OMRON

ProgrammableTerminal NA-series

Practices Guide
Creating Basic Pages

NA5-15W□□□□(-V□)
NA5-12W□□□□(-V□)
NA5-9W□□□□(-V□)
NA5-7W□□□□(-V□)
NA-RTLD□□

SYSMAC
always in control

V421-E1-03

■ Introduction

This guide provides reference information on editing pages of the NA. It does not provide safety information.

Be sure to obtain the NA-series Programmable Terminal User's Manuals, read and understand the safety points and other information required for use, and test sufficiently before actually using the equipment.

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Related Manuals

The following manuals are related to this manual.

Cat.No.	Model	Manual Name
W504	SYSMAC-SE2□□□	Sysmac Studio Version 1 Operation Manual
V117	NA5-□□W□□□□	NA-series Programmable Terminal Hardware User's Manual
V125	NA5-□□W□□□□-V1(-P)	NA-series Programmable Terminal Hardware(-V1) User's Manual
V128	NA5-□□W□□□□-V2	NA-series Programmable Terminal Hardware(-V2) User's Manual
V118	NA5-□□W□□□□(-V□) NA-RTLD□□	NA-series Programmable Terminal Software User's Manual
V119	NA5-□□W□□□□(-V□) NA-RTLD□□	NA-series Programmable Terminal Device Connection User's Manual
V126	NA-RTLD□□	NA-series Programmable terminal Soft-NA User's Manual
V120	NA5-□□W□□□□	NA-series Programmable Terminal Startup Guide
V469	NA5-□□W□□□□(-V□)	NS → NA Replace Guide
V461	NA5-□□W□□□□-V1	NA5 → NA5-V1 Replace Guide
V472	NA5-□□W□□□□-V2	NA5-V1 → NA5-V2 Replace Guide

Terminology

Term	Description
HMI	A general term for interface devices that indicates both hardware and software elements. In this manual, “HMI” refers to an OMRON Sysmac-brand product unless otherwise specified.
NA Series	The NA Series of Programmable Terminals and peripheral devices.
NA5 Series	NA5-□□W□□□□ (-V□).
NA Unit	An NA-series Programmable Terminal.
HMI Project	A Sysmac Studio project for an HMI.
Download	Transferring data from the Sysmac Studio to an HMI.
Upload	Transferring the project from an HMI to the Sysmac Studio.

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1 Introduction

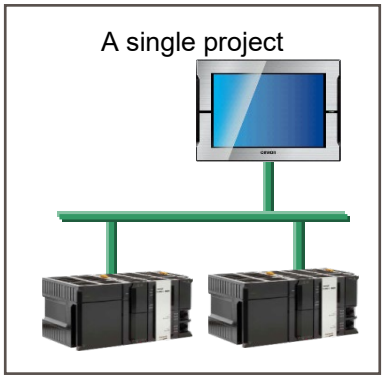
This document describes the method for creating basic screens with the NA Series and how to connect to the NJ/NX-series Controller.
This chapter allows you to confirm the knowledge required to create screens on the NA Series and what you will learn in this Practices Guide, and to learn the system configuration and the screen creation procedure required before creating screens.

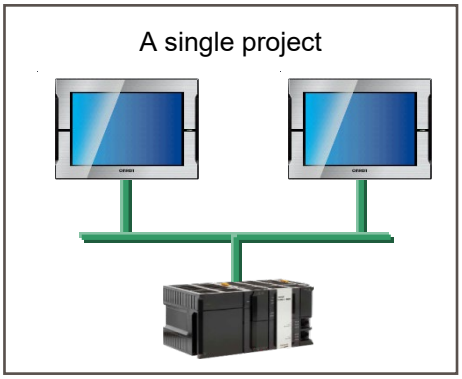
1-1 System Configuration

Create a project in the following environment.

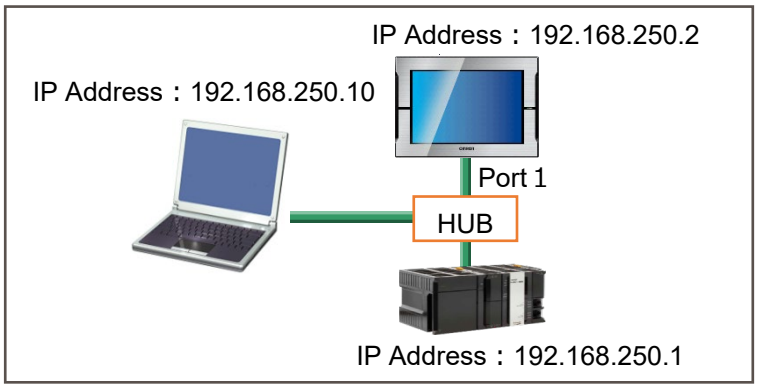
Target Devices	Version
Sysmac Studio	1.65 64bit
NA5-12W101S-V2	1.18
NJ501-1500	1.67
Windows OS	Windows 11 Pro 64bit

The NA series can include multiple NJ units or NA units within a single project as shown in the figures below.





In this guide, creation is performed using a configuration in which the NJ and NA are connected 1:1 as shown in the following figure.
The Ethernet is used for communications between the NJ series and NA series, as well as for the screen data transfer from the PC.



1-2 Procedure to Create Pages

The following flow describes the NA Series settings and the basic method for creating screens up to operation check.

Project Creation

▼

Various Settings

▼

Screen Creation

▼

Integrated Simulation

▼

Operation Check on Actual Unit

2 Project Creation

This chapter describes the settings for the NJ that are required before creating pages of the NA series.

2-1 Starting up Sysmac Studio

2-1-1 Starting up Sysmac Studio

Start up Sysmac Studio in either way described below:

- Double-click the icon on the desktop.

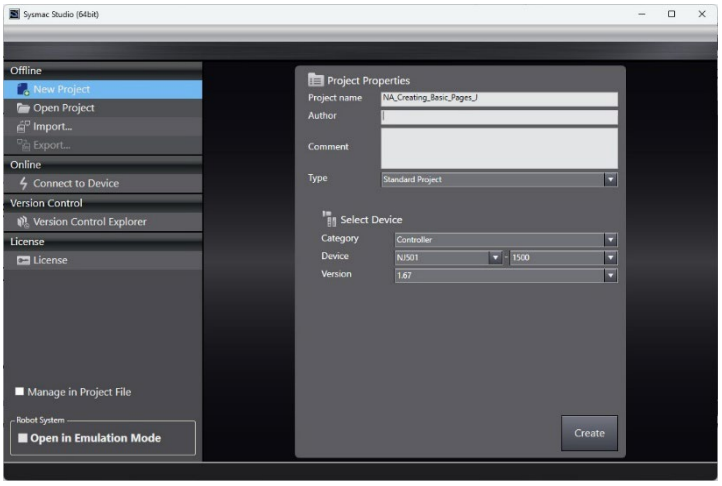
- Select [START]-[All Programs]-[OMRON]-[Sysmac Studio]-[Sysmac Studio].

2-1-2 Creating a New Project

1. First, create a new project for the NJ.
   Click [New Project] on the Project window.

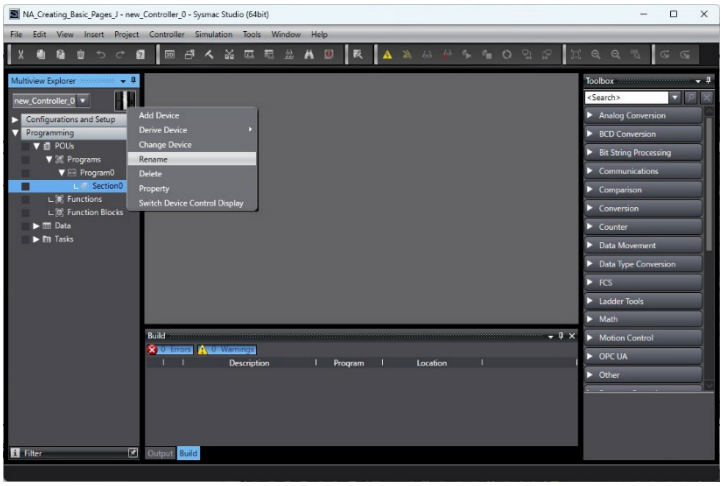
2. Specify the following items, and click [Create]. A project file is then created.

・Project name
“Arbitrary project name”
・Device
「NJ501-1500」*
・Version
「1.67」*
* Set the model and version of the NJ to be connected.

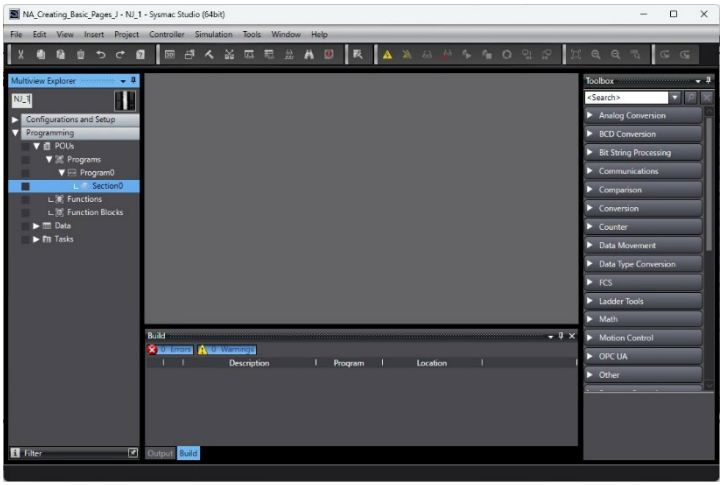


2-1-3 Changing the Controller Name

1. For easy identification, change the controller name.
Right-click the NJ icon and select “Rename”.



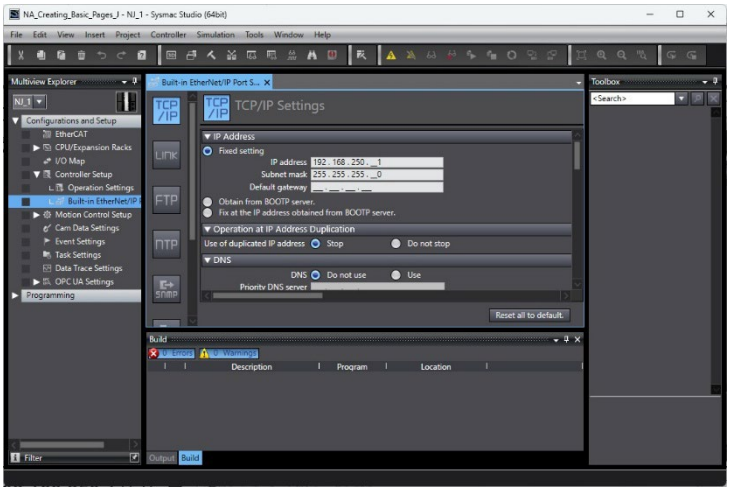
2. Change the controller name to “NJ_1”.



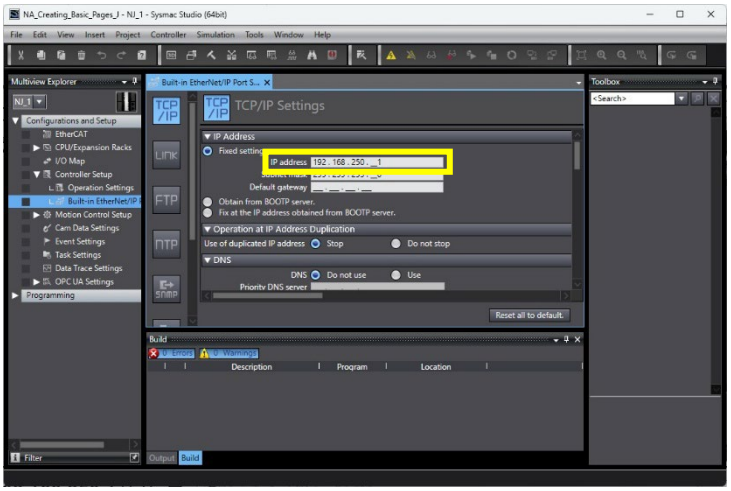
2-1-4 Confirming the IP Address

To connect NJ with Sysmac Studio via EtherNet/IP™, confirm the IP address of the NJ side as described below.

1. Double-click [Configurations and Setup]-[Controller Setup]-[Built-in EtherNet/IP Port Settings].



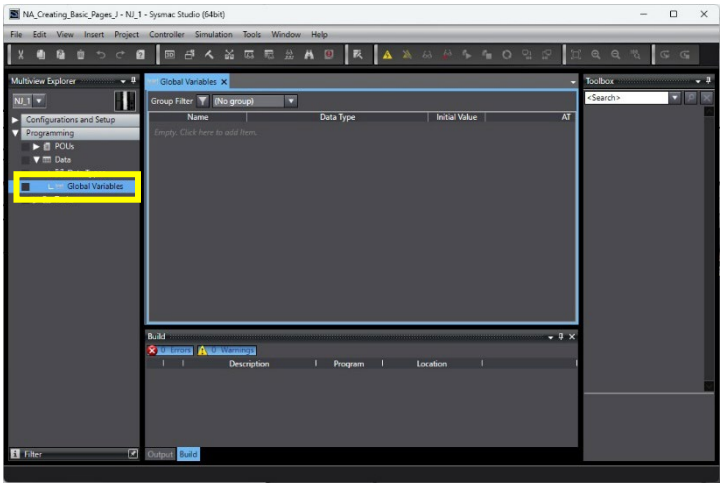
2. Confirm that the IP address is specified as “192.168.250.1”.



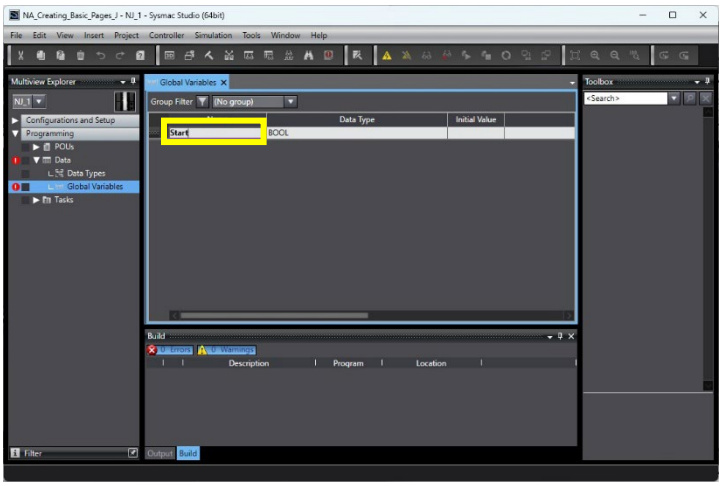
2-2 Registering Global Variables

To exchange data with the NA, register the global variables of the NJ.

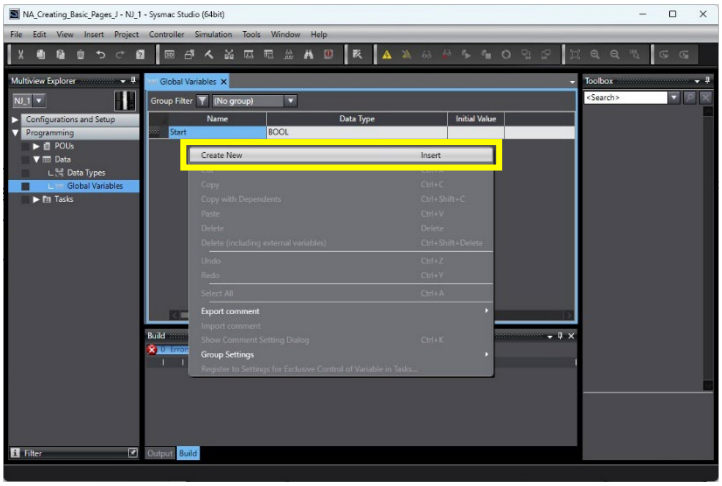
1. Double-click [Programming]-[Data]-[Global Variables].



2. Click the variable table and register a variable name.

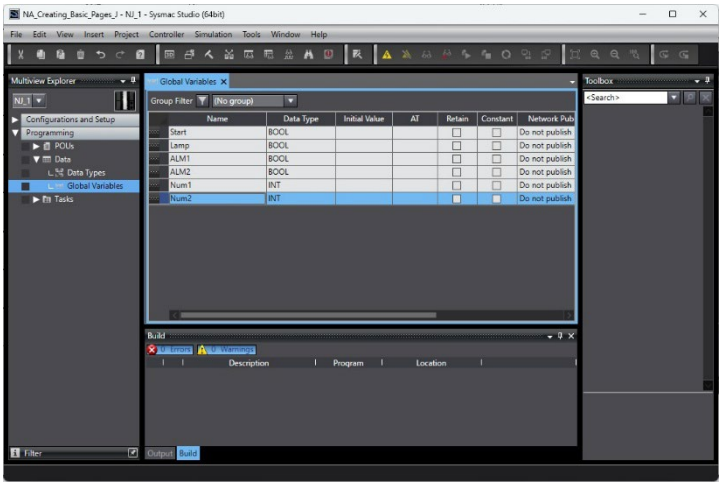


3. Subsequently, right-click on the variable table and select “Create New”. Otherwise, press the “Insert” key.



4. Register all of the variables listed on the right.

Name	Data Type
Start	BOOL
Lamp	BOOL
ALM1	BOOL
ALM2	BOOL
Num1	INT
Num2	INT

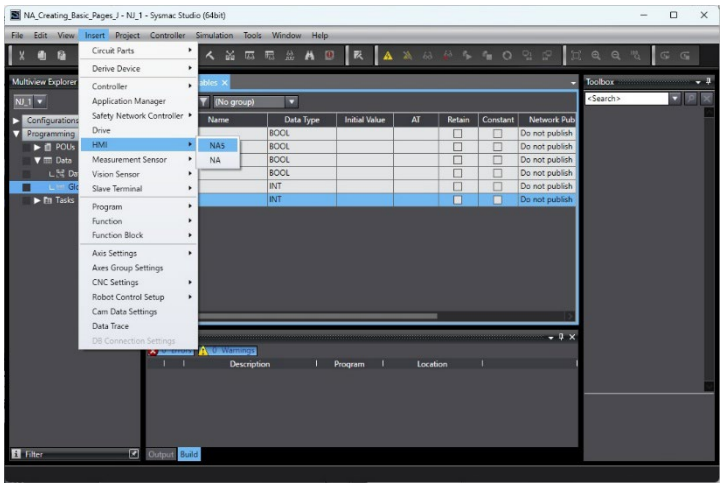


3 Basic Settings

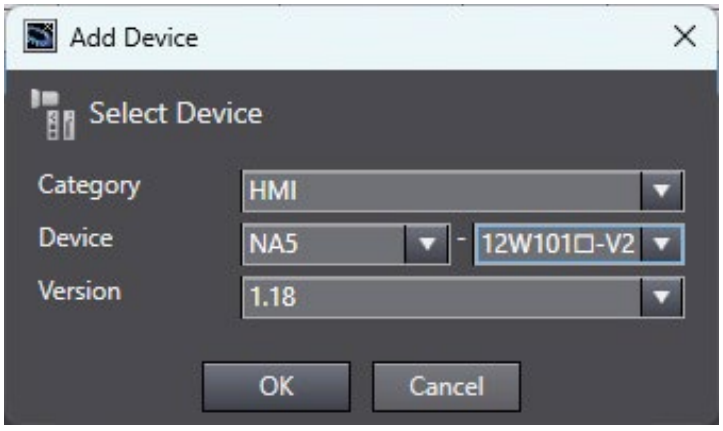
This chapter describes the basic procedure to create an NA project, to specify communication settings, and to register variables.

3-1 Adding an NA

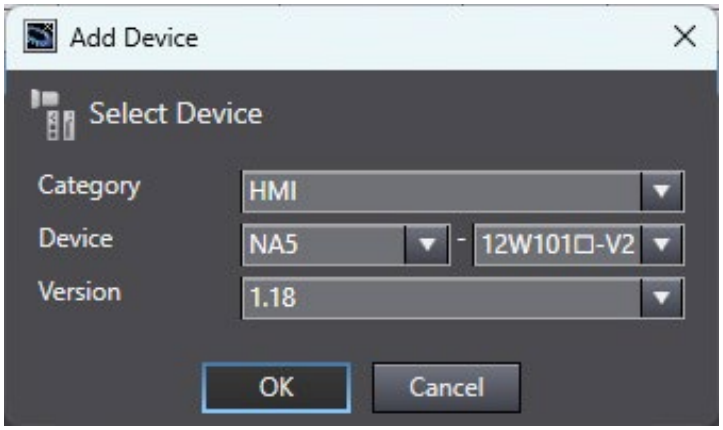
1. Add an NA to the project.
   Select [Insert]-[HMI]-[NA5].



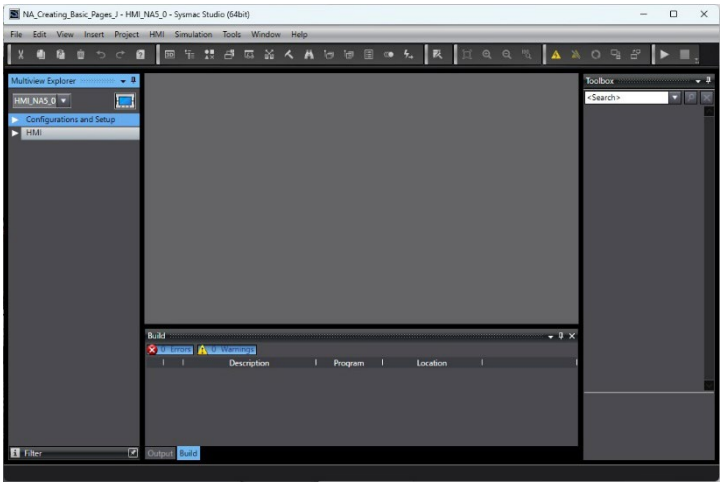
2. Select an option from among the list according to the actual unit.
   For example, when using a 12-inch V2, select 12W101□-V2.



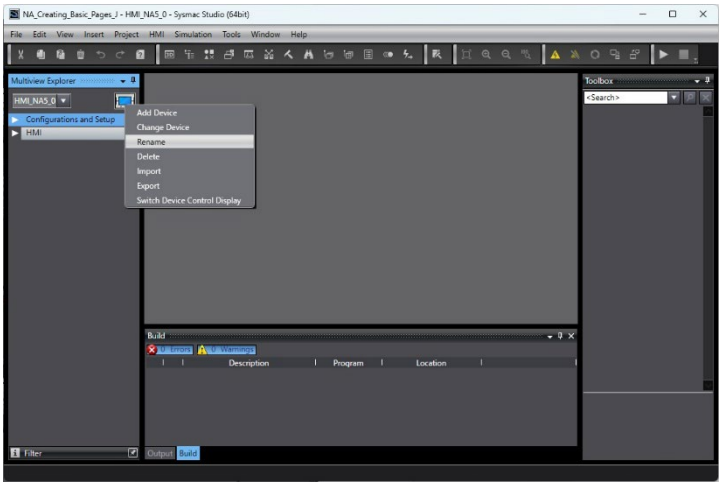
3. Select OK.



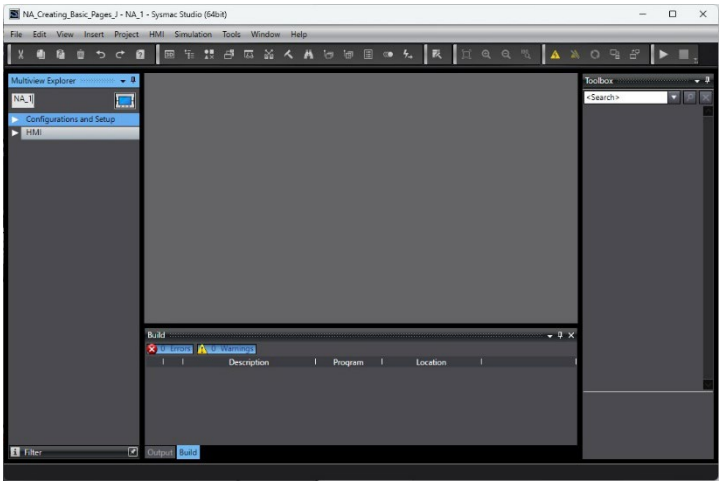
4. An NA is now added, and the display is changed accordingly.



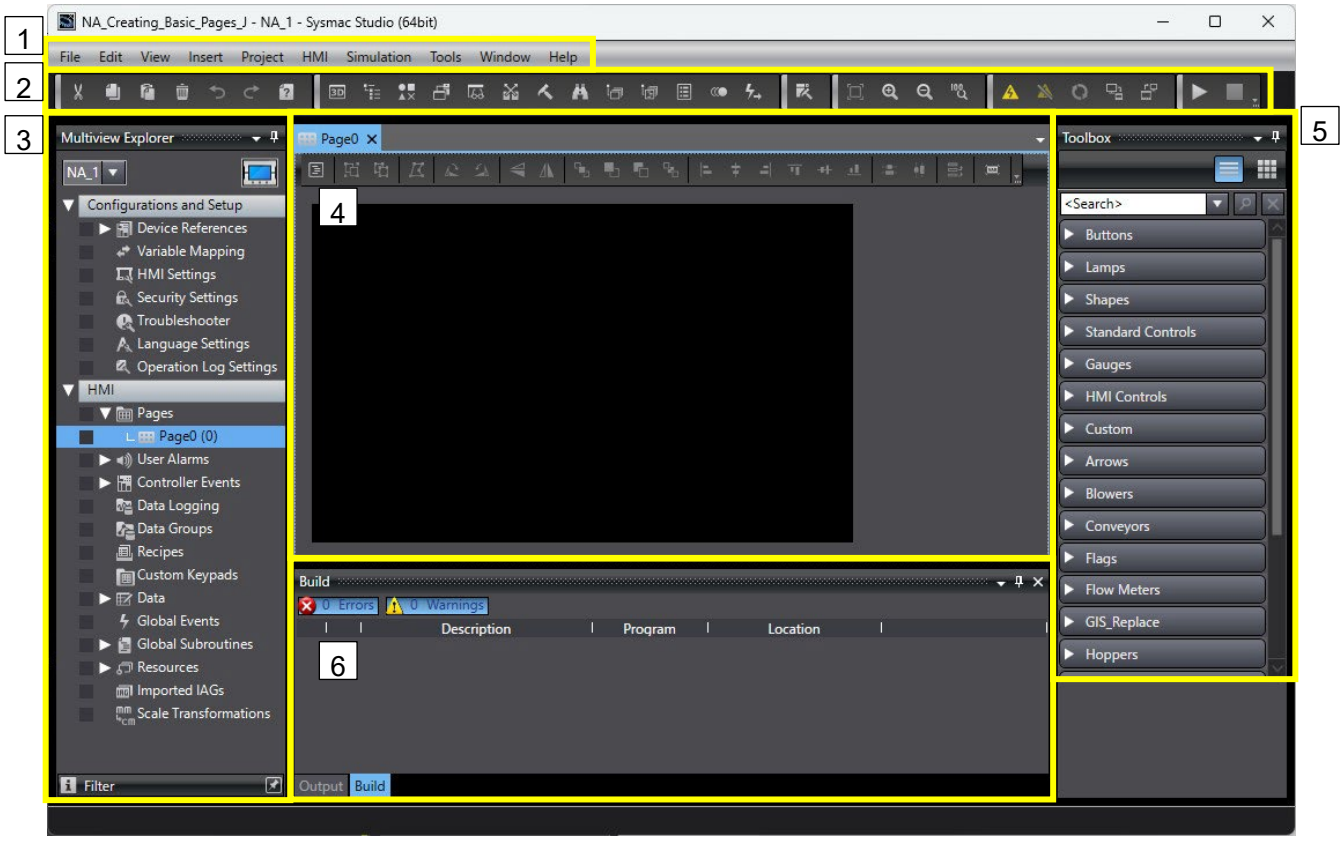
5. Change the NA name for easy identification. Right-click the NA icon and select “Rename”.



6. Change the name to “NA_1”.



3-2 Sysmac Studio Window Components for Creating NA Pages

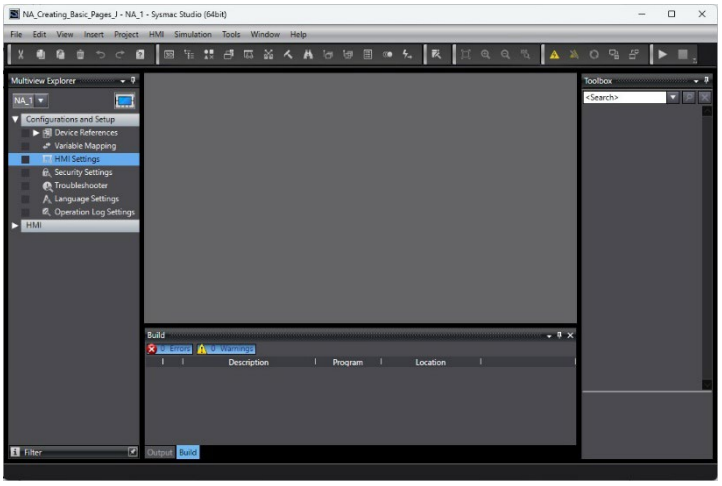


	Name	Description
1	Menu bar	This is a common menu.
2	Toolbar	Frequently used functions are provided on the Toolbar.
3	Multiview Explorer	This pane is your access point for all Sysmac Studio data. When an HMI is selected, it is divided into a Configurations and Setup Layer and an HMI Layer. You can also display the Page Explorer to display lists of objects on pages or the Code Explorer to display lists of subroutines
4	Edit Pane	The Edit Pane is used to display and edit the data for any of the items. Double-click an item in the Multiview Explorer to display details of the selected item in the Edit Pane. You can edit pages and set up the HMI.
5	Toolbox	The Toolbox shows the objects that you can use to edit the page that is displayed in the Edit Pane. You can also display the Properties Window, Animations Window and the Events and Actions Window to make the settings of the objects.
6	Build Tab Page	The Build Tab Page shows the results of building. Double-click any of the results to display the location of the program check error, program check warning, or building error in the Edit Pane of the Sysmac Studio so that you can edit

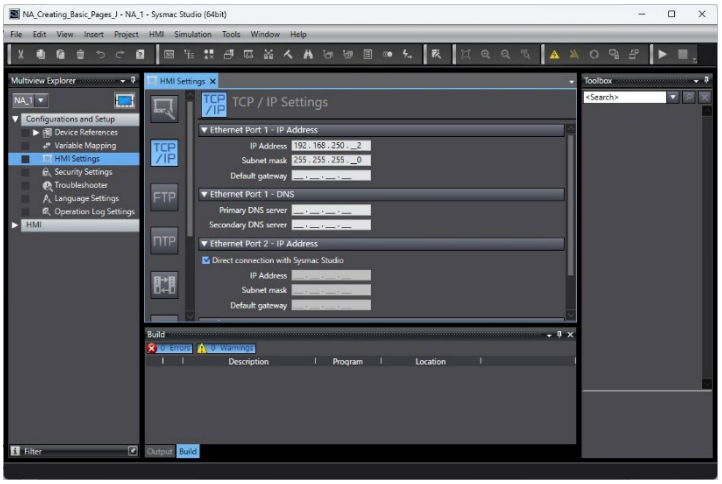
3-3 NA Communication Settings

Specify the Ethernet communication settings following the procedure below.

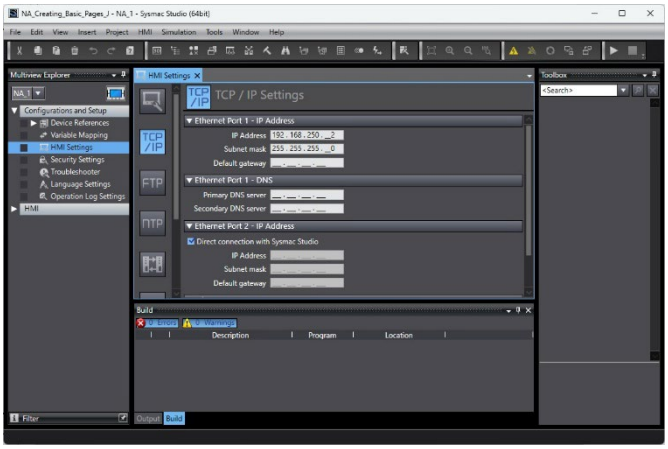
1. Double-click [Configurations and Setup]-[HMI Settings].



2. Click the “TCP/IP” icon.



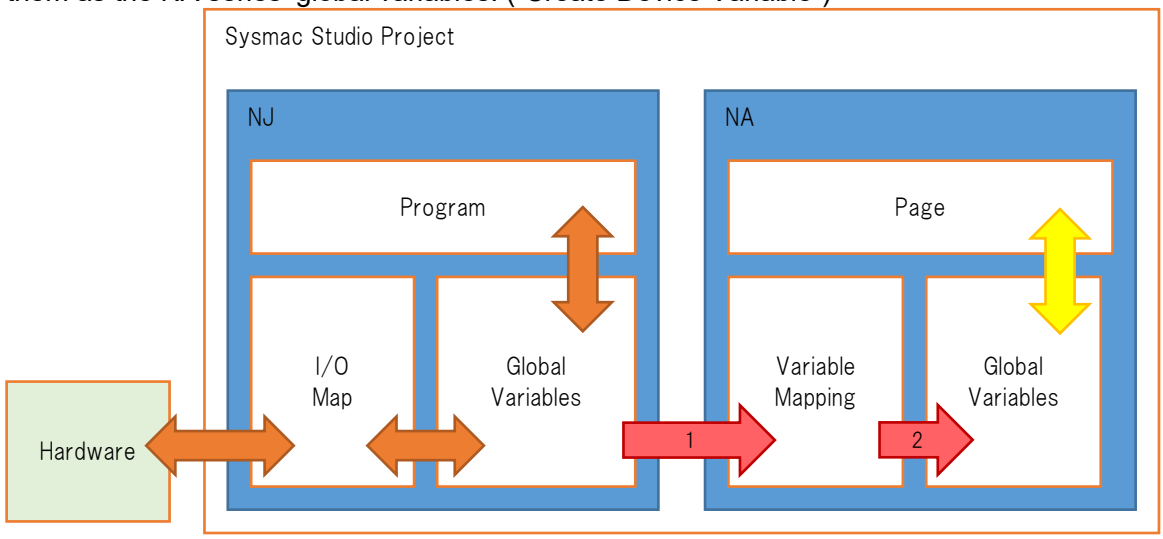
3. Confirm that the IP address is “192.168.250.2”.



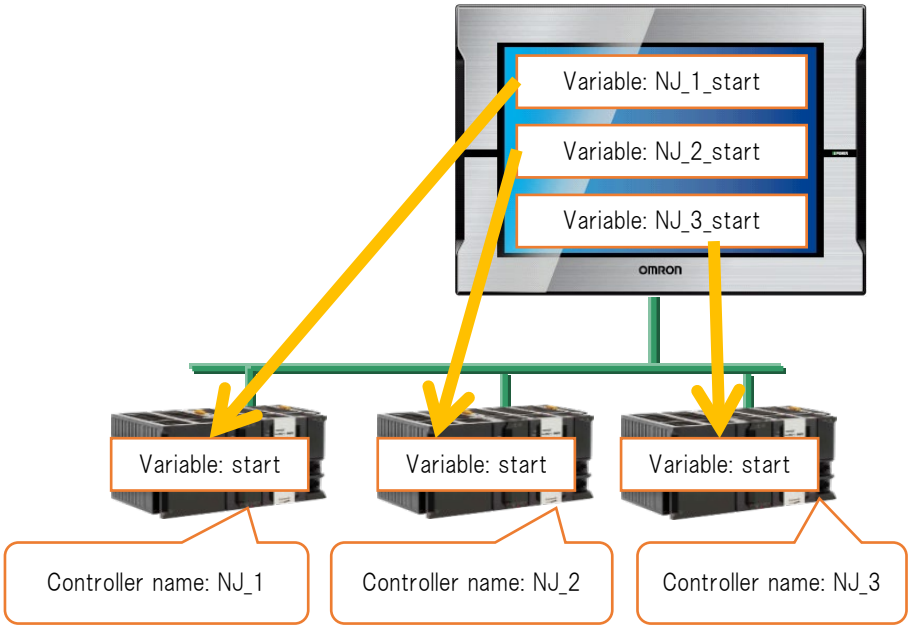
3-4 Registering Variables

3-4-1 Variable Mapping Scheme

1. When an NJ exists within the same project in which an NA exists, all of the NJ's global variables will be automatically reflected in the NA's variable mapping table.
2. You can select the variables required to create the pages of the NA series and register them as the NA series' global variables. ("Create Device Variable")



The function is called "variable mapping", and the names of the NA's global variables allocated at this time are specified as "*NJ controller name_NJ global variable name*". When NA is connected with NJ at 1: N, each NJ is identified by the controller name.



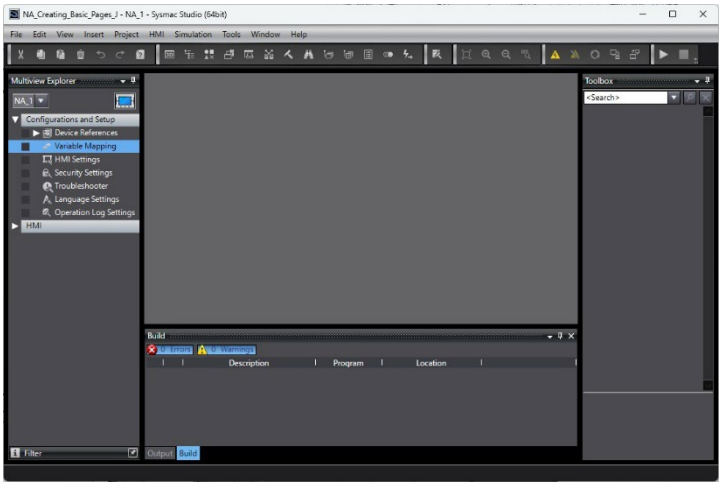
Precautions for Correct Use

If you change the variable type or other items of the NJ while variable mapping has been already performed, a mapping error may occur because the change is

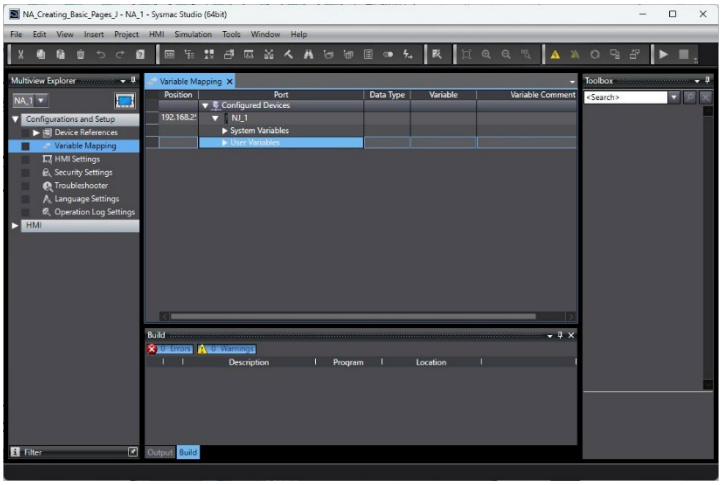
automatically reported to the NA.

3-4-2 Variable Mapping Procedure

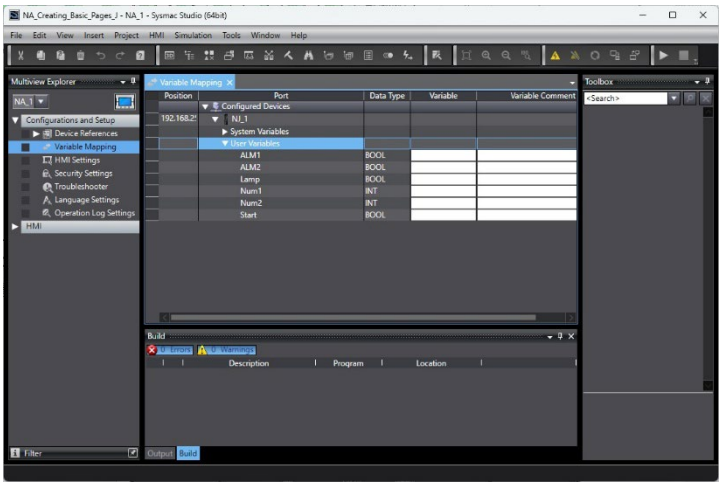
1. Double-click [Configurations and Setup]-[Variable Mapping].



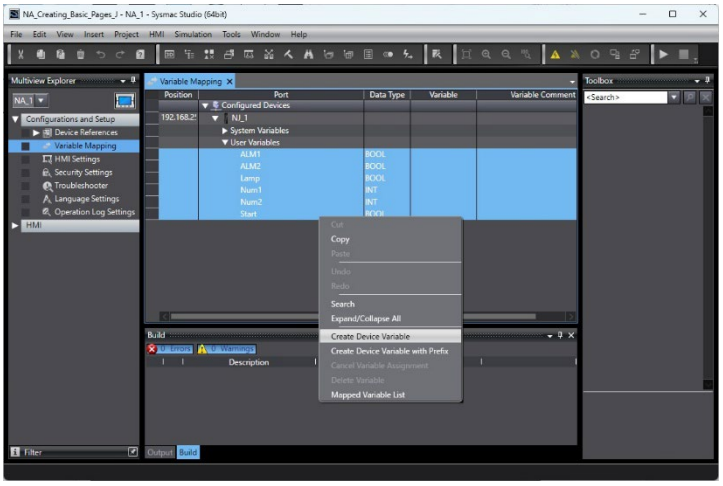
2. The controllers that exist within the project appear on the table.
When you click the arrowhead to the left of “NJ_1”, the categories of the variables defined for the NJ_1 controller appear.

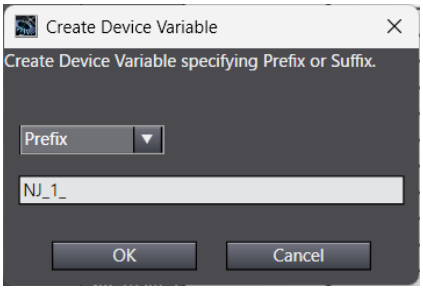


3. Subsequently, when you click the arrowhead to the left of “User Variables”, you can confirm the variables defined as global variables.

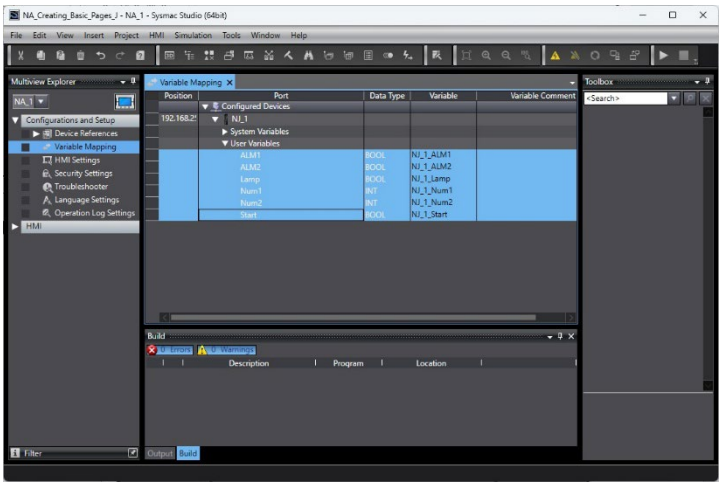


4. Perform variable mapping for all the user variables.
Select all the variables from “ALM1” to “Start” and then right-click on the rows to select “Create Device Variable”.

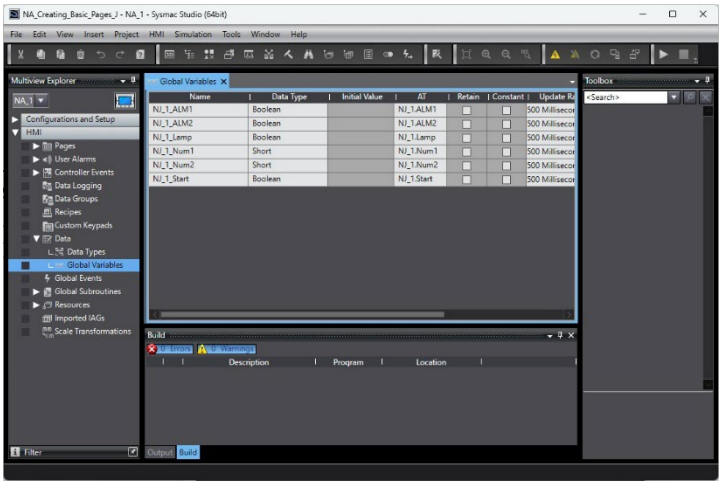




5. The NA variables are now created.
The names of the variables are specified as “*Controller name_NJ variable name*”.



6. The created variables are registered as the global variables for the NA project.
Click [HMI]-[Data]-[Global Variables] and check if they are registered as the global variables.



3-5 Language Registration

3-5-1 Project Language and System Language

There are two languages on the NA.

• Project Language

The project language is displayed for the project that you create.

• System Language

The system language is displayed for the System Menu and for error messages displayed by the system.

The two language settings are managed as pairs. If you change the project language, the paired system language will also change.

Additional Information

Changing the project language settings will affect the positions below.

For items that have an affect only in subroutines, refer to the technical information on the effects of culture in Micro soft's Visual Basic.

• Date and time display format

• Decimal point and thousands separator

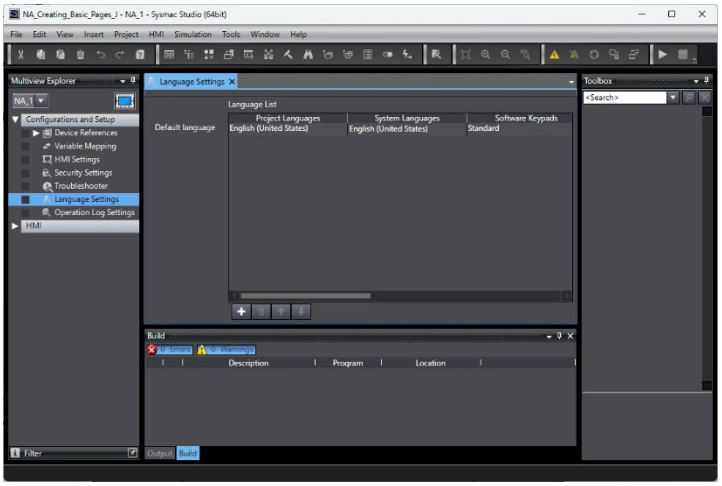
• Currency symbols

• Character string sort order

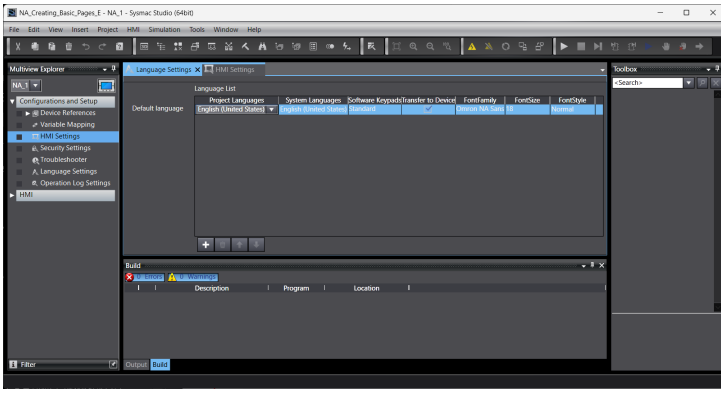
Project languages are managed in Resources.

For details, refer to Reference Materials " 7 - 2 Resources".

1. Double-click [Language Settings] under [Configuration and Setup] in the Multiview Explorer. The Language Settings Tab Page is displayed in the Edit Pane.



2. Change FontFamily and FontSize as follows.
   • English
   FontFamily: Omron NA Sans
   * For those other than NA5-V2, set it to “Segoe UI”.
   FontSize: 18
   * The settings made here become the initial settings when placing objects on the screen.
   Font settings for each language are displayed when the NA Runtime version is 1.11 or higher.

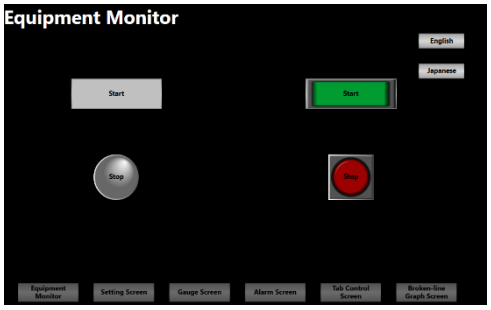


4 Creating Basic Pages

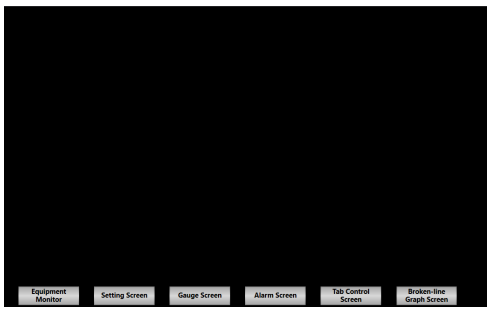
This chapter describes the procedure to create basic pages.

Images of Pages to Create
In this chapter, you are to create the following pages.

