OMRON

Programmable Terminal NA Series

Practice Guide
IAG Library to Visualize Integration of Control and Safety

NA5-15□101□
NA5-12□101□
NA5-9□001□
NA5-7□001□

SYSMAC
always in control

V448-E1-03

■ Introduction

This guide provides the reference information when creating and using IAG objects. It does not provide safety information. Be sure to obtain manuals for NA series programmable terminals, to read the safety and other information necessary to use, and to test the equipment sufficiently before actual use.

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- Unauthorized access.

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(b) Usage outside of the usage conditions.

(c) Usage of the product against the conditions described in “Note about Use”

(d) Modification or repair made to the Omron product by other than Omron personnel.

(e) Software program embedded by other than Omron or usage of such software.

(f) Causes which could not have been foreseen with the level of science and technology at the time of shipping from Omron.

(g) Causes originating from other than Omron or Omron products (including causes such as, but not limited to, natural disasters).

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Table of Contents

Terms and Conditions Agreements 3

1 **Related Manuals 7**

2 **Precautions 8**

3 **Overview 9**

3-1 Overview 9

3-2 System Configuration 11

4 **Library Version 12**

5 **Details of IAG Objects 13**

5-1 ReadConfiguration 13

5-2 SignatureViewer 16

5-3 IOMonitor 30

5-4 RestoreFileDownLoad 37

5-5 DataLogFileDownLoad 50

5-6 DataLogFileView 62

5-7 SelectDataLogParameter 70

5-8 GraphDisplay 77

5-9 DataLogResultMeasurement 86

5-10 TroubleShooter 93

6 **Structures 96**

Revision History 97

1 Related Manuals

No.	Model	Title
V117	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Programmable Terminal NA-series Hardware USER'S MANUAL
V118	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Programmable Terminal NA-series Software USER'S MANUAL
V119	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Programmable Terminal NA-series Device Connection USER'S MANUAL
V120	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Programmable Terminal NA-series STARTUP GUIDE
W504	SYSMAC-SE2□□□	Sysmac Studio Version 1 OPERATION MANUAL
V447	NA5-15W□□□□ NA5-12W□□□□ NA5-9W□□□□ NA5-7W□□□□	Programmable Terminal NA-series Practice Guide Demonstration Screen for Safety CPU

2 Precautions

(1) When building an actual system, check the specifications of the component devices of the system, use within the ratings and specified performance, and take safety measures such as safety circuits to minimize the possibility of an accident.
(2) For safe use of the system, get the manuals of the component devices of the system and check the information in each manual, including “Safety Precautions” or “Precautions for Safe Use” before usage.
(3) It is the responsibility of the customer to check all the laws, regulations, and standards that the system must comply with.
(4) All rights reserved. No part of this publication may be reproduced, copied and redistributed without the prior written permission of Omron.
(5) The information in this guide is current as of December 2019.
It is subject to change without notice because of product upgrade.
(6) This IAG library has been tested with the system configuration in 3-2 “System Configuration.” However, Omron does not guarantee screen operations after embedding the IAGs

Special information in this document is classified as follows:

Precautions for Safe Use

It describes precautions on what to do and what no to do to ensure safe usage of the product.

Precautions for Correct Use

It shows precautions on what to do and what not to do to ensure proper operation and performance.

Additional Information

It shows precautions on what to do and what not to do to ensure proper operation and performance

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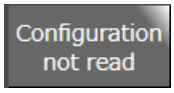
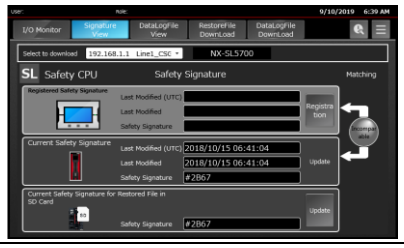
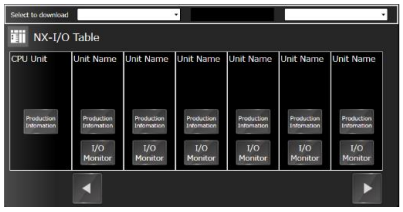
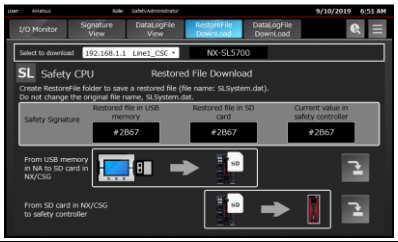
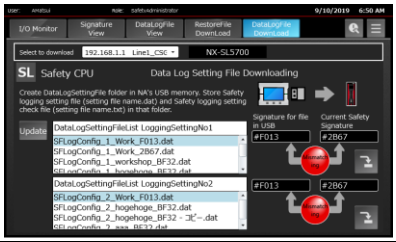
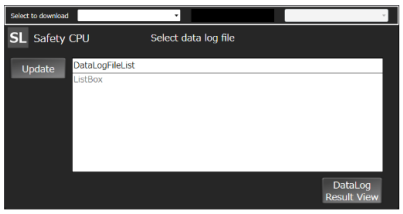
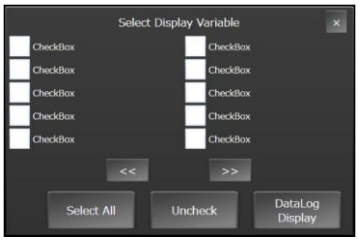
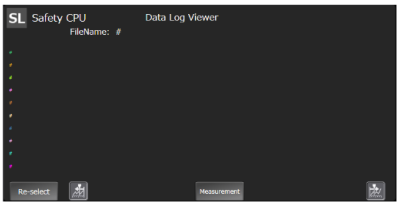
3 Overview

3-1 Overview

This document describes IAG functions which read the information about a safety CPU and I/O units directly from NA series HMI without ladder programs, and how to use them.

- IAG external specifications
- Import and setting methods for IAG library
- IAG design structure

Object	Icon	Description
ReadConfiguration		The configuration information about controllers connected with NA is read when this button is pressed.
SignatureViewer		Safety signature information of the safety CPU unit is read and registered on this screen.
IOMonitor		Controller I/O tables are displayed.
RestoreFileDownLoad		The safety CPU unit restored file is downloaded to a controller.
DataLogFileDownLoad		The safety CPU unit data log setting is downloaded to a controller.

Object	Icon	Description
DataLogFileView		The data log file of the safety CPU unit is displayed on this screen.
SelectDataLogParameter		The data log variables are displayed on this screen. The selected variables are shown in Data Log Viewer (GraphDisplay).
GraphDisplay		The result of data logging is depicted on this screen graphically.
DataLogResultMeasurement		The data logging result is measured.
TroubleShooter		The safety CPU unit trouble shooter is displayed when this button is pressed.

These IAGs are included in the following files.

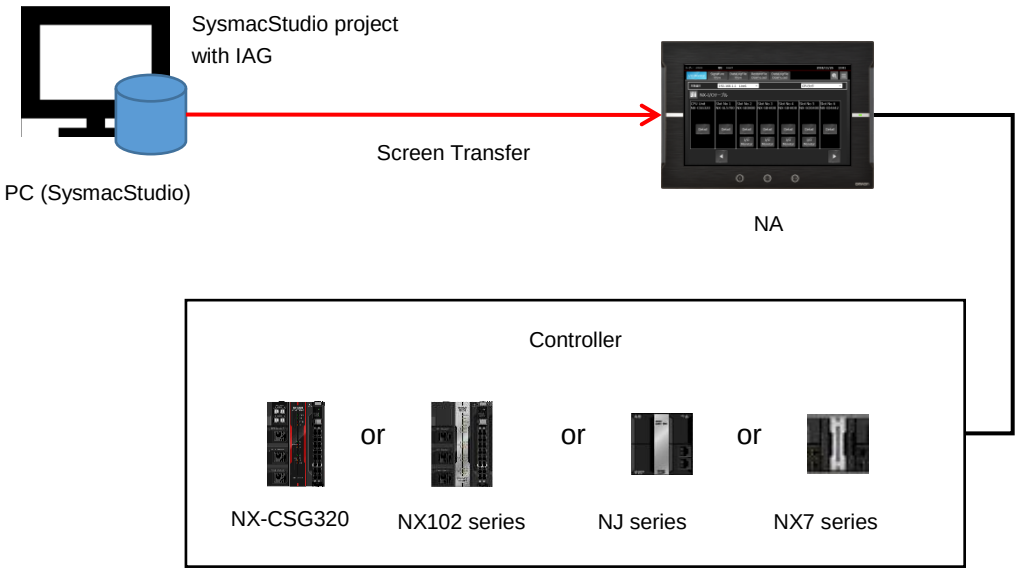
File	Icon	Description
SafetyCPU_IAG_7inch_RevD.iag	7/ 9-inch	
SafetyCPU_IAG_12inch_RevD.iag	12/ 15-inch	

Ask an Omron sales representative to get the files.

The description and introduction procedure about IAG objects are for 7-inch display. The contents except IAG objects are the same. When you create screens for 12-inch NA, the IAG objects in this document should be replaced as necessary.

3-2 System Configuration

The IAG objects were tested with the system configuration and versions below



Tested versions are the following:

- NA OS: 7.2.1
- NA: 1.10
- SysmacStudio: 1.25
- Distribution file: 1.50*
- NX-CSG320: 1.00
- NX102-□□□□: 1.31
- NJ□□□-□□□□: 1.18
- NX7-□□□□: 1.18

*: See Chapter 4, “Library Version” for details.

Precautions for Correct Use

Omron tested the operation of this library. However, its quality is not guaranteed because it is a sample product. Confirm that the library operates properly with your equipment before use.

4 Library Version

This chapter describes the versions of related items with IAG library.
You must check versions of the items listed in the table below before using the library.

Item	Description	How to Check the Version
Distributed file	The distributed IAG files have the library versions.	The version can be checked in the SysmacStudio IAG Collections Manager pop-up.
IAG library	Version of each IAG library. It manages specification change, bug correction, and others.	IAG project file editing function in SysmacStudio. The version can be checked as an IAG property in IAG Collections Manager. Also in Properties after located as an object.
NA	The version of NA with which IAG has been created. IAG library is NOT applicable to older versions than that in this guide because supported functions depend on versions.	See [Minimum supported HMI version] in IAG Collections Manager.
NA OS	The version which NA runtime can operate. It differs according to NA runtime version.	System Menu of NA. It will be checked if necessary when you upgrade NA runtime version of a project in SysmacStudio.

The versions of IAG library, NA runtime, and OS in “Practice Guide IAG Library to Visualize Integration of Control and Safety (V448)” are as the following.

Item	Version	Remarks
Distributed file	Ver. 1.50	Filename extension is “.iag”.
IAG library	Noted individually	Refer to Chapter5 “Properties”.
NA	Ver. 1.10 and later	
NA OS	Ver. 7.2.1 and later	

The updated contents of IAGs due to distributed file update (ver. 1.40 to 1.50) are listed in the table below.

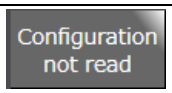
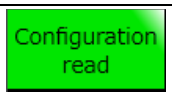
IAG	Version	Updated Content
ReadConfiguration	1.1→1.2	NX7 and NJ series supported.
SignatureViewer	1.2→1.3	The security function improved.
IOMonitor	1.4→1.5	Displayed content in the LED Monitor Screen updated.
DataLogFileDownLoad	1.3→1.4	Bugs fixed.
DataLogFileView	1.3→1.4	Bugs fixed.。

5 Details of IAG Objects

5-1 ReadConfiguration

5-1-1 Specifications

● External Specification

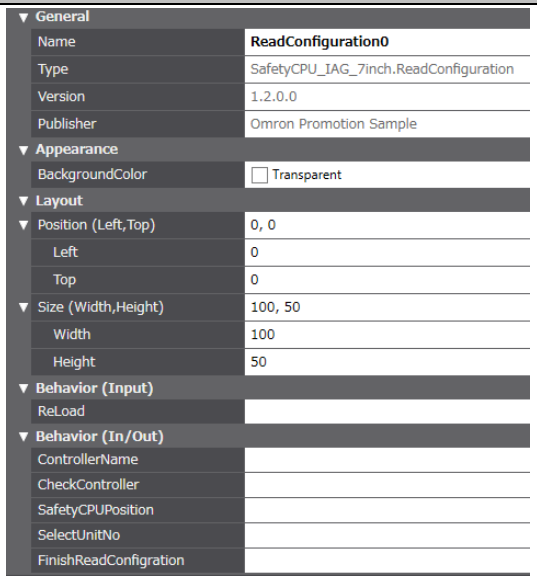
Object Name	ReadConfiguration
Category	SafetyCPU
Description	Reads out configuration information when the screen with this IAG appears for the first time. Set the screen, which contains this IAG, to be displayed first.
Function	Reads configuration information about controllers that connected with NA. Up to16 safety CPU units can be connected.
Graphic	Before reading 
	After reading 

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen	Direct input	Character string (1 to 127)	ReadConfiguration0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. ReadConfiguration
Version	IAG version	-	-	1.2.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent [1]
Layout				
▼Position (Left , Top)	Position setting of objects on a page[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（100,50）
Width	Width of object	Direct input Spin button	Numeric Numeric	100
Height	Height of object	Direct input Spin button	Numeric Numeric	50
Input				
ReLoad	Re-reading configuration	Variable specification	Boolean	(Blank)

Property	Description	Input Mode	Input Range/ Data Type	Default
Input/Output				
ControllerName	Controller name of the connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit	Variable specification	Boolean(15)	(Blank)
SafetyCPUPosition	Place to where the safety CPU unit is connected	Variable specification	String(15)	(Blank)
SelectUnitNo	The number of selected unit	Variable specification	Short	(Blank)
FinishReadConfigration	Completion flag for configuration reading	Variable specification	Boolean	(Blank)

Image



1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

Precautions for Correct Use

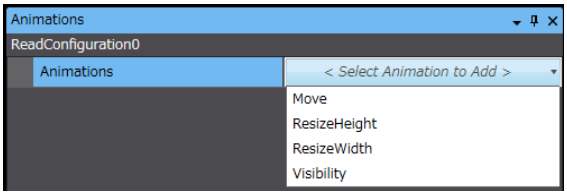
Be sure to use this IAG because the controller configuration which this IAG acquire is used for other IAGs; they may not operate properly.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



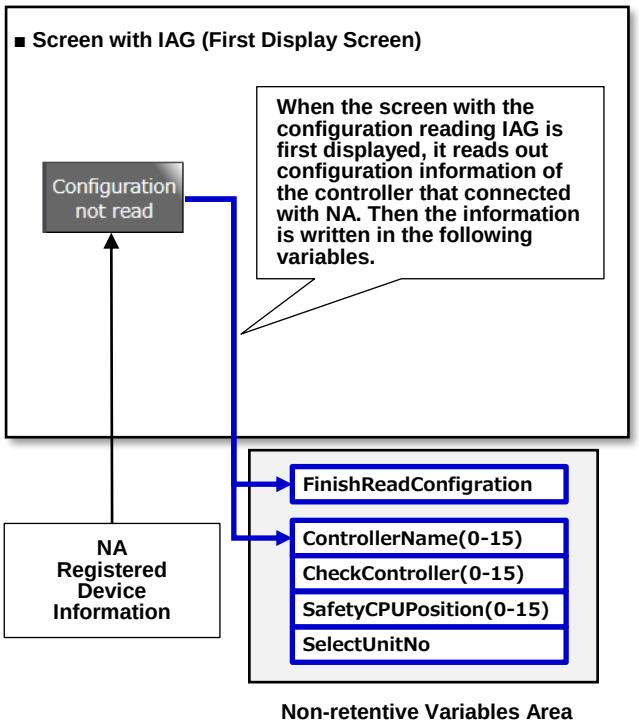
- Security

  No security function available.

● Property Assignment

This IAG reads out safety configuration information. The information is used for other IAGs. Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

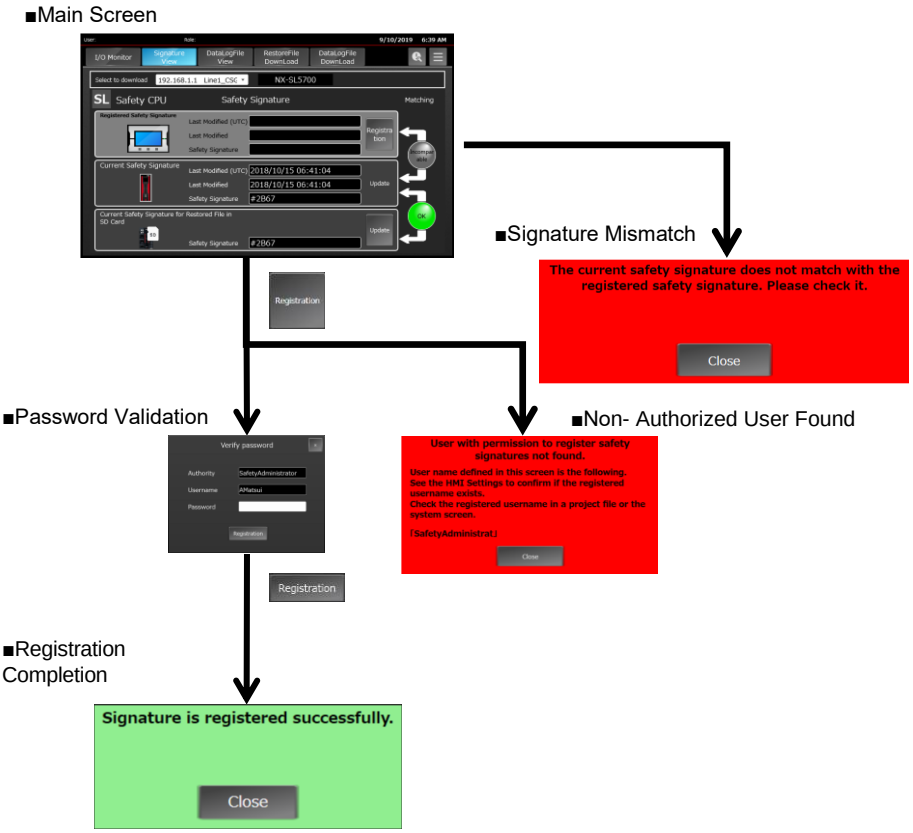
Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The number of selected unit.	Short
FinishReadConfigration	Completion flag for configuration reading	Boolean



5-2 SignatureViewer

5-2-1 Specifications

● External Specification

Object Name	SignatureViewer
Category	SafetyCPU
Description	Registers safety signatures on NA. Safety signatures on the safety CPU and NA can be checked against each other to confirm if they are not fabricated unintentionally.
Function	●Reads and registers a safety signature of the safety CPU unit. [Update] Reads out safety signature information of the connected safety CPU unit. [Register] Registers a safety signature on an IAG variable. The signature can be registered on up to 16 safety CPU units. ●Only one user is authorized to register the safety signature information.
Graphics	This IAG consists of one screen and four pop-ups. 

● Screen Specifications

Main Screen	On this screen, you can register safety signature and display the current varue. Also you can display pop-up windows if necessary.

User I/F Specification		
No	Part	Description
1	DropDown	Selects the controller to display its safety signature information. Displays the safety signature, that of the selected controller, in the box2.
2	Data Display	Displays safety signature information obtained by the safety CPU unit.
3	Button	Updates safety signature information.
4	Data Display	Displays safety signature information that registered on NA.
5	Button	Registers safety signature information of the safety CPU on NA.
6	Data Display	Displays the model of the connected safety CPU.
7	Data Display	Displays safety signature information stored in the SD card.
8	Data Lamp	Displays a result of comparison: signature information registered in NA and that of the safety CPU.
9	Data Lamp	Displays a result of comparison: signature information registered in the SD card and that of the safety CPU.

Layout		
Property	Default	Description
Position (Left, Up)		Set in Property.
Size (Width, Height)		Set in Property.

Password Validation Screen	This screen requires a password at safety signature registration. Press the Register button on Main screen to display this pop-up. Safety signature is registered according to the security setting of NA, after login.

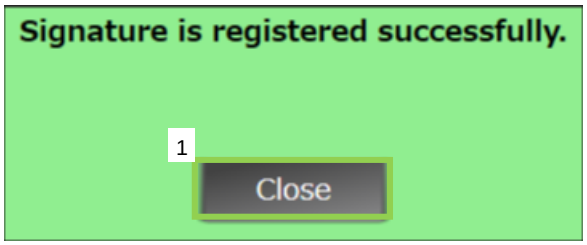
User I/F Specification

No	Part	Description
1	Data Display	Authority given to the user displayed in the box [2] is displayed.
2	Data Display	Username allocated to the input variable *RegisteredUserName* is displayed.
3	Data Edit	User password is entered here.
4	Button	Executes login processing.
5	Button	Closed this pop-up.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Registration Completion Screen	The pop-up notifies that registration of safety signature has been completed. It doesn't normally appear. After the Register button is pressed, the screen appears in consequence of registration of safety signature.



