InfoSOSA™Series

Reference Manual

InfoSOSA
Version 2.5-2.7

DMC Co., Ltd
https://www.dush.co.jp/english/

Introduction

Thank you for purchasing DMC product.

This manual describes the functions of the InfoSOSA unit and the screen editing tool (InfoSOSA Builder).

Please read this manual and use the product correctly.

<u>**Target audience**</u>

- ✓ For those checking details of InfoSOSA functions and specifications
- ✓ For those checking communication specifications between InfoSOSA and microcontroller devices

<u>**Target Version**</u>

This manual describes the following versions of InfoSOSA.

Some operations may differ depending on the version.

Please refer to "InfoSOSA ReleaseNote" for details.

InfoSOSA Builder		2.7.1
IS7 Runtime		2.7.1
IS-APP		2.4.1

Copyright and Trademarks

- ■ This software shall be used according to the "Software License".
- ■ Copyright of this manual is owned by DMC Corporation.
- ■ Reproduction and/or duplication of this product and/or this manual, in any form, in whole or in part, without permission are strictly prohibited.
- ■ This product and/or the contents in this document are subject to change without prior notice.
- ■ Although all efforts have been made to ensure the accuracy of this product and/or the contents in this document, should you notice errors, please feel free to contact and notify us.
- ■ DMC shall not be held liable for any damages or losses, nor be held responsible for any claims by a third party as a result of using this product.
- ■ Microsoft®, Windows®, Windows® 10, Windows® 11,and Microsoft® .NET Framework are trademarks or registered trademarks of Microsoft Corporation USA and other countries.
- ■ Other company and product names mentioned herein are trademarks or registered trademarks of their respective companies.

Handling of Image and Sound Files

When using image and sound files, please use original files created by individual users.

Using and distributing, without permission, files protected by the copyright is strictly prohibited by law.

Please note some free materials might have using restrictions.

Reference Documents

InfoSOSA includes the following documents. Refer to the document that matches your purpose.

IS731 Series Startup Guide

Manual for users of the IS731 Series.
The manual includes an introduction to IS731 Series features, a tutorial, and descriptions of IS731 Series specific functions.

Target audience
- ✓ For those considering the IS731 Series
- ✓ For those using the IS731 Series for the first time
- ✓ For those checking functions unique to the IS731 Series

IS-APP Startup Guide

Manual for users of the IS-APP.
The manual includes an introduction to IS-APP features, a tutorial, and descriptions of IS-APP specific functions and specifications.

Target audience
- ✓ For those considering the IS-APP
- ✓ For those using the IS-APP for the first time
- ✓ For those checking specifications and functions unique to the IS-APP

InfoSOSA Reference Manual

This document.
Describes InfoSOSA functions and specifications.

Target audience
- ✓ For those checking details of InfoSOSA functions and specifications
- ✓ For those checking communication specifications between InfoSOSA and microcontroller devices

InfoSOSA Builder Operation Manual

This describes how to operate the InfoSOSA Builder.

Target audience
- ✓ For those checking details of InfoSOSA Builder settings and operation
- ✓ For those wanting to know about InfoSOSA Builder handy uses

Host Communication Tester Manual

Describes how to operate the host communication.

Note: Host Communication Tester is a software to check the communication with the InfoSOSA with a computer instead of a microcontroller device.

Target audience
- ✓ For those testing InfoSOSA communication without using microcontroller devices
- ✓ For those checking communication commands when debugging microcontroller devices
- ✓ For those checking details of Host Communication Tester settings and operation

InfoSOSA ModbusDeviceConnection

This manual describes how to use Modbus protocol communication with InfoSOSA.

Target audience
- ✓ Anyone who wants to know about IS-APP's Modbus protocol communication function

InfoSOSA ReleaseNote

Differences depending on the version of InfoSOSA are described.

Target audience
- ✓ For InfoSOSA users who are considering upgrading to a newer version.

Table of Contents

1. InfoSOSA

Chapter Contents

1.1   InfoSOSA: Overview

The InfoSOSA is a LCD touch panel display for microcontrollers.

There is no complicated wiring required to connect InfoSOSA with a microcontroller device. You can connect them with a single serial cable.

As the screen display is completely handled by InfoSOSA, the microcontroller does not have to perform any complicated screen processing. Also, as the display screens are all stored in memory on the InfoSOSA, there is no need for you to prepare memory specifically for saving screens on the microcontroller.

Simply by sending commands from the microcontroller to the InfoSOSA, you can perform operations such as display screens saved on InfoSOSA and read from and write to memory. These operations can also be run from the InfoSOSA touch panel.

You can use the supplied drawing software InfoSOSA Builder to create the screens displayed on InfoSOSA.
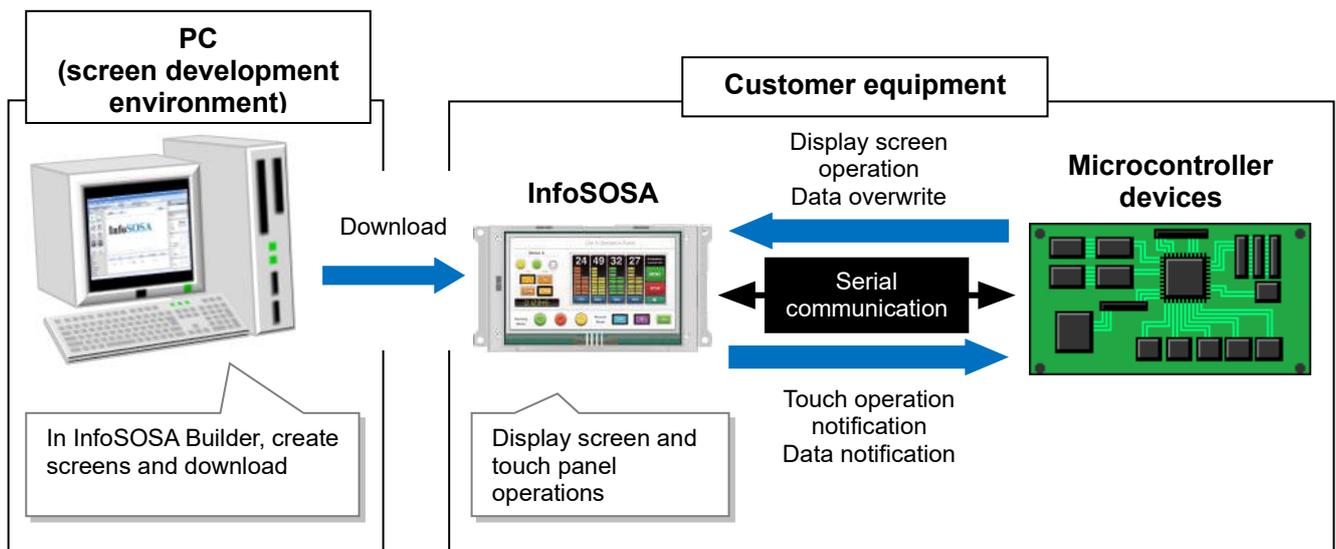
1.2 About the InfoSOSA Application

The InfoSOSA application (IS-APP) is an application for displaying screen data created with the InfoSOSA Builder drawing software on DMC panel computers.

By using InfoSOSA Builder, you can easily create an HMI even with a panel computer.

Additionally, in cooperation with the user application running on the panel computer, you can expand on InfoSOSA standard functions to accomplish things you otherwise could not.

1.3   About this document

This document supports both InfoSOSA IS731 series (hereinafter referred to as "IS Series") and the InfoSOSA application (hereinafter referred to as "IS-APP") that runs on the EM series.

While both IS Series and IS-APP basically have the same functions, there are some IS Series only functions and some IS-APP only functions.

Supported functions for each series are identified with the following icons.
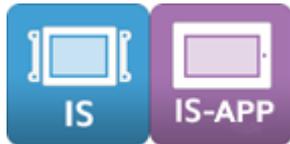
Item for both IS Series and IS-APP.

Item for IS Series.

Item for IS-APP.

2. Components

Chapter Contents

2.1 List of Components

InfoSOSA is made of the following components.
Please refer to each chapter for details.

Items	Descriptions	Chapters
Base Screen	Provides the substructure framework for each screen.	3. Screens
Pop-up Screen A	Screen that can be displayed on Base Screen.	
Pop-up Screen B	Screen that can be displayed on Base Screen and Pop-up Screen A.	
Parts	Function of InfoSOSA that is arranged on screens, such as buttons, lamps, etc.	4. Parts
Screen Memory	Memory that can only be operated inside each screen. Cannot be operated from different screens.	5. Memory
Global Memory	Memory that can be operated from all screens.	
Event	Event that notifies changes such as "touchscreen is pressed", "time is up", etc.	6. Events
Action	Action setting that moves with event as it's trigger such as switching of displayed screens, calculations, etc.	7. Action
Subroutine	Multiple actions set together.	
Method	Parts functions can be executed with host communication commands.	8. Method
String Resources	String that can be registered beforehand with InfoSOSA Builder. Multiple strings can be registered to one ID and the displayed strings can be switched all at once.	9. Resources
Image resource	Image data that is used for screens, buttons, and switches. If you want to change the appearance of the parts you must register it beforehand to the image resource.	
Environment Variables	Information related to action and status of InfoSOSA unit such as backlight brightness.	11. Environment Variable

Items	Descriptions	Chapters
Sound Resources	Data for playing back sound files. You can use actions to run playback on registered data.	9. Resources

2.1.1   Relation of Screens and Parts
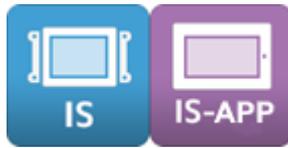
To add functions to the InfoSOSA, arrange parts, such as buttons, lamps, etc. onto the screen. Please refer to 4. Parts for the types of Parts.

Part (Lamp)

Base Screen

Part (Button)
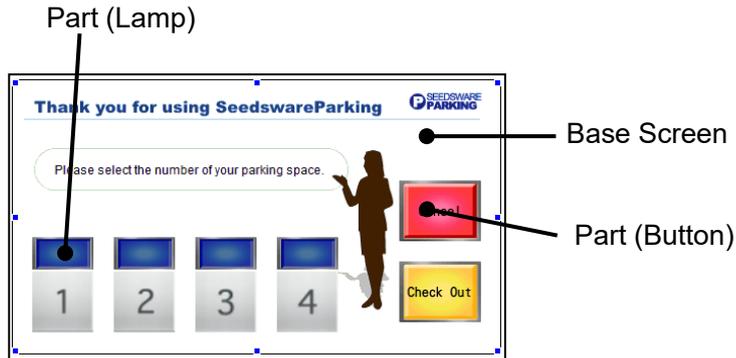
2.1.2   Relation of Parts, Events, and Actions
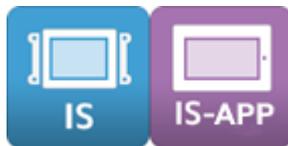
Event is what is generated when touch operations and other operations are implemented, such as Press (pressed), and Release (released), etc.
When an event is generated, optional Actions (behaviors) are performed.
Actions can be registered to each event of Parts.
Please refer to 6. Events for the details of events and 4. Parts for events of each Part.

Press "Check Out" button.   Perform "move to designated screen".

Event generated.

2.2 IDs

Screens, Parts, memories, and each resources used on the InfoSOSA are all categorized by a number called an ID. This ID is used to specify actions and the Host Communication commands.

2.2.1 Default ID List

IDs are allocated automatically when Parts and memories, etc. are arranged.
There are two types of IDs, changeable IDs and unchangeable IDs.

Type	Name	ID	Changeable?
Screens	Base Screen	BAS00001~	Yes
	Pop-up Screen A	POPA0001~	Yes
	Pop-up Screen B	POPB0001~	Yes
Parts	Button	BTN00001~	Yes
	Transparent Button	TBN00001~	Yes
	Change Screen Button	STB00001~	Yes
	Switch	SWH00001~	Yes
	Image Multi State Switch	MSI00001~	Yes
	Color Multi State Switch	MSC00001~	Yes
	Numeric Keypad	TEN00001~	Yes
	Lamp	LMP00001~	Yes
	Image Multi State Lamp	MLI00001~	Yes
	Color Multi State Lamp	MLC00001~	Yes
	Label	LBL00001~	Yes
	Character Display Parts	CHI00001~	Yes
	Number Display Parts	NMI00001~	Yes
	Telop	TLP00001~	Yes
	Time Display Part	TIM00001~	Yes
	Frame	FRA00001~	Yes
	Simple Graph	GRH00001~	Yes
	Bar Meter	BAR00001~	Yes
	Picture Box	PIC00001~	Yes
	Line Parts	LIN00001~	Yes
	Arrow Parts	ARW00001~	Yes
	Rectangle Parts	REC00001~	Yes
	Table Parts	GRD00001~	Yes
Memories	Screen Memory	MEM00001~	Yes
	Global Memory	GME00001~	Yes
	Global Memory Group	GRP00001~	Yes

Type	Name	ID	Changeable?
Resources	Image Resource	IMG00001~	Yes
	String Resource	STR00001~	Yes
Others	String Resource Set	STM00001~	Yes
	Subroutine	SUB00001~	Yes

Type	Name	ID	Changeable?
Others	Sheet Key LED	XLED01~	No
	Sheet Key SW	XSW01~	No

Type	Name	ID	Changeable?
Parts	Scroll Frame	SCRFM001~	Yes
	Screen Zoom Frame	SCNZM001~	Yes
	Image Zoom Frame	IMGZM001~	Yes
	Grid Button	GRDBT001~	Yes
	Slider	SLD00001~	Yes
Resources	Sound Resources	SOUND001~	Yes

2.2.2　ID Changing Rules
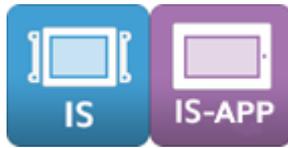
When changing the ID, please follow the rules below.
- (1) Use 1 to 8 characters.
- (2) Alphanumeric characters (only capital letters), "-"(hyphens), and "_" (underscores) can be used.
- (3) First character must be an alphabet.
- (4) Do not use "OSD" as the first three characters as "OSD" is a reserved ID.
- (5) The same ID cannot be used in the same screen or category.

2.3 Property

The Property holds information, such as setting values of Parts and memories.

Functions and appearance of Parts can be changed by changing the values in the Property by Action or Host Communication commands.

Setting and Changing Properties

With the InfoSOSA Builder, the property can be set by "Property Area" or "Advanced Properties Dialog" of each Part.

A part of the property can be changed by Action or Host Communication while the InfoSOSA is operating.

Property Area

The Property Area, located on the screen of the Builder, is an area for setting the properties.

It allows you to quickly change the properties common to many Parts.

If you select multiple Parts, it is possible to change their properties all at once.

For the properties not displayed in the Property Area, please make the changes via "Advanced Properties Dialog".
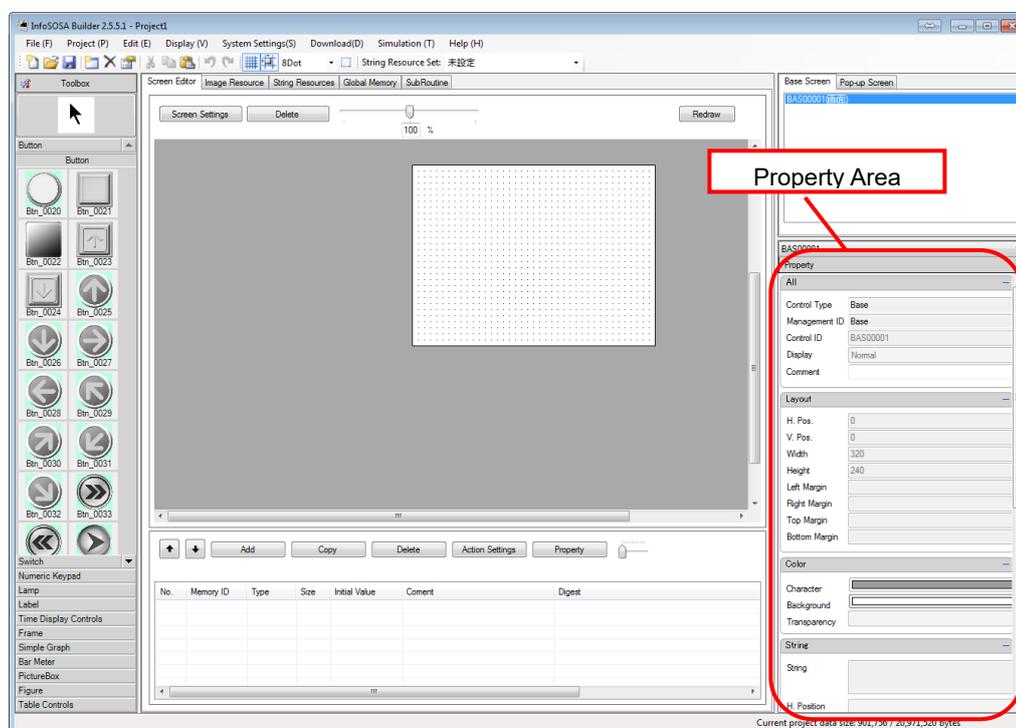
Advanced Properties Dialog

The "Advanced Properties Dialog" is a screen that allows you to set the properties that have been prepared for each Part.
Properties that can be set vary according to each Part.
"Advanced Properties Dialog" can be displayed by double clicking on the Part or by right clicking on the Part and choosing "Advanced Properties".

2.4 Local and Global Data

The InfoSOSA has Local Data and Global Data.

Local data is the data that belongs to a screen (Base Screen, Pop-up Screen). You will not be able to set nor refer to the Local Data other than the ones belonging to the screen currently displayed. In addition, it will be initialized each time the corresponding screen is displayed.

The Global Data can be referred to and set up regardless of the screen displayed.

Data Type	Data Name	Accessibility	Data Initialization
Local Data	- Screen properties and Part properties arranged one the screen (display setting, enable setting, blink setting, etc.) Screen Memory[*1]	Only when related screen is displayed.	Initialized to value set in Builder when related screen is displayed. (The value is saved only while the related screen is displayed.)
Global Data	All data other than Local Data E.g. - Global Memory - String Resources - Image resource - Environment Variables	Always accessible	Initialized to value set by Builder when power is turned ON. (Changed values are retained when power is ON)

*1   When initial action of timer Screen Memory is set to "Start", only the related screen display will operate.

2.5 Gestures

You can use gestures with IS-APP. You can use the following types of gestures.

Pan

Pan refers to touching then dragging.
You can scroll the display area and operate the slider.

Flick

Flick refers to touching then quickly dragging and releasing.
You can use this action to quickly scroll the display area.

Tap

Tap refers to a single momentary touch.
The associated operation depends on the part.
The operation that is run when the part is tapped is initialize scroll frame's magnification and rotation.
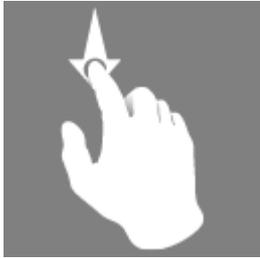
Double tap

Double tap refers to two quick momentary touches.
Use to initialize the image zoom frame's magnification and rotation.

* Depending on your setup, you can switch between tap and double tap.

Pinch

A pinch is a touch with two fingers and then bringing your fingers either closer together or farther apart.
Use to change the screen zoom frame and image zoom frame's display magnification.
If you move your fingers closer together it zooms out. If you move your fingers farther apart it zooms in.

* Scaling option needs to be enabled.
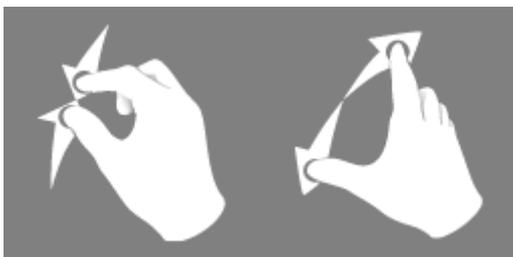
Rotate

Rotate is touching with two fingers, then rotating either clockwise or counter-clockwise.
Rotates the image in the Image Zoom Frame.

* Rotation option needs to be enabled.

G Parts Support

Gestures you can use differ between parts.

G Parts	Pan	Flick	Tap	Double tap	Pinch	Rotate
Scroll Frame	○	○	○	○	-	-
Screen Zoom Frame	○	○	-	-	○	-
Image Zoom Frame	○	-	○	-	○	○
Grid Button	○	○	○	-	-	-
Slider	○	-	○	-	-	-

Model Gesture Support

Available gestures are different depending on the model.

Model Name	Pan	Flick	Tap	Double tap	Pinch	Rotate
IS731-3Q	-	-	-	-	-	-
IS731-4WQ	-	-	-	-	-	-
IS731-5V	-	-	-	-	-	-
EMG7-W207A8	○	○	○	○	○	○
EMG7-312A8	○	○	○	○	○	○
EM8-W104A7	○	○	○	○	○*	○*
EM8-205A7	○	○	○	○	○*	○*
EM8-W207A7	○	○	○	○	○*	○*

*Only for models that support two-point touch

2.6 Nesting Screens

When you use parts (such as Scroll Frame and Screen Zoom Frame parts) that support the display of base screens, you can display a different base screen on a base screen. However, if you nest the base screens 3 or more levels, it may not operate properly. Use with a maximum 2 levels of nesting.

○ 2 levels

Screen 1 (base screen or pop-up screen)

On base screen 1, display base screen 2 with a Screen Zoom Frame part

On base screen 2, display base screen 3 with a Screen Zoom Frame part

x   3 or more levels

Screen 1 (base screen or pop-up screen)

On base screen 1, display base screen 2 with a Screen Zoom Frame part

On base screen 2, display base screen 3 with a Screen Zoom Frame part

On base screen 3, display base screen 4 with a Screen Zoom Frame part

3. Screens

Chapter Contents

3.1 Screens
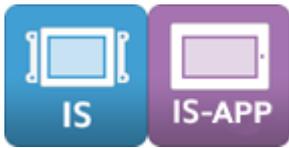
There are 3 types of Screens: Base Screen, Pop-up Screen A, and Pop-up Screen B.
Create the functions and operations of InfoSOSA by arranging the parts on the screen.
Base screen, and Pop-up screen A/B are in layer structure and are possible to display up to three screens at the same time.
The layer will be structured with the base screen at the bottom and Pop-up Screen A and Pop-up Screen B on top in that order.
Touch operation can be performed only on the screen displayed as the top layer.
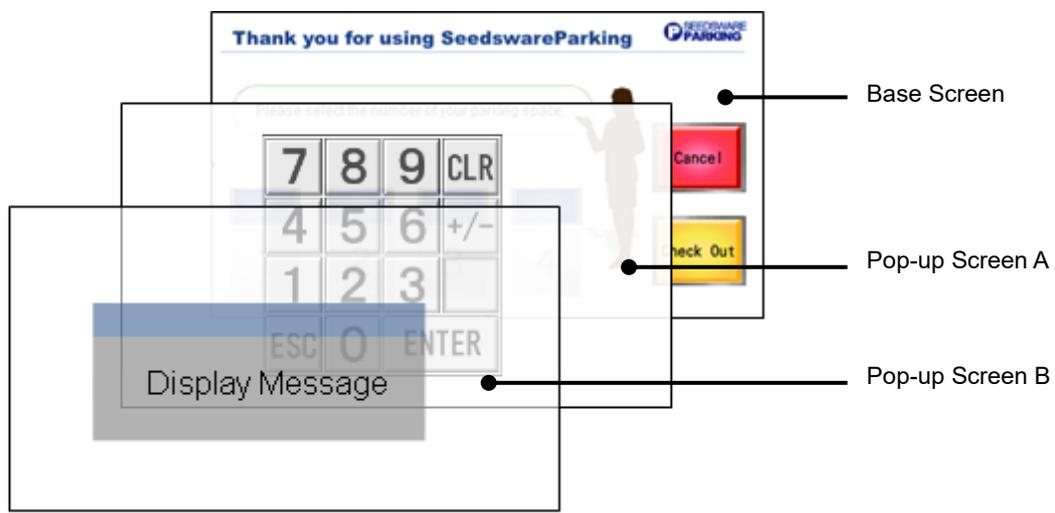
3.2   Base Screen
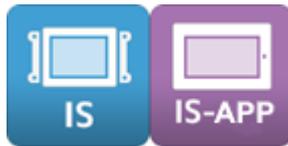
Located at the backmost layer, it serves as the substructure for arranging the parts.

Properties

Category	Property Name	Property ID	Default Value	Change after Download	
				Host Communication	Action
Layout	Width	-	-	×	×
	Height	-	-	×	×
Color	Background Color	BCOLOR	White	○	×
Image	Normal	-	-	×	○

*   When Background Color and Image are set simultaneously, the image is given priority

Events

Event	Description
On Display	Generated when screen display is complete
On Load	Generated once after screen is called and before it is displayed.

*   Please refer to "6. Events" for details.

Notices

*   Screen Properties and events are specified as *[Screen ID]* and *[Property/Event ID]*.
    Example: PA01,BAS00001.BCOLOR,0-240-0[CR]
                    PA04,BAS00001.ON_DISPLAY[CR]
    Please refer to 13.14 The Parameters of the Communication Command for details.

Differences by Series

InfoSOSA, an exclusive HMI unit, can only display on its LCD display, screens that are designed in the InfoSOSA Builder. As a result, with the IS Series the default base screen size is the same as the LCD screen resolution.

As the InfoSOSA application runs on a generic PC (panel computer), you can select to run it in either full-screen or window display. As a result, with the IS-APP you can define any size for the default base screen size. ("Default Window Size" set up at project creation.)
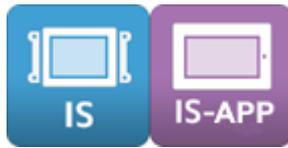
3.3   Pop-up Screen A/B

These are screens overlying the Base Screen.