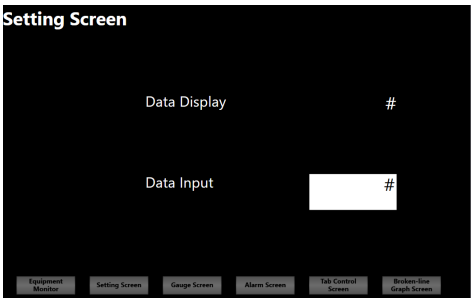
(1) Equipment Monitor



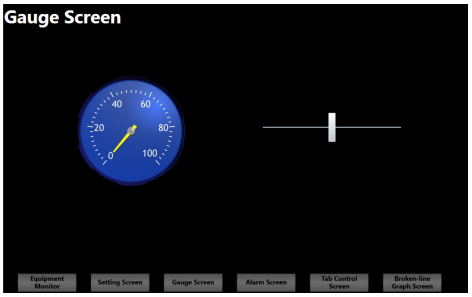
(2) Background



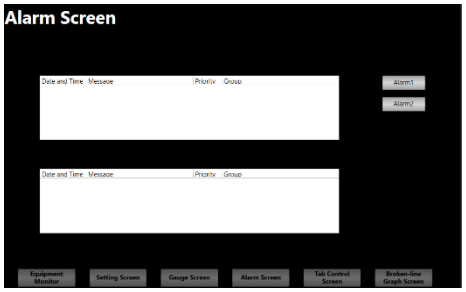
(3) Setting Screen



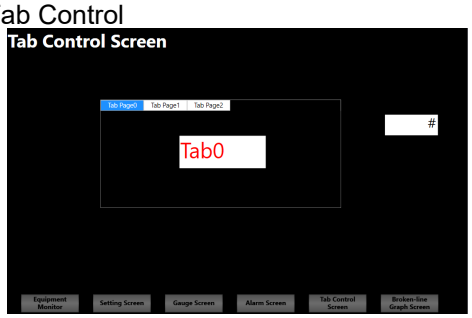
(4) Gauge Screen



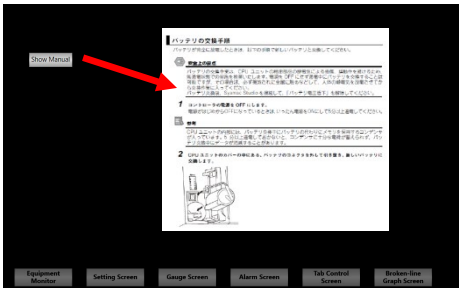
(5) Alarm Screen



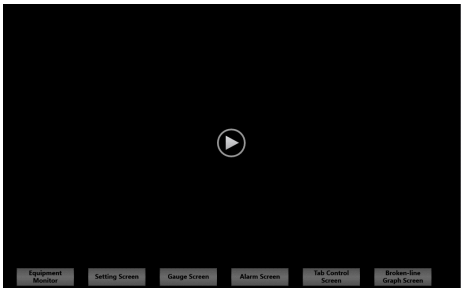
Tab Control



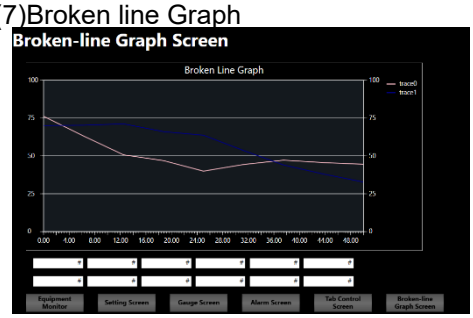
(6) Troubleshooter 1 (PDF Display)



Troubleshooter 2 (Video Display)



(7)Broken line Graph

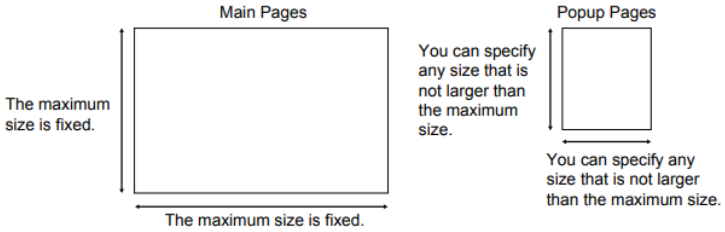


4-1 Adding Pages

4-1-1 Page Types

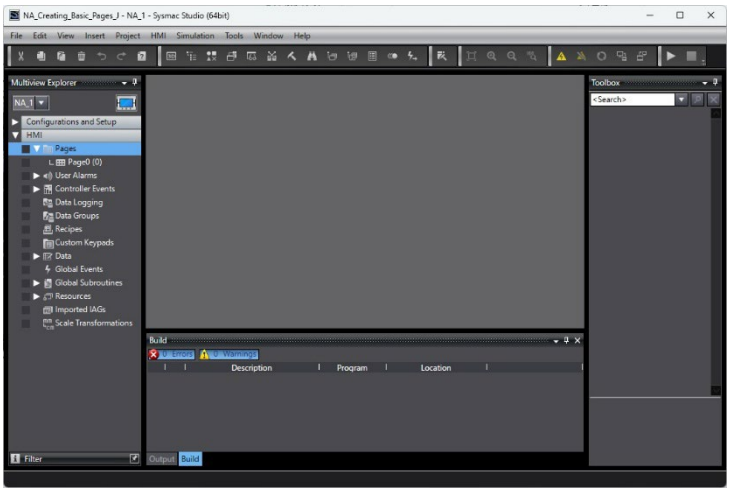
There are two types of pages, as described in the following table.

Page Type in the Page Behavior	Sizes (width and height)	Application
Main	Fixed for each model	Basic pages Pages can be layered. You can specify a transparent color and specify a background page.
Popup	You can set the page sizes as long as they are not larger than the main page size.	Warning dialog boxes and other applications

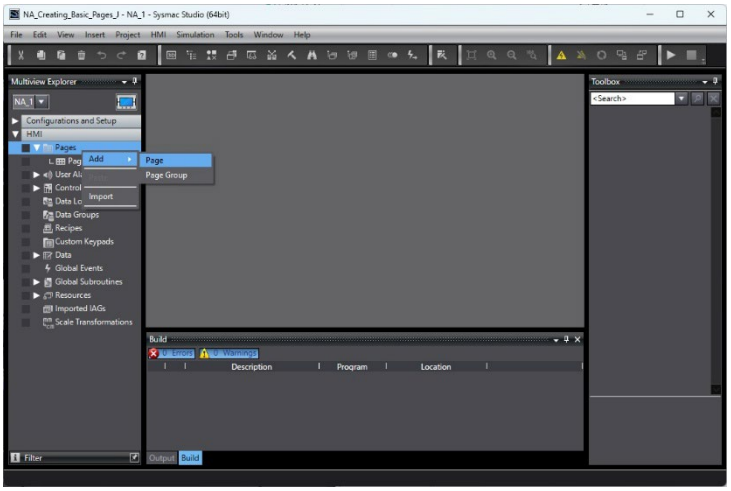


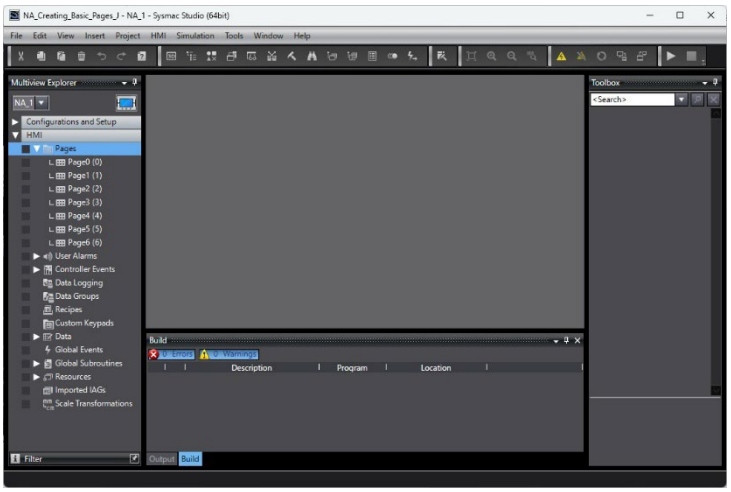
4-1-2 Adding Pages

1. When you click the arrowhead of [Pages] under [HMI], you can see that a page has already been created.



2. Right-click on [Pages] under [HMI] and select [Add]-[Page].
Repeat the same action to create 7 pages.



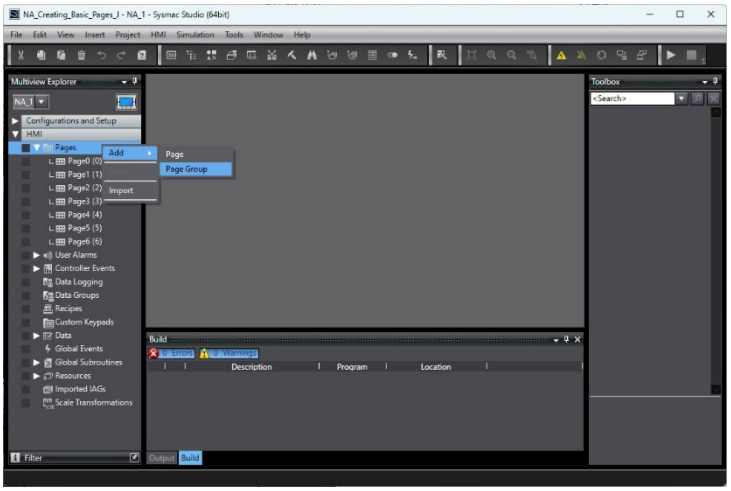


4-1-3 Creating Page Groups

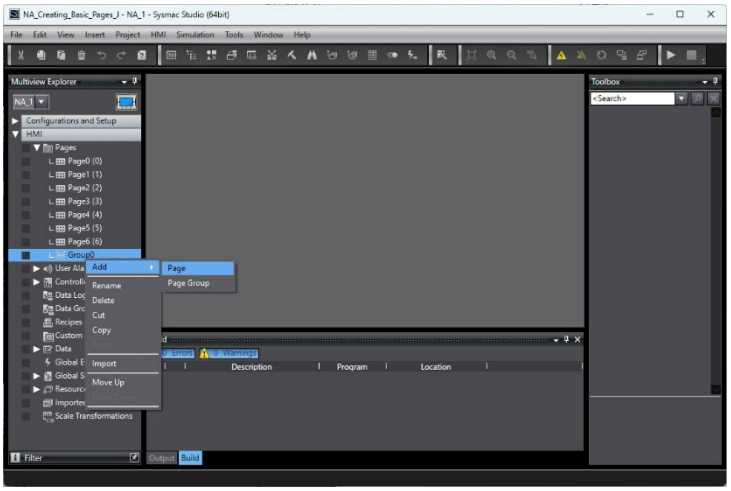
● Pages and Page Groups

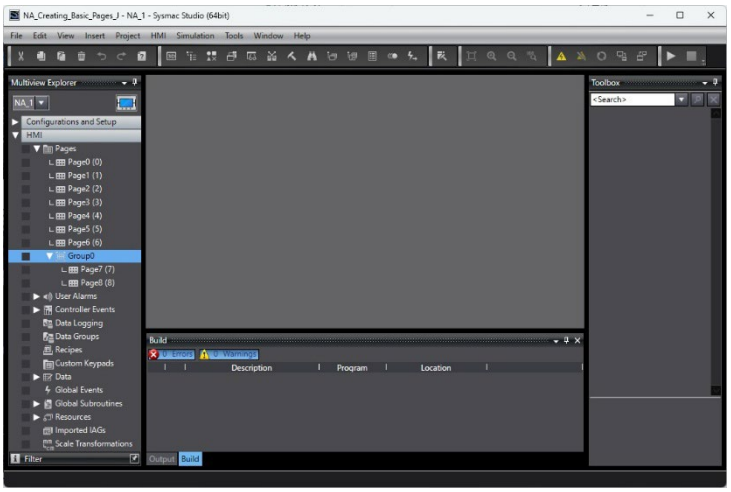
You can create multiple pages as a group. By grouping multiple pages, you can easily copy the multiple pages such as alarm/troubleshooter pages as a unit. In this subsection, you are to group the troubleshooter pages.

1. Right-click on [Pages] under [HMI] and select [Add]-[Page Group].



2. Right-click on the created [Group0] and select [Add]-[Page].
Repeat the same action to create 2 pages.

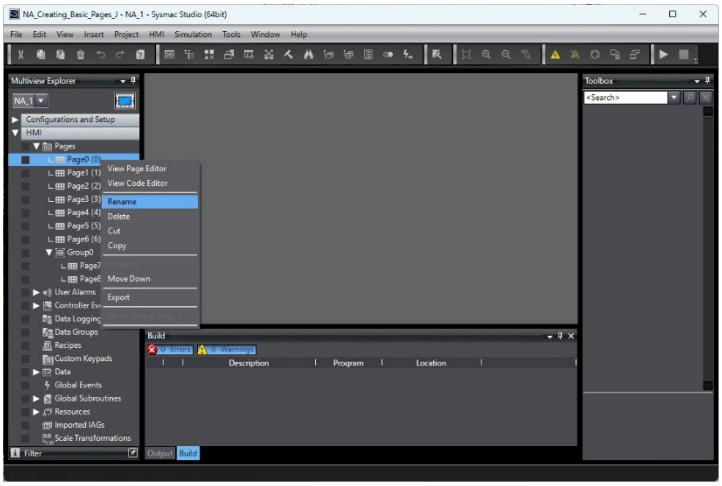




4-1-4 Changing the Page Names

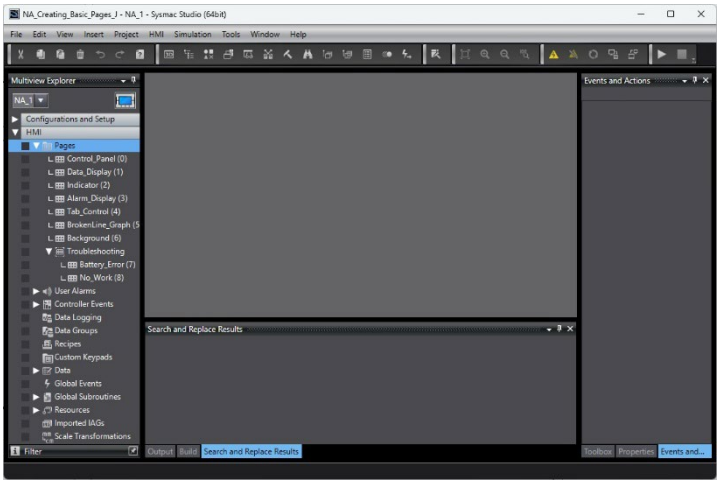
Manage screens to be displayed by page name and page index on the NA.

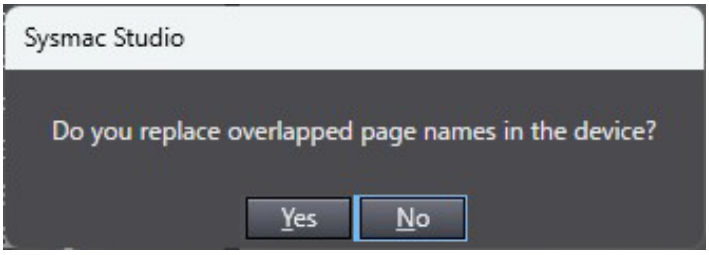
1. Right-click on a page and select [Rename].



2. Change the page name.
Change all page names as follows.
The page names are as follows from the top in order.
Control_Panel
Data_Display
Indicator
Alarm_Display
Tab_Control
BrokenLine_Graph
Background
Troubleshooting
Battery_Error
No_Work

In the pop-up screen displayed when changing the page name, select [Yes].

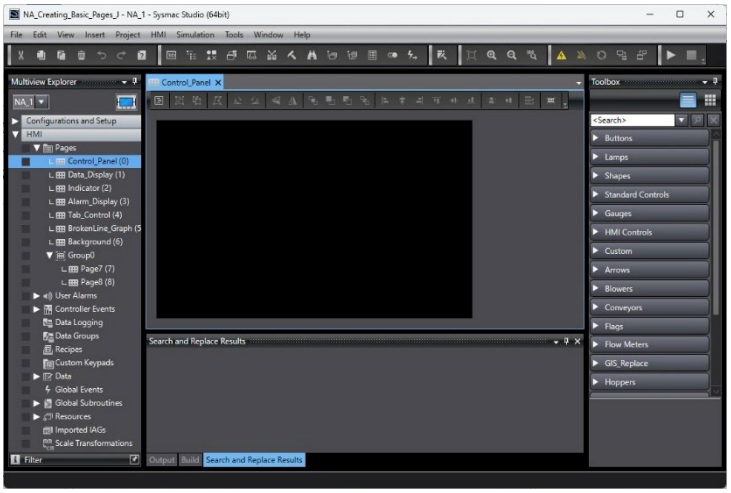




4-1-5 Specifying a Background Page

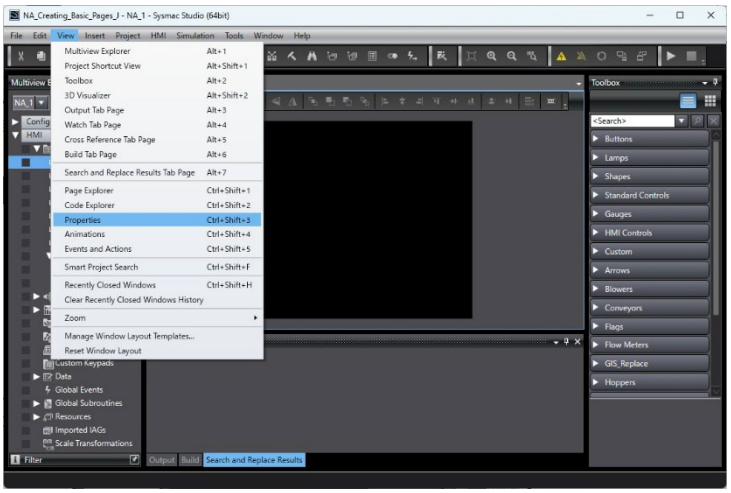
You can specify a background page for each page. The setting can be performed from [Properties].

1. Double-click [Control_Panel] to display the Edit Pane.

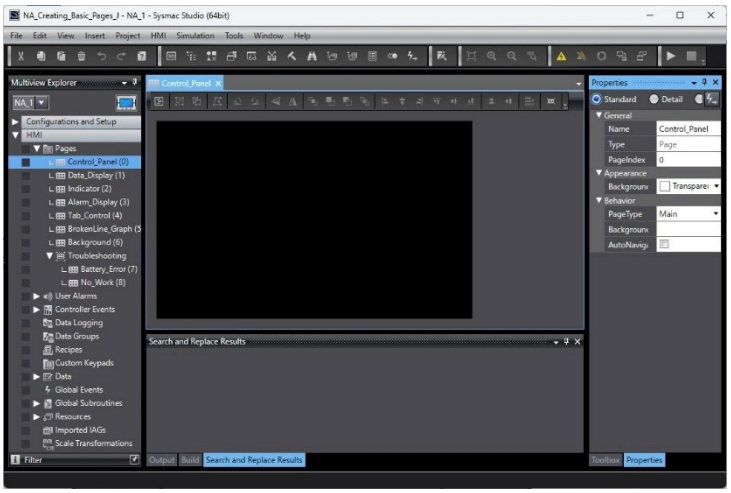


2. Select [View]-[Properties].

   If you use the toolbar, click the icon.

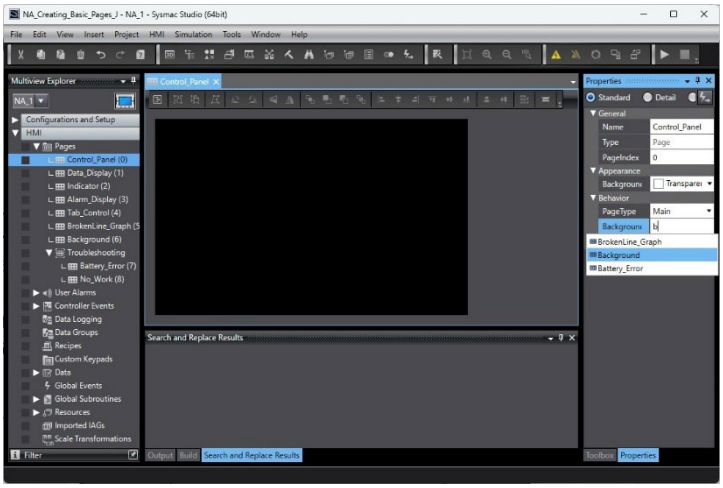


3. The [Properties] window appears on the right of the screen.



4. The [Properties] window for the “Control_Panel” page appears on the right of the screen.
If you enter “b” in [BackgroundPage], the candidates appear. Select “Background” from among them.

Perform the same settings for all the pages except “Background”.

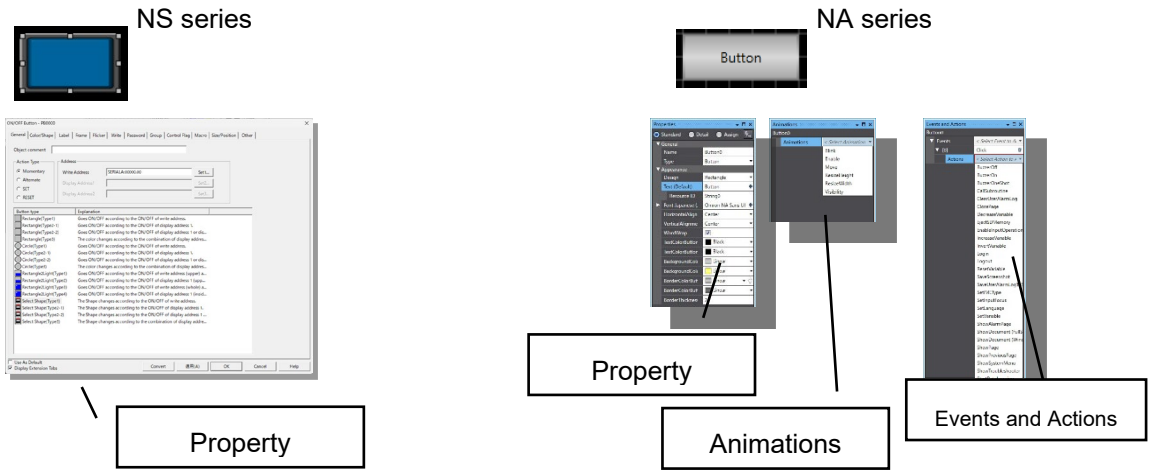


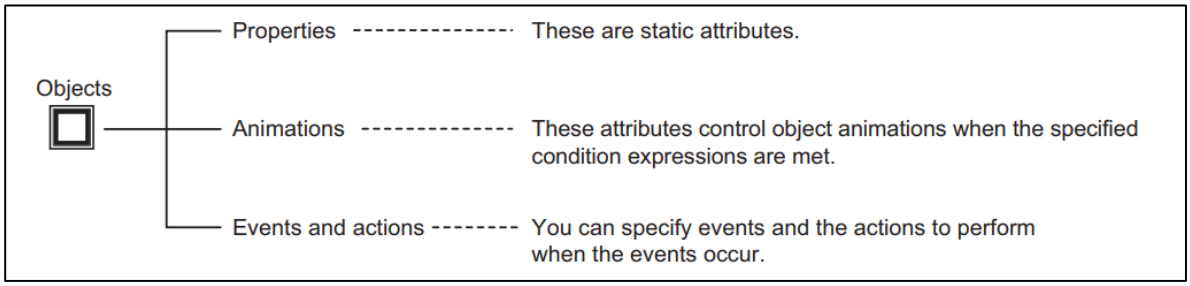
4-2 Creating Button

4-2-1 Object Properties

IN the NA series, the functional parts laid out on pages are called “objects”.
In the NS series, the functional objects placed on pages are all defined only by “Properties”. The objects in the NA series, in contrast, are defined by the categories including “Properites”, “Events and Actions”, and “Animations”, all of which have their own window for setting.

For example, if you specify the appearance or variable of a switch, you use the “Properties” window. You use “Events and Actions” to perform settings for switching pages.





4-2-2 Switches

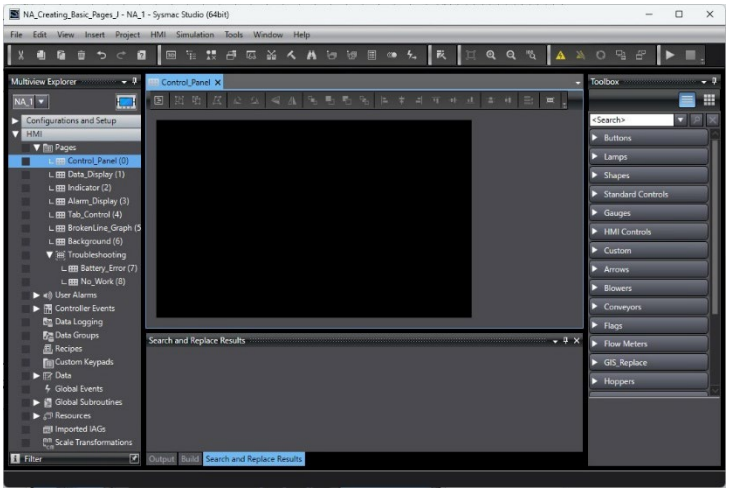
There are 5 switch objects as described below. Use “Momentary Button” for ON/OFF momentary switches, or “Button” to switch pages.

Button types	Functions
Button	A simple button with no particular action.
Momentary Button	Sets the bit only while it is held down.
Reset Button	Sets the bit to False when pressed.
Set Button	Sets the bit to True when pressed.
Toggle Button	Switches the bit between True and False when either turned on or off.

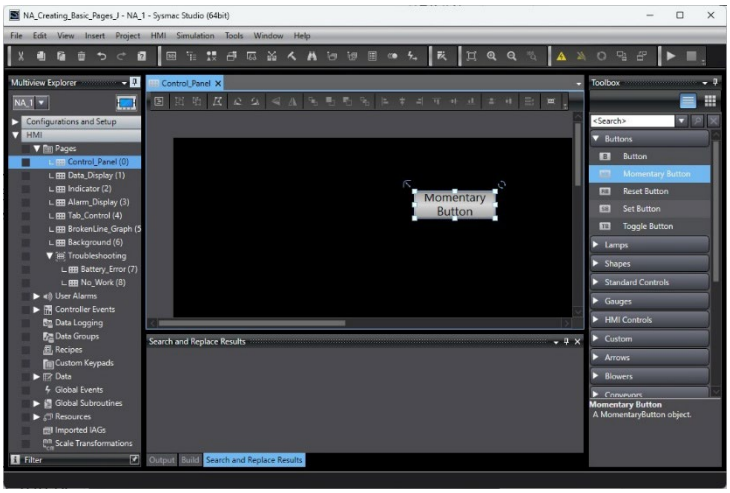
4-2-3 Creating ON/OFF Switches

Create the START button on the “Control_Panel” page. Drag and drop the object from the Toolbox to the page.

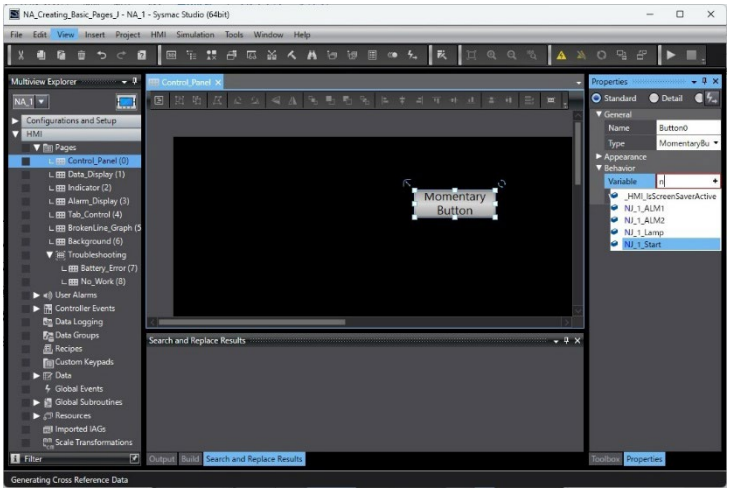
1. Open the “Control_Panel” page and click the “Toolbox” tab.



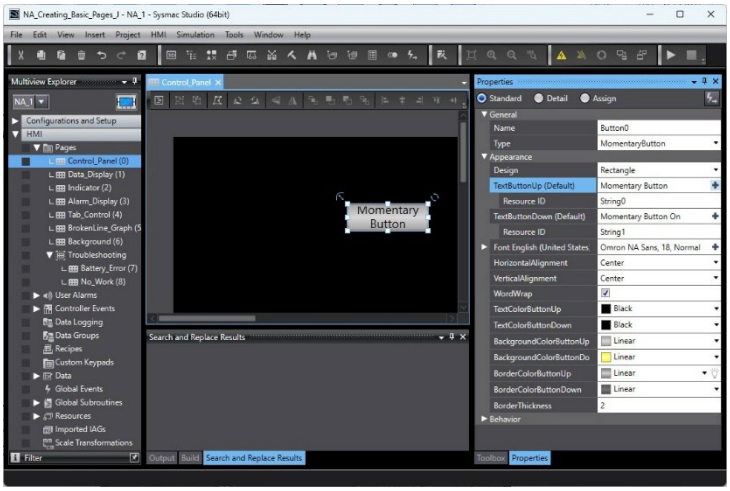
2. From [Toolbox], select [Buttons]-[Momentary Button], and drag and drop it to the page.



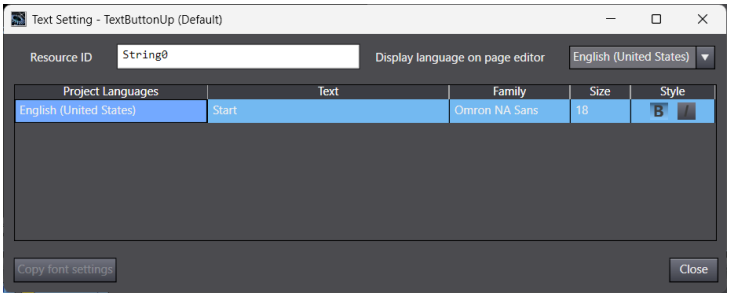
3. Use [Properties] to set text attributes.
While keeping the object selected, select the [Properties] tab and enter “NJ_1_Start” in [Variable] under [Behavior].
If you enter “n” the variable’s first character, the variables starting with “n” appear.



4. Select Properties, and select [+] for [Appearance]-[TextButtonUp (Default)].

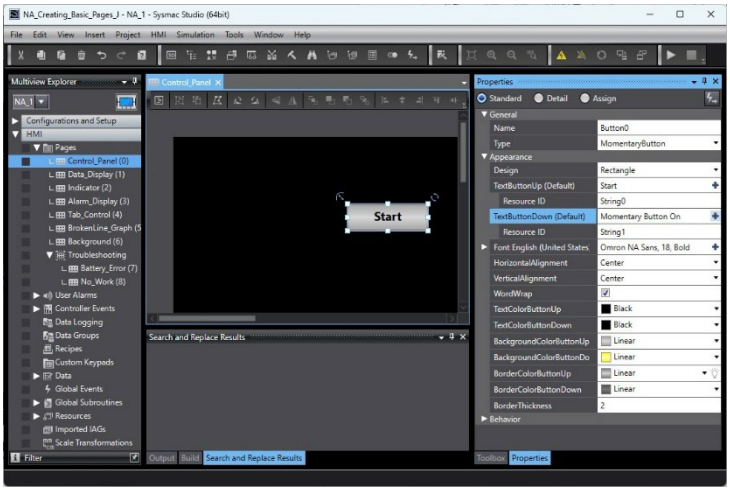


5. The TextButtonUp (Default) setting dialog is displayed, so make the settings as follows.
• English (United States)
Text: Start
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 18
Style: Select [B].

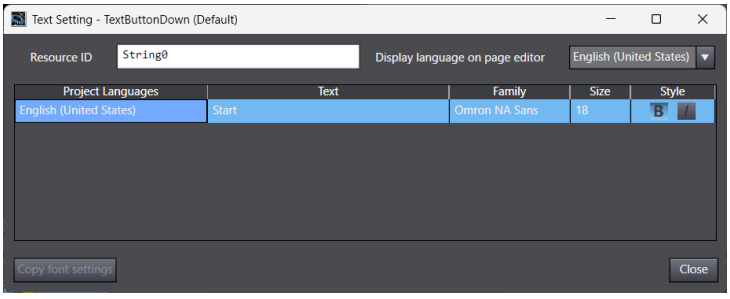


6. Select [Close].

7. Select Properties, and select [+] for [Appearance]-[TextButtonDown (Default)].

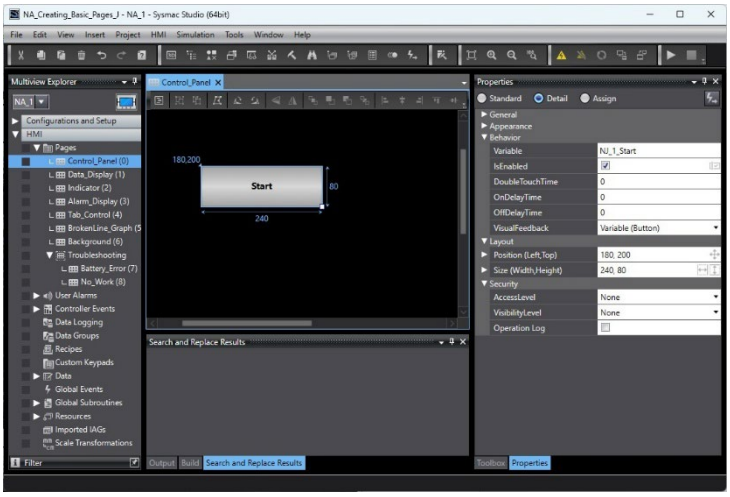


8. The TextButtonDown (Default) setting dialog is displayed, so make the same settings as the TextButtonUp (Default) settings.

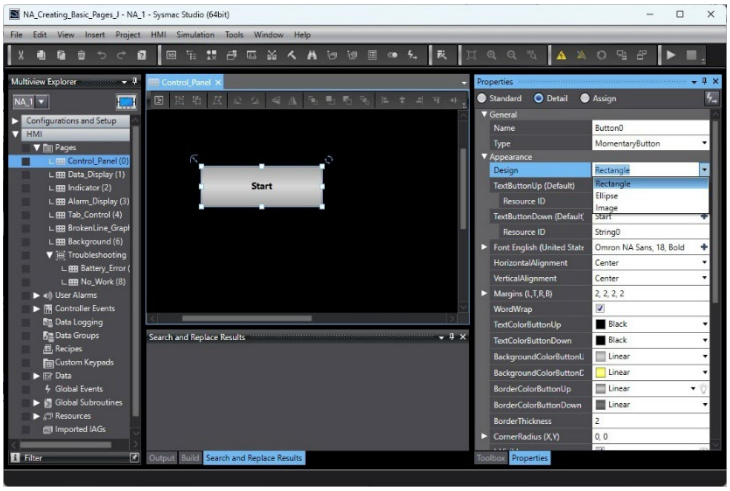


9. Select [Close].

10. You can change the size of the placed object by dragging its handles.
You can also move the object by dragging it.
Set it to the following position and size.
• Position
Left: 180
Top: 200
• Size
Width: 240
Height: 80

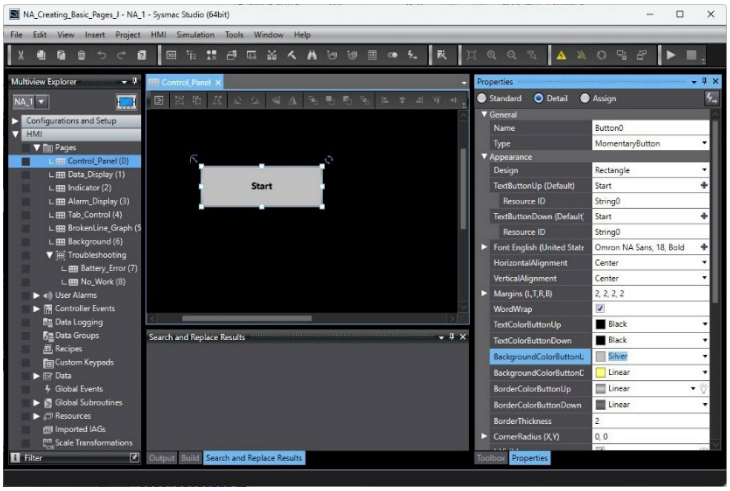


11. Select Properties, click [▼] for [Appearance]-[Design], and select Rectangle.
Design can be selected from [Rectangle], [Ellipse], and [Image].

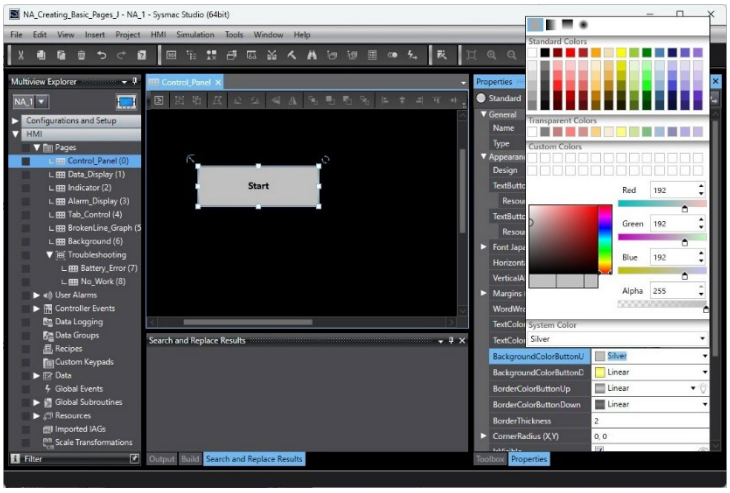


12. Select Properties, click [Appearance]-[BackgroundColorButtonUp], and enter [Silver] with the keyboard.
The color is set directly.

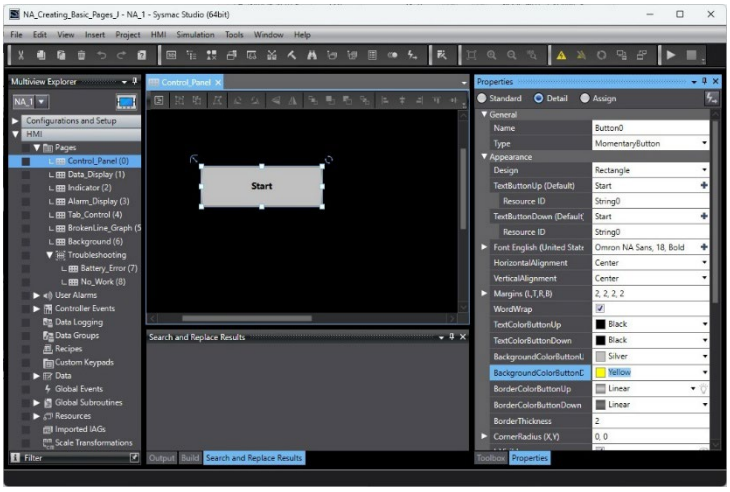
The background color can also be set by clicking [▼] to the right of [BackgroundColorButtonUp] to set RGB values numerically or select from system colors.



Setting display when [▼] is clicked

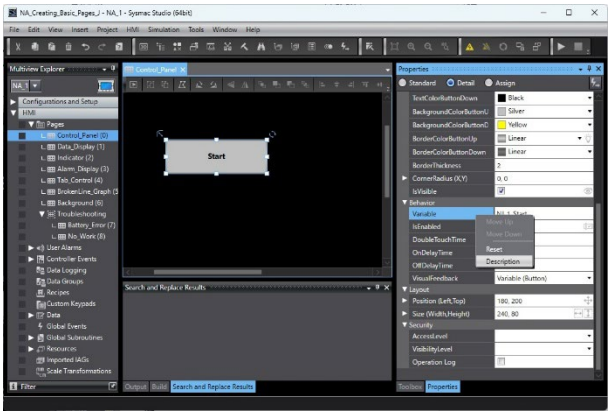


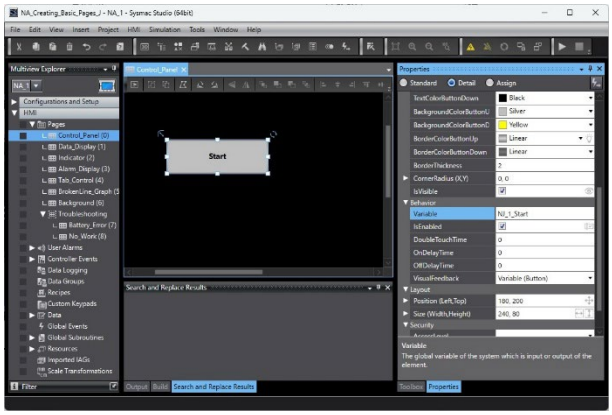
13. Select Properties, click [Appearance]-[BackgroundColorButtonDown], and enter [Yellow] with the keyboard.



Additional Information

When you right-click on an item and click “Description”, the description for the item appears at the bottom right of the screen.



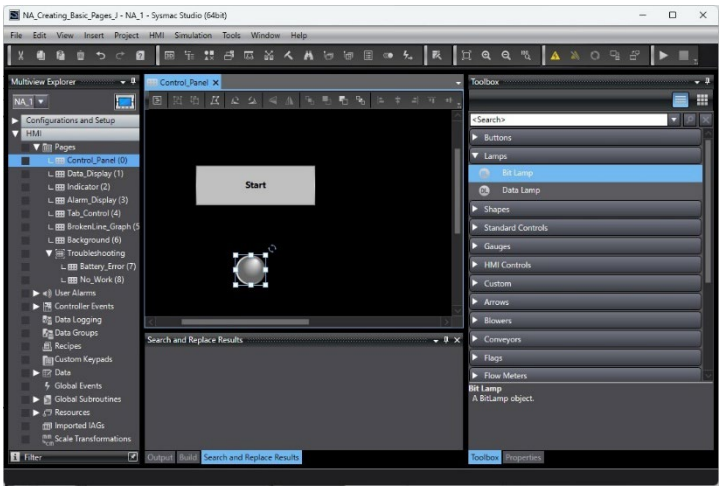


4-3 Creating Bit Lamps

4-3-1 Creating Bit Lamps

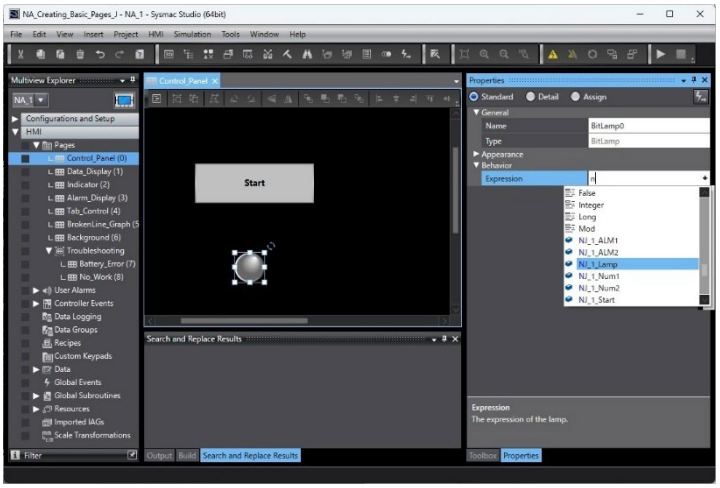
Create a Bit Lamp on the “Control_Panel” page.

1. Select the [Toolbox] tab.
   Select [Lamps]-[Bit Lamp] and then drag and drop it to the page.

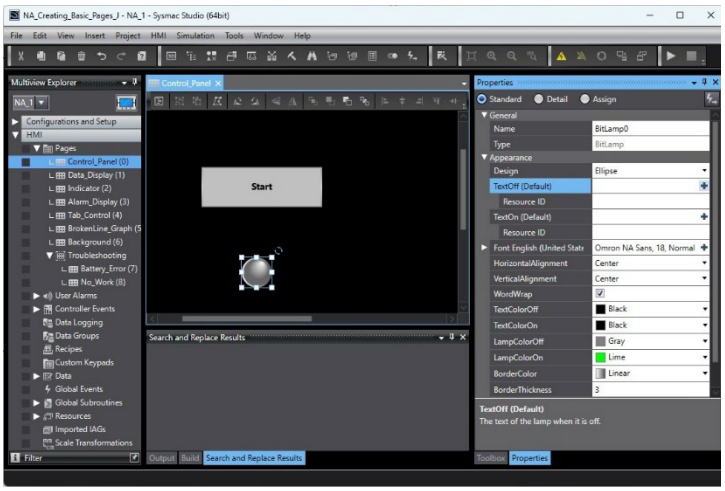


2. Select the [Properties] tab and specify the variable in [Expression] under [Behavior].

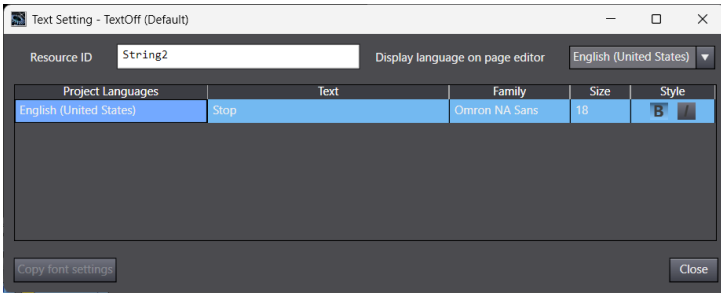
   When you enter a character, the list of candidates appears. Select “NJ_1_Lamp” from the list.



3. Select Properties, and select [+] for [Appearance]-[TextOff (Default)].

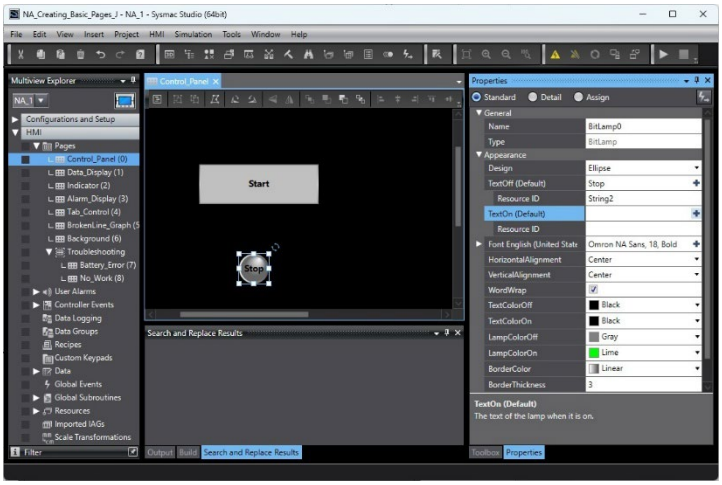


4. The TextOff (Default) setting dialog is displayed, so make the settings as follows.
• English (United States)
Text: Stop
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 18
Style: Select [B].

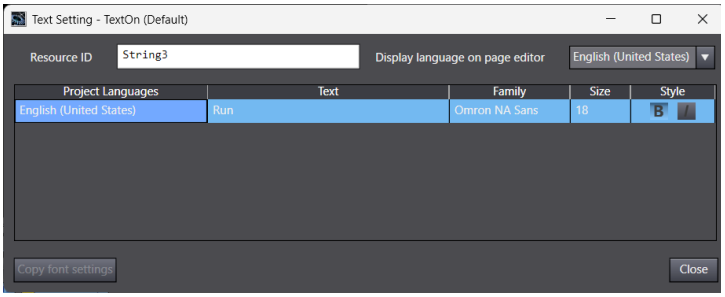


5. Select [Close].

6. Select Properties, and select [+] for [Appearance]-[TextOn (Default)].

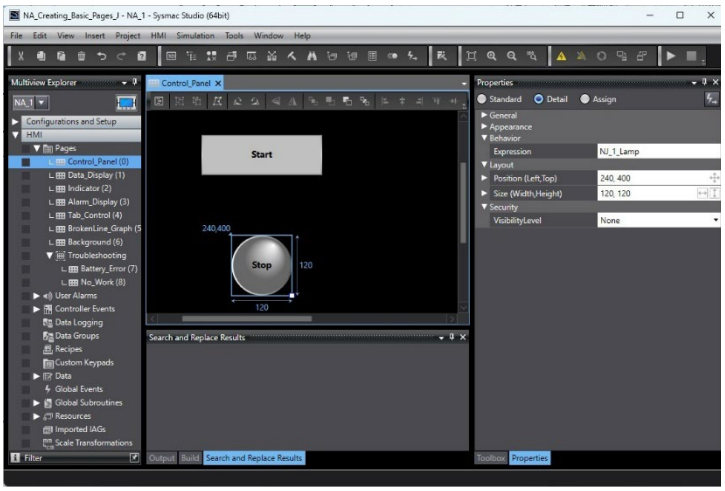


7. The TextOn (Default) setting dialog is displayed, so make the settings as follows.
• English (United States)
Text: Run
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 18
Style: Select [B].



8. Select [Close].

9. Adjust the size and position in the same way as the button.
Set it to the following position and size.
• Position
Left: 240
Top: 400
• Size
Width: 120
Height: 120



Additional Information

In [Expression], you can specify a conditional expression using variables as described below:

How to specify [Expression]
When you assign a Boolean variable for an object such as Lamp, specify [Expression] under [Behavior] in [Properties] as below.

Example 1: To execute the function when a Boolean variable (blnSample) is True;
blnSample=True
* If the value is True, you can omit the [=True] part.

Example 2: To execute the function when an Integer variable (intSample) is less than 20;
intSample<20

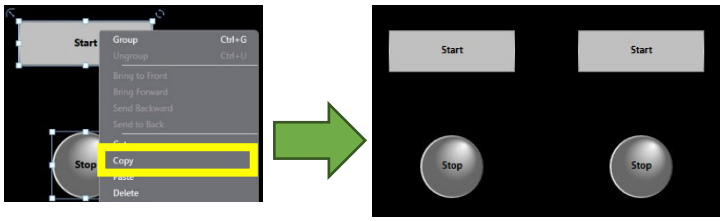
Example 3: To execute a function when a Boolean variable (blnSample) is True and also when an Integer variable (intSample) is less than 20;
(blnSample=True) AND (intSample<20)

Example 4: To set the value obtained by adding 100 to an Integer variable (intSample);
intSample+100

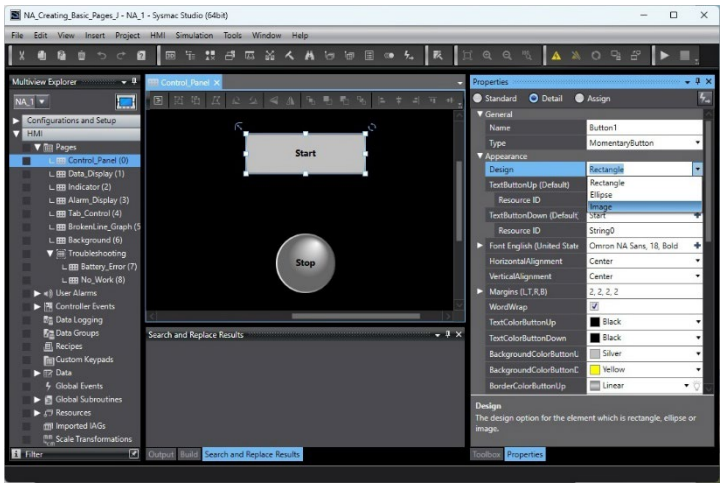
4-3-2 Importing the NS Objects

You can import image files to be used for the designs of the objects such as buttons or lamps. This subsection describes the procedure to import the NS objects.