User I/F Specification

No	Part	Description
1	Button	Closes this pop-up.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Signature Mismatch Screen	This screen shows that the current safety signature is different from the registered value. It doesn't appear under a normal condition; it is displayed when a mismatch is detected.

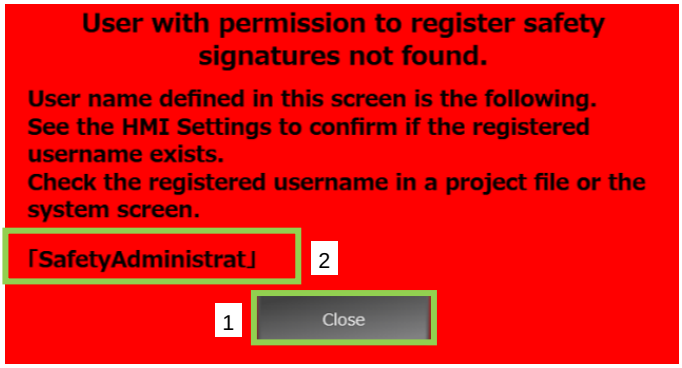
User I/F Specification

No	Part	Description
1	Button	Closes this pop-up.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Non-Authorized User Found Screen	It shows the message telling that the user who is permitted to register the safety signature is not registered on the security setting of the project file. This screen is usually not seen. It appears if the authorized user does not exist when the safety signature is registered.



User I/F Specification

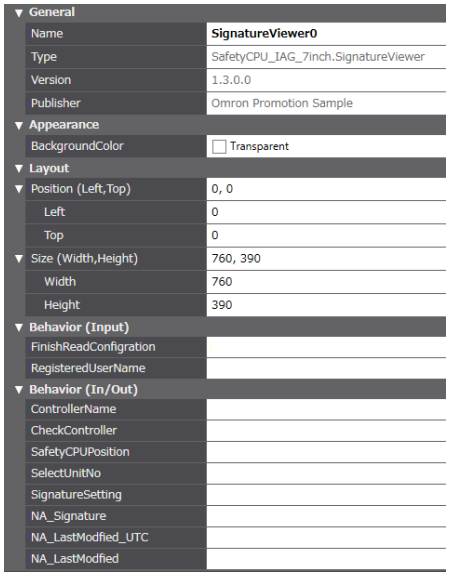
No	Part	Description
1	Button	Closes this pop-up.
2	Data Display	Registered authorized user's name is displayed. The value of this IAG's input variable, *RegisteredUserName,* is shown.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	SignatureViewer0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. SignatureViewer
Version	IAG version	-	-	1.3.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（760,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	760
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input				
FinishReadConfigration	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
RegisteredUserName	Username who is permitted to register the safety signature	Variable specification	String	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String (15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean (15)	(Blank)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	Variable specification	String (15)	(Blank)
SelectUnitNo	The number of selected unit.	Variable specification	Short	(Blank)
SignatureSetting	Flag for the registered signature which stored in NA.	Variable specification [3]	Boolean (15)	(Blank)
NA_Signature	Signature information which stored in NA.	Variable specification [3]	String (15)	(Blank)
NA_LastModffied_UTC	UTC of the registered signature which stored in NA.	Variable specification [3]	String (15)	(Blank)
NA_LastModffied	Registration time of the registered signature which stored in NA.	Variable specification [3]	String (15)	(Blank)
SignatureCompError	Flag that shows safety signatures mismatching	Variable specification [3]	Boolean (15)	(Blank)
SignatureCompError_RestoreFile	Display of comparison with a safety signature of a restored file.	Variable specification [3]	Short	(Blank)
CompRestoreFile	Flag to compare restored files	Variable specification [3]	Boolean	(Blank)

Image


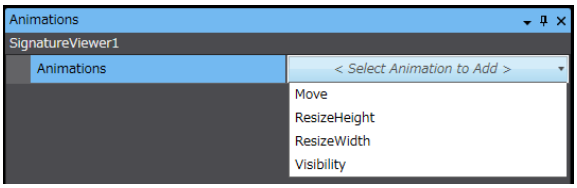
1: Transparent
2: The origin of coordinates locates at the top left corner of NA screen.
3: Allocated variables should be retentive.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  You are always required to login when pressing Registration. It is necessary to enter the registered Sysmac Studio user account name and password.

  You can log in with the user account which has been registered on *RegisteredUserName*, this IAG's input variable.

Precautions for Correct Use

This IAG does not work in the following cases:

- Any user account is not registered on the Security Setting of Sysmac Studio.
- The username which has been set to RegisteredUserName does not exist in the Security Setting.

- Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

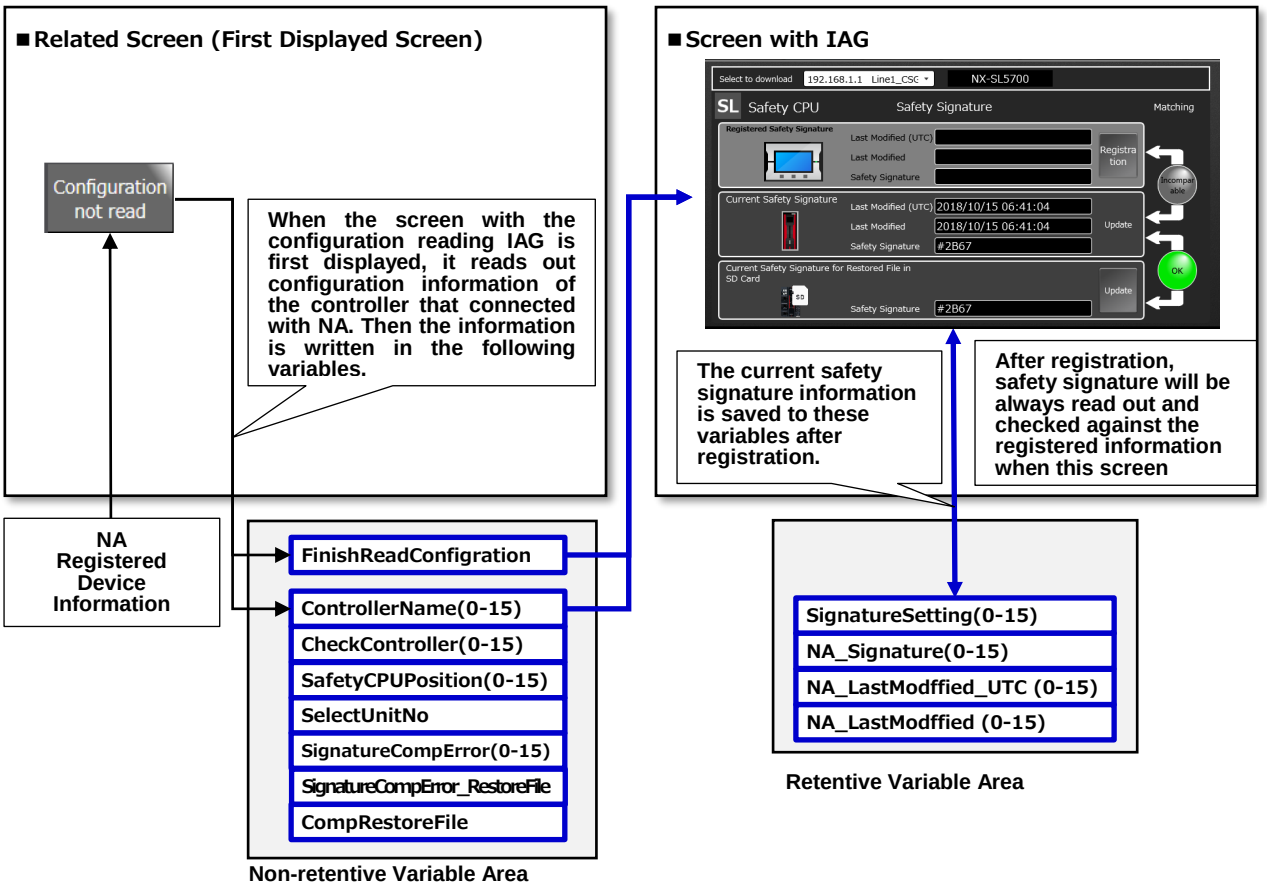
Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The unit number of the selected unit.	Short
SignatureCompError	Flag that shows safety signatures mismatching	Boolean(15)
SignatureCompError_RestoreFile	Display of comparison with a safety signature of a restored file.	Short
CompRestoreFile	Flag to compare restored files	Boolean

Allocate array variables which have been set to retentive to the following properties (Input/Output) in order to save each safety CPU unit safety signature data to NA.

Property (Input)	Description	Data Type
SignatureSetting	Flag for the registered signature which stored in NA.	Boolean(15)
NA_Signature	Signature information which stored in NA.	String(15)
NA_LastModffied_UTC	UTC of the registered signature which stored in NA.	String(15)
NA_LastModffied	Registration time of the registered signature which stored in NA.	String(15)

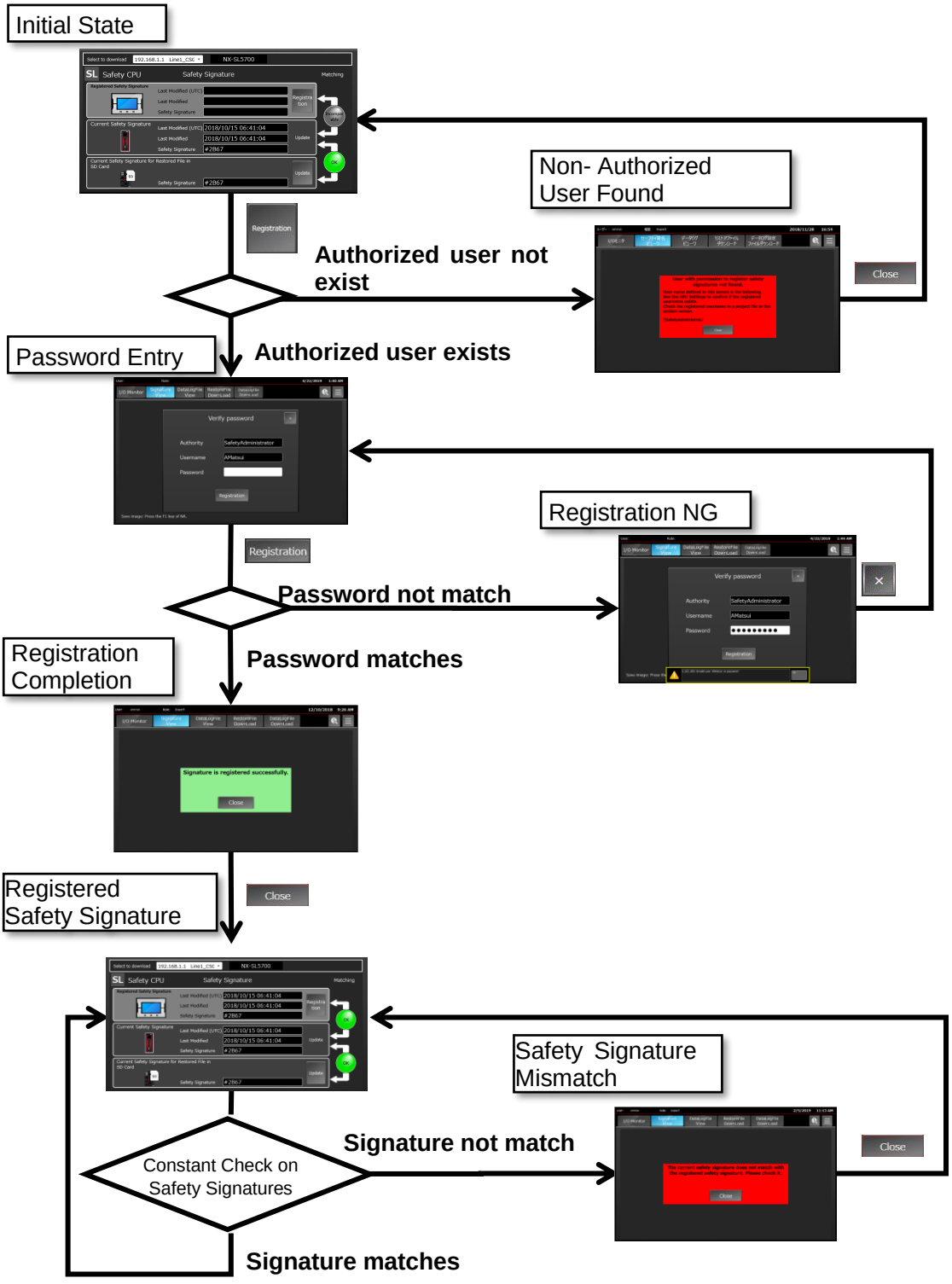


Precautions for Correct Use

- When multiple internal/ external devices are registered in a PJ file, they are allocated to Sysmac Studio Device Reference in registered order.
- If 16 and more devices are connected, only 16 can be assigned.

- Screen Transition

The flowchart below describes how the screens switch when the IAG object is used.



Customers must design screens if there is any necessary object except IAG objects.

5-2-3 Password Setting for Safety Program Administrator

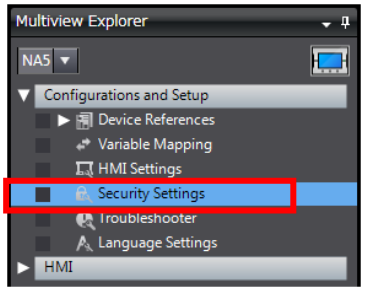
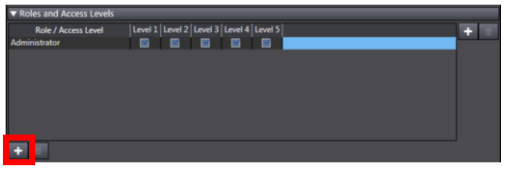
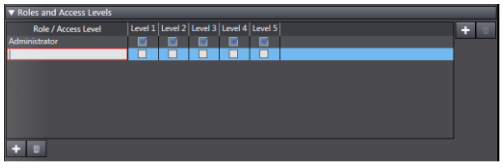
When an administrator of the safety program manages the safety signature after equipment operation, an equipment designer must register an authority and a username first. Then, the safety program administrator will take over them. The administrator must change the password that the designer had registered at first to the new one. This section shows how to do it.

1. The equipment designer set the authority, login username, and temporary password as the safety program administrator designates. See “Security Setting for NA” for detailed procedure.
2. The designer tells the temporary password to the administrator when handing the equipment over. The administrator changes the password in NA’s System Menu. Refer to “How to Change the Login Password to NA” for details.

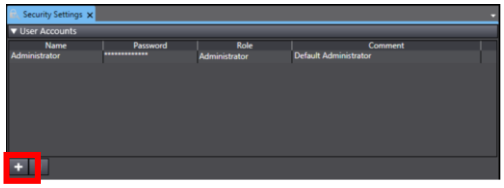
- Security Setting for NA

When you register a safety signature, password authentication is required. You must configure the security setting of NA before using this IAG.

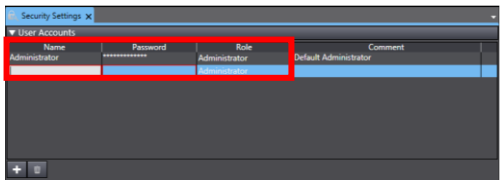
Only the user whose name has been input to the variable *RegisteredUserName* can register the safety signature. The setting procedures for security and user on NA are as the following.

1. Double-click [Configurations and Setup] – [Security Settings] in Multiview Explorer.	
2. Click the [+] button enclosed in a red square, in [Roles and Access Levels].	
3. Enter an authority title and click to check the access level boxes.	

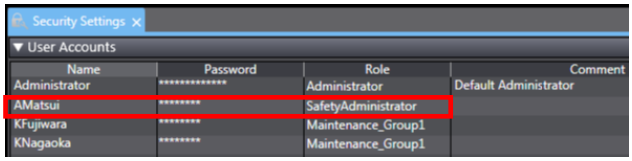
4. Click the [+] button in [User Accounts].



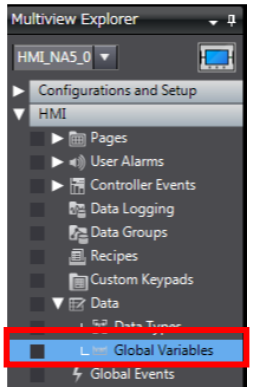
5. Enter Name, Password, and Role (authority).



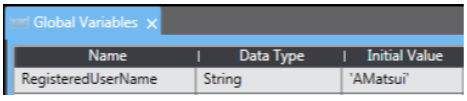
6. The right illustration is a sample setting. It permits the user “AMatsui” to register the safety signature.



7. Double-click [HMI] – [Global Variables] in the Multiview Explorer.

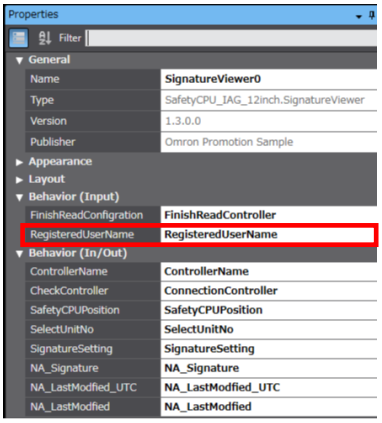


8. Create a variable according to the right illustration.



Variable name:
RegisteredUserName
Data Type: String
Default: ’AMatsui’

9. Put this IAG on any screen. Then assign the variable *RegisteredUserName*, which you have created in the previous step, to the input variable *RegisteredUserName*.



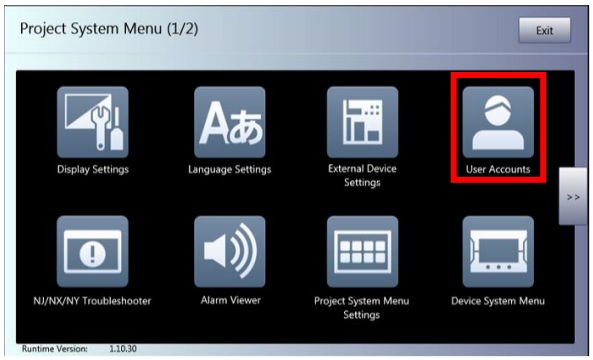
- How to Change the Login Password to NA

  You can edit the user account information in the System Menu of NA.

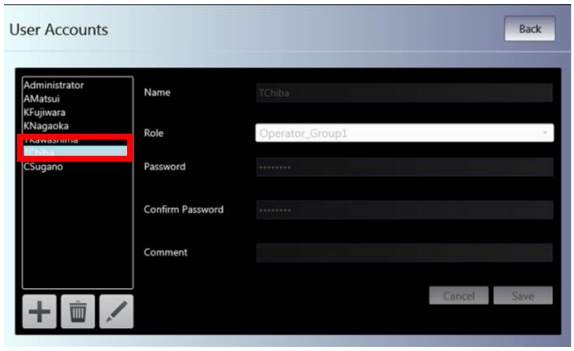
  This section describes how to edit it with the configuration for the safety CPU demo screens.

1. Start the safety CPU demo screen. The screen shown in the right appears. Double-tap the upper-left corner of the screen.

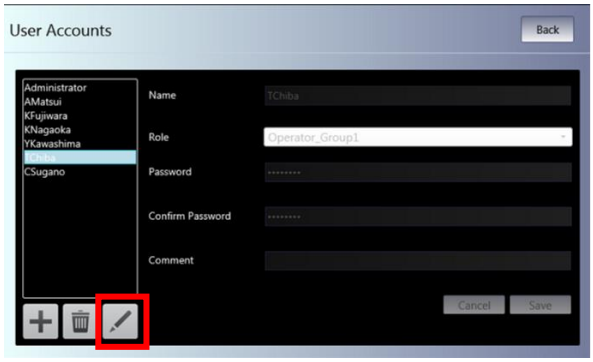
2. The System Menu is displayed.
   Touch the User Account icon.