Pop-up B will be displayed on top of Pop-up A.

They can be displayed on any Base Screen using Actions and/or Host Communication.

The default size of the popup screen is the same as the base screen. After creating the screen, change to the required size.

Properties

Category	Property Name	Property ID	Default Value	Change after Download	
				Host Communication	Action
Layout	Width	-	-	×	×
	Height	-	-	×	×
Color	Background Color	BCOLOR	White	○	×
Image	Normal	-	-	×	○

*   When Background Color and Image are set simultaneously, the image is given priority

Events

Event	Description
On Display	Generated once when screen display is complete.
On Load	Generated once after screen is called and before it is displayed.

*   Please refer to 6. Events for details.

Notices

*   Screen Properties and events are specified as *[Screen ID]* and *[Property/Event ID]*.
Example: PA01,POPA0001.BCOLOR,0-240-0[CR]
PA04, POPA0001.ON_DISPLAY[CR]
Please refer to 13.14 The Parameters of the Communication Command for details.

Differences by Series

For the popup screen display position, the top-left corner of the InfoSOSA application window is the origin point (0,0). (Displays inside the InfoSOSA application window)

4. Parts

Chapter Contents

4.1 **Parts**

There are Parts that generate events and display states, texts, and numbers.
Screens are created by arranging and setting these Parts with the InfoSOSA Builder.

Each Part has a property.
Setting of Parts can be done by changing the values of the property.
Parts property can be changed only when screen is displayed.
The initial value is always read at screen change.

* "On Display" or "On Load" event is generated at screen change. Re-setup is possible with this event as the trigger.

Actions can be set for Parts that can generate events.
InfoSOSA Action Setting can be done by setting behavior to the events generated.
Please refer to 6.3. List of Events Generated by Parts/ Memories for details.

4.2   List of Parts that can be Used on InfoSOSA

Below is the list of parts that can be used on the InfoSOSA.

Please refer to the description of each part for details.

*   Parts that can be used vary according to Models.

Part Name	Description	Model	
		IS7	IS-APP
[Buttons] Momentary switch that generates a touch event. ON/OFF state is not maintained.			
Button	Various expressions are possible by pasting images.	○	○
NoImage Button	Simple part that allows color to be specified. Possible to suppress increase of project data size since it does not use image data.	○	○
Touchscreen Button	Button that is not displayed on InfoSOSA. Can be used as hidden button.	○	○
Change Screen Button	Button that allows screen change action to be set easily. Various expressions are possible by pasting images.	○	○
[Switches] Alternate switch for generating a touch event by state. ON / OFF state is retained.			
Switch	Various expressions are possible by pasting images.	○	○
Image Multi State Switch	Switch that allows multiple state setting. Image can be set to each state.	○	○
Color Multi State Switch	Switch that allows multiple state setting. Color can be set to each state.	○	○
[Numeric Keypads] Used for entering numbers. Used as a set with number displaying Parts.			
Numeric Keypad	2 sizes.	○	○
[Lamps] Displays state such as ON and OFF.			
Lamp	Various expressions are possible by pasting images.	○	○
NoImage Lamp	Simple part that allows color to be specified. Possible to suppress increase of project data size since it does not use image data.	○	○
Image Multi State Lamp	Lamp that allows multiple states setting. Image can be set to each state.	○	○
Color Multi State Lamp	Lamp that allows multiple states setting. Color can be set to each state.	○	○
[Labels] Displays numbers and characters.			
Label	Used to express static characters that do not change such as menus and descriptions.	○	○
Character Display Parts	Used to express dynamic characters that change such as status display.	○	○
Number Display Parts	Used to display numeric memory such as to display counters, clocks, etc.	○	○
Telop	Used to display characters that cannot be displayed on screen. Characters are displayed by scrolling from right to left.	○	○

Part Name	Description	Model	
		IS7	**IS-APP**
[Time Display Parts] Displays elapsed time.			
Time Display Parts	Used to display elapsed time in form of hours/minutes/seconds. *Clock will be displayed linked to Environment Variables and Number Display Parts.	○	○
[Frame] Displays decorations and punctuations.			
Frames	Various expressions are possible by pasting images.	○	○
NoImage Frames	Simple part that allows color to be specified. Possible to suppress increase of project data size since it does not use image data.	○	○
[Simple Graph] Displays graph with simple functions			
Simple Graph	Stores data sent from host to internal memory of display device and displays it as polygonal line graph.	○	○
[Bar Meter] Displays the percentage by length of the bar.			
Bar Meter	Displays values as percentages.	○	○
[Picture Box] Part that displays images. Circles and rectangles can be drawn by Host Communication.			
Picture Box	Part that displays images. Simple drawings can be done by Host Communication.	○	○
[Figures] Expresses simple shapes.			
Line Parts	Lines	○	○
Arrow Parts	Lines with arrows	○	○
Rectangular Parts	Rectangles	○	○
[Table Parts] Displays tables.			
Table Parts	Create tables	○	○

Part Name	Description	Model	
		IS7	**IS-APP**
[G Parts] Parts you can use in IS-APP. You can perform operations with gestures.			
[Scroll Frame](#)	Store multiple base screens. Use gestures change between stored base screens.	-	○
[Screen Zoom Frame](#)	Parts that can store base screens. Stored base screens can be set up with a resolution greater than the LCD display resolution, so that you can use gestures to scroll to areas that are not normally visible, as well as scaling up and down.	-	○
[Image Zoom Frame](#)	Part that displays images. You can use gestures to scale up/down, move, and rotate images.	-	○
[Grid Button](#)	Set up multiple buttons on parts. Buttons adjust automatically, and you can use gestures to change between buttons that cannot be displayed.	-	○
[Slider](#)	You can set the value by moving the handle left/right or up/down.	-	○

4.3　Standard Properties of Parts
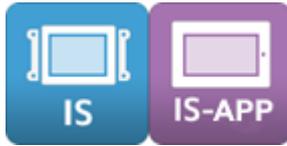
Below describes the standard properties, the common properties, of each Part.

4.3.1　Standard Properties List

Below is the list of the standard properties.

Properties vary according to Parts.

　*　Please refer to the descriptions of each Part for their extended properties.

Category	Property Name	Property ID	Description
General	Parts type	-	Category name in Toolbox (Cannot be modified)
	Parts ID	NAME	Part control ID on Screen Refer to 2.2.2 ID Changing Rules when changing IDs.
	Display	-	Part display status in the Builder Choose from "Normal", "Movement", or "Cancel Function".
	Comment	-	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting
Layout * Define in pixel units.	H. Pos.	-	Distance from top left of Screen to top left of Part. Specify a value from 0 to (screen width minus part width)
	V. Pos.	-	Distance from top left of Screen to top left of Part. Specify a value from 0 to (screen height minus part height)
	Width	-	Width of Part. * Please refer to 14.1 Setting Range List for the settings range.
	Height	-	Height of Part. * Please refer to 14.1 Setting Range List for the settings range.
	Left Margin	-	Left margin of string displayed on Part. Specify value from 0 to Part width.
	Right Margin	-	Right margin of string displayed on Part. Specify value from 0 to Part width.
	Top Margin	-	Top margin of string displayed on Part. Specify value from 0 to Part height.
	Bottom Margin	-	Bottom margin of string displayed on Part. Specify value from 0 to Part height.
Color	Character	FCOLOR	Color of string displayed on Part.
	Background Color	BCOLOR	Background color of Part.
	Transparency	-	True: Enable transparency. False: Disable transparency.

Category	Property Name	Property ID	Description
String	String	TEXT	String displayed on Part. Can be set under the following conditions. Number of characters: 0 to 256. Character types: Single-byte, Double-byte * Both Single-byte and Double-byte character string will be counted as one character. Newline is counted as 2.
	H. Position	-	Horizontal position of string in Part. Choose from "Left", "Center", and "Right"
	V. Position	-	Vertical position of string in Part. Choose from "Left", "Center", and "Right"
	Font Type	-	Choose from "System Font" or "Image Font"
	Font	-	Choose from fonts installed in the PC when "Image Font" is chosen. Can be set to each String Resource set.
	Size	-	Size of Font
Data	Value	VALUE	Value to display on Part. Displayed value is limited to value range of linked memory. Linkable memory can be chosen from "Screen Memory", "Global Memory", and "Envir. Variables".
	Display Digit	-	Digits of numbers to be displayed. Specify a value from 1 to 256
Link Data	Memory Type	-	Memory type linked to string or value property. Settable memory type depends on Parts
	Memory ID	-	Specify the memory ID to link.
	Numeric Keypad	-	When using a numeric keypad to enter values, specify the associated keypad Only valid for parts that display numbers
Image	Action	-	Image when button is pressed.
	NORMAL	-	Image when button is not pressed.
	Disable	-	Image when button is disabled.
Movement	Enable Setting	ENABLED	Enable or disable Touch Input. True: Enable / False: Disable
	Display Setting	VISIBLE	Display setting of Part True: Show / False: Hide
	Blink Setting	BLINK	Blink setting of Part. True: Blink / False: No blink
	Touch Sound	-	Sound Setting when Part is touched. Select 'None' or from Patterns 1-9.
	Event	-	Choose when to change screen: when pressed or released. Valid only for Screen Change button.
	Transition DST	-	Choose screen change destination. Valid only for Screen Change button.
Number, Time Display	Display Type	-	Choose from Screen Image and Font
	Character	-	Choose to display values in single-byte or double-byte characters. *Valid only when "System Font" or "Image font" is chosen.
	NUM Image	-	Choose Image. *Valid only when Image is chosen.

[Notice]

* Same Parts ID cannot be used on the same screen.

* If the margin is too large, numbers and strings may not be displayed correctly.

* The same color as the upper left pixel of the bitmap pasted on the part will become transparent if transparent setting is enabled.

* Wide characters are double-byte characters such as those used for Japanese, Chinese and Hangul.

* New line is counted as two characters.

* System font can be set by "System Font Settings" in the "System Settings" menu.

* Each image is selected from the default image or Image Resource.

* The default setting of touch sound can be changed from "H/W Setting" in the "System Settings" menu.

* In the action or host communication, to set a property true, set 1. To set false, set 0.

4.3.2   Basic Setting of Standard Properties

This section describes the basic method of setting the Standard Properties.

* Please refer to each part for specific property of each.

Moving and Changing Size of Parts

Parts can be moved by dragging the mouse, using the cursor key, or directly specifying the property value.
Changing the size of Parts can be done by dragging the mouse or directly specifying the property value.
Name of properties to change and where they influence when moving or resizing are as described in below diagram.
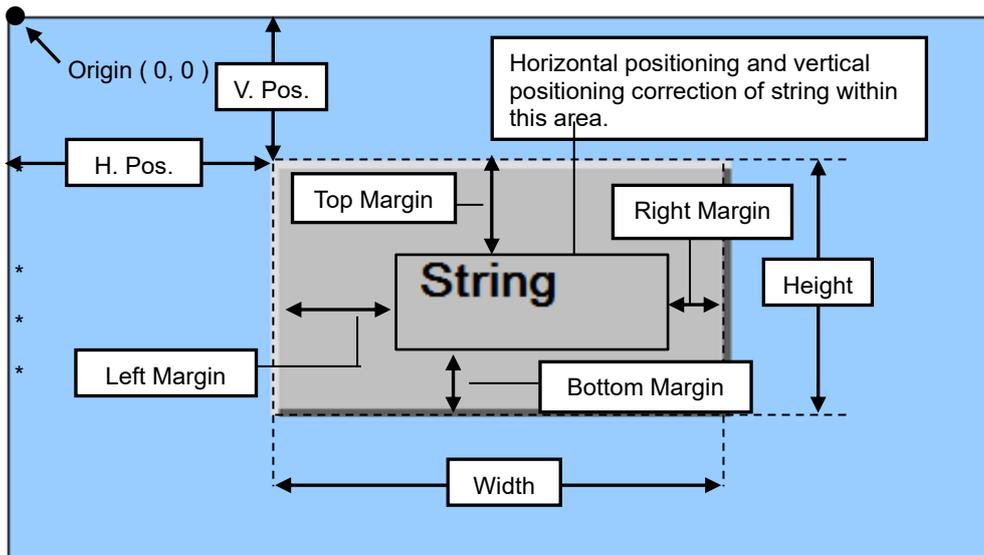
[Notice]

* Numbers and strings may not display correctly if margins are too big.

* If you reduce a part size too much, touch operation may be difficult. Adjust to match the screen size.

Writing Characters to Parts

When writing characters to a Part, enter the character you want to write in the "String" in the "Property Area" and the "Advanced Properties Dialog".

Property Area

Advanced Properties Dialog

Enter characters here and it will appear on the Part.

---
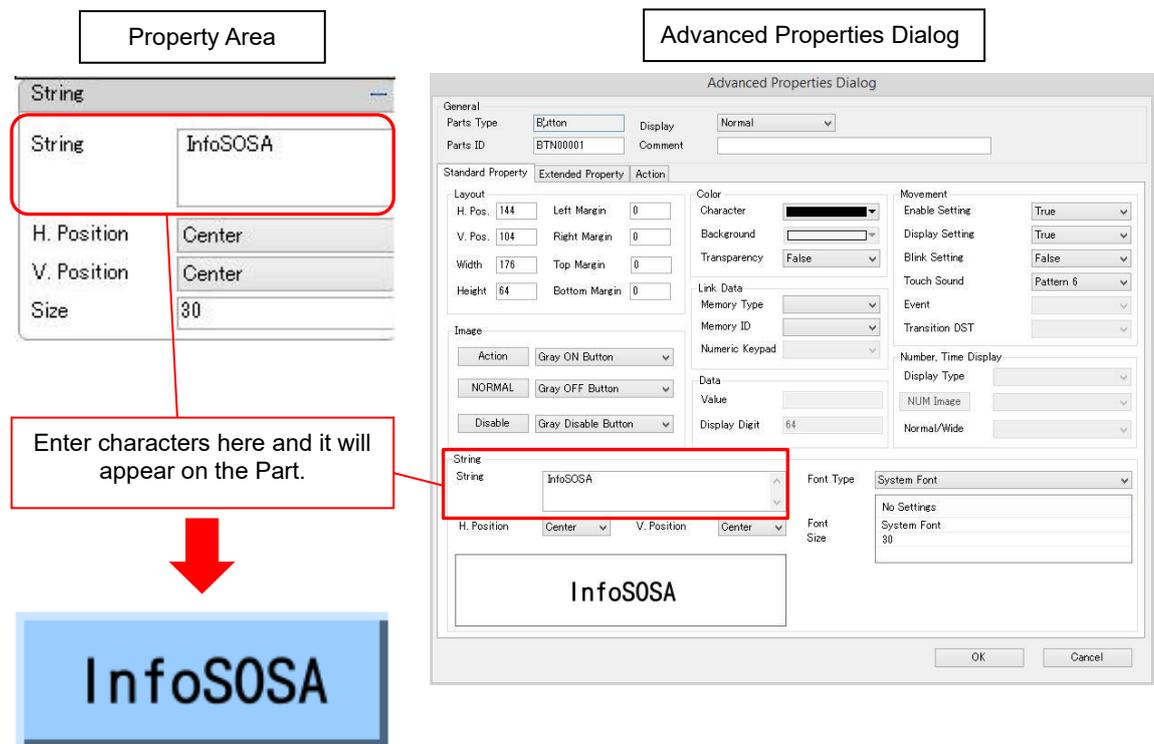
*   Please refer to <u>10. Fonts</u> for font details.

Reflecting Memory Values to Parts

When you want to coordinate the memories and Parts, or if you want to display memory values and strings, link memory to "Link Data" in the "Property Area" and "Advanced Properties Dialog".

Property Area

Advanced Properties Dialog

Memory value is reflected to the Parts when Link Data is set.

Memory value is displayed on Parts that display numbers

3 2 7 6 7

Changing Colors and Images of Parts

Change the "Color" or "Image" in the "Property Area" or the "Advanced Properties Dialog" to change the Base Screens or colors/images of Parts. When changing the image, be sure to take in the image resource before attempting to paste it to the Part.

Property Area

Advanced Properties Dialog
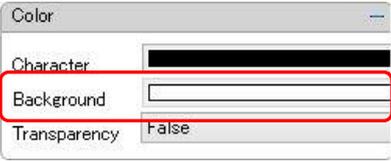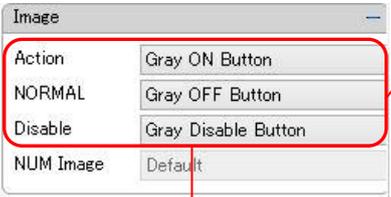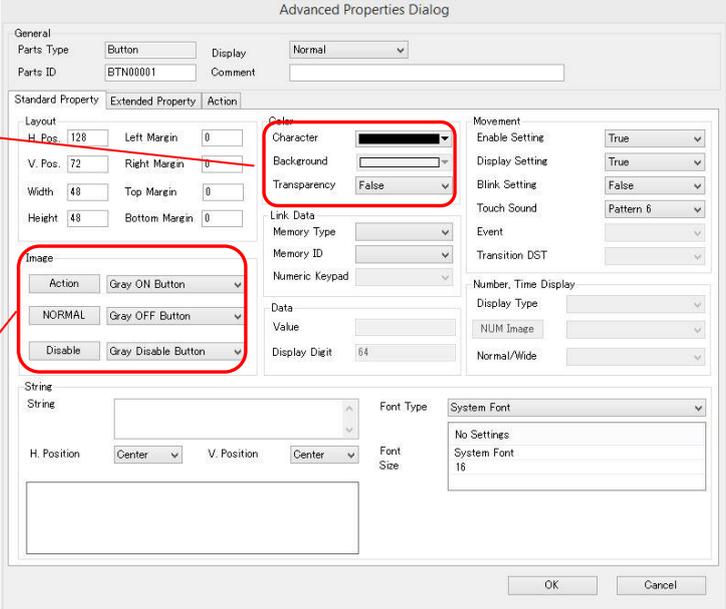
When color is changed or image is set, the appearance of the Part will change.
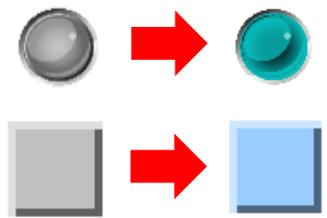
*When color and image is specified simultaneously, image will have priority.

Transparency of Parts

Some parts can be set to be transparent.

When Parts are set to be transparent, the color or images of parts behind the parts become invisible.

Areas that become transparent vary according to parts.

Property Area

Advanced Properties Dialog

When Transparency is set to "True", the background of the Part becomes transparent when displayed.
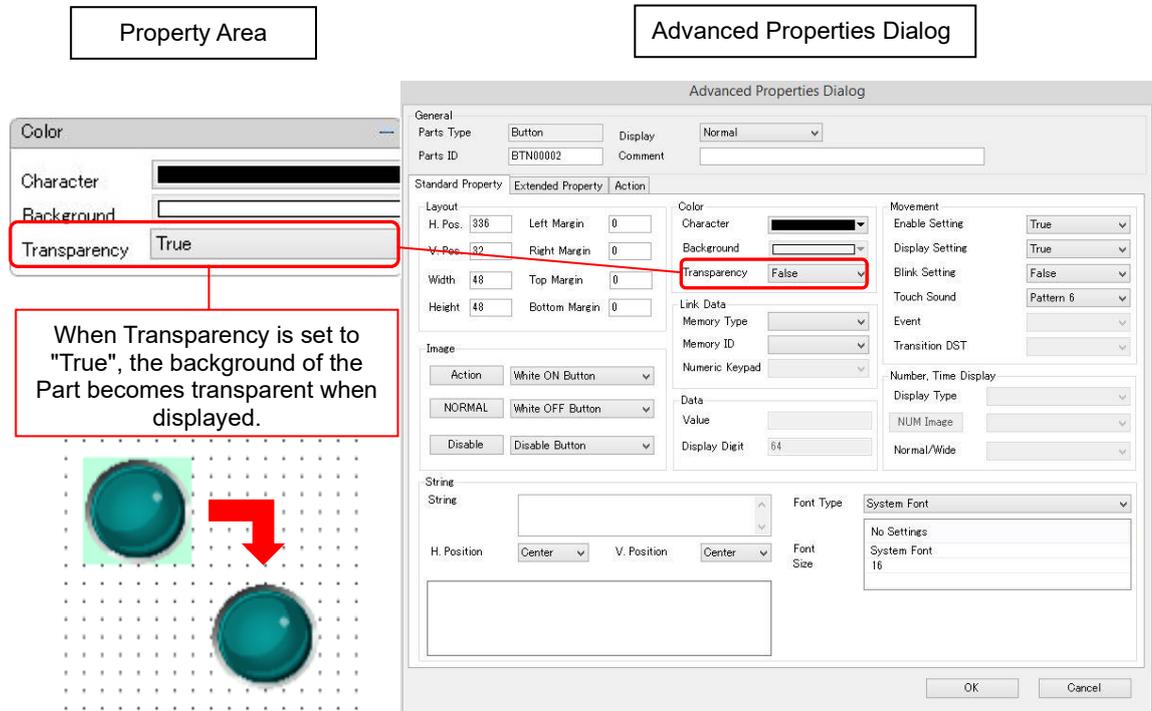
* When Transparency is set, the color in the upper left corner of the part is determined to be transparent when part is displayed. Please note, the part may not be displayed correctly depending on how the image is made. For example, if the part to be made transparent is not a single transparent color, it will not become transparent at all. Additionally, if the part to display includes a transparent color, that portion also becomes transparent.

Enabling and Disabling of Part

To switch the Enable/Disable setting of the parts, change the "Enable Setting" of "Property Area" and "Advanced Properties Dialog". This property can also be changed with "Action" or with "Host Communication". If this property is set to "False", Parts will be displayed but cannot be operated.
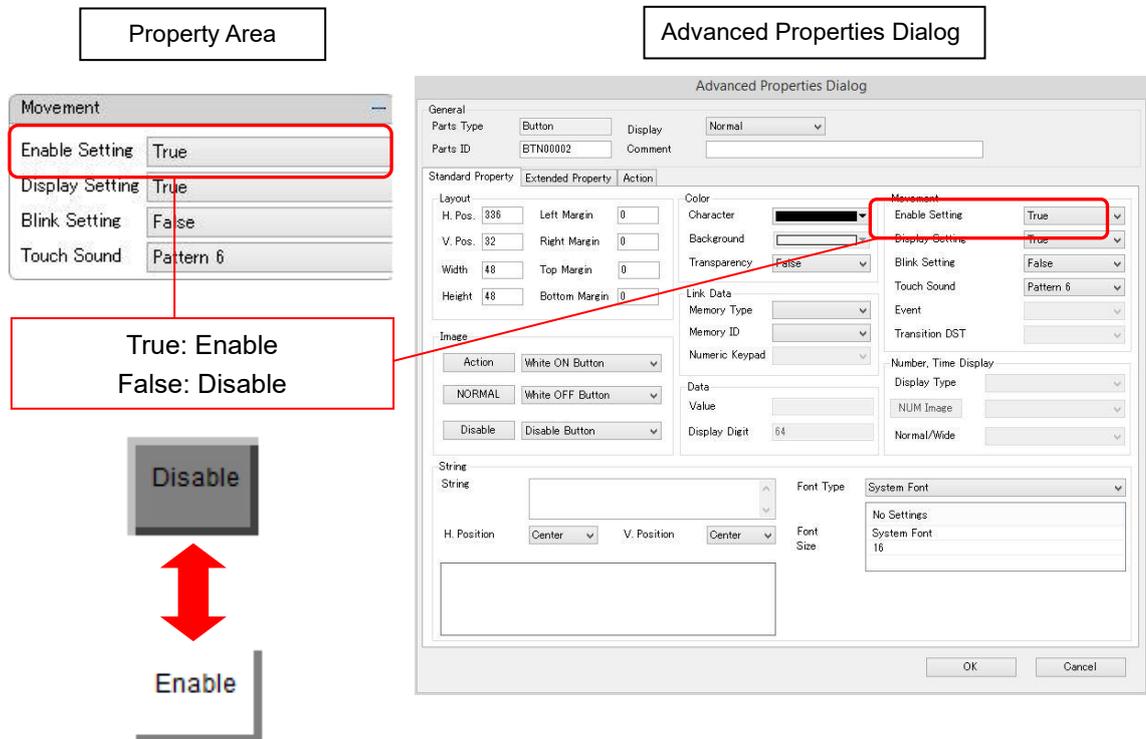
*Function Disabled Image will be displayed when set to Disable.