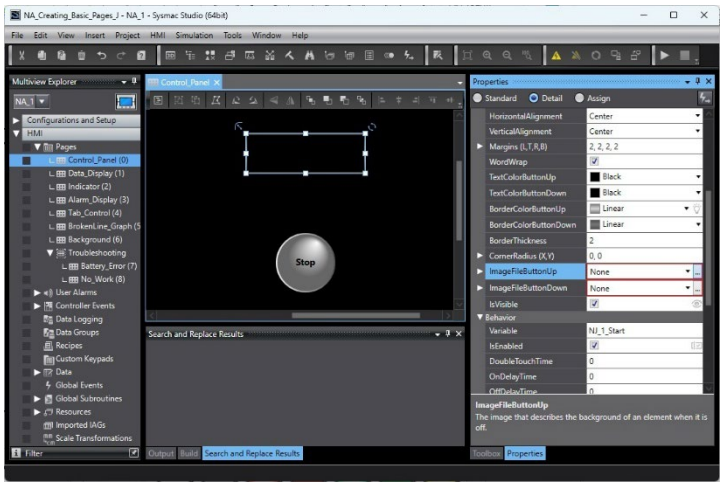
1. Select the Button and the Lamp you created, and copy and past them.



2. Select the Button object, and change [Design] to “Image” under [Appearance] in [Properties].



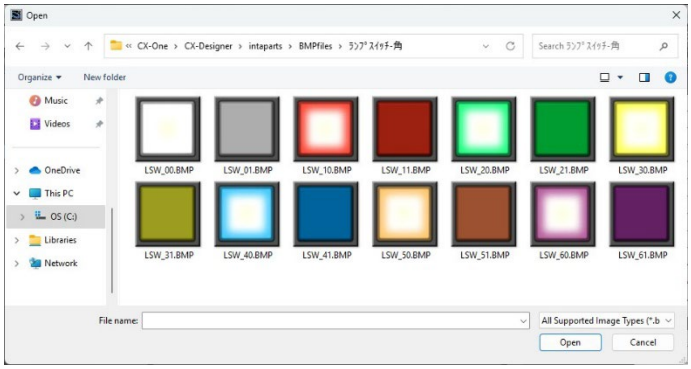
3. Click the button in [ImageFileButtonUp] under [Appearance].



4. Open the folder located at the following path.

   C:\Program Files\OMRON\CX-One\CX-Designer\intaparts\BMPfiles\Lamp Switch-Rectangle

   Select LSW_21.BMP and click “Open”.

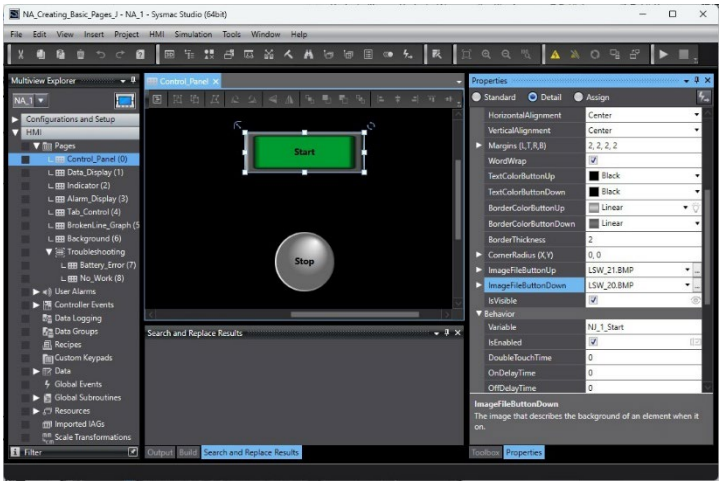


Additional Information

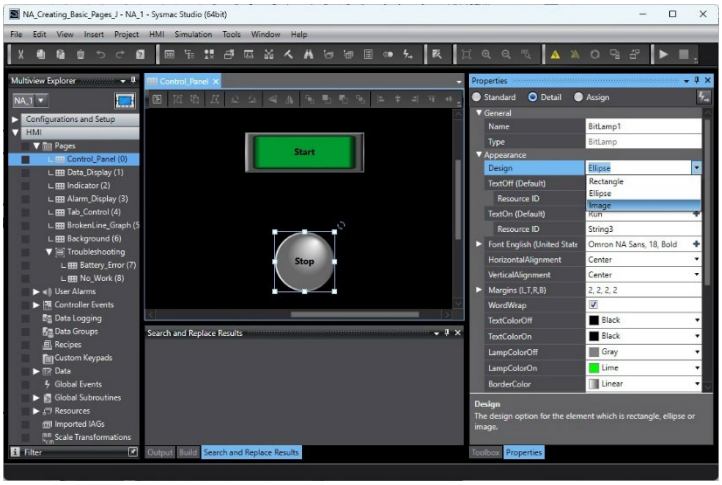
To display the bmp file images on the Explorer as shown in Step 4, you must perform the following settings.

1) Select [START]-[Computer] and right-click on it to select [Properties].
2) Click [Advanced system settings] to open the [System Properties] dialog box.
3) Click the [Advanced] tab and click the [Settings…] button of the [Performance] field.
4) Check the checkbox of “Show thumbnails instead of icons”.

5. Similarly, set the “LSW_20.BMP” file in [ImageFileButtonDown].



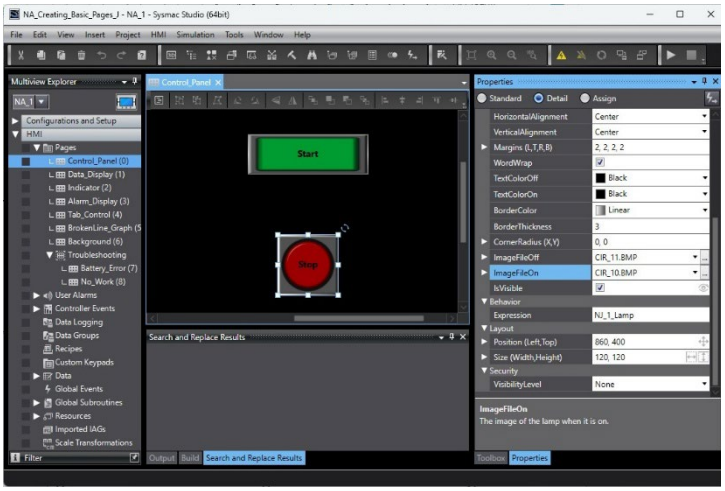
6. You can use the NS image files for the Lamp as well.
Select the Lamp object and change [Design] to “Image” in [Properties].



7. Specify the following image files respectively for the Lamp.

File path
C:\Program Files\OMRON\CX-One\CX-Designer\intaparts\BMPfiles\Lamps-Circle

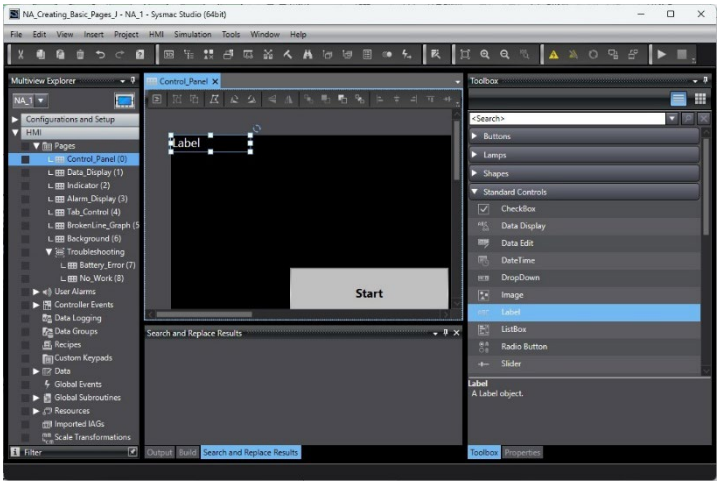
ImageFileOff: CIR_11.BMP
InageFileOn: CIR_10.BMP



4-4 Creating Labels

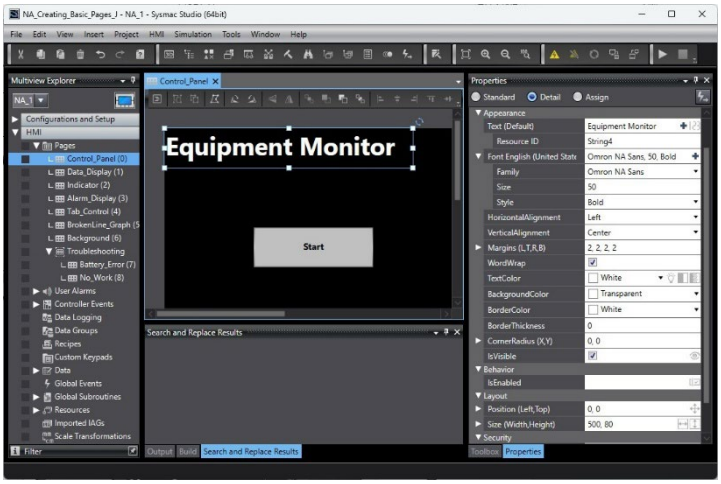
Create a Label on the “Control_Panel” page.

1. Select the [Toolbox] tab. Select [Standard Controls]-[Label] and then drag and drop it to the page.

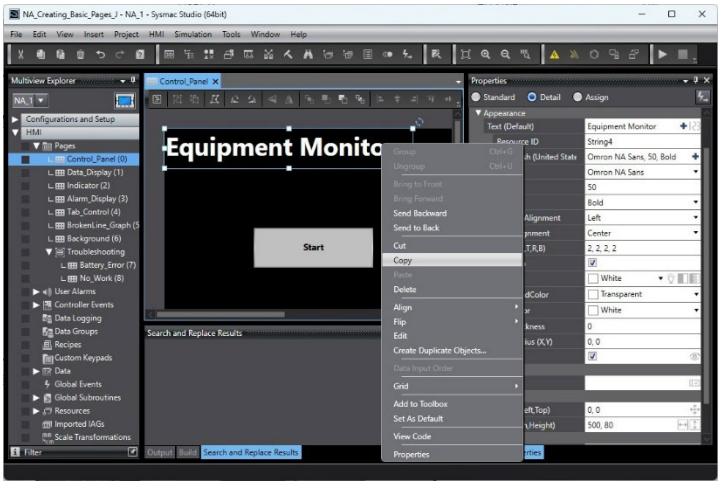


2. Click the [Properties] tab and specify the Label as describe below. Adjust the size and position accordingly.

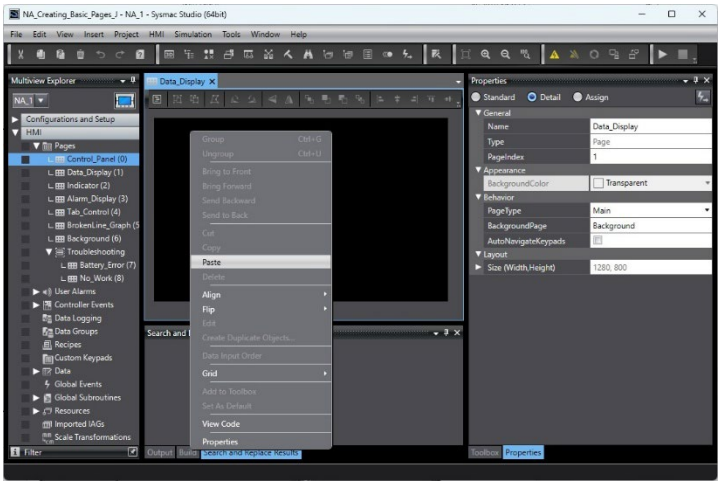
[Text(Default)]
Equipment Monitor
[Font]
Family：Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size：50
Style：Bold
[HorizontalAlignment]
Center
VerticalAlignment: Center
• Layout
Position
Left: 0
Top: 0
Size
Width: 500
Height: 80



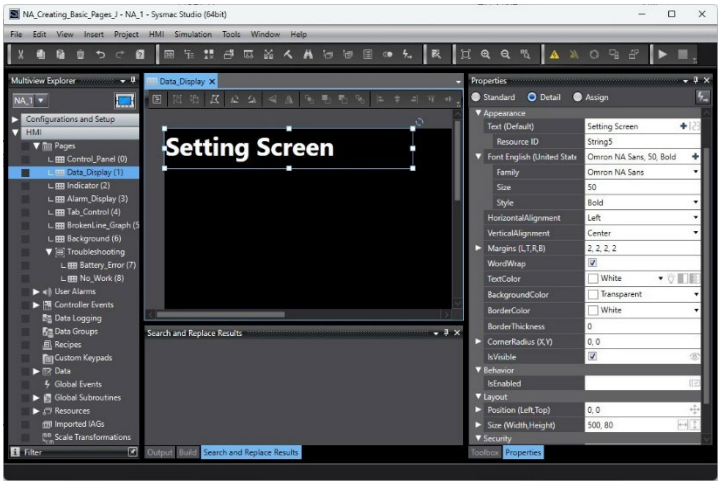
3. Subsequently, place the Label object on the other pages. Copy the created Label.



4. Paste it on the [Data_Display] page.



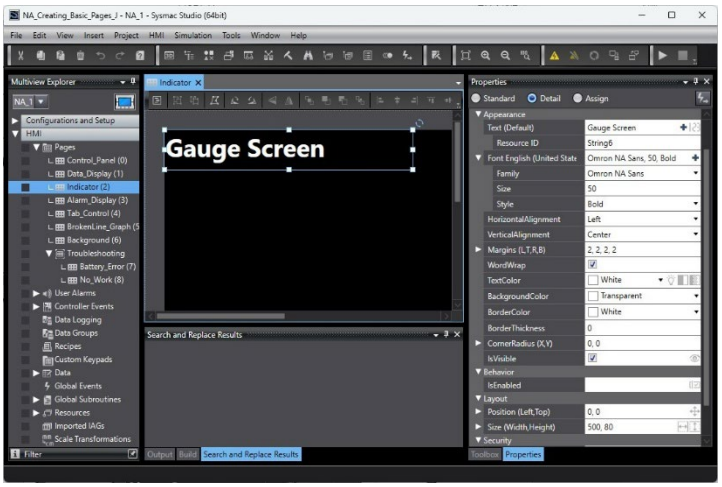
5. Paste it to the “Data_Display” page.



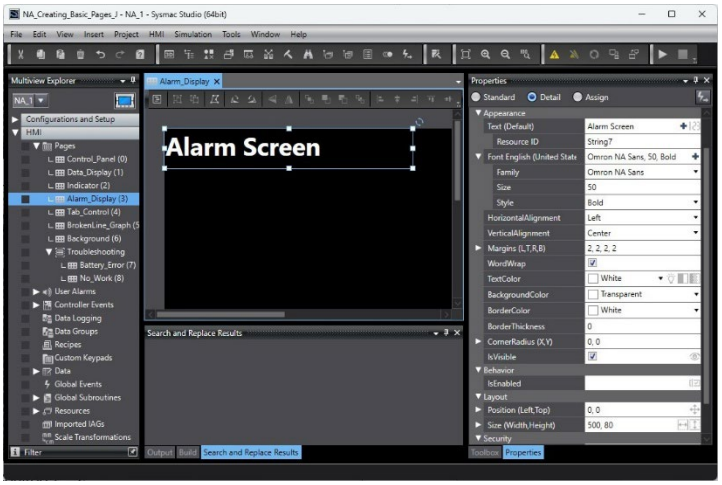
6. Similarly, copy & paste it to the “Indicator”, “Alarm_Display”, “Tab_Control”, and “BrokenLine_Graph” pages, and change the text for each.

- Indicator: Gauge Screen
- Alarm_Display: Alarm Screen
- Tab_Control: Tab Control Screen
- BrokenLine_Graph: Broken-line Graph Screen

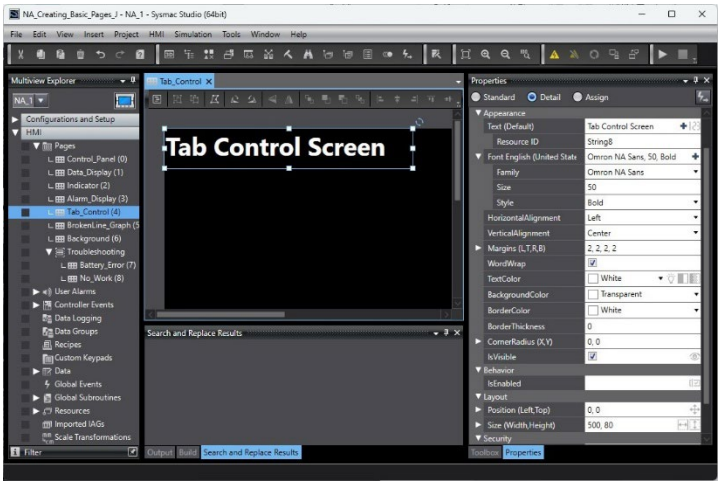
Indicator



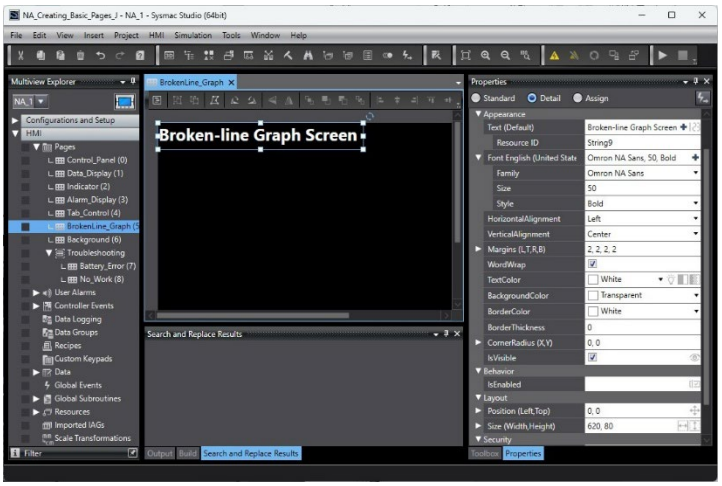
Alarm_Display page



Tab_Control page



BrokenLine_Graph page

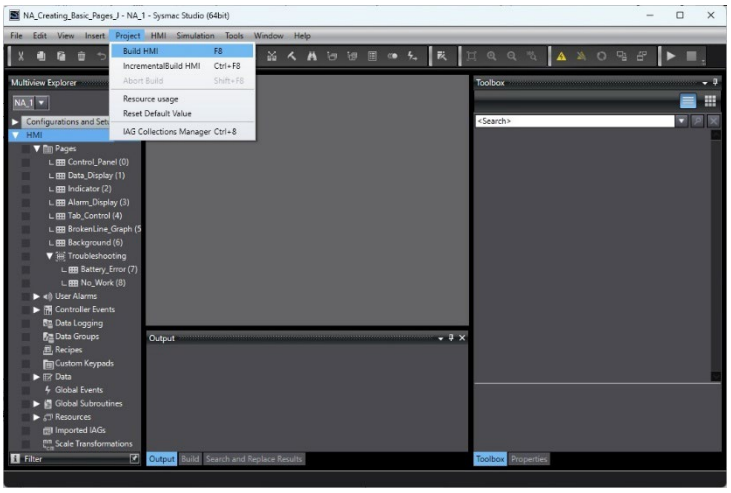


4-5 Off-line Testing 1

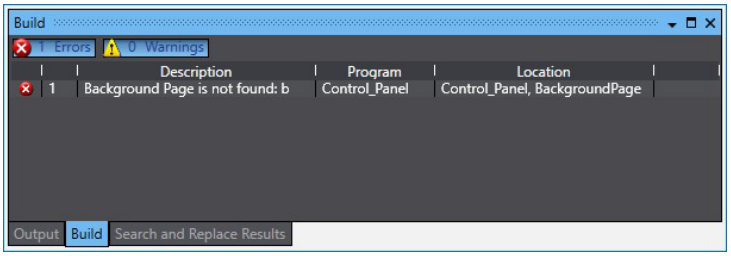
4-5-1 Build

Check if there is no error in the created pages to confirm that they operate properly.

1. Select [Project]-[Build HMI].



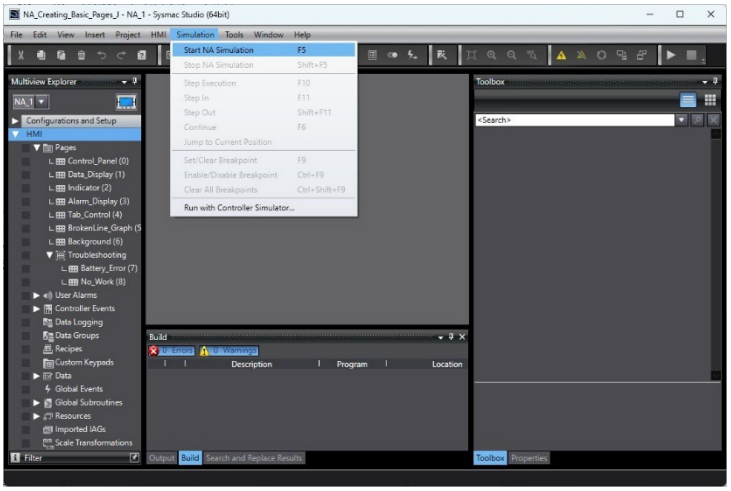
2. The Build window appears at the bottom of the screen. If there is any error, the error or warning is displayed. With an error, you cannot start up the simulator. Correct the error.



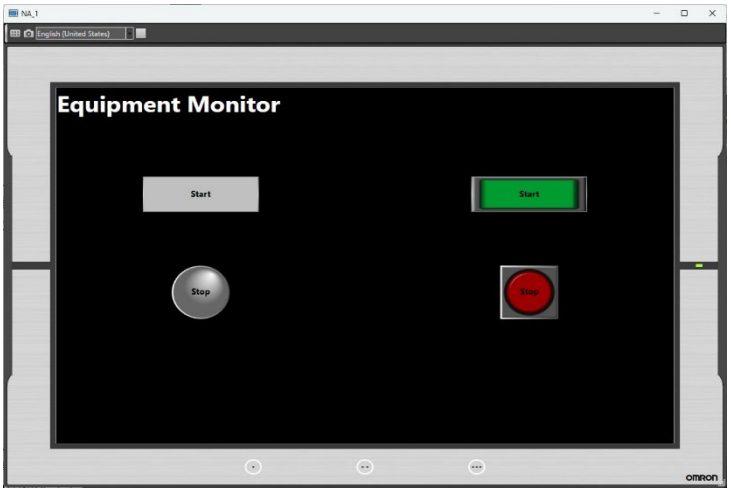
4-5-2 Simulation Only with the NA unit.

Perform simulation only with the NA unit.

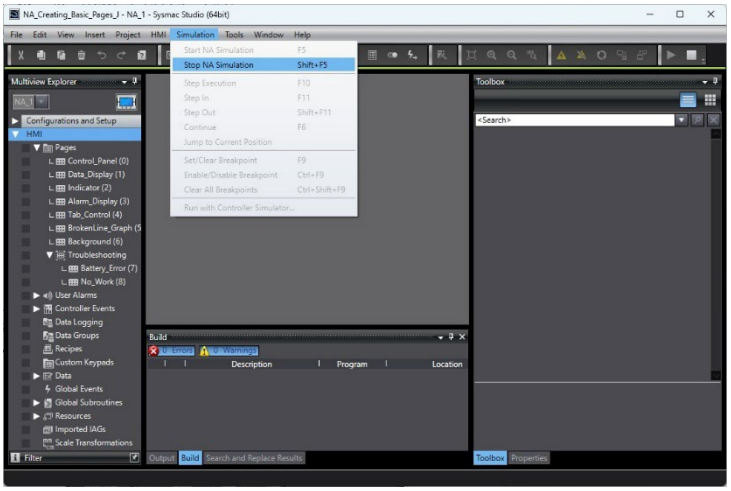
1. Select [Simulation]-[Start NA Simulation].



2. The simulator screen appears. Turn ON/OFF the switches to confirm the behaviors.



3. To stop the simulator, select [Simulation]-[Stop NA Simulation].



4-6 Creating the Button to Switch Pages

4-6-1 Events and Actions

To create a button to switch pages, perform settings to display the new page upon pressing the button. Use [Events and Actions] to perform such settings.

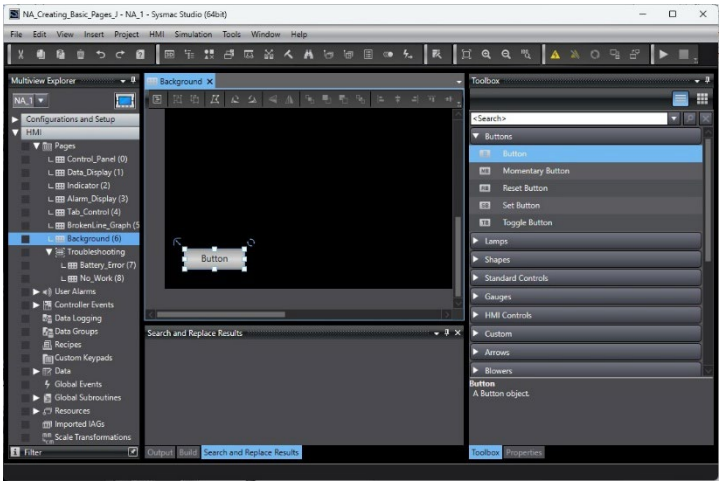
● Available Actions

Actions	Description
BuzzerOff	Turns OFF the buzzer.
BuzzerOn	Turns ON the buzzer.
BuzzerOneShot	Turns ON the buzzer that beeps for only 0.25 second.
CallSubroutine	Executes a subroutine registered as a global subroutine or page subroutine
ClearUserAlarmLog	Clears the user alarm log.
ClosePage	Closes the specified page.
DecreaseVariable	Subtracts the specified value from the specified variable.
EjectSDMemory	Enables removing the SD Memory Card.
EnableInputOperation	Enables or disables inputs on the touch panel.
EndSyncLock	Ends a critical section.
IncreaseVariable	Adds the specified value to the specified variable.
InvertVariable	Inverts the value of the specified Boolean variable.
Login	Displays the login page.
Logout	Logs out the user.
ResetVariable	Changes the value of the specified Boolean variable to False.
SaveScreenshot	Captures the screen displayed on the HMI.
SaveUserAlarmLogToFile	Saves the user alarm log to a file.
SetIMEType	Changes the IME language settings.
SetInputFocus	Sets the data input focus.
SetLanguage	Changes the project language settings.
SetVariable	Sets the value of the specified variable to a specified value.
ShowAlarmPage	Displays the page set in a specified User Alarm.
ShowDocument(FULL SCREEN)	Displays a PDF or other file full screen.
ShowDocument(Windows)	Displays a PDF or other file in a window.
ShowPage	Displays a page.
ShowPreviousPage	Displays the most recently displayed page.
ShowSystemMenu	Displays the System Menu.
ShowTroubleshooter	Displays the NJ/NX/NY Troubleshooter.
StartDataLogging	Starts data logging.
StartSafetyMonitor	Displays the Safety Monitor.
StopDataLogging	Stops data logging.
ShowOperation LogViewer	Displays the Operation Log Viewer.
StartOperationLog	Starts operation logging.
StopOperationLog	Stops operation logging.
SyncLock	Starts a critical section.
TriggerEvent	Sets the UserEvents for IAG objects.

4-6-2 Creating the Buttons to Switch Pages

Create the Buttons to switch pages on the “Background” page.

1. Open the “Background” page.
Select from the Toolbox [Buttons]-[Button], and then drag and drop it to the page.

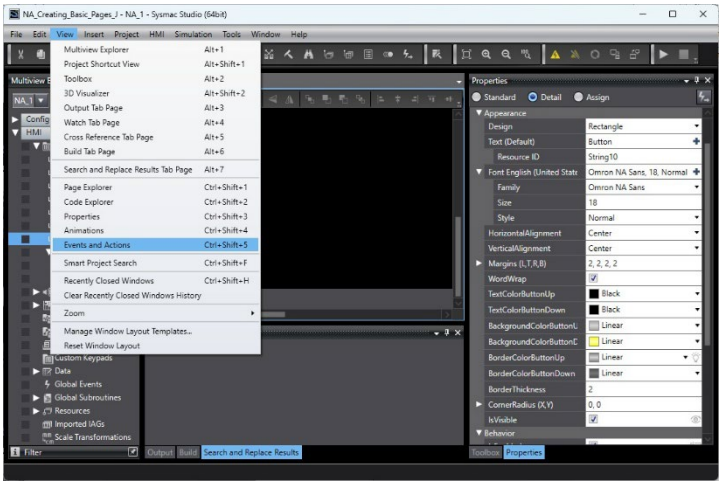


2. Set the Button so that the page is switched when the Button is pressed.
Perform settings in [Events and Actions].

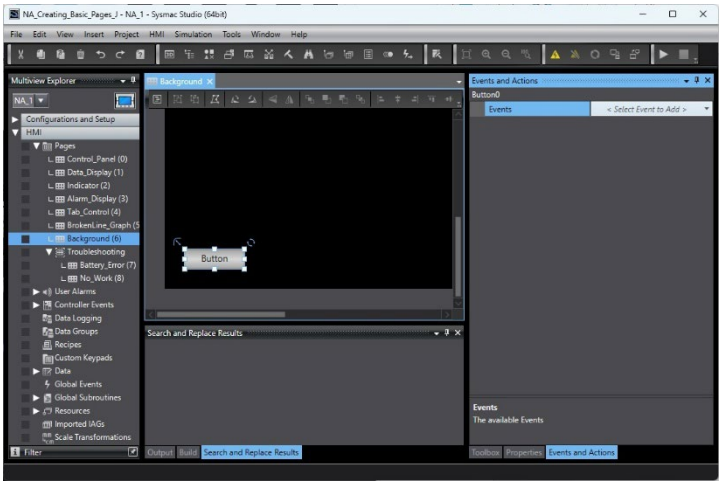
Select [View]-[Events and Actions].

If you use the toolbar, click the icon.

The [Events and Actions] window appears on the right side of the screen.



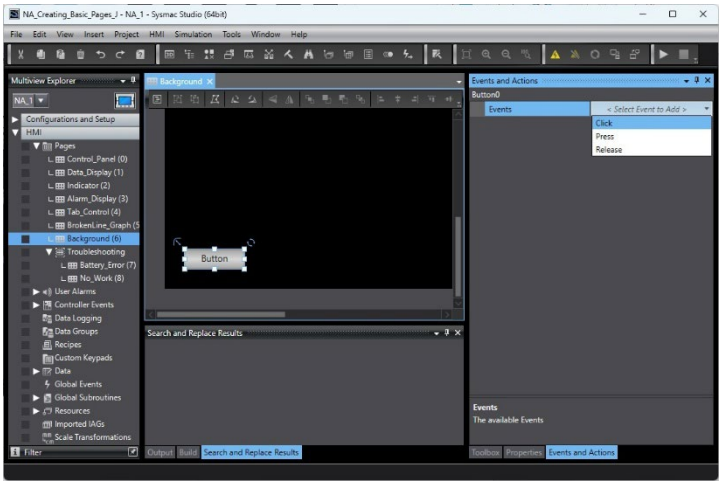
3. While selecting the Button object, click the cell indicating *<Select Event to Add>* to the right of [Events].



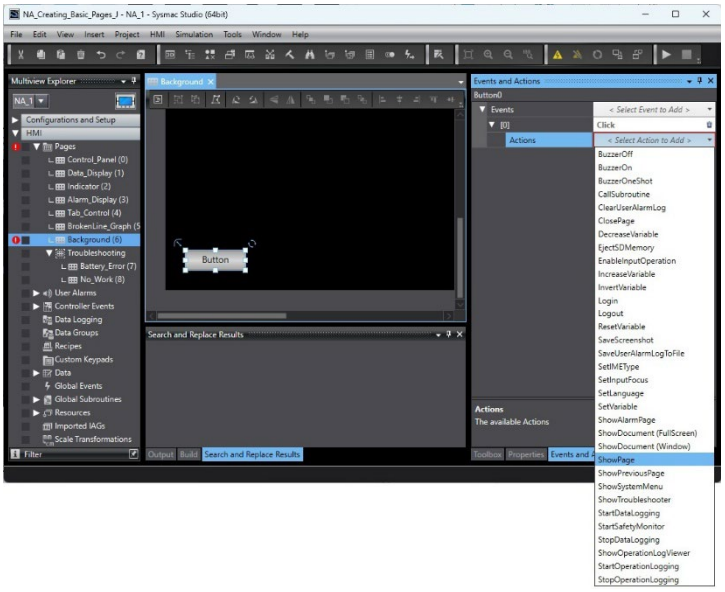
4. Select “Click”.

The event occurs at the time of:
Click: when you release the object
Press: while you are holding down the object
Release: when you release the object

* For both *Click* and *Release*, the event occurs when the object is released, but the operation when the page is changed is different. If the page changes when an object set for *Click* is touched but not yet released, the event does not occur. If the page changes when an object set for *Release* is touched but not yet released, the event does occur.

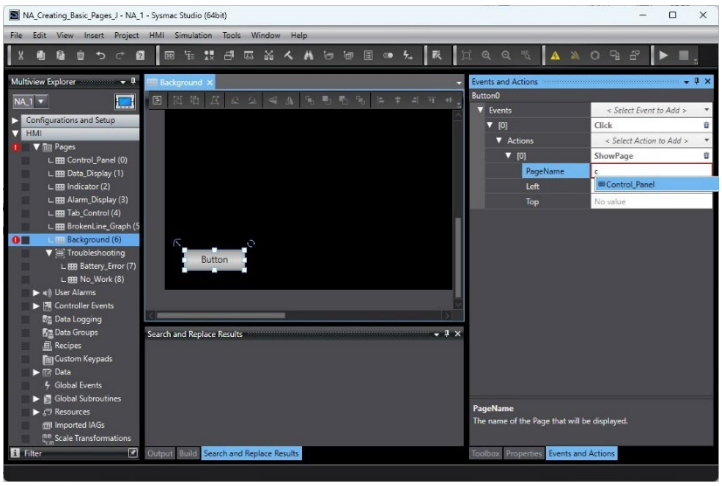


5. Click the cell to the right of [Actions], and select “ShowPage”.



6. Click the cell to the right of [PageName] and select “Control_Panel”.

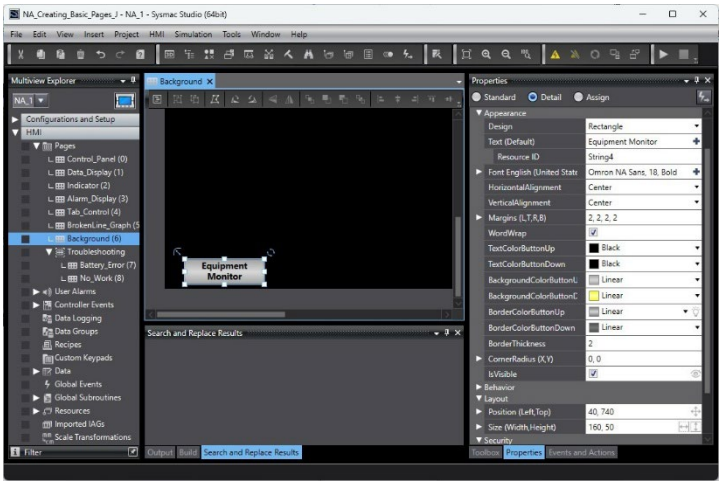
This completes the settings for switching pages.



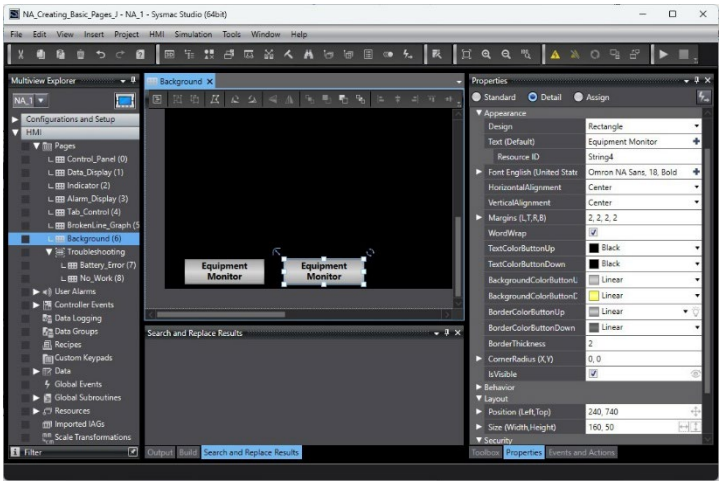
7. Next, specify the properties. Click the [Properties] tab and perform the settings as descried below.

Appearance
• English (United States)
Text: Control Panel
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 18
Style: Select [Bold].

Layout
Position
Left: 40
Top: 740
Size
Width: 160
Height: 50

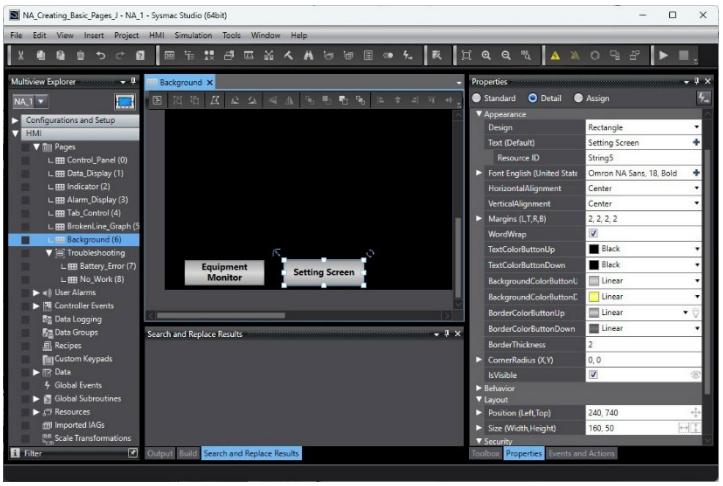


8. Create a button to switch to the Data_Display page. Copy & paste the screen switching button created earlier.

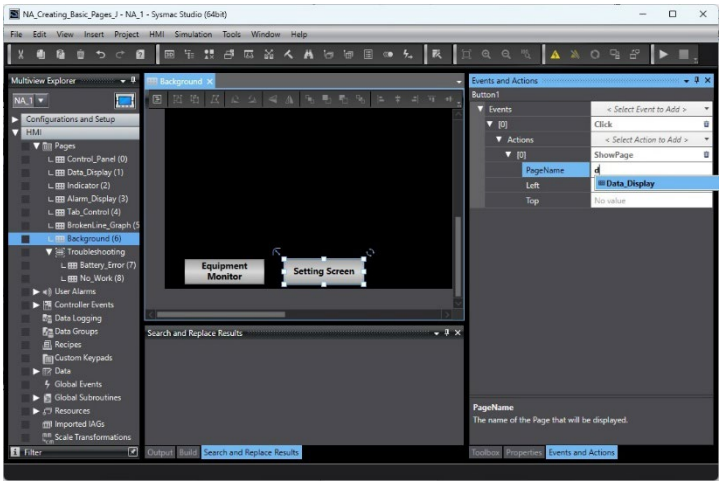


9. In Properties, change [Text (Default)] as follows.

• English
Data Display



10. In Events and Actions, set [PageName] to “Data_Display”.

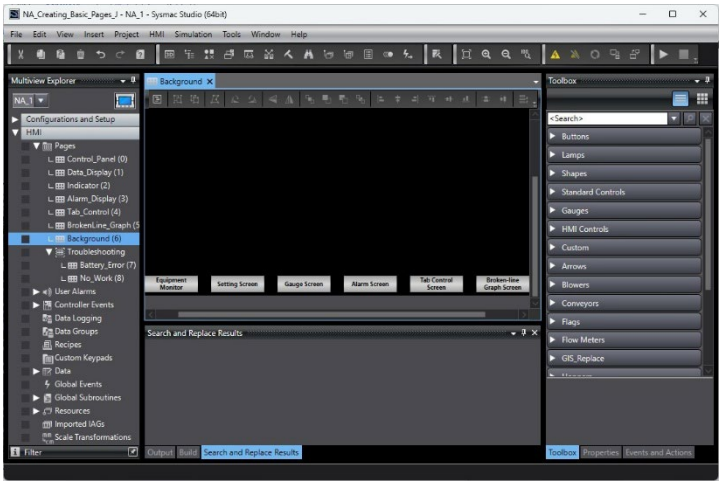


11. Similarly, create buttons to switch to the Indicator, Alarm_Display, Tab_Control, and BrokenLine_Graph pages.

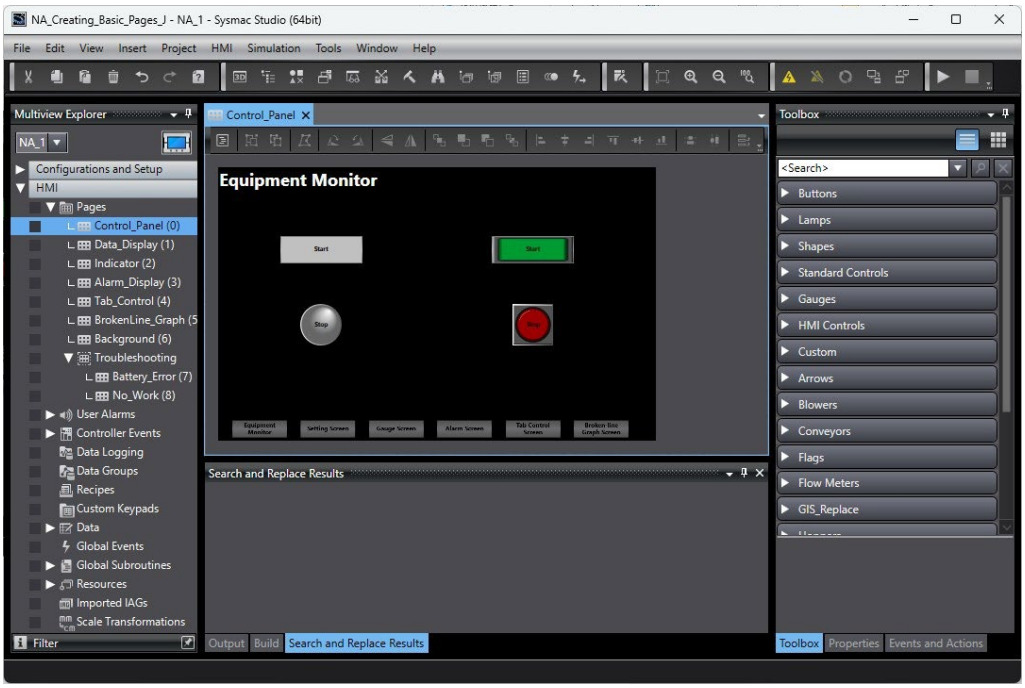
1) Copy & paste the screen switching button.
2) Set Text (Default) and PageName as shown in the figure on the right.

Text (Default) (English)	PageName
Gauge Screen	Indicator
Alarm Screen	Alarm_Display
Tab Control Screen	Tab_Control
Broken-line Graph Screen	BrokenLine_Grtaph

12. Last, adjust the size and position of each Button.



* The “Background” page is specified as a background.
You can confirm the page when opening the “Control_Panel” page.

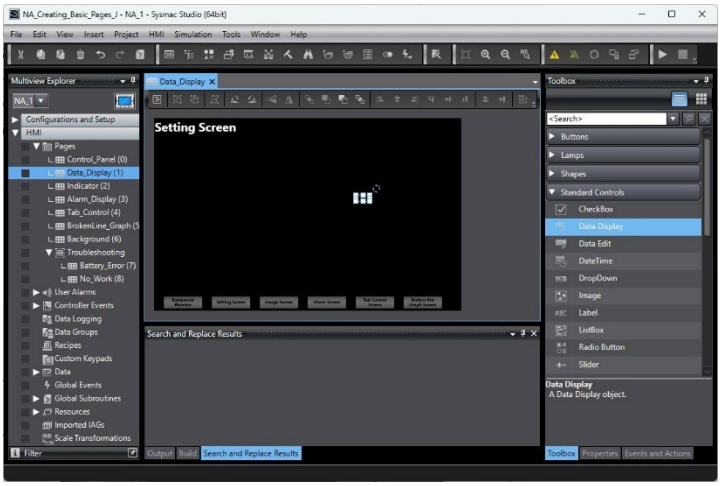

NA_Creating_Basic_Pages_J - NA_1 - Sysmac Studio (64bit)
File Edit View Insert Project HMI Simulation Tools Window Help
Multiview Explorer
NA_1
Configurations and Setup
HMI
Pages
Control_Panel (0)
Data_Display (1)
Indicator (2)
Alarm_Display (3)
Tab_Control (4)
BrokenLine_Graph (5
Background (6)
Troubleshooting
Battery_Error (7)
No_Work (8)
User Alarms
Controller Events
Data Logging
Data Groups
Recipes
Custom Keypads
Data
Global Events
Global Subroutines
Resources
Imported IAGs
Scale Transformations
Filter
Control_Panel
Equipment Monitor
Start
Start
Stop
Search and Replace Results
Output Build Search and Replace Results
Toolbox
<Search>
Buttons
Lamps
Shapes
Standard Controls
Gauges
HMI Controls
Custom
Arrows
Blowers
Conveyors
Flags
Flow Meters
GIS_Replace
Toolbox Properties Events and Actions

4-7 Creating Data Display/Edit Objects

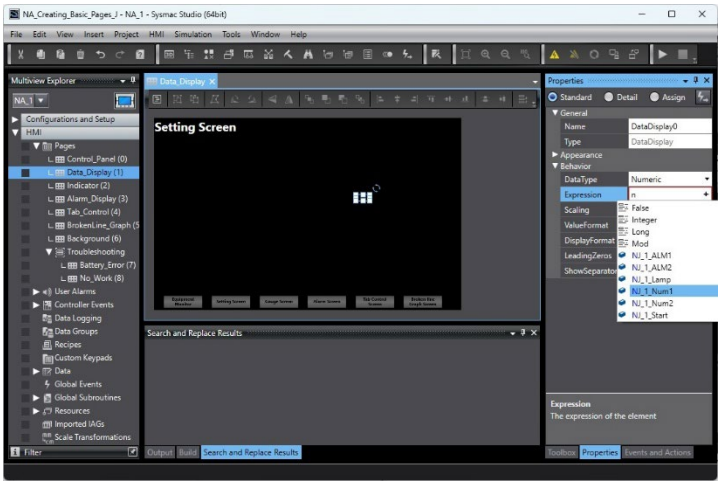
4-7-1 Creating Data Display Objects

Create on the “Data_Display” page a Data Display object.

1. From [Toolbox], select [Standard Controls]-[Data Display] and drag and drop it to the page.



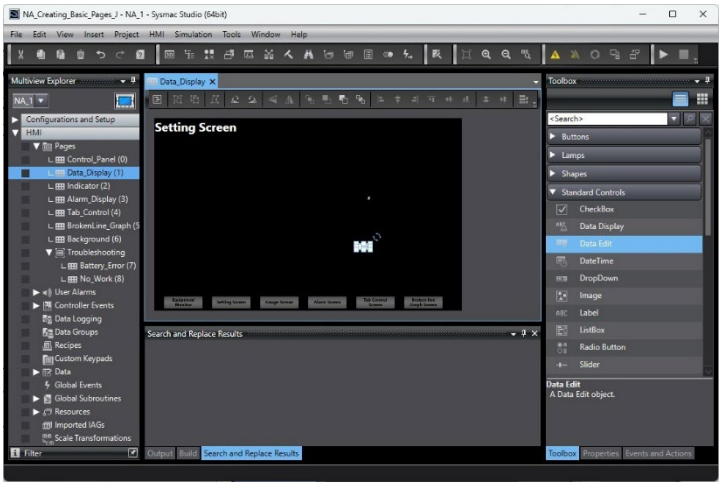
2. Set “NJ_1_Num1” in [Expression] under [Behavior].



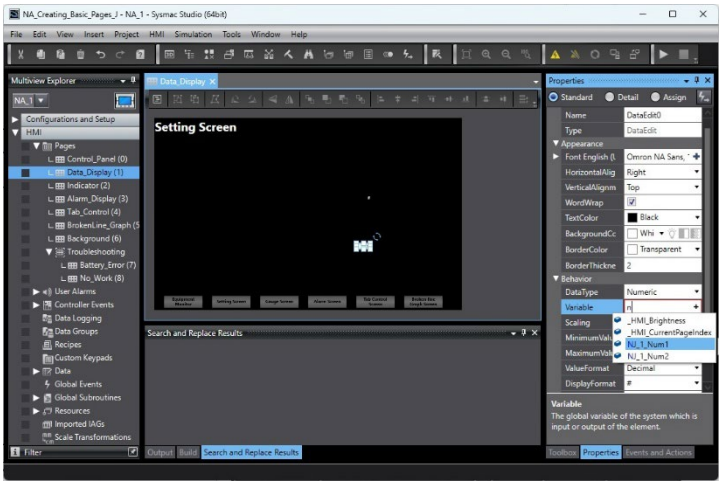
4-7-2 Creating Data Edit Objects

Create on the “Data_Display” page a Data Edit object.