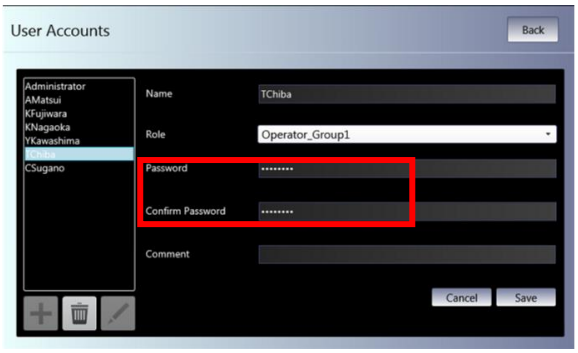
3. The User Account Screen is displayed.
   Select the account you want to set.



4. Touch the icon .



5. Enter a new password in the [Password] box.
Type the password again in the [Confirm Password] box to confirm it.

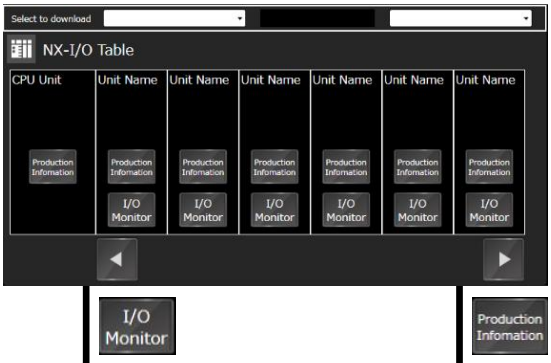


6. Touch the Save button.

5-3 IOMonitor

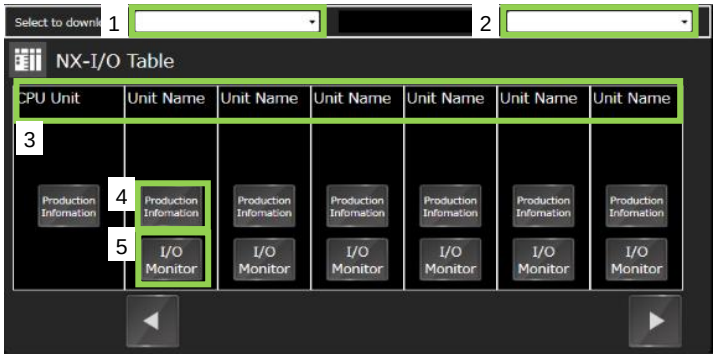
5-3-1 Specifications

● External Specification

Object Name	IOMonitor
Category	SafetyCPU
Function	Displays controller I/O tables. [I/O Monitor] Indicates input/output LED status of the safety I/O unit. [Production Information] Shows product information about the I/O unit. [►] Displays the right-hand unit. [◄] Displays the left-hand unit.
Description	It enables to see the safety I/O unit LED status on NA without opening a control panel.
Graphics	This IAG contains two screens and a pop-up. ■Main Screen 

● Screen Specifications

Main Screen	Displays I/O tables of the selected controller.

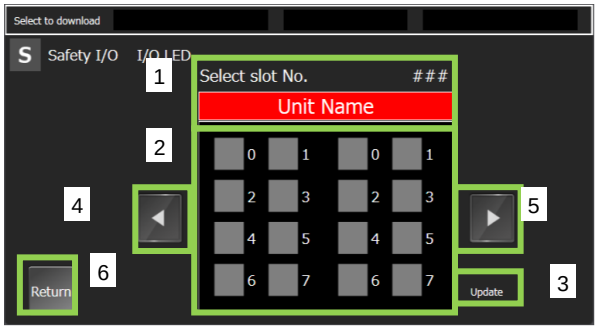


User I/F Specification

No	Part	Description
1	DropDown	The button is used to select a controller to display its I/O tables. You can select the controller from the drop down list.
2	DropDown Button	Enables to select the I/O table to display in [3] on the screen.
3	Data Display	I/O tables of the connected controllers are displayed in this area.
4	Button	Displays product information on the selected unit. This button supports controller units (NX102 series, CSG series) and safety I/O units (NX-SI series, NX-SO series). Regular NX-I/O units are not supported.
5	Button	The screen is changed to the selected slot number safety I/O monitor screen by pressing this button. It supports safety I/O units (NX-SI series, NX-SO series), but not regular NX-I/O units.

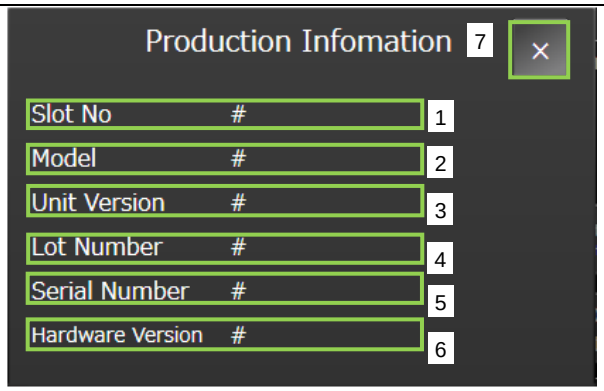
Layout

Property	Default	Description
Position (Left, Up)		Set in Property.
Size (Width, Height)		Set in Property.

I/O LED Monitor Screen	LED monitor of the selected controller is displayed by pressing the I/O Monitor button. It supports safety I/O units (NX-SI series, NX-SO series), but not regular NX-I/O unit. The LED status is updated every 1 second.
	

User I/F Specification		
No	Part	Description
1	Data Display	The selected slot number and unit model are shown.
2	Data Display	Status of safety I/O unit LED is indicated.
3	Label	The reading blinks during an update of LED status.
4	Button	The button shows the LED status of the left unit.
5	Button	The button shows the LED status of the right unit.
6	Button	This button enables to switch to the Main Screen.

Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Production Information Screen	Product information about the selected unit is shown in this screen by pressing the Production Information button.
	

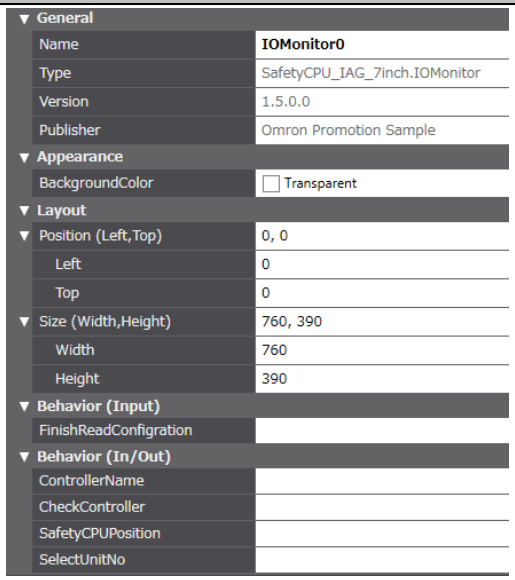
User I/F Specification		
No	Part	Description
1	Data Display	Slot number is displayed.
2	Data Display	Model of the unit is displayed.
3	Data Display	Unit version is shown.
4	Data Display	Lot number is shown.
5	Data Display	Serial number is displayed.
6	Data Display	Version number of hardware is displayed.
7	Button	Closes this screen.

Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	IOMonitor0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch.IOMonitor
Version	IAG version	-	-	1.5.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（760,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	760
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input				
FinishReadController	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean(15)	(Blank)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	Variable specification	String(15)	(Blank)
SelectUnitNo	The number of selected unit.	Variable specification	Short	(Blank)

Image



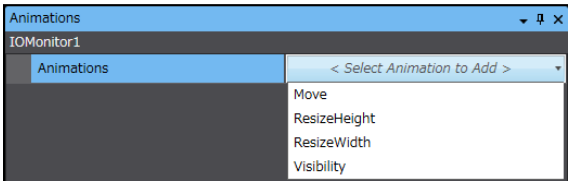
1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No security function available.

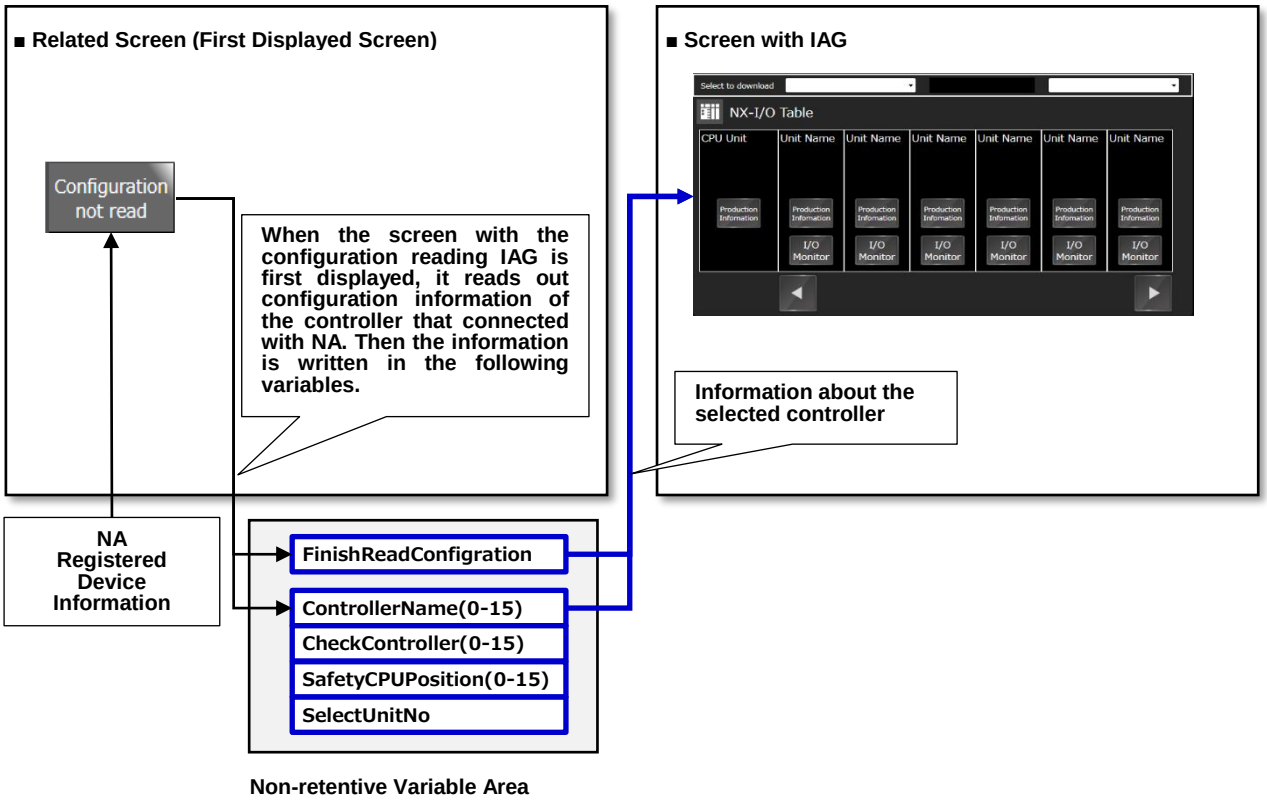
● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The number of selected unit.	Short

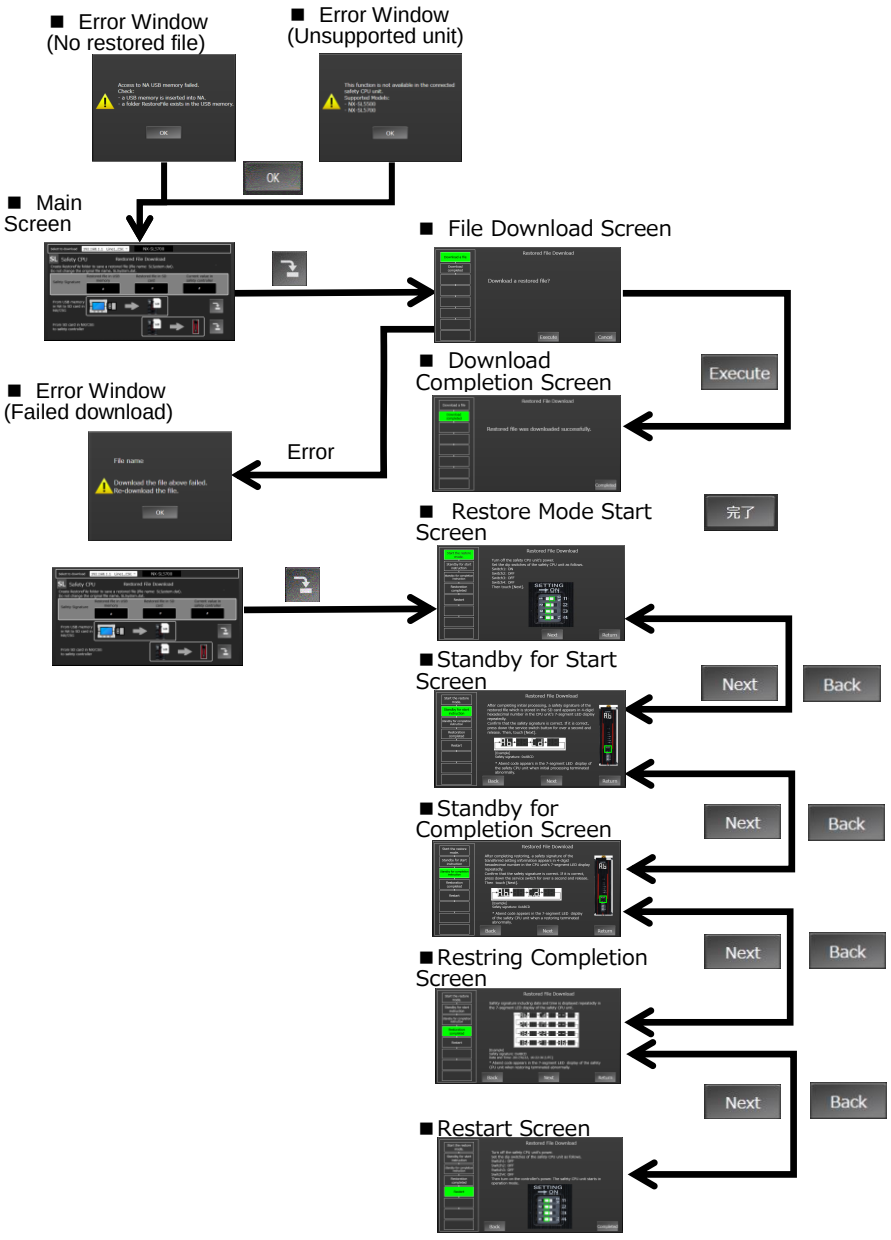


5-4 RestoreFileDownLoad

5-4-1 Specifications

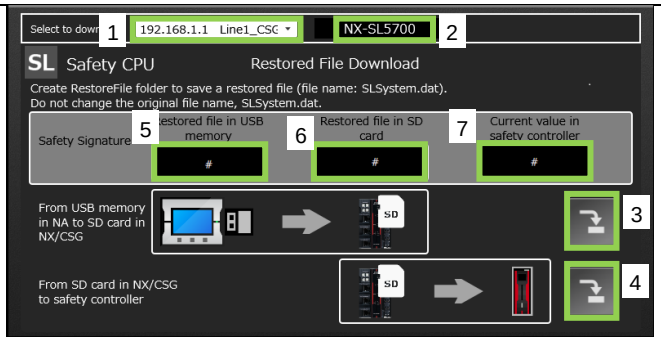
- External Specification

Object Name	RestoreFileDownLoad
Category	SafetyCPU
Description	With this IAG, you can transfer restored files in NA USB memory to controllers in order to restore the safety CPU unit. Login to NA before downloading restored files.
Function	Downloads restored files of the safety CPU unit to controllers. [Download] Executes downloading of restored files, and displays procedure to restore.
Graphics	This IAG consists of eight screens and three pop-ups. Details are described in page 34, “Screen Specifications.”



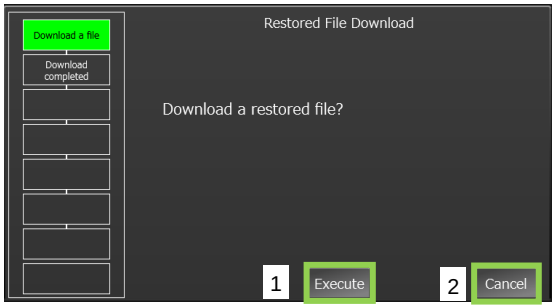
● Screen Specifications

Main Screen	Pressing the download button, you can go to procedures to download restored files and to implement restoring.



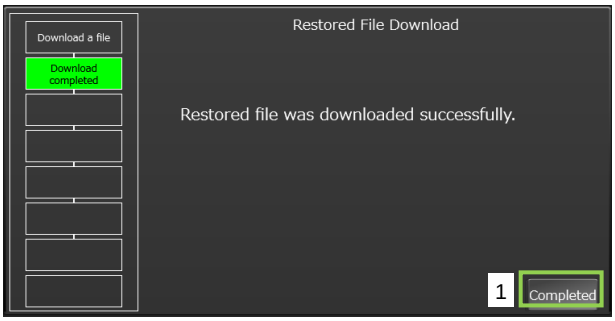
User I/F Specification		
No	Part	Description
1	DropDown	You can select a controller from the drop-down list. Restored files are downloaded to the selected controller.
2	Data Display	Model of the connected safety CPU unit is shown.
3	Button	Restored file stored in NA USB memory is transferred to the SD card in NX/CSG.
4	Button	You can restore files.
5	Data Display	Signature registered in NA is displayed.
6	Data Display	Signature registered in the NX/CSG SD card is displayed.
7	Data Display	Signature for NX/CSG is displayed.
Layout		
Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

File Download Screen	Restored file download confirmation dialog is displayed by pressing the Download button on Main Screen. Pressing the Execute button, you can download the restored files, which stored in NA USB memory, to an SD card of the controller.



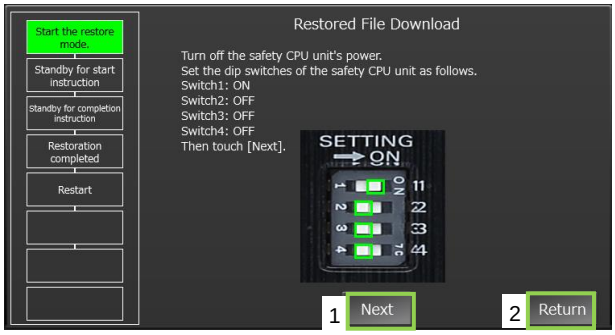
User I/F Specification		
No	Part	Description
1	Button	Executes download of restored files.
2	Button	Cancel the download. The screen is switched to Main Screen.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Download Completion Screen	After the Execute button was pressed, this screen appears if the download has been successfully completed.



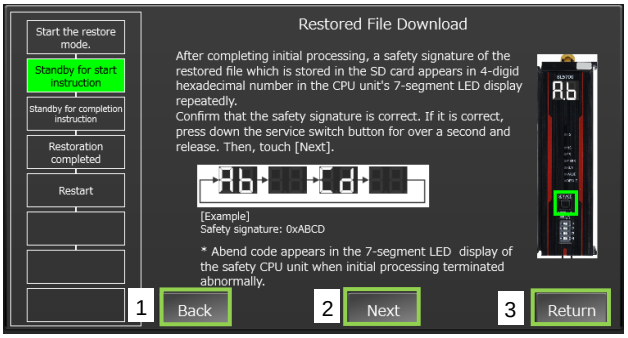
User I/F Specification		
No	Part	Description
1	Button	Enables to back to the Main Screen.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Restore Mode Start Screen	This screen is displayed after the Next button is pressed on Download Completion Screen. It shows the procedure to start restoring mode.



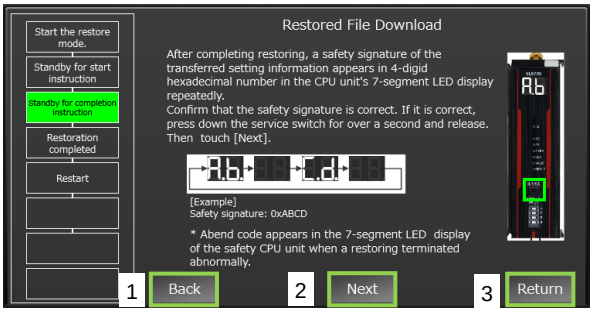
User I/F Specification		
No	Part	Description
1	Button	Enables to jump to Standby for Start Instruction Screen.
2	Button	You can go back to Main Screen.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Standby for Start Instruction Screen	This screen is displayed when the Next button is pressed on Restoring Start Screen. It shows the restoring procedure such as checking safety signature.