Showing and Hiding of Parts

To switch the show/hide setting of the Parts, change the "Display Setting" of "Property Area" and "Advanced Properties Dialog". This property can also be changed with "Action" or with "Host Communication".
If this property is set to "False", Parts will not be displayed and cannot be operated.
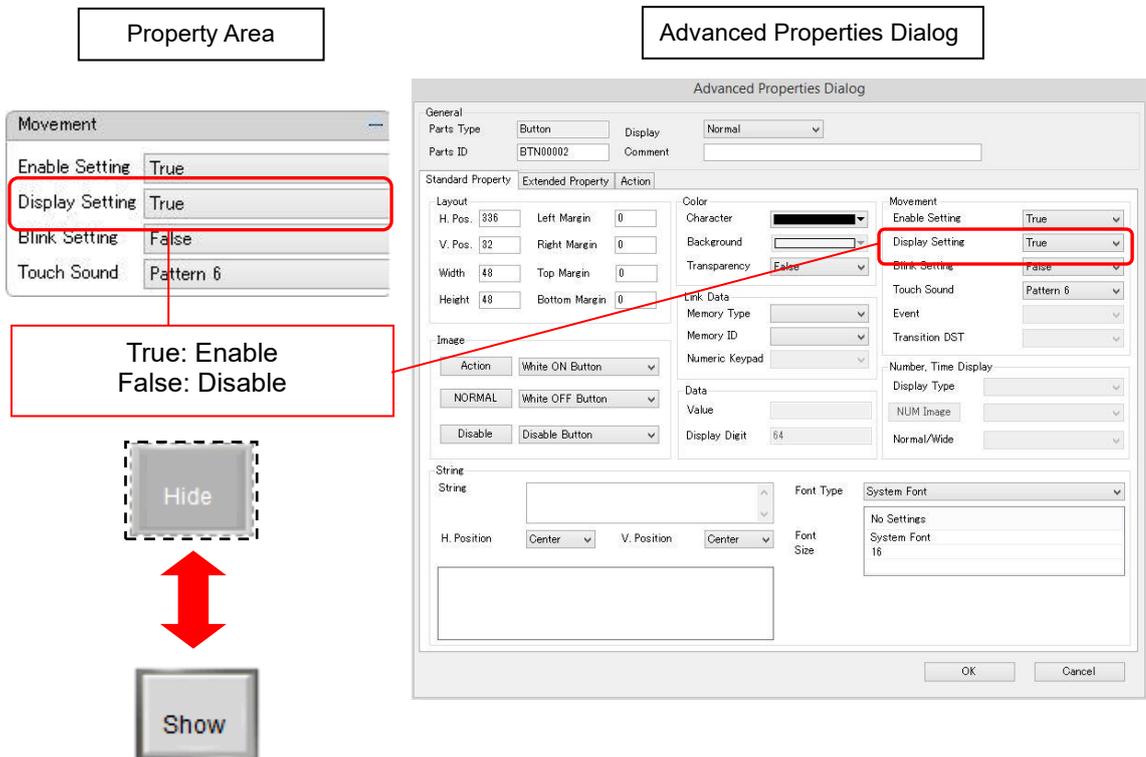
Blinking of Parts

To change the blinking setting of Parts, change the "Blink Setting" of "Property Area" or "Advanced Properties Dialog". This property can also be changed with "Action" or with "Host Communication".

Property Area

Advanced Properties Dialog

True: Blink
False: No Blink

On and Off state will be displayed alternately.
Character will blink on Labels
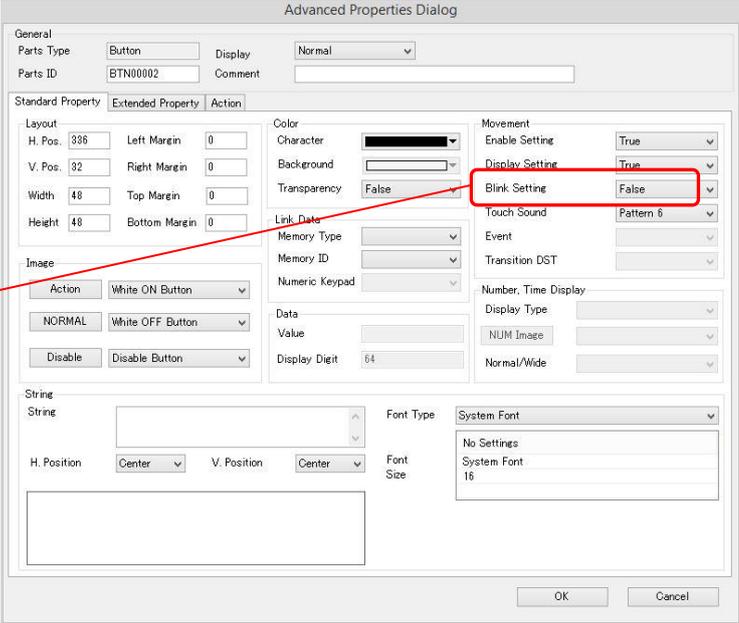
* Blink design will vary according to the Part.

Changing the Touch Sound of Parts

To change the touch sound, change the "Touch Sound" Setting of "Property Area" and "Advanced Properties Dialog". The touch sound tone changes. The touch sound volume and duration do not change.

| Property Area | Advanced Properties Dialog |

Choose desired pattern.
The larger the number, the higher the tone.
* The sound volume and duration do not change.

You can enable or disable the buzzer on IS-APP with a startup parameter. When disabled, there is no sound on touch.

4.4 Pointer

4.4.1 Pointer

The pointer is at the top area of the Toolbox.

It can be used to release Part Placement Mode, or moving, enlarging, and reducing of Parts arranged on the editing area, and calling property and action settings, etc.

(6) Part Placement Mode is the state where a part selected is active in the Toolbox. It is placed when you click on the Base Screen.
The cursor becomes a "+" symbol and not an arrow when in Part Placement Mode.

4.5 Buttons
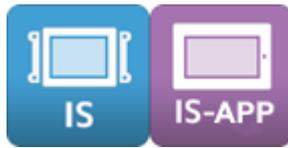
Momentary switch that generates a touch event. ON/OFF state is not maintained.

There are 3 types of buttons: NoImage, Touchscreen, and Change Screen buttons.

4.5.1 Button

Button appearance can be changed by pasting images to Action, NORMAL, and Disable Images.

Project data size will increase than using the NoImage buttons.

Properties

① **Standard Properties**

Below described are the standard properties of the buttons.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Button	×	×
	Parts ID	NAME	BTN00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Transparency	-	FALSE	×	×
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Image	Action	-	-	×	×
	NORMAL	-	-	×	×
	Disable	-	-	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×

② Extended Properties

Below described are the Extended Properties of the buttons.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Holding Time	-	0	Time until LongPress event occurs.	×	×
Start Time	-	0	Time until RepeatPress event occurs.	×	×
Interval	-	0.2	Basic generated interval of RepeatPress Event	×	×
Minimum Interval	-	0.2	Minimum generated interval of RepeatPress Event	×	×
Step Up	-	0.0	Shortening time each time RepeatPress Event is generated.	×	×

*   If the LongPress event is used, set the number of seconds to long press to 1 or more.

*   If the RepeatPress event is used, set the start time to 1 or more.

*   Number of seconds for Long Press and the start time cannot be set at the same time. (One or the other must be 0)

*   Please refer to 6.4 Event Details for details of LongPress and RepeatPress events.

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
Long Press	Generated once when pressed and held down
Repeat Press	Generated when press is repeated

*   Please refer to 6. Events for details.

Methods

There are no corresponding methods.

Notices

Blink Action

Only String will repeat show/hide

Memory Type Settable to Link Data

String Type

4.5.2　NoImage Button

Btn_0099

NoImage button has a simple appearance.

Images cannot be pasted, but the color can be changed.

It is possible to save with the current project data size since it does not use image data.

Properties

① Standard Properties

Below described are the standard properties of the NoImage button.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Button	×	×
	Parts ID	NAME	BTN00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Background Color	BCOLOR	White	○	×
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×

② **Extended Properties**

Below described are the extended properties.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Button Display Type	-	0	Choose from 3 types of Button display types	×	×

*Value of button display type and the image that will be displayed.

Display Image	Button Display Type		
	0	1	2
ON			
OFF			

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Holding Time	-	0	Time until LongPress event occurs.	×	×
Start Time	-	0	Time until RepeatPress event occurs.	×	×
Interval	-	0.2	Basic generated interval of RepeatPress Event	×	×
Minimum Interval	-	0.2	Minimum generated interval of RepeatPress Event	×	×
Step Up	-	0.0	Shortening time each time RepeatPress Event is generated.	×	×

*   When using the LongPress Event, set the number of seconds to hold to 1 or more.

*   When using the RepeatPress Event, set the Start time to 1 or more.

*   Number of seconds for Long Press and the start time for RepeatPress cannot be set at the same time. (Either one must be 0)

*   Please refer to "6.4 Event Details" for details of LongPress and RepeatPress events.

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
Long Press	Generated once when pressed and held down
Repeat Press	Generated when press is repeated

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

Blink Action
Only String will repeat show/hide

Memory Type Settable to Link Data
String Type

4.5.3　Touchscreen Button

Touchscreen Buttons have a transparent appearance.
It is visible on the Builder, but invisible on the InfoSOSA

Properties

① Standard Properties

Below described are the standard properties of the Touch Screen Buttons.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Touch Screen Button	×	×
	Parts ID	NAME	TBN00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

② Extended Properties

Below described are the extended properties.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Long Press Time	-	0	Time until LongPress event occurs.	×	×

*   When using LongPress Event , set the hold time to more than 1 second.

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
Long Press	Generated once when pressed and held down

*   Please refer to "6 Events" for details.

Methods

There are no corresponding methods.

Notices

When checking/editing parts placed under the touch panel buttons, you can temporarily hide them from the view menu at the top of the builder.
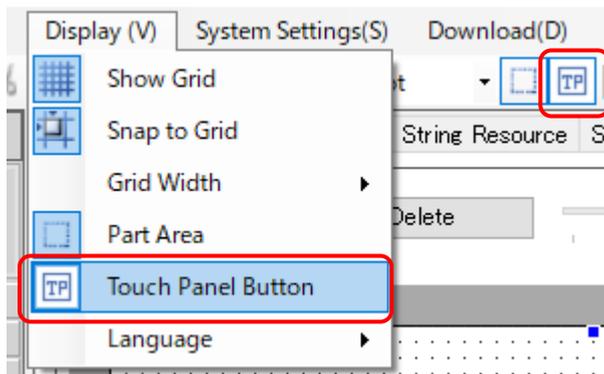
4.5.4　Change Screen Button

By simply setting the screen transition destination in its own property, it allows the screen to change when the button is either pressed or released.
Button displays can be changed by pasting images to Action, NORMAL, and Disable Images.
Project data size will increase than using the NoImage buttons.

Properties

① Standard Properties

Below described are the standard properties of the Change Screen Button.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	ScreenTransitionButton	×	×
	Parts ID	NAME	STB00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Transparency	-	FALSE	×	×
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Image	Action	-	-	×	×
	NORMAL	-	-	×	×
	Disable	-	-	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×

By simply setting the below properties in the "Advanced Properties Dialog", it will allow you to change the screen when pressed or released.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Event	-	(Blank)	Choose when to change screen: when pressed or released.	×	×
Transition DST	-	(Blank)	Choose screen change destination.	×	×

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Only String will repeat show/hide

Memory Type Settable to Link Data
String Type

4.6   Switches
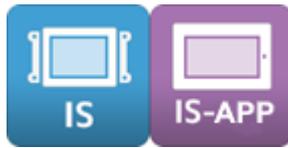
The switch is an alternate Button Part that maintains the ON/OFF state.

Separate events at ON state and OFF state are generated at touch input.

There are 3 types of switches: Switch, Image Multi State Switch, and Color Multi State Switch.

4.6.1   Switch

Optional images can be set to Action, NORMAL, and Disable Images.

Normal image is displayed when the value is "0". Action image is displayed when the value is any value other than "0".

If touched when value is "0", it will change to "1", and if touched when value is other than "0", it will change to "0".

Properties

① Standard Properties

Below described are the standard properties of the switch.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Switch	×	×
	Parts ID	NAME	SWH00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	-	Black	×	×
	Transparency	-	FALSE	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Image	Action	-	White ON Switch	×	×
	NORMAL	-	White OFF Switch	×	×
	Disable	-	Disable Switch	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×
Data	Value	VALUE	0	Read only	○

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×

② **Extended Properties**

Below described are the extended properties of the Switch.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
Long Press Event	Holding Time	-	0	×	×
Caption	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×

When string memory is set to the Caption, string set to string memory will be displayed on the Parts. Also, when Action or Host Communication is used to change the string memory, the string displayed on the Part will also change.

Events

Event	Description
On	Generated when switch value changes to ON when touched
Off	Generated when switch value changes to OFF when touched
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
Long Press	Generated once when pressed and held down

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

Blink Action

Only String will repeat show/hide

Memory Type Settable to Link Data

Numeric Type

* Be sure to set the caption when displaying the value of the string memory.

4. Parts

4.6.2   Multi State Switch

This switch can switch the appearance and action according to the state.

There are two types. One is Image Multi State Switch which allows images to be set, and another is Color Multi State Switch which has a smaller byte size and displays colors instead of images.

Properties

① Standard Properties

Below described are the standard properties of the Image Multi State Switch and the Color Multi State Switch.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	MultiStateSwitchImage or MultiStateSwitchColor	×	×
	Parts ID	NAME	MSI00001~ or MSC00001~	Read only	×
	Display	-	Movement	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
	Value	VALUE	0	○	○
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Transparency	-	FALSE	×	×
	Enable Setting	ENABLED	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

② State Setting

Below described is the state setting of the Multi State Switch. (Refer to red frame below.)

In the Multi State Switch's State Settings, you can define the "Display this when value is X and do this when the switch is touched" switch operation.

InfoSOSA Reference Manual   50

Example:

Create a switch that changes between multiple steps of operation (stop → low speed → medium speed → high speed → stop)

When the value is 0, the switch displays as "Gray OFF Switch". (If none of the defined conditions apply, then the ELSE line is enabled)

Touch while in this state and the switch's value changes to 1.

*   When the switch is touched, the value set up in the Value When Press column is applied to the switch.
   (When no value is set up, a value is not applied)

State Conditions	Normal	Disable	Forec...	String	Value When...
Value=3	Red ON Switch	Red Disable Swi...		high speed	0
Value=2	Orange ON Swit...	Orange Disable ...		medium speed	3
Value=1	Green ON Switch	Green Disable S...		low speed	2
ELSE	Gray OFF Switch	Gray Disable Sw...		stop	1

*   Apart from setting a value, you can also click the action cell and define a different action.

State Conditions	Normal	Disable	Forec...	String	Value When...	Value When ...	Action
Value=3	Red ON Switch	Red Disable Swi...		high speed	0		
Value=2	Orange ON Swit...	Orange Disable ...		medium speed	3		
Value=1	Green ON Switch	Green Disable S...		low speed	2		
ELSE	Gray OFF Switch	Gray Disable Sw...		stop	1		

When the value changes to 1, the switch displays as "Green ON Switch".
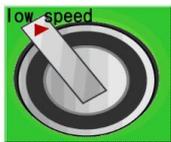
State Conditions	Normal	Disable	Forec...	String	Value When...
Value=3	Red ON Switch	Red Disable Swi...		high speed	0
Value=2	Orange ON Swit...	Orange Disable ...		medium speed	3
Value=1	Green ON Switch	Green Disable S...		low speed	2
ELSE	Gray OFF Switch	Gray Disable Sw...		stop	1

Touch the switch again, and this time the row with Value=1 status condition is run, the switch's value changes to 2.

State Conditions	Normal	Disable	Forec...	String	Value When...
Value=3	Red ON Switch	Red Disable Swi...		high speed	0
Value=2	Orange ON Swit...	Orange Disable ...		medium speed	3
Value=1	Green ON Switch	Green Disable S...		low speed	2
ELSE	Gray OFF Switch	Gray Disable Sw...		stop	1

In this way you can base changes in the appearance and processing with the value of the switch.
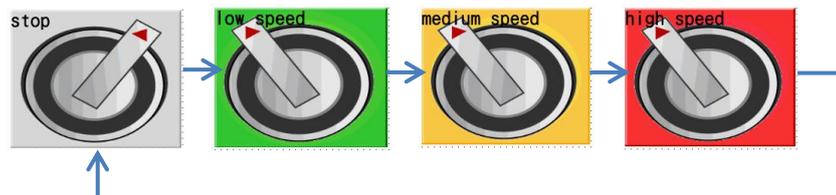
Below described is the each state setting detail. You can set the items below for each state condition.

Name	Description
State Conditions	Conditional expression to determine the state of switch. Maximum of 50 states can be set. Setting is done with conditional expression setting dialog. Conditions are as follows: - When value matches *** - When value is not *** - When value is greater than or equal to *** and less than or equal to ***. - When value is less than *** or greater than *** - When value is greater than or equal to *** - When value is less than *** or equal too. "***" specifies any value from -2147483648 to 2147483647
NORMAL	Set image to display when effective setting of switch is True. Image from Image resource can also be used along with the default images. Only Image Multi State is valid.
Disable	Set image to display when effective setting of switch is False. Image from Image resource can also be used along with the default images. Only Image Multi State is valid.
Normal Color	Set color to display when effective setting of switch is True. Only Color Multi State is valid.
Func. Disable	Set color to display when effective setting of switch is False. Only Color Multi State is valid.
Character	Set color of font to display on switch.
String	Set string to display on switch. Set with String Setting Dialog. (Refer to table below for details)
Value when pressed	Set value to enter to property of switch value when switch is pressed between values of -2147483648 to 2147483647. It is also possible to not make any settings.
Value when released	Set value to enter to property of switch value when switch is release between values of -2147483648 to 2147483647. It is also possible to not make any settings.
Action	Set actions Press, Release, Leave to occur when state conditions are satisfied.

*   State condition ELSE is registered as default and cannot be deleted.

③ **String Setting Dialog of State Setting**

Below described is the String Setting Dialog displayed at string setting of State Setting.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
Link Data	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×
Color	Character	-	Black	×	×
String	String	-	(Blank)	×	×
	H. Position	-	Left	×	×
	V. Position	-	Top	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×

* String and font color can only be changed with the Builder.

* Only String Resources can be set for Link Data.

④ **Display**

Below described is the display image (color) of the Multi-state Switch.

1) Evaluate in order the conditional expressions set at state condition in accordance to the current value.
2) "Normal Image (Color)" and "String" that satisfy the state conditions are displayed.
   * When the "Enable Setting" is False, "Cancel Function Image (Color)" is displayed.
   * When multiple conditions are satisfied, the conditions set at the first will have priority.
3) When none of the state conditions are satisfied, "Image (Color)" and "String" set in ELSE will be displayed.

⑤ Operation at Touch

Below described is the operation of the Multi State Switch in details when touched

1) Touch the area
2) State Condition "Value When Press" displayed will be set to Value Property of Multi State Switch.
3) Conditional expression set to state condition will be evaluated in order from top in accordance to the set "Value When Press".
4) Display will change to the "Image (Color)" and "String" that satisfies the condition.
   Action set to Press Event of "Action" state condition before touching will be implemented
5) Action set to Press Event of "Action" state condition before touching will be implemented.
   * If the Multi-State Switch value changes due to this action, the conditional expression is evaluated again and the only the display will change. (Action associated with the changed value is not run.)
6) Common press event set with the "Action" tab will be generated.
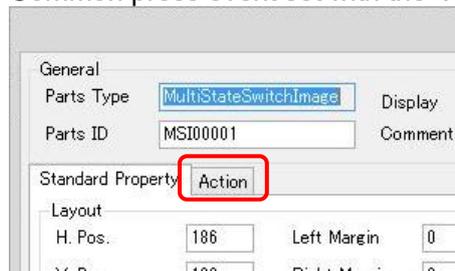
   * If the Multi-State Switch value changes due to this action, the conditional expression is evaluated again and the only the display will change. (Action associated with the changed value is not run.)

7) Release finger.
8) "Value When Release" of valid state condition at time of finger release will be set to value property of the Multi-state Switch.
   * This includes slide operations.
9) Evaluate in order the conditional expressions set to the state condition in accordance to the set "Value When Release".
10) Display will change to the "Image (Color)" and "String" that satisfies the condition.
11) The action set at state condition before finger release, "Release Event", will be implemented.
   * Action set to Leave Event will be implemented for slide operation.
   * If the Multi-State Switch value changes due to this action, the conditional expression is evaluated again and the only the display will change. (Action associated with the changed value is not run.)
12) Common Release Event set at "Action" will be generated.
   * Leave Event will generate the slide operation.

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.

*   Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

Blink Action
Set String will repeat show/hide

Memory Type Settable to Link Data
Numeric Type

Caution

Images can be registered for each state, but if many large images are registered, it may not operate normally due to insufficient memory.

4.7 Numeric Keypad
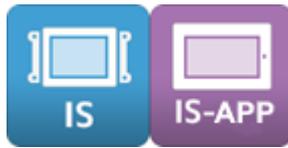
4.7.1 Numeric Keypad
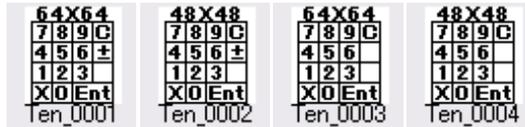
This is a Part for inputting numbers to the Number Displaying Parts.

It must be used in pairs with a number displaying part and cannot be used alone.

The Numeric Keypad can be used by setting the "Linked Numeric Keypad" of the number displaying parts.

The IDs and features in the toolbox for the Numeric Keypad are as below:

* Ten_0001：268×268pixels w/ "+/-" key

* Ten_0002：204×204pixels w/ "+/-" key

* Ten_0003：268×268pixels w/o "+/-" key

* Ten_0004：204×204pixels w/o "+/-" key

Properties

① **Standard Properties**

Below described are the Standard Properties of the Numeric Keypad.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	TenKey	×	×
	Parts ID	NAME	TEN00001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
Movement	Touch sound	-	Pattern 6	×	×

③ **Extended Properties**

Below described are the extended properties.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Auto Clear	-	False	Set if to automatically clear already input value at input. True: Valid False: Invalid	×	×
Num. key Setting Display Setting	-	Always Display	Set display action of the numeric keypad. Choose from "Always Display" and "Display when Valid (While Input)"	×	×

* Value is cleared with Auto Clear only when the first key pressed is a value between 0 and 9 after number input becomes possible. The ENTER or the ESC key will not clear the value.
If "+/-" key is pressed in the beginning, the value will not be cleared even if the values between 0 and 9 are pressed

Events

Event	Description
Enter	Generated when ENTER is pressed.
Cancel	Generated when ESC is pressed.

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

4.8 Lamps
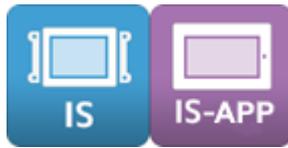
Lamps are Parts that display states.

There are 4 types: Lamp, NoImage Lamp, Image Multi State Lamp and Color Multi State Lamp.

4.8.1 Lamp

Images can be pasted to the Lamps.

Normal image is displayed when the value is "0". Action image is displayed when the value is any value other than "0".

Project data size will increase than using the NoImage Lamp.

Properties

① Standard Properties

Below described are the standard properties of the Lamps.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Lamp	×	×
	Parts ID	NAME	LMP00001 -	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Transparency	-	FALSE	×	×
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Size	-	Small	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Data	Value	VALUE	0	○	○
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Image	Action	-	-	×	×
	NORMAL	-	-	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

② Extended Properties

Below described are the extended properties of the Lamps.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
Caption	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×

When a String type memory is set to the Caption, the part displays the string defined in the assigned String memory. Also, if there is an action or host communication that changes the string in the String memory, the associated string displayed on the part also changes.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action

Normal and Action image will be displayed alternatively

Memory Type Settable to Link Data

Numeric Type

* String type can be displayed by setting the caption.

4.8.2　NoImage Lamp

The NoImage Lamp is a lamp with a simple appearance. The color of the lamp can be changed freely.

The Background color will be displayed when the value is "0" and the Character Color will be displayed when the value is "1".

This will not increase the project data size when compared to lamps using images.

Properties

① Standard Properties

Below described are the standard properties of the NoImage lamps.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Lamp	×	×
	Parts ID	NAME	LMP00001 ~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Color	Character (Action)	FCOLOR	Black	○	×
	Background (NORMAL)	BCOLOR	White	○	×
Data	Value	VALUE	0	○	○
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action

Normal and Action color will be displayed alternatively

Memory Type Settable to Link Data

Numeric Type

*　Values other than 0 and 1 will all be treated as 1.

4.8.3　Multi State Lamp

The Multi State Lamp is a lamp that colors can be changed according to the state.
There are two types: one is Image Multi State Lamp that images can be set, and the other is the Color Multi State Lamp, a smaller byte lamp that displays colors instead of images.

Properties

① Standard Properties

Below described are the standard properties of the Image Multi State Lamp and the Color Multi State Lamp.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	MultiStateLampImage or MultiStateLampColor	×	×
	Parts ID	NAME	MLI00001~ or MLC00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
	Value	VALUE	0	○	○
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Transparency	-	FALSE	×	×

② State Setting

Here described is the state setting of the Multi State Lamp. (Shown below in red frame)

In the Multi State Lamp's State Settings, you can define the "when value is X, then display this" lamp operation.