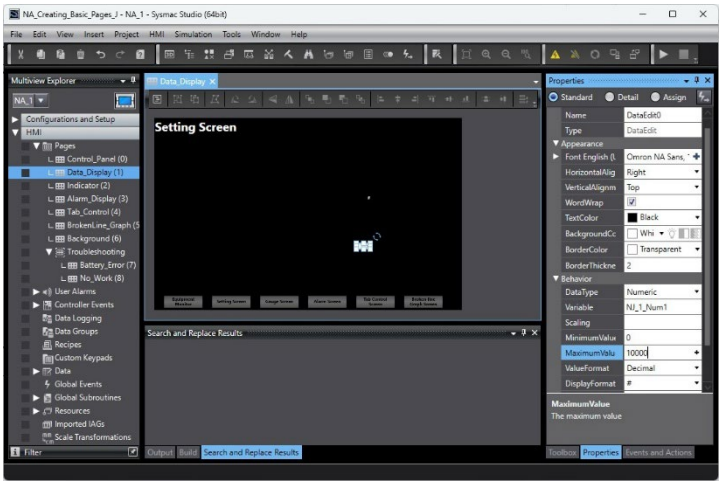
1. From [Toolbox], select [Standard Controls]-[Data Edit] and drag and drop it to the page.



2. In [Properties], set “NJ_1_Num1” in [Variable].



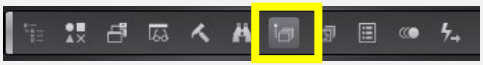
3. Specify the maximum and minimum values for the Data Edit object.
Change [MaximumValue] to 10000.

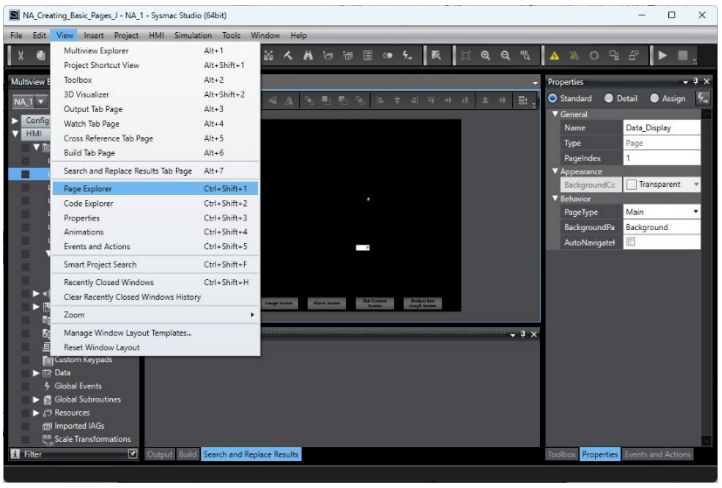


4-7-3 Batch Modification of Objects by the Page Explorer

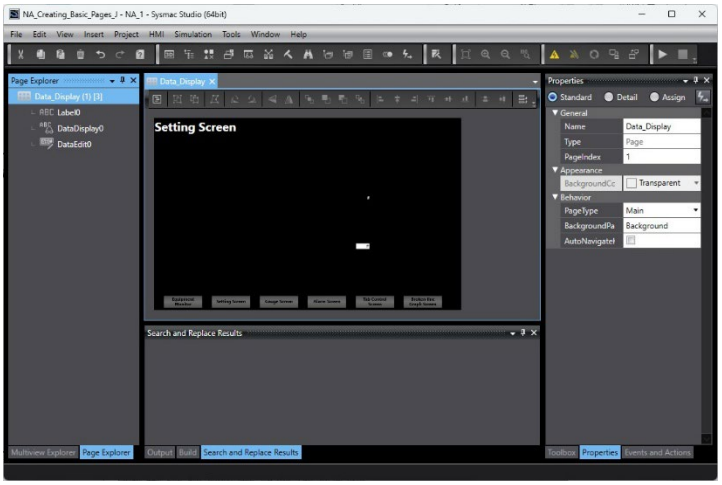
The Page Explorer displays the objects included in the pages in the tree format. It allows you to edit the properties including the text size and others that are common to the objects which have been already placed on the pages. It is useful especially when editing the duplicated objects.

1. Select [View]-[Page Explorer].
   If you use the toolbar, click the icon.

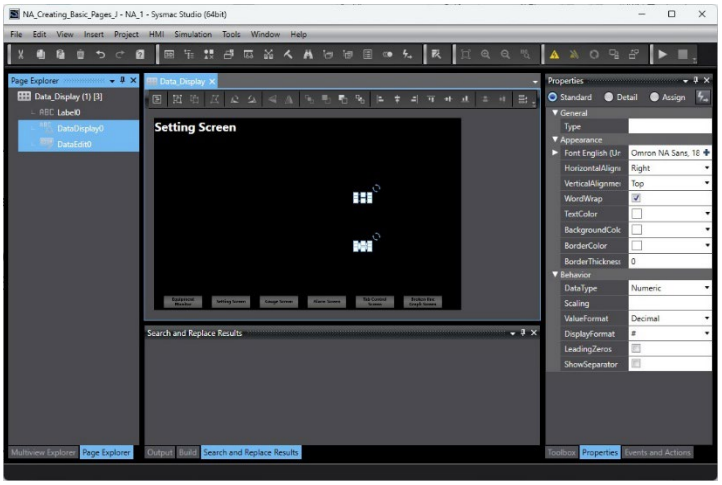




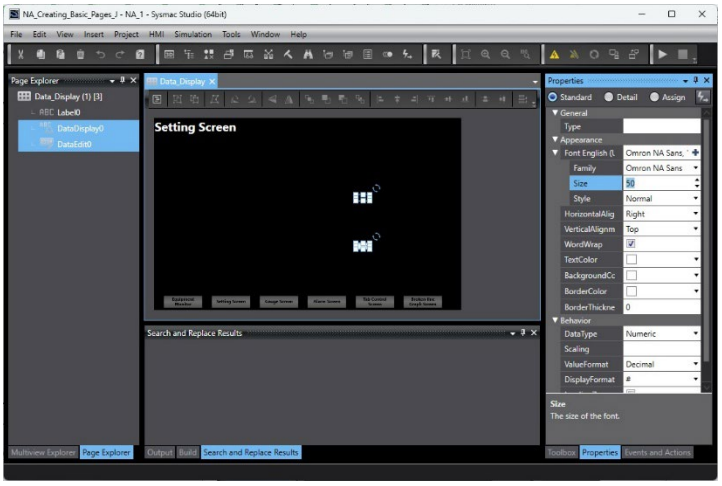
2. The [Page Explorer] window appears on the left side of the screen.



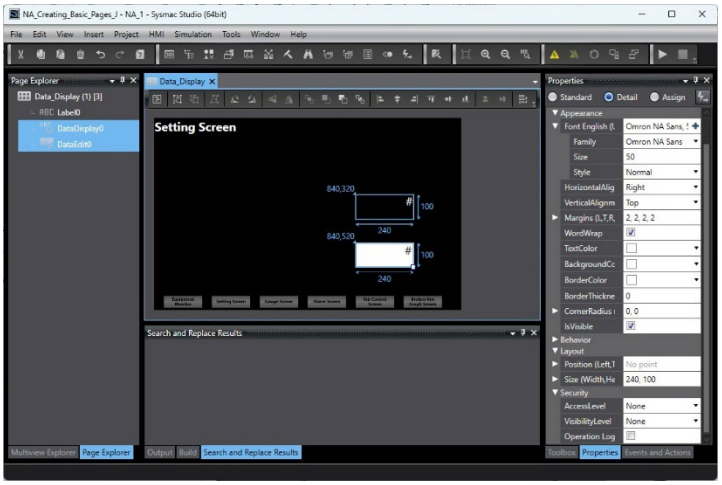
3. In [Page Explorer], select “DataDisplay0” and “DataEdit0”. When selecting multiple objects simultaneously, select the objects while holding down the Shift key.



4. Change [Size] to 50 under [Font].



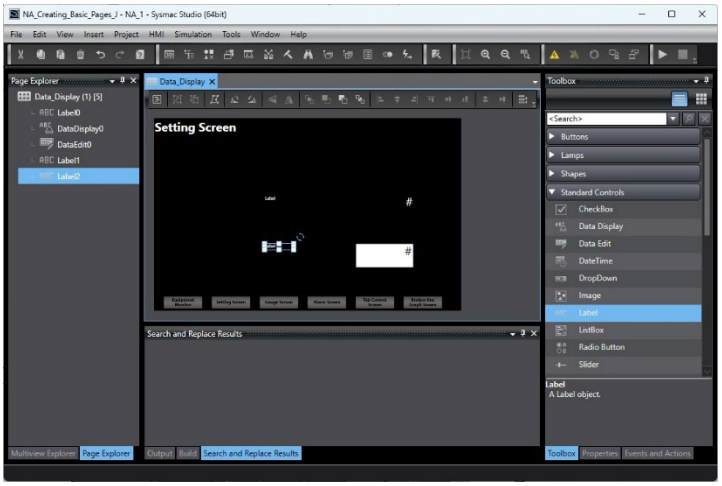
5. Modify the objects' sizes and adjust the positions.



4-7-4 Creating the Labels

Create the Labels of the Data objects.

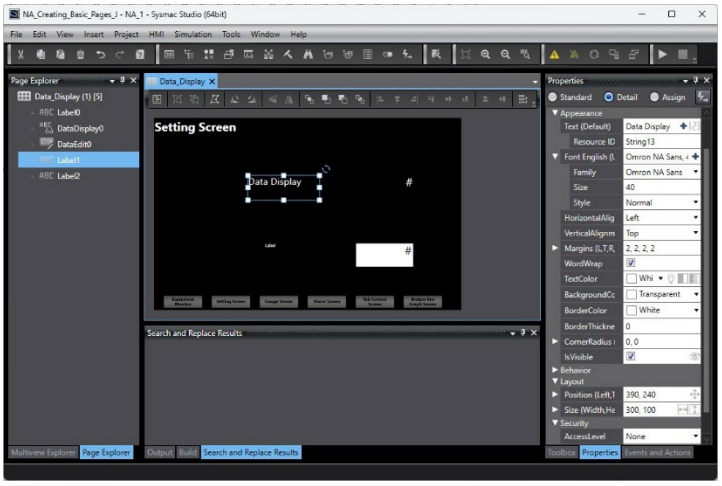
1. From [Toolbox], select [Standard Controls]. Drag and drop two Label objects to the page.



2. In the Properties of the first label, set as follows.

Appearance
• English (United States)
Text (Default): Data Display
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 40
Style: Default

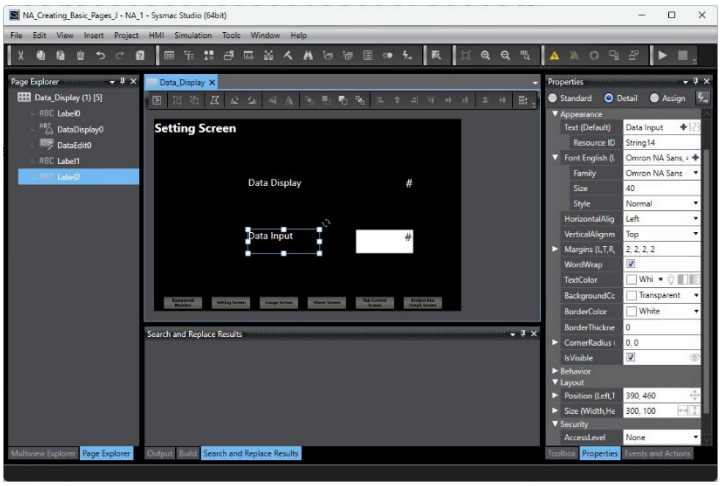
Layout
Position
Left: 390
Top: 240
Size
Width: 300
Height: 100



3. In the Properties of the second label, set as follows.

Appearance
• English (United States)
Text (Default): Data Input
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 40
Style: Default

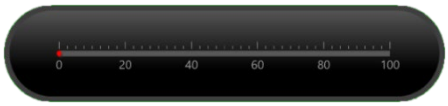
Layout
Position
Left: 390
Top: 460
Size
Width: 300
Height: 100



4-8 Creating Gauges

4-8-1 Gauge Objects

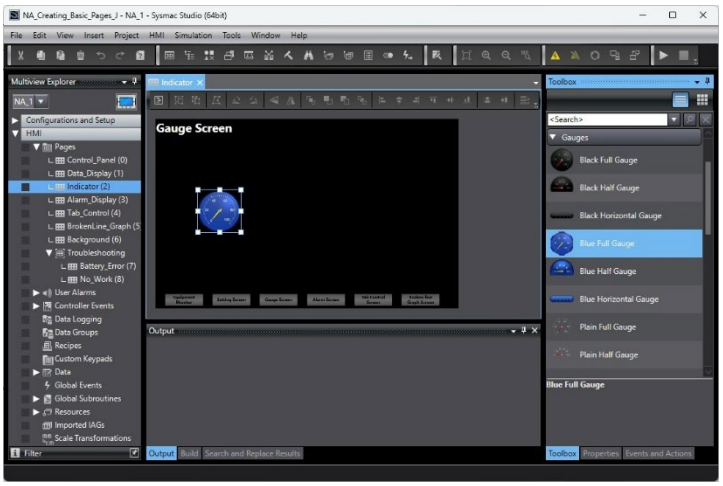
The Gauge objects display the digital values of variables in the analog format.
The NA series provides two basic gauge types.

Types	Description	Appearance
Linear Gauge	Linearly displays fluctuation of the analog values. Can be placed vertically or horizontally.	
Rotational Gauge	Displays fluctuation of the analog values in a rotational angle format.	

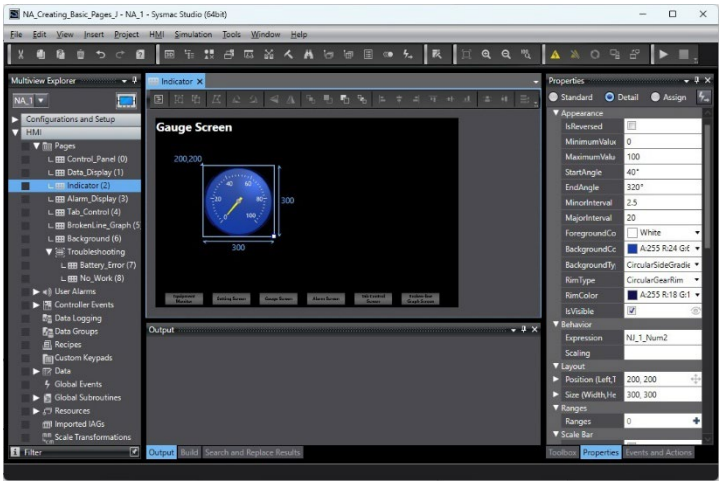
4-8-2 Creating Gauges

Create a Gauge on the “Indicator” page.

1. From [Toolbox], select [Gauges]-[Blue Full Gauge] and drag and drop it to the page.



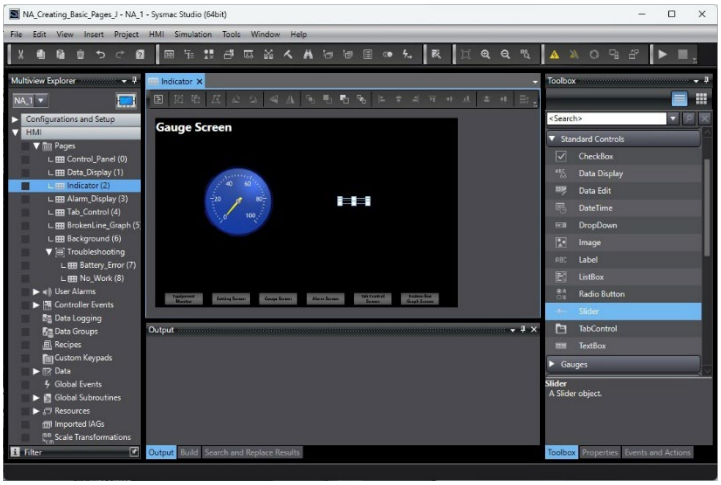
2. Set “NJ_1_Num2” in [Behavior]-[Expression] of Properties.
Also make the following settings.
Layout
Position
Left: 200
Top: 200
Size
Width: 300
Height: 300



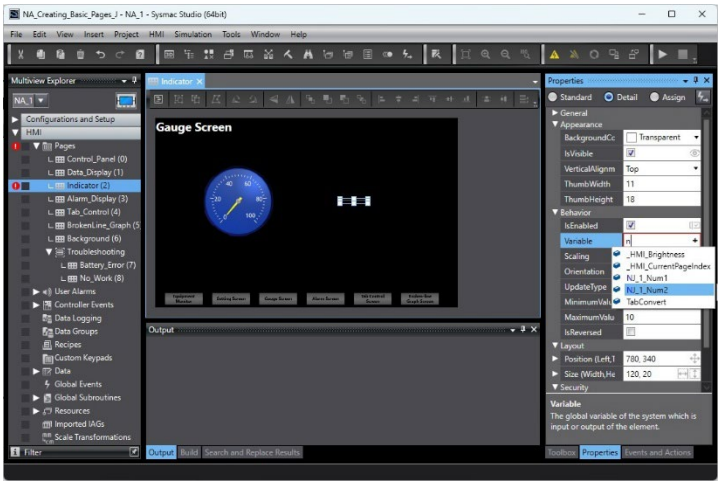
4-8-3 Creating Sliders

Create a Slider for checking the operation.

1. From [Toolbox], select [Standard Controls]-[Slider] and drag and drop it to the page.

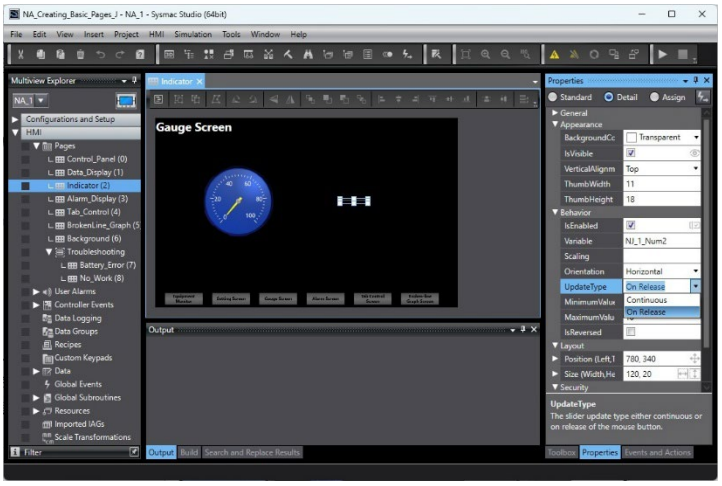


2. In [Properties], set “NJ_1_Num2” in [Variable] under [Behavior].

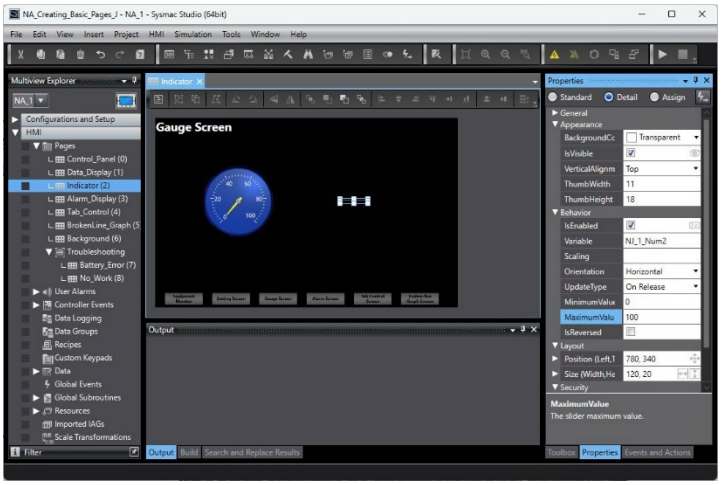


3. Change [Update Type] to “Continuous” under [Behavior].

Continuous: the value changes in accordance with the movement of the slider.
On Release: the value changes at the time when you release the slider.



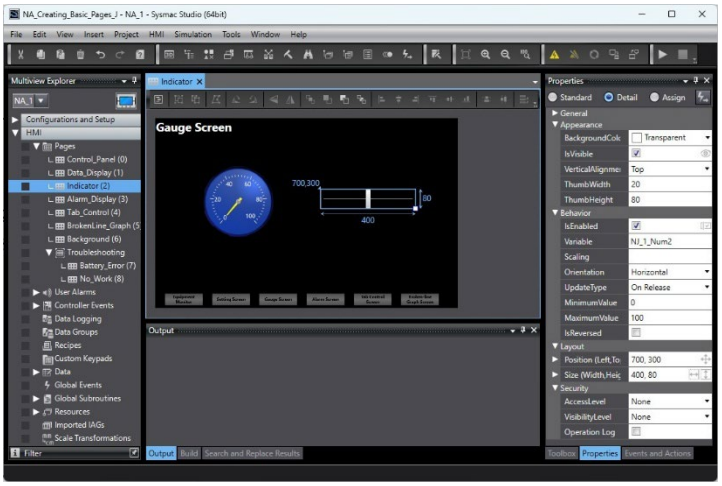
4. According to the gauge settings, change [MaximumValue] to 100 under [Behavior].



5. Make the following settings.

Appearance
ThumbWidth: 20
ThumbHeight: 80

Layout
Position
Left: 700
Top: 300
Size
Width: 400
Height: 80



4-9 Creating Tab Controls

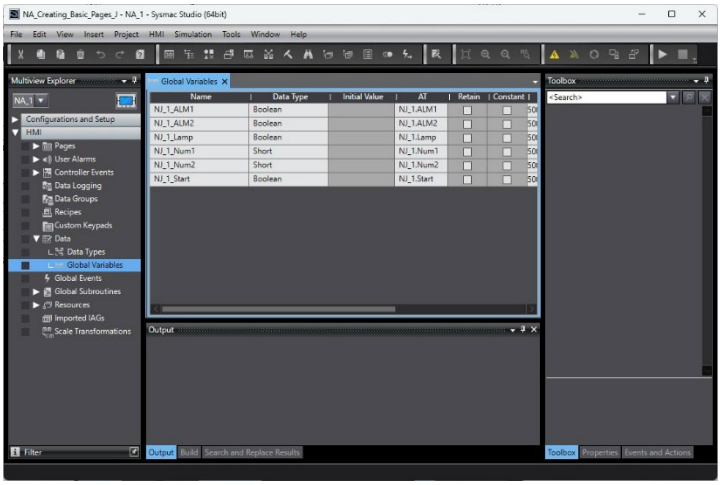
4-9-1 Tab Control

This is an object that can create partial screens within a screen and can switch pages.
It is a function equivalent to the frame of the NS Series.

4-9-2 Creating Tab Controls

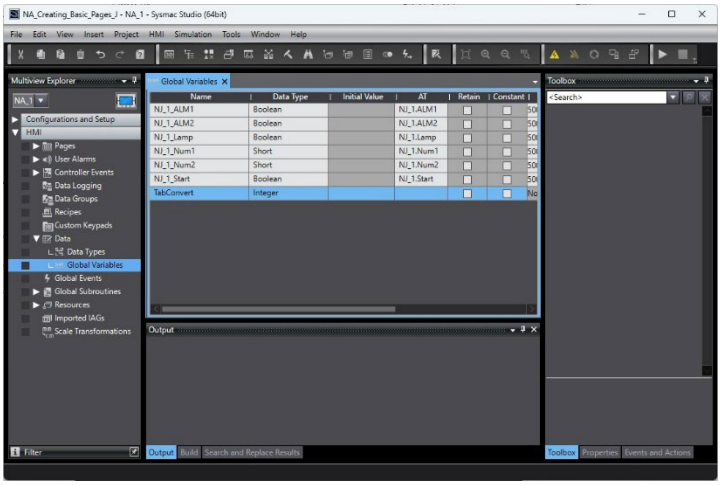
Create a Tab Control object on the “Tab_Control” page.

1. Register variables used for the Tab Control. Double-click [Global Variables] under [HMI]-[Data] in the Multiview Explorer.

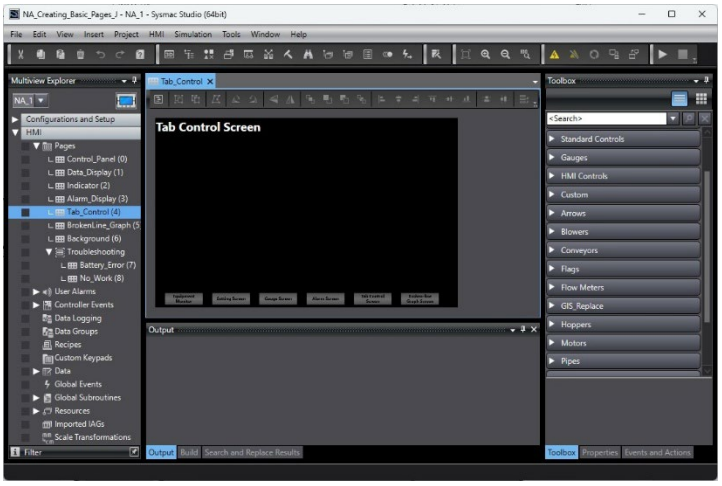


2. Register the following variables.

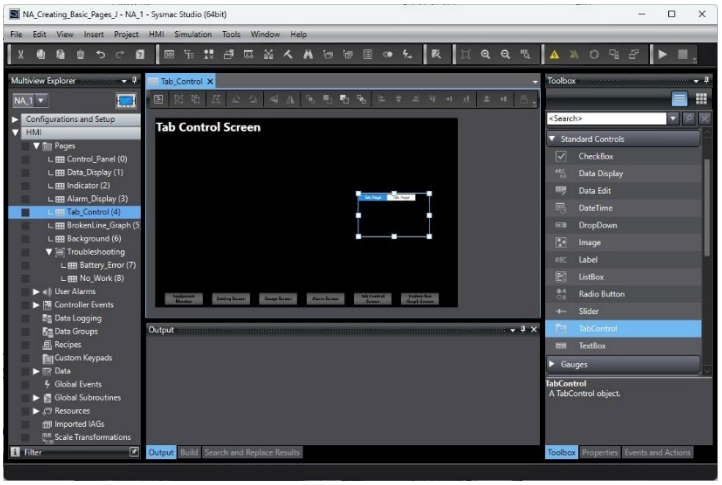
Name	Data Type
TabConvert	Integer



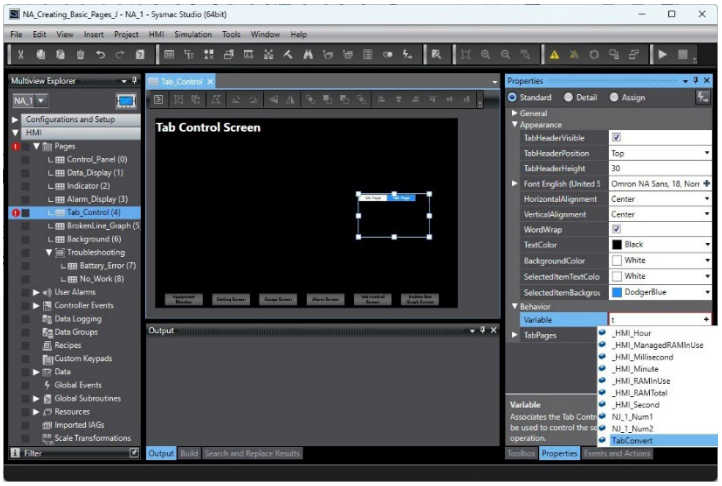
3. Open the [Tab_Control] page.



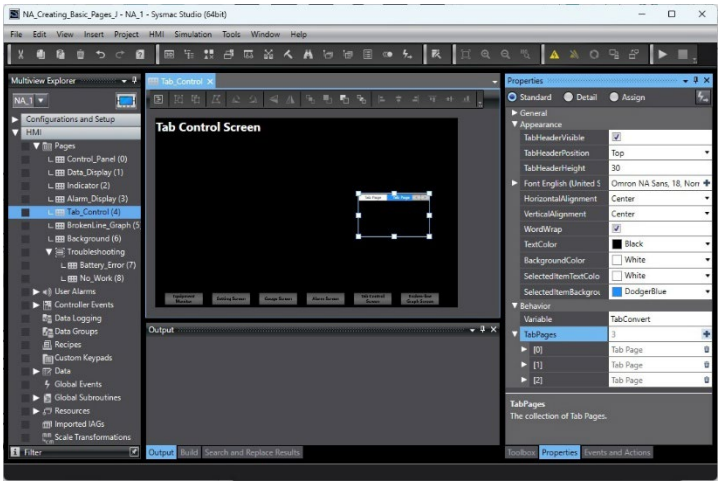
4. Select [Standard Controls]-[TabControl] from the Toolbox, and drag & drop it.



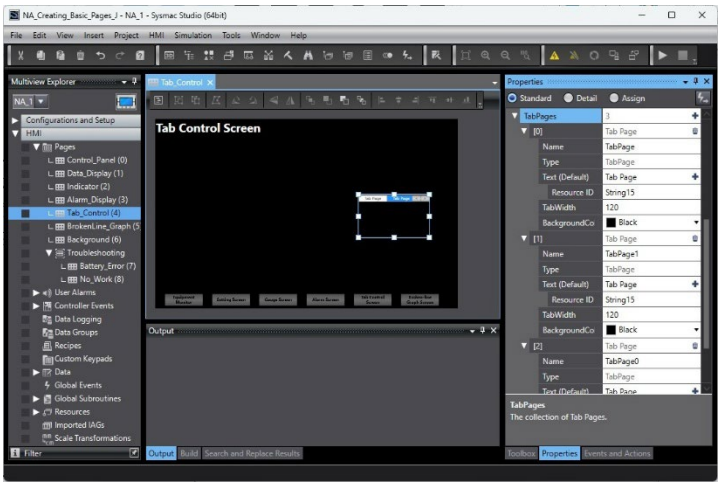
5. Specify the variable used to control tab pages.
Register “TabConvert” for [Behavior]-[Variable] of Properties of the Tab Control.



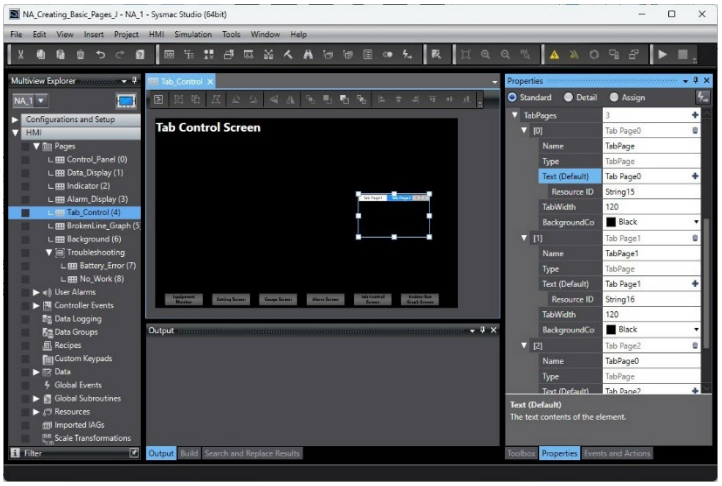
6. To increase the number of tab pages, select the “+” button in [TabPages].
Also, to decrease it, select the “ ” button.



7. Click the triangle mark to the left of [TabPages] to expand the menu, and you can set the name and background color for each tab.

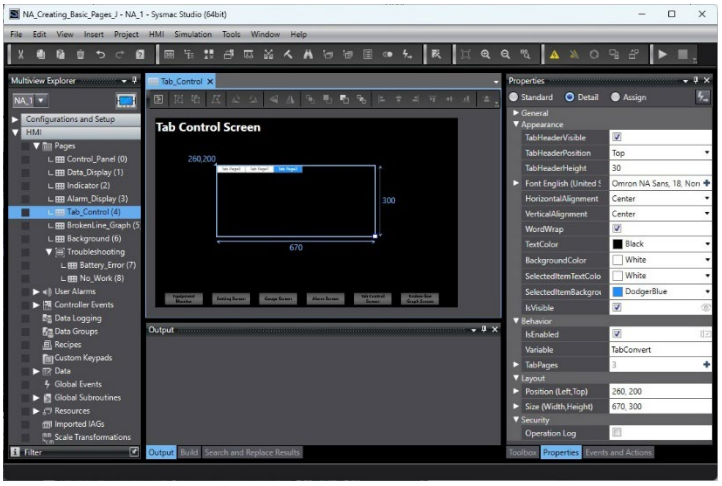


8. You can change the characters displayed on the tab by editing the Text (Default) field.
In this document, change them from Page0 to “Tab Page0”, “Tab Page1”, and “Tab Page2” in order.

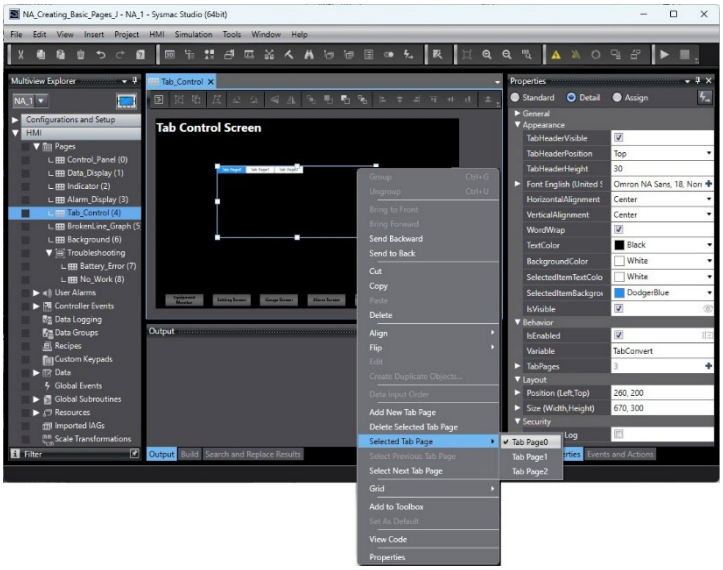


9. Make the following settings.

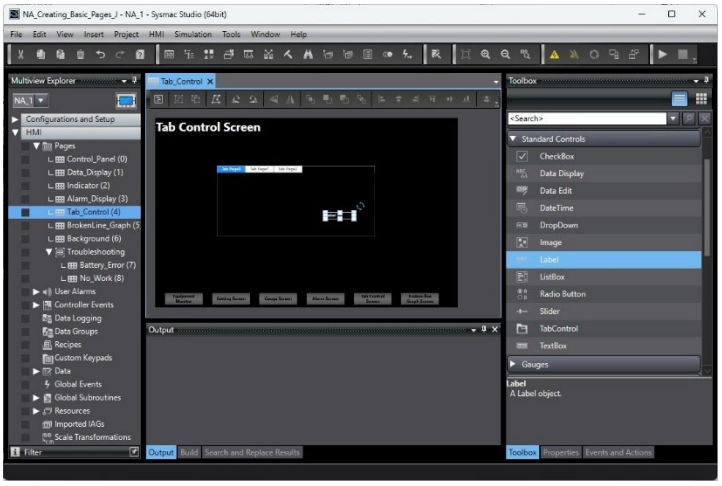
Layout
Position
Left: 260
Top: 200
Size
Width: 670
Height: 300



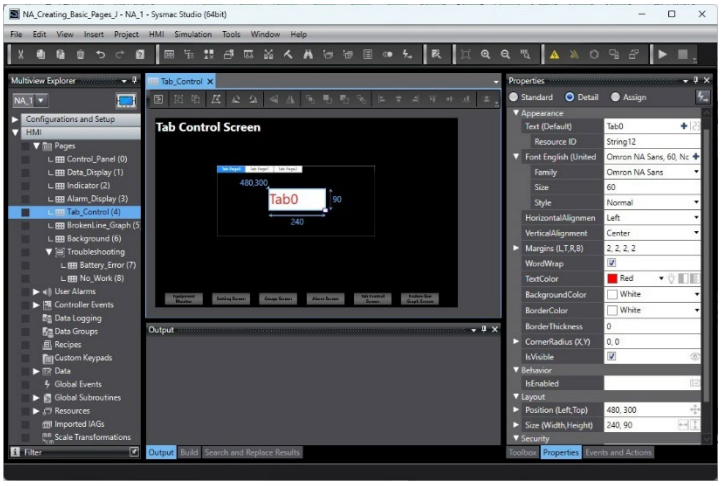
10. Right-click the Tab Control object and click “Selected Tab Page”-“Tab Page0”.



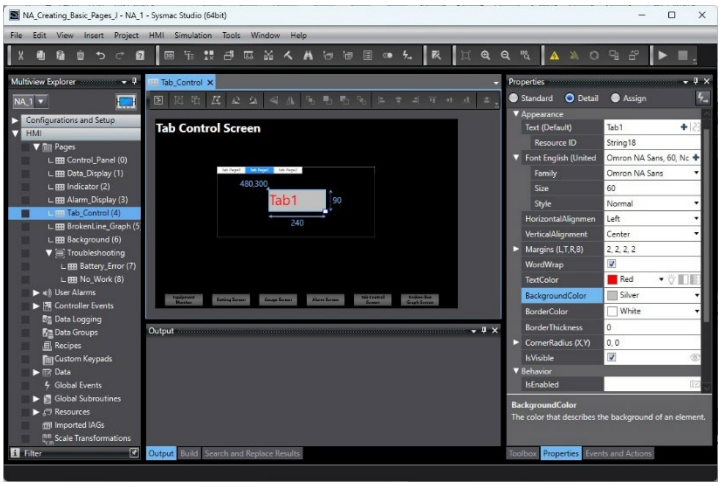
11. Place a Label object in the Tab Control object.
Select [Standard Controls]-[Label] from the Toolbox, and drag & drop it into the Tab Control object.

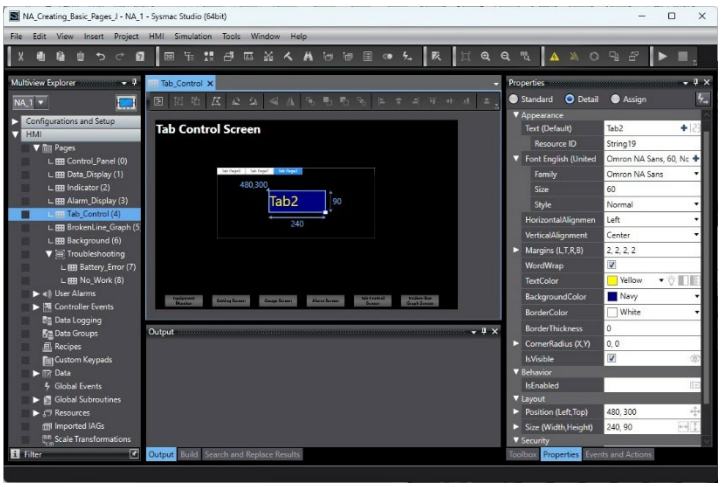


12. Make the desired settings for the placed Label object.
This label is for confirming that the tab page switches, so there are no specified settings.

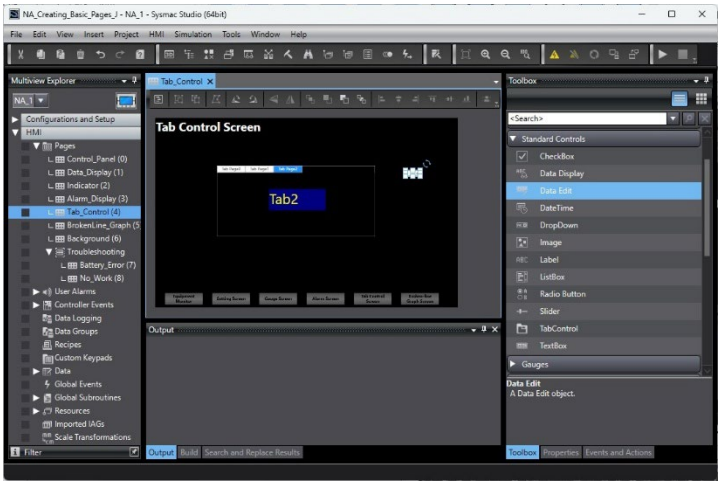


13. Switch the tab page using the method in step 11, and place labels on Tab Page1 and Tab Page2.



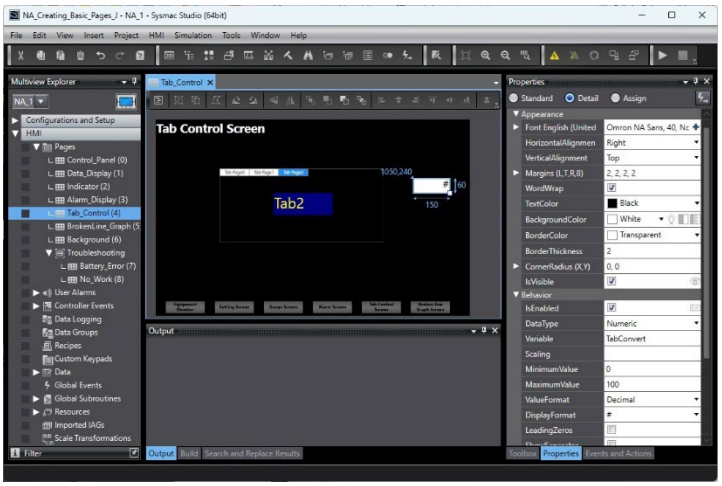


14. Select [Standard Controls]-[Data Edit] from the Toolbox, and drag & drop it outside the Tab Control object.
This Data Edit object is used to check and change the displayed page of the Tab Control.



15. Make the following settings for the Data Edit object.

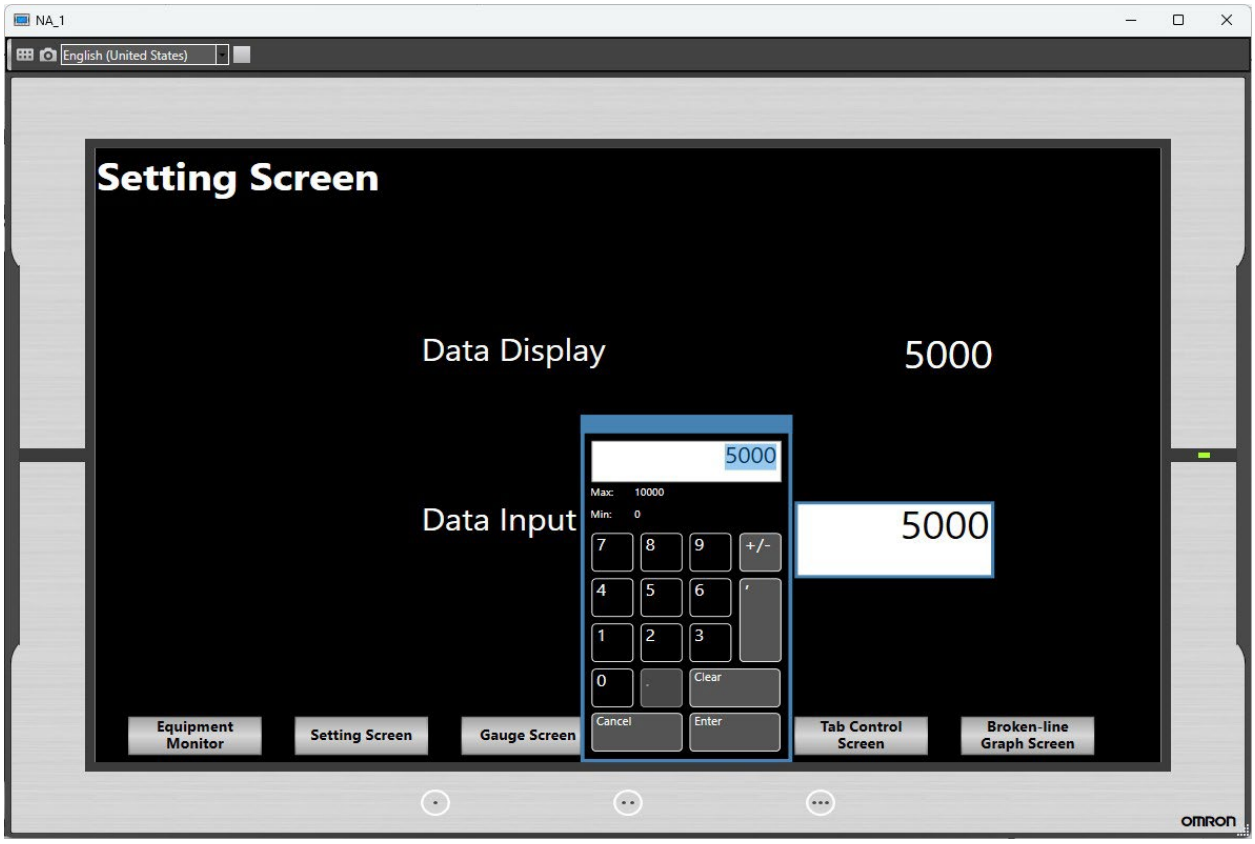
Appearance
 Font
  Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
  Size: 40
  Style: Default
Layout
 Position
  Left: 390
  Top: 240
 Size
  Width: 1050
  Height: 60



4-10 Off-line Testing 2

Build the project and start up the simulator.

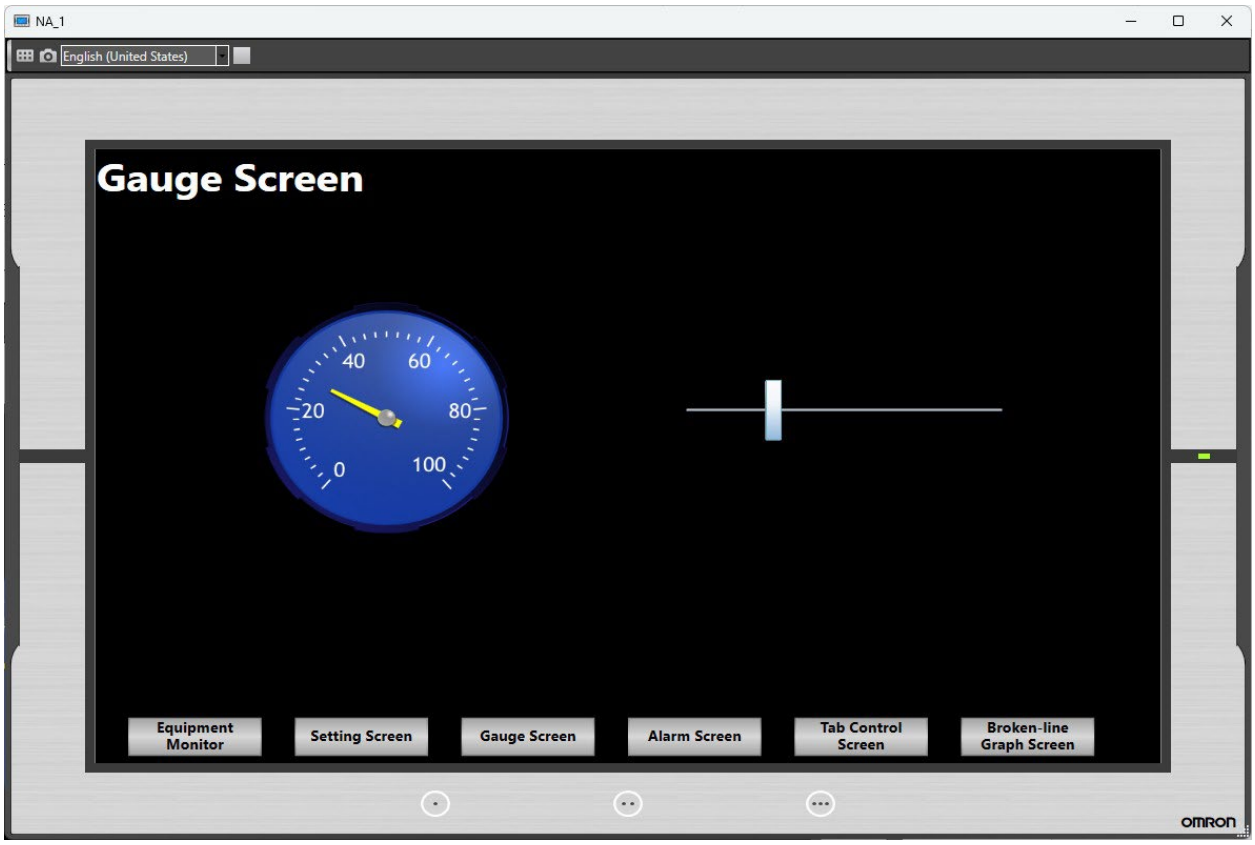
[Operation Check 1]
(1) Click the [Setting Screen] Button to switch the page.
(2) When you click the Data Edit object, a numeric keypad appears. Specify a value and click the Enter key.



[Operation Check 2]

(1) Click the [Gauge Screen] Button to switch the page.