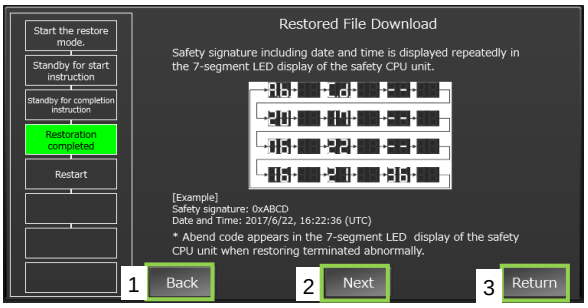


User I/F Specification		
No	Part	Description
1	Button	Enables to go to Restore Mode Start Screen.
2	Button	Enables to go to Standby for Completion Instruction Screen.
3	Button	You can go back to Main Screen.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Standby for Completion Instruction Screen	This screen appears when the Next button is pressed on Standby for Start Instruction Screen. It shows the restoring procedure such as checking safety signature.



User I/F Specification		
No	Part	Description
1	Button	Enables to back to Standby for Start Instruction Screen.
2	Button	Enables to go to Restoring Completion Screen.
3	Button	You can go back to Main Screen.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

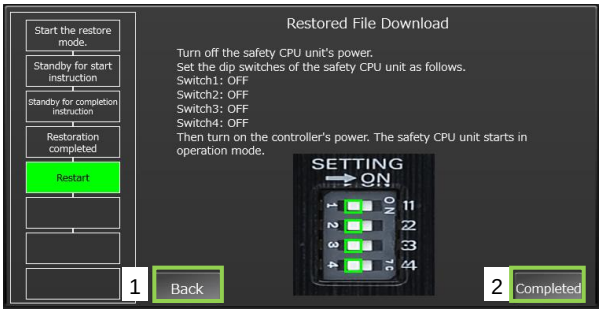
Restoring Completion Screen	This screen appears when the Next button is pressed on Standby for Completion Instruction Screen. It describes the procedure for normal/abnormal end of restoring.
	

User I/F Specification

No	Part	Description
1	Button	Enables to back to Restoring Completion Screen.
2	Button	Enables to go to Restart Screen.
3	Button	You can go back to Main Screen.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Restart Screen	This screen is displayed when the Next button is pressed on Restoring Completion Screen. It describes the procedure to restart.
	

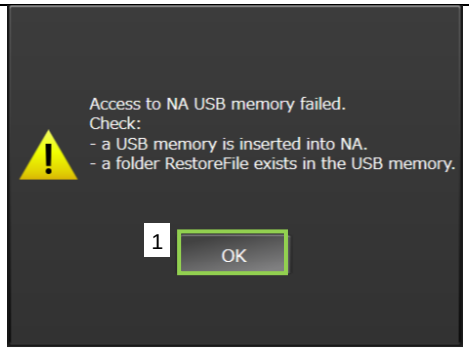
User I/F Specification

No	Part	Description
1	Button	Enables to back to Restoring Completion Screen.
2	Button	You can go back to Main Screen.

Layout

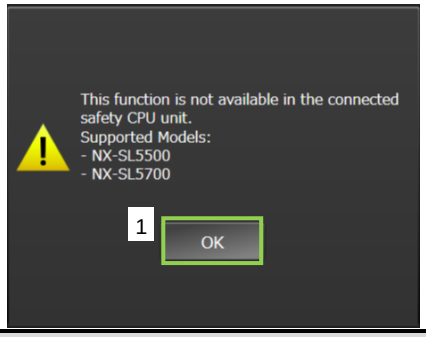
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (No restored file)	This pop-up appears when restored files do not exist in a USB memory or NA has failed to access a USB memory.

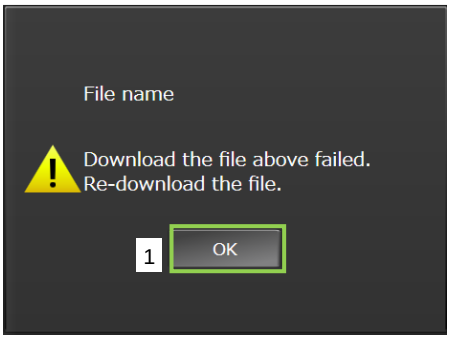


User I/F Specification		
No	Part	Description
1	Button	Closes this window.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (Unsupported unit)	This pop-up appears if the connected unit is not supported by the safety CPU.



User I/F Specification		
No	Part	Description
1	Button	Closes this window.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

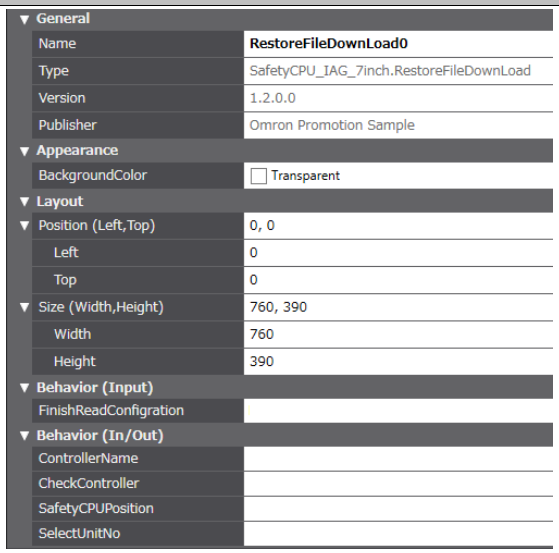
Error Window (Failed download)	This pop-up is displayed if the download of restored files has been failed. 

User I/F Specification		
No	Part	Description
1	Button	Closes this window.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	RestoreFileDownLoad0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. RestoreFileDownLoad
Version	IAG version	-	-	1.2.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（760,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	760
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input				
FinishReadConfigration	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean(15)	(Blank)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	Variable specification	String(15)	(Blank)
SelectUnitNo	The number of selected unit.	Variable specification	Short	(Blank)

Image



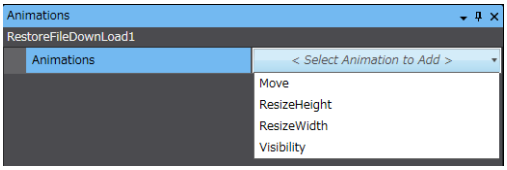
1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No security function available.

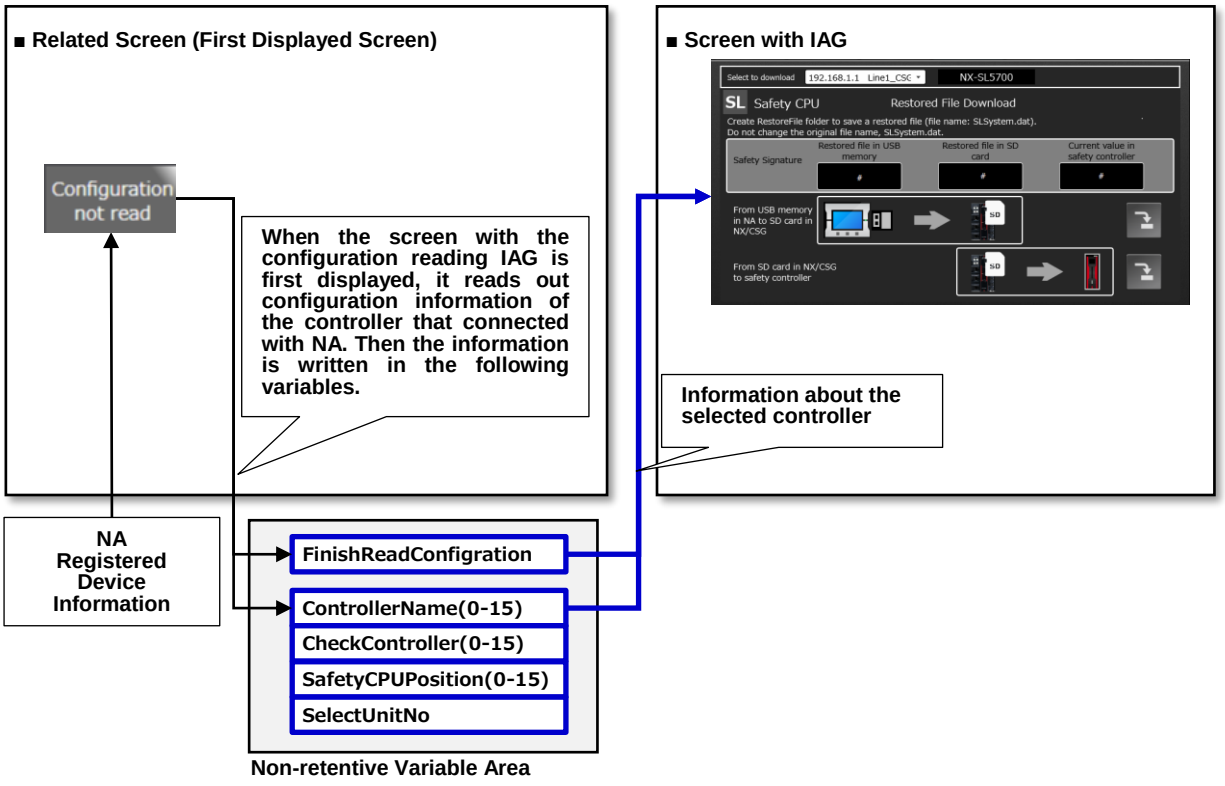
● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

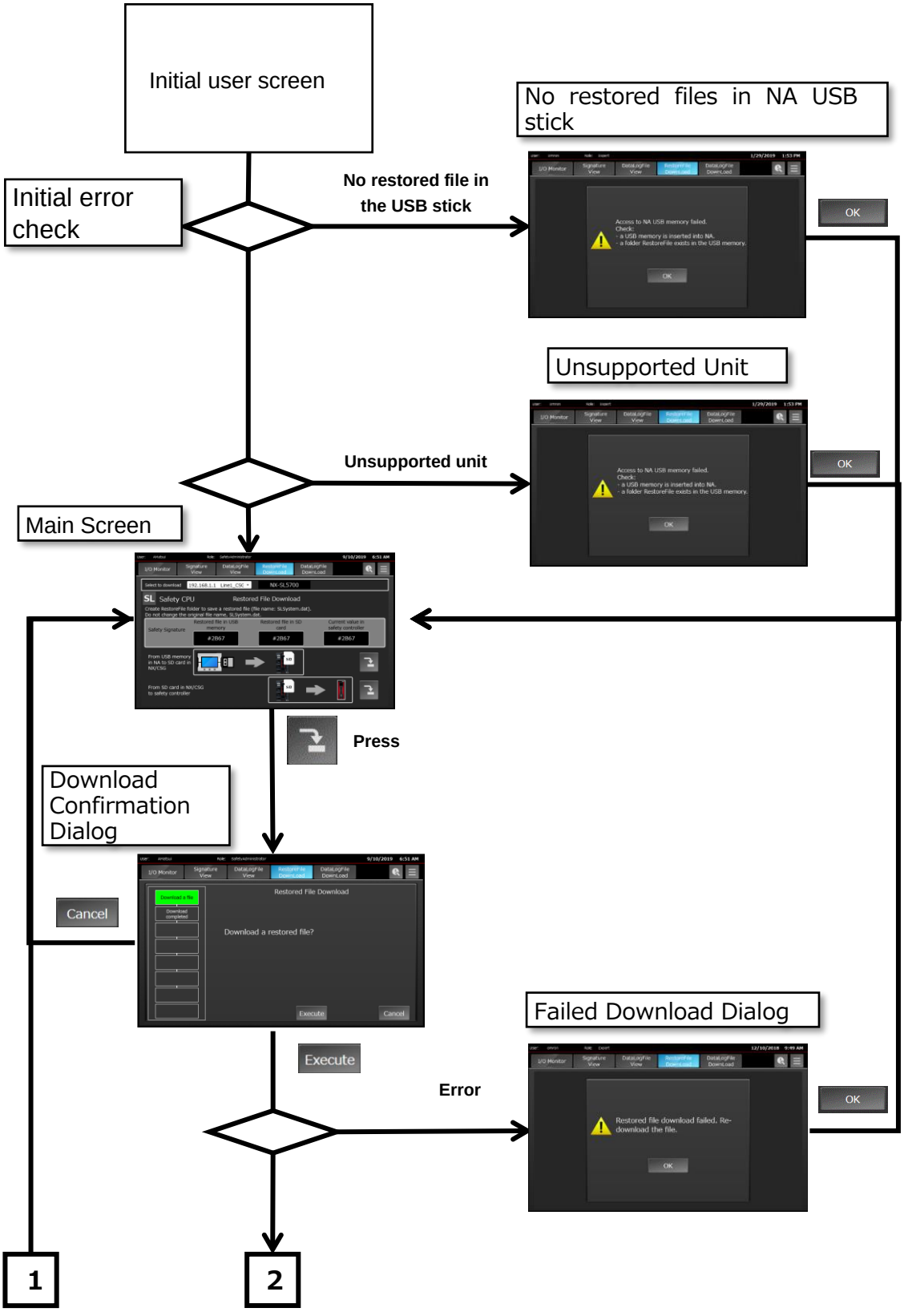
Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

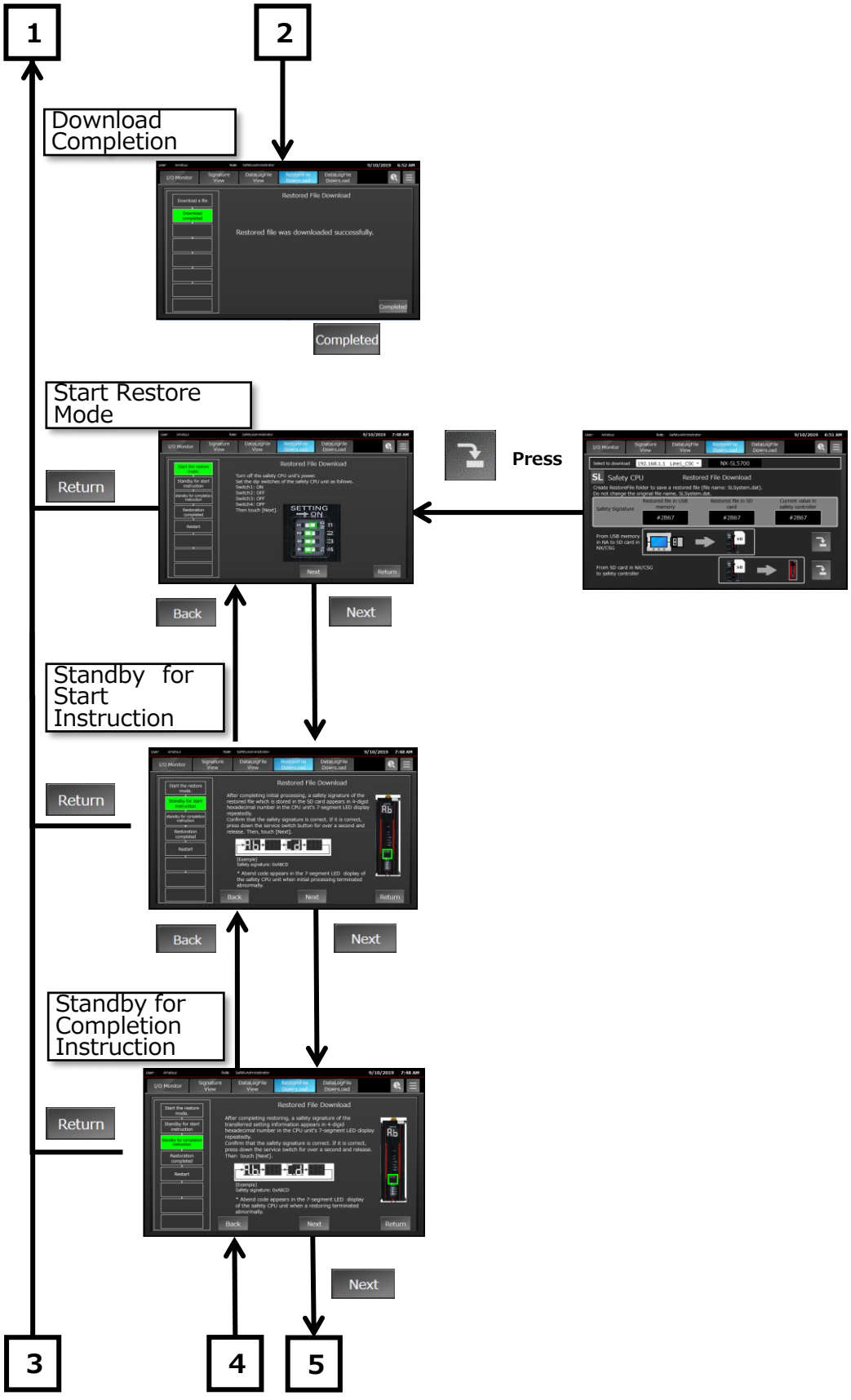
Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The selected unit number.	Short

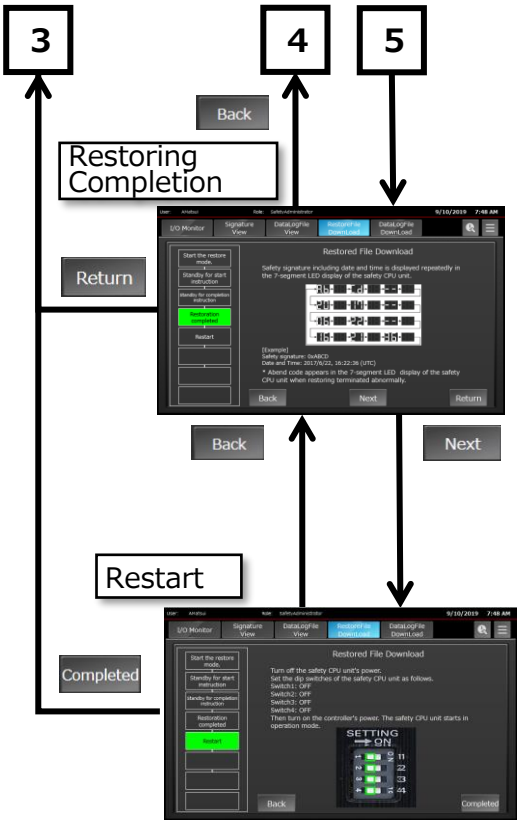


● Screen Transition

The flowchart below describes how the screens switch when the IAG object is used.




1
2
Download Completion
Restored File Download
Restored file was downloaded successfully.
Completed
Completed
Start Restore Mode
Return
Restored File Download
SETTING
ON
Next
Return
Press
Safety CPU
Restored File Download
Back
Next
Standby for Start Instruction
Return
Restored File Download
Back
Next
Standby for Completion Instruction
Return
Restored File Download
Next
3
4
5



Customers must design screens if there is any necessary object except IAG objects.

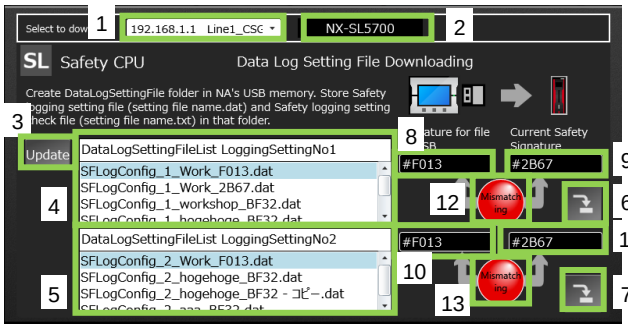
5-5 DataLogFileDownLoad

5-5-1 Specifications

● External Specification

Object Name	DataLogFileDownLoad
Category	SafetyCPU
Description	Transfers data log setting files in NA USB memory to controllers to execute data logging of the safety CPU unit.
Function	It enables to download data logging settings of the safety CPU unit to controllers. [Update] Updates file lists of data log No.1 and No.2. [Download] Downloads data log setting file No.1 or No.2, and shows the data logging procedure.
Graphic	This IAG consists of five screens and five pop-ups. Initial error check ■Error Window (No data log setting folder) ■ Error Window (Unsupported unit) OK ■ Main Screen ■ Download Screen Error Execute ■ Error Window (Lack of setting check file) ■ Download Completion Screen Next ■ Error Window (Lack of data log setting file) ■ Data logging Validating Screen ■ Error Window (Failed download) ■ Data Logging Settings Update Screen Next Back

● Screen Specification

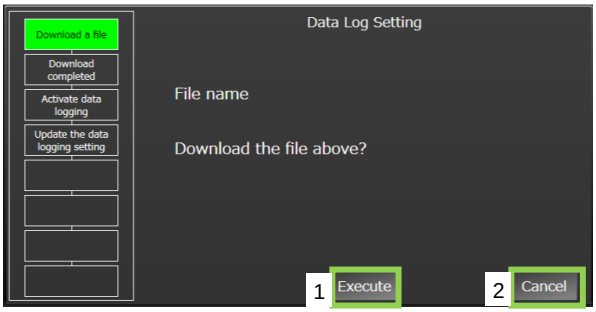
Main Screen	You can download data log setting files and check the data logging execution procedure by pressing the Download button.
	