Example:
Create a lamp that changes between multiple stages of operation
stopped → running (normal) → running (caution) → running (danger)
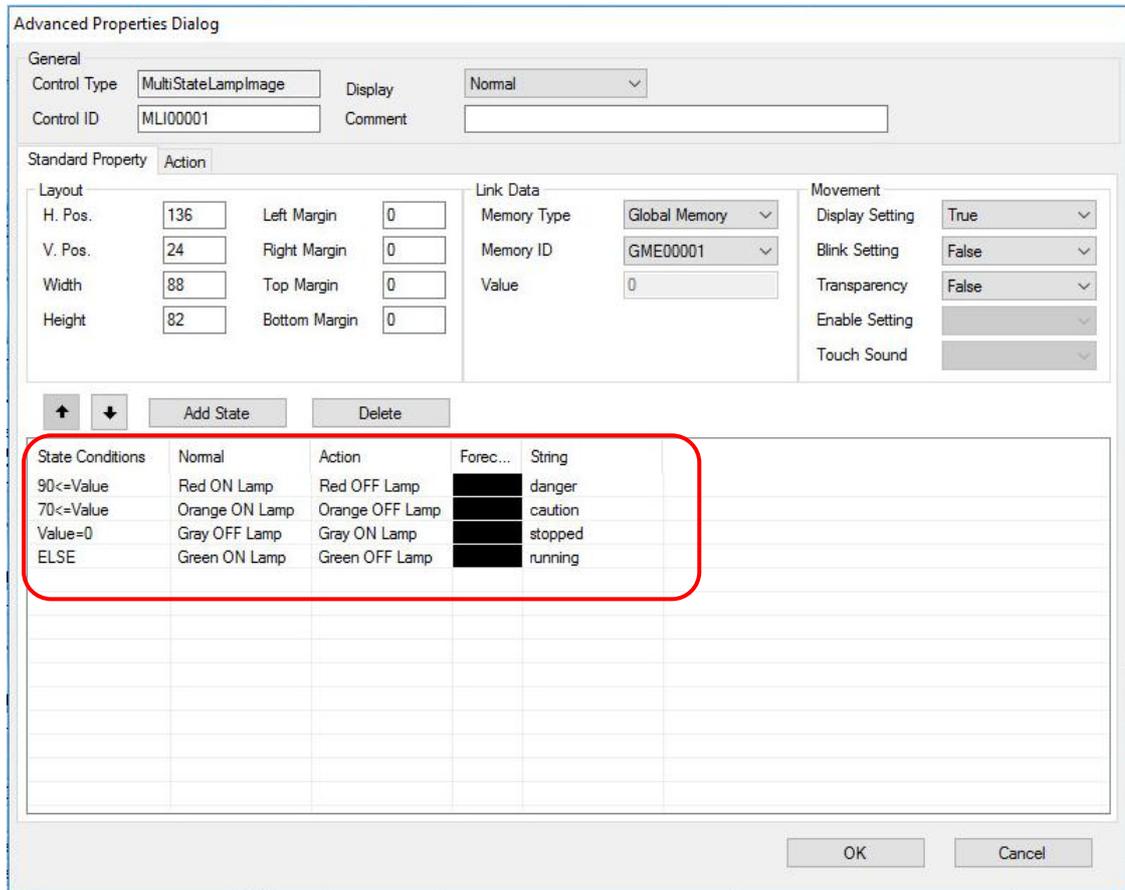
Linked to global memory (GME00001), the lamp display changes based on the global memory value. * Higher the row, higher the priority.

[90 or more]   [70 or more]   [1 to 69]   [0]
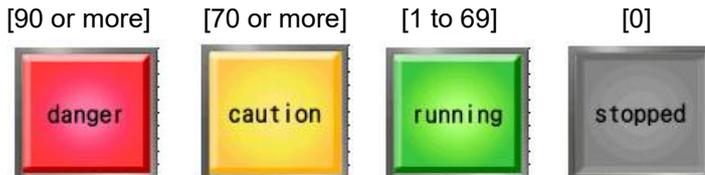
Below described are the items that can be set for the Multi State Lamps.

You can set the items below for each state condition.

Name	Description
State Conditions	This is a conditional expression to determine the state of the lamp. Maximum of 50 states can be set. Setting is done with conditional expression setting dialog. Conditions are as follows: - When value matches *** - When value is not *** - When value is greater than or equal to *** and less than or equal to ***. - When value is less than *** or greater than *** - When value is greater than or equal to *** - When value is less than *** or equal to. "***" specifies any value from -2147483648 to 2147483647
NORMAL	Set image to display when state condition is satisfied. Image from Image resource can also be used along with the default images. Only Image Multi State is valid.
Action	Set image to display at blink Image from Image resource can also be used along with the default images. Image from Image resource can also be used along with the default images. Only Image Multi State is valid
Normal Color	Set image to display at blink Image from Image resource can also be used along with the default images. Only Color Multi State is valid.
Action Color	Set color to display at blink. Only Color Multi State is valid.
Character	Set string color to display on lamp.
String	Set string to display on lamp. Set with String Setting Dialog. (Refer to table below for details)

* State condition ELSE is registered as default and cannot be deleted.

③ **String Setting Dialog of State Setting**

Below described is the String Setting Dialog displayed at string setting of State Setting.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
Link Data	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×
Color	Character	-	Black	×	×
String	String	-	(Blank)	×	×
	H. Position	-	Left	×	×
	V. Position	-	Top	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×

* String and font color can only be changed with the Builder.

* Only String Resources can be set for Link Data.

④ Display

Below described is the display image (color) of the Multi State Lamp.

1) Evaluate in order the conditional expressions set to the state conditions of the current value.
2) "Normal Image (Color)" and "String" of the State condition that satisfies the conditions will be displayed.
* If multiple states are satisfied, the states set on top have priority.
3) If all state conditions are not satisfied, then "Image color" and "String" set to ELSE will be displayed.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Normal and Action image will be displayed alternatively

Memory Type Settable to Link Data
Numeric Type

Caution

Images can be registered for each state, but if many large images are registered, it may not operate normally due to insufficient memory.

4.9   Labels

Labels are a Part that displays strings and numbers.

There are 4 types: Label, Character Display Parts, Number Display Parts, and Telop.

4.9.1   Label

This is a Part that displays fixed characters. Strings and String Resources set in the property are displayed on the label.

The label string cannot be changed dynamically when the created screen including the label is being used by the InfoSOSA unit; it can only be edited when creating with the Builder.

When changing the String with the InfoSOSA unit, please use a "Character Indicator Part".

Properties

① Standard Properties

Below described are the standard properties of the label.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Label	×	×
	Parts ID	NAME	LBL00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	100	×	×
	Height	-	100	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Background	BCOLOR	White	○	×
	Transparency	-	True	×	×
String	String	TEXT	(Blank)	Read only	Read only
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Only String will repeat show/hide

Memory Type Settable to Link Data
String Type

*   Only String Resources

4.9.2　Character Display Parts

ABC
Chr_0001
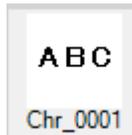
This Part displays strings.

Strings set in the Property or linked to string type memory can be displayed.

String of Character Display Parts can be changed with the InfoSOSA unit.

Properties

① Standard Properties

Below described are the standard properties of the Character Display Parts.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	CharIndicator	×	×
	Parts ID	NAME	CHI00001~	Read only	×
	Display	-	Normal	×	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character	FCOLOR	Black	○	×
	Background	BCOLOR	White	○	×
	Transparency	-	False	×	×
String	String	TEXT	(Blank)	○	○
	H. Position	-	Center	×	×
	V. Position	-	Center	×	×
	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×

③ **Extended Properties**

Below described are the extended properties.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Holding Time	-	0	Time until LongPress event occurs.	×	×

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
Long Press	Generated once when pressed and held down

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

Blink Action
Only String will repeat show/hide

Memory Type Settable to Link Data
String Type

4.9.3　Number Display Parts
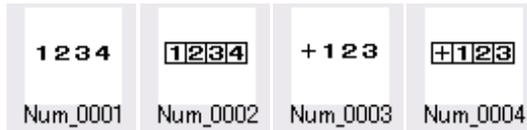
This is a Part that displays the numerical value.

You can choose from "font" or "image".

If the numeric keypad is set in the "linked numeric keypad" property, values can be entered with the numeric keypad to the Number Display Parts.

Num_0001 to Num_0002 of Toolbox are the standard Number Display Parts. Sign will be displayed immediately to the left of the value.

Num_0003 to Num_0004 of Toolbox is a Number Display Parts with sign area. Sign will always be displayed on the left edge.

Properties

① Standard Properties

Below described are the standard properties of the Number Display Part.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	NumberIndicator	×	×
	Parts ID	NAME	NMI00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Character*	FCOLOR	(Invalid)	○	×
	Background	BCOLOR	White	○	×
	Transparency*	-	(Invalid)	×	×
String	H. Position	-	Left	×	×
	V. Position	-	Top	×	×
	Font Type*	-	(Invalid)	×	×
	Size*	-	(Invalid)	×	×
Data	Value	VALUE	12345	○	○
	Display Digits	-	10	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
	Numeric Keypad	-	(Blank)	×	×
Number, Time Display	Display Type	-	Screen Image	×	×
	NUM Image	-	Default	×	×
	Character*	-	(Invalid)	×	×

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○
	Touch Sound	-	Pattern 6	×	×

* Numbers are valid only when display type is "Image".

* If value property is not linked to memory, the input value range is from -2,147,483,648 and 2,147,483,647 (Double Word Type).

* Numeric Keypad that can be linked are keypads placed on the same screen as the number indicator Parts.

* If double-byte font is specified but is not supported by the character font, it will be displayed with the Windows default font.

② Extended Properties

Below described are the extended properties of the Number Display Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Sign Display	-	False	Places a plus sign (+) prefix to the number. True: add prefix False: no prefix	×	×
Zero Suppression	ZEROSPRS	True	Deletes leading 0's in front of the number. True: delete leading 0's False: keep leading 0's	Read Only	×
Digit Separator	-	False	Setting to add "," (comma) as a digit separator. True: add comma False: remove comma	×	×
Decimal Position	-	0	Set values between 0 and 9 Decimal point is not shown when value is "0"	×	×
Holding Time	-	0	Time until LongPress Event is generated.	×	×

* The Decimal point is a pseudo symbol. There is no difference in the value whether there is a decimal or not. Treat it only as a way to change the display of numbers.

* The Decimal point is counted as one digit regardless of the presence or absence of the code area.

* Below is an example of how the decimal will be displayed.

Decimal Position	Value	Display Result									
0	12345						1	2	3	4	5
	-12345					-	1	2	3	4	5
1	12345					1	2	3	4	.	5
	-12345				-	1	2	3	4	.	5
2	12345					1	2	3	.	4	5
	-12345				-	1	2	3	.	4	5
3	12345					1	2	.	3	4	5
	-12345				-	1	2	.	3	4	5

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
LongPress	Generated when pressed and held down.

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

Blink Action
Show/Hide of numbers will be alternated

Memory Type Settable to Link Data
Numeric Type

NUM Image can be selected from "Default" bitmap or other image resources.

If registering from image resource, you will need to create a wide image with 17 images of the same size lined as shown below.

* It will not be displayed properly if the sizes vary.

From the left: "0, 1, 2, 3,4,5,6,7,8,9, blank, comma, minus, plus, point, error display, reserved".

Even though the "Reserved" area on the right side is an extended area reserved for the system and does not display, be sure to register it. (Increase the width with blank spaces)

4.9.4　Telop
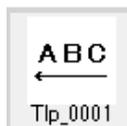
This is a Part for displaying Telop. Be sure to link it to String Type Global Memory.

By scrolling from right to left, it will allow strings wider than the Part to be displayed.

The space between the characters from the last letter to the next sequence can be adjusted.

Be sure to link the String Type Global Memory in a one-to-one relationship. One Global Memory cannot be shared by multiple Telop Display Parts. By changing the strings of the Global Memory, it is possible to change the characters displayed on the InfoSOSA.

Properties

① Standard Properties

Below described are the Standard Properties of the Telop Display Parts:

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Telop	×	×
	Parts ID	NAME	TLP00001	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Color	Character	FCOLOR	Black	Read only	×
	Background Color	BCOLOR	White	Read only	×
String	Font Type	-	System Font	×	×
	Font	-	-	×	×
	Size	-	16	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

② Extended Properties

Below described are the extended properties of the Telop Display Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Moving Distance	-	1	Set pixels to move per second	×	×
Holding Time	-	0	Time until LongPress event is generated.	×	×

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Leave	Generated when you slide and release touch from part.
LongPress	Generated when pressed and held down.

* Please refer to "6. Events" for details.

Methods

There are no corresponding methods.

Notices

| Memory Type Settable to Link Data |
|---|
| String Type |

* Global Memory only.

Restrictions

* Telop cannot display Multi-lines. The 2nd Row and after will not be displayed.

* There is a limit to the number of Telop you can draw on 1 screen, and the maximum Telop data size for the entire project. If you exceed the maximum Telop data size, any excess Telop will not display.

Items	Model	
	IS7	IS-APP
Maximum per screen	3	5
Maximum Telop data size per project	32MB	No limit

Telop Data Size Equation (Estimate)
Global Memory string length x (font size)2 × 2 = Data size (bytes)

* Above is only an estimate. There may be Telop that cannot be displayed even if the calculation result is less than the limit.

* When you reach the maximum amount of data (and with the following conditions), the end of the Telop does not display properly.

- Text string size is 256 for Global Memory linked to Telop

- Text size is 256 for Telop parts

- Global Memory text string is all double-byte characters

4.10 Time Display Parts

This is Part that displays the elapsed time. Set "Value" in units of seconds.
Choose from "Font" and "Image".

* To display the clock, link separately the Environment variable for clocks to the Number Displaying Part.

Properties

① Standard Properties

Below described are the standard properties of the Time Displaying Part.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	TimeIndicator	×	×
	Parts ID	NAME	TIM00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	0	×	×
	Right Margin	-	0	×	×
	Top Margin	-	0	×	×
	Bottom Margin	-	0	×	×
Color	Letter*	FCOLOR	(Invalid)	○	×
	Background Color	BCOLOR	White	○	×
	Transparency*	-	(Invalid)	×	×
String	H. Position	-	Left	×	×
	V. Position	-	Top	×	×
	Character Font*	-	(Invalid)	×	×
	Size*	-	(Invalid)	×	×
Data	Value	VALUE	0	○	○
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Number, Time Display	Display Type	-	Screen Image	×	×
	Number Image	-	Default	×	×
	Character*	-	(Invalid)	×	×
Movement	Display Setting	VISIBLE	True	○	○
	Blink Setting	BLINK	False	○	○

* Font Color, Transparency, Font Type, Size, Character is valid when Display Type is set to "System Font" or "Image Font".

* Number image is valid only when the Display Type is "Image Pics"

* When value property is not linked to memory, the value range can be input between -2,147,483,648 and 2,147,483,647 (Double Word Type).

* If double-byte font is specified but is not supported by the character font, it will be displayed with the Windows default font.

② **Extended Properties**

Below described are the Extended Properties of Time Displaying Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Zero Suppression	ZEROSPRS	True	Deletes leading 0's in front of the number. True: delete leading 0's False: keep leading 0's	Read Only	×
Overflow	OVERFLOW	Save	Movement when maximum value is exceeded	Read Only	×
Upper Digits	-	4	Setting for highest digits.	×	×
Time Format	-	HMS	Setting format Choose from HMS/HM/MS/S	×	×

* The values may not be displayed depending on the setting of the significant digit number and time format. When the value cannot be displayed, the display shows "#".

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Show/Hide of numbers will be alternated

Memory Type Settable to Link Data
Numeric Type

Choose default image or image resource for image of numbers.

If registering from image resource, you will need to create a wide image with 16 images of the same size lined as shown below.

* It will not be displayed properly if the sizes vary.

From the left: "0,1,2,3,4,5,6,7,8,9,Blank,Error,H,M,S".

4.11 Frames
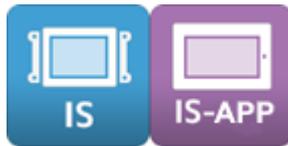
Frames are Parts for decorating. It can be used to separate Parts from each other on the screen, or simply to decorate.

There are two types: Frame and NoImage Frame.

4.11.1 Frames

Displays can be changed by using images.

Properties

① Standard Properties

Below described are the Standard Properties of the Frame.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Frame	×	×
	Parts ID	NAME	FRA00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	100	×	×
	Height	-	100	×	×
Color	Transparency	-	False	×	×
Image	Normal	-	-	×	×
Movement	Display Setting	VISIBLE	True	○	○

Event

There are no corresponding events.

Methods

There are no corresponding methods.

4.11.2 NoImage Frames

NoImage Frame is a frame with a simple appearance.

Images cannot be pasted, but the frame color and background color can be changed.

Font Color will be the frame color.

This frame will not increase the project data size when compared to the frame using images.

Properties

① Standard Properties

Below described are the Standard Properties of the NoImage.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Frame	×	×
	Parts ID	NAME	FRA00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	100	×	×
	Height	-	100	×	×
Color	Character (Frame)	FCOLOR	Black	○	×
	Background	BCOLOR	White	○	×
	Transparency	-	False	×	×
Movement	Display Setting	VISIBLE	True	○	○

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

When the transparency is valid, inside of the frames will become transparent.

4.12 Simple Graph

4.12.1 Simple Graph

This is Part to display a line graph with simple functions.

A Simple Graph is a Part that displays graphs based on data sent using the Host Communications.
X-axis does not have the concept of time and displays at regular intervals the sent data in order.

Sent data is stored in the Array Queue type memory.
Please always link the "Simple Graph Parts" and the Array Queue Type Memory registered as Screen Memory.

Properties

① Standard Properties

Below described are the Standard Properties of the Simple Graphs.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	TimeSeqGraph	×	×
	Parts ID	NAME	GRH00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	200	×	×
	Height	-	200	×	×
	Left Margin	-	10	×	×
	Right Margin	-	10	×	×
	Top Margin	-	10	×	×
	Bottom Margin	-	10	×	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
String	Size	-	16	×	×
Color	Background	BCOLOR	White	○	×
Image	NORMAL	-	-	×	×
Movement	Display Setting	VISIBLE	True	○	○

* Select String Queue Type Screen Memory for the Link Data.

* When Background Color and Image are set simultaneously, Image will be given priority

* The font size will be the same as the scales of the Y-axis. The maximum value is fixed so the scales do not overlap by the height of the Part and the setting of the Y-axis. (Minimum value:8)

② **Extended Properties (Line Graph Data Setting)**

Below described are the settings of the graph and the auxiliary lines.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
CH Number	-	8	Number of lines to display on the graph Choose from 1 to 8	×	×
Graph Line	GL_COL01 to 08	-	Color of lines (Can be set to each CH)	○	×
Display Setting	GL_VIS01 to 08	True	True : Show lines False : Hide lines	○	○
Comment	-	(Blank)	Comments will not show on graph	×	×
AUX Line	AL_COL01 to 03	-	Color of auxiliary lines	○	×
Display Setting	AL_VIS01 to 03	False	True : Show lines False : Hide lines	○	○
Value	AL_VAL01 to 03	0	Location to show auxiliary lie Set values between -2,147,483,647 to 2,147,483,647	○	×
Comment	-	(Blank)	Comments will not show on graph	×	×
Graph Point Size	PNTSIZE	1	Size of points on graph	○	×
Axis Scale	-	Black	Color of scale and X and Y axis	×	×
Letter	-	Black	Color of scale numbers	×	×

③ **Extended Properties (Line Graph Operation Setting)-Grid Lines**

Below described are the settings and confirmation of the properties of the Grid lines.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Line Color	-	Black	Color of Grid on Graph	×	×
Display Type	-	X-Axis & Y-Axis	- X axis and Y axis - Y axis only - X axis only - no axis	×	×

④ **Extended Properties (Action Setting of Line Graph)-Action Setting**

Below described are the settings of the graph actions.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Display Update	-	Scroll	Choose how to draw the graph. Choose from "Scroll" or "Redraw From Left".	×	×
Scroll Direction	-	From Left	Valid only when Display Update is set to "Scroll". Set scroll direction of graph. Choose from "From Left" or "From Right"	×	×
Background	-	Fixed	Valid only when Display Update is set to "Scroll". Set movement of background when graph is scrolled. Currently it is fixed.	×	×
Blank Interval	-	0	Valid only when Display Update is set to "Redraw from Left". Set interval of old graph line and new graph line.	×	×

⑤ **Extended Properties (Action Setting of Line Graph)-X Axis Setting**

Below described are the settings of the X-Axis.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Display area	-	False	Fixed to False Scale interval display area of this part is fixed to "False".	×	×
Area Height	-	0	Fixed to "0"	×	×
Scale Style	-	Outside	- Outside Show scale outside axis - Inside Show scale inside axis - None Hide scale	×	×
Scale Unit	-	1	Scale interval of X axis	○	○
No. of Data	-	4	Number of data lines to display in X axis direction	○	○

⑥ Extended Properties (Action Setting of Line Graph)-Y Axis Setting

Below described are the settings of the Y-Axis.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action

Display area	-	True	- True
			  Show Y axis scale display area, scale, and scale value.
			- False
			  Hide Y axis scale display area and scale value. Scale will be shown.
				×	×

Area Width	-	30	Area Size (Width) In units of pixel only Specify in units of pixels	×	×

Scale Style	-	Outside	- Outside
			  Show scale outside axis
			- Inside
			  Show scale inside axis
			- None
			  Hide scale
			  (Scale value will not be shown also)
				×	×

Y-axis Scale Interval	-	10	Value display interval of Y axis	○	○
Scale Interval	-	5 Scale Each	Scale interval of Y axis	○	○
Characters	-	5	Digit displayed of Y axis scale Anything over this digit will not show.	○	○
Lower Limit	-	0	Minimum value displayed of Y axis	○	○
Upper Limit	-	100	Maximum value displayed of Y axis	○	○

Events

There are no corresponding events.

Methods

The Simple Graph creates a graph based on the data sent via Host Communication.

Below described are the communication commands to create a graph.

Method ID	Action Description
ADDLAST	Add data to end of graph data
ADDDATA	Add data to multiple lines
ALLCLR	Clear all data
DRAWAXIS	Change number of data to display and lower/upper display limit
GETAXIS	Obtain number of data to display and lower/upper display limit

* 　Please refer to "13.13 Communication Command Detail" for details.

Notices

* 　Link to the "Array Queue Type Memory" registered on the same screen as the Simple Graph itself.

* 　The number of the graph line to be displayed on the graph is the same as the CH number of Array Queue Type Memory linked to the Graph Parts.

* 　If Array Queue Type Memory's "Size" property is smaller than the Simple Graph Part's "No. of Data" property, the line will not be drawn to the right end.

Memory type settable to Link Data
Array Queue Type (Display Memory only)

4.13　Bar Meter

4.13.1　Bar Meters

This is a Part that displays the rates of the scale value.

Please link to a Numeric Type Memory when using.

Properties

① Standard Properties

Below described are the Standard Properties of the Bar meter.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	BarMeter	×	×
	Parts ID	NAME	BAR00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout * Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left Margin	-	10	×	×
	Right Margin	-	10	×	×
	Top Margin	-	10	×	×
	Bottom Margin	-	10	×	×
Color	Initial Color	-	White	×	×
	Background	BCOLOR	White	○	×
Link Data	Memory Type	-	(Blank)	×	○
	Memory ID	-	(Blank)	×	○
Image	Normal	-	(Blank)	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○

*　If the margin value is too large, it may not be displayed properly.

② **Extended Properties (Data)**

Below described are the settings related to the display of the Bar meter.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Number Of Division	-	5	Number of bars Choose between 1 to 200	×	×
Direction	-	Top to Bottom	Direction to proceed Choose from vertical (top to bottom, bottom to top), or horizontal (left to right, right to left)	×	×
Display Interval	-	3	Display interval of bars Choose between 0 to 2147483647	×	×

③ **Extended Properties (Settings)**

Below described are the settings related to the operations of the Bar meter.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
DISP UP Limit	-	2147483647	Display upper limit when Modbus memory is linked	×	×
DISP LOW Limit	-	-2147483648	Display lower limit when Modbus memory is linked	×	×
Bar Frame	-	With Frame	Set to show or hide the frame of each bar. Choose from "With Frame" or "Without Frame"	×	×
Rounding	-	Round Down	Decide value and method of lighting of each bar. Choose from round up, round down or rounding.	×	×

Make sure that Display upper limit is larger than Display lower limit.

④ **Extended Properties (Bar Color List)**

Below described are the settings of each bar color when lit.
You will be able to configure and confirm the bar color when values are input.
There are 2 ways to make the setting; by choosing from the palette, or by directly entering the color code.

Setting Procedure

Below described are the settings procedure of the Bar meter.

① Setting of Numeric Memory

The numeric memory is used to display the Bar meter.
You will need to create a numeric memory with the screen or the Global Memory when using the Bar meter.

② Setting of Bar Meter Parts

Open the "Advanced Properties Dialog" of the Bar meter and link it with the numeric memory set above.
Set the bar and background color, the direction the bar will precede, and the division number of the bar.
When using Modbus memory, it is necessary to set the "display upper limit value" and "display lower limit value" in addition to the above.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Memory Type Settable to Link Data
Numeric Type

Calculation formula for number of bars to light
Value/ ((Maximum value of Link Memory – Minimum value of Link Memory) / *Division number*) = Numbers to light

*   Link memory is a memory set in the link data.

*   If the calculated result is bigger that the division number, all bars will light.

*   If the calculated result is a negative number, than all bars will light off.

*   If not an integer, the lighting number will be based on the value rounding setting.

*   The link memory set first will be used for the maximum value and minimum value used in the calculation to determine the lighting number. The maximum and minimum value will not change with the change of link memory by "Link Data Setting" of "Action".

4.14 Picture Box

4.14.1 Picture Box

Pbx_0001
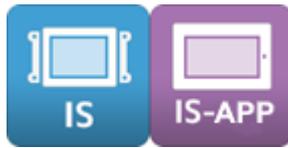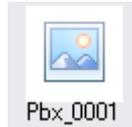
This is a Part for displaying images and drawing figures, such as lines, arrows, and rectangles. It can draw dots, lines, rectangles, circles, and image resources by Host Communication Commands"PA03 (Method Execution)". It can also be drawn from "Action".

Properties

① Standard Properties

Below described are the Standard Properties of the Picture Box.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Picture Box	×	×
	Parts ID	NAME	PIC00001~	Read only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Color	Background Color	BCOLOR	White	Read only	×
Image	Normal	-	-	×	○
Movement	Display Setting	VISIBLE	True	○	○

*   When Background Color and Image are set simultaneously, Image will be given priority

Events

There are no corresponding events.

Methods

Dots, lines, rectangles, circles and images from image resources can be drawn with the Host Communication of the Picture Box.
Below listed are the communication commands that can be used:

Method ID	Action Description
DPOINT	Draw a pixel on the specified coordinate
DLINE	Draw an angle or line between the specified two coordinates,
DCIRCLE	Draw a circle around the specified coordinate.
LPICTURE	Draw an image registered in the image file to the specified coordinates.