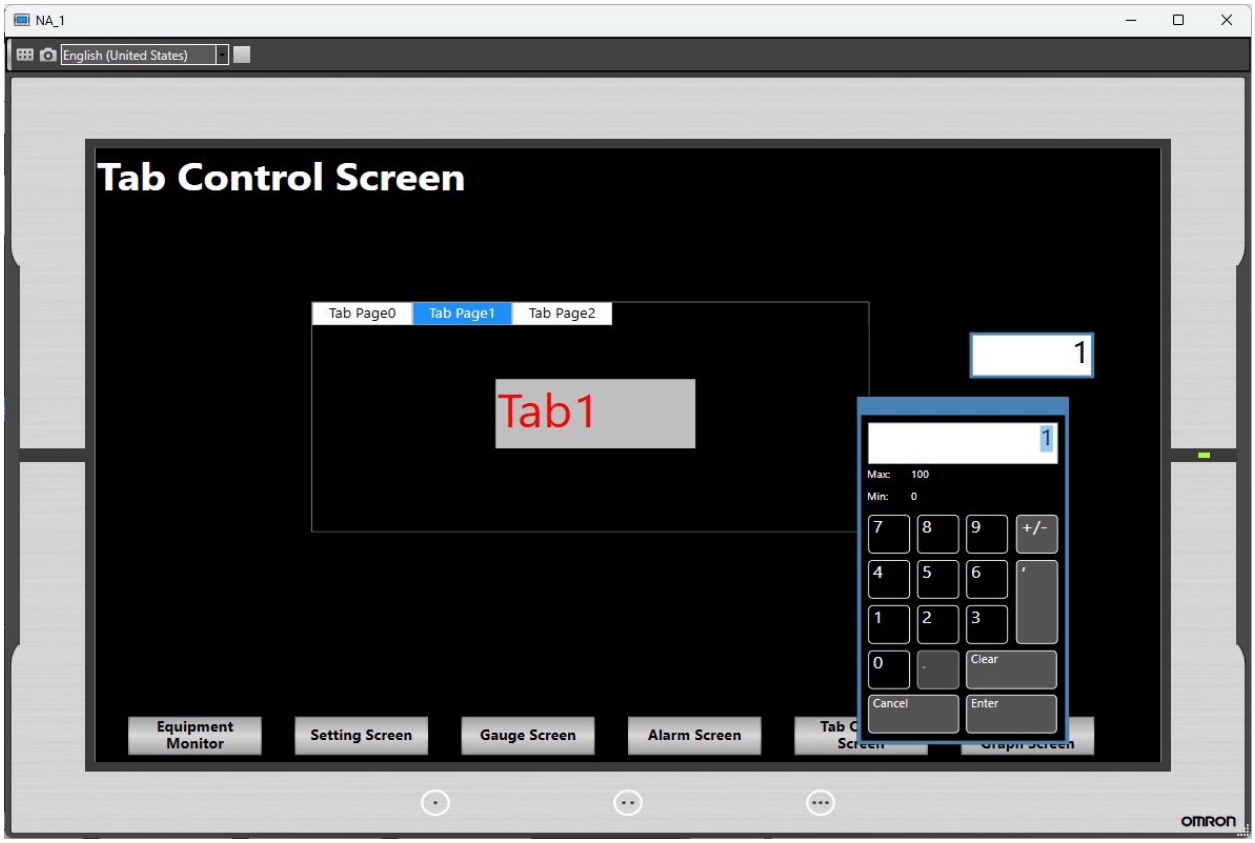
(2) Operate the Slider and confirm that the needle of the Gauge moves in accordance with the slider movement.



[Operation Check 3]

(1) Click the “Tab Control Screen” using the page switching button to switch pages.

(2) Enter a value from the Data Edit object, and confirm that the tab page switches.



4-11 Creating Alarms

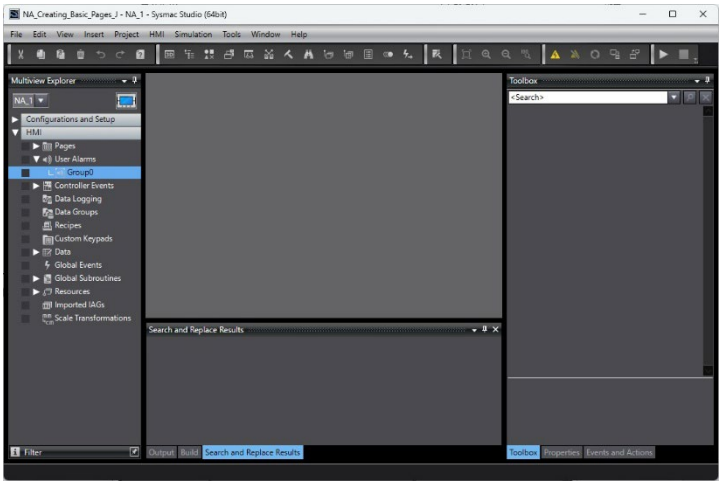
4-11-1 User Alarm

You can specify conditions for specified variables to display user messages when the conditions are met.
You can use this to record information when errors occur, when operation is started, etc

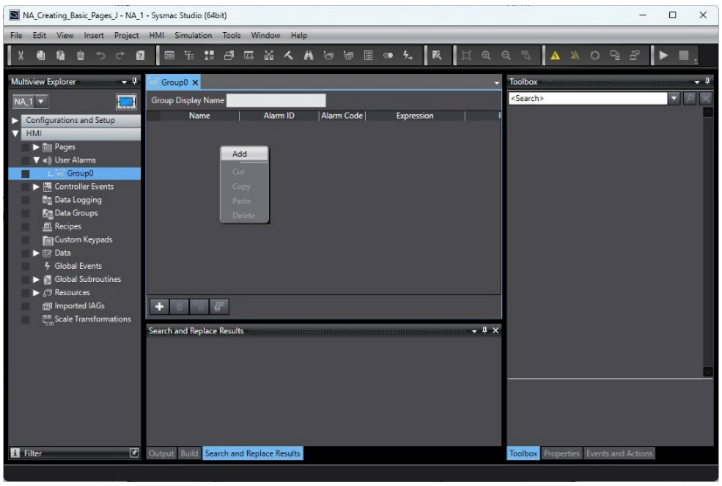
4-11-2 Creating New User Alarms

First, create an alarm list.

1. Double-click [Group0] under [HMI]−[User Alarms] in the Multiview Explorer.



2. Right-click on the Edit Pane and select “Add”.



3. Register the following alarms respectively.

<Alarm1>

・Name: Battery_Error

・Expression: NJ_1_ALM1

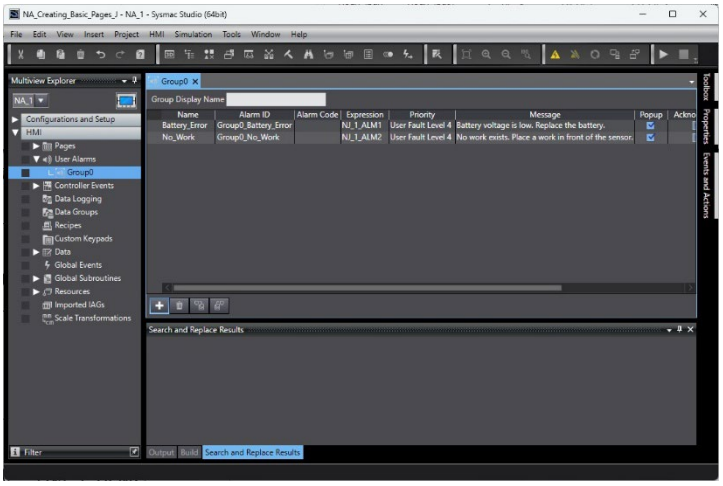
・Message: Battery voltage is low. Replace the battery.

<Alarm2>

・Name: No_Work

・Expression: NJ_1_ALM2

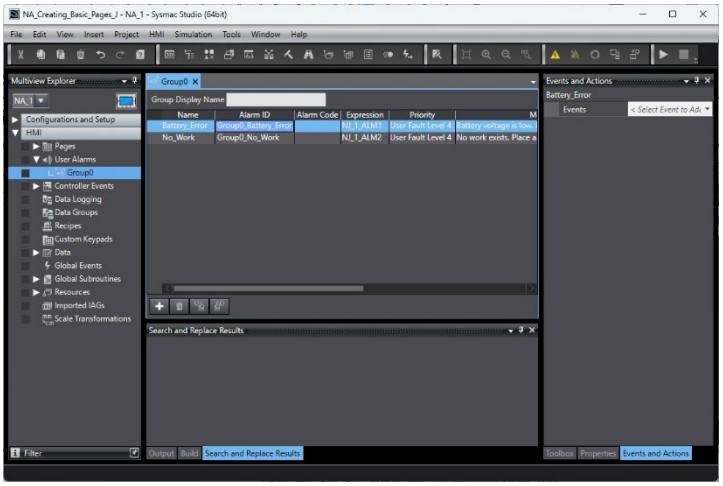
・Message: No work exists. Place a work in front of the sensor.



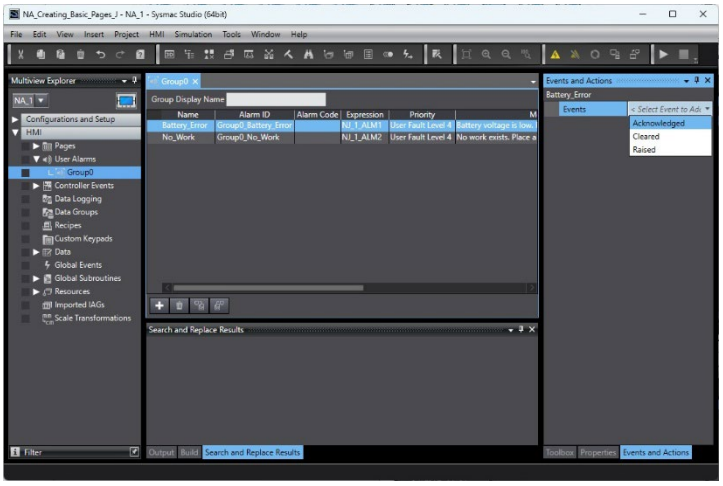
4-11-3 Displaying the Troubleshooter

Perform settings so that the troubleshooter is displayed when confirming errors.

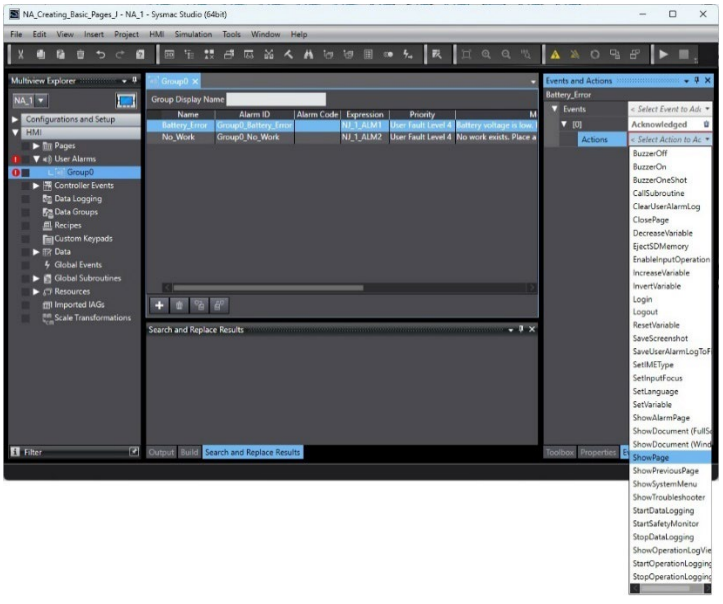
1. While keeping one of the specified alarms selected, open the [Events and Actions] window.



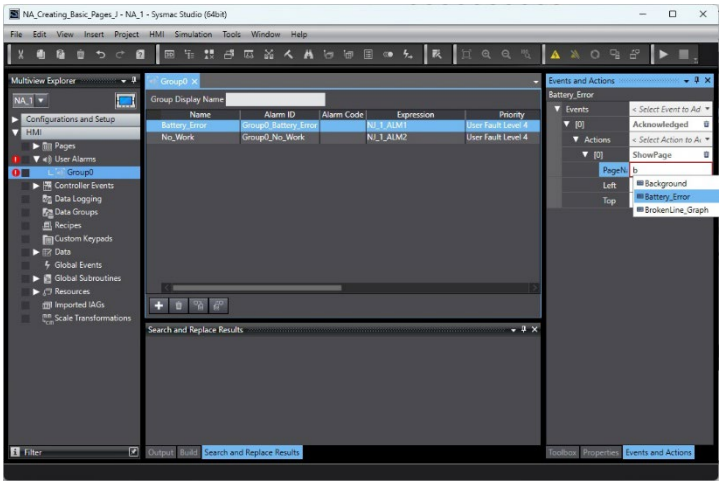
2. 2. Perform the settings for changing the page upon confirming alarms.
Click the cell indicating <Select Event to Add> to the right of [Events], and select “Acknowledged”.



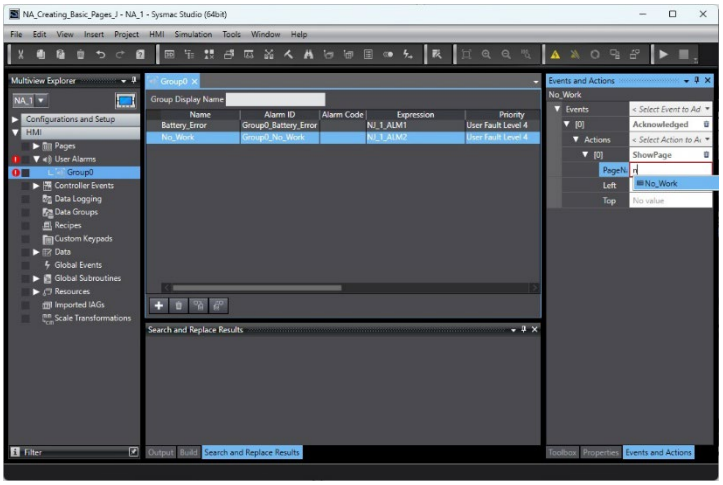
3. 3. Click the cell to the right of [Actions], and select “ShowPage”.



4. Click the cell to the right of [PageName] and select “Battery_Error”.



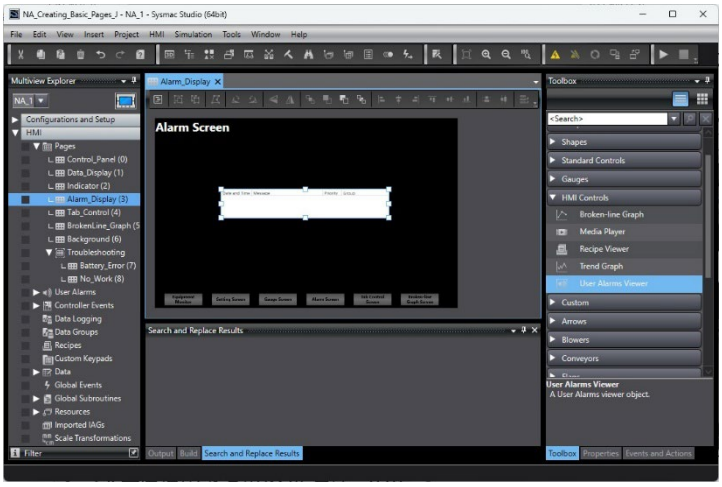
5. Similarly for the No Work error, perform the settings so that the “No_Work” page is displayed when confiring the error.



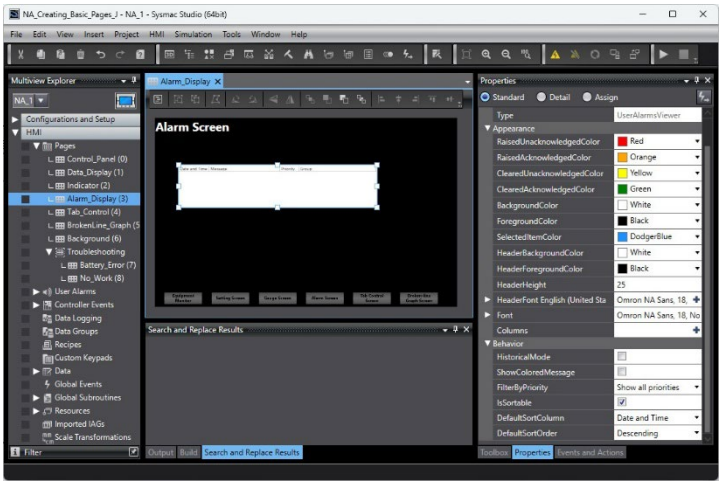
4-11-4 Creating Alarm Objects (Active Display Mode)

The Alarm objects include the mode in which to display the currently raised alarms (Active Display Mode) and the other mode in which to display the log (Log Display Mode). First, create the Active Display Mode Alarm object.

1. Open the “Alarm_Display” page and drag and drop to the page from [Toolbox] the [User Alarms Viewer] object under [HMI Controls].



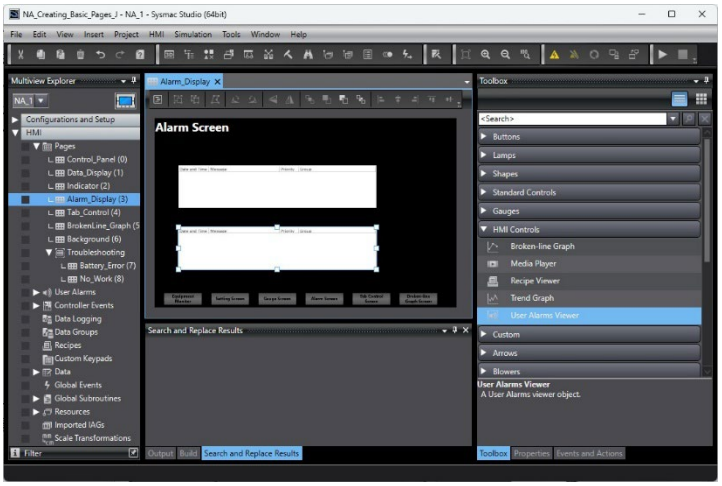
2. Use [Properties] to change text attributes and others.



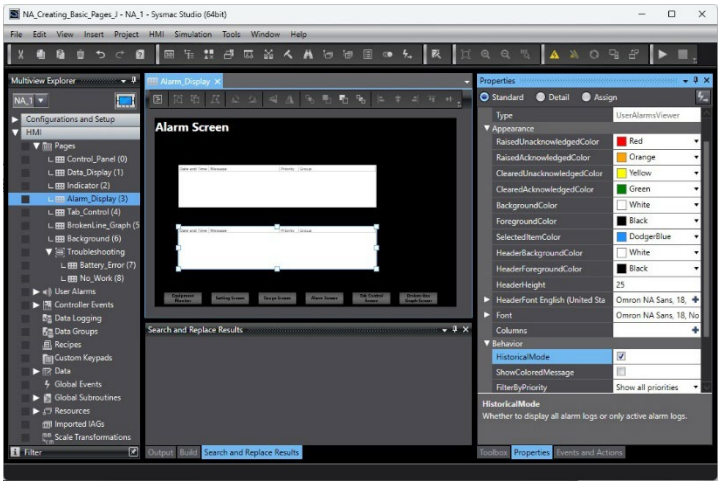
4-11-5 Creating Alarm Objects (Log Display Mode)

Create the object that displays alarm logs.

1. From [Toolbox], select [User Alarms Viewer] and drag and drop it to the page.



2. Open the [Properties] widnow and check the checkbox of “HistoricalMode”.



4-11-6 Creating a Switch to Cause Alarms

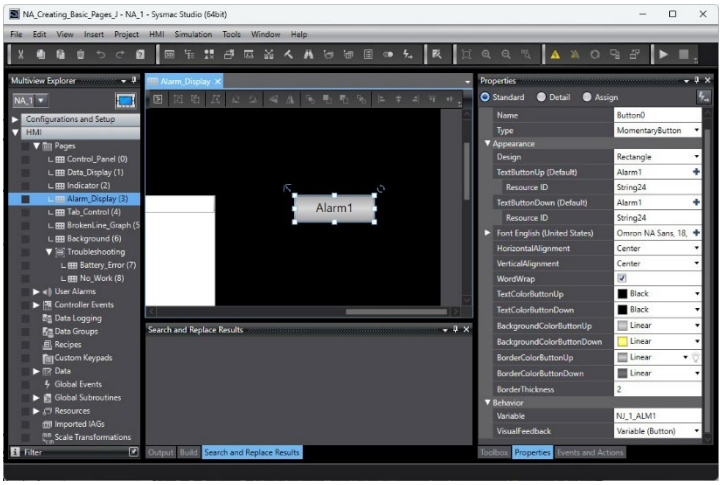
To check operations, create a switch that causes alarms.

1. Place a Momentary Button on the page.

2. Specify the properties as described below.

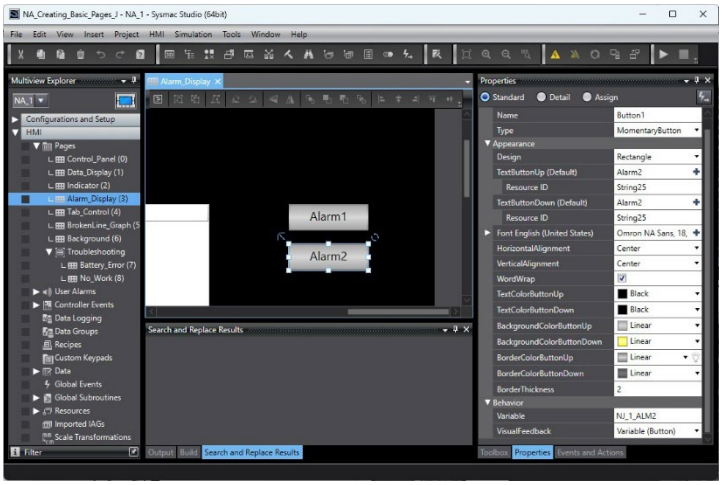
[TextButtonUp(Default)]
Alarm1
[TextButtonDown(Default)]
Alarm1
[Variable]
NJ_1_ALM1

c



3. Copy and paste the object, and specify the properties as described below.

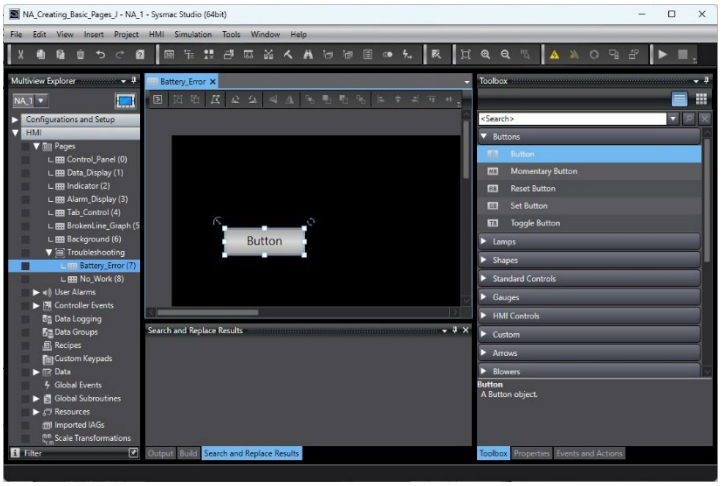
[TextButtonUp(Default)]
Alarm2
[TextButtonDown(Default)]
Alarm2
[Variable]
NJ_1_ALM2



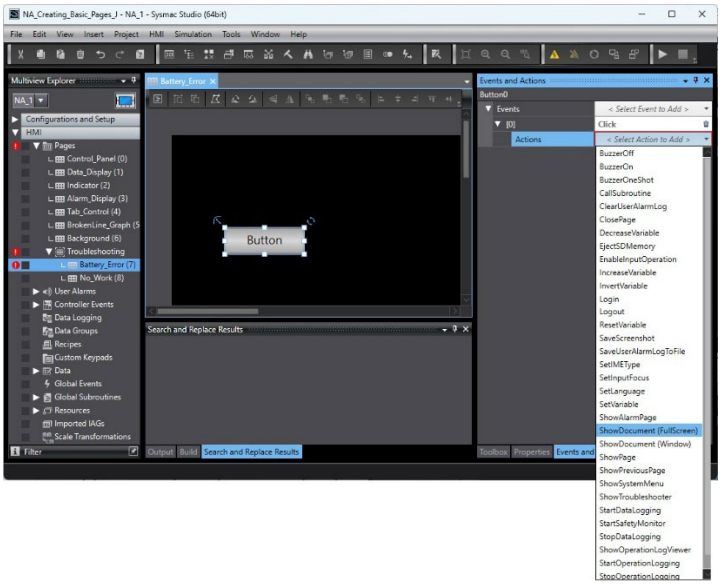
4-12 Displaying PDF Files

Perform the settings for displaying a PDF file when pressing a Button.

1. Place a Button object on the “Battery_Error” page.

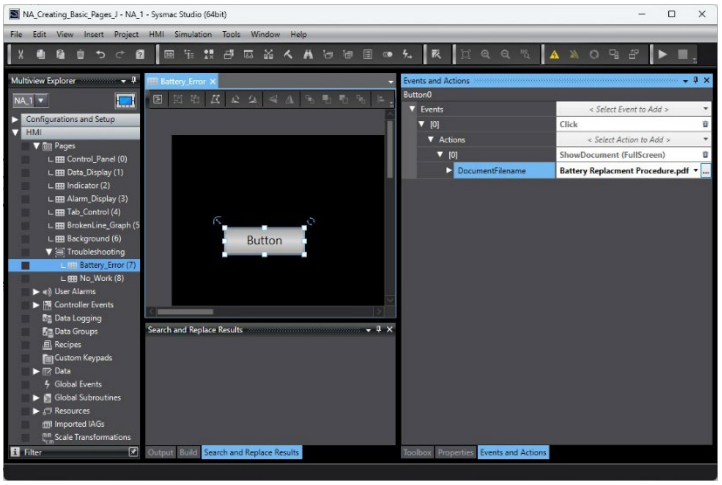


2. In [Events and Actions], perform the settings for displaying the document when clicking the Button. Select “Click”, and then “ShowDocument (Full Screen)”.

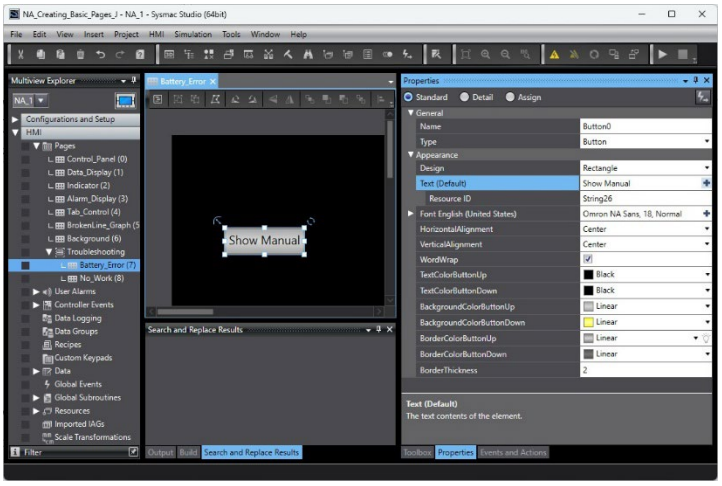


3. Select the PDF file to display. Click the button and select “Battery Replacment Procedure.pdf” from the desktop.

   This completes the settings in [Evens and Actions].



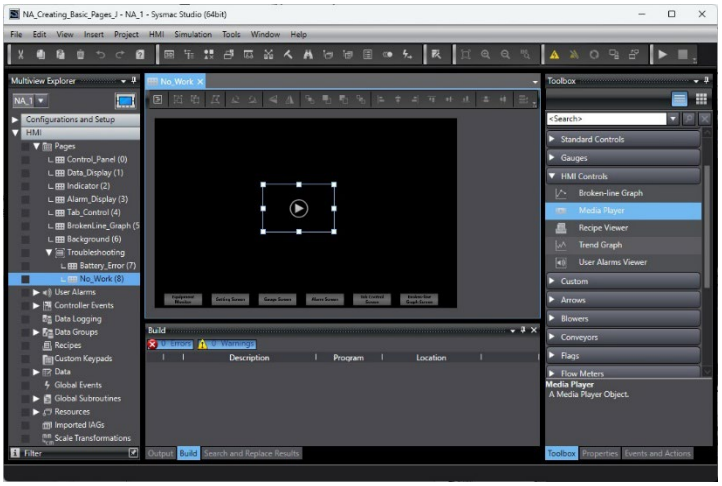
4. In [Properties], change [Text(Default)] to “Show Manual”.



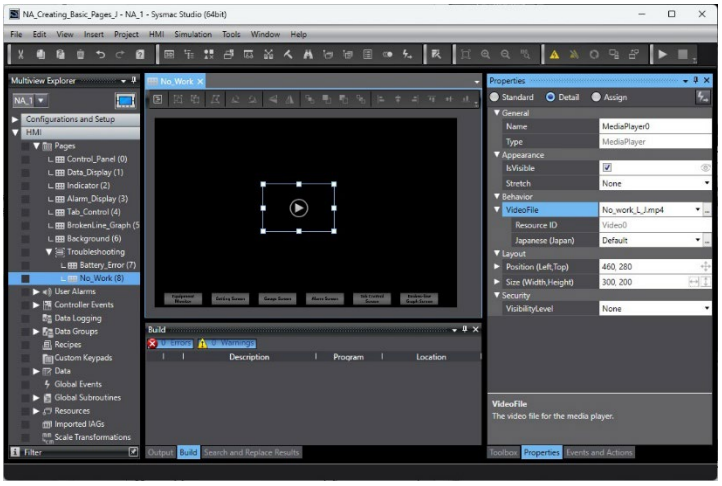
4-13 Displaying Videos

Perform the settings for displaying videos.

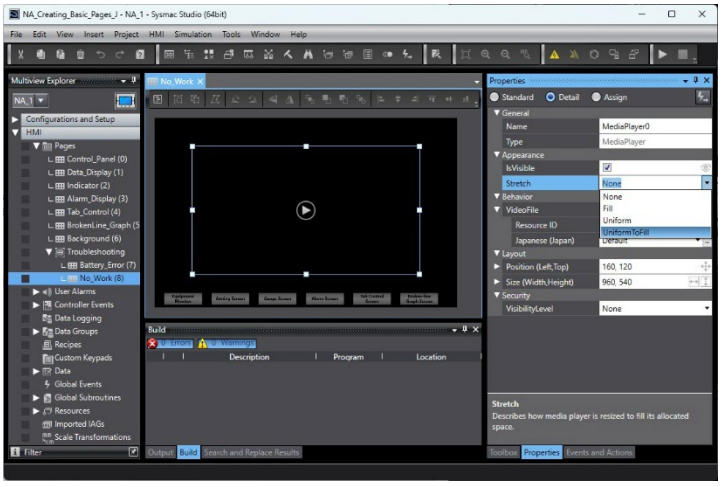
1. Open the “No_Work” page. Select [HMI Controls]-[Media Player] and drag and drop it to the page.



2. In [Properties], click the button in the cell to the right of [VideoFile] under [Behavior], and select “No_work_L_J.mp4” from the desktop.



3. Change [Stretch] under [Appearance] to “UniformToFill”. The setting allows you to expand/reduce the video so as to fit in the object size.
You can arbitrarily modify the object size.



4-14 Broken-line Graph Basic Settings

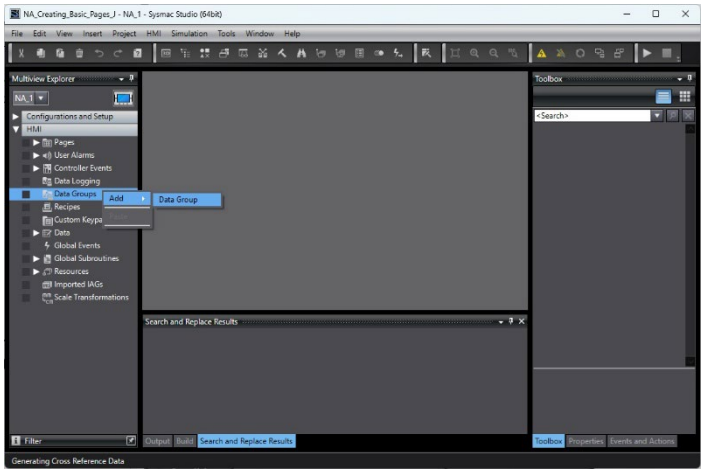
4-14-1 Broken-line Graph

The Broken-line Graph objects display the graphs of the current value of array variables or multiple variables of the same data type.
Beware that a Broken-line Graph object does not operate in the simulation function of Sysmac Studio. You must transfer data to the NA unit and operate the actual unit to confirm operations.

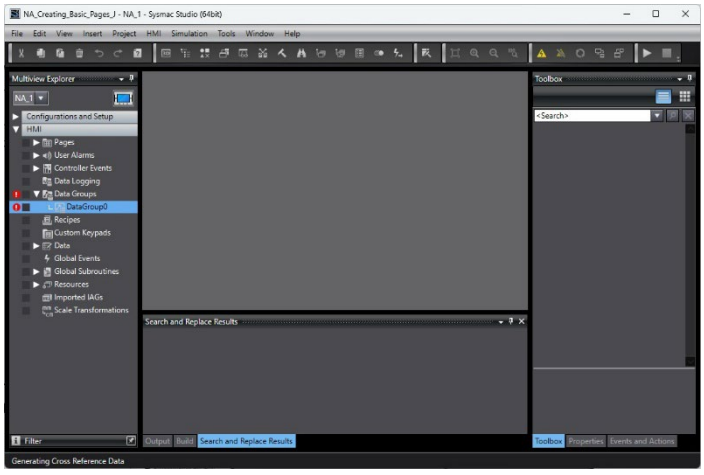
4-14-2 Registering Data Group

The variables that are to be displayed in a Broken-line Graph should be registered in Data Groups. This function is equivalent to the “Broken-line Graph Group Setting” of the NS series.

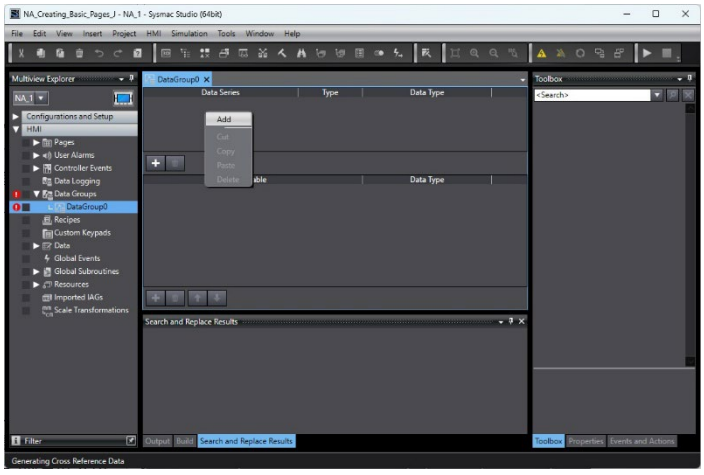
1. In the Multiview Explorer, right-click [HMI]-[Data Groups], and click [Add]-[Data Group].



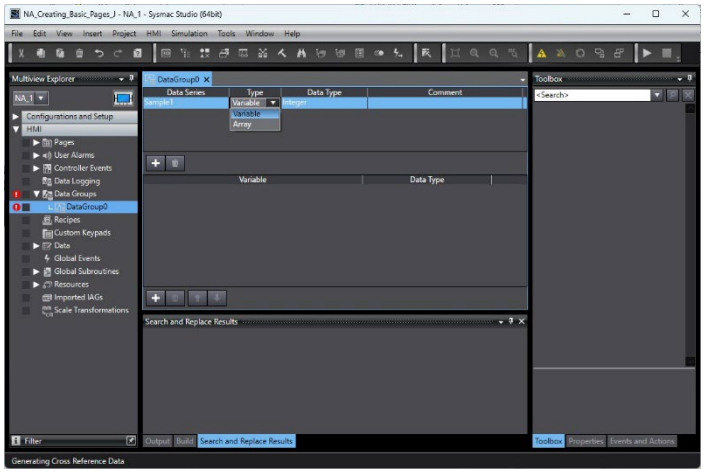
2. Double-click the added [DataGroup0].



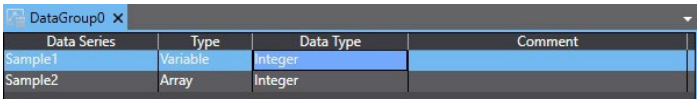
3. Create the data to be displayed as a graph.
Right-click on the edit pane and click “Add”, or click the [+] button.



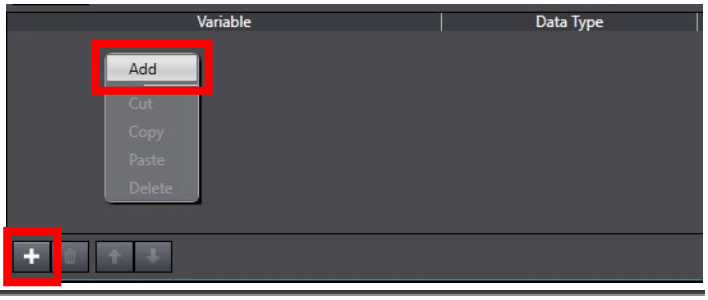
4. Enter an arbitrary name in [Data Series]. The name is used in the Properties of the Broken-line Graph object to be described later.
Under [Type], choose the type of variables to be used in a graph from either “Variable” or “Array”. If you use multiple variables as a group, choose “Variable”. To display the data of the array variable as a graph, select “Array”.
In [Data Type], specify the data type of the variables to be used in the graph. Make sure to unify the data type of the variables that are to be used in a single data series.



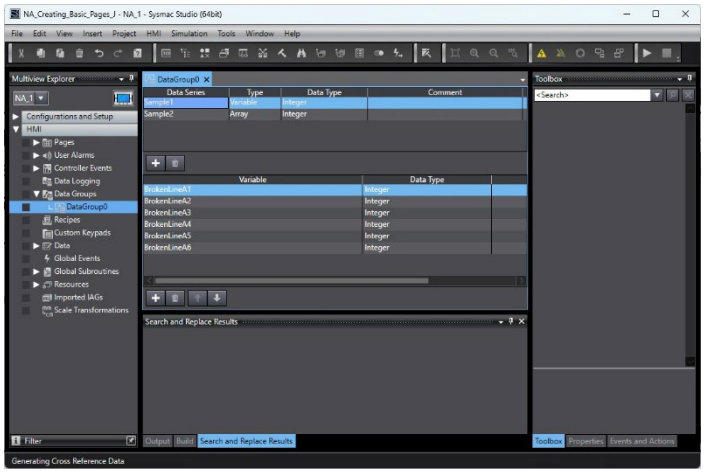
5. You can have different types of data series such as “Variable” and “Array” within a data group.



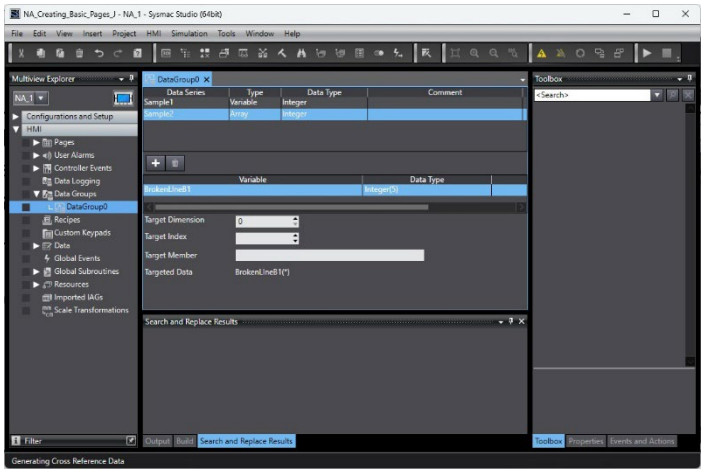
6. Following is the explanation of the settings in cases where “Variable” is specified as the graph type. To add the variables to be displayed in the graph, right-click and select “Add”, or click the [+] button.



7. Enter variables “BrokenLineA1” to “BrokenLineA6” in [Variable] for the number of points to be displayed on one line.



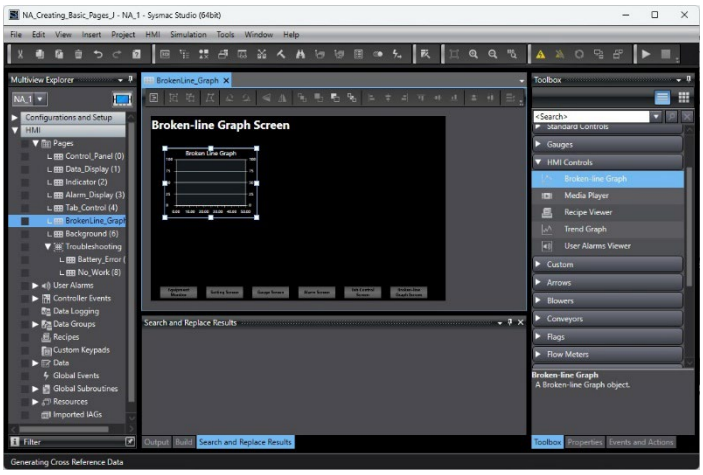
8. Make the settings when the graph type is specified as “Array”. With Data Series “Sample2” selected, set “BrokenLineB1” in the Variable field. For arrays, one-dimensional arrays and two-dimensional arrays can be used.



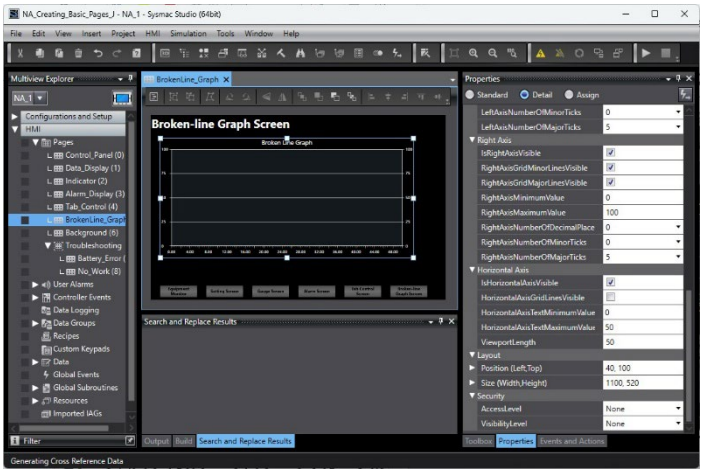
4-14-3 Setting the Properties of a Broken-line Graph Object

Perform settings for displaying as a graph the data group specified in the previous subsection.

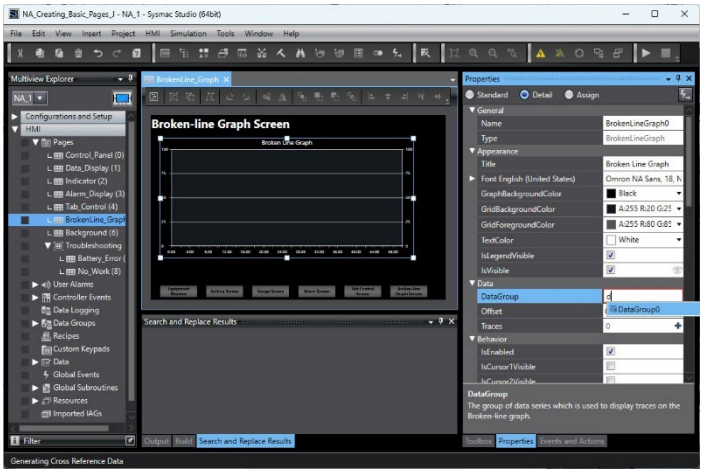
1. From [Toolbox], select [HMI Controls]-[Broken-line Graph] and drag and drop it to the page.



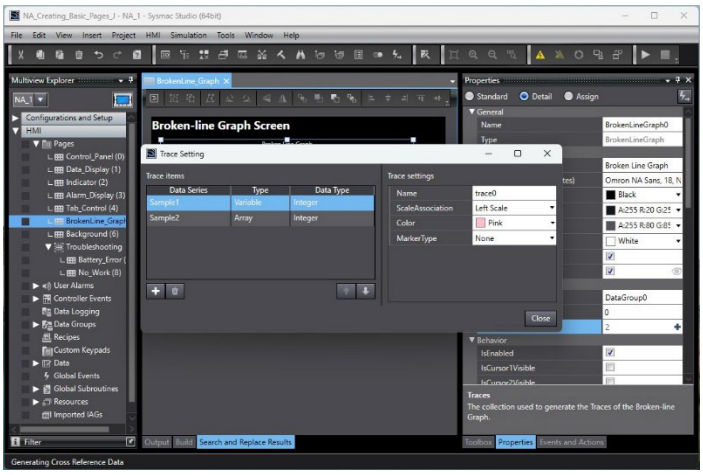
2. Change the placed broken-line graph to a desired size.



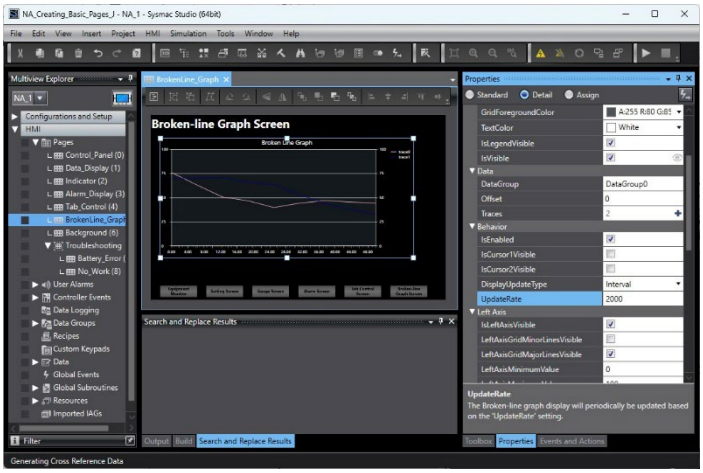
3. In [DataGroup] under [Data] in the Properties, enter the name of the data group created in the previous subsection.



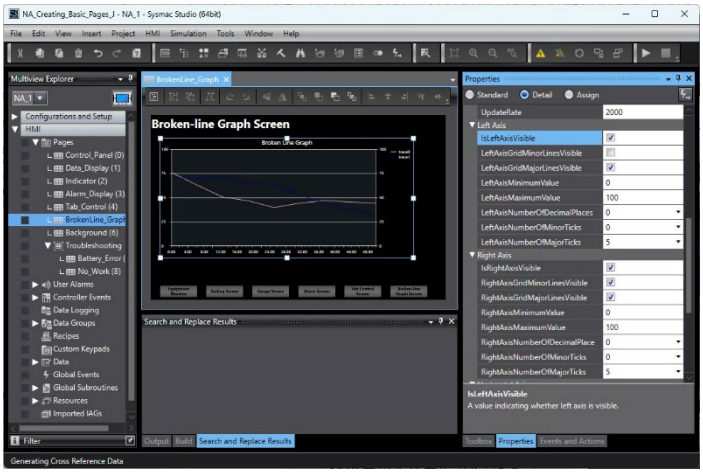
4. Click [+] of [Traces] to display the Trace Setting dialog, then click [+] to register the Data Series name to be displayed in the graph for the Data Series.



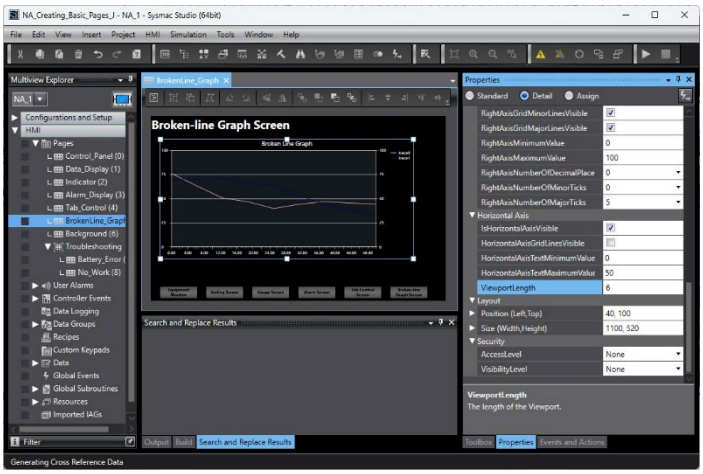
5. Set the update timing of the graph. Two types can be selected: update at fixed intervals and update when variable conditions are met. If “Interval” is selected in [Behavior]-[DisplayUpdateType] of Properties, display is updated at the interval of the value selected in [UpdateRate] (unit: ms).
If “Condition” is selected in [DisplayUpdateType], display is updated when the condition set in [Expression] is satisfied.



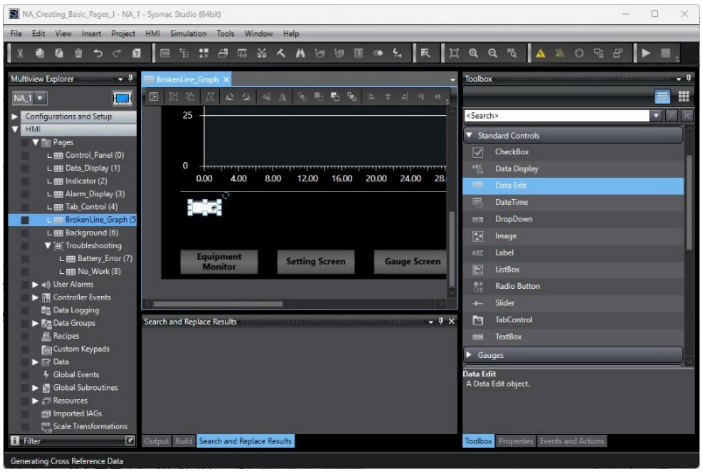
6. Edit the vertical axis of the graph. The figure in this section is the setting field for the left axis, but there is a similar setting field for the right axis.



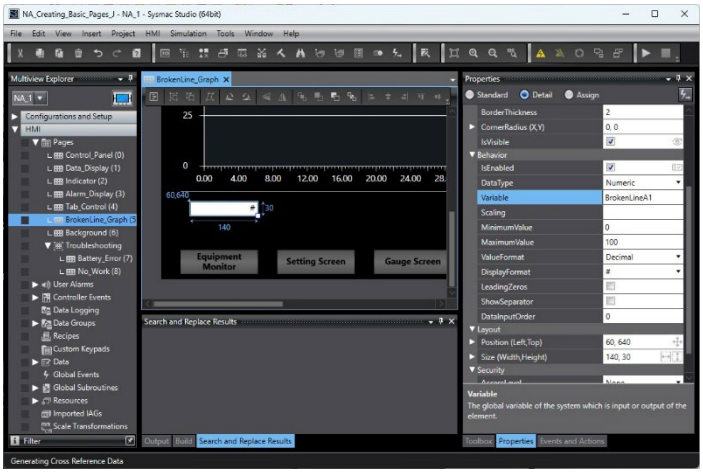
7. Edit the horizontal axis of the graph.
Set the number of display points to 6.



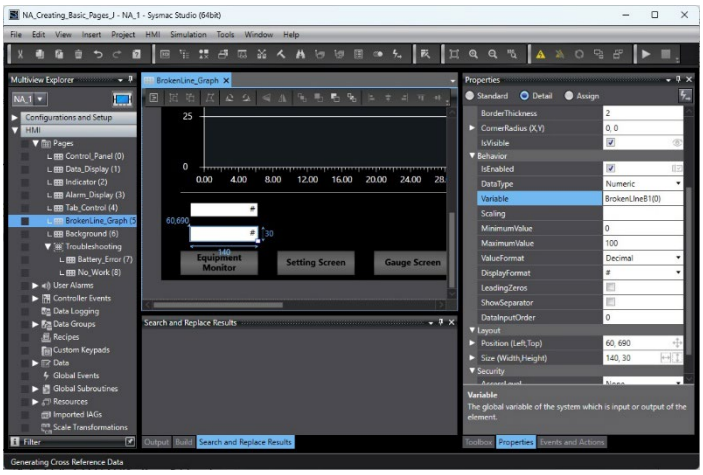
8. Create a Data Edit object for checking the operations.
From [Toolbox], select [Standard Controls]-[Data Edit] and drag and drop it to the page. Specify arbitrarily the font type and size.