User I/F Specification

No	Part	Description
1	DropDown	You can select the controller where data log setting files are to be downloaded, using the drop-down list.
2	Data Display	Displays the model of connected safety CPU unit.
3	Button	Updates file lists displayed in [4] and [5].
4	ListBox	A list of data logging files (logging setting No.1) is shown here. You can select one to download.
5	ListBox	A list of data logging files (logging setting No.2) is shown here. You can select one to download.
6	Button	Downloads the data logging file that selected in [4].
7	Button	Downloads the data logging file that selected in [5].
8	Data Display	Displays the signature for the logging file selected in [4].
9	Data Display	Displays the safety signature for the main unit.
10	Data Display	Displays the signature for the logging file selected in [5].
11	Data Display	Displays the safety signature for the main unit.
12	Data Lamp	Displays comparison of signatures in [8] and [9].
13	Data Lamp	Displays comparison of signatures in [10] and [11].

Layout

Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

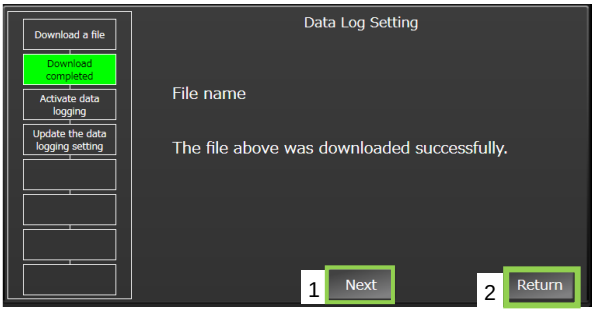
Download Screen	Confirmation dialog for data log setting file download is displayed. This screen appears when you pressed the Download button on Main Screen. After the Execute button pressed, data log setting files that stored in NA USB memory are downloaded to SD card in the controller.
	

User I/F Specification

No	Part	Description
1	Button	Executes download of data log setting files.
2	Button	Download can be cancelled with this Cancel button. After pressing it, you can go back to Main Screen.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Download Completion Screen	This screen appears if a download is successfully completed after you press the Execute button on Download Screen.
	

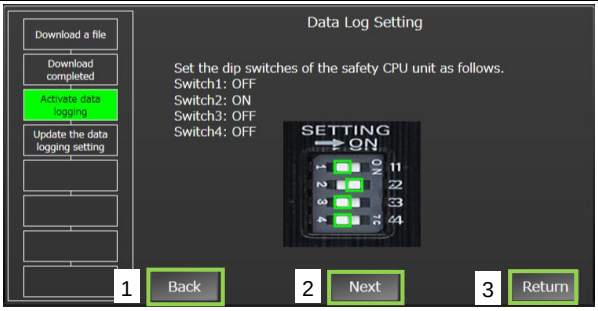
User I/F Specification

No	Part	Description
1	Button	Enables to jump to Data Logging Validation Screen.
2	Button	You can go back to Main Screen.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Data Logging Validation Screen	This screen is displayed by pressing the Next button on Download Completion Screen. It suggests the procedure to validate data logging.



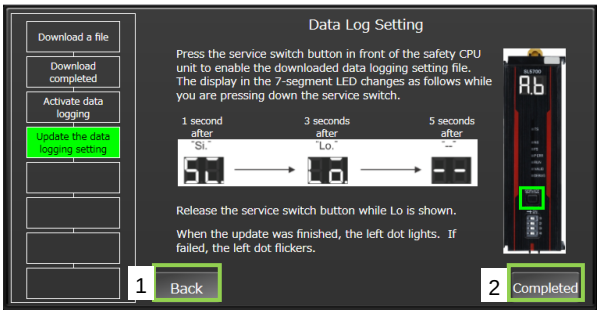
User I/F Specification

No	Part	Description
1	Button	Not displayed in NA.
2	Button	Enables to jump to Data Logging Settings Update Screen.
3	Button	You can go back to Main Screen.

Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Data Logging Settings Update Screen	This screen is shown when the Next button is pressed on Data Logging Validation Screen. The update procedure for data logging settings is displayed.



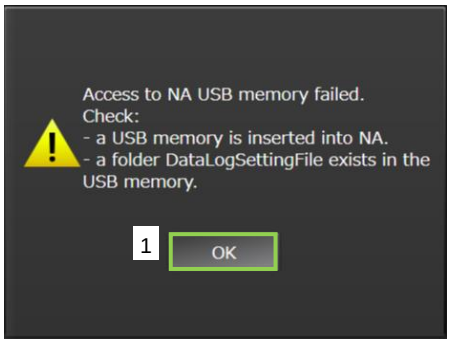
User I/F Specification

No	Part	Description
1	Button	Enables to jump to Data Logging Validation Screen.
2	Button	You can go back to Main Screen.

Layout

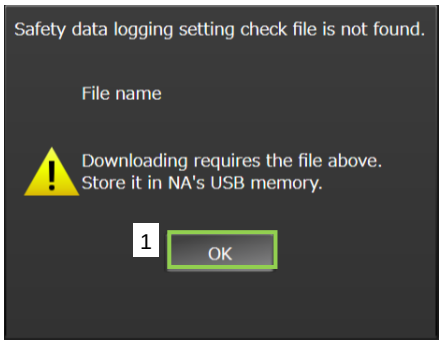
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (No data log setting folder)	This window appears when a specified file is not in the USB memory, or access to the USB memory is failed.

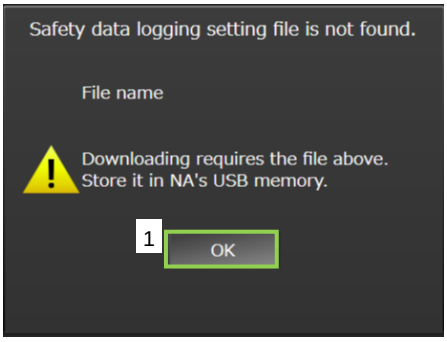


User I/F Specification		
No	Part	Description
1	Button	Closes the window.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (Lack of setting check file)	This pop-up is displayed if the file to check data logging settings is lacking.

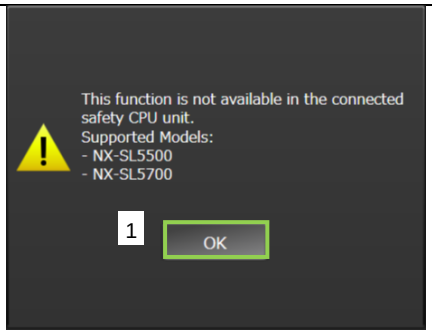


User I/F Specification		
No	Part	Description
1	Button	Closes the window.
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (Lack of data log setting file)	This pop-up is shown if data logging file is missing. 

User I/F Specification		
No	Part	Description
1	Button	Closes the window.

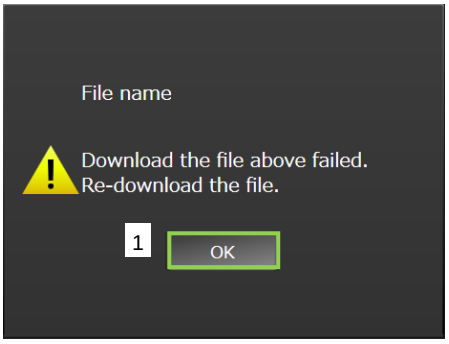
Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (Unsupported unit)	This pop-up appears when the connected safety CPU unit is not supported. 

User I/F Specification		
No	Part	Description
1	Button	Closes the window.

Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

Error Window (Failed download)	This pop-up is displayed when a data logging setting file has not been downloaded properly.



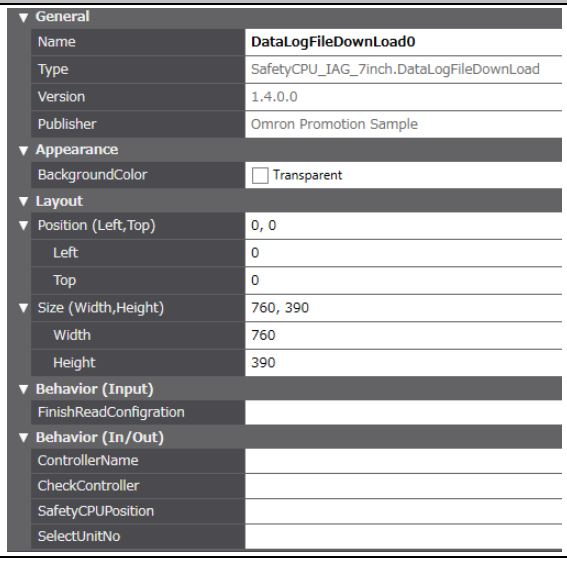
User I/F Specification		
No	Part	Description
1	Button	Closes the window.

Layout		
Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	DataLogFileDownLoad 0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. DataLogFileDownLoad
Version	IAG version	-	-	1.4.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（760,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	760
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input				
FinishReadConfigration	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean(15)	(Blank)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	Variable specification	String(15)	(Blank)
SelectUnitNo	The unit number of selected unit.	Variable specification	Short	(Blank)

Image



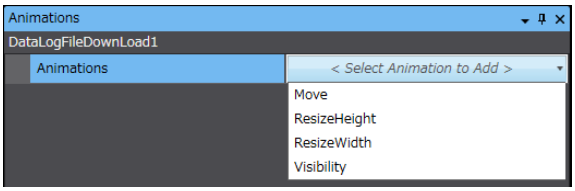
1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No security function available.

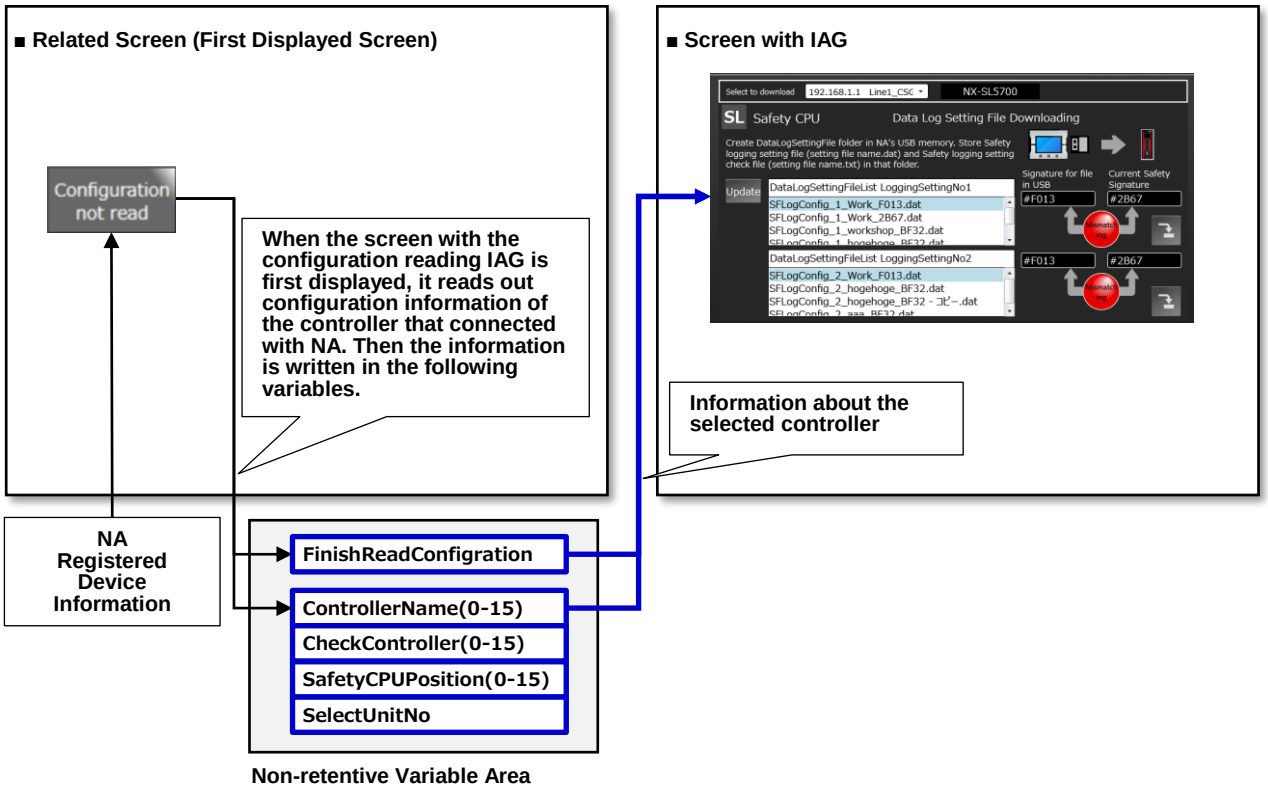
● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

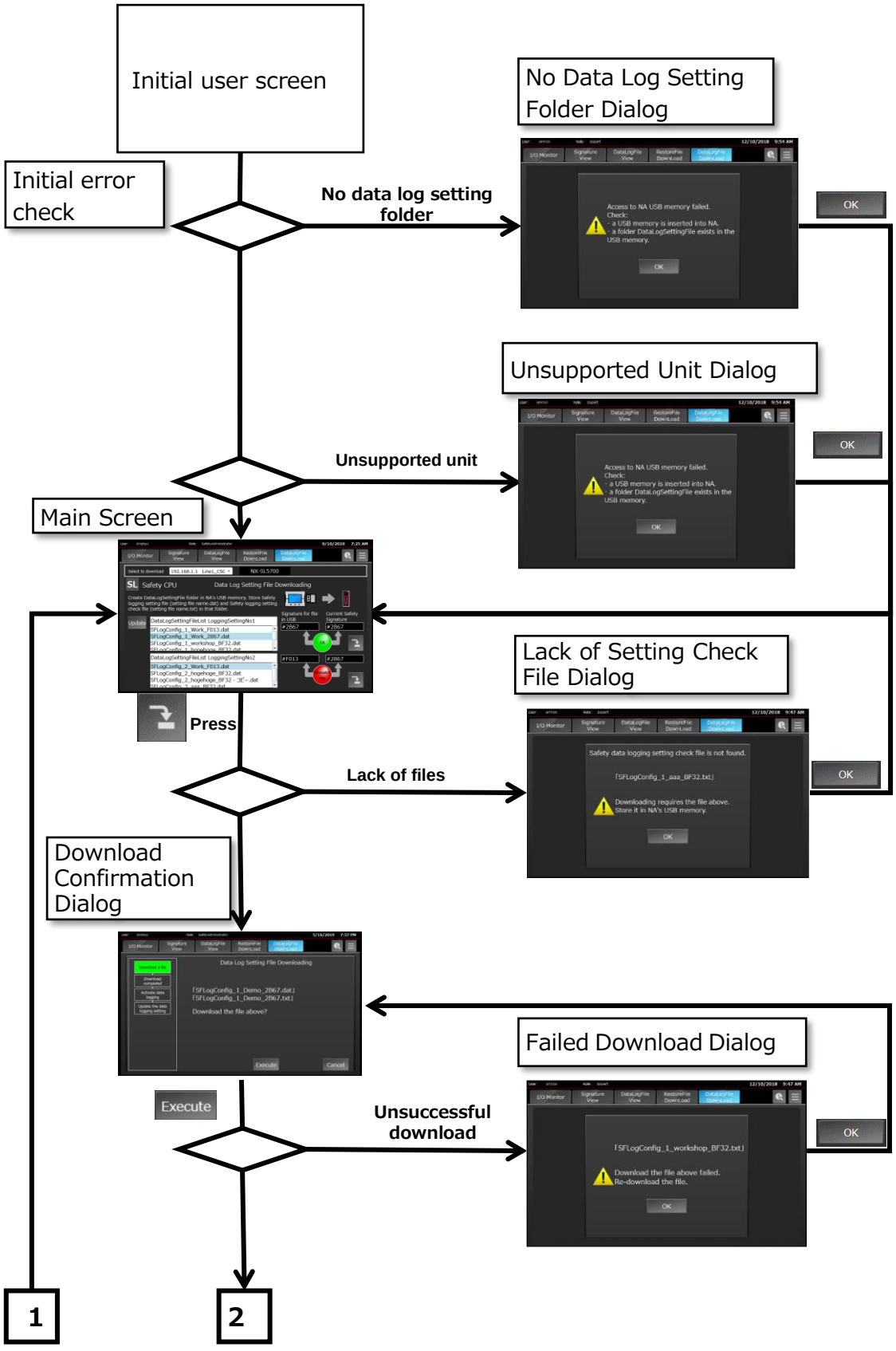
Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

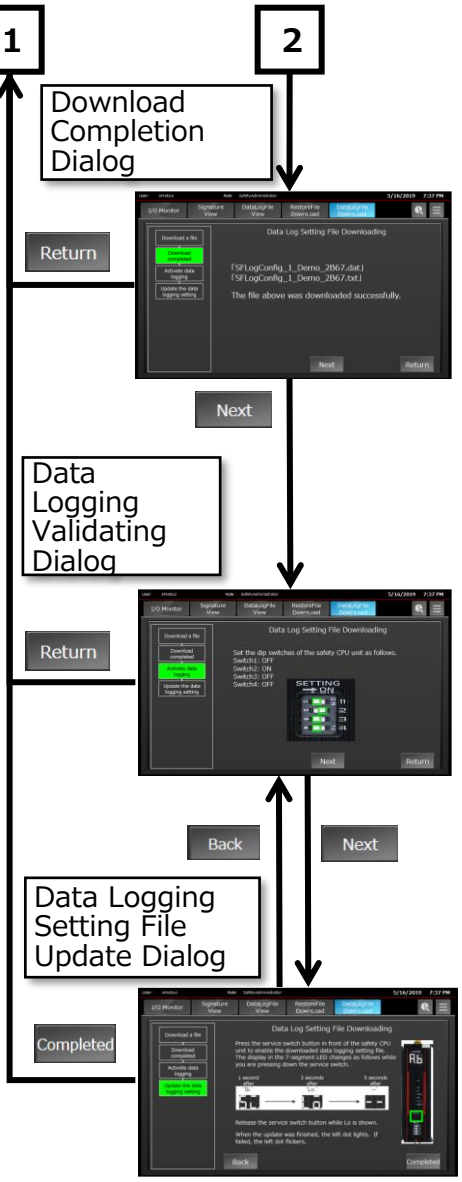
Property (Input)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The selected unit number.	Short



- Screen Transition

  The flowchart below describes how the screens switch when the IAG object is used.



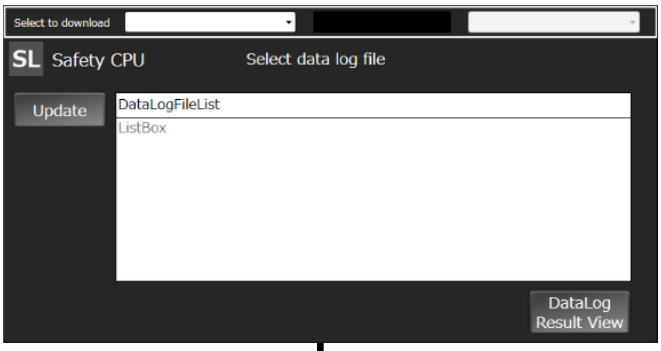
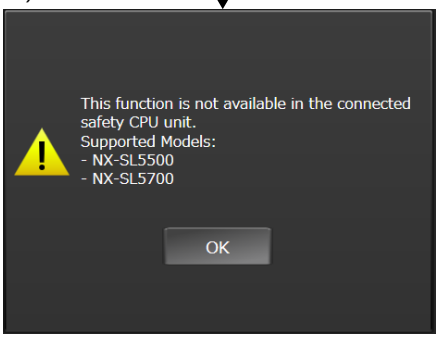


Customers must design screens if there is any necessary object except IAG objects.