*   The upper left of the Part is the coordinate origin (0, 0).

*   Please refer to "13.13 Communication Command Detail" for details.

4.15　Figures
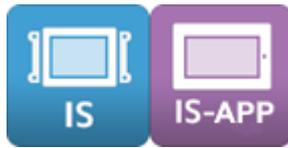
This is a Part for drawing figures.
You can draw figures such as lines, arrows, and rectangles.

4.15.1　Line Parts
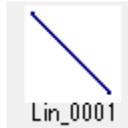
Simple lines can be drawn with the Line Parts. The angle of the lines can be changed freely by dragging the mouse to the desired angle.

Properties

① Standard Properties

Below described is the Extended Properties of the Line Parts.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Line	×	×
	Parts ID	NAME	LIN00001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

② Extended Properties

Below described is the Extended Properties of the Line Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Line Type	-	Solid	Select either "Solid" or "Dashed".	×	×
Line Color	-	Black	Select line color.	×	×
Arrow	-	None	Select arrow existence and position	×	×

*　The thickness of the line is 1 pixel.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Show/Hide of Parts will be repeated

The values of the horizontal and vertical position will be the red pixel shown below.

As a result, displays value of -6.

4.15.2   Arrow Parts
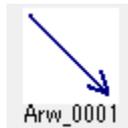
A simple line with an arrow can be drawn with the Arrow Parts. The angle of the line can be changed freely by dragging the mouse to the desired angle.

Properties

① Standard Properties

Below described are the Standard Properties of the Arrow Parts.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Arrow	×	×
	Parts ID	NAME	ARW00001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

② Extended Properties

Below described are the Extended Properties of the Arrow Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Line Type	-	Solid	Select either "Solid" or "Dashed".	×	×
Line Color	-	Black	Select line color.	×	×
Arrow	-	End Point	Select arrow existence and position	×	×

* The thickness of the line is 1 pixel.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

## Notices

Blink Action

Show/Hide of Parts will be repeated

The values of the horizontal and vertical position will be the red pixel shown below.

As a result, displays value of -6.

4. Parts

4.15.3   Rectangular Parts

A simple rectangle can be drawn with the Rectangle Parts

Properties

① Standard Properties

Below described are the Standard Properties of the Rectangle Parts.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Rectangle	×	×
	Parts ID	NAME	REC00001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○
	Blink Setting	BLINK	FALSE	○	○

② Extended Properties

Below described is the Extended Properties of the Rectangle Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Line Type	-	Solid	Select either "Solid" or "Dashed".	×	×
Line Color	-	Black	Select line color.	×	×
Paint Background	-	Fill	Choose to fill or not fill	×	×
Background Color	-	White	Choose color to fill	×	×

*   The thickness of the line is 1 pixel.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

Blink Action
Show/Hide of Parts will be repeated.

4.16   Tables
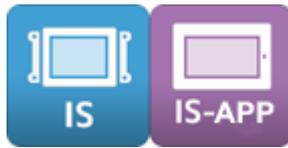
4.16.1   Table Parts

A simple table can be drawn with the Table Parts.

The table can be edited by the Extended Properties in the Advanced Properties Dialog.

Rows and Columns can be increased up to 30.

Properties

① Standard Properties

Below described are the Standard Properties of the Table Parts.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Table	×	×
	Parts ID	NAME	GRD00001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	-	×	×
	Height	-	-	×	×
Movement	Display Setting	VISIBLE	TRUE	○	○

*   If the row or column is changed, the height and width will also change.

② **Extended Properties**

Below described is the Extended Properties of the Table Parts.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Line Type	-	Solid	Choose from "Solid" or "Dashed"	×	×
Line Color	-	Black	Set color of table line	×	×
Cell Color	-	Fill	Choose from "Fill" or "No Fill"	×	×
Background Color	-	White	Choose color to fill	×	×

* The thickness of the line is 1 pixel.

* Filling pattern and the background color of the cell can be set for each cell.

* Line style and line color are set for the entire table.

Events

There are no corresponding events.

Methods

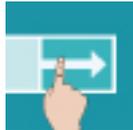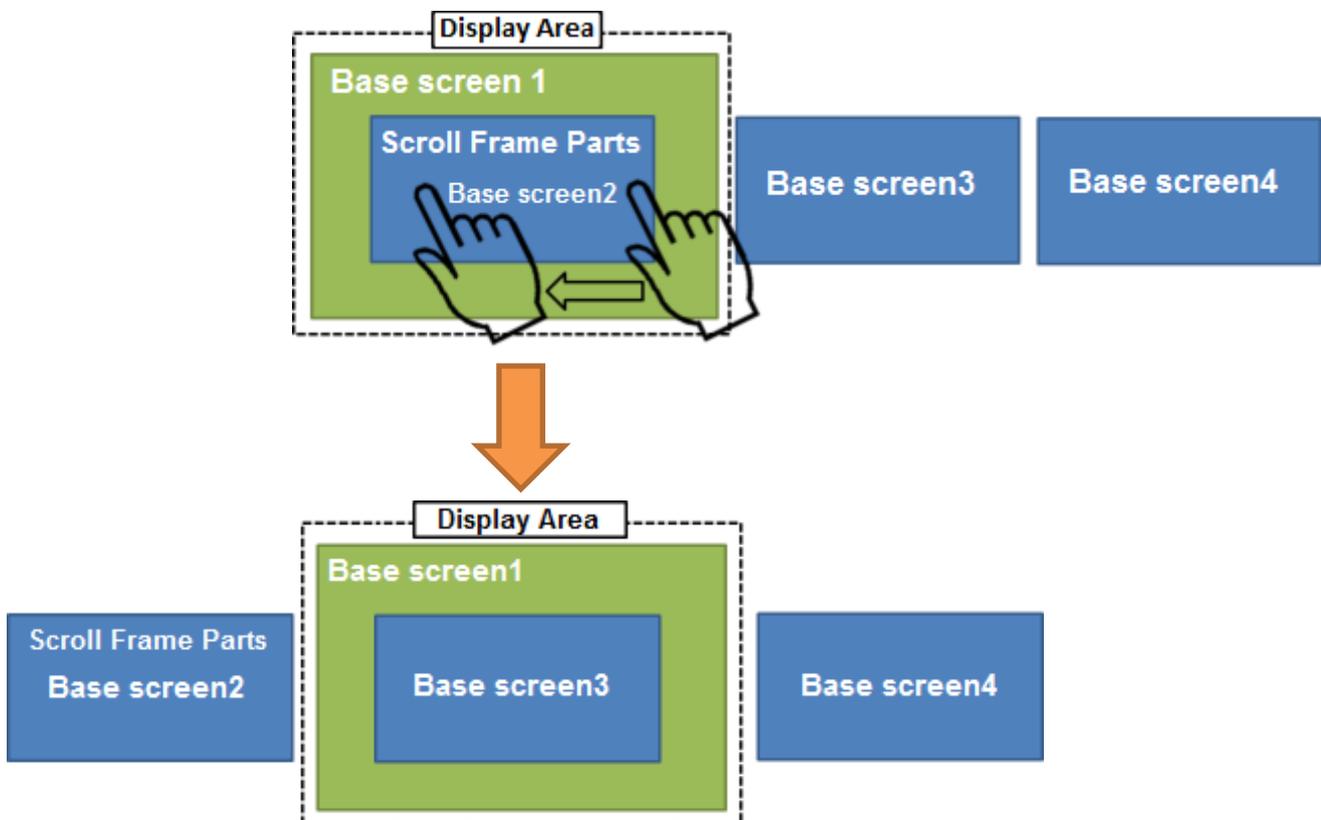There are no corresponding methods.

4.17 G Parts

Parts for gesture operations. You can use these parts only with IS-APP.

4.17.1 Scroll Frame

Internally scroll frame parts have multiple base screens, which you can scroll through with gestures on the visible portion.

Properties

① Standard Properties

Described below are standard properties of the Scroll Frame.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	ScrollFrame	×	×
	Parts ID	NAME	SCRFM001 -	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left	-	0	×	×
	Right	-	0	×	×
	Top	-	0	×	×
	Bottom	-	0	×	×
Color	Background	-	White	×	×
	Transparency	-	FALSE	×	×
Link Data *1	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

*1 Link Memory is set up with the currently displayed screen number (1 to the number of registered screens).

Change the value of Link Memory to change to the associated screen.

If you change to a value outside the range, it changes to the first screen.

Example:
When set up as follows

No.	Screen to Be Displayed In Frame	Switching Destination S
1	BAS00001(Screen)	
2	BAS00002(Screen)	
3	BAS00003(Screen)	

When using gestures to scroll

Current screen	Value set to Link Memory
BAS00001	1
BAS00002	2
BAS00003	3

When you change Link Memory value

Value set to Link Memory	Displayed screen
1	BAS00001
2	BAS00002
3	BAS00003
4 *	BAS00001 *

* If outside the range, displays the first screen.

② Scroll Screen

For registering screens and setting up operations.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Screen to be Displayed in Frame [*1]	-	Unregistered base screen	Set up the base screen to display. You cannot set up the same base screen multiple times. You can register a maximum 50 screens [*2]	×	×
Switching Destination Screen	-	(Blank)	Set up the screen to display when a part is tapped (or double-tapped).	×	×
Scroll Direction	-	Horizontal	Specify the scroll direction. You can select from Vertical, Horizontal, or both directions.	×	×
Operation on Scroll End	-	Stop at End	When on the last screen and scrolling to the next screen, you can choose to either stop at the last screen or return to the first screen.	×	×
Switch to Frame Screen	-	No check	Set up a condition for changing screens. Select from Switch by Tap / Switch by Double Tap / none.	×	×
Display Indicator [*3]	-	No check	Select to display or hide the indicator	×	×

*1   In a popup screen, you cannot set up the [Screen to display in frame].

*2   Depending on the structure of registered screens, it could become smaller.

*3   If there are a large number of registered screens, all the indicators will not display.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Supported Gestures

Gesture	Description
Pan/Flick	Displays the next screen set up in the [Screen to display in frame] list.
Tap/Double tap	Changes to the screen set up in the [Change screen destination] field.

Notices

- Between parts touch operations and gesture operations, the gesture operation takes priority.
- Use screens with up to a maximum 2 levels of nesting.

Precautions on screens registered as [Screen to display in frame]
- When the base screen with a scroll frame is displayed the first time, all the OnDisplay events for all the screens that can display in the frame are run.   - Additionally, all those screens are treated as current screens. (Local data is enabled, and you can define as the communication target for host communication)   - When the size of the registered screen is larger than the scroll frame, areas that exceed the frame size do not display. Match the size of base screens and scroll frame parts.   - You cannot display the same base screen in a scroll frame multiple times.   - You cannot display the current base screen in the scroll frame.   - You cannot display the same base screen in multiple scroll frames.

Memory Type Settable to Link Data
Numeric type (Global Memory only)

4.17.2   Screen Zoom Frame

You can use Screen Zoom Frame parts to set up a different type of base screen that is larger than parts. With internal screens, you can use gestures to scroll to areas that are not visible, as well as scaling up and down.

Properties

① **Standard Properties**

The following describes the Standard Properties of the Screen Zoom Frame.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	ScreenZoomFrame	×	×
	Parts ID	NAME	SCNZM001~	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○

② Displayed Screen

Set up the screen to display in a part.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Base Screen ID	-	(Blank)	Set up the base screen to display in a Screen Zoom Frame[*1].	×	×
Show Indicator	-	No check	When you select the check box, displays the magnification level (zoom) and the internal screen position.	×	×
Initial Scale (%)	-	Automatic	Set up how much the internal screen is magnified (zoomed) on initial display. If you select [Automatic], the magnification is the minimum[*3].	×	×
Initial Location X coord	-	0	Set up the position of the internal screen on initial display. When the [Initial Scale] is Automatic, the initial location are (0,0).	×	×
Initial Location Y coord	-	0		×	×
Screen Touchable on Start	-	Check	Set up to enable touch of internal screen parts on initial display. If the check box is cleared, then you cannot touch display screen parts.	×	×
Touch Scale Limit (%)	-	0	When the screen magnification falls below the defined magnification level, touch on the internal screen is disabled. When set to 0, [Touch Scale Limit] is disabled.	×	×
Touch Disabled Icon	-	(Blank)	Register the icon image[*4] that indicates internal screen touch is disabled. The icon displays in the bottom right of the Screen Zoom Frame. Nothing is displayed there when it is not set up.	×	×
Min Scale(%)	-	10	Set up the minimum scale for the display.[*3]	×	×
Maximum Scale (%)	-	1000	Set up the maximum scale for the display.	×	×

*1   You cannot set up a popup screen.

*2   Even if the check box is selected, when the size of parts is small they will not display.

*3   The minimum size possible is the minimum scale or until you reach the magnification where the horizontal or vertical display is completely visible.

*4   The image background becomes transparent.

③ **Operation Option**

Enable when using gestures.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Scaling	-	No check	Select the check box when scaling the internal screen up or down with gestures.	×	×
Pan Gesture	-	No check	Select the check box when scrolling the internal screen with gestures.	×	×

④ **Link Data**

Registers Global Memory for acquiring and retaining settings for internal screen display magnification, display coordinates, and enable/disable touch.

[Acquisition/Retained]

The current value is shown in real time in the referenced Global Memory. You can link the Global Memory with a numeric display part for display on the screen, or get values with Host Communication. Also, items linked with Global Memory are retained even if there is a screen transition.

[Note]

- Set up screen zoom frame and Reference Memory so it is 1 to 1.

- Do not change Reference Memory values with actions or host communication.

[Configuration]

By changing the Global Memory value for defined settings, you can change the display magnification or coordinates with gestures or other methods.

After setting the values for each instruction memory, setting to 1 the memory for [Trigger on Coordinate or Magnification change] changes the display. After the change to the display is complete, the [Trigger on Coordinate or Magnification change] is reset to 0.

[Note]

- Before displaying the screen, do not set [Trigger on Coordinate or Magnification change] to the value 1. If the value is 1, after the screen displays you need to manually change the value to 0.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Scale (%) Status Reference Memory	-	(Blank)	Set up the Global Memory magnification reference. When set up, the magnification is retained even during screen transition.	×	×
Scale (%) Control Instruction Memory	-	(Blank)	Set up the Global Memory magnification specification.	×	×
X coord Status Reference Memory	-	(Blank)	Set up the Global Memory X coordinate reference. When set up, the X coordinate is retained even during screen transition.	×	×
X coord Control Instruction Memory	-	(Blank)	Set up the Global Memory X coordinate specification.	×	×
Y coord Status Reference Memory	-	(Blank)	Set up the Global Memory Y coordinate reference. When set up, the Y coordinate is retained even during screen transition.	×	×
Y coord Control Instruction Memory	-	(Blank)	Set up the Global Memory Y coordinate specification.	×	×
Trigger on Coord, or Scale change Control Instruction Memory	-	(Blank)	When the set Global Memory is 1, it reflects the value registered in support memory[1]. After the value is updated, memory is automatically reset to 0.	×	×
Screen Touch enabled Status Reference Memory	-	(Blank)	Set up the internal screen's Global Memory enable/disable status flag reference. 0 indicates disabled; 1 indicates enabled. When set up, the enable/disable status is retained even during screen transition.	×	×
Screen Touch enabled Control Instruction Memory	-	(Blank)	Set up the internal screen's Global Memory enable/disable status specification reference. Set 0 to disable; set 1 to enable.	×	×

*1 Only items set up with Global Memory are reflected.

*1 Even if you write the value 1 again before the value is reflected (before it returns to 0), the update is done just once.

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Supported Gestures

Gesture	Description
Pan/Flick	Scrolls the internal screen.
Pinch	Scales the internal screen up or down.

Notices

- Between parts touch operations and gesture operations, the gesture operation takes priority.
- When the Font Type used by the part on the internal screen is System Font, the font size automatically changes to match the magnification.
- Font sizes you can set up are 8 to 256. Zooming in to large characters and zooming out from small characters may not display properly.
- Set up so that the internal screen width multiplied by the magnification, and the internal screen height multiplied by the magnification, do not exceed 2000. If you exceed this value, it may not display properly.
- If the position of the part is not calculated as an integer during scaling, it is corrected to the closest integer.
  (The position may change within plus or minus 1 pixel)
- Use screens with up to a maximum 2 levels of nesting.

In the simulator, you can use the mouse for gestures that require two-point touch.

Gesture	Mouse operation
Pinch	Mouse Wheel

4.17.3　Image Zoom Frame

Part that displays images.

You can use gestures to scale up/down, move, and rotate images.

Also, you can change the image with action or host communication commands.

Properties

① Standard Properties

The following describes the standard properties of the Image Zoom Frame.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	ImageZoomFrame	×	×
	Parts ID	NAME	IMGZM001 -	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Color	Background	-	White	×	×
	Transparency	-	FALSE	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

② Image

Set up the image and initial display settings.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Image ID	IMNAME	(Blank)	Select the image to display.	○*1	○*2
Display Indicator	-	No check	When you select the check box, displays the indicator for the image magnification and position. *2	×	×
Init Scale (%)	-	Automatic	Select to set initial scale either automatically or manually. When you select automatic, the horizontal and vertical magnification are adjusted automatically to display the whole part.	×	×
H. Scale	-	(Invalid)	When initial scale is set to manual, set up the horizontal magnification and vertical magnification. Select from 1 to 1000.	×	×
V. Scale	-	(Invalid)		×	×
Initial Location X coordinate	-	0	Set up the image's initial position in the part. Select from -10000 to 10000.	×	×
Initial Location Y coordinate	-	0		×	×

*1   When the image is changed, it displays using its initial values for position and rotation angle.

*2   Even if the check box is selected, when the size of parts is small they will not display.

③ **Operation Options**

Select the operation to use: scale, move, or rotate.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Scaling	-	No check	When selected you can use gestures to scale images up and down.	×	×
Min Scale (%)	-	(Invalid)	The minimum scale when scaling the image.	×	×
Maximum Scale (%)	-	(Invalid)	The maximum scale when scaling the image.	×	×
Move	-	No check	When selected you can use gestures to move images.	×	×
Rotation	-	No check	When selected you can use gestures to rotate images.	×	×
Tap Operation	-	Disable	Operation when tapped. You can select from Invalid, Back To Initial Value, or Expand.	×	×

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Supported Gestures

Gesture	Description
Pan	Moves the image.
Pinch	Scales the image.
Rotate	Rotates the image.
Tap	Runs the operation defined in the Tap Operation field.

Notices

In the simulator, you can use the mouse for gestures that require two-point touch.

Gesture	Mouse operation
Pinch	Mouse Wheel
Rotate	Right-click and drag

4.17.4　Grid Button

You can set up multiple buttons on parts. Buttons adjust automatically, and you can use gestures to change between buttons that cannot be displayed.

Properties

① Standard Properties

The following describes the standard properties of grid buttons.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	GridButton	×	×
	Parts ID	NAME	GRDBT001 -	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
	Left	-	0	×	×
	Right	-	0	×	×
	Top	-	0	×	×
	Bottom	-	0	×	×
Color	Background	-	White	×	×
	Transparency	-	FALSE	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×

② **Grid Button**

You can set up the size and number of buttons in a part, scroll operation, and so on.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Button Size	-	Width 32 / Height 32 *1	Size of one button in a part.	×	×
Button Shown	-	Col 1 / Row 1	Number of buttons displayed in the part. If you set up icons greater than the number of buttons, you can scroll to display them.	×	×
Scroll Direction *2	-	Lateral	If there are more icons than buttons, you can set up the scroll direction. You can select from horizontal or vertical.	×	×
Scrolling Action *3	-	Pixel Scroll	If there are more icons than buttons, you can set up the scroll action. You can select from pixel scroll, icon scroll, or screen scroll.	×	×

*1 If you reduce the button size too much, touch operation may be difficult.   A size of 32 pixels or larger is recommended.

*2 The icons line up differently depending on the scroll direction.

Lateral   Longitudinal
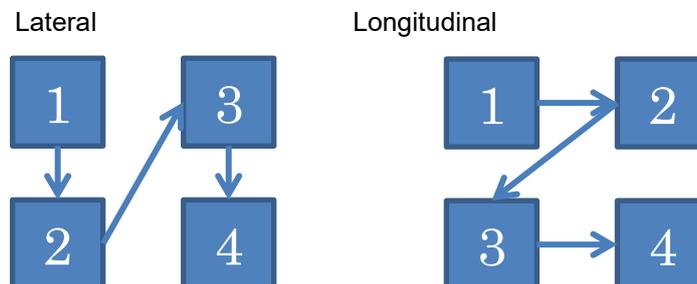
*3 The scroll stop position is automatically adjusted depending on the [Scroll Action] setting.

Configuration	Behavior
Pixel Scroll	No adjustment.
Icon Scroll	When it stops at a position where all the icons do not display, the position is adjusted to where they display.
Screen Scrolling	Adjusts the display in the defined units.

③ Icon Displayed In Control

You can set up buttons with things like the icon image that is displayed when tapped, or the subroutine that is run when tapped.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Icon	-	(Blank)	Set up the icon displayed on a button. Select the icon from the Image Resource.	×	×
Title	-	(Blank)	Set up the title displayed on a button. Define the title via either the String Resources or direct input.	×	×
Subroutine	-	(Blank)	Set up the subroutine that is run when the button is tapped.	×	×

④ Title

For a button's title, set up its properties such as position and color.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Title Position	-	None	Title display position. Select from none, center, under or right.	×	×
Character	-	Black	Title text color.	×	×
Background	-	White	Title background color.	×	×
Transparency	-	True	When True, the background color is transparent.	×	×
Font Size	-	16	Font size.	×	×

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Supported Gestures

Gesture	Description
Pan/Flick	When there are buttons that cannot display in the screen, you can scroll to them.
Tap	Perform this on a button to execute the registered subroutine.

4.17.1 Slider
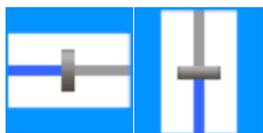
You can set the value by moving the handle left/right or up/down.

Properties

① Standard Properties

The following describes the standard properties of slider.

Category	Property Name	Property ID	Default Value	Change with Host Communication	Change with Action
General	Parts Type	-	Slider	×	×
	Parts ID	NAME	SLD00001 -	Read Only	×
	Comment	-	(Blank)	×	×
Layout *Set in units of pixels	H. Pos.	-	-	×	×
	V. Pos.	-	-	×	×
	Width	-	48	×	×
	Height	-	48	×	×
Movement	Enable Setting	ENABLED	TRUE	○	○
	Display Setting	VISIBLE	TRUE	○	○
	Touch Sound	-	Pattern 6	×	×
Link Data	Memory Type	-	(Blank)	×	×
	Memory ID	-	(Blank)	×	×

② Slider

Sets the behavior of the slider.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Direction (horizontal/ vertical)	-	Left to Right/ Bottom to Top	Sets the direction in which the value increases when the handle is moved.	×	×
Step Size	-	1	Sets the unit value of the snap position when moving the handle.	×	×
Base Value	-	0	Sets the reference value of the snap position when moving the handle.	×	×
Max Value	-	100	slider upper limit	×	×
Min Value	-	0	slider lower limit	×	×

③ Image

Sets the visibility of the slider.

Property Name	Proper ty ID	Default Value	Description	Change with Host Communication	Change with Action
Normal	-	Gray	Set the slider image in the upper limit direction from the handle position.	×	×
Action	-	Blue	Set the slider image in the lower limit direction from the handle position.	×	×
Handle	-	White	Sets the handle image.	×	×
Disable Handle	-	Black	Sets the handle image when disabled.	×	×
Handle Width (horizontal/ vertical)	-	24/ 48	Sets the width of the handle.	×	×
Handle Height (horizontal/ vertical)	-	48/ 24	Sets the height of the handle.	×	×
Transparency*	-	Flase	Transparency settings for sliders and handles.	×	×

* If the transparency setting is enabled, the part of the same color as the upper left dot of the bitmap of each slider and handle will be transparent.

Set the image as shown below.

Property Name	Image example
Normal	
Action	
Handle	
Disable Handle	

Display the slider using the set image.

Enabled	
Disabled	

Events

Event	Description
Press	Generated when pressed
Release	Generated when released For slider parts, the handle operation continues even if you slide your finger out of the part area. Therefore, unlike other parts, there is no Leave event, and a Release event occurs under either condition.

*   Please refer to 6. Events for details.

Methods

There are no corresponding methods.

Supported Gestures

Gesture	Description
Pan	Handle position can be set.
Tap	Moves the handle to the tapped position.

Notices

-   When a position without a handle in the slider component is touched, the handle moves to that position and a value is set.
-   If a value is set by a method other than handle operation (action, communication, etc.), the value is not snapped by the step size, and the value is set as it is.
-   When disabled, handle operation cannot be performed, but if a value is set by other than handle operation (action, communication, etc.), the handle position will be updated.

5. Memory

Chapter Contents

5.1 Memory

The internal variables used in InfoSOSA are memory.

There are types, such as Numeric Type for numeric values, and String Type for Strings.

Action and Host Communication Command are used to change the values and the properties.

There are two types, Screen Memory and Global Memory.

For memory dedicated to Modbus communication that is not listed in this section, please refer to the separate "InfoSOSA ModbusDeviceConnection".

5.1.1 Numeric Type

The Numeric Type is the memory that uses numeric values that treats numeric values as signed integers.

There are Boolean types, Byte types, Word types, Double Word types and the numerical values vary.