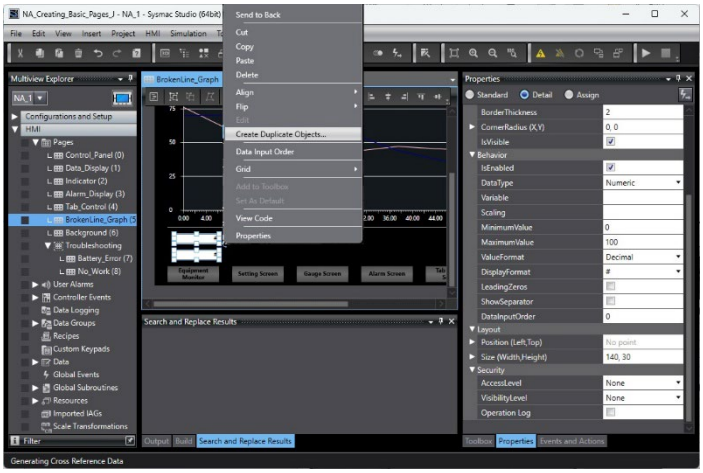
9. Register [BrokenLineA1] in [Behavior]-[Variable] of Properties of the placed Data Edit object.



10. Copy & paste the Data Edit object and register [BrokenLineB1(0)] in [Behavior]-[Variable] of Properties.

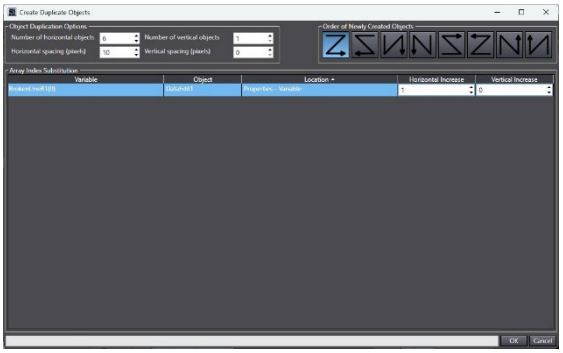


11. Right-click with the two Data Edit objects selected, and click [Create Duplicate Objects].



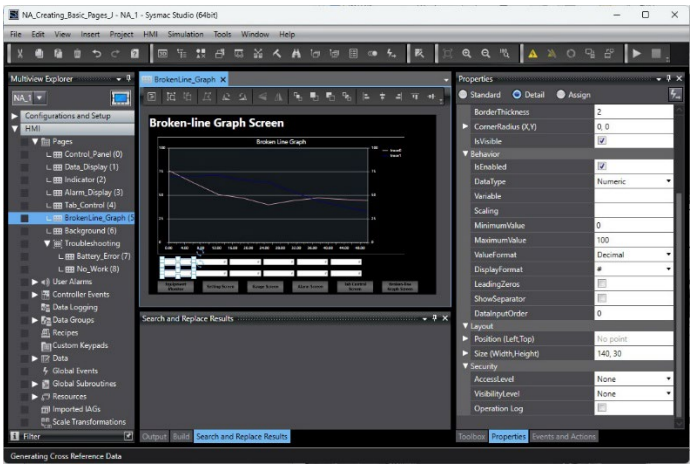
12. The Create Duplicate Objects dialog is displayed, so make the following settings.

- Object Duplication Options
  Number of horizontal objects: 6
  Horizontal spacing (pixels): 10
- Array Index Substitution
  Variable: BrokenLineB1
  Horizontal Increase: 1

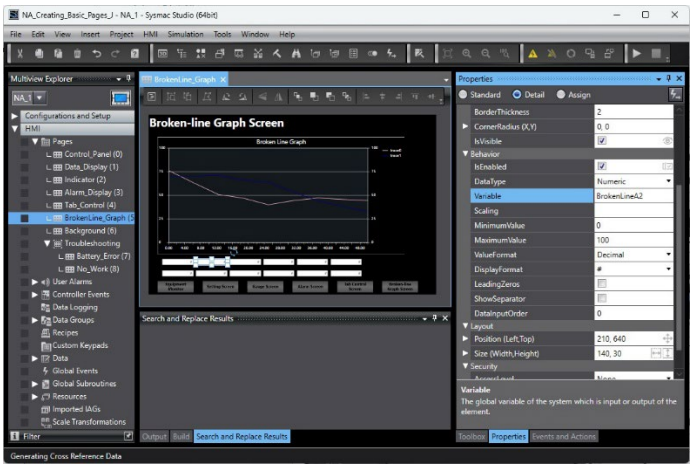


13. Click [OK].

14. Data Edit objects are duplicated by the set number.
* Array variables can add/subtract element numbers when duplicating objects, so setting changes after duplication are not required.



15. Enter [BrokenLineA2] to [BrokenLineA6] respectively in [Variable] of Properties for the Data Edit objects in the first column.



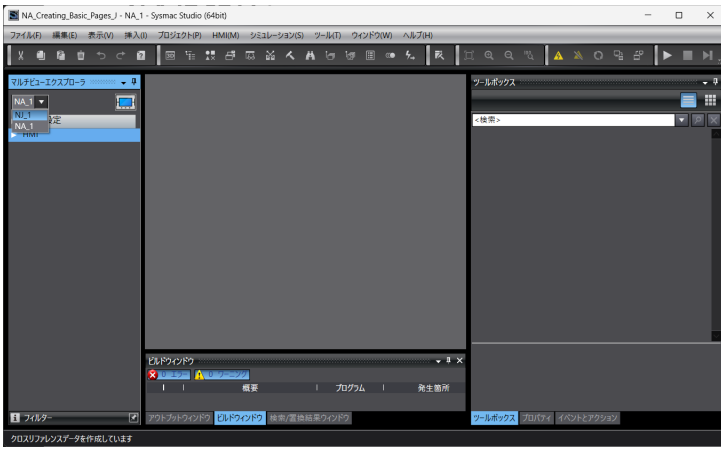
5 Integrated Simulation

When you do not have an actual NJ or NA unit, you can confirm the NJ programs and NA operations using the integrated simulation function as described below.

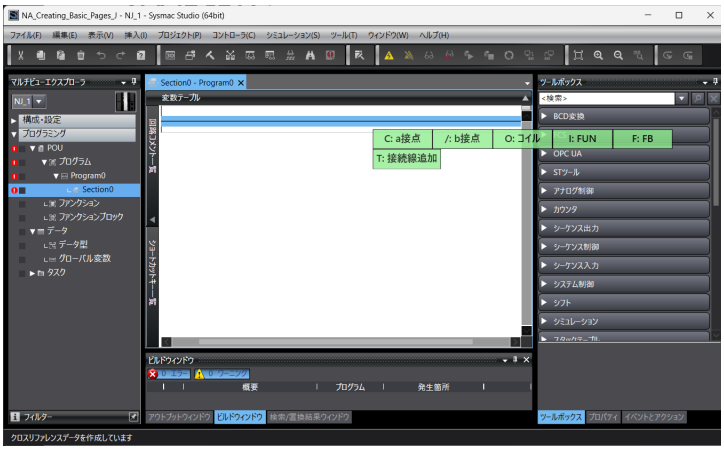
5-1 Creating a Ladder

Input the ladder for checking the operation.

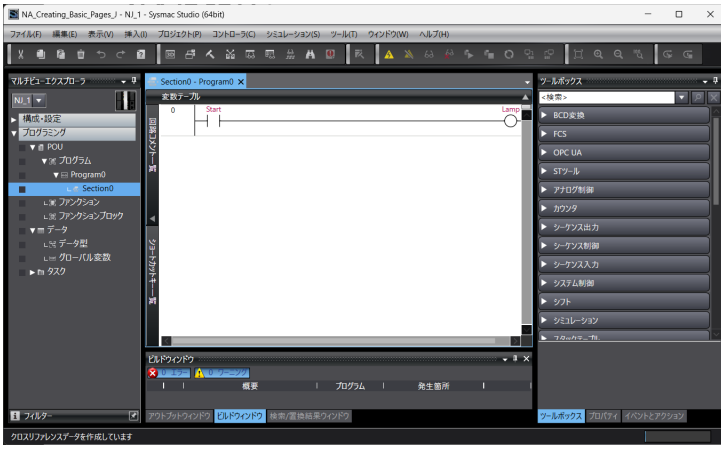
1. Change the project to “NJ_1”.



2. Double-click [Programming]-[POU]-[Programs]-[Program0]-[Section0].

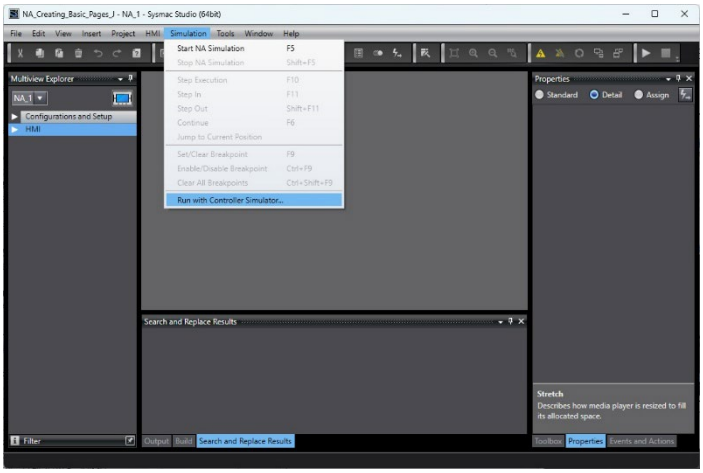


3. Enter the ladder program shown on the right.

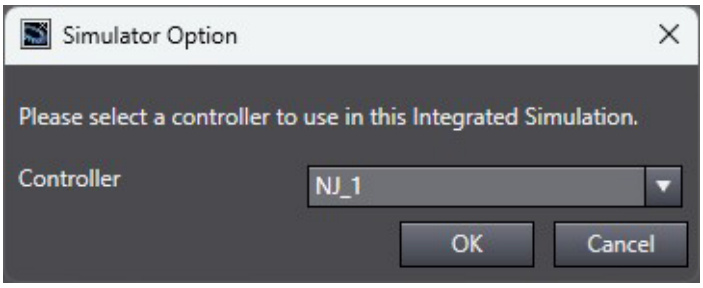


5-2 Executing Integrated Simulation

1. Click [Simulation]-[Run with Controller Simulator…].



2. Select the controller to use in the integrated simulation, and click [OK].



3. The Equipment Monitor Screen appears. Confirm that when you press the [START] button the Lamps light up.

6 Check on the Actual Unit

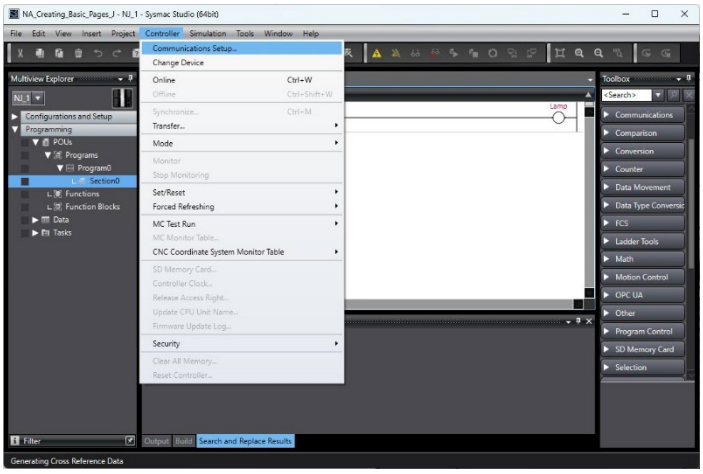
This chapter describes the procedure to transfer the project data of Sysmac Studio to an NA unit to check the operation.
If you do not have any actual unit, you can check the operation with the integrated simulation function described in Chapter 5 Integrated Simulation.

6-1 Synchronization

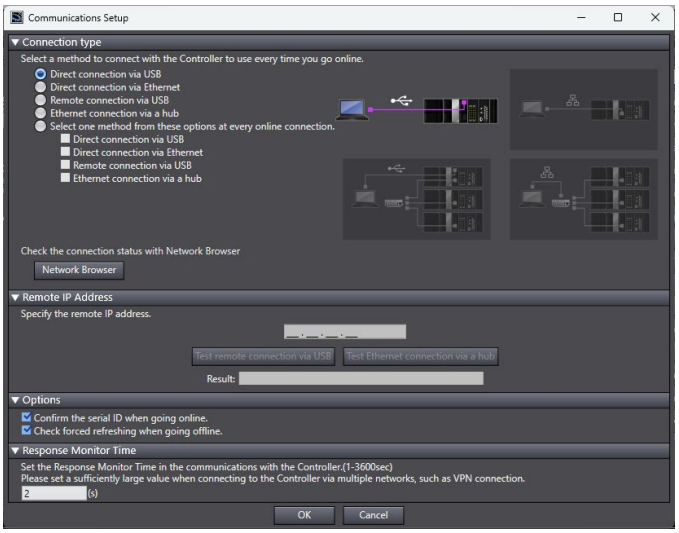
6-1-1 Synchronization with NJ

To transfer the configurations and settings as well as the programs of the NJ, synchronize with the NJ.

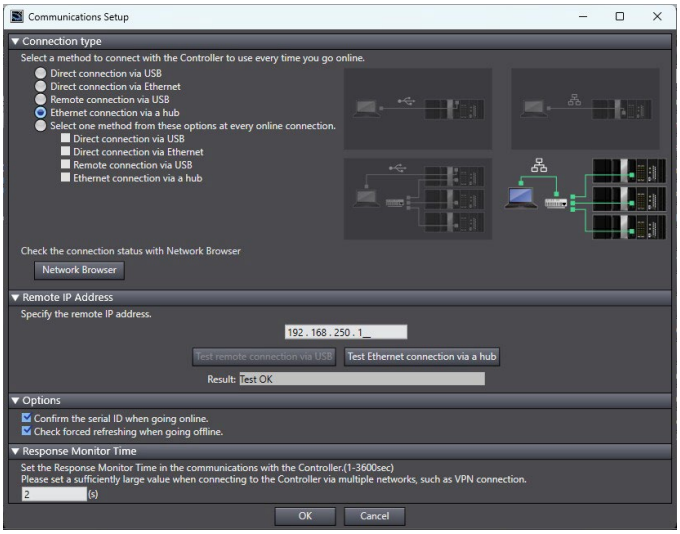
1. Select [Controller]-[Communications Setup…].



2. Select “Ethernet connection via a hub”.



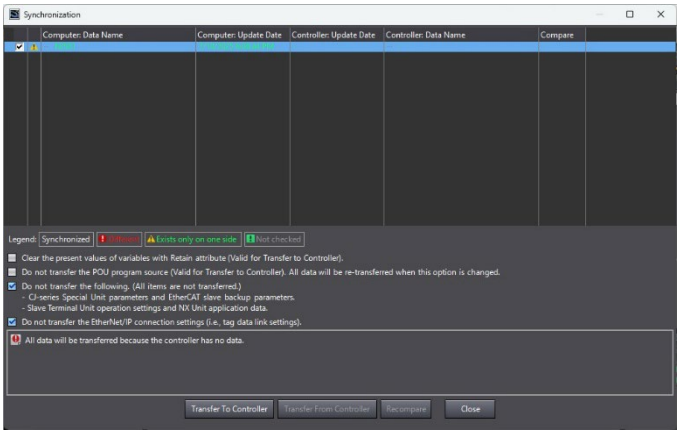
3. Enter the IP address (192.168.250.1) of the controller to be connected in [Remote IP Address].
Click [Ethernet Communications Test] and confirm that “Test OK” appears. Then click [OK].



4. Click the icon to connect to NJ online.

5. Click the icon to execute synchronization.

6. Cilck [Transfer To Controller].

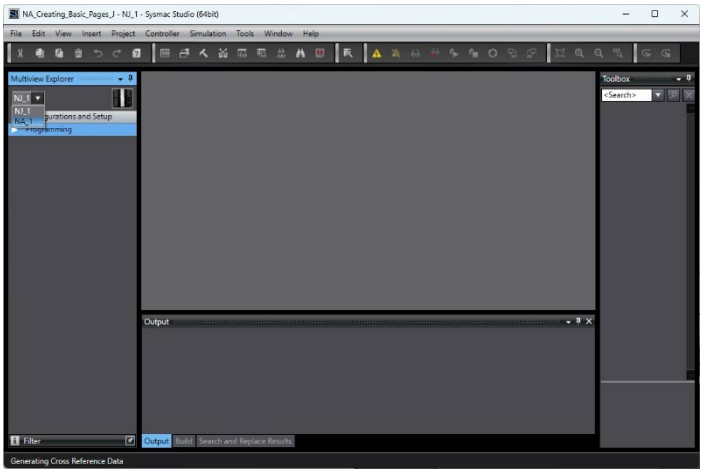


7. This completes the settings on the NJ side.

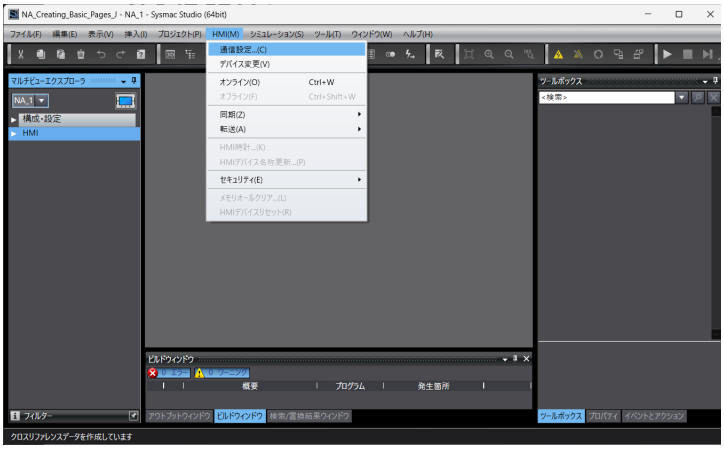
6-1-2 Synchronization with NA

Subsequently, synchronize with NA to transfer the configurations and settings as well as the programs of the NA.

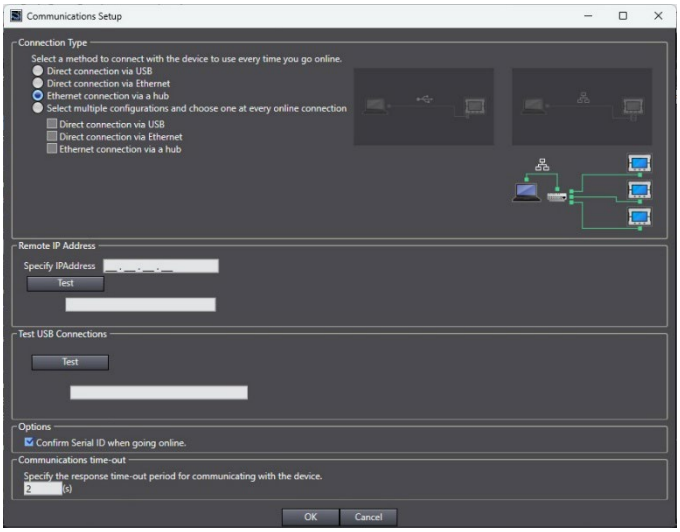
1. Swtich the project to “NA_1”.



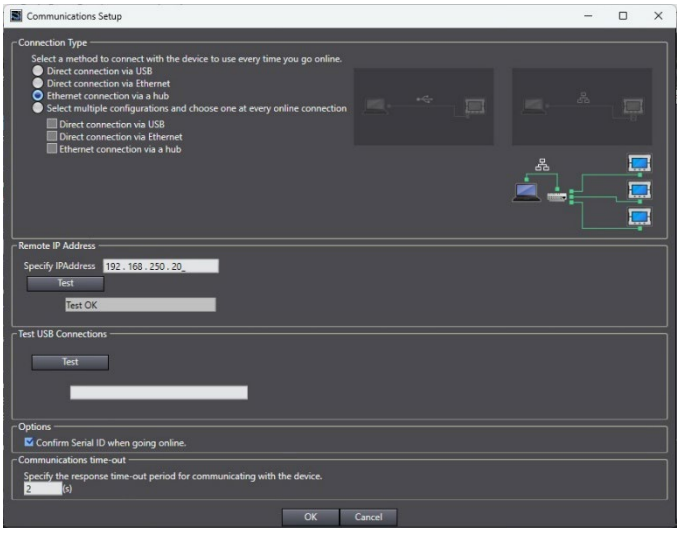
2. Select [HMI]-[Communications Setup…].



3. Select “Ethernet connection via a hub”.



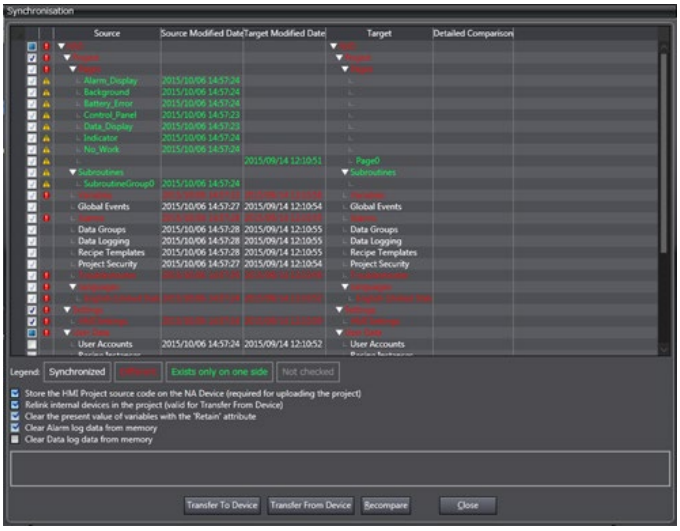
4. Enter the IP address of the NA to be connected in [Remote IP Address].
Click [Test] and confirm that “Test OK” appears. Then click [OK].



5. Click the icon to connect to NA online.

6. Click the icon to execute synchronization.

7. Click [Transfer To Device].



6-2 Operations

Check the operations on each page.

(1) Equipment Monitor

The Lamp objects light up while a START Button is held down.
The indications of the switches and lamps change when turning ON/OFF the switches.

(2) Setting Screen

When you specify the data input, the value is displayed.

(3) Gauge Screen

When you move the slider, the needle of the gauge moves in accordance with the slider movement.

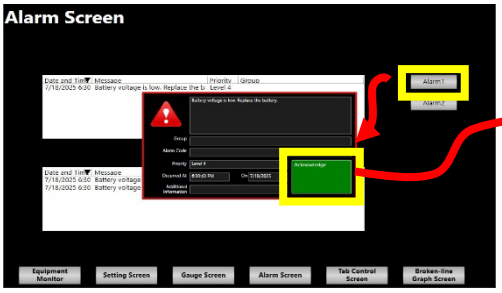
(4) Alarm Screen

Press the Alarm1/Alarm2 Buttons to confirm that the respective Alarms are raised.

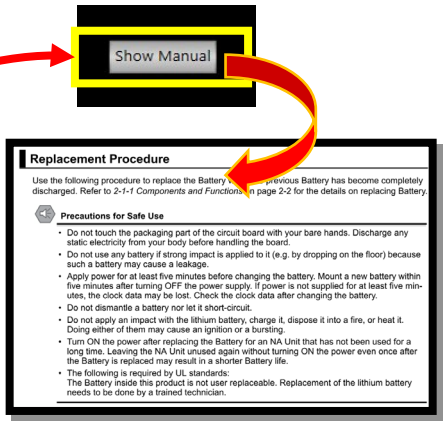
・For Alarm1, the Button to show the manual appears when the alarm is confirmed.
When you press the Button, the PDF file that explains how to replace batteries is displayed.

・For Alarm2, a video is played when the alarm is confirmed.

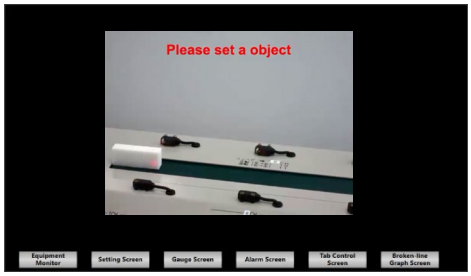
<<Alarm Screen>>



<<Alarm 1>>



<<Alarm 2>>

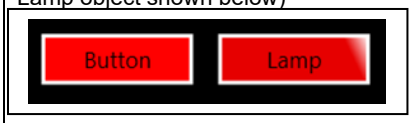


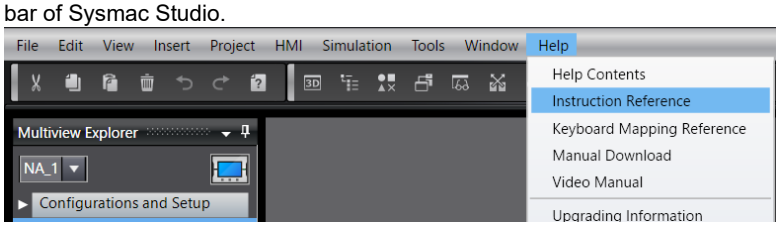
7 Reference Materials

7-1 List of Questions and Answers

This chapter lists questions and answers when creating screens with the NA Series.

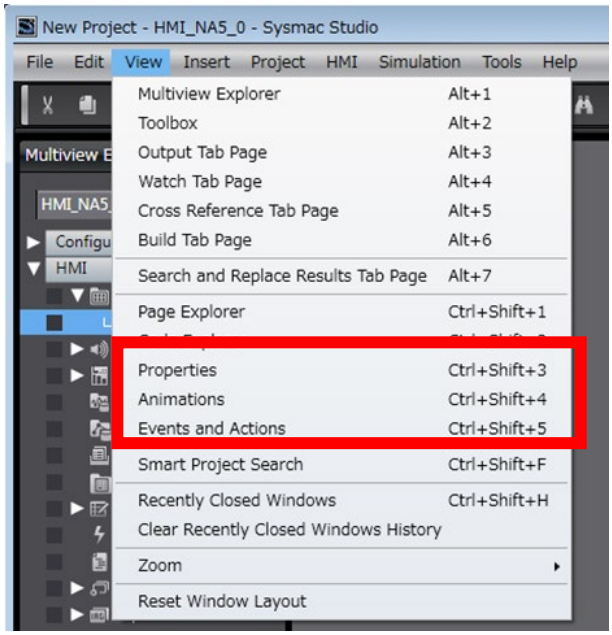
Questions	Answers
How can I know the differences between NS and NA and how to replace screens.	Refer to the Replace Guide From NS to NA (Cat. No. V469).
Can I find which functional object in NS corresponds with which object in NA?	Refer to the Replace Guide From NS to NA (Cat. No. V469).
How can I display the setting fields of Properties, Animations, or Events and Actions for an object?	Select an item from the [View] menu at the top. For details, refer to "7-1-1 How To Display the Properties Tab".
How can I view description of each function or object on Sysmac Studio?	Select "Description" from the context menu to show or hide the description. For details, refer to "7-1-2 How To Display Description of Objects".
How can I deactivate an input object such as a button (i.e. the control flag function in NS)?	Uncheck the [IsEnabled] checkbox under [Behavior] in the [Properties] tab page. For details, refer to "7-1-3 Settings to Enable Input".
How can I indirectly specify input permission for an input object such as a button (i.e. the control flag function in NS)?	Select [Animations] – [Enable] in the [Animations] tab page and set in [Expression] the indirect specification condition. For details, refer to "7-1-3 Settings to Enable Input".
How can I perform show/hide settings for objects (i.e. the control flag function in NS)?	Open the [Properties] tab page and uncheck the [IsVisible] checkbox under [Appearance]. For details, refer to "7-1-4 Show/Hide Settings".
How can I blink an object?	In the [Animations] tab page, select [Animations] - [Blink] and set in [Expression] the indirect specification condition. For details, refer to "7-1-5 Settings to Blink an Object".
There are several fields such as [Variable], [Expression], or [Value] to specify variables. What are the differences between these three?	You can only specify variables in [Variable], whereas you can not only enter variables but also show arithmetic results in [Expression] and [Value]. For details, refer to "7-1-6 Differences among Properties [Variable], [Expression], and [Value]".
How can I unify the aspect ratios of an image file and an object?	Uncheck the checkbox of [LockAspectRatio] under [Appearance] in the [Properties] tab page. For details, refer to "7-1-7 Automatic Adjustment of Aspect Ratio for Image Objects".
Can I create an object that enters a fixed value to a variable (i.e. the Set Value function by the WORD button in NS)?	In the [Events and Actions] tab page, select "SetVariable" as [Actions] and set the value to enter. For details, refer to "7-1-8 How To Enter a Fixed Value".

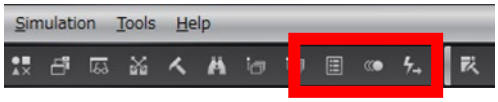
Questions	Answers
Can I increase a variable (i.e. the Increase/Decrease Value function by the WORD button in NS)?	In the [Events and Actions] tab page, select “IncreaseVariable” as [Actions] and set the value to add. For details, refer to “7-1-9 How To Increase/Decrease a Value.
Can I decrease a variable (i.e. the Increase/Decrease Value function by the WORD button in NS)?	In the [Events and Actions] tab page, select “DecreaseVariable” as [Actions] and set the value to subtract. For details, refer to “7-1-9 How To Increase/Decrease a Value”.
Can I create an object that is equivalent to a Multifunction object in the NS series?	You can set several functions in the [Events and Actions] tab page. For details, refer to “7-1-10 How To Create Multifunction Objects”.
Can I learn about the date and time formats?	It complies with the date and time format of Visual Basic. You can also specify an arbitrary format. For details, refer to “7-1-11 Date and Time Display Format”.
Can I change the state of a button object by not only pressing it down but also the value of an address?	It can be set in [Behavior]-[VisualFeedback] on the [Properties] tab. For details, refer to “7-1-12 Changing the State of the Button Object”.
Which NA object corresponds with the message indicator function of the NS series?	It can be replaced with a Label object or a Text object. However, unlike the NS Series, the font size and type cannot be changed for each state. For details, refer to “7-1-13 How to Create Message Displays”.
Can I remove gradation of a Lamp object? (the upper right corner of the Lamp object shown below) 	It is not possible to remove gradation from a Lamp object. However, part of the Lamp functions can be substituted by specifying [ColorChange] in the [Animations] tab page for a graphical object. For details, refer to “7-1-14 How To Create a Lamp Object with No Gradation”.
How can I show a decimal point in a Data Display object (i.e. the scale setting in NS)?	This can be achieved by using the Scale Transformations function. For details, refer to “7-1-15 Decimal Display of Integer-type Values”.
How can I deactivate the popup that comes up when selecting an already raised alarm event?	Uncheck the “Popup” checkbox of the User Alarm. For details, refer to “7-1-16 How To Disable the Popup Screen Upon Confirming Alarms”.
Cannot distinguish the raised alarms from the reset alarms by default. How can I do it?	Click the + icon in [Columns] on the [Properties] tab to add “Status”. For details, refer to “7-1-17 How To Display Information on Raised/Cleared Alarms”.
How can I set a macro equivalent to the one that is run in NS upon loading a project?	In the Global Events menu, set a subroutine that is created for “ProjectInitialzation”, the condition to start up the project. For details, refer to “7-1-18 Creating the Subroutine That Runs Upon Loading a Project”.

Questions	Answers
How can I set a macro equivalent to the one that is run in NS when an alarm event is raised or reset?	Set a subroutine that is created for an event and action of each user alarm. For details, refer to "7-1-19 Creating the Subroutine That Runs Upon Activation/Deactivation of an Alarm Event".
How can I set a macro equivalent to the one that is run in NS when a value is changed?	In the Global Events menu, set a subroutine that is created for "Condition", the condition for a value to change. For details, refer to "7-1-20 Creating the Subroutine That Runs Upon Change of Bit/Value".
Is it possible to connect an NA with a CJ-series CPU?	Connection is possible by registering the CPU to be connected as an external device. Supported connection methods are CIP Ethernet, FINS Ethernet, and serial connection. For details, refer to "7-1-21 Connecting with the CJ/CS/CP-series CPU".
Is it possible to switch the screen from the PLC? Is it also possible to report the current screen from NA to PLC?	Prepare a DINT-type variable on the PLC side, and map that variable to "_HMI_CurrentPageIndex", which is a system variable representing the current screen. You can move to a screen by entering the destination screen number in the variable assigned to the system variable. For details, refer to "7-1-22 How To Switch the Screen by the PLC Variables".
How to display the NA-series Subroutine Reference	It can be displayed by selecting [Help]-[Instruction Reference] on the menu bar of Sysmac Studio. 
How can I know the differences in data types between NJ/NX CPU Units and NA.	Refer to "7-1-23 Correspondence Table of Data Types between the NJ-series Controllers and the PTs".

7-1-1 How To Display the Properties Tab

By default, the tabs of Properties and other aspects are not displayed. To display these tabs, select an item to display from the [View] menu. (See the figure below.)
On Sysmac Studio Ver1.11 and later, you can display the Properties tab by double-clicking the object.



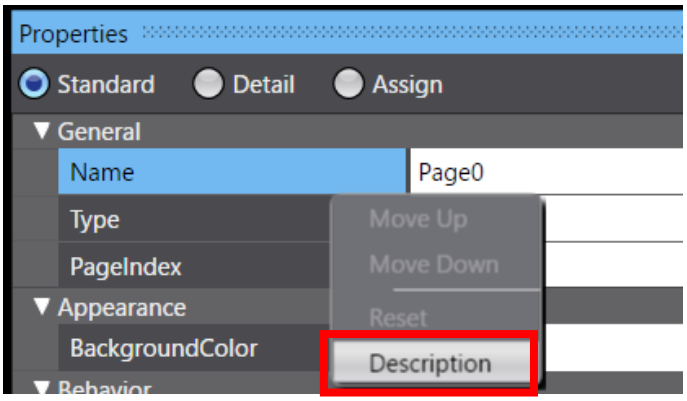


You can also use the icons (enclosed in the red rectangular above) under the menu bar to show the tabs.
The icons signify Properties, Animations, and Events and Actions from the left.

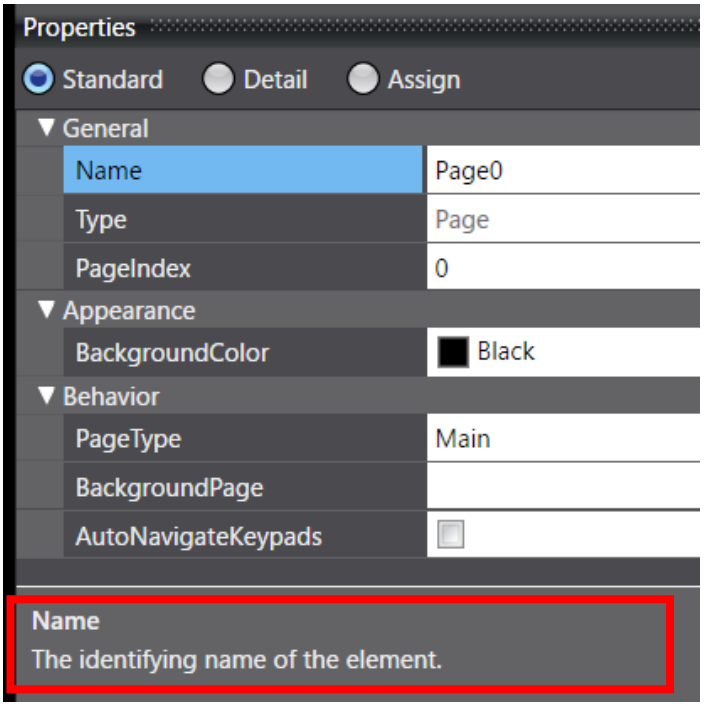
7-1-2 How To Display Description of Objects

By default, the descriptions of objects are not displayed. To display them, select “Description” from the context menu.

1. Select “Description” from the context menu.

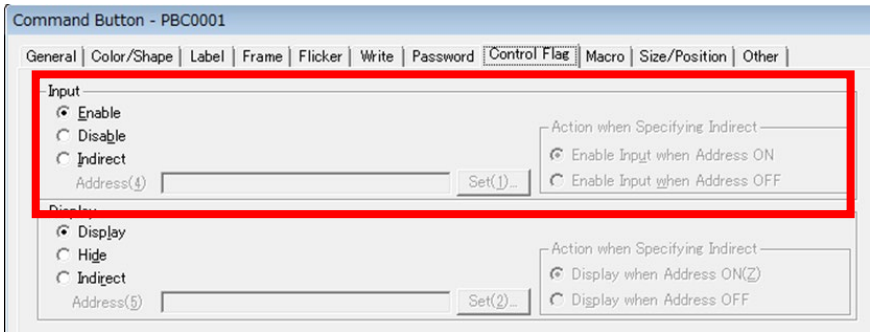


2. The description is displayed at th e bottom of the tab. Repeat step 1 to hide the description.

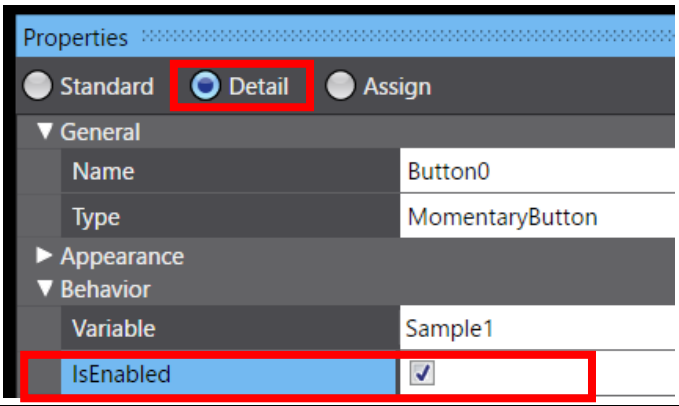


7-1-3 Settings to Enable Input

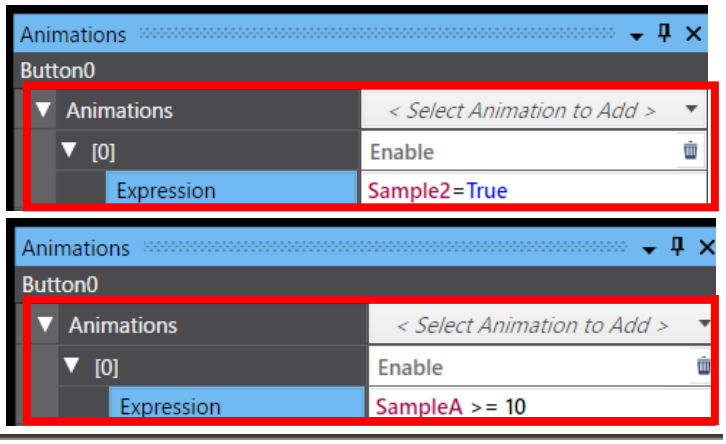
This subsection describes how to perform in the NA series the settings that are equivalent to the function of enabling input in the NS series.



1. Select the object for which you want to enable input, open the [Properties] tab, and with Detail selected, enable/disable input from [Behavior]-[IsEnabled]. Checked enables input, and unchecked disables input.

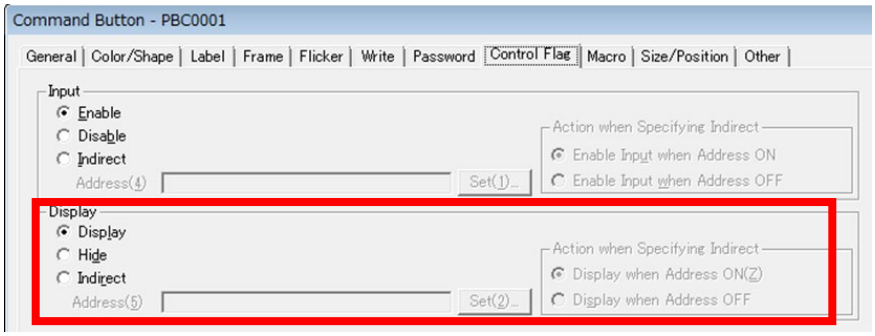


2. To control input by the state of the variable, select the target object and open the [Animations] tab. From [Animations], select “Enable” and specify the condition to enable input in [Expression].
In the NS series, all you can do to perform the settings is to turn ON or OFF the bit address. In the NA series, however, you can also specify the condition by numeric values.

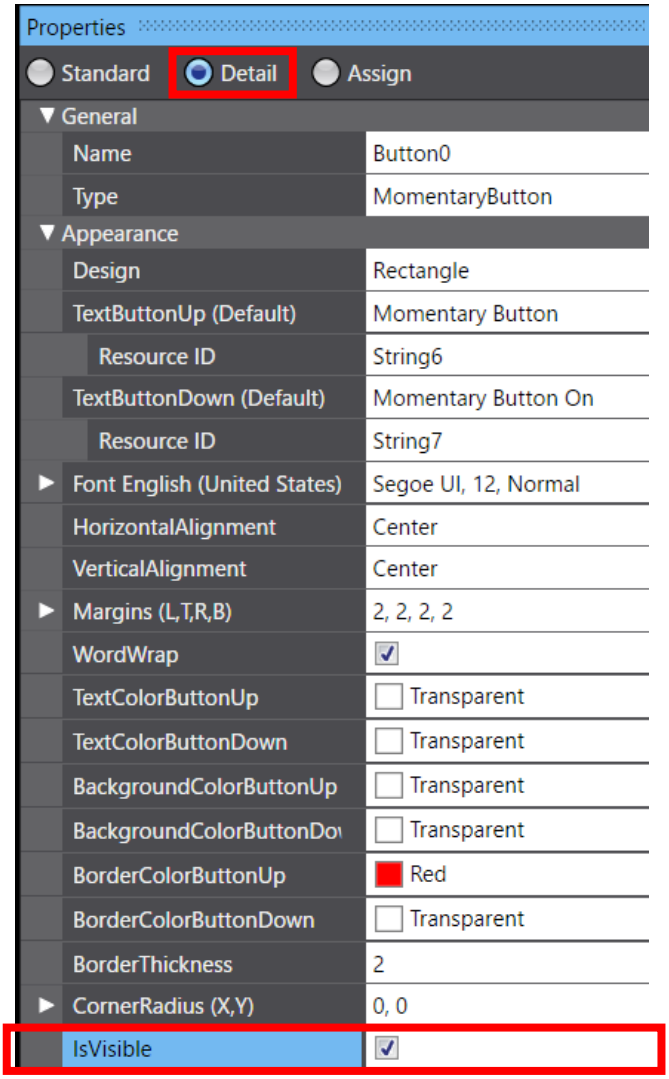


7-1-4 Show/Hide Settings

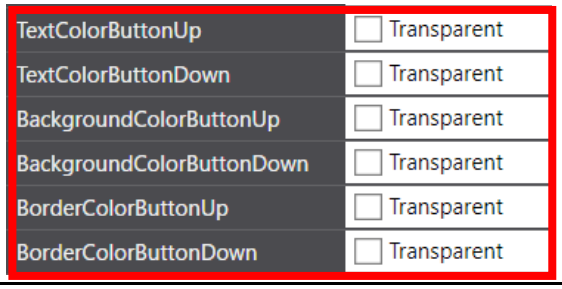
This subsection describes how to perform in the NA series the show/hide settings that are equivalent to the function in the NS series.



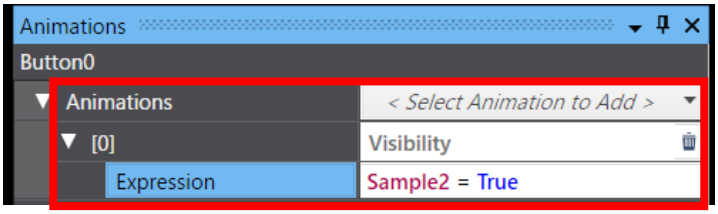
1. Select the object for which you want to make settings, open the [Properties] tab, and with Detail selected, show/hide it from [Appearance]-[IsVisible]. Checked shows it, and unchecked hides it.
   Beware that, while in the NS series the functions of the object work even if it is hidden, the hidden objects in NA series do not operate even if it is touched.

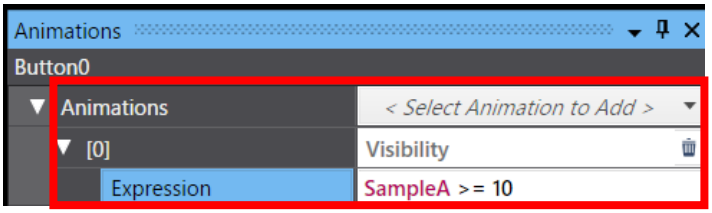


2. If you wish to hide an object while keeping its functions available, set all the parameters to specify the colors (enclosed by the red rectangular in the figure on the right) to “Transparent”.



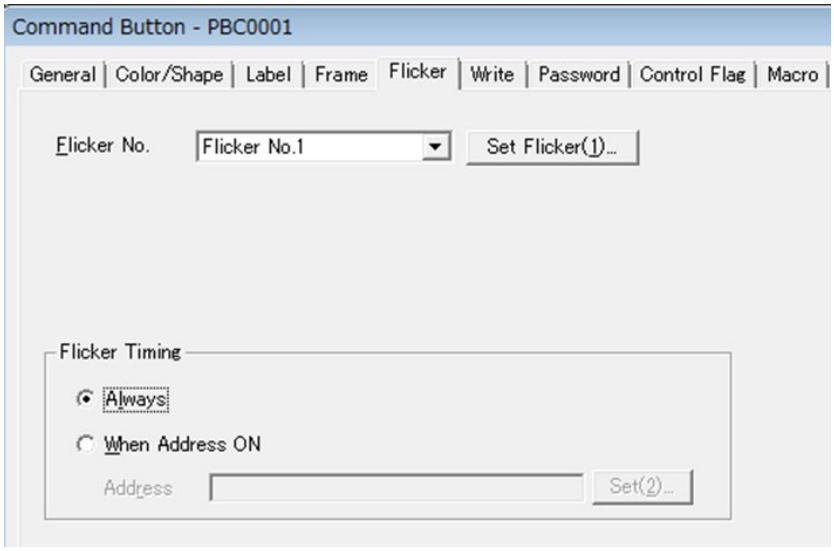
3. To control show/hide of an object by the state of the variable, select the target object and open the [Animations] tab. From [Animations], select “Visibility” and specify the condition to show the object in [Expression].
In the NS Series, settings could only be made by ON/OFF of bit addresses, but in the NA Series, condition settings by values are also possible.



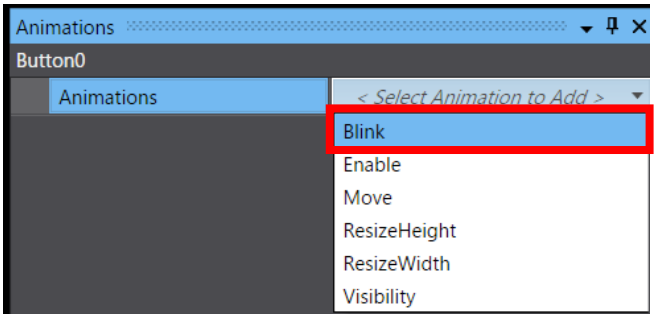


7-1-5 Settings to Blink an Object

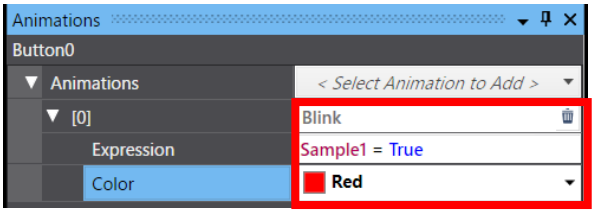
This section describes how to set the flicker function of the NS Series.



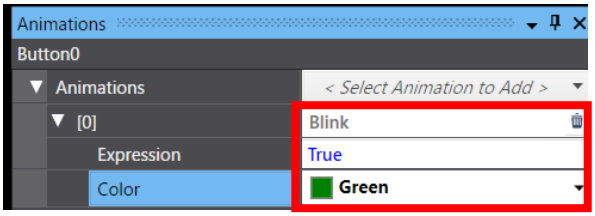
1. Select an object for which to perform settings, and open the [Animations] tab. From [Animations], select “Blink”.



2. Specify the condition to blink the object in [Expression], and specify the color for blinking in [Color].
Unlike the NS series, you cannot change the blinking speed.



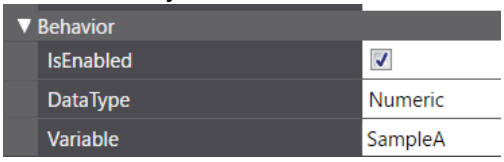
3. To constantly blink the object, select “True” in [Expression].



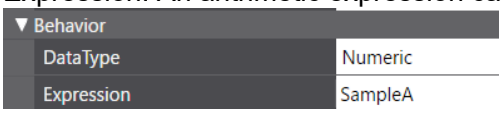
7-1-6 Differences among Properties [Variable], [Expression], and [Value]

The title of the field in which a variable is assigned for an object varies from [Variable] to [Expression] to [Value], depending on the object or item.
The indication of [Variable] is mainly used by the objects such as Data Edit or Button that write values. You can only set a variable in this field.
The indication of [Expression] is mainly used by the objects such as Data Display or Lamp that read values, in the fields for specifying startup conditions or display targets. You can set arithmetic expressions in addition to variables.
The indication of [Value] is mainly used by the objects that write fixed values or variable values. While you can only set a variable in the [Variable] field, you can also enter an arithmetic expression in this field. Thus, you can enter a value obtained by adding a fixed value to a variable value.