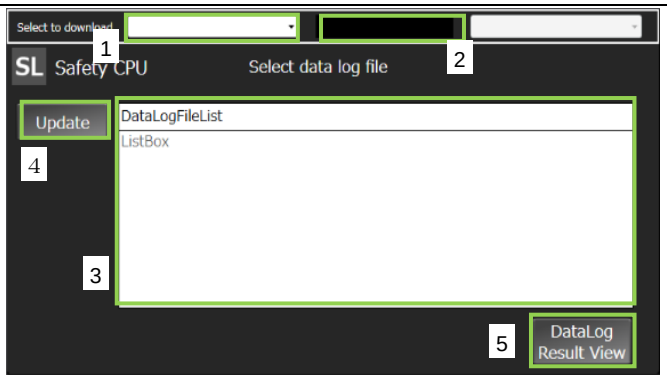
5-6 DataLogFileView

5-6-1 Specifications

● External Specification

Object Name	DataLogFileView
Category	SafetyCPU_DataLogResultViewer
Description	Use this IAG component in conjunction with the following IAGs: SelectDataLogParameter, GraphDisplay, and DataLogResultMeasurement.
Function	The IAG displays the safety CPU unit data log files. [Update] Updates a list of data log result files. [Data Log Result View] Opens the selected data log result file, then enables to go to SelectDataLogParameter.
Graphic	This IAG contains a screen and a pop-up. ■ Main Screen  Check unsupported unit ■ Error Window (Unsupported unit) 

● Screen Specification

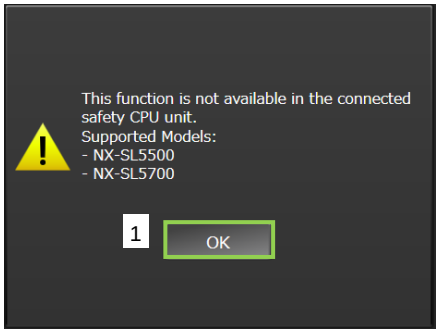
Main Screen	The main screen of this IAG. A list of data log result files which stored in the safety CPU SD card is displayed on this screen. You can select a file here.
	

User I/F Specification

No	Part	Description
1	DropDown Button	You can select the controller from a drop-down list in order to display its data log files. The file list is displayed in the [3] box.
2	Data Display	Shows the unit model of the connected safety CPU.
3	ListBox	A list of saved data log files in the safety CPU SD card is displayed here. You can select a file from the list.
4	Button	Updates the list in [3].
5	Button	Opens the file selected in [3]. Then you can go to SelectDataLogParameter automatically.

Layout

Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

Error Window (Unsupported unit)	This pop-up appears when the connected unit is not supported.
	

User I/F Specification

No	Part	Description
1	Button	Closes the window.

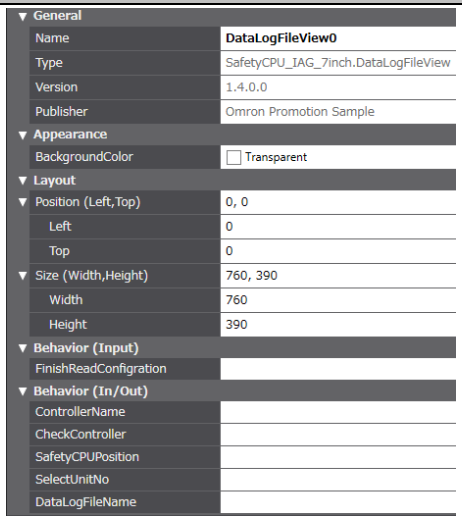
Layout

Property	Default	Description
Position (Left, Up)		Fixed
Size (Width, Height)		Fixed

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	DataLogFileView0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. DataLogFileView
Version	IAG version	-	-	1.4.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（760,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	760
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input				
FinishReadConfigration	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit. [3]	Variable specification	Boolean(15)	(Blank))
SafetyCPUPosition	Place to where the safety CPU unit is connected.	Variable specification	String(15)	(Blank)
SelectUnitNo	The unit number of the selected unit.	Variable specification	Short	(Blank))
DataLogFileName	File name of the downloaded file.	Variable specification	String	(Blank)

Image



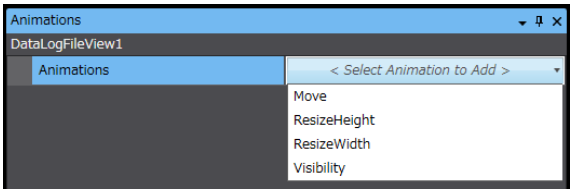
1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No security function available.

● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

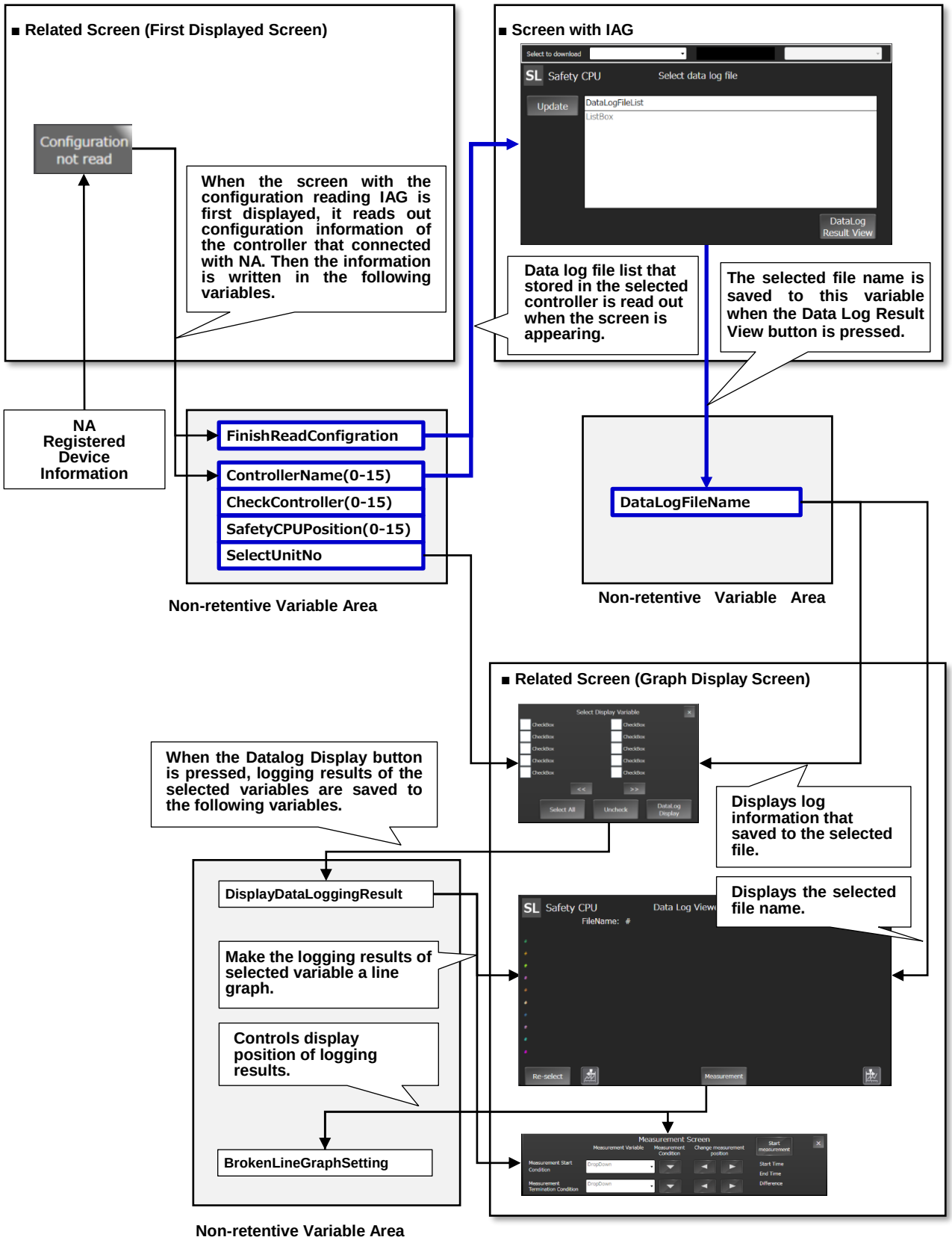
Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

Property (Input)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SafetyCPUPosition	Place to where the safety CPU unit is connected.	String(15)
SelectUnitNo	The unit number of the selected unit.	Short

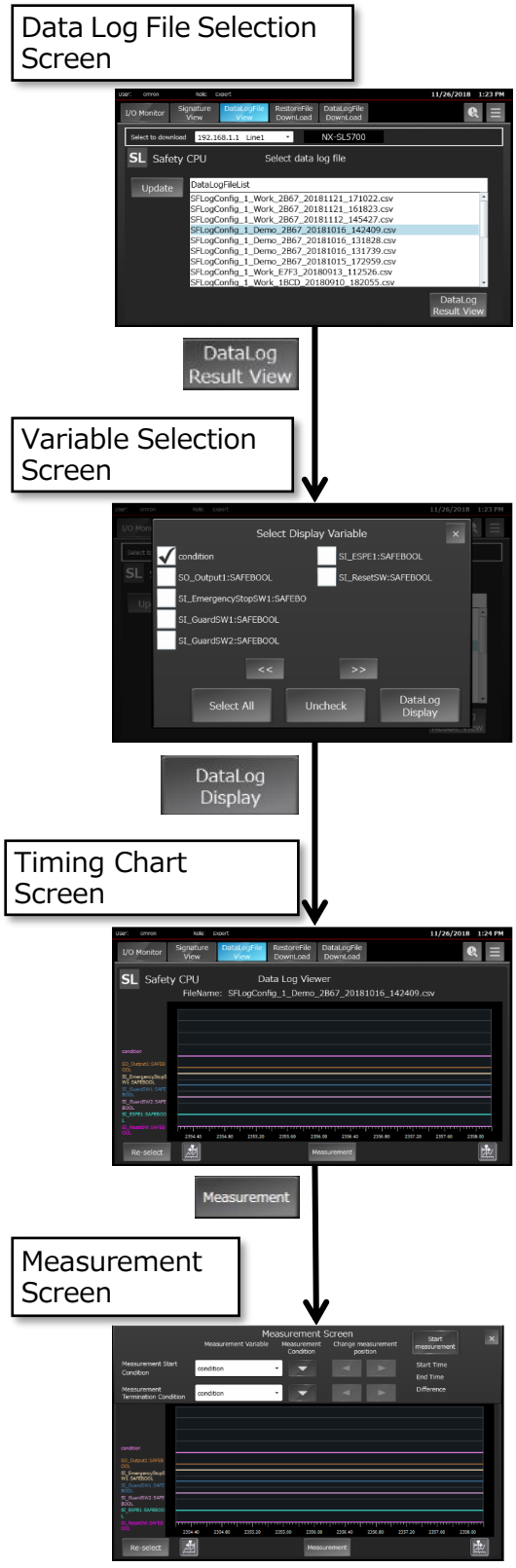
Downloaded data log file names are shared with other IAGs. For that reason, allocate the same variables to the property (input/output) below.

Property (Input)	Description	Data Type
DataLogFileName	File name of the downloaded file.	String


■ Related Screen (First Displayed Screen)
Configuration not read
When the screen with the configuration reading IAG is first displayed, it reads out configuration information of the controller that connected with NA. Then the information is written in the following variables.
NA Registered Device Information
FinishReadConfigration
ControllerName(0-15)
CheckController(0-15)
SafetyCPUPosition(0-15)
SelectUnitNo
Non-retentive Variable Area
■ Screen with IAG
Select to download
SL Safety CPU
Select data log file
Update
DataLogFileList
ListBox
DataLog Result View
Data log file list that stored in the selected controller is read out when the screen is appearing.
The selected file name is saved to this variable when the Data Log Result View button is pressed.
DataLogFileName
Non-retentive Variable Area
■ Related Screen (Graph Display Screen)
Select Display Variable
Select All
Uncheck
DataLog Display
When the Datalog Display button is pressed, logging results of the selected variables are saved to the following variables.
Displays log information that saved to the selected file.
DisplayDataLoggingResult
Make the logging results of selected variable a line graph.
Controls display position of logging results.
BrokenLineGraphSetting
Non-retentive Variable Area
SL Safety CPU
FileName: #
Re-select
Measurement
Displays the selected file name.
Measurement Screen
Start measurement
Measurement Start Condition
Measurement Termination Condition
Start Time
End Time
Difference

- Screen Transition

The flowchart below describes how the screens switch when the IAG object is used.

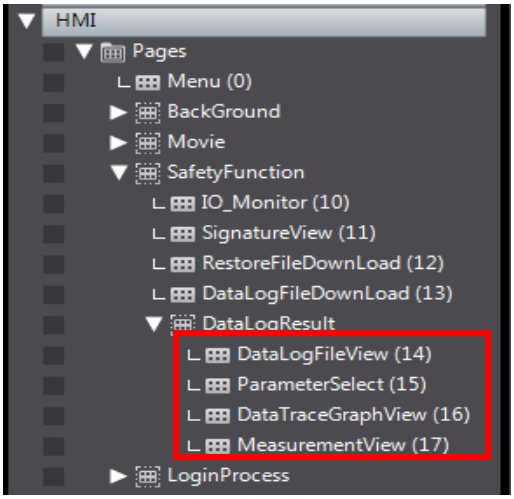


Customers must design screens if there is any necessary object except IAG objects.

● Screen Name

Screen names used by data log display IAG objects in the table below are fixed because pages are switched inside IAG. Be sure to use IAG objects in the specified pages.

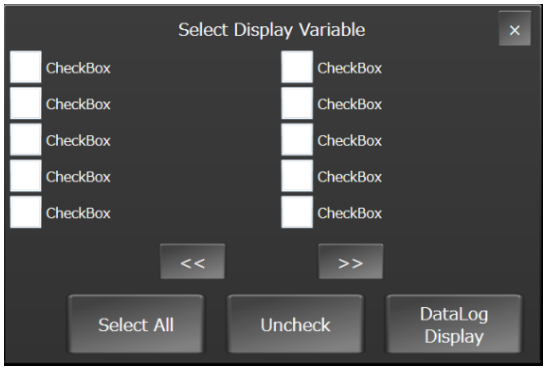
IAG Object Name	Screen Name
DataLogFileView	DataLogFileView
SelectDataLogParameter	ParameterSelect
GraphDisplay	DataTraceGraphView
DataLogResultMeasurement	MeasurementView



5-7 SelectDataLogParameter

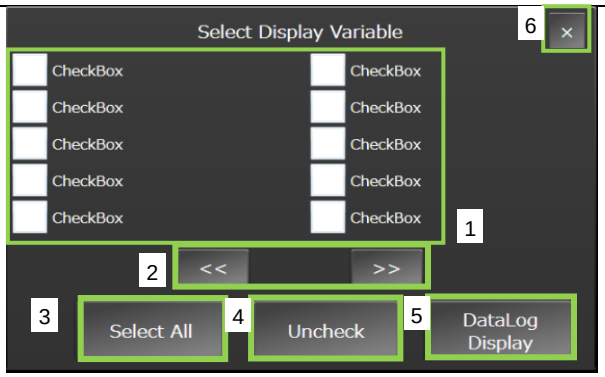
5-7-1 Specifications

● External Specification

Object Name	SelectDataLogParameter
Category	SafetyCPU_DataLogResultViewer
Description	Up to 10 variables can be selected.
Function	This IAG enables to display variables of data log. The selected variables are shown on Data Log Viewer. [Display Switching (Right/ Left)] Can be used when a data log result file has 10 and more variables. Display is switched by pressing the button. [Select All] Selects all the displayed variables. [Uncheck] Unselects all variables. [Data Log Display] You can go to Data Log Viewer (GraphDisplay) by pressing the button. [Close (X)] Closes the screen.
Graphic	This IAG has one screen. ■ Main Screen 

● Screen Specification

Main Screen	The main screen of this IAG. A list of variables that logged in the selected data log file.



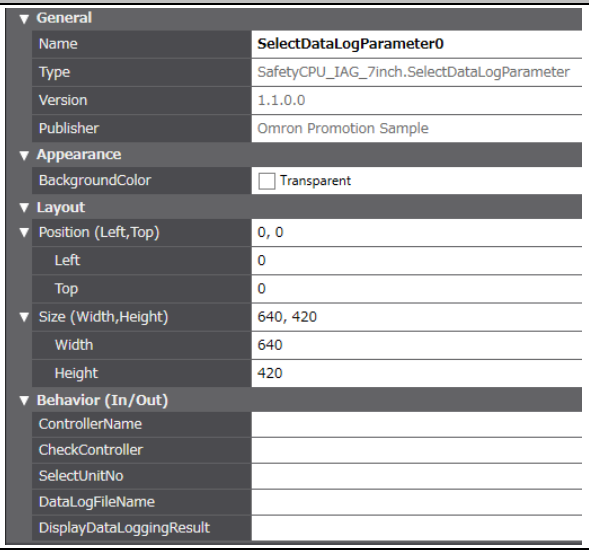
User I/F Specification		
No	Part	Description
1	Check Button	Logging variables in data log file are shown in this area. Up to 10 variables are available. You can select them by checking the box.
2	Button	With these buttons, you can switch variables to display. The buttons can be used when 10 and more variables have been logged.
3	Button	Selects all the displayed variables.
4	Button	Unchecks all the selected variables in [1].
5	Button	Enables to jump to GraphDisplay. This button cannot be pressed unless at least one variable has been selected in [1].
6	Button	Closes this screen.

Layout		
Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	SelectDataLogParameter0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch.SelectDataLogParameter
Version	IAG version	-	-	1.1.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（640,420）
Width	Width of object	Direct input Spin button	Numeric Numeric	640
Height	Height of object。	Direct input Spin button	Numeric Numeric	420
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean(15)	(Blank)
SelectUnitNo	The unit number of the selected unit.	Variable specification	Short	(Blank)
DataLogFileName	File name of the downloaded file.	Variable specification	String	(Blank)
DisplayDataLoggingResult	Parameter information to be graphically displayed.	Variable specification	Str_DataLogResult (structure) [3]	(Blank)

Image



1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.
3: Refer to Chapter 6 “Structures” for the used structures.

Additional Information

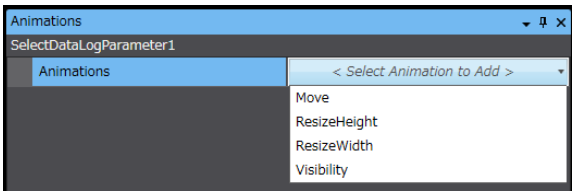
This IAG doesn't have Input property.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No security function available.

● Property Assignment

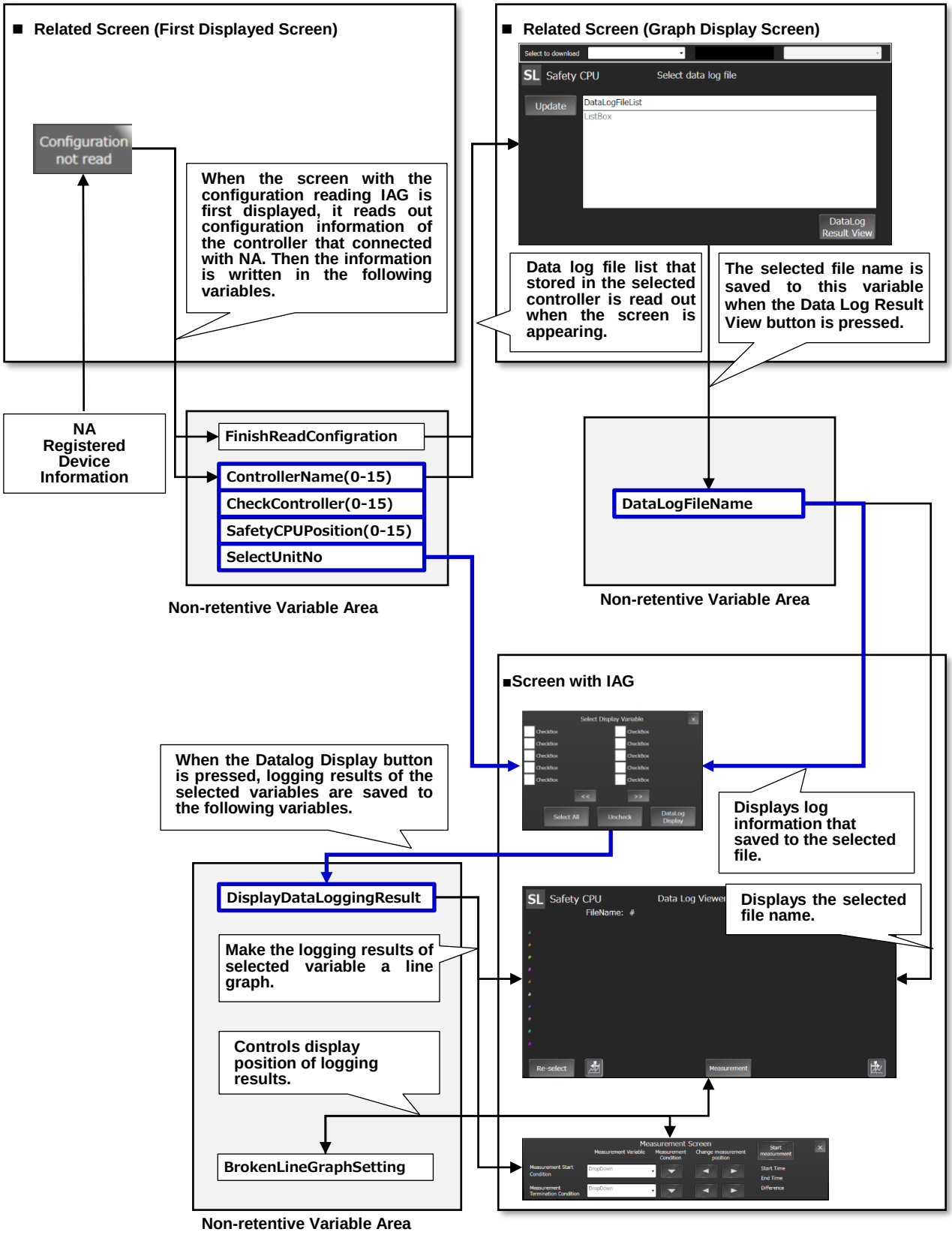
This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SelectUnitNo	The unit number of the selected unit.	Short

Downloaded data log file names and log results are shared with other IAGs. For that reason, allocate the same variables to the property (input/output) below.