Type	Numerical Range
Bool	Only 2 values, 'True,1' or 'False, 0'
Byte	1 Byte signed integer　(-128 to 127)
Word	2 Byte signed integers　(-32,768 to 32,767)
Double Word	4 byte signed integer (-2,147,483,648 to 2,147,483,647)

Properties

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
Memory ID	NAME	MEM00001~ GME00001~	Used to manage parts on screen. Refer to 2.2.2 ID Changing Rules when changing IDs.	Read Only	×
Comment	-	(Blank)	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting Displayed after parts ID at time of Action setting or Link setting.	×	×
Value	VALUE	0	Value stored in memory.	○	○
Min. Value[1]	-	-	Setting of the smallest value that can be obtained by the target memory.	×	×
Max. Value[1]	-	-	Setting of the largest value that can be obtained by the target memory.	×	×
Underflow[1]	-	Retention	Prescribes action for when target memory value exceeds smallest value set.	×	×
Overflow[1]	-	Retention	Prescribes action for when target memory value exceeds largest value set.	×	×
SRAM	-	No Retention	This item is for older versions. Currently, there are no supported models.	×	×
OnChangeVa	-	Not available	When set to "Available", the	×	×

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
lueEvent			action can be set for the "On Change Value" event.		

*1   Only Byte, Word, and Double Word Type can be set.

Events

Event	Description
On Change Value	Occurs when the value changes.

*   Please refer to "6 Events" for details.

Methods

Numeric Type of Global Memory can be counted up or down automatically to the appointed value by the Host Communication command.

Method ID	Description
AUTOCNT	Count up (down) to set value

*   Please refer to "13.13 Communication Command Detail" for details.

*   Only Global Memory can be used.

Notices

● Action when value outside of range is specified:

Copy source/ Type before calculation	Copy source/ Storage Type after calculation	Description
Byte/ Word/ Double Word Type	Boolean Type	If copy source is 0, than 0 and 1 for anything else.
Byte/ Word/ Double Word Type	Byte/ Word/ Double Word Type	Value is set to Overflow/Underflow setting of change destination when changed to value outside of range

● Property of Minimum value, Maximum value, Underflow, and Overflow.

Property Name	Description
Min. Value	Minimum value of value obtained with target memory within numeric value range according to each type. If target memory value undergoes lowest limit of minimum value, it will move accordingly to action set at underflow.
Max. Value	Maximum value of value obtained with target memory within numeric value range according to each type. If target memory value over-goes highest limit of maximum value, it will move accordingly to action set at Overflow.
Underflow	Prescribes action for when target memory value exceeds smallest value set. 3 types of action can be set Retention: Saves value right before underflow occurs. (No re-calculations) Loop: Underflow memory subtracted from maximum value will be the value of target memory. Clip: Set minimum value to target memory

Overflow	Prescribes action for when target memory value exceeds largest value set. 3 types of action can be set Retention: Saves value right before overflow occurs. 　　　No calculations Loop: Overflow memory added to minimum value will be the value of target memory. Clip: Set maximum value to target memory

5.1.2　String Type

A memory type that uses strings. Maximum of 256 characters can be used.

Properties

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
Memory ID	NAME	MEM00001~ GME00001~	Used to manage parts on screen. Refer to 2.2.2 ID Changing Rules when changing IDs.	Read Only	×
Comment	-	(Blank)	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting Displayed after parts ID at time of Action setting or Link setting.	×	×
String	TEXT	0	String stored in memory	○	○
String Length	-	10	Maximum number of strings stored in memory	×	×

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

- Single-byte and double-byte character is counted as 1 character.
- New line will counted as 2 characters.

5.1.3　Timer Type

This is a memory type that automatically generates Timer events after a specific time elapses.

Properties

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
Memory ID	NAME	MEM00001~ GME00001~	Used to manage parts on screen. Refer to 2.2.2 ID Changing Rules when changing IDs.	Read Only	×
Comment	-	(Blank)	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting Displayed after parts ID at time of Action setting or Link setting.	×	×
Time up Value	TIMEUP	1.0	Time until Timer event is generated. 0. Can be set between 1 to 2147483.0 (sec)	○	○
Loop Count	LOOPCNT	0	Number of Timer Events generated Set value between 0 and 32767. The timer event will continue to generate until stopped when set to "0".	○	○
Timer Status	STATE	Stop	Set timer action status Set either "Stop" or "Start"	○	○

Events

Event	Description
Timer	Generated when Screen display is complete

*　Please refer to "6 Events" for details.

Methods

There are no corresponding methods.

Notices

- There might be a time lag in the seconds set if other process is being executed when an event is generated because it will be generated after completing the prior process.
- If action that cannot be completed during the interval of time-up value of the timer type memory is being registered, the execution interval will be delayed.
- If a small value is set to time-up value, the system may become slow due to the action set on timer being generated repeatedly.

5.1.4　　Array Queue Type

This is a Memory type for Simple Graph Part. It is linked with the Simple Graph when used.

Properties

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
Memory ID	NAME	MEM00001~	Used to manage parts on screen. Refer to 2.2.2 ID Changing Rules when changing IDs.	Read Only	×
Comment	-	(Blank)	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting. Displayed after parts ID at time of Action setting or Link setting.	×	×
CH	-	1	Complies to CH number of Simple Graphs	×	×
Size	-	10	Size that can be saved in Simple graph data. If 100 is set, it can save 100 data.	×	×

Events

There are no corresponding events.

Methods

There are no corresponding methods.

Notices

● Array queue type global memory is an item for the old version. Currently, there is no compatible model.

5.2   Screen Memory and Global Memory

There are 2 types of memory; one is Screen Memory and the other is Global Memory. The differences between the two are as listed below.

Item	Screen Memory	Global Memory
Handling of Data	Local Data	Global Data
Timer Type	Only works when related screen is displayed.	Always works
Array Queue Type	○	×
Global Memory Group	×	○
AUTOCNT Method	×	○

*   Array queue type global memory is an item for the old version. Currently, there is no compatible model.
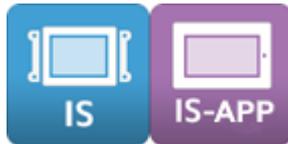
5.2.1　Work with Data

Screen Memory is local data that can be used only on set screens.
It initializes when displayed so it should be used to store temporary data for processes that will complete within that screen.
Global Memory is global data that can be used from any screen.
Use the Global Memory for data to be used in multiple screens.

5.2.2　Timer Type

Screen Memory will function only when screen it belongs is displayed.
Global Memory will work regardless of the display screen.
Also, it is not possible to use the local data to the operation target of the Global Memory action.

5.2.3　Array Queue Type

Array Queue Type can be used only with Screen Memory.
*　Array queue type global memory is an item for the old version. Currently, there is no compatible model.

5.2.4　Global Memory Group

Global Memory can be grouped and operated together.

5.2.5　AUTOCNT Method

AUTOCNT Method can be used only with Global Memory.

5.3   Global Memory Group
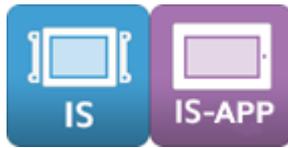
Global Memory Group is a function to manage multiple Global Memories as a group.
The grouped Global Memory can be setup/ obtained together with the Host Communication Command.

Properties

Below properties can be set up with Group Setting.

① **General**

Set ID and Comment of Group Memory.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Group ID	NAME	GRP00001~	ID given when added to group or copied Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_).	Read Only	×
Comment	-	(Blank)	0 to 256 characters can be input freely Displayed after parts ID at time of Action setting or Link setting Displayed following the memory ID of Action or at link setting.	×	×

[Note]

*   The same Group ID cannot be used.

② **Data**

Register or release Grouping of Global Memory.

Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
Memory to Register	-	-	Global Memory that can be registered to group Bool, byte, word, double word and String can be displayed.	×	×
Registered Memory	-	-	Global Memory that is .registered to group	×	×
"→"	-	-	Register to group selected memory.	×	×
"←"	-	-	Release from group selected memory.	×	×

*   Registered memory will be sorted in order according to the Global Memory number.

6. Events

6.1 Events

Events are what trigger the Action to be performed.

Events are generated with Touchscreen operations, timers and others.

Various and multiple events can be used on 1 part.

Multiple actions can be set to each event.

Action setting can be done via "Action Setting" of parts or Timer Type Memories.

For events dedicated to Modbus communication that are not listed in this section, please refer to the separate "InfoSOSA ModbusDeviceConnection".

6.2 List of Events That You Can Use With InfoSOSA

Below is the list of events that can be used with the InfoSOSA.

6.2.1 Events Generated by Touch Input

Event Name	Event ID	Description
Press	PRESS	Generate when part is touched or sheet key is pressed
Release	RELEASE	Generate when released after part is touched or released after Sheet Key is pressed
Leave	LEAVE	Generate when touch area is outside of part by sliding a finger
LongPress	LONGPRESS	Generated once when pressed and held down
Repeat Press	REPEATPRESS	Generated once when pressed and held down and generated repeatedly while kept held down.
Enter	ENTER	Generate when the ENTER key of numeric keypad has been pressed
Cancel	CANCEL	Generate when the ESC key of numeric keypad has been pressed
On	ON	Generate when the result is ON after the switch is touched
Off	OFF	Generate when the result is OFF after the switch is touched

6.2.2 Events Generated by Others

Event Name	Event ID	Description
Timer	TIMER	Generate when the time set in TimeUp value of the timer type memory has elapsed
On Display	ON_DISPLAY	Generate at the time of change screen or the Pop-up screen is completed.
On Load	ON_LOAD	Generate just before the change screen or Pop-up display is performed.
On Change Value	ON_CHANGE	Occurs when the value of global memory changes when the value change event is set to "Available".
Data Check Complete	DATACHKCOMP	Occurs when the data check is complete.

6.3   List of Events Generated by Parts/ Memories

Below is the List of Events generated by Parts/Memories.

*   Parts not in the list do not correspond to events.

Events	Parts							
	Button	NoImage Button	Touch screen Button	Switch	Image Multi State Switch	Color Multi State Switch	Numeric Keypad	Character Display Parts
Press	○	○	○	○	○	○		○
Release	○	○	○	○	○	○		○
Leave	○	○	○	○	○	○		○
Long Press	○	○	○	○				○
Repeat Press	○	○						
Enter							○	
Cancel							○	
On				○				
Off				○				
Timer								
On Display								
On Load								
On Change Value								
Data Check Complete								

Events	Parts		Memory				
	Number Display Parts	Telop	Numeric type*1	Timer	Sheet-key Pad	Screen*2	Global
Press	○	○			○		
Release	○	○			○		
Leave	○	○					
Long Press	○	○			○		
Repeat Press					○		
Enter							
Cancel							
On							
Off							
Timer				○			
On Display						○	
On Load						○	
On Change Value			○				
Data Check Complete							○

*1 Refers to Booleans, bytes, words, and double words.

*2 Refers to Base Screen and Pop-up Screen.

6.4 Event Details
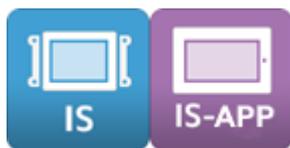
Below described are the details of the events.

There are some events that will require you to setup the Extended Properties of Parts in order to be able to use it.

Events that need to be setup include Long Press, and Repeat Press.

6.4.1 Press

Press events are triggered at the instant you touch.

However, it will be generated only when you touch the part area from a non-touched state.

For example, if you slide your finger from outside the part to the part area, nothing will occur.

6.4.2 Release/Leave

Release events are triggered the moment you release your finger.

However, it will be generated only when you release your finger from inside the part after the Press event.

For example, if you slide your finger outside the part area, nothing will occur.

In that case, Leave event will occur instead.

Either Release or Leave event will occur and not simultaneously.

Below described are examples of the Release and Leave events.

[Example 1]

   Move the motor while the button is pressed.

   Please setup as below:
- Set "Notify event to host" to Press, Release, Leave events of Builder.
- Host will start motor upon receipt of Press event from the Builder and stop the motor with the Release event or the Leave event.

   For Release event only, when the finger is slid and released, the motor would continue to operate, so be sure to set to stop for Leave also.

   However, if the following operation is performed by Host Communication or Timer event, neither the Release event nor the Leave event will occur.
- Screen transition
- Enabled Touchscreen
- LCD Back light OFF (including auto-OFF)

[Example 2]

Perform action when button is pressed and released; but do not perform if slid and released.

Setup as below:

- Do not set action to Press Event
- Set action to Release Event
- Do not set action to Leave Event

If set as above, the action will not be implemented if the finger slides outside the button even after pressing the button.

Caution

Note that if any of the following operations are performed during part operation (after Press occurs and before Relese/Leave occurs) with a higher-level communication, Timer event, OnChageValue event, etc., the corresponding Relese event and Leave event will not occur.

- **Screen transition (including pop-up close)**
- **Disable "VISBLE" setting**
- **Disable "ENABLED" setting**
- **Touch panel disabled**
- **LCD backlight OFF (including auto OFF)**

Notices

Slider parts continue to operate their handles even when a finger is slid outside the part area. Therefore, unlike other parts, there is no Leave event, and the Release event is fired under either condition.

6.4.3   Long Press

Long Press event is generated only once by continuously touching the same part for more than the time set. Time until the event occurs can be set from the "Long Press Events" property of the parts. The number of seconds can be set at 0 to 30 seconds.
If it is set to 0, Long Press event will not occur.
Below shown is the property setting examples.
● Long Press Events/Holding Time: 5 seconds
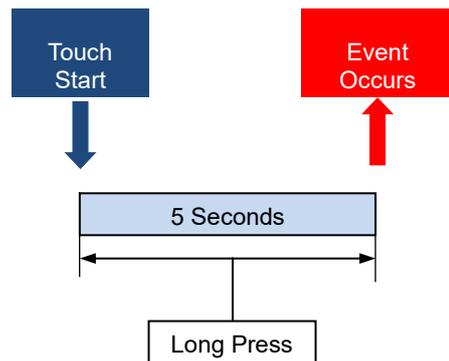
*   Repeat Press Event cannot be set for parts that have Long Press Events set.

Property

Property of "Long Press" is set from "Extended Properties" of "Advanced Properties Dialog".

Notices

If other process is being conducted at the time event is generated, a small time lag (seconds) will occur due to the event generating after the undergoing process is complete.

6.4.4　Repeat Press

Repeat Press event is a recurring event generated when same part is kept touching.

While the parts are being touched, the event will occur infinitely.

Time until the event occurs can be set in the "Start Time" in the property of each Part .

Start time can be set between 0 to 30 seconds.

If 0 is set, Repeat Press events will not occur.

Also by setting the "Minimum Interval" property, and the "Step Up" property, the interval of events can be changed. Below is the property setting examples.

● Interval: 0.8 seconds

● Minimum Interval: 0.2 seconds

● Step-up: 0.3 seconds

Touch start	Event Generated (1st time)	Event Generated (2nd time)	Event Generated (3rd time)	Event Generated (4th time)	Event Generated (5th time)

Start Time	Interval	Event Interval -Step Up	Minimum Interval
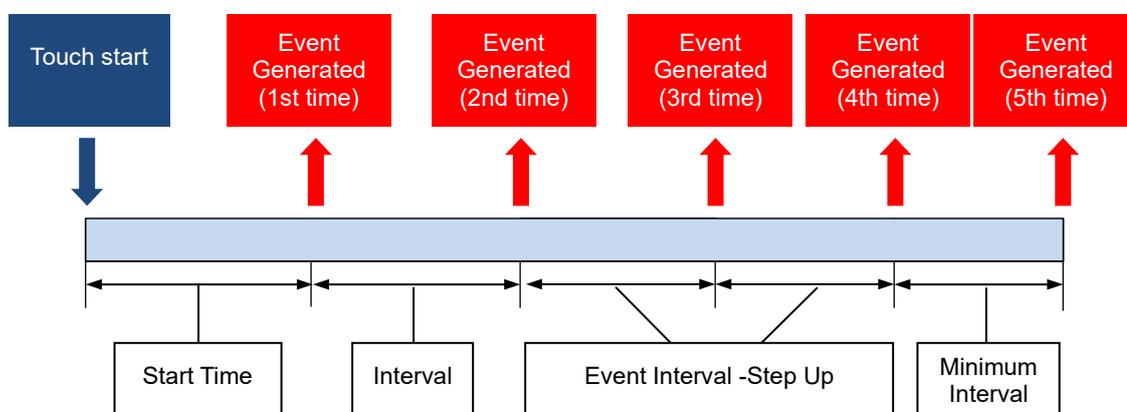
*　　When Repeat Press event is set to a part, the Long Press Event cannot be set.

Properties

The properties of "Start Time", "Minimum Interval", and "Step Up" can be set from "Extended Properties" of the "Advanced Properties Dialog".

Notice

If other process is being conducted at the time event is generated, a small time lag (seconds) will occur due to the event generating after the undergoing process is complete.

6.4.5　Enter/Cancel

Enter/Cancel Event is an event dedicated for the Numeric Keypad

Enter event is generated when ENTER of the Numeric Keypad is touched.
The input value gets fixed and the action set to the Enter event is processed.

Cancel event is generated when ESC of the Numeric Keypad is touched.
The input value gets discarded and the action set to the Cancel event is processed.

6.4.6　On/Off

On/Off Event is an event dedicated for the switch.
The Switch Part, when touched, switches repeatedly the ON and OFF state.
When touched, the On event is generated when OFF state switches to ON state, and the Off event is generated when ON state switches to OFF state.

The order events are generated when the switch is taped twice:

Order	Event	Description
①	Press	Generated first when touched.
②	On	Generated when the switch value turns ON at touch
③	Release	Generated when finger is released
④	Press	Generated first when touched.
⑤	Off	Generated when the switch value turns OFF at touch
⑥	Release	Generated when finger is released

[Switch State]

ON

②On　　⑤Off

OFF

[Touch State]

①Press　　④Press

Touched

③Release　　⑥Release

Not Touched
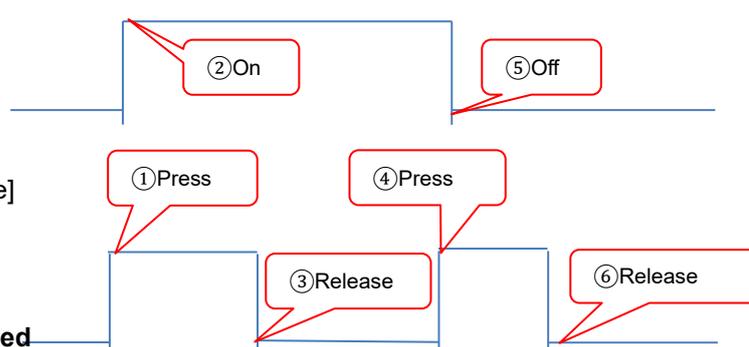
Notices

When ON/OFF is switched with Action or Host Communication, On/Off event will not be generated.

6.4.7　Timer

Timer event is an event that is generated with the elapsed time that has been set.

Setting Procedure

When using the Timer event, you will need to create a Timer Type Memory on Screen Memory or Global Memory.

Setting can be done in the "Advanced Properties Dialog" of the Screen Memory or Global Memory.

Property Name	Property ID	Default Value	Description	Change after Download	
				Host Communication	Action
Time Up	TIMEUP	1.0	Time (seconds) until the Timer event is generated Specify values between 0.1 and 2147483.0	○*	○*
Loop Count	LOOPCNT	0	Number of times that generate Timer Event Set value between 0 and 32767. Specify values between 0 to 32767 Timer events will generate repeatedly when set to 0.	○	○
Timer State	STATE	Stop	Specify initial operation state of Timer. Choose from Stop (stop state) or Start (operation state).	○	○

● When the initial state of the timer status is set to "Start" in Builder, it will operate as follows:

[Screen Memory]

It will operate when the screen that the memory is registered to is displayed.

[Global Memory]

The timer will operate at the same time the InfoSOSA startup completes.

● When changing the timer state with the Host Communication Command/Action, use value of "0" for stop and value of "1" for start.

● When the timer status is set to "stop", Timer event will not occur as long as the Timer status is changed to "start" by Action or Host Communication.

● When the Loop event occurs to the number of loops set, the Timer state automatically changes to "stop".

● When timer state is change to "stop" during operation, it will return to the initial state.

＊ It cannot restart from the middle of the state.

● When the time-up value is changed during operation via Host Communication or Action, it will be specified in milliseconds.

＊ If you want to set the 5 seconds, set 5000.

● When Loop count or the Time Up Value is changed during operation, the timer will continue counting. It will be reflected from the next time-up second.

＊ If time-up value is change to 30 seconds when there are 5 seconds left before time-up, then it will time-up once after 5 seconds. The next time-up will be 30 seconds later.

- When property of TimeUp and LoopCnt are obtained via Host Communication or Action, the value will return to the initial state.

  * Remaining operation count and time until Timer event is generated cannot be obtained.

Operation Description

Operation when setup is shown below.
- Time Up Value: 5 seconds
- Loop Count: 3 times
- Timer Status: Stop
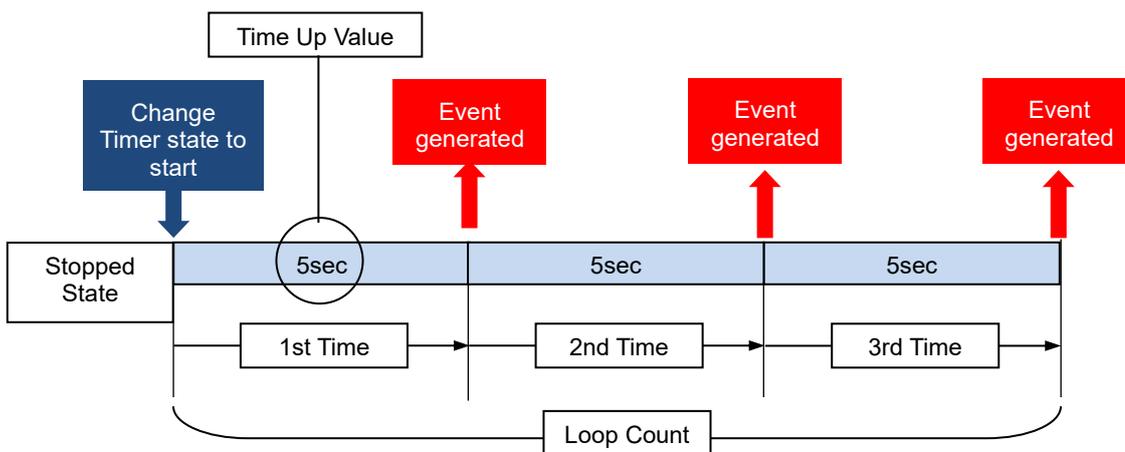
Notices

- If other process is being conducted at the time event is generated, a small time lag (seconds) will occur due to the event generating after the undergoing process is complete
- If action that cannot be completed in the interval of time-up value of the timer type memory, than the execution interval will be delayed.
- If a small value is set for the Time Up value, the entire system operation speed might slow down due to the Timer event action occurring repeatedly.

6.4.8   On Display

On Display Event is an event that occurs when screen transition and Pop-Up display is complete.

Setting Procedure

When using the On Display Event, choose On Display event from the Action Settings Dialog of the transition destination Base Screen or the Pop-up Screen and set the optional action.

*   Action Settings dialog of the screen can be opened by right-clicking menu of the location where there are no parts.

Operation Description

This event is generated when screen transition at Action or Host Communication, after instruction of Pop-up Display, and after screen display is complete.

*   If you want to change the display by triggering this event, it will be re-displayed after the state before the change is displayed once.

*   If the screen being displayed and the screen of transition destination is the same, On Display event will not occur.

*   In the case of re-display of Pop-up, On Display event will be generated because the Pop-up is redisplayed again after closing once.

6.4.9   On Load

On Load Event is an event that occurs right before screen display update at screen transition or Pop-up display.

Setting Procedure

When using the On Load Event, choose On Load Event from the Action Setting Dialog of the transition destination Base Screen or the Pop-up Screen and set the optional action.

* Action Settings dialog of the screen can be opened by right-clicking menu of the location where there are no parts.

Operation Description

This event is generated right before the screen display is updated, and after the instruction of screen transition or Pop-up display through an Action or Host Communication.
Screen will be displayed after all actions registered to this event have been executed.
The relationship with the On Display event is, it will be generated in the order of "On Load -> On Display".

* When changing the display with this event, the screen will be displayed after the change and not before.

* If the screen displayed and the transition destination screen is the same, On Load event will not generate.

* When re-displaying the displayed Pop-up, the Pop-up will once be closed before re-displaying, thus the On Load event will be generated.

6.4.10   On Change Value Event

The "On Change Value Event" is an event that occurs when the value of the memory with the "OnChangeValueEvent" property of the numeric global memory and numeric screen memory set to "Available" changes.
It does not occur if the same value is set in the memory.

When the "OnChangeValueEvent" property is set to "Available", "Action Setting" is possible.

<div style="text-align:center">

Caution

If you change the value of the memory in which the "OnChangeValueEvent" is set at high speed, the value change event may occur repeatedly and give performance, so please be careful to make the change frequency optimal.

When changing the value of the memory in which the "OnChangeValueEvent" is set in the value change event, be careful not to cycle.

</div>

6.4.11   Data Check Complete Event

The "Data Check Complete Event" is an event that occurs when the data check is completed at startup.
Occurs regardless of the display screen.

For details, refer to "12.9 Data check function".

7. Action

7.1   Actions

Actions are the user configurable behavior of the InfoSOSA.

By setting Actions to the events generated by the operation of Parts or the timer with the touchscreen, you will be able to set the behavior of the InfoSOSA.

Action setting can be done by "Action Settings" of Parts and Timer Type memories.

7.2 List of Actions that can be Setup with InfoSOSA

Below is the list of actions that can be used with the InfoSOSA.

Please refer to each action details for more details.

* Actions that can be set vary depending on the model.

