entire system can be seriously damaged by improper operation of the HMI.
- Install communication cables at least 100mm from high-voltage wires or machinery. Failure to do so may result in improper operation.
- Install the HMI only in an environment that meets the general specifications described in the XGT Panel User Manual. Failure to do so could result in electric shock, fire, erroneous operation, or deterioration of the product.
- Install the HMI in an environment that is protected from vibration. Failure to do so could result in electric shock, fire, erroneous operation, or deterioration of the product.
- Prevent foreign substances, such as liquids and conductive debris, from entering the HMI. Failure to do so could result in electric shock, fire, erroneous operation, or deterioration of the product.

### Caution: Usage and Maintenance

- Do not touch the terminals while the power is on. Doing so may result in electric shock or erroneous operation.
- Turn off controllers and disconnect all power supplies before cleaning or tightening terminals. Failure to do so may result in electric shock or erroneous operation.

- Do not charge, disassemble, heat, short circuit, solder, or otherwise attempt to open or repair the battery. Mishandling the battery may result in overheating, discharge of corrosive chemicals, fire, or injury.
- Do not disassemble the PCB from the product case or modify the product. Doing so may result in fire, electric shock, or erroneous operation.
- Use wireless and radio devices at least 30cm away from controllers. Failure to do so may result in erroneous operation.
- When disposing of the product or battery, adhere to all applicable local and federal regulations. Treat the product or battery as industrial waste and contact the appropriate authority for disposal instructions.



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