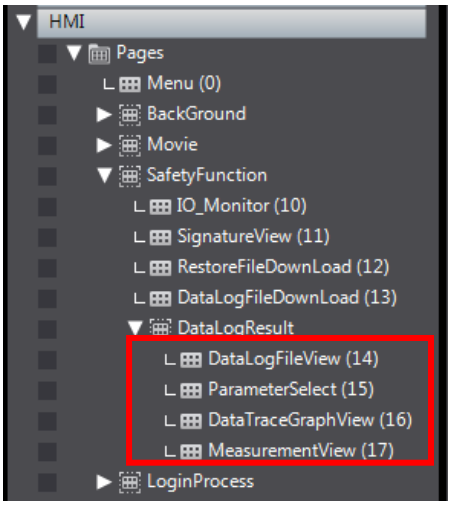
Property (Input/Output)	Description	Data Type
DataLogFileName	File name of the downloaded file.	String
DisplayDataLoggingResult	Information on parameters to display.	Str_DataLogResult (structure)


■ Related Screen (First Displayed Screen)
Configuration not read
When the screen with the configuration reading IAG is first displayed, it reads out configuration information of the controller that connected with NA. Then the information is written in the following variables.
NA Registered Device Information
FinishReadConfigration
ControllerName(0-15)
CheckController(0-15)
SafetyCPUPosition(0-15)
SelectUnitNo
Non-retentive Variable Area
■ Related Screen (Graph Display Screen)
Select to download
SL Safety CPU
Select data log file
Update
DataLogFileList
ListBox
DataLog Result View
Data log file list that stored in the selected controller is read out when the screen is appearing.
The selected file name is saved to this variable when the Data Log Result View button is pressed.
DataLogFileName
Non-retentive Variable Area
■Screen with IAG
Select Display Variable
Checkbox
<<
>>
Select All
Uncheck
DataLog Display
When the Datalog Display button is pressed, logging results of the selected variables are saved to the following variables.
Displays log information that saved to the selected file.
DisplayDataLoggingResult
Make the logging results of selected variable a line graph.
Controls display position of logging results.
BrokenLineGraphSetting
Non-retentive Variable Area
SL Safety CPU
Data Log Viewer
FileName: #
Displays the selected file name.
Re-select
Measurement
Measurement Screen
Measurement Variable
Measurement Condition
Change measurement position
Start measurement
Measurement Start Condition
Measurement Termination Condition
DropDown
Start Time
End Time
Difference

● Screen Name

Screen names used by data log display IAG objects in the table below are fixed because pages are switched inside IAG. Be sure to use IAG objects in the specified pages.

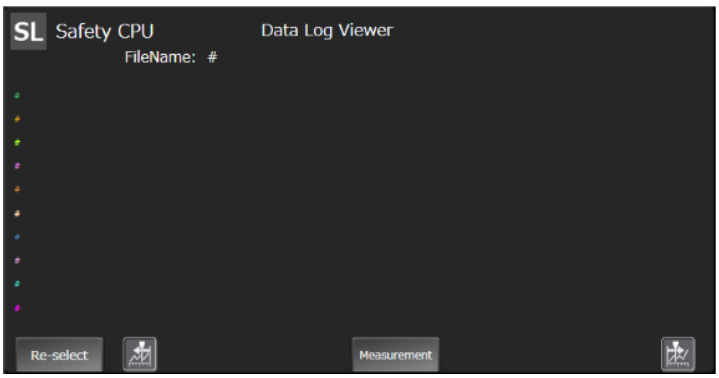
IAG Object Name	Screen Name
DataLogFileView	DataLogFileView
SelectDataLogParameter	ParameterSelect
GraphDisplay	DataTraceGraphView
DataLogResultMeasurement	MeasurementView



5-8 GraphDisplay

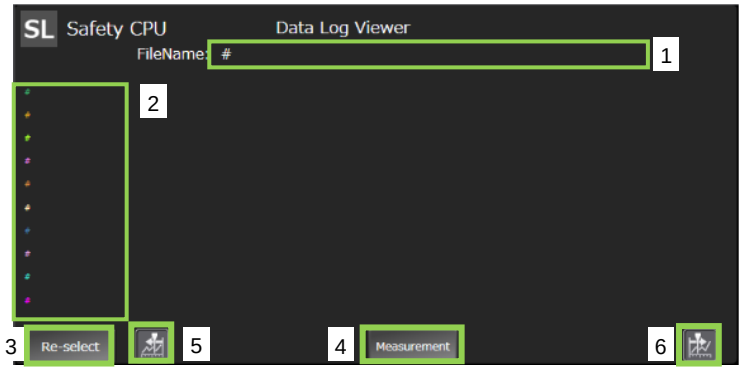
5-8-1 Specifications

● External Specification

Object Name	GraphDisplay
Category	SafetyCPU_DataLogResultViewer
Description	Line graph component is not included in this IAG. Add a line graph component if necessary.
Function	Depicts the results of data logging graphically. Up to 10 data logs can be displayed at the same time. [Move to Right/Left] You can scroll a line graph right or left. [Measurement] Displays DataLogResultMeasurement. [Re-select] You can jump to SelectDataLogParameter.
Graphic	The IAG has one screen. ■ Main Screen 

● Screen Specification

Main Screen	The main screen of this IAG. The variables that logged in the selected data log file are displayed in this screen.

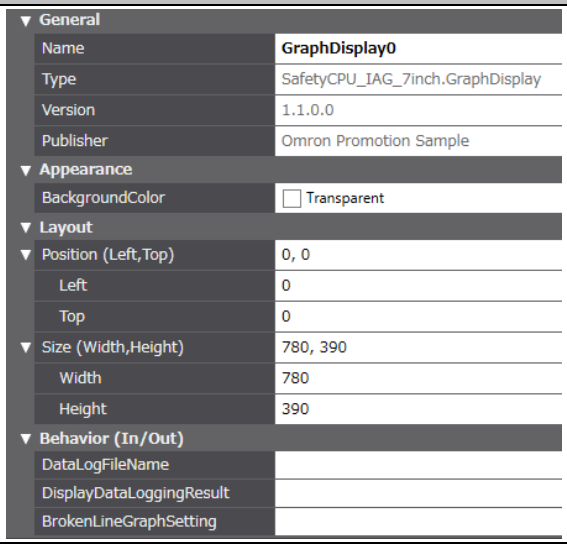


User I/F Specification		
No	Part	Description
1	Data Display	Displays the name of selected data log file.
2	Data Display	Selected variable is displayed.
3	Button	Enables to jump to SelectDataLogParameter.
4	Button	Displays DataLogResultMeasurement.
5	Button	You can scroll a data log result graph to left.
6	Button	You can scroll a data log result graph to right.
Layout		
Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	GraphDisplay0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. GraphDisplay
Version	IAG version	-	-	1.1.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left, Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（780,390）
Width	Width of object	Direct input Spin button	Numeric Numeric	780
Height	Height of object。	Direct input Spin button	Numeric Numeric	390
Input/Output				
DataLogFileName	File name of the downloaded file.	Variable specification	String	(Blank)
DisplayDataLoggingResult	Parameter information to be graphically displayed.	Variable specification	Str_DataLogResult (structure) [3]	(Blank)
BrokenLineGraphSetting	Control information about displayed line graph component.	Variable specification	Str_BrokenLineGraphSetting (structure) [3]	(Blank)

Image



1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.
3: Refer to Chapter 6 “Structures” for the used structures.

Additional Information

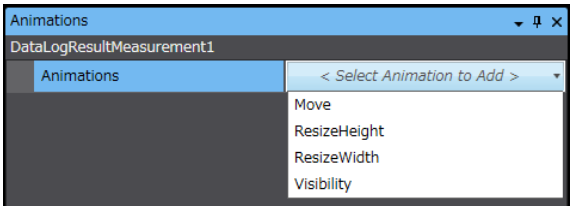
This IAG doesn’t have Input property.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

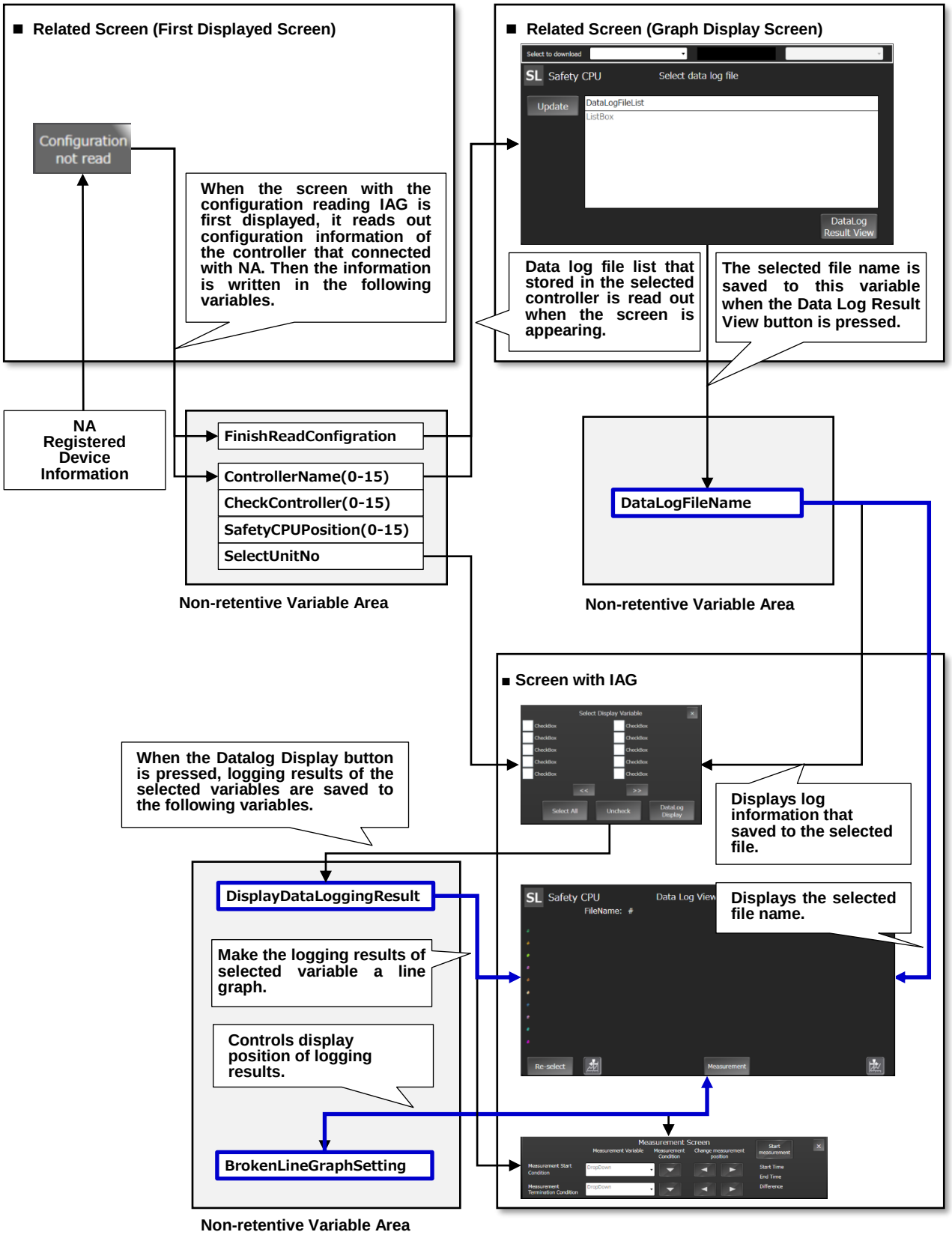
  No security function available.

● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information.

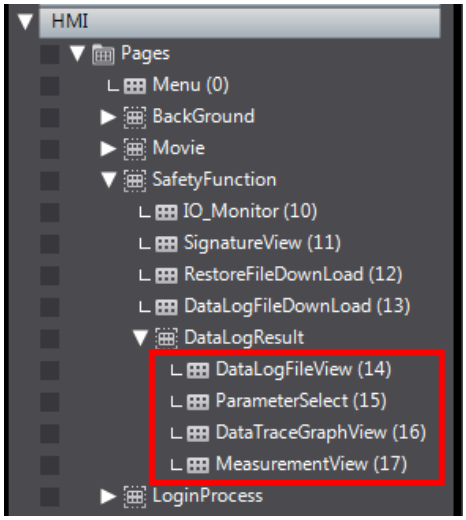
Property (Input/Output)	Description	Data Type
DataLogFileName	File name of the downloaded file.	String
DisplayDataLoggingResult	Parameter information to be graphically displayed.	Str_DataLogResult (structure)
BrokenLineGraphSetting	Control information about displayed line graph component.	Str_BrokenLineGraphSetting (structure)


■ Related Screen (First Displayed Screen)
Configuration not read
When the screen with the configuration reading IAG is first displayed, it reads out configuration information of the controller that connected with NA. Then the information is written in the following variables.
NA Registered Device Information
FinishReadConfigration
ControllerName(0-15)
CheckController(0-15)
SafetyCPUPosition(0-15)
SelectUnitNo
Non-retentive Variable Area
■ Related Screen (Graph Display Screen)
Select to download
SL Safety CPU
Select data log file
Update
DataLogFileList
ListBox
DataLog Result View
Data log file list that stored in the selected controller is read out when the screen is appearing.
The selected file name is saved to this variable when the Data Log Result View button is pressed.
DataLogFileName
Non-retentive Variable Area
■ Screen with IAG
Select Display Variable
Checkbox
<<
>>
Select All
Uncheck
DataLog Display
When the Datalog Display button is pressed, logging results of the selected variables are saved to the following variables.
Displays log information that saved to the selected file.
DisplayDataLoggingResult
Make the logging results of selected variable a line graph.
Controls display position of logging results.
BrokenLineGraphSetting
Non-retentive Variable Area
SL Safety CPU
Data Log View
FileName: #
Displays the selected file name.
Re-select
Measurement
Measurement Screen
Measurement Variable
Measurement Condition
Change measurement position
Start measurement
Measurement Start Condition
Measurement Termination Condition
DropDown
Start Time
End Time
Difference

● Screen Name

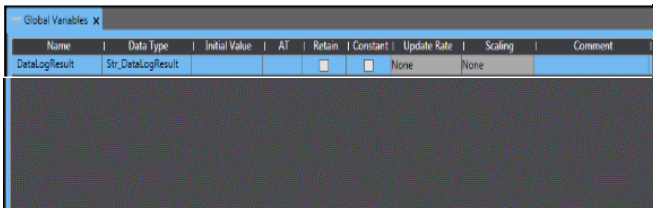
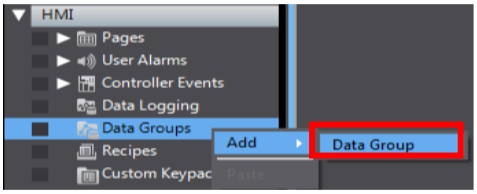
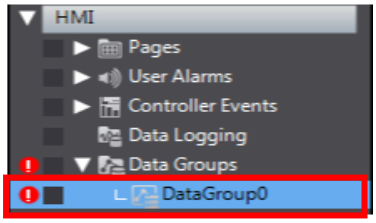
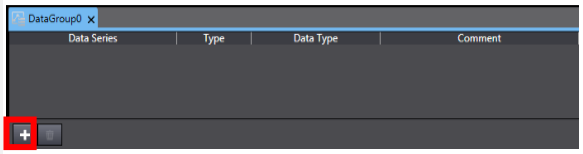
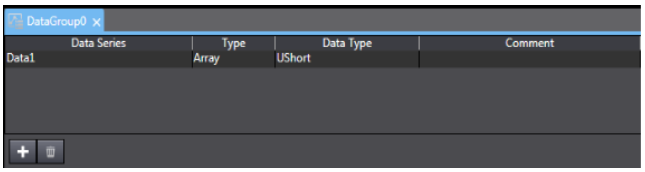
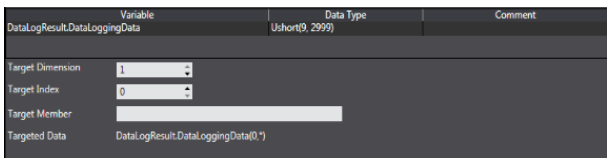
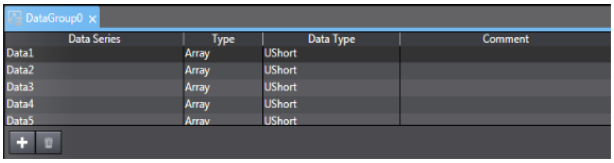
Screen names used by data log display IAG objects in the table below are fixed because pages are switched inside IAG. Be sure to use IAG objects in the specified pages.

IAG Object Name	Screen Name
DataLogFileView	DataLogFileView
SelectDataLogParameter	ParameterSelect
GraphDisplay	DataTraceGraphView
DataLogResultMeasurement	MeasurementView

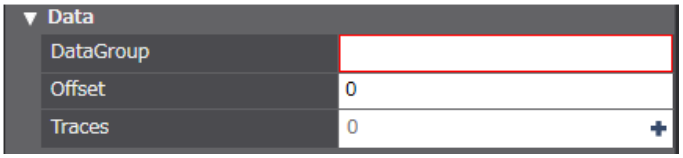


● Data Group Registration

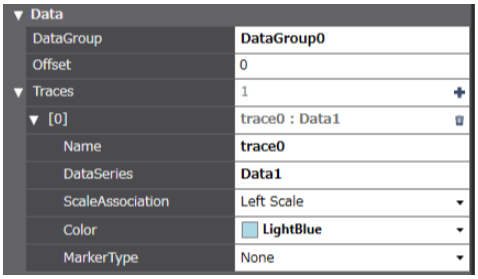
You must register a Data Group if you want to add a line graph component. The setting procedure for the data group is described below.

1. Register a global variable and data type in advance, referring to *DisplayDataLoggingResult*, which is the property of this IAG object. Name: DataLogResult Data Type: Str_DataLogResult	
2. Right-click [HMI] – [Data Group] in Multiview Explorer. Then Click [Add] – [Data Group].	
3. Double-click the newly added data group.	
4. Click the [+] button to create the data to be graphically displayed.	
5. Enter a name in Data Series box. Then enter the following values in Type and Data Type: Type = Array Data Type = Ushort	
6. Enter “ DataLogResult.DataLoggingData” in the Variable box. Then set Target Dimension and Target Index.	
7. Click the [+] button to add as many data series as necessary traces.	

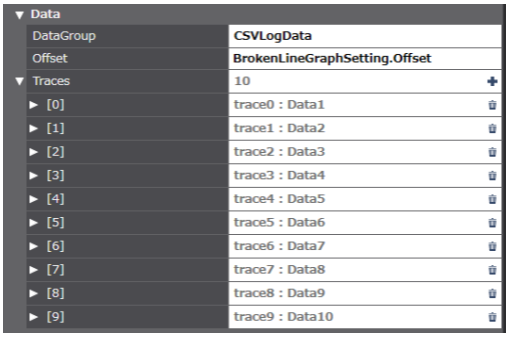
8. The setting after placing line graph component is described here.
First, enter a data group name.



9. Click the [+] button in Traces.
Assign the data series which have been set in Data Group.
You can set items such as Color.