[Common Action]

Action Group	Action	Description	IS7	IS-APP
H/W Actions	Notify Event to Host	Notify to host event of action processed	○	○
	Output String of Memory to Host	Ignore communication protocol and transit string.	○	○
	Notify value to Host	Notify host event of action processed and value of optional memory.	○	○
	Buzzer On	On/Off of buzzer.	○	○
Screen Operations	Transit to Specified Screen	Switch display to specified Base Screen	○	○
	Display Pop-up Screen	Display specified Pop-up Screen A.	○	○
	Display Pop-up Screen	Display specified Pop-up Screen B.	○	○
	Hide Pop-up Screen	Close specified Pop-up Screen A.	○	○
	Hide Pop-up Screen	Close specified Pop-up Screen B.	○	○
Parts Operations	Property Setting	Set value to part properties	○	○
	Copy Property	Copy part properties	○	○
	Set Link Data	Link memories to parts	○	○
Graph Operations	Main Line ON/OFF Setting	Sets ON/OFF the main line of Simple Graph parts.	○	○
	Main Line ON/OFF Acquisition	Gets the ON/OFF status of the main line of Simple Graph parts.	○	○
	Auxiliary Line ON/OFF Setting	Sets ON/OFF the AUX line of Simple Graph parts.	○	○
	Auxiliary Line ON/OFF Acquisition	Gets the ON/OFF status of the AUX line of Simple Graph parts.	○	○
	Add Data to Simple Graph End	Add data to end of Simple Graph parts	○	○
	Simple Graph Data Clear	Clear all data of Simple Graph parts	○	○
	Simple Graph Axis Setting Change	Change the axis setting of Simple Graph parts	○	○
	Simple Graph Axis Setting Memory Output	Acquire and store to memory the axis setting of Simple Graph parts	○	○
Control Statements	Create Local Variable	Declare a variable to use only in Action	○	○
	Call Subroutine	Call a Subroutine	○	○
	IF Block (1 Condition)	Specify and set 1 branch condition of Action process.	○	○
	IF Block (2 Conditions)	Specify and set 2 branch condition of Action process.	○	○
	ELSE IF Block (Condition 1)	Specify and set 1 condition if it does not apply to IF Block condition	○	○
	ELSE IFBlock (Condition 2)	Specify and set 2 conditions if it does not apply to IF Block condition	○	○
	ELSE Block	Setup when it does not apply to IF and Else IF Block conditions	○	○

Action Group	Action	Description	IS7	IS-APP
	FOR Block	Repeat Action repeatedly to number of times set	○	○
	WHILE Block (Condition 1)	Repeat Action repeatedly to number of times set if it satisfies one condition.	○	○
	WHILE Block (Condition 2)	Repeat Action repeatedly to number of times set if it satisfies two conditions.	○	○
Numerical Operations	Copy Value	Copy value to part or memory	○	○
	Value Setting	Set specified value to part or memory	○	○
	Arithmetic Operations	Set added result to part or memory	○	○
	Arithmetic Operations	Set subtracted result to part or memory	○	○
	Arithmetic Operations	Set multiplied result to part or memory	○	○
	Arithmetic Operations	Set divided result to part or memory	○	○
	Arithmetic Operations	Set remainder of the divided result to part or memory	○	○
	Increment	Add set value to part or memory	○	○
	Decrement	Subtract set value to part or memory	○	○
Bit Operations	Bit Operations (AND)	Set result of Bit operation AND to part or memory.	○	○
	Bit Operations (OR)	Set result of Bit operation OR to part or memory.	○	○
	Bit Operations (XOR)	Set result of Bit operation XOR to part or memory.	○	○
	Bit Operations (NOT)	Set result of Bit operation NOT to part or memory.	○	○
	Bit Shift (Left)	Set left shift operation result to part or memory	○	○
	Bit Shift (Rightt)	Set right shift operation result to part or memory	○	○
Logical Operations	Logical Operation (AND)	Set result of Logical Operations AND to part or memory.	○	○
	Logical Operation (OR)	Set result of Logical Operations OR to part or memory.	○	○
	Logical Operation (XOR)	Set result of Logical Operations XOR to part or memory.	○	○
	Logical Operation (NOT)	Set result of Logical Operations NOT to part or memory.	○	○
Comparison Operations	Comparison Operations (Equal)	Set result of comparison operation (Equal) to part or memory.	○	○
	Comparison Operations (Not Equal)	Set result of comparison operation (Not Equal) to part or memory.	○	○
	Comparison Operations (Greater Than)	Set result of comparison operation (Garger than) to part or memory.	○	○
	Comparison Operations (Greater Than or Equal to)	Set result of comparison operation (Garger than or Equal to) to part or memory.	○	○
	Comparison Operations (Less Than)	Set result of comparison operation (Less than) to part or memory.	○	○
	Comparison Operations (Less Than or Equal to)	Set result of comparison operation (Less than or Equal to) to part or memory.	○	○
String Operations	Copy Strings	Copy string to part or memory	○	○
	Add 1 Character to String End	Add a character to end of string.	○	○
	Insert 1 Character to Specified String Position	Insert specified character to the specified location.	○	○
	Add String to String End	Add memory string to end of string	○	○

Action Group	Action	Description	IS7	IS-APP
	Insert String to Specified Position	Add memory string to specified position	○	○
	Delete characters from String End	Delete specified number of character from end of string	○	○
	Search Character	Search specified character	○	○
	Get No. of Characters from Position	Search and acquire specified string type	○	○
Data Conversions	Convert Decimal String to Integer	Convert decimal number stored in the string type, then converted to a numeric type	○	○
	Convert HEX String to Integer	Convert hexadecimal number stored in the string type, then converted to a numeric type	○	○
	Convert Integer to Decimal String	Convert to string type in decimal expression the value of a numeric type.	○	○
	Convert Integer to HEX String	Convert to string type in hexadecimal expression the value of a numeric type.	○	○
Image Operations	Image Setting	Set image resource image to part	○	○

[IS Series exclusive action]

Action Group	Action	Description	IS7	IS-APP
H/W Actions	Output to LED	On/Off of Sheet key LED.	○	-
	Restart	Restart InfoSOSA.	○	-
	Restart in OSD mode	Restart the InfoSOSA in OSD mode.	○	-
Screen Operations	Display Calibration Screen	Display calibration screen	○	-

[IS-APP exclusive action]

Action Group	Action	Description	IS7	IS-APP
H/W Actions	Sound ON	Turns sound ON/OFF.	-	○
External Command	Execute External Call	You can run any commands.	-	○
	Terminate by Process ID	Exits the specified process ID.	-	○
	Terminate by Process Name	Exits the named process.	-	○

7.3 Local Variables and Constants
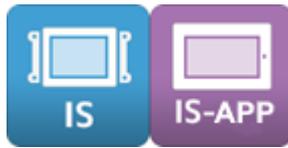
Local variables and constants of parts properties and memories can be specified in the Action parameter.

7.3.1 Local Variables

Local variables are a numeric type memory for temporarily storing the calculation results that are in Action.

It can be created by "Create Local Variable" of "Control Statement" group.

The local variable created can write and read values as Screen Memory (Global Memory), but will be discarded when all actions in the event has been completed.

[Notes]

- Local Variable must always be registered to the head of the Action.
- The value range of the local variable is -2,147,483,648 to 2,147,483,647.
- String cannot be used.

Characters that can be used for variable names are as below:

Parameter	Description
Variable Name	Specify 8 or fewer alphanumeric characters. Below are conditions to follow: Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_). First character must be an alphabet. *Same variable name cannot be used in the same screen.

7.3.2 Constants

Constants are used when specifying a conditional expression directly without having to go through the memory.

Use constants to make the right side of the IF Block condition equations a fixed value.

[Notes]

- The value range that can be specified for a constant is from -2,147,483,648 to 2,147,483,647.
- String cannot be used.

7.4 Subroutine
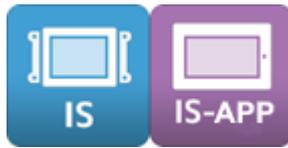
Subroutine can register multiple actions in a batch.

For example, if there are 10 buttons and each have 5 actions to implement when pressed and 4 action are common, by registering the common 4 as subroutine, the actions that need to be registered to each button is "Call Subroutine" and the individual actions.

Also, when sending commands as "Execute Subroutine" by Host Communication, subroutine can be done according to each command on arbitrary timings.
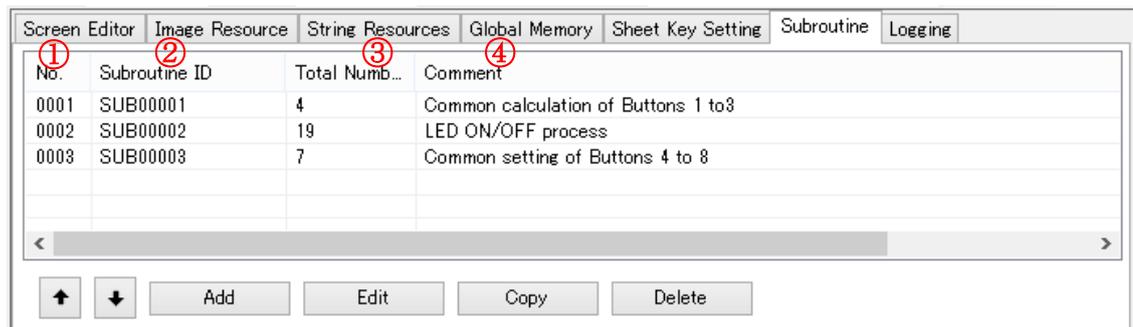
① No.

A serial number automatically given when subroutine is added or copied.

It cannot be edited.

② Subroutine ID

An ID to distinguish each subroutine. It is used at Host Communications and Actions.

It will not be automatically set even if it is copied or added. Please refer to below regulations for setup.

Items	Description
Number of characters	1 to 8
Characters allowed	Alphanumeric, hyphens (-), underscores (_),

* Make sure Subroutine IDs do not overlap.

* Head character must be an alphabet (single-byte uppercase).

③ Total Number of Commands

The total number of actions registered to the subroutine will be displayed.

④ Comment

The description of the subroutine will be set.

If you set the comment, what you fill out here in the back of the subroutine ID is displayed when the action is set.

[Notes]

- Do not register as "Call Subroutine" inside of subroutine.
- When accessing to local data such as parts and screen memories, choose screens that belong to "Target Screen Of Subroutine".
- Subroutines that have "Target Screens Of Subroutine" set, cannot be executed when the target screen is not displayed.
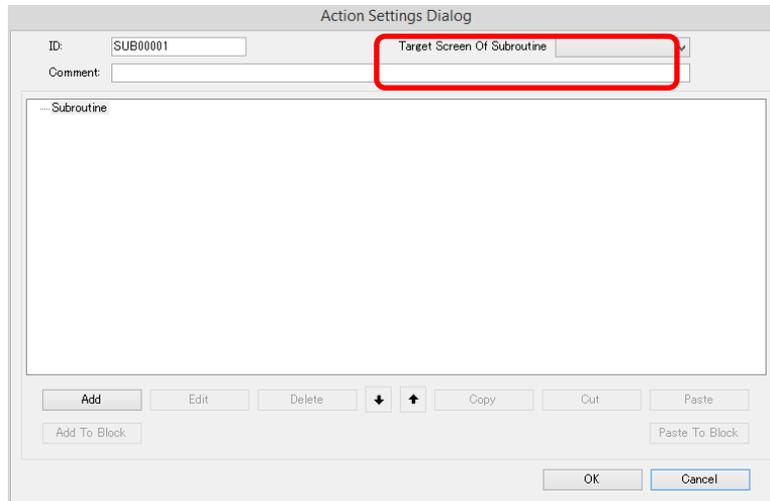
7.5 H/W Action Group

This is an action group of the action of H/W.

7.5.1 Notify Event to Host
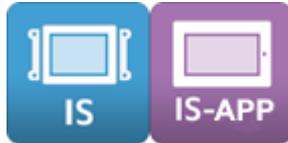
Description

Sends the generated event to the destination set at "Notify event to Host".

* "Notify event to Host" can be set from "Communications Settings (Target)".

For setup process, refer to the attached "InfoSOSA Builder Operation Manual".

Parameters

None

7.5.2　Output String of Memory to Host
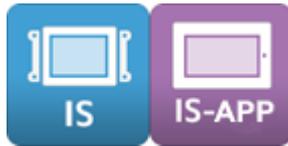
Description

Send string of specified string type memory to the notification destination set at "Notify Event to Host" without Host Communication protocol format. Do not convert new line code such as add header/footer, sequence number control, retransmission process, and send ignoring the protocol.

* "Host to notify String" can be set via "Communication Setting (Target) Dialog".

* When transmitting control statement, click "Yes" for "Control Character Input" of the H/W Settings Dialog.

* String will be transmitted according to the current "Character Code Setting", either in ASCII or UTF-16LE.

* It will be transmitted as *<CR><LF>* since new line will not be converted.

[About Control Character]
If "Control Character Input" is set to "Yes", the 2 digits that follow "/" (0 to 9, A to F, and a to f) will be converted to binary value. Also "//" will be changed to "/"
Example 1: /02test/0d/03　->　*<STX>*test*<CR><ETX>*
Example 2: //mark　　　　->　/mark

**<STX>* is 0x02 *<CR>* is 0x0d *<LF>* is 0x0a and *<ETX>* is 0x03.

Parameter

Parameter	Description
Memory type	Category of the string type memory
Memory ID (String type)	String Type memory ID

7.5.3　Notify value to Host

Description

Transmits the generated event and any memory value to the destination set at "Notifying Event to Host".

*　"Notify Event to Host" is setup with the Communication Setting (Target) Dialog.

Parameter

Parameter	Description
Value 1 Memory Type	Category of value 1
Value 1 Memory ID (Number/String type)	Memory ID of value 1
Value 2 Memory Type*	Category of value 2
Value 2 Memory ID (Number/String type) *	Memory ID of value 2
Value 3 Memory Type*	Category of value 3
Value 3 Memory ID (Number/String type) *	Memory ID of value 3
Value 4 Memory Type*	Category of value 4
Value 4 Memory ID (Number/String type) *	Memory ID of value 4
Value 5 Memory Type*	Category of value 5
Value 5 Memory ID (Number/String type) *	Memory ID of value 5
Value 6 Memory Type*	Category of value 6
Value 6 Memory ID (Number/String type) *	Memory ID of value 6

*　Values 2 to 6 are optional. Leave blank if not necessary.

7.5.4　Output to LED

Add Action Dialog

Action

Action Group	H/W Actions
Action	Output to LED

Parameters

LED ID	XLED01
LED Status Setting	LED On

Description

Turn ON or OFF the Sheet Key LED.

Parameter

Parameter	Description
LED ID	ID of the operating LED
LED Status Setting	LED on/ LED off

7.5.5 Buzzer On

Description

Turn the Buzzer On or Off.
Pattern 1 is the lowest sound and Pattern 9 is the highest sound.

Parameter

Parameter	Description
Buzzer Status	Buzzer ON/ Buzzer OFF
Buzzer Sound	Pattern 1 to 9 (You can set up when [Buzzer Status] = [Buzzer ON])

Differences by Series

You can enable or disable the buzzer on IS-APP with a startup parameter. When disabled, action settings are also disabled.

7.5.6　Sound ON

Description

Play and stop sounds.

Sounds that you want to play need to be registered in Sound Resources.

Parameters

Parameter	Description
Sound Status	Sound ON / Sound OFF
Sound ID	Sound Resource ID

7.5.7   Restart

Description

Restart InfoSOSA.
Actions set after Restart action will not be implemented.

* By using together with the Long Press Event, restarting by mistake can be avoided.

Parameter

None.

7.5.8 Restart in OSD mode

Description

Run this action to restart in OSD mode where you can set LCD settings such as brightness, as well as communication settings.

It will go back to normal mode with below operations
- Turn power off and on again
- Run Download (USB)

Parameters

None

7.6 Screen Operation Group

This is the action group to display switching to specified screen, ON/OFF of Pop-Up Screen, coordinate calibration of touchscreen.

7.6.1 Transit to Specified Screen

Description

Switch to specified screen.

* If the displayed screen and the transit destination screen is the same, then the OnDisplay/OnLoad event will not generate.

* Action results after transition of screen action will become indefinite. Be sure to setup.

Parameter

Parameter	Description
Screen ID of Transit DST	ID of the transit destination screen

7.6.2   Display Pop-up Screen
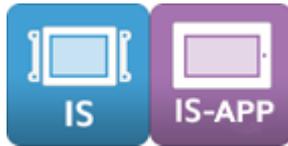
Description

Displays the specified Pop-up Screen.
There are two actions: "Display Pop-up Screen A" and "Display Pop-up Screen B".

* *When same layer of Pop-up screen is turned ON when Pop-up screen is being displayed, the displayed screen will automatically be turned OFF and the specified screen will be displayed.

* Even if the type of the target pop-up screen is changed after the action is registered, the action type will take precedence. For example, if the "Display Popup Screen A ON" action is registered and the target popup screen is changed to "Popup Screen B", but the "Display Popup Screen A ON" action is used to display it, it will be displayed as "Popup Screen A".

Parameter

Parameter	Description
Screen ID	ID of Pop-up Screen A or B to be displayed
X Coordinate of Display Position	Display position of Pop-up Screen by specifying the distance of the pop-up screen in units of pixel in the X direction with the upper left point as origin.
Y Coordinate of Display Position	Display position of Pop-up Screen by specifying the distance of the pop-up screen in units of pixel in the Y direction with the upper left point as origin.

Differences by Series

For the popup screen display position, the top-left corner of the InfoSOSA application window is the origin point (0,0). (Displays inside the InfoSOSA application window)

7.6.3　Hide Pop-up Screen
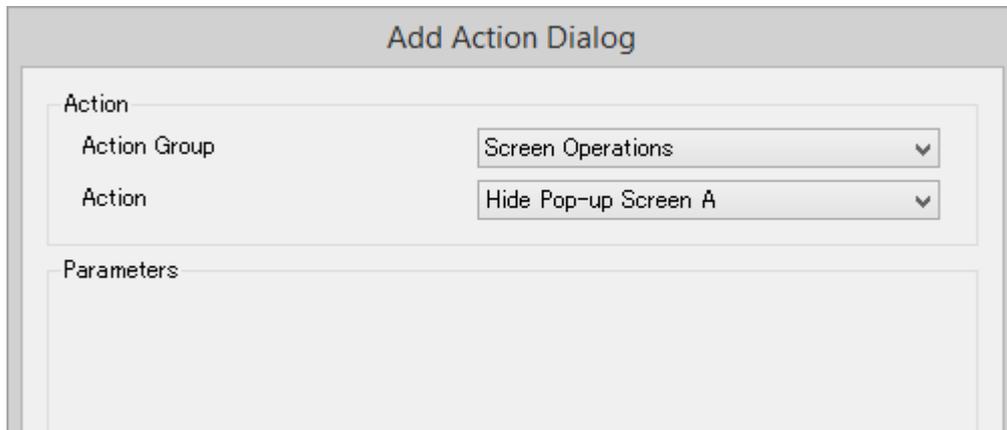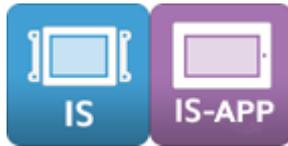
Description

Turn the display of the specified screen OFF.

There are two actions: "Hide Pop-up Screen A" and "Hide Pop-up Screen B".

Parameter

None.

7.6.4　Display Calibration Screen

Description

Display the coordinate calibration screen for the touchscreen.
If calibration ends successfully, the result will be saved and the screen will go back to what was displayed.

After calibration is started and 30 seconds elapse, returns to the screen with the buzzer sound. In this instance, the calibration state is the same as it was before.

Please refer to "12.5 Calibration".

Parameter

None

Differences by Series

IS-APP calibration cannot be run from the InfoSOSA Application. Run calibration from the unit's system.

7.7 Part Operation Group
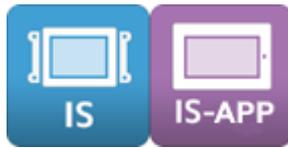
This is an action group to operate the property of the parts.

Parts and properties that can be used in Part Operation is as below:

Parts/Memories	Operable Properties						
	Value	Enabled	Visible	Blink	State	TimeUp	LoopCnt
Global Memory (Numeric type)	○						
Global Memory (Timer type)					○	○	○
Screen Memory (Numeric type)	○						
Screen Memory (Timer type)					○	○	○
Environment Variable (Numeric type)	△*						
Button		○	○	○			
NoImage Button		○	○	○			
Touchscreen Button		○					
Switch screen Button		○	○	○			
Switch	○	○	○	○			
Image Multi State Switch	○	○	○	○			
Color Multi State Switch	○	○	○	○			
Numeric keyboard							
Lamp	○		○	○			
NoImage Lamp	○		○	○			
Image Multi State Lamp	○		○	○			
Color Multi State Lamp	○		○	○			
Label			○	○			
Character Display Parts		○	○	○			
Number Display Parts	○	○	○	○			
Telop	○	○	○				
Time Displaying Parts	○		○	○			
Frames			○				
NoImage Frames			○				
Simple Graph			○				
Bar Meter			○				
Picture Box			○				
Line Parts			○	○			
Arrow Parts			○	○			
Rectangle Parts			○	○			
Table Parts			○				
Scroll Frame		○	○				
Screen Zoom Frame		○	○				
Image Zoom Frame		○	○				
Grid Button		○	○				
Slider		○	○				

*   Only complies with Environment variables that allow write.

7.7.1 Property Setting

Description

Change the value of the Property to the property set.

Parameter

Parameter	Description
Screen ID	Screen which parts or memory belongs to
Parts ID	Target Part or Memory
Property	Property to set (depends on parts and memory)
Set value	Value to set to property "1" when you want to set the defined property to True. "0" when you want to set the defined property to False.
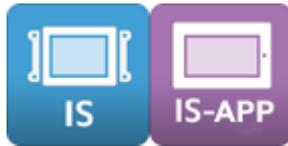
7.7.2　Copy Property

Description

Copy value to destination property value from the source property value.

Parameter

Parameter	Description
SRC Screen ID	Screen which the source parts or memory belongs to.
SRC Parts ID	Parts and memories of copy source
SRC Property	Source property (depends on parts and memories)
DST Screen ID	Screen which the destination parts or memory belongs to
DST Parts ID	Parts or memories of destination
DST Property	Destination property (depends on parts and memories)

7.7.3　Set Link Data
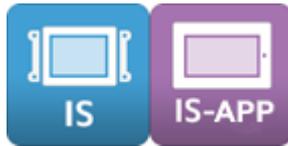
Description

Change the specified link data of Parts to memory.

Parameter

Parameter	Description
Screen ID	Screen ID of parts to set link data
Parts ID	Part to set link data
Link DST Memory Type	Category for memory to link
Link DST Memory ID	ID of memory to link

7.8   Graph Operations Group

This is an action group to operate Simple Graph parts.

7.8.1   Main Line ON/OFF Setting

Description

Acquire to specified memory the ON/OFF status of graph lines of specified Simple Graph parts.

Parameters

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
CH Number	CH Number of graph line (1 - 8)
ON/OFF	1:ON 0:OFF

7.8.2　　Main Line ON/OFF Acquisition

Description

Acquire to specified memory the ON/OFF status of graph lines of specified Simple Graph parts.

Parameters

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
CH Number	CH Number of graph line (1 - 8)
DST Memory Type	Category of destination memory
DST Memory ID	Memory ID of destination

7.8.3　Auxiliary Line ON/OFF Setting

Description

Acquire to specified memory the ON/OFF status of AUX lines of specified Simple Graph parts.

Parameters

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
AUX Number	Auxiliary line number(1-3)
ON/OFF	1:ON 0:OFF

7.8.4　Auxiliary Line ON/OFF Acquisition

Description

Acquire to specified memory the ON/OFF status of AUX lines of specified Simple Graph parts.

Parameters

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
AUX Number	Auxiliary line number(1-3)
DST Memory Type	Category of destination memory
DST Memory ID	Memory ID of destination

7.8.5　Add Data to Simple Graph End

Description

Add data to the end of the specified Simple Graph end.

Specify data from CH1 to 8. Be sure to match the CH number of the target Simple graph and the specified data number.

If data is left blank, it will be treated as missing value.

Parameter

Parameter		Description
Screen ID		Screen which parts belong to.
Parts ID		Target Part
CH1~8	Memory Type	Memory type of data to add
	Memory ID	Memory ID of data to add

7.8.6　Simple Graph Data Clear
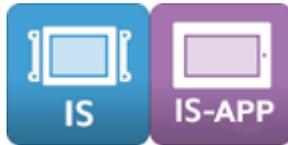
Description

Clear all data of the specified Simple Graph part.

Parameter

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part

7.8.7　Simple Graph Axis Setting Change

Add Action Dialog

Action

Action Group	Graph Operations
Action	Simple Graph Axis Setting Change

Parameters

Screen ID	
Parts ID	
X-axis Data Number MEM Type	
X-axis Data Number MEM ID	
Y-axis Upper Limit MEM Type	
Y-axis Upper Limit MEM ID	
Y-axis Lower Limit MEM Type	
Y-axis Lower Limit MEM ID	
X-axis Scale Interval MEM Type	
X-axis Scale Interval MEM ID	
Y-axis Scale Interval MEM Type	
Y-axis Scale Interval MEM ID	
Y-axis Scale Disp Interval MEM Type	
Y-axis Scale Disp Interval MEM ID	
Y-axis Display Dig MEM Type	
Y-axis Display Dig MEM ID	

OK　　　Cancel

Description

Change the X-axis/Y-axis of the specified Simple Graph part.