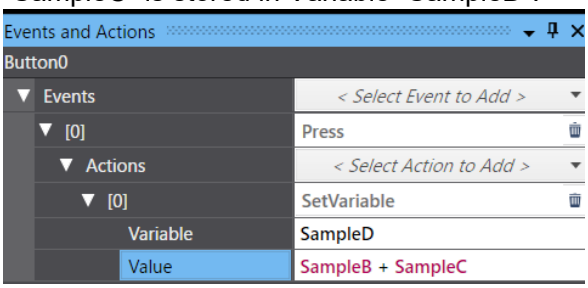
Variable: Only a variable can be set.



Expression: An arithmetic expression can be entered in addition to variables.

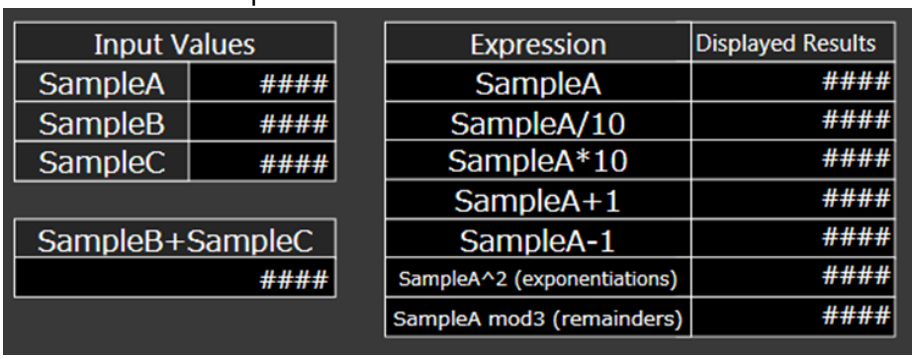


Value: As is the case with Expression, an arithmetic expression can be entered in addition to variables.
* In the example below, the value obtained by adding Variable “SampleB” and Variable “SampleC” is stored in Variable “SampleD”.



[Expression] is mainly used in the [Properties] tab, and [Value] in the [Events and Actions] tab. The figure on the left shows the settings on the [Events and Actions] tab for a Label object.

In [Expression] and [Value], you can use exponentiations and remainders besides the four arithmetic operations.



Input Values	
SampleA	####
SampleB	####
SampleC	####

SampleB+SampleC
####

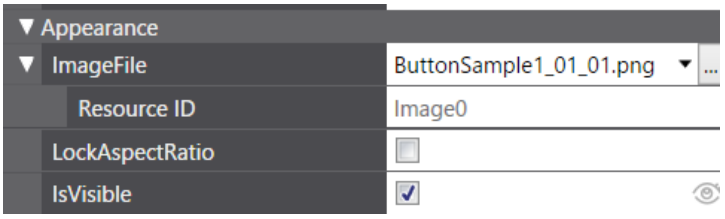
Expression	Displayed Results
SampleA	####
SampleA/10	####
SampleA*10	####
SampleA+1	####
SampleA-1	####
SampleA^2 (exponentiations)	####
SampleA mod3 (remainders)	####

7-1-7 Automatic Adjustment of Aspect Ratio for Image Objects

When you use an external image for a Button or Lamp object, the aspect ratio of the object and the image is automatically adjusted. As for the default of an Image object, however, the image's original size is kept when it is displayed.
Following is the procedure to automatically adjust the aspect ratio.

1. By default, when you set an image to an Image object, the height matches the object whereas the width does not, producing blanks on both ends.

2. Select the Image object and open the [Properties] tab. Uncheck the checkbox of [LockAspectRatio] under [Appearance].

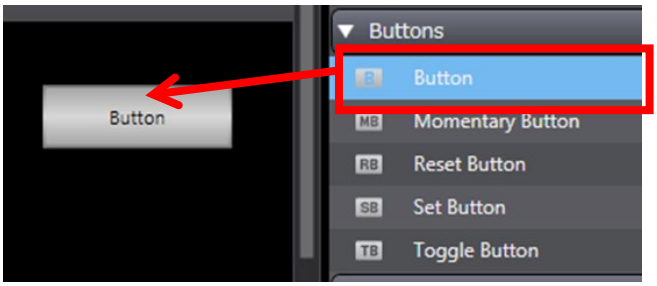


3. The image's aspect ratio matches that of the object.

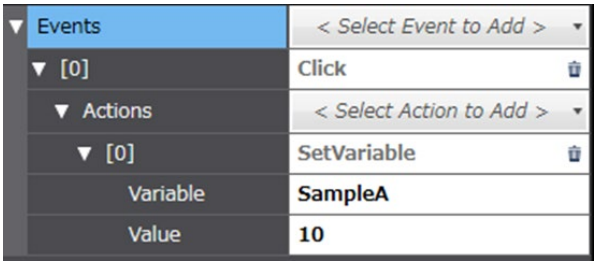
7-1-8 How To Enter a Fixed Value

To enter a fixed value in a variable or address in the NS series, you use a Word Button. In the NA series, you use Events and Actions.

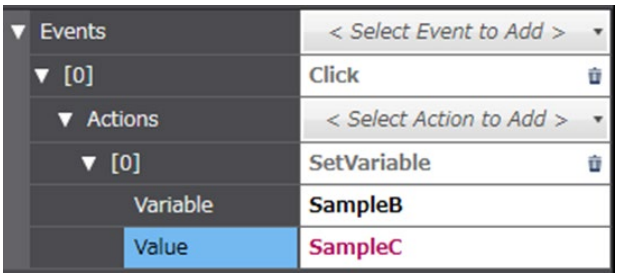
1. Select [Buttons] – [Button] in the Toolbox. Drag and drop it to the page.



2. In the [Events and Actions] tab page, select “click” as [Events] and “SetVariable” as [Actions]. Then, set a target variable in [Variable] and an input value in [Value].



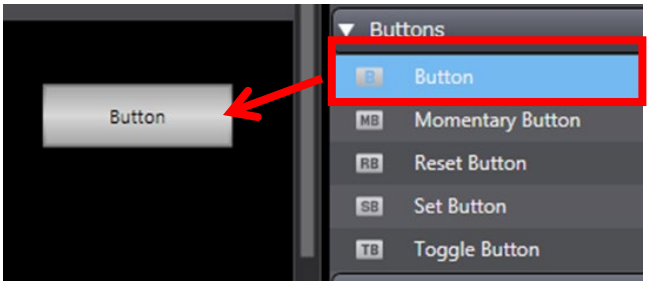
3. You can indirectly specify the input value by setting a variable instead of a fixed value in [Value].
The example on the right shows the value of Variable SampleC is entered in SampleB.



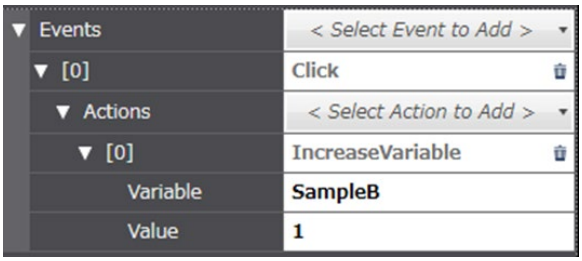
7-1-9 How To Increase/Decrease a Value

In the NS Series, the Word Button was used to add/subtract values to/from variables/addresses.
In the NA Series, Events and Actions are used.

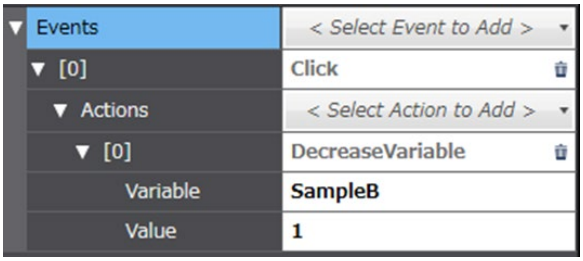
1. Select [Buttons] – [Button] in the Toolbox. Drag and drop it to the page.



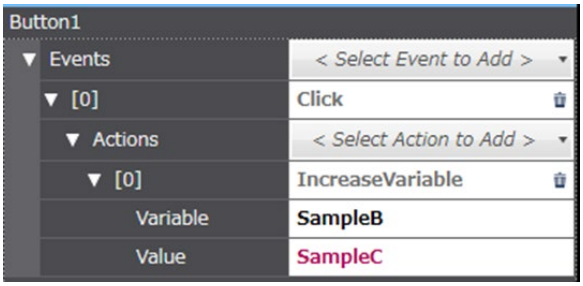
2. In the [Events and Actions] tab page, select “click” as [Events] and “IncreaseVariable” as [Actions]. Then, set a target variable in [Variable] and an increment value in [Value].



3. For subtraction, select “DecreaseVariable” as [Actions] and set a decrement value in [Value].



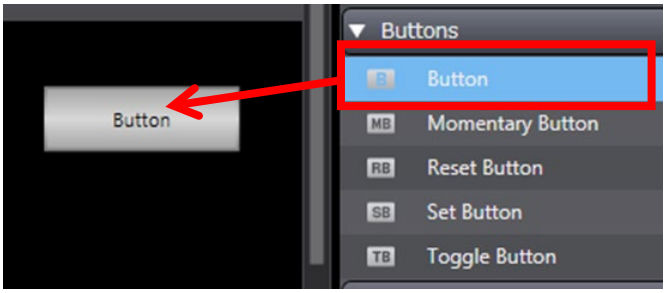
4. You can indirectly specify the increment/decrement value by setting a variable instead of a fixed value in [Value].



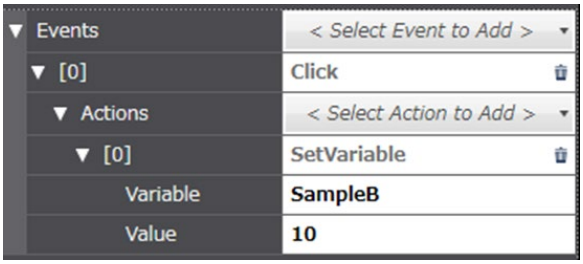
7-1-10 How To Create Multifunction Objects

In the NS series, there exist the Multifunction objects that have multiple functions within the single object. In the NA series, by contrast, such objects that are dedicated for multifunction do not exist. You can realize multifunction, however, by assigning multiple events and actions to a single object.

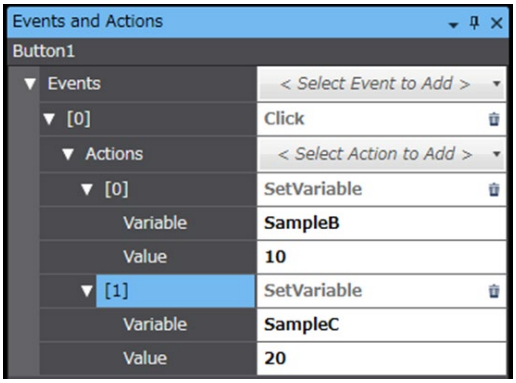
1. Select [Buttons] – [Button] in the Toolbox. Drag and drop it to the page.



2. In the [Events and Actions] tab page, select “click” as [Events] and “SetVariable” as [Actions]. Then, set the target variable in [Variable] and an input value in [Value].



3. Subsequently select “SetVariable” as [Actions] and set a target variable in [Variable] and an input value in [Value], both of which are different from those set in Step 2 above.

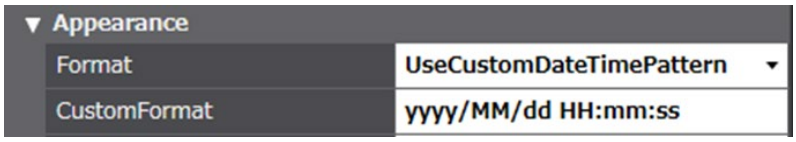


7-1-11 Date and Time Display Format

While the NS series has the respective independent date and time objects, the NA series has the integrated data and time display objects. You can still display only date or time by specifying the format.
15 types of formats are available. The users can arbitrarily specify one of them.
In addition in the NS series, you can set the clocks built in the PTs by specifying input permission for either a date or a time object. In the NA series, however, you cannot specify time from a DateTime object.

Formats	Display Examples (for 13:08:54 on June 5th 2015)
ShortDatePattern	06/05/2015
LongDatePattern	Friday,05 June 2015
FullDateShortTimePattern	Friday,05 June 2015 13:08
FullDateTimePattern	Friday,05 June 2015 13:08:54
ShortDateTimePattern	06/05/2015 13:08
ShortDateLongTimePattern	06/05/2015 13:08:54
MonthDayPattern	June 05
Rfc1123Pattern	Fri,05 June 2015 13:08:54 GMT
SortedDateTimePattern	2015-06-05T13:08:54
ShortTimePattern	13:08
LongTimePattern	13:08:54
UniversalSortedDateTimePattern	2015-06-05 13:08:54Z
UniversalSortedDateTimePattern	Friday,05 June 2015 04:08:54
YearMonthPattern	2015 June
UseCustomDateTimePattern	User-defined setting *1

*1: Users can arbitrarily specify [CustomFormat] as shown below.



・Setting Examples for UseCustomDateTimePattern

CustomFormat Settings	Display Examples (for 13:08:54 on June 5th 2015)
yyyy/MM/dd HH:mm:ss	2015/06/05 13:08:54
yy-MM-dd dddd HH:mm:ss dddd	15-06-05 Friday 13:08:54
yy/M/d ddd H:m:s	15/6/5 Fri 13:8:54
MMMM dd tt hh:mm:ss	June 05 PM 01:08:54
MMM dd hh:mm:ss t	Jun 05 01:08:54 P

Note:
The Formats are case sensitive. Thus, if you set as YYYY/MM/DD, the year and date are not properly displayed.

7-1-12 Changing the State of the Button Object

For button objects in the NA Series, conditions for state changes can be set by the VisualFeedback property. When replacing from the NS Series, make the settings as follows.
Some ON/PFF button types supported in the NS series have no functionalities in the NA series.

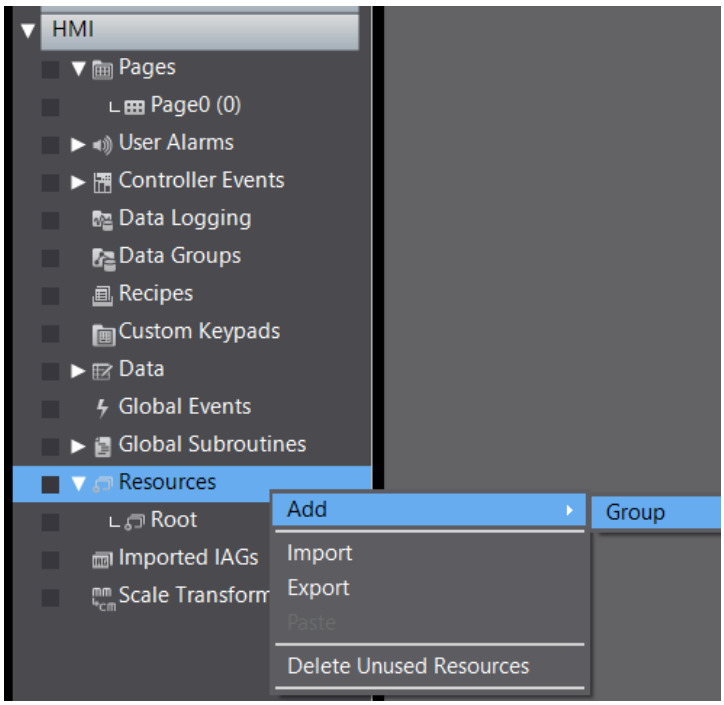
NS Action Type	NA Setting	Remarks
Rectangle/Circle/Select Shape (Type1)	Variable (Button)	
Rectangle/Circle/Select Shape (Type2-1)	Feedback (Button)	Enter an expression for changing the state in **FeedbackExpression**.
Rectangle/Circle/Select Shape (Type2-2)	Touch (Button) + Feedback (Button)	Enter an expression for changing the state in **FeedbackExpression**.
Rectangle/Circle/Select Shape (Type3)	No corresponding setting	This type does not have a functionality as a button itself, but you can create a similar display by overlaying buttons, lamps, and shapes.
Rectangle2Light(Type1)	Variable (Button) + Feedback (Indicator)	Select *Bottom* or *Custom* for **IndicatorPosition** to adjust the width, height, and position of the indicator.
Rectangle2Light(Type2)	No corresponding setting	
Rectangle2Light(Type4)	Variable (Button) + Feedback (Indicator)	I the NA series, the indicator corresponds to the ○ in an NS series object, but its shape is rectangle.
Rectangle2Light(Type4)	No corresponding setting	

7-1-13 How to Create Message Displays

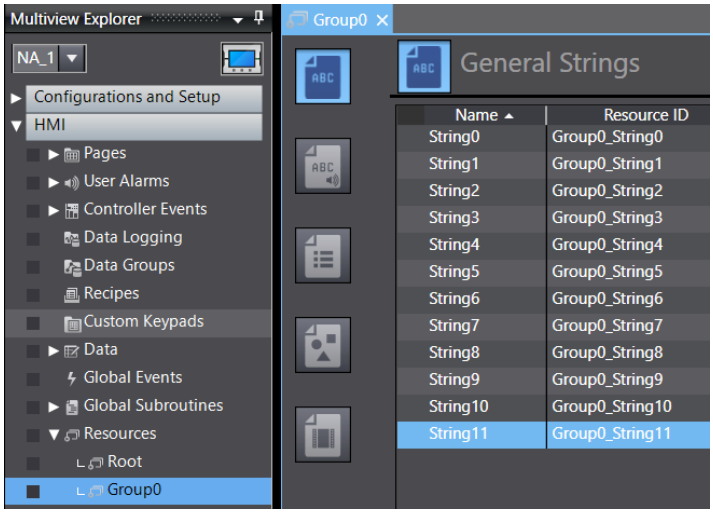
For functions that change the state according to the value of a variable, such as message displays that can be used in the NS Series, Label objects and Text objects are used in the NA Series.

However, while in the NS Series you could set the font type and size for each state, in the NA Series you cannot change them from the base setting values. You can change the background color and the text color as before.

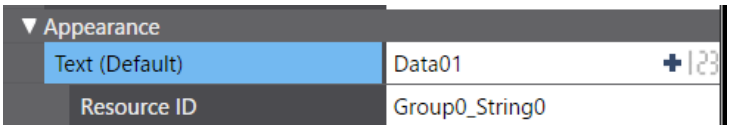
1. Right-click [HMI]-[Resources] in the Multiview Explorer and select [Add]-[Group]. Although the group [Root] exists in the initial state, it is recommended to create a new group for easier management.



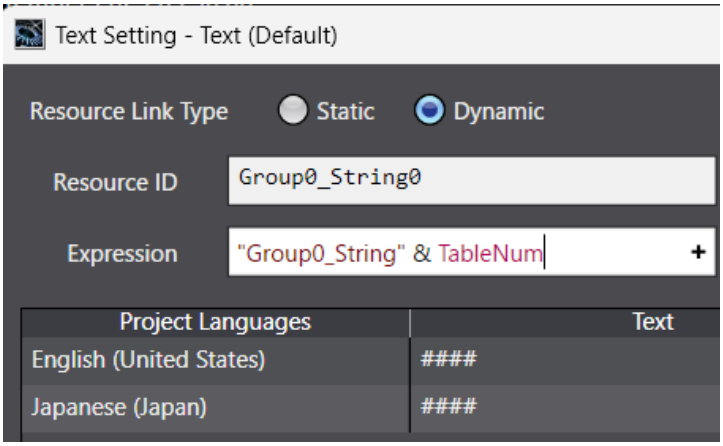
2. Enter text in [General Strings] within the newly registered group.



3. After entering the text in Resources, create a label or a text box object, and click the + icon.



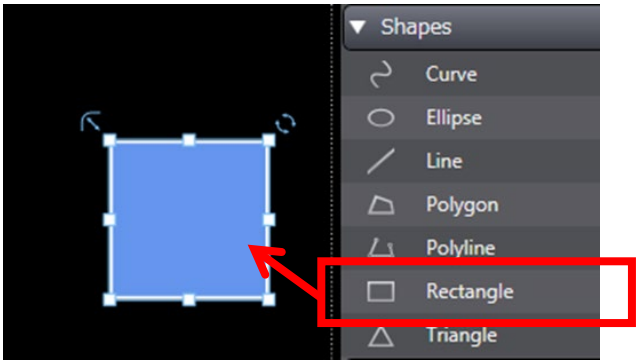
4. Selecting [Dynamic] from the Resource Link Type allows you to enter [Expression].
Enclose the fixed part in double quotation marks, followed by “&”, and then describe the numerical variable.
In the following example, the part up to Group0_String is fixed, and the string can be switched by the value of the numerical variable TableNum.



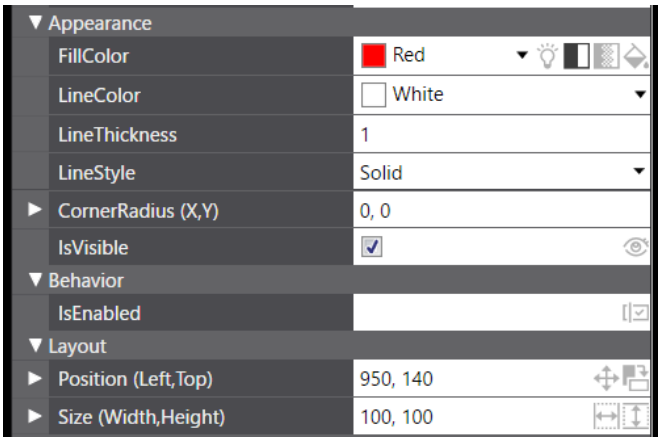
7-1-14 How To Create a Lamp Object with No Gradation

The NA-series Lamp objects are gradated by default. You cannot make a Lamp of which appearance is perfectly identical to a Button even if you specify the same color for the Lamp as that of the Button (see the figure below). You can avoid the gradation by setting [Design] under [Appearance] to “Image” and importing an external image. You can also substitute the partial function of a Lamp by using the animation function.

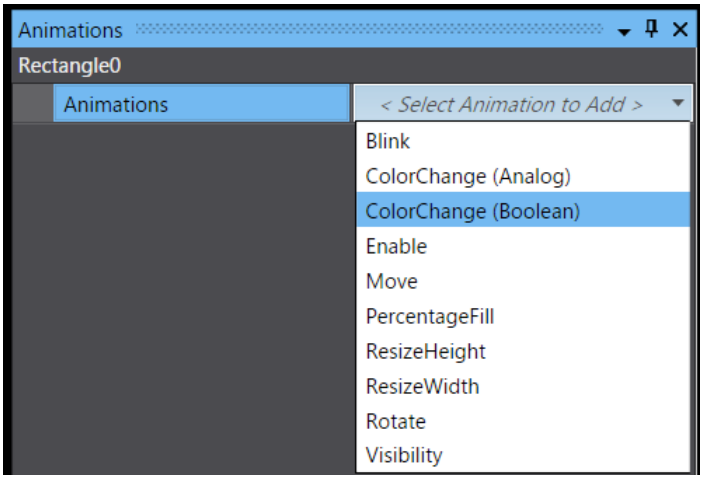
1. Select [Shapes] – [Rectangle] in the Toolbox. Drag and drop it to the page.



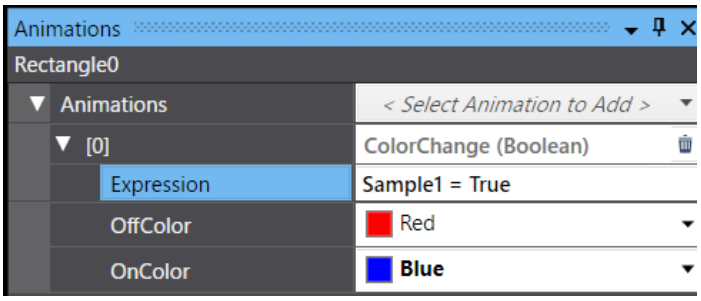
2. Select the object and open the [Properties] tab page. Specify [FillColor] and [LineColor] under [Appearance], and [Size] under [Layout] arbitrarily.



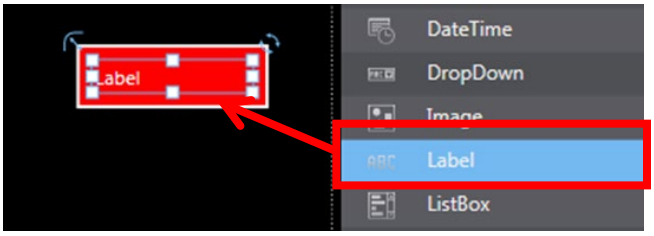
3. Open the [Animations] tab page. Select “ColorChange (Boolean)” as [Animations].



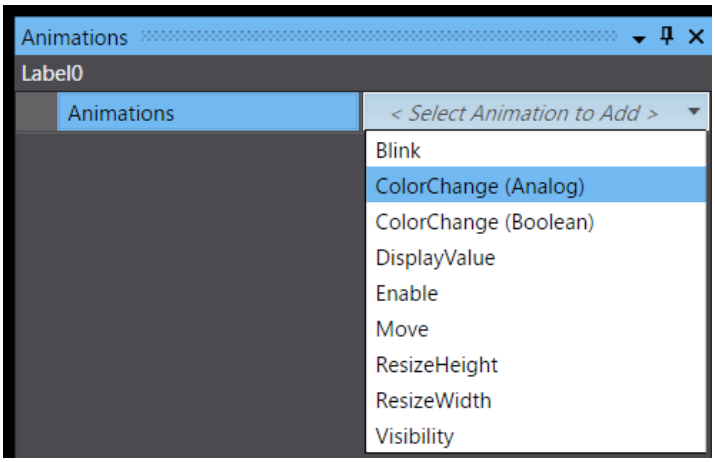
4. Specify the condition to change the background color in [Expression], the color at the time when the conditions is “False” in [OffColor], and the color at the time when the condition is “True” in [OnColor].
Note that for the Shape objects you can only modify the color of background. Unlike the Lamp objects, you cannot change the color of the frame.



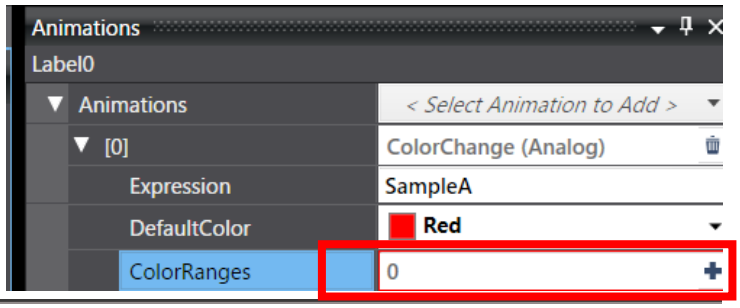
5. To add a label, select [Standard Controls] – [Label] in the Toolbox. Drag and drop it to the object that has been created up until Step 4 to add an arbitrary text.
As is the case with the Rectangle objects, you can change the state of the Label objects by specifying “ColorChange” in the [Animations] tab. Except for the frame color, you can reproduce the function almost equivalent to that of Bit Lamp objects.



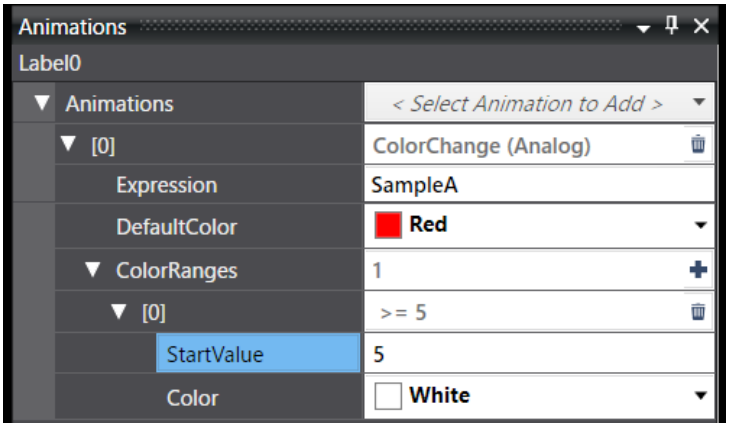
6. Like a Data Lamp object, if you wish to use a function of switching the state depending on the variable value, select “ColorChange (Analog)” in Step 3.



7. Set the variable that controls state change in [Expression] under [Animations], and click the cross (+) in [ColorRanges].



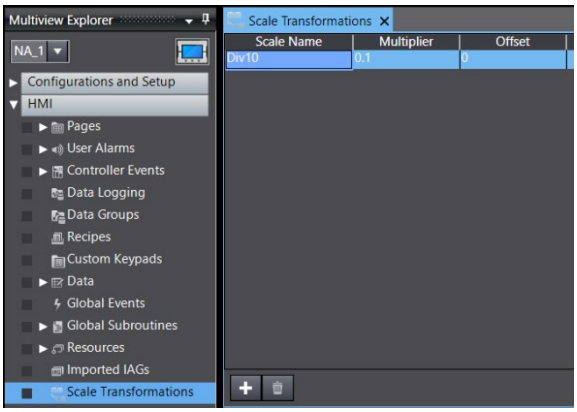
8. A setting field is added under [ColorRanges]. Set the condition in [StartValue]. Set also the background color in [Color] for the cases where the condition specified in [StartValue] is met. The example on the right shows that if the value of Variable “SampleA” becomes 5 or greater, the background color turns white. To add more conditions, click the cross (+) in [ColorRanges] to add the setting fields.



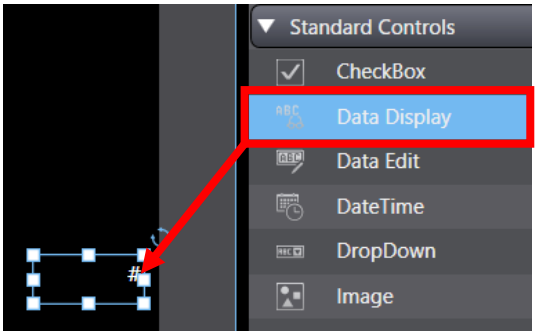
7-1-15 Decimal Display of Integer-type Values

This is equivalent to the function specified by “Unit & Scale” in the NS series.
For NA, this can be achieved by using the Scale Transformations function.
The following explanation is an example of setting the magnification setting “0.1 times” for the variable “SampleA” using a Data Display object.
With similar settings, the Data Edit object can also display and input values.

1. Double-click [HMI]-[Scale Transformations] in the Multiview Explorer to display the setting screen.
Left-click the + icon to display the scale settings.
Set as follows.
• Scale Name: Div10
• Multiplier: 0.1
• Offset: 0

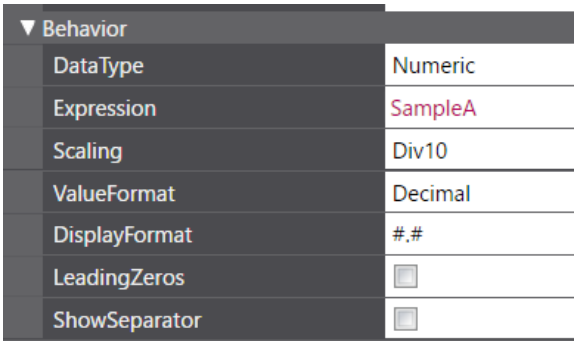


2. Open a desired page and drag & drop the Data Display object from the Toolbox.



3. Make the following settings for the placed Data Display object.
• Expression: SampleA
• Scaling: Div10
• DisplayFormat: #.#

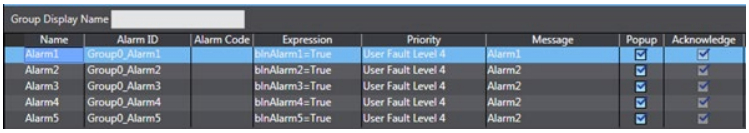
By making the above settings, values can be displayed with a magnification setting of [0.1] times. When changing the magnification, change Multiplier in Scale Transformations.



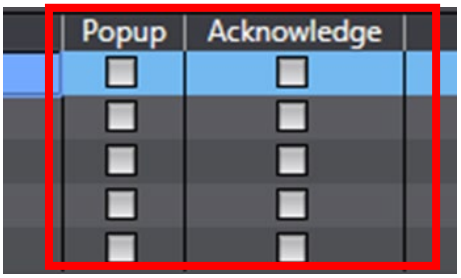
7-1-16 How To Disable the Popup Screen Upon Confirming Alarms

By default of the NA-series alarm objects, a popup page that includes the alarm's detailed information comes up when you touch the raised alarm. Following is the procedure to disable the popup page.

1. In the Multiview Explorer, select [Group0] under [HMI]-[User Alarms].



2. Uncheck the checkbox of "Popup".



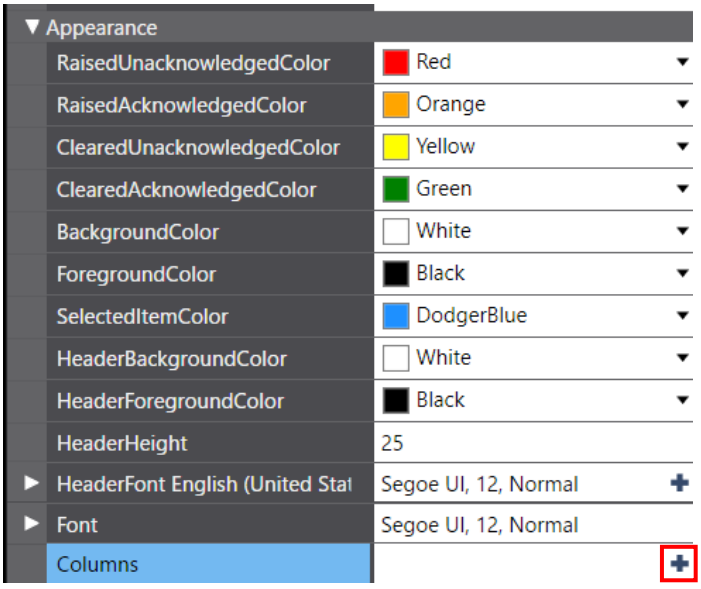
7-1-17 How To Display Information on Raised/Cleared Alarms

The default of the NA-series alarm objects does not display information on raised or cleared alarms. The figure below shows a record including raised/cleared Alarm Messages 1 to 3 respectively. However, without indication of raised or cleared, the table is difficult to understand.

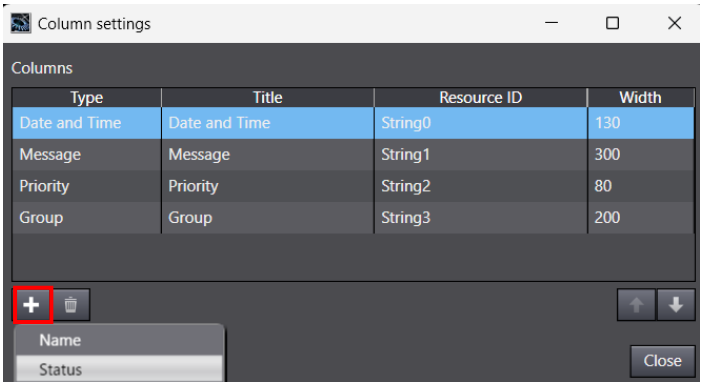
In addition, the NS series can display in a single row an alarm that has been raised and cleared, whereas the NA series forcibly separates the raised from the cleared to display in different rows. You can display neither only alarms that have been raised, nor only those that have been cleared.

Date and Time	Message	Priority	Group
9/30/2015 9:46:55 AM	AlarmMessage2	Level 1	
9/30/2015 9:46:50 AM	AlarmMessage3	Level 1	
9/30/2015 9:46:46 AM	AlarmMessage3	Level 1	
9/30/2015 9:46:44 AM	AlarmMessage2	Level 1	
9/30/2015 9:46:43 AM	AlarmMessage1	Level 1	
9/30/2015 9:46:31 AM	AlarmMessage1	Level 1	

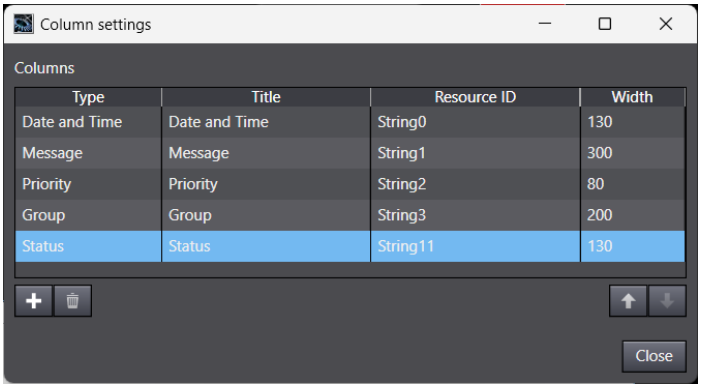
1. Select User Alarm Viewer and open the [Properties] tab.
   Click the + icon to the right of the [Columns] property.



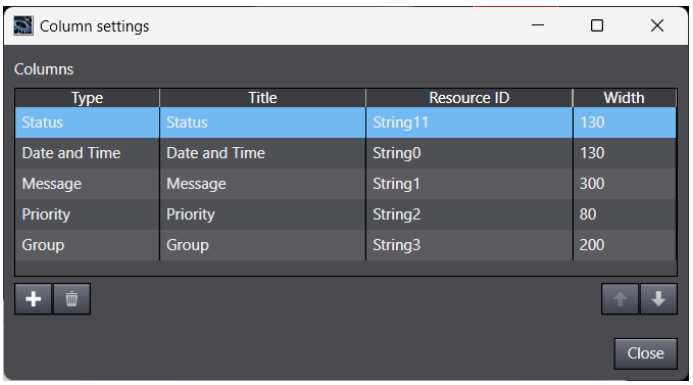
2. The dialog for setting items to be displayed in the User Alarm Viewer object is displayed.
   Click the + icon in the lower left and select Status.



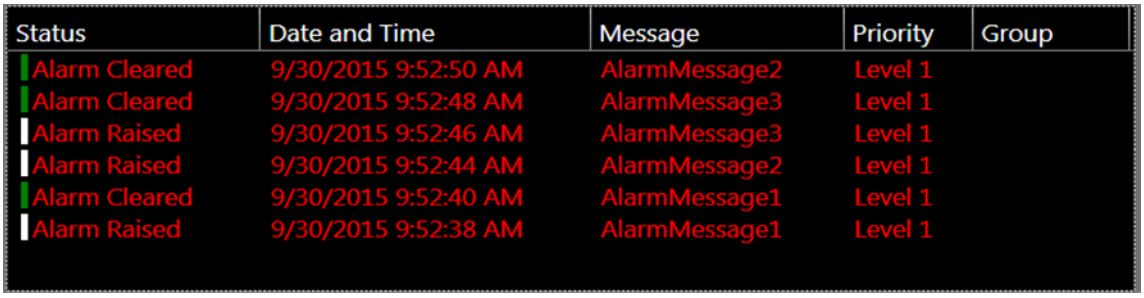
3. A Status item is added.



4. With Status selected, click the ↑ button to move the item to the top.

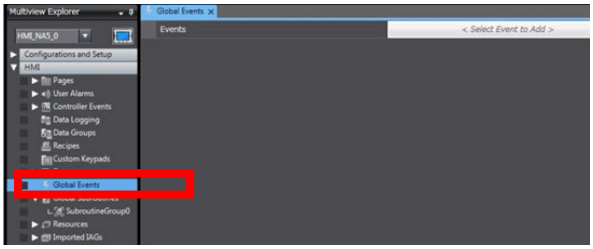
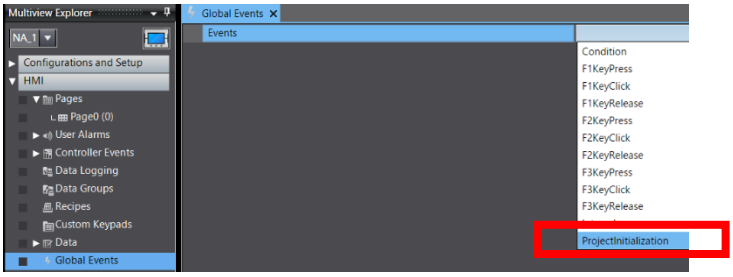


With the above settings, the alarm object is displayed as below:
The information on raised/cleared alarms is shown in the “Status” column.
“Alarm Raised” indicates those that have been raised, and “Alarm Cleared” those cleared.



7-1-18 Creating the Subroutine That Runs Upon Loading a Project

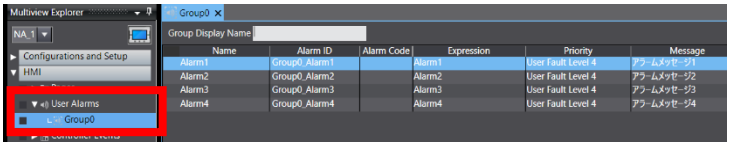
Following is the procedure to create the subroutine that is executed upon starting up the system after power is supplied to the NA series.

1. In the Multiview Explorer, select [HMI]-[Global Events].	
2. In the [Events and Actions] tab page, select “ProjectInitialzation” as [Events].	
3. Select “CallSubroutine” as [Actions] and specify the subroutine to call in the [SubroutineName] field.	

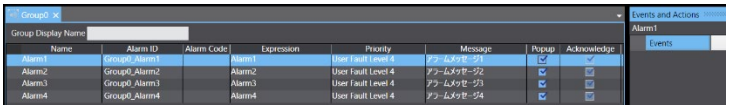
7-1-19 Creating the Subroutine That Runs Upon Activation/Deactivation of an Alarm Event

In the NS series, a macro can be run upon activation or deactivation of an alarm. In the NA series, it can also be run even at the timing of confirming an alarm.

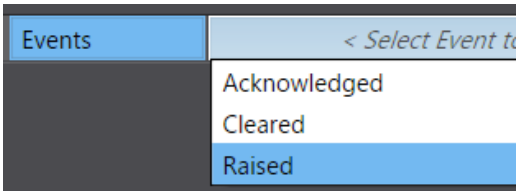
1. In the Multiview Explorer, select [Group0] under [HMI]-[User Alarms].



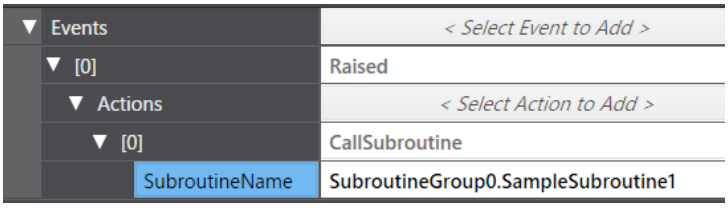
2. Select the alarm event to which to assign a subroutine, and open the [Events and Actions] tab page.



3. To execute the subroutine upon occurrence of the alarm, select “Raised” as [Events]. Similarly, select “Cleared” to execute upon reset, and “Acknowledged” upon confirmation.

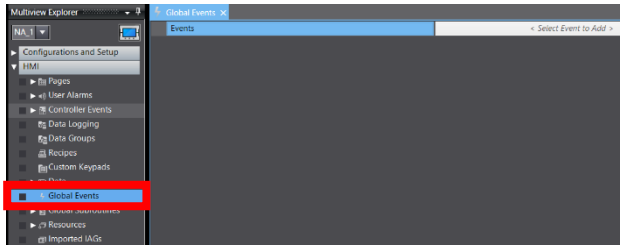


4. Select “CallSubroutine” as [Actions] and specify the subroutine to call in the [SubroutineName].

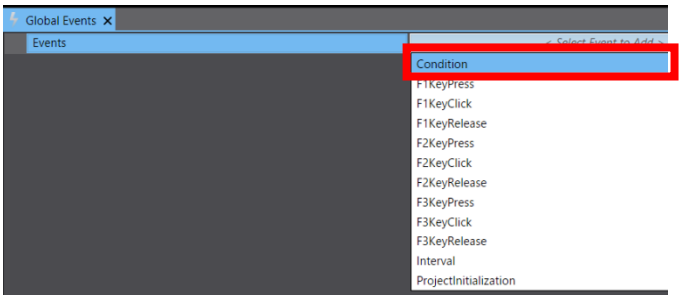


7-1-20 Creating the Subroutine That Runs Upon Change of Bit/Value

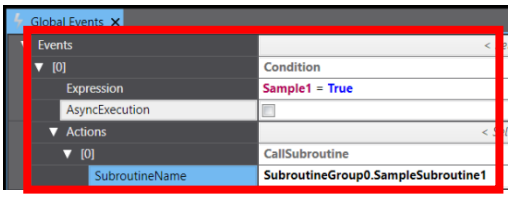
1. In the Multiview Explorer, select [HMI]-[Global Events].



2. In the [Events and Actions] tab page, select “Condition” as [Events].



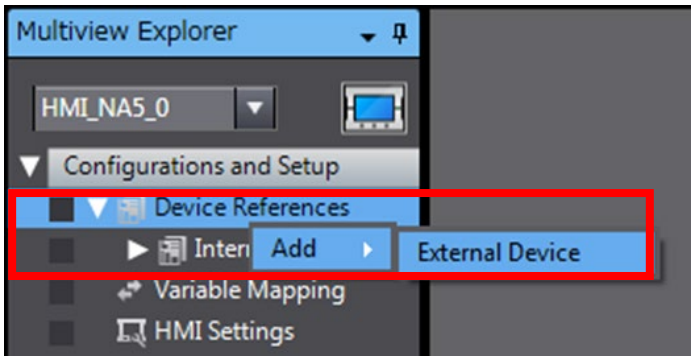
3. Specify the condition of subroutine function in the [Expression] field. Then select “CallSubroutine” as [Actions] and specify the subroutine to call in the [SubroutineName] field.



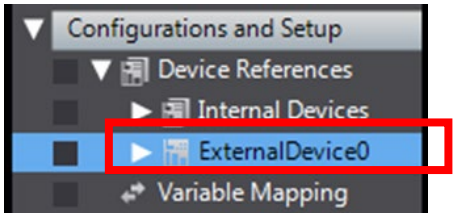
7-1-21 Connecting with the CJ/CS/CP-series CPU

The NA series can be connected with the CJ/CS/CP series in addition to the NJ series.
To use the variables of the CJ/CS/CP series in NA, you must specify the CJ/CS/CP-series PLC as the connected device, and register the variables of CJ/CS/CP into the NA.
Following is the procedure to register the CJ/CS/CP series as the connected device in NA.

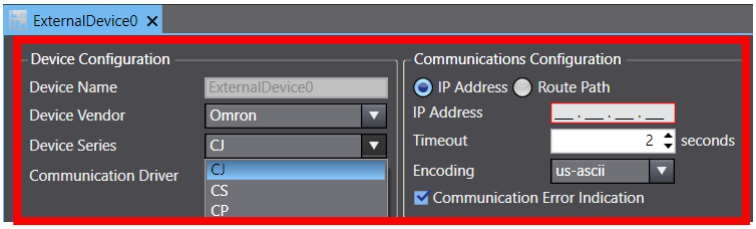
1. In the Multiview Explorer, right-click [Device References] and select [Add] – [External Device].

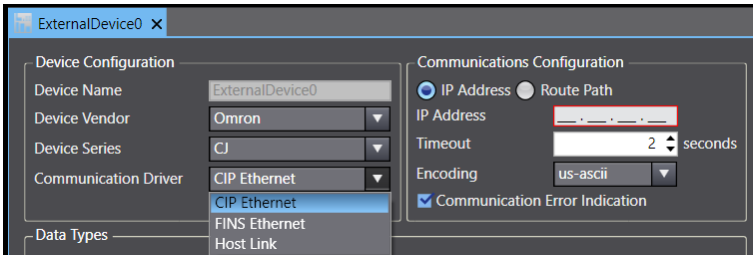


2. Double-click [ExternalDevice0] that is created under [Device References].



3. Select “CJ”, “CS”, or “CP” for [Device Series] from [Device Configuration], select “CIP Ethernet”, “FINS Ethernet”, or “Host Link” for [Communication Driver], and set the connection destination PLC in [Communications Configuration].





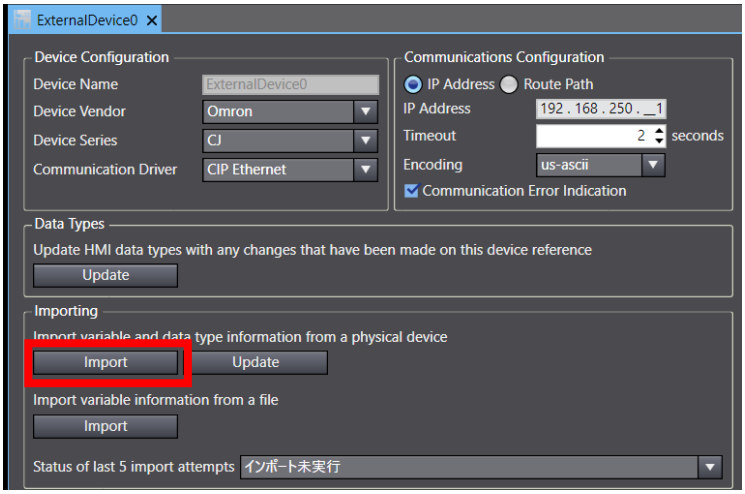
There are two ways to register in the NA the variables of the CJ registered as an external device:

- to import the variables directly from the device or to update the variables,
- Copy & paste from the variable table.

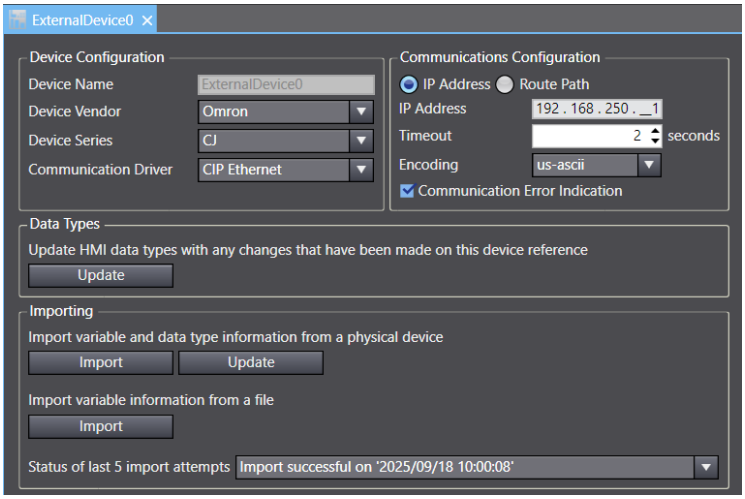
● Importing or Updating the Variables Directly from the Device

This is only available if “CIP Ethernet” is selected as [Communication Driver]. You must transfer the variable table to the CPU unit in advance.