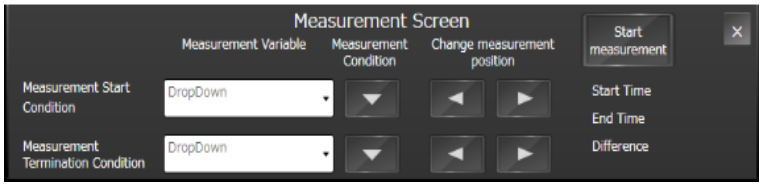
10. Repeat the Step 9 to display multiple data in a line graph.



5-9 DataLogResultMeasurement

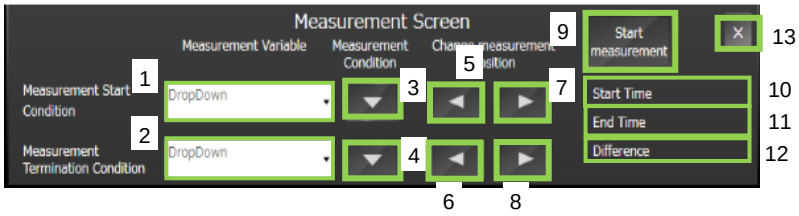
5-9-1 Specifications

● External Specification

Object Name	DataLogResultMeasurement
Category	SafetyCPU_DataLogResultViewer
Description	This IAG picks up the two variables among the tracing results which are displayed on GraphDisplay. Then measures the time between the two points to display.
Function	Measures data log results. [Start Measurement] Begins to measure. [Measurement Condition (Rising)] Specifies the rising point of selected variable as the condition to measure start/end position. [Measurement Condition (Falling)] Specifies the falling point of selected variable as the condition to measure start/end position. [Search Trigger Condition (Forward/ Back)] Moves to the trigger which satisfies conditions, searching forward or backward from the currently selected trigger. [Close] Closes the screen.
Graphic	The IAG has one screen. ■ Main Screen 

● Screen Specification

Main Screen	The main screen of this IAG. You can measure the elapsed periods of time for the two triggers of the displayed variable.



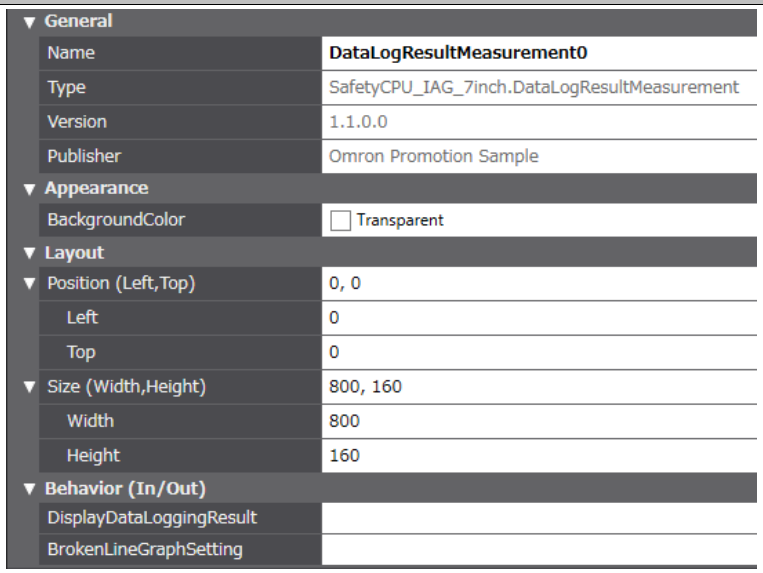
User I/F Specification		
No	Part	Description
1	Drop Down	You can select the variable of the condition for starting measurement here.
2	Drop Down	You can select the variable of the condition for stopping measurement here.
3	Button	Enables to select a condition for starting measurement: rising or falling.
4	Button	Enables to select a condition for stopping measurement: rising or falling.
5	Button	Searches forward the point that satisfies trigger condition from where currently triggered by measurement start condition.
6	Button	Searches forward the point that satisfies trigger condition from where currently triggered by measurement stop condition.
7	Button	Searches backward the point that satisfies trigger condition from where currently triggered by measurement start condition.
8	Button	Searches backward the point that satisfies trigger condition from where currently triggered by measurement stop condition.
9	Button	Starts to measure.
10	Data Display	Shows the time that fills trigger condition for starting measurement.
11	Data Display	Shows the time that fills trigger condition for stopping measurement.
12	Data Display	Displays a difference between start time and end time of measurement.
13	Button	Closes the screen.

Layout		
Property	Default	Description
Position (Left, Up)		Set in Properties.
Size (Width, Height)		Set in Properties.

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	DataLogResultMeasurement0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch.DataLogResultMeasurement
Version	IAG version	-	-	1.1.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（800,160）
Width	Width of object	Direct input Spin button	Numeric Numeric	800
Height	Height of object。	Direct input Spin button	Numeric Numeric	160
Input/Output				
DisplayDataLoggingResult	Parameter information to be graphically displayed.	Variable specification	Str_DataLogResult (structure) [3]	(Blank)
BrokenLineGraphSetting	Control information about displayed line graph component.	Variable specification	Str_BrokenLineGraphSetting (structure) [3]	(Blank)

Image



1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.
3: Refer to Chapter 6 “Structures” for the used structures.

Additional Information

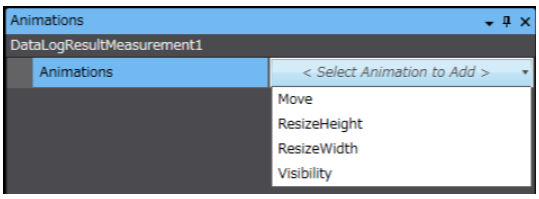
This IAG doesn't have Input property.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



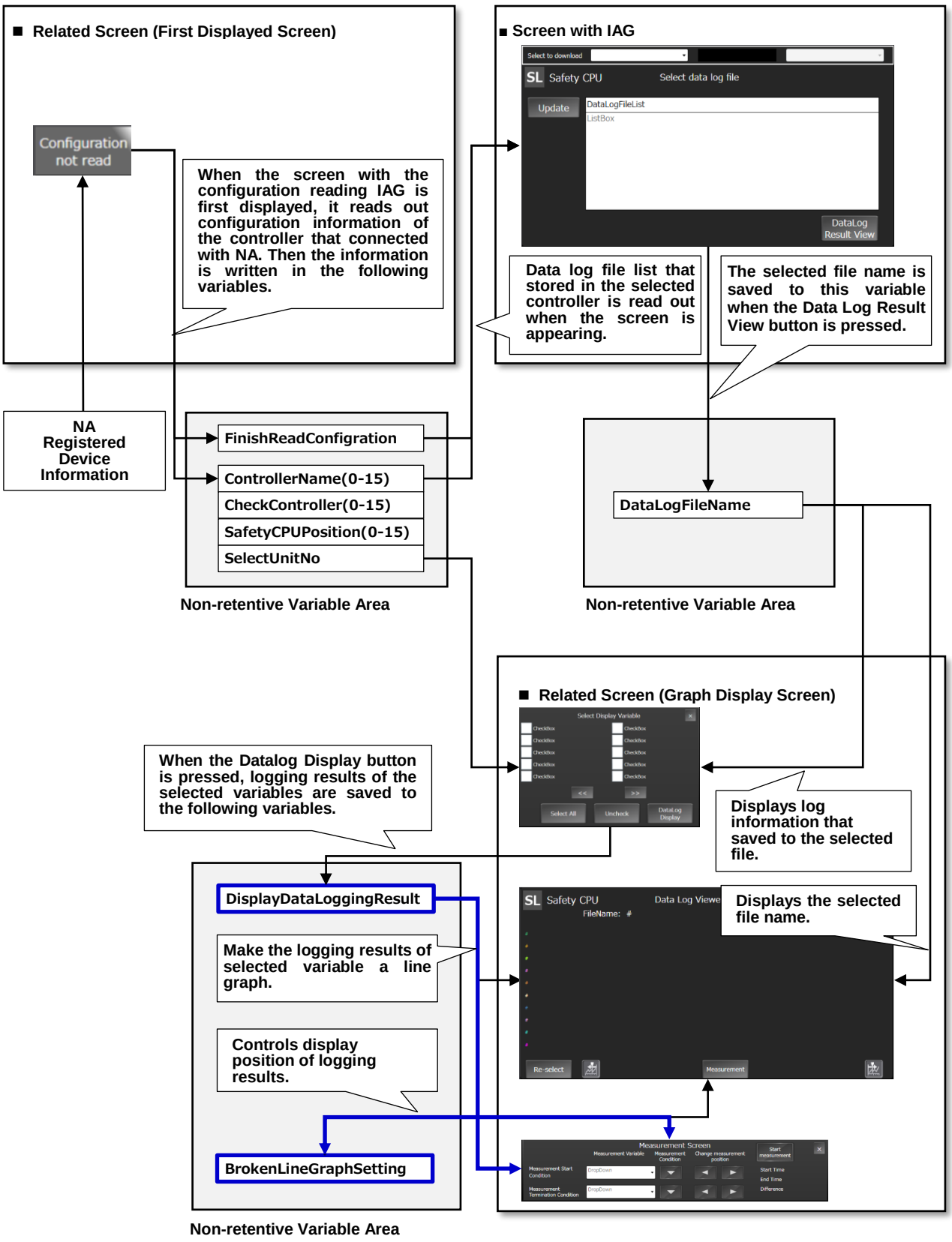
- Security

  No security function available.

● Property Assignment

Assign the same variables to the following properties (input/output) to share the logging results and line graph configuration information with other IAGs.

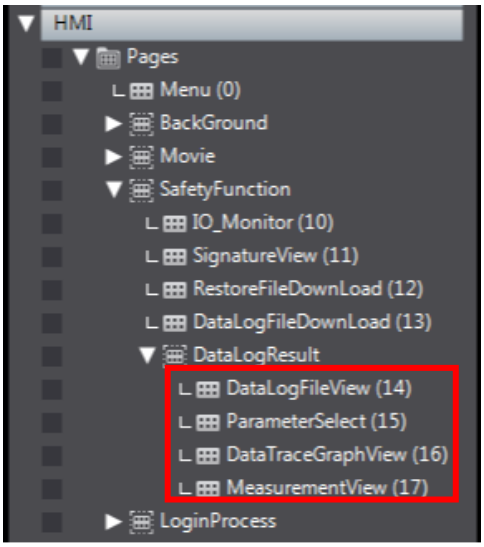
Property (Input/Output)	Description	Data Type
DisplayDataLoggingResult	Parameter information to be graphically displayed.	Str_DataLogResult (structure)
BrokenLineGraphSetting	Control information about displayed line graph component.	Str_BrokenLineGraphSetting (structure)


■ Related Screen (First Displayed Screen)
Configuration not read
When the screen with the configuration reading IAG is first displayed, it reads out configuration information of the controller that connected with NA. Then the information is written in the following variables.
NA Registered Device Information
FinishReadConfigration
ControllerName(0-15)
CheckController(0-15)
SafetyCPUPosition(0-15)
SelectUnitNo
Non-retentive Variable Area
■ Screen with IAG
Select to download
SL Safety CPU
Select data log file
Update
DataLogFileList
ListBox
DataLog Result View
Data log file list that stored in the selected controller is read out when the screen is appearing.
The selected file name is saved to this variable when the Data Log Result View button is pressed.
DataLogFileName
Non-retentive Variable Area
■ Related Screen (Graph Display Screen)
Select Display Variable
Select All
Uncheck
DataLog Display
When the Datalog Display button is pressed, logging results of the selected variables are saved to the following variables.
Displays log information that saved to the selected file.
DisplayDataLoggingResult
Make the logging results of selected variable a line graph.
Controls display position of logging results.
BrokenLineGraphSetting
Non-retentive Variable Area
SL Safety CPU
Data Log Viewe
FileName: #
Displays the selected file name.
Re-select
Measurement
Measurement Screen
Measurement Start Condition
Measurement Termination Condition
Start measurement
Start Time
End Time
Difference

● Screen Name

Screen names used by data log display IAG objects in the table below are fixed because pages are switched inside IAG. Be sure to use IAG objects in the specified pages.

IAG Object Name	Screen Name
DataLogFileView	DataLogFileView
SelectDataLogParameter	ParameterSelect
GraphDisplay	DataTraceGraphView
DataLogResultMeasurement	MeasurementView



5-10 TroubleShooter

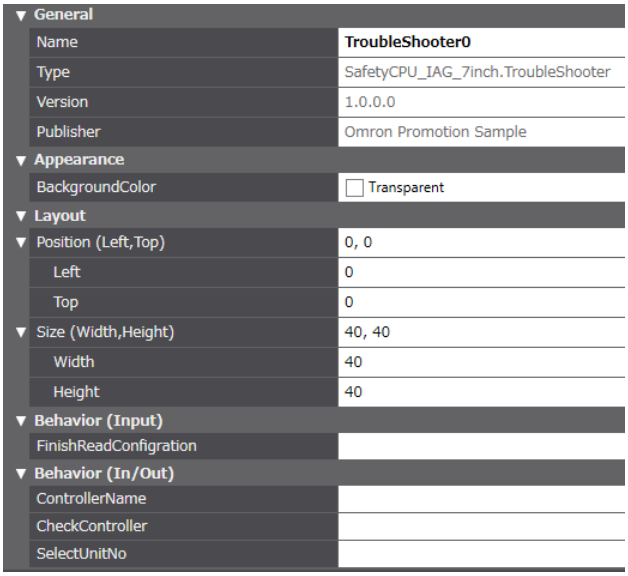
5-10-1 Specifications

● External Specification

Object Name	TroubleShooter
Category	SafetyCPU_TroubleShooter
Description	This IAG enables you to jump to the troubleshooter screen of the connected controller.
Function	Displays the troubleshooter of the safety CPU unit.
Graphic	Normal
	Press

● Properties

Property	Description	Input Mode	Input Range/ Data Type	Default
General				
Name	Object name. Must not be overlapped in a screen.	Direct input	Character string (1 to 127)	TroubleShooter0
Type	Object type. Not changeable.	-	-	SafetyCPU_IAG_7inch. TroubleShooter
Version	IAG version	-	-	1.0.0.0
Publisher	IAG publisher	-	-	Omron Promotion Sample
Appearance				
Background Color	Background color of a page	Item selection Direct input	Color pallet Character string	Transparent[1]
Layout				
▼Position (Left , Top)	Position setting of object on a page.[2]	Direct input Spin button	Numeric Numeric	-
Left	Horizontal position (X-axis) of the top-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
Top	Vertical position (Y-axis) of the to-left corner of an object on a page.	Direct input Spin button	Numeric Numeric	-
▼Size (Width, Height)	Object size setting.	Direct input Spin button	Numeric Numeric	（40,40）
Width	Width of object	Direct input Spin button	Numeric Numeric	40
Height	Height of object。	Direct input Spin button	Numeric Numeric	40
Input				
FinishReadController	Completion flag for configuration reading	Variable specification	Boolean	(Blank)
Input/Output				
ControllerName	Controller name of connected unit	Variable specification	String(15)	(Blank)
CheckController	Check flag for unit connected with the safety CPU unit.	Variable specification	Boolean(15)	(Blank)
SelectUnitNo	The unit number of selected unit.	Variable specification	Short	(Blank)

Image


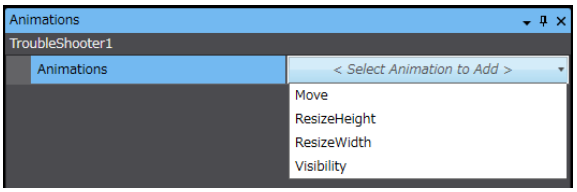
1: Transparent.
2: The origin of coordinates locates at the top left corner of NA screen.

- Events & Actions

  No event & action function available.

- Animations

  Basic motions can be defined.



- Security

  No Security function available.

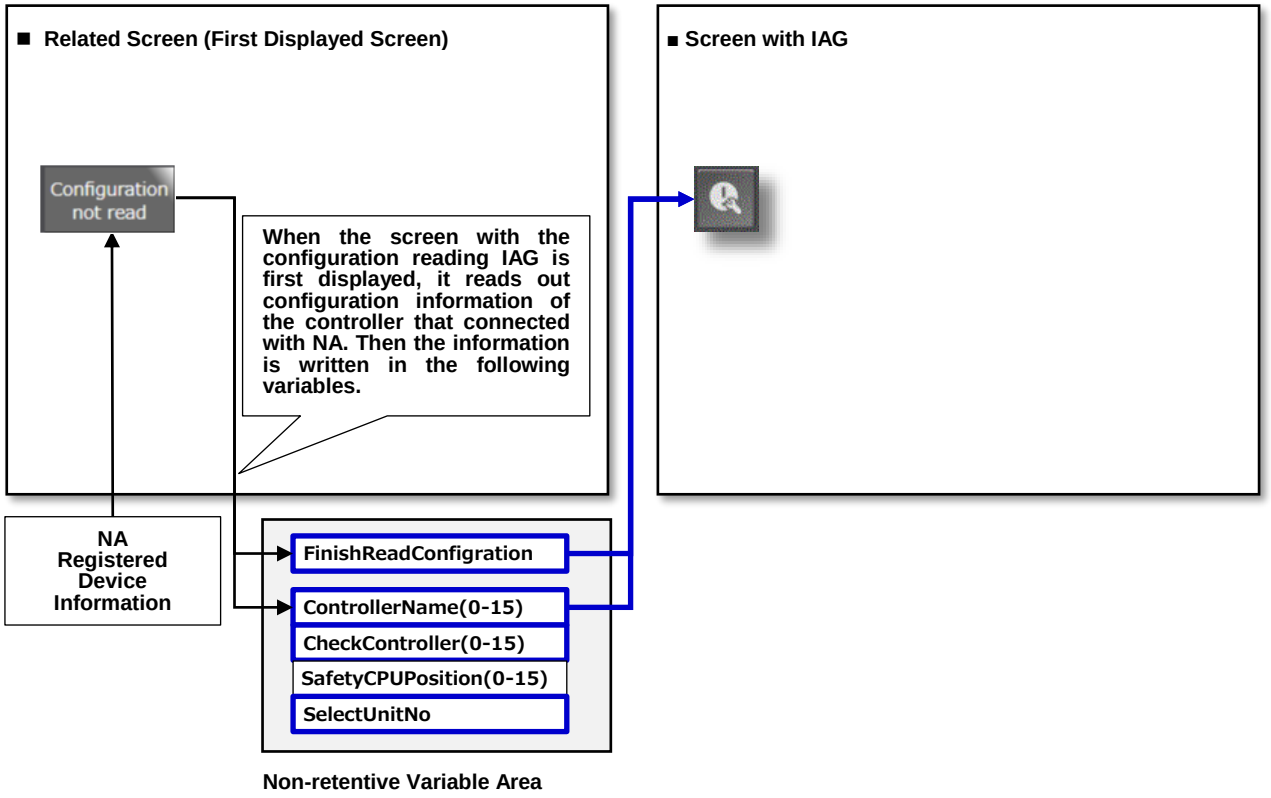
● Property Assignment

This IAG uses the safety configuration information which has been read out by ReadConfiguration.

Be sure to place ReadConfiguration IAG in the first displayed screen. Assign variables to the following properties (input/output) to share the safety configuration information

Property (Input)	Description	Data Type
FinishReadConfigration	Completion flag for configuration reading	Boolean

Property (Input/Output)	Description	Data Type
ControllerName	Controller name of connected unit	String(15)
CheckController	Check flag for unit connected with the safety CPU unit.	Boolean(15)
SelectUnitNo	The unit number of selected unit.	Short



6 Structures

Category	Name	Data Type	Remarks
Structure	Str_DataLogResult	STRUCT	Structure to store data logging results.
Member	ParameterCount	Short	Number of selected variables.
Member	ParameterName	String(9)	Name of selected variable.
Member	DataLogTimeStamp	String(2999)	Timestamp of selected data log.
Member	DataLoggingData	Ushort(9, 2999)	Logging results of selected data log.

Category	Name	Data Type	Remarks
Structure	Str_BrokenLineGraphSetting	STRUCT	Structure to control line graphs of data tracing results.
Member	Offset	Integer	Offset value on time axis.
Member	BrokenGraphXAxisMinValue	Single	Minimum value on time axis.
Member	BrokenGraphXAxisMaxValue	Single	Maximum value on time axis.

Revision History

Revision Code	Date	Revision Description
01	February 2019	First edition
02	May 2019	Added new functions
03	December 2019	Reflected the regarding descriptions with rev. D project files

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