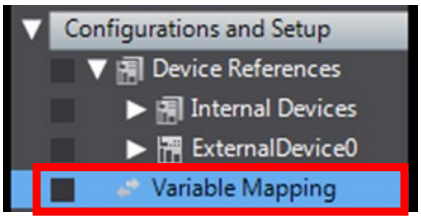
1. While the CJ-series CPU and the computer are connected via an Ethernet cable, select “Import”. (At this time, it does not matter even if “USB” has been selected for communication setting on the Sysmac Studio side.)



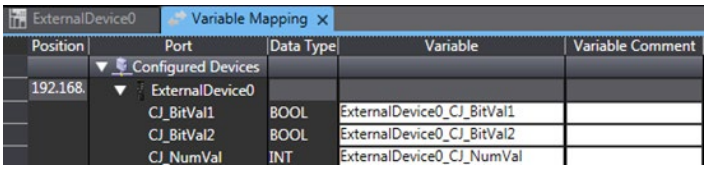
2. The device variables registered in CJ are imported as shown in the [Device Variables] field.



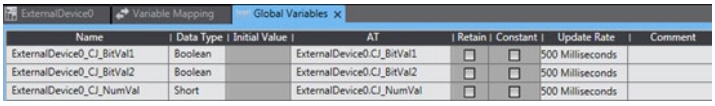
3. In the Multiview Explorer, double-click [Variable Mapping].



4. Variables can be created from “Create Device Variable” in the right-click menu.



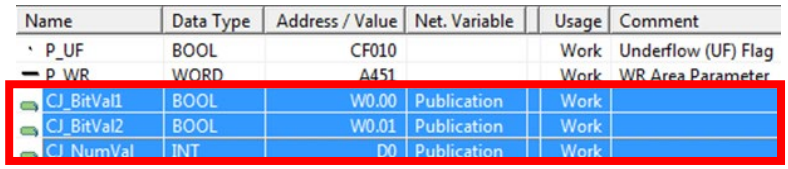
5. The variables created in Step 4 are automatically registered in the [Global Variables] tab page.



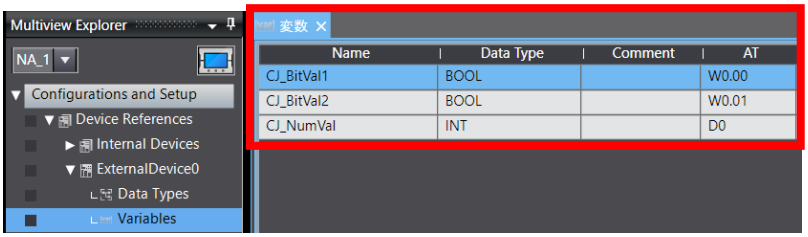
● Copying & Pasting from Variable Table

Device variables can also be copied & pasted from the variable table.

1. Open the variable table in CX-Programmer, select the range to copy, and copy the variables with “Right-click + Copy” or “Ctrl + C”.



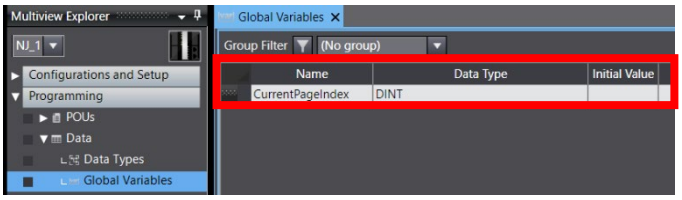
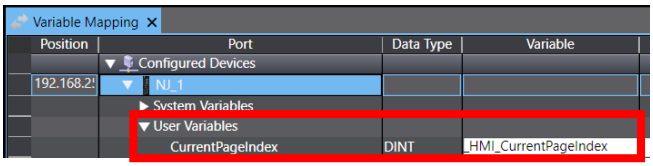
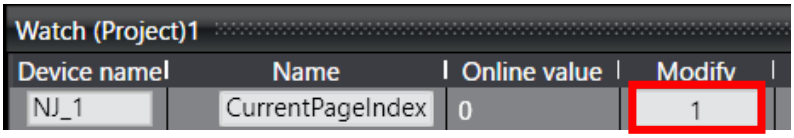
2. Open [Device References]-[ExternalDevice0]-[Variables] in the Multiview Explorer, and paste the copied variable data.



7-1-22 How To Switch the Screen by the PLC Variables

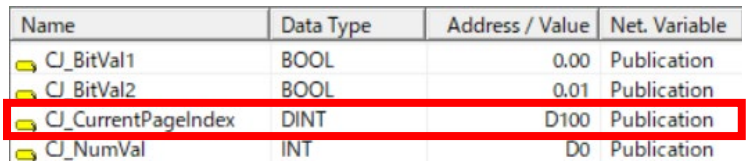
"_HMI_CurrentPageIndex" is an NA system variable that indicates the currently displayed screen number. The NA variable mapping function can also assign system variables.

● How to Assign NJ Variables to NA System Variables

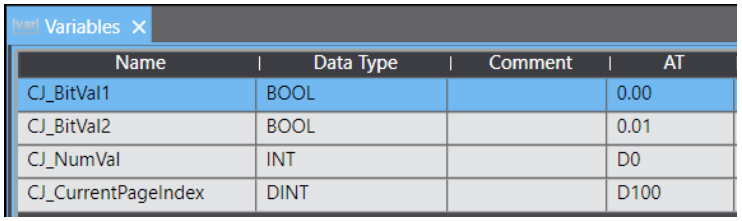
1. Declare a DINT-type variable to store the screen name on the NJ side.	
2. Using the variable mapping function on the NA side, assign the NA system variable "_HMI_CurrentPageIndex" to the screen name variable created in step 1. (At this time, manually enter the system variable name instead of using automatic assignment from the right-click menu.)	
3. By writing the destination page name to the NJ-side variable created in step 1, the screen moves to the corresponding screen.	

● How to Assign CJ Variables to NA System Variables

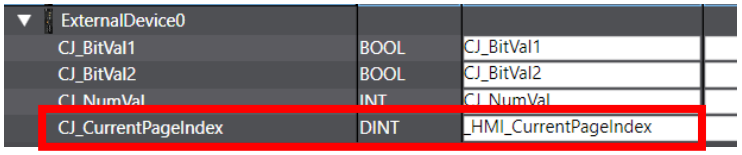
1. Declare a DINT-type variable to store the screen name on the CJ side.



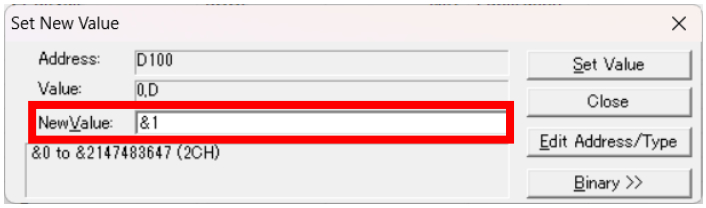
2. Assign the CJ variable created in step 1 to the NA. Refer to “7-1-2 1 Connecting with the CJ/CS/CP-series CPU” for the assignment procedure.



3. Using the variable mapping function on the NA side, assign the NA system variable “_HMI_CurrentPageIndex” to the screen name variable created in step 1. (At this time, manually enter the system variable name instead of using automatic assignment from the right-click menu.)



4. By writing the destination screen number to the CJ-side variable created in step 1, the screen moves to the corresponding screen.



7-1-23 Correspondence Table of Data Types between the NJ-series Controllers and the PTs

Following is the correspondence of data types between the NJ-series controllers and the PTs.

Data Types of the NJ-series Controllers	Data Types of the PTs
BOOL	Boolean
INT	Short
DINT	Integer
LINT	Long
UINT	UShort
WORD	
UDINT	UInteger
DWORD	
ULINT	Ulong
LWORD	
REAL	Single
LREAL	Double
STRING	String
SINT	SByte
USINT	Byte
BYTE	
TIME	TimeSpan
DATE	Date
DATE_AND_TIME	
TIME_OF_DAY	

7-2 Resources

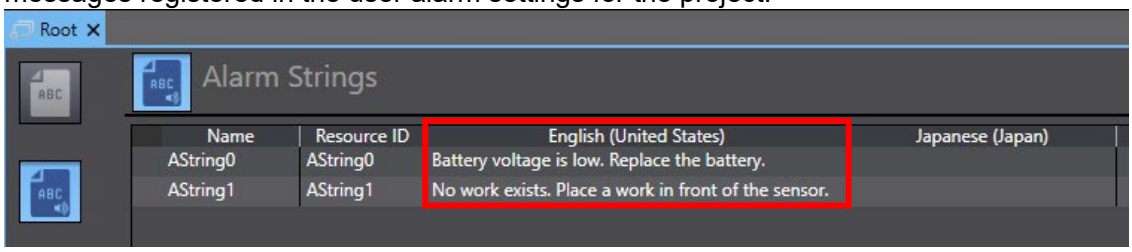
Resources are the text strings, movies, still images, and documents that are displayed for objects and alarms on user pages.
You can use Resources to manage all of the text strings, images, files, and other resources that you use in a project.
For multi-language projects, you can set resources for each project language.

7-2-1 Setting Up Resources

Double-click [HMI]-[Resources]-[Root] in the Multiview Explorer. The resources are displayed in the Edit Pane.

・The text strings that are used in the objects of the project are displayed in the “English (United States)” column in the “General Strings” table.

・Selecting the “Alarm Strings” icon (the second one from the top) displays the alarm messages registered in the user alarm settings for the project.



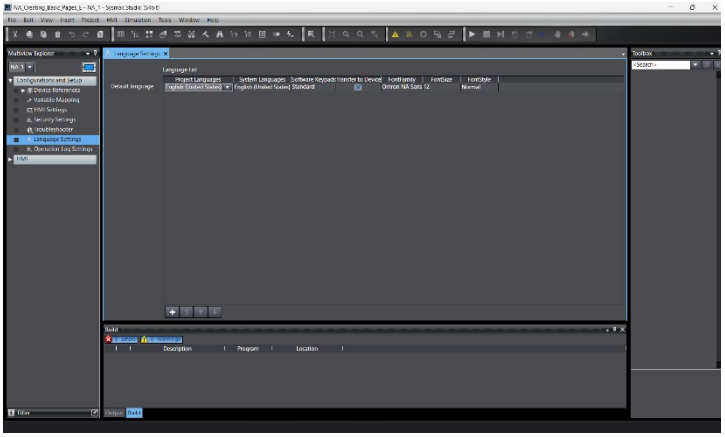
Resources can also be imported/exported in Excel format.
For details, refer to the “NA Series Programmable Terminal Software User’s Manual (Cat. No. V118)”.

7-3 Multi-language Settings

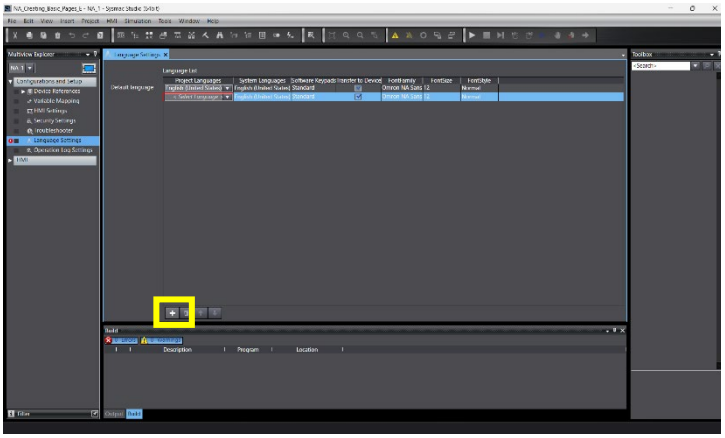
7-3-1 Multi-language Setting Procedure

This chapter describes the setting method for displaying multiple languages on the NA.

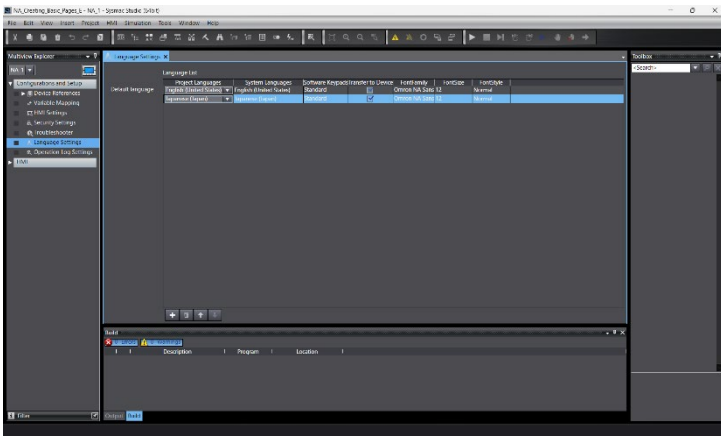
1. Double-click [Language Settings] under [Configuration and Setup] in the Multiview Explorer. The Language Settings Tab Page is displayed in the Edit Pane.



2. Select [+] to add a language.

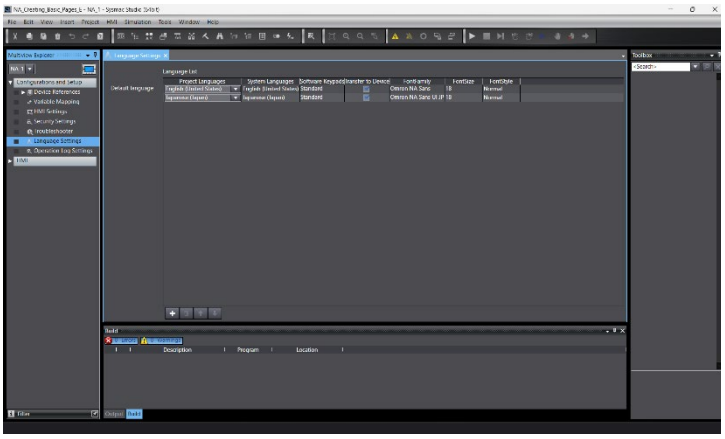


3. Set the project language and system language of the added item to Japanese.



4. Change FontFamily and FontSize as follows.
• English
FontFamily: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
FontSize: 18
• Japanese
FontFamily: Omron NA Sans UI JP
* For those other than NA5-V2, set it to “Meiryo UI”.
FontSize: 18

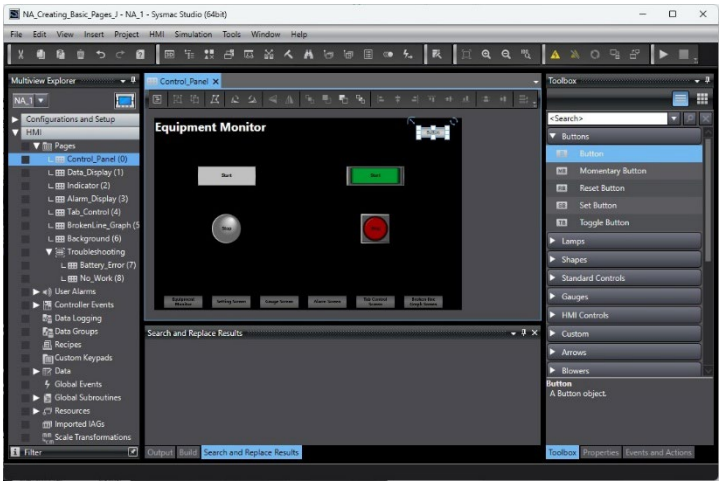
* The settings made here become the initial settings when placing objects on the screen.
Font settings for each language are displayed when the NA version is 1.11 or higher.



7-3-2 Creating Language Switching Buttons

Language switching can be set in Events and Actions.
Create a screen switching button on the “Control_Panel” page.

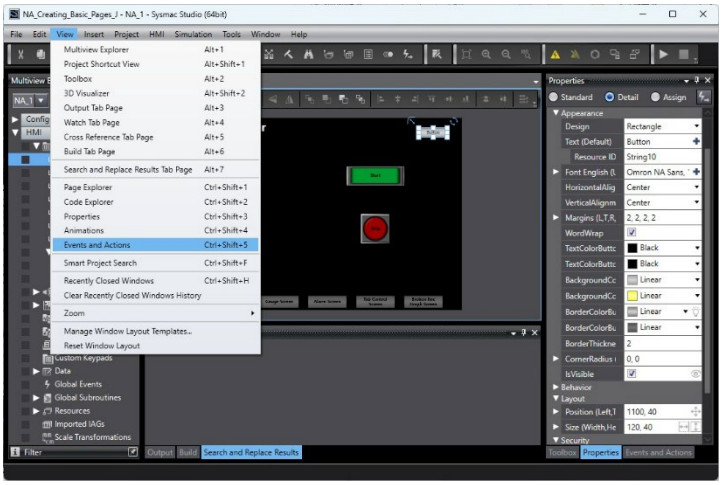
1. Open the “Control_Panel” page, select [Buttons]-[Button] from the Toolbox, and drag & drop it.



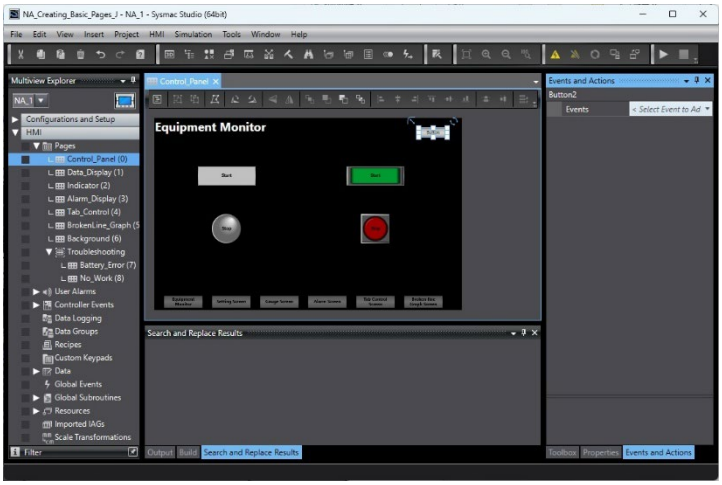
2. Make settings so that the page switches when the button is pressed.
Settings are made from “Events and Actions”.

   Select [View]-[Events and Actions].
   For the icon, click .

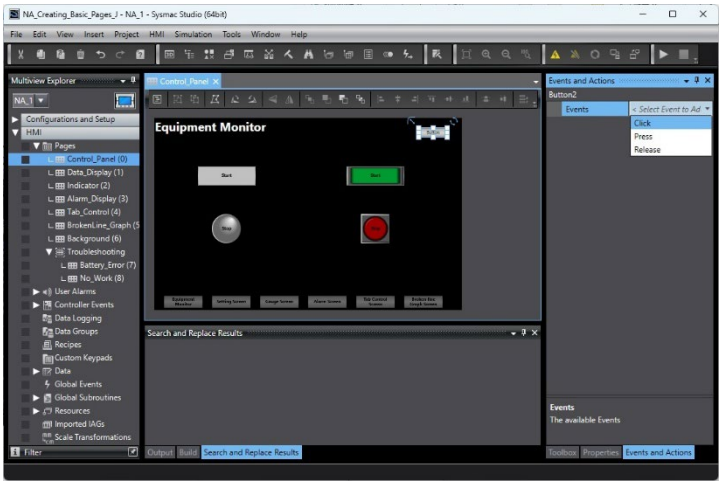
   The Events and Actions window is added to the right side of the screen.



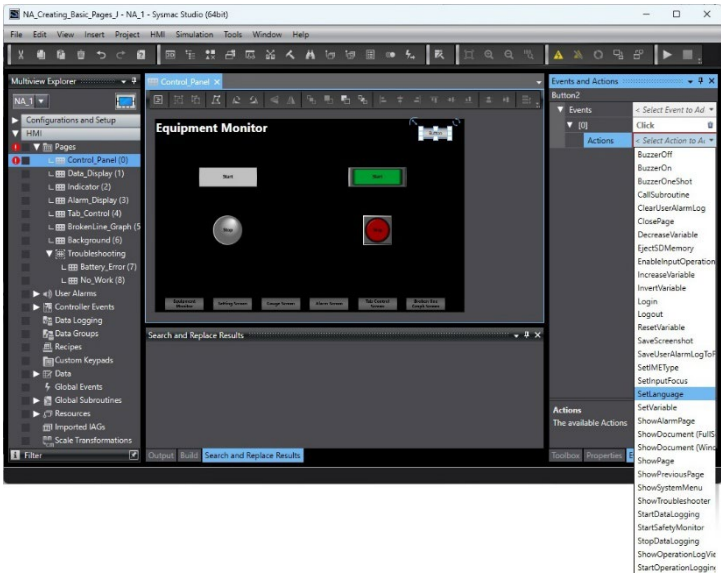
3. Click the cell displayed as <Select Event to Add> to the right of Events.



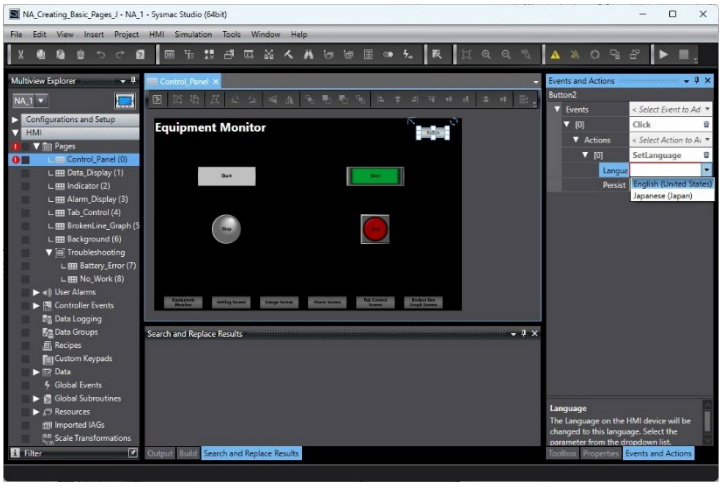
4. Select “Click”.



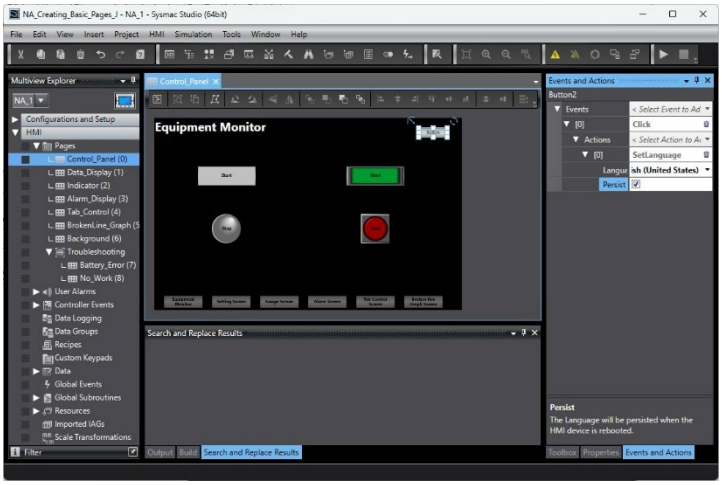
5. Click the cell to the right of Actions, and select “SetLanguage”.



6. Click the cell to the right of [Language], and select “English (United States)”.



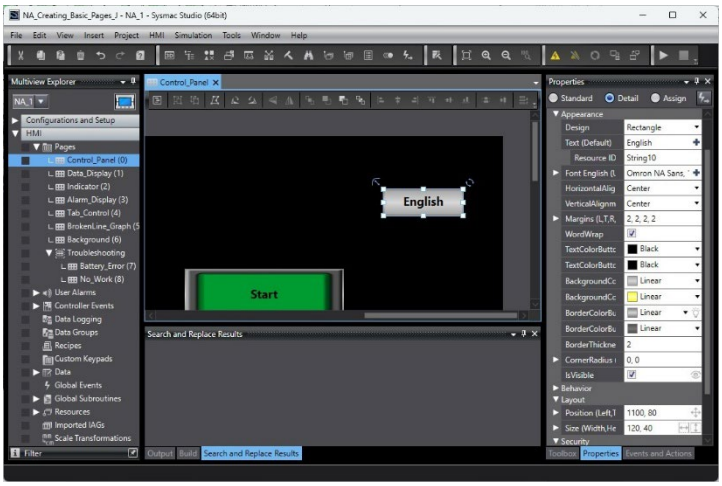
7. Click the check box to the right of [Persist] to add a check mark.
By making the Persist setting, the user language setting is maintained even after restarting the NA5.



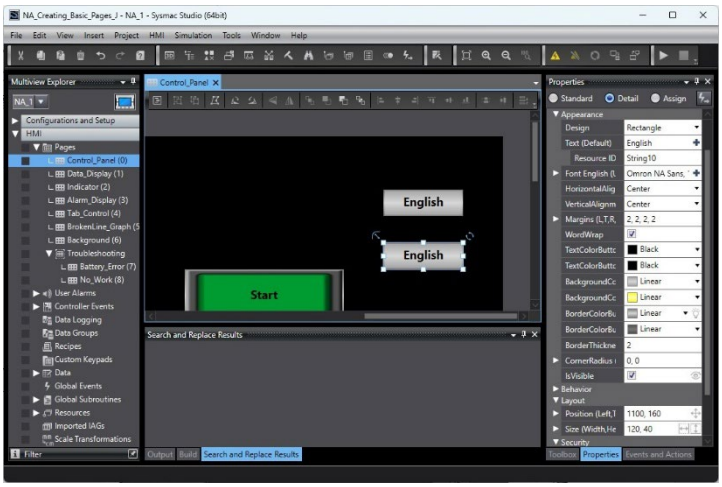
8. Make property settings.
Click Properties and set as follows.

Appearance
• English (United States)
Text: English
Family: Omron NA Sans
* For those other than NA5-V2, set it to “Segoe UI”.
Size: 18
Style: Select [B].
• Japanese
Text: English
Family: Omron NA Sans UI JP
* For those other than NA5-V2, set it to “Meiryo UI”.
Size: 18
Style: Select [B].

Layout
Position
Left: 1100
Top: 80
Size
Width: 120
Height: 40

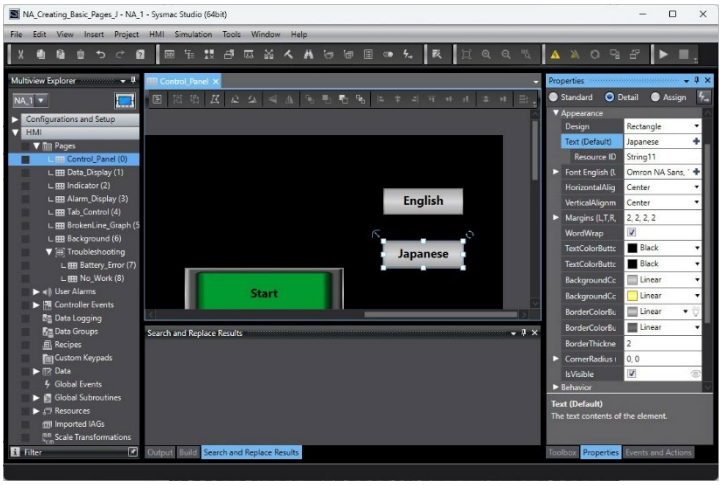


9. Create a button to switch to English. Copy & paste the language switching button created earlier.

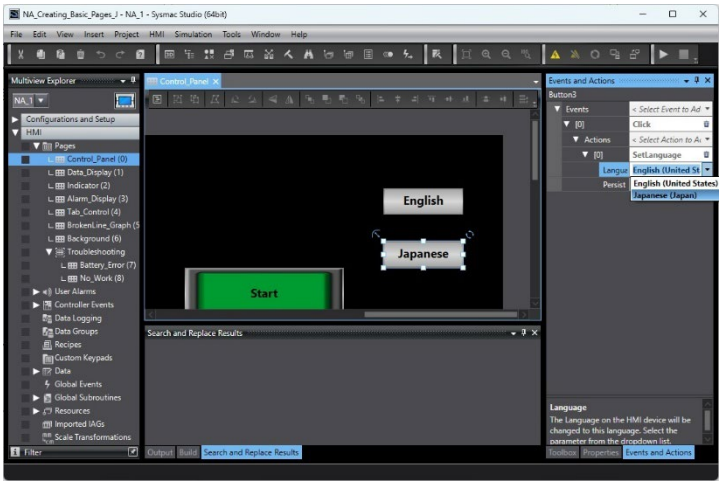


10. In Properties, change [Text (Default)] as follows.

    • Japanese
    Japanese
    • English
    Japanese



11. In Events and Actions, set [Language] to “English (United States)”.

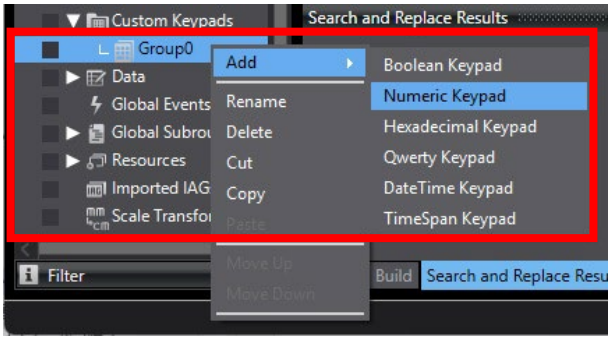
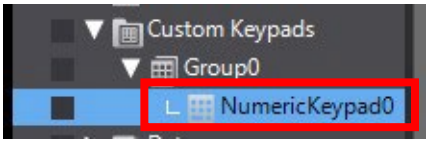


7-4 Custom Keypads

You can create keypads with user-specified button layouts, colors, and other properties.
Custom keypads can be managed by group. Multiple keypads can be registered in a custom keypad group. ‘Boolean Keypad’, ‘Numeric Keypad’, ‘Hexadecimal Keypad’, ‘QWERTY Keypad’, ‘DateTime Keypad’, and ‘TimeSpan Keypad’ can be registered in each group.
For details, refer to the “NA Series Programmable Terminal Software User’s Manual (Cat. No. V118)”.

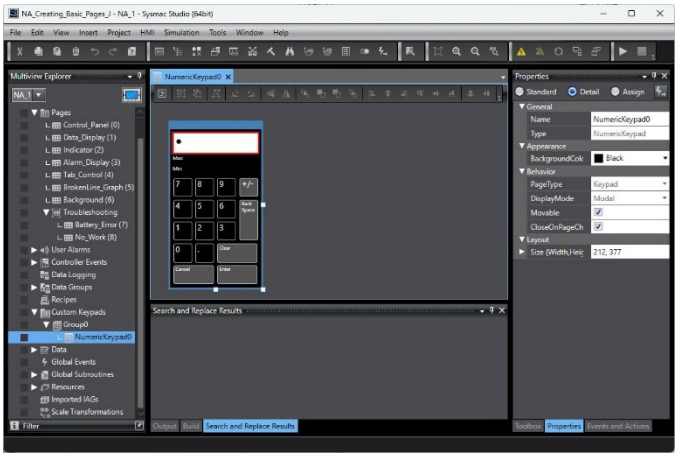
7-4-1 Creating Custom Keypads

Create a user-specific keypad. The created keypad can be used for numeric input instead of the system keypad.

1. Right-click [HMI]-[Custom Keypads] in the Multiview Explorer and click [Add]-[Custom Keypad Group].	
2. Right-click [Group0] added by the operation in step 1 and click [Add]-[(keypad to be created)]. In this section, “Numeric Keypad” is selected. Multiple keypads of the same type cannot be created within the same group.	
3. Double-click [NumericKeypad0] added by the operation in step 2.	

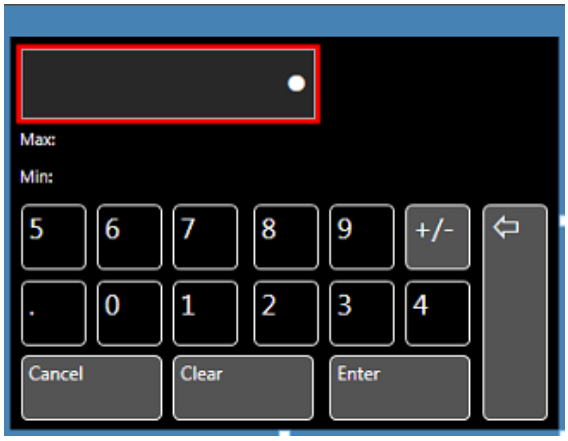
4. A screen based on the standard keypad is displayed. Edit the custom keypad from this screen.

5. The following three points are the differences in properties between screens created with the custom keypad and normal popup screens.
(1) PageType: Fixed to “Keypad”. (Custom keypad-specific value)
(2) DisplayMode: Fixed to “Modal”. While the custom keypad is displayed, you cannot operate the objects on the main screen.
(3) AutoNavigateKeypads: Since the item does not exist and cannot be set, the continuous data input function cannot be used within the custom keypad.

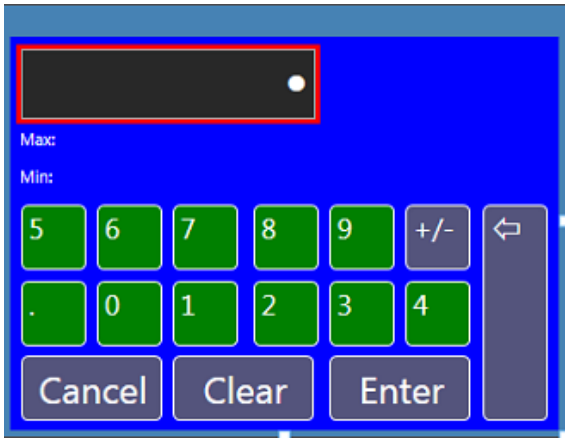


6. Make the following edits for [NumericKeypad0] created in step 2.
(1) Layout change (change of display positions of keypad and objects)
(2) Appearance of objects (change of colors and fonts)
(3) Add an operation to write values to a specific variable when entering a value

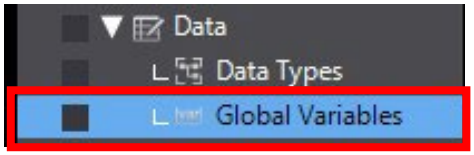
7. Change the layout.
The screen size is changed from [Layout]-[Size (Width, Height)] of the screen properties. Change the object position and size as desired from the properties of each object.



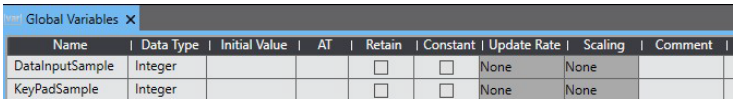
8. Change the appearance of objects.
Modify the background color from [Appearance]-[BackgroundColor] of the screen properties, and modify the background color and font size of the objects from the properties of each object.



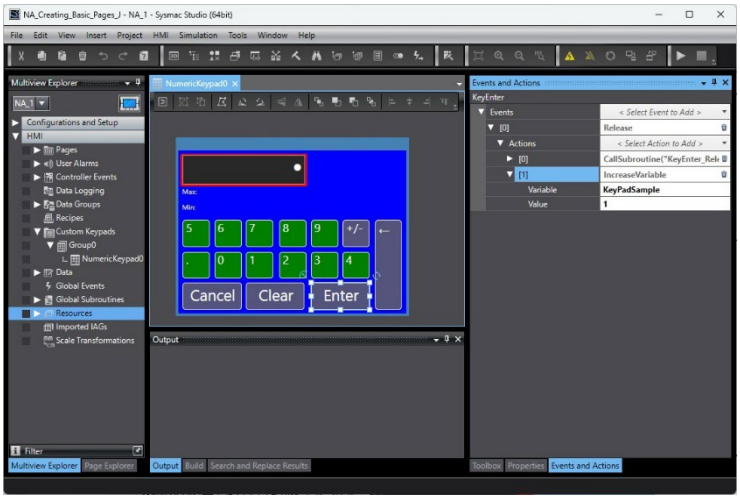
9. Add an operation to write values to a specific variable when entering a value. Double-click [Global Variables] under [HMI]-[Data] in the Multiview Explorer.



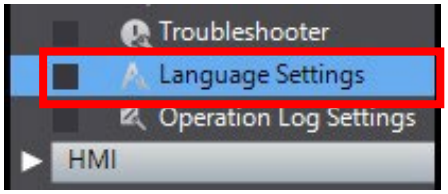
10. Create two desired numerical variables. In this document, create the following variables.
DataInputSample
KeyPadSample



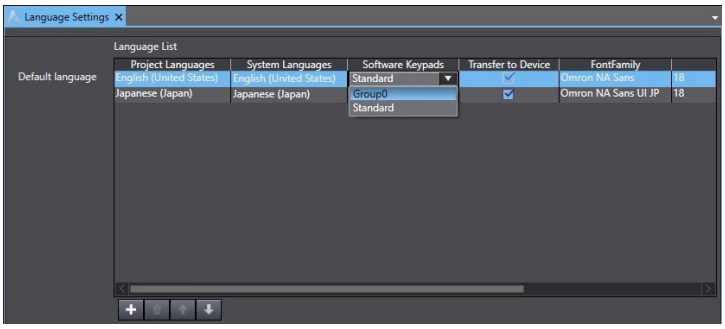
11. Press “Ctrl + Shift + 5” to display “Events and Actions”, select the [Enter] key, and add the following settings to [Actions].
Actions: IncreaseVariable
Variable: KeyPadSample
Value: 1
By making this setting, an operation to add 1 to the variable KeyPadSample when releasing the [Enter] key is added.



12. After finishing editing the keypad, make settings to use the created keypad in the project. Double-click [Language Settings] under [Configuration and Setup] in the Multiview Explorer.

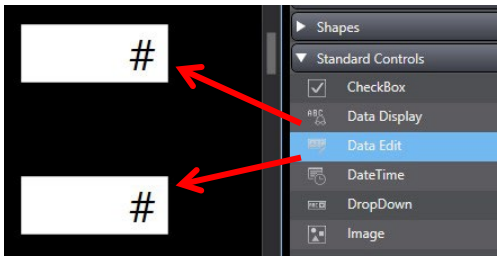


13. Change the field of [Default language]-[Software Keypads] from “Standard” to “Group0”.
If this setting field remains “Standard”, the standard keypad will be used.

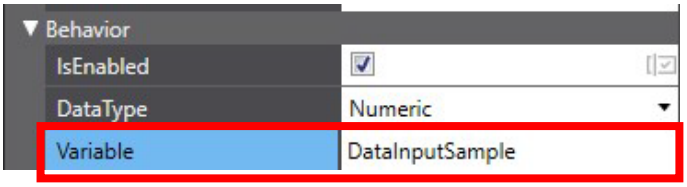


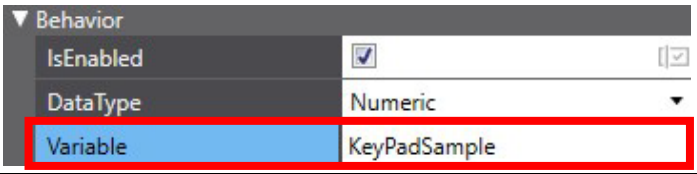
7-4-2 Checking Operations of the Custom Keypad

1. Create two Data Edit objects for checking the operations.
From [Toolbox], select [Standard Controls]-[Data Edit] and drag and drop it to the page. Specify arbitrarily the font type and size of each object.

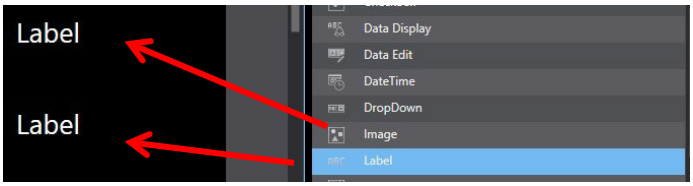


2. In [Variable] in the Properties tab of the two Data Edit objects created in Step 1, set respectively the variables registered in Step 10 of "7-4-1 Creating Custom Keypads".

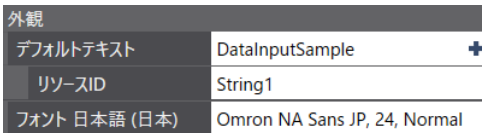


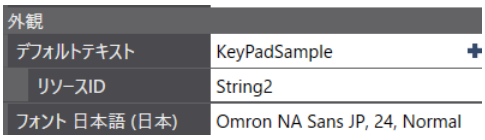


3. Create two Label objects that indicate which variables are assigned to the Data Edit objects created in Step 1.
From [Toolbox], select [Standard Controls]-[Label] and drag and drop it to the page.

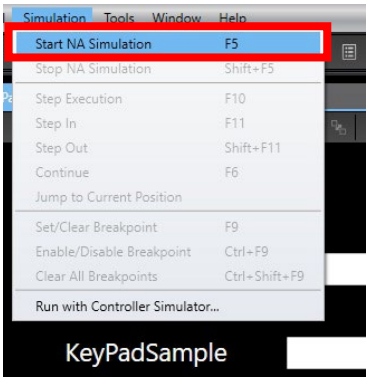


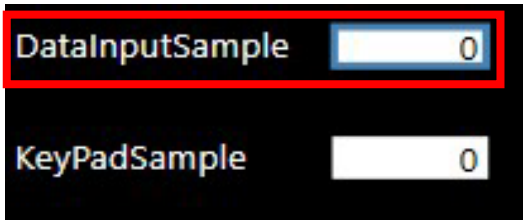
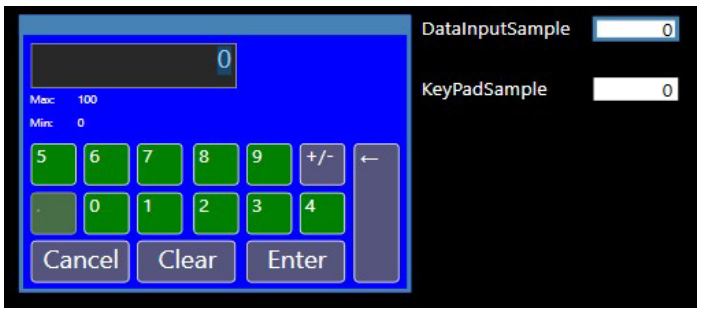
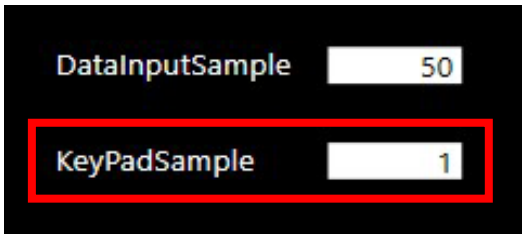
4. In [Text (Default)] in the Properties tab of the Label objects created in Step 3, enter respectively the names of the assigned variables registered in Step 10 of "7-4-1 Creating Custom Keypads". Arbitrarily specify the font.





5. Use the simulation function to check the operations. From the menu bar, select [Simulation]-[Start NA Simulation].



6. When the Simulator starts up, click the Data Edit object next to [DataInputSample].	
7. The created keypad appears. Enter an arbitrary value.	
8. When the value is entered, “1” is now added to the value of [KeyPadSample] according to the action specified in Step 11 of “ 7 - 4 - 1 Creating Custom Keypads”.	

7-4-3 How to Display Custom Keypad from Subroutine

The NA function [EditVariable] can set the custom keypad to be displayed.
Usage examples are as follows.

•EditVariable function
It displays a keypad and stores a value in the specified variable.

•Syntax
EditVariable(VariableName As String,
Optional KeypadCaption As String,
Optional FalseText As String,
Optional TrueText As String,
Optional MinimumValue As Numerical,
Optional MaximumValue As Numerical,
Optional MaskCharacters As Boolean,
Optional InputMethod As String,
Optional Reserved As String,
Optional CustomKeypadGroup As String)

・Parameters

VariableName
Data type: String
Essential
It specifies a name of the variable that should store a value.

KeypadCaption
Data type: String
Optional
It specifies a title character string for the keypad.

FalseText
Data type: String
Optional
It specifies a character string that is displayed when the entered value is illegal.

TrueText
Data type: String
Optional
It specifies a character string that is displayed when the entered value is normal.

MinimumValue
Data type: Numerical
Optional
It specifies the minimum input value.

MaximumValue
Data type: Numerical
Optional
It specifies the maximum input value.

MaskCharacters
Data type: Boolean
Optional
It specifies whether to mask input values.
True：Enable masking
False：Disable masking

InputMethod
Data type: String
Optional
It specifies the keypad used to input values.
NUMERICKEYPAD：Keypad to input numeric values
QWERTYKEYPAD：Keypad to input text strings

Reserved
Data type: String
Omit the parameter as it is for future expansion.

CustomKeypadGroup
Data type: String
Optional
It specifies the custom keypad group when using a custom keypad.

・Description
It displays a keypad and stores a value in the specified global variable.

・Example
Enter the value of variable [strValue] with the custom keypad [Group0].

```
Sub SampleSource
  EditVariable("strValue", "Keypad", , , , , False, "QWERTYKEYPAD", , "Group0")
End Sub
```

7-4-4 Types of Custom Keypads

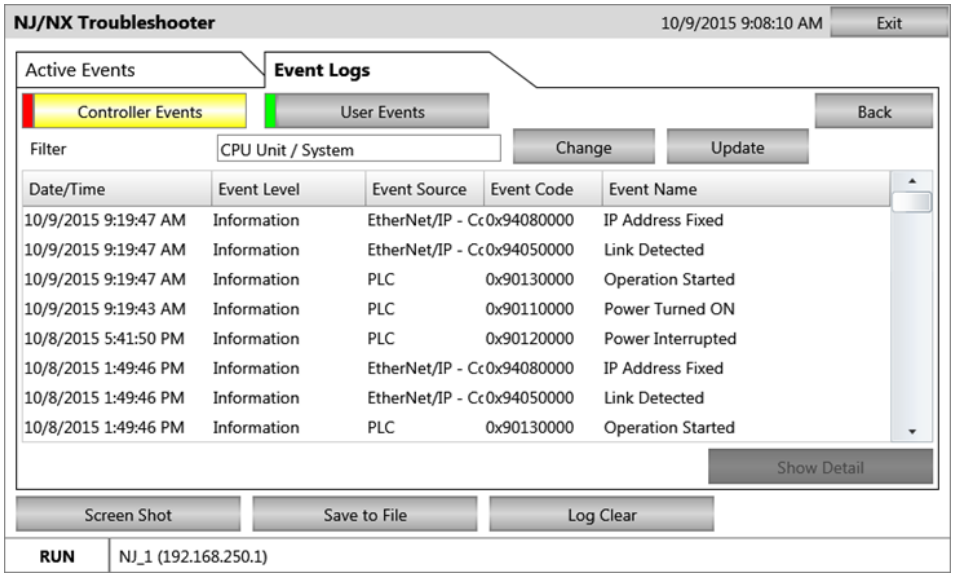
The custom keypad displayed during data input corresponds to the data type of the input target variable.
The correspondence between custom keypads and data types is as follows.

Custom Keypads	Data Types of Variables
Boolean Keypad	Boolean
Numeric Keypad	Short
	Integer
	Long
	Single
	Double
	Decimal
Hexadecimal Keypad	Byte
	Ushort
	UInteger
	ULong
QWERTY Keypad	Char
	String
DateTime Keypad	Date
TimeSpan Keypad	TimeSpan

7-5 NJ/NX Troubleshooter

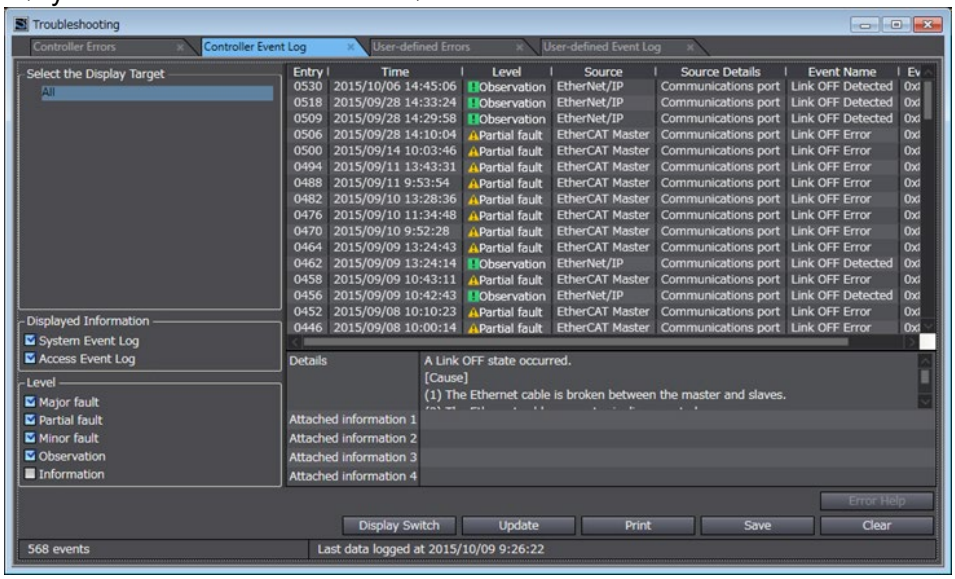
This is a function to display “Controller Errors” on the NA Unit using the Troubleshooter function in the CPU Unit of the NJ/NX Series.
The troubleshooter screens are installed in the NA unit system. Thus, there is no need at all for the users to create the conventional alarm screens using the graphic tool (i.e. to perform the settings on Sysmac Studio) for NA. Moreover, the contents that are to be displayed as “User Events” are to be registered in advance in “Event Settings” in Sysmac Studio, which eliminates the need for setting alarms in the NA tool.
For details, refer to the “NA Series Programmable Terminal Hardware (-V1) User’s Manual (Cat. No. V125)”.

＜NJ/NX Troubleshooter for NA＞



Sysmac Studio also has the same troubleshoot function as that of the NA unit.
Selecting [Tools]-[Troubleshooting…]-[Controller Event Log] displays the screen shown below.

＜Sysmac Studio Troubleshooter＞



Revision History

Revision code	Date	Revised content
01	September 2015	Original production
02	December 2018	Correction of related manual numbers
03	June 2026	Made revisions accompanying support of NA5-[][]W[][][][]-V2

Note: Do not use this document to operate the Unit.

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