Item that can be changed:

Item	Description
X-axis Data Number	Number of data to display on X-axis Setting Range: Setting range: 1 to 400
Y-axis Upper Limit	Upper value limit of Y-axis Setting range: -2147483645 to 2147483647 * Specify value greater than lower limit of the Y axis display. * If there is a large difference in the Y-axis upper display limit value and the lower limit value, it may not be able to setup. * In order to display scale value, please set digit number bigger than or equal to the Y-axis display digit number * Values higher than the Y-axis Upper limit will be displayed depending on the Y-axis scale interval.
Y-axis Lower Limit	Lower limit of Y-axis Setting Range : -2147483645 to 2147483647 * Specify a value smaller than Y-axis Upper display limit * If there is a large difference in the Y-axis upper display limit value and the lower limit value, it may not be able to setup. * In order to display scale value, please set digit number bigger than or equal to the Y-axis display digit number
X-axis Scale Interval	Scale interval (Unit=each data number) on X-axis. Setting range: 1 to 400
Y-axis Scale Interval	"Scale interval (Unit=each data value) on Y-axis Graduation line is drawn for each Scale Interval" Setting range: 1 to 2147483647 * Specify interval with so that scale is larger than or equal to 1 * You cannot set an interval so that the number of scales exceed the number of pixels in the Graph display area.
Y-axis Scale Disp Interval	Scale Value Display Interval (Unit= each Scale) on Y-axis Scale value is drawn at the left of Scale Line for each Scale Disp Interval. Setting Range : 0 - 5 * Scale value will not display if 0 is chosen.
Y-axis Display Dig	Number of digits of Scale Value displayed on Y-axis. Setting range: 1 to 12 * Scale value will not be displayed if specified number of digits is greater than scale value.

Parameter

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
X-axis Data Number MEM Type	Memory type of source of X-axis data number
X-axis Data Number MEM ID	Memory ID of source of X-axis data number
Y-axis Upper Limit MEM Type	Memory type of source of Y-axis upper limit
Y-axis Upper Limit MEM ID	Memory ID of source of Y-axis upper limit
Y-axis Lower Limit MEM Type	Memory type of source of Y-axis lower limit
Y-axis Lower Limit MEM ID	Memory ID of source of Y-axis lower limit
X-axis Scale Interval MEM Type	Memory type of source of X-axis Scale Interval
X-axis Scale Interval MEM ID	Memory ID of source of X-axis Scale Interval
Y-axis Scale Interval MEM Type	Memory type of source of Y-axis Scale Interval
Y-axis Scale Interval MEM ID	Memory ID of source of Y-axis Scale Interval
Y-axis Scale Display Interval MEM Type	Memory type of source Y-axis scale display interval
Y-axis Scale Display Interval MEM ID	Memory ID of source of Y-axis scale display Interval
Y-axis Display Dig MEM Type	Memory type of source of Y-axis display digit
Y-axis Display Dig MEM ID	Memory ID of source of Y-axis display digit

7.8.8　Simple Graph Axis Setting Memory Output

Add Action Dialog

Action
Action Group	Graph Operations
Action	Simple Graph Axis Setting Memory Outp

Parameters
Screen ID	
Parts ID	
X-axis Data Number MEM Type	
X-axis Data Number MEM ID	
Y-axis Upper Limit MEM Type	
Y-axis Upper Limit MEM ID	
Y-axis Lower Limit MEM Type	
Y-axis Lower Limit MEM ID	
X-axis Scale Interval MEM Type	
X-axis Scale Interval MEM ID	
Y-axis Scale Interval MEM Type	
Y-axis Scale Interval MEM ID	
Y-axis Scale Disp Interval MEM Type	
Y-axis Scale Disp Interval MEM ID	
Y-axis Display Dig MEM Type	
Y-axis Display Dig MEM ID	

OK　　　　Cancel

Description

Output the setting of the X-axis/Y-axis of the specified Simple Graph to the specified memory.

Items that can be acquired are the same as "Axis Setting Change".

Parameter

Parameter	Description
Screen ID	Screen which parts belong to.
Parts ID	Target Part
X-axis Data Number MEM Type	Memory type of source of X-axis data number
X-axis Data Number MEM ID	Memory ID of source of X-axis data number
Y-axis Upper Limit MEM Type	Memory type of source of Y-axis upper limit
Y-axis Upper Limit MEM ID	Memory ID of source of Y-axis upper limit
Y-axis Lower Limit MEM Type	Memory type of source of Y-axis lower limit
Y-axis Lower Limit MEM ID	Memory ID of source of Y-axis lower limit
X-axis Scale Interval MEM Type	Memory type of source of X-axis Scale Interval
X-axis Scale Interval MEM ID	Memory ID of source of X-axis Scale Interval
Y-axis Scale Interval MEM Type	Memory type of source of Y-axis Scale Interval
Y-axis Scale Interval MEM ID	Memory ID of source of Y-axis Scale Interval
Y-axis Scale Display Interval MEM Type	Memory type of source Y-axis scale display interval
Y-axis Scale Display Interval MEM ID	Memory ID of source of Y-axis scale display interval
Y-axis Display Dig MEM Type	Memory type of source of Y-axis display digit
Y-axis Display Dig MEM ID	Memory ID of source of Y-axis display digit

7.9   Control Statement Group
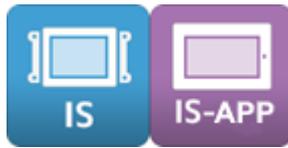
This is an action group related to the Control Statements such as conditional branching and repetition.

This action group allows you to create a Control Statement with blocks such as IF block and ELSE IF block.

Parts, memories, and comparison operators that could be used by each block are as follows.

*   Do not use the control block in a control block.

*   Please make sure it does not become an infinite loop.

Parts and Memories that can be used for Blocks

Parts/Memory Types
Constant
Local Variables
Global Memory (Numeric)
Screen Memory (Numeric)
Environment Variable (Numeric)
Switch
Image Multi State Switch
Color Multi State Switch
Lamp
NoImage Lamp
Image Multi State Lamp
Color Multi State Lamp
Number Display Parts
Time Display Parts

*   Only Parts property that can be used is Value.

Comparison Operators that can be used for Blocks

Item	Description
==	Equal
!=	Not Equal
>	Larger than
>=	Larger than or equal to
<	Smaller than
<=	Smaller than or equal to

7.9.1　Create Local Variable
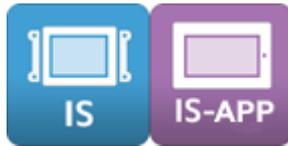
Description

Set a Local Variable.

The set Local Variables can be used only in the event that the variable declaration action is set.

Local Variable must be registered at the top of the action.

Local Variable value range is treated as a double word type with memory of "-2,147,483,648" to "2,147,483,647".

The value of the Local Variable is discarded when you perform an action to the end.

Parameter

Parameter	Description
Variable Name	Specify alpha numerals within 8 characters and less Can be set to below conditions. No. of character: 1 to 8 characters Type of character: Alpha-numeric characters, hyphens (-), and underscores (_) First character must be an alphabet. * Same variable cannot be used within the same screen.

7.9.2　Call Subroutine
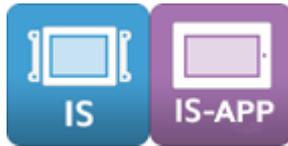
Description

Implement Subroutine.

Please refer to "" for details.

Parameter

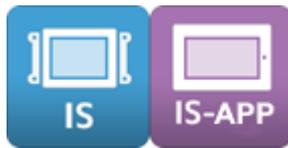| Parameter	Description
Subroutine ID	ID of the subroutine to implement

7.9.3 IF Block (1 Condition)
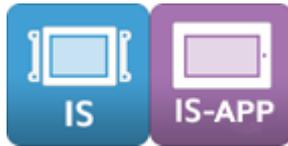
Description

Set the branch condition of action treatment. One branch condition can be specified.

Parameter

Parameter	Description
Left Memory Type	Category for numeric parts (or memories) of comparison source
Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Comparison Operators	Comparison Operators
Right Memory Type	Category for numeric parts (or memories) to be compared
Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.9.4 　 IF Block (2 Conditions)

Description

Set the branch condition of action treatment. Two branch conditions can be specified.

Parameter

Parameter	Description
Eq.1 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.1 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.1 Comparison Operators	Comparison Operators
Eq.1 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.1 Right Memory ID (Int)	Numeric parts (or memories) to be compared
Logical Relation Operators	Logical sum (or) / Logical product (and)
Eq.2 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.2 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.2 Comparison Operators	Comparison Operators
Eq.2 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.2 Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.9.5   ELSE IF Block (Condition 1)

Description

Set the condition when it does not match the IF Block Conditions. One condition can be specified.

*   Else IF Block cannot be used unless IF Block is registered

Parameter

Parameter	Description
Left Memory Type	Category for numeric parts (or memories) of comparison source
Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Comparison Operators	Comparison Operators
Right Memory Type	Category for numeric parts (or memories) to be compared
Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.9.6　ELSE IFBlock (Condition 2)

Description

Set the condition when it does not match to the IF Block Conditions. Two conditions can be specified.

*　Else IF Block cannot be used unless IF Block is registered

Parameter

Parameter	Description
Eq.1 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.1 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.1 Comparison Operators	Comparison Operators
Eq.1 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.1 Right Memory ID (Int)	Numeric parts (or memories) to be compared
Logical Relation Operators	Logical sum (or) / Logical product (and)
Eq.2 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.2 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.2 Comparison Operators	Comparison Operators
Eq.2 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.2 Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.9.7　ELSE Block
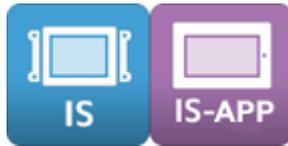

Description

Set the process other than the conditions of IF Block and Else IF Blocks.
This cannot be used without registering the IF Block.
Registration of the Else IF Block is not necessary.

Parameter

None

7.9.8   FOR Block

Description

Set the action that repeats a process a fixed number of times.
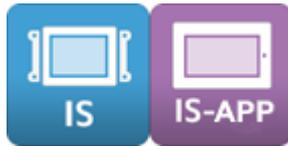Register the action to be processed repeatedly below this action block.

* Please note, if a time-consuming process is registered, event generating touch or timer, or Host Communication processing might be delayed.

Parameter

Parameter	Description
REP Count Setting MEM Type	Category for numeric parts (or memories) with repeat count set
REP Count Setting MEM ID (Int)	Numeric parts (or memories) with repeat count set

7.9.9　WHILE Block (Condition 1)

Description

Repeat the process while the specified condition is met.
One condition can be specified.

*　Please note, if a time-consuming process is registered, event generating touch or timer, or Host Communication processing might be delayed.

[Note]
Always set up a WHILE condition that will allow the loop to break out of the WHILE block.
Other actions of parts and timers and instructions of Host Communications will not be processed until the WHILE Block is take out and be in an infinite loop.

Parameter

Parameter	Description
Left Memory Type	Category for numeric parts (or memories) of comparison source
Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Comparison Operators	Comparison Operators
Right Memory Type	Category for numeric parts (or memories) to be compared
Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.9.10　WHILE Block (Condition 2)
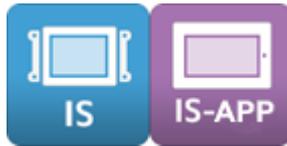
Add Action Dialog

Action

Action Group	Control Statements
Action	WHILE Block (2 Conditions)

Parameters

Eq.1 Left Memory Type	
Eq.1 Left Memory ID (Int)	
Eq.1 Comparison Operators	==
Eq.1 Right Memory Type	
Eq.1 Right Memory ID (Int)	
Logical Relation Operators	AND
Eq.2 Left Memory Type	
Eq.2 Left Memory ID (Int)	
Eq.2 Comparison Operators	==
Eq.2 Right Memory Type	
Eq.2 Right Memory ID (Int)	

Description

Repeat the process while the specified condition is met.
Two conditions can be specified.

*　Please note, if a time-consuming process is registered, event generating touch or timer, or Host Communication processing might be delayed.

[Note]
Always set up a WHILE condition that will allow the loop to break out of the WHILE block.
Other actions of parts and timers and instructions of Host Communications will not be processed until the WHILE Block is take out and be in an infinite loop.

Parameter

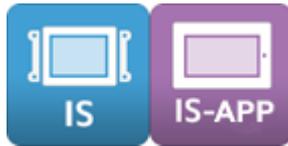| Parameter	Description
Eq.1 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.1 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.1 Comparison Operators	Comparison Operators
Eq.1 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.1 Right Memory ID (Int)	Numeric parts (or memories) to be compared
Logical Relation Operators	Logical sum (or) / Logical product (and)
Eq.2 Left Memory Type	Category for numeric parts (or memories) of comparison source
Eq.2 Left Memory ID (Int)	Numeric parts (or memories) of comparison source.
Eq.2 Comparison Operators	Comparison Operators
Eq.2 Right Memory Type	Category for numeric parts (or memories) to be compared
Eq.2 Right Memory ID (Int)	Numeric parts (or memories) to be compared

7.10   Numerical Operations Group
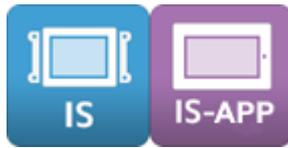
This is an action group that operates numerical values such as arithmetic operations.

Parts and memories that can use the Numerical Operations are as follows.

Parts/Memories	Input Source	Output Destination
Invariables	○	
Local Variables	○	○
Global Memory (Numeric)	○	○
Screen Memory (Numeric)	○	○
Environment Variable (Numeric)	○	△*
Switch	○	○
Image Multi State Switch	○	○
Color Multi State Switch	○	○
Lamp	○	○
NoImage Lamp	○	○
Image Multi State Lamp	○	○
Color Multi State Lamp	○	○
Number Display Parts	○	○
Time Display Parts	○	○

*   Environment variables are only compatible to those that can be written. For details, please refer to "11.2 List of Environment Variables".

*   Parts property than can be used with Numerical Operations is Value only.

7.10.1 Copy Value

Description

Copy the value of the copy source to the copy destination.

Maximum of three copy destinations are available with one action.

Parameter

Parts/Memory Types	Description
SRC Memory Type	Category for parts or memories of copy source
SRC Memory ID (Int)	Parts and memories of copy source
DST 1 Memory Type	Category for parts or memories of copy destination (1st)
DST 1 Memory ID (Int)	Parts or memories of copy destination (1st)
DST 2 Memory Type	Category for parts or memories of copy destination (2nd)
DST 2 Memory ID (Int)	Parts or memories of copy destination (2nd)
DST 3 Memory Type	Category for parts or memories of copy destination (3rd)
DST 3 Memory ID (Int)	Parts or memories of copy destination (3rd)

* Destinations 2 and 3 are options. If not necessary, it can be left blank.

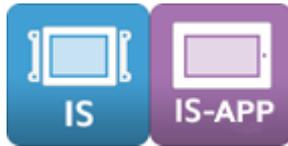## 7.10.2 Value Setting
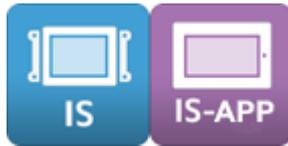
Description

Set the specified value to the parts or memories.

Parameter

Parameter	Description
Memory Type	Category for parts or memories that set values
Memory ID (Int)	Parts or memories that set values
Value	Values to set*

* Values vary according to Parts and Memories.

7.10.3   Arithmetic Operations

Description

Arithmetic Operations include addition, subtraction, multiplication, division, and remainder calculation.
Calculates value 1 and 2, and then outputs calculation results to the specified parts or memories.

*   Nothing will be processed when 0 divisions is specified.

Parameter

Parameter	Description
Value 1 Memory Type	Category for calculating parts or memories
Value 1 Memory ID (Int)	Calculating parts or memories
Value 2 Memory Type	Category for calculating parts or memories
Value 2 Memory ID (Int)	Calculating parts or memories
Result Memory Type	Categories of parts or memories that output calculation results
Result Memory ID (Int)	Parts or memories that output calculation results

7.10.4   Increment
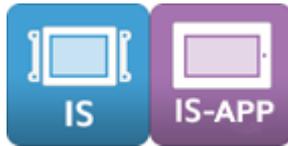
Description

Increments the value of memory type and memory ID to the value of additional value.

Parameter

Parameter	Description
Memory Type	Category for parts or memories to be subtracted
Memory ID (Int)	Parts or memories to be subtracted
Added Value	Values to subtract (0 - 2,147,483,647)

7.10.5 Decrement
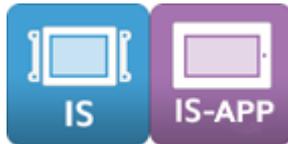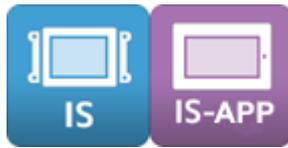

Description

Decrements the value of subtracted value from the value of memory type and memory ID.

Parameter

Parameter	Description
Memory Type	Category for parts or memories to be subtracted
Memory ID (Int)	Parts or memories to be subtracted
Subtracted Value	Values to subtract (0 - 2,147,483,647)

7.11 Bit Operations Group

This is an action group that implements bit operations.

Bit operation converts all input values, including Boolean, to Double Word type (32 bit).

Calculation result values (32 bit) are set accordingly to the maximum/minimum value and over/underflow (all values than 0 are 1 for Boolean) of memory of the destination.

Parts and Memories that can be used for bit operation are as shown below.

Parts/Memories	Input Source	Output Destination
Invariables	○	
Local Variables	○	○
Global Memory (Int)	○	○
Screen Memory (Int)	○	○
Environment Variable (Int)	○	△*
Switch	○	○
Image Multi State Switch	○	○
Color Multi State Switch	○	○
Lamp	○	○
NoImage Lamp	○	○
Image Multi State Lamp	○	○
Color Multi State Lamp	○	○
Number Display Parts	○	○
Time Display Parts	○	○

* Environment variables are only compatible to those that can be written. For details, please refer to 11.2 List of Environment Variables.

* Parts property than can be used with Bit Operations is Value only.

7.11.1   Bit Operations
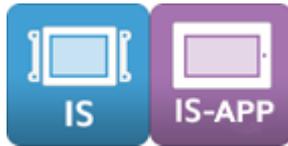
Description

Calculate 2 values for each bit and output the results to the specified parts and memories.
There are 4 types of bit operations: Logical AND (AND), Logical OR (OR), Exclusive-OR (XOR), and Logical NOT (NOT).

Parameter

Parts/Memory Types	Description
Value 1 Memory Type	Category for parts or memories to calculate
Value 1 Memory ID (Int)	Parts or memories that calculate
Value 2 Memory Type	Category for parts or memories to calculate
Value 2 Memory ID (Int)	Parts or memories that calculate
Result Memory Type	Category for parts or memories that output calculation results
Result Memory ID (Int)	Parts or memories that output calculation results

*   There is no "Value2 Memory Type" or "Value 2 Memory ID (Int) in Logical NOT (NOT).

7.11.2   Bit Shift
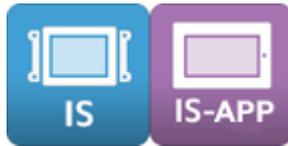
Description

Bit shift by shift amount with the original value and output the results to the specified parts and memories.

There are 2 types of bit shifts: "Bit Shift Left" and "Bit Shift Right".

Parameter

Parameter	Description
Original Value Memory Type	Category for parts or memories to calculate
Original Value Memory ID (Int)	Parts or memories that calculate
Shift Amount Memory Type	Bit shift amount (Categories of Parts or memories)
Shift Amount Memory ID (Int)	Bit shift amount (Parts or memories)
Result Memory Type	Category for parts or memories that output calculation results
Result Memory ID (Int)	Parts or memories that output calculation results

7.12　Logical Operation Group
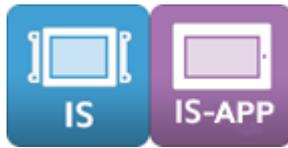
This is an action group that does logical operations.

Parts and memories that can be use are as below:

Parts/Memories	Input Source	Output Destination
Invariables	○	
Local Variables	○	○
Global Memory (Numerc)	○	○
Screen Memory (Numeric)	○	○
Environment Variable (Numeric)	○	△*
Switch	○	○
Image Multi State Switch	○	○
Color Multi State Switch	○	○
Lamp	○	○
NoImage Lamp	○	○
Image Multi State Lamp	○	○
Color Multi State Lamp	○	○
Number Display Parts	○	○
Time Display Parts	○	○

* 　Environment variables are only compatible to those that can be written. For details, please refer to 11.2 List of Environment Variables.

* 　Parts property that can be used with Logical Operations is Value only.

7.12.1   Logical Operation
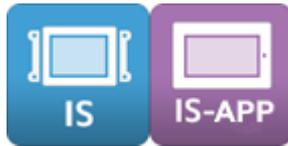
Description

Output the results of logical operations of 2 values to the specified parts and memories.

Operation results will be "1" if "true" and "0" if "false".

There are 4 types of logical operations: Logical AND (AND), Logical OR (OR), Exclusive-OR (XOR), and Logical NOT (NOT).

Parameter

Parameter	Description
Value 1 Memory Type	Memory Type of the operand Part or Memory
Value 1 Memory ID (Int)	Operand Part of Memory
Value 2 Memory Type	Memory Type of the operand Part or Memory
Value 2 Memory ID (Int)	Operand Part of Memory
Result Memory Type	Category for parts or memories that output calculation results
Result Memory ID (Int)	Parts or memories that output calculation results

*   When input value (value 1 and value 2) is other than 0, it will all be treated as 1.

*   There is no "Value 2 Memory Type" and "Value 2 Memory ID (Int)" for Logical NOT (NOT).

7.13 Comparison Operations Group
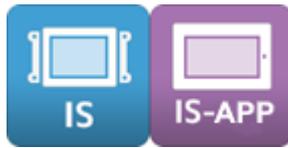
This is an action group that performs comparison operations.

Parts and memories that can be use are as below:

Parts/Memories	Input Source	Output Destination
Invariables	○	
Local Variables	○	○
Global Memory (Numeric)	○	○
Screen Memory (Numeric)	○	○
Environment Variable (Numeric)	○	△*
Switch	○	○
Image Multi State Switch	○	○
Color Multi State Switch	○	○
Lamp	○	○
NoImage Lamp	○	○
Image Multi State Lamp	○	○
Color Multi State Lamp	○	○
Number Display Parts	○	○
Time Display Parts	○	○

* Environment variables are only compatible to those that can be written. For details, please refer to 11.2 List of Environment Variables.

* Parts property than can be used with operations is Value only.

7.13.1 Comparison Operations
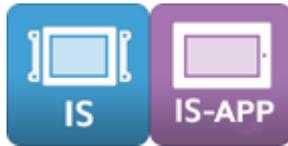
Description

Compare value 1 and value 2 and output to specified part and memory "1" if there equal and "0" if they are not.

There are 6 types to a comparison operation: equal (=), not equal (≠), greater than (>), greater than or equal to (>=), less than (<), and less than or equal to (=<).

Parameter

Parameter	Description
Value 1 Memory Type	Category for parts and memories of comparison source
Value 1 Memory ID (Int)	Parts and memories of comparison source
Value 2 Memory Type	Category for parts and memories of comparison
Value 2 Memory ID (Int)	Parts and memories of comparison
Result Memory Type	Category of parts or memories that output calculation results
Result Memory ID (Int)	Parts or memories that output calculation results

7.14 String Operations Group
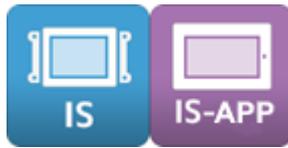
This is an action group that performs operations concerning strings.

Parts and memories that can be used for string operations are as shown below.

Parts/Memories	Input Source	Output Destination
String Type Global Memory	○	○
String Type Screen Memory	○	○
String Resources	○	
String Type Environment Variables	○	△*
Button	○	○
NoImage Button	○	○
Switch Screen Button	○	○
Switch		
Image Multi State Switch		
Color Multi State Switch		
Lamp		
NoImage Lamp		
Image Multi State Lamp		
Color Multi State Lamp		
Label	○	
Character Display Parts	○	○
Telop*	○	○

* Environment variables are only compatible to those that can be written. For details, please refer to [11.2 List of Environment Variables](#).

* Telop is operated only to global memories of the link destination.

7.14.1   Copy Strings

Description

Copy the string of copy source to copy destination.
3 destinations can be specified to 1 action.

Parameter

Parameter	Description
SRC Memory Type	Category of parts and memories of copy source
SRC Memory ID (String)	Parts and memories of copy source
DST 1 Memory Type	Category for parts or memories of copy destination (1st)
DST 1 Memory ID (String)	Parts or memories of copy destination (1st)
DST 2 Memory Type	Category for parts or memories of copy destination (2nd)
DST 2 Memory ID (String)	Parts or memories of copy destination (2nd)
DST 3 Memory Type	Category for parts or memories of copy destination (3rd)
DST 3 Memory ID (String)	Parts or memories of copy destination (3rd)

*   Destinations 2 and 3 are options. If not necessary, it can be left blank.

7.14.2 Add 1 Character to String End
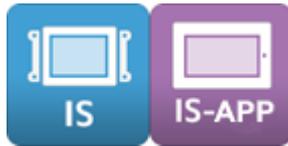
Description

Add a character to end of string.

Parameter

Parameter	Description
Memory Type	Category of parts and memories of character adding destination
Memory ID (String)	Parts and memories of character adding destination
Character to Add (1 character)	Character to add (1 character)

7.14.3 Insert 1 Character to Specified String Position
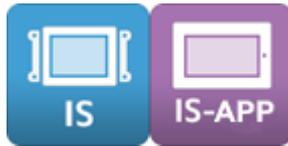
Description

Insert specified character to the specified location.

If inserting location is set to 0, then it will be inserted to head of strings.

Parameter

Parameter	Description
Memory Type	Category of the parts or memory of character inserting destination.
Memory ID (String)	Parts or memory of character inserting destination.
Character to Insert (1 Character)	Character to insert (Both single-byte and double-byte character counted as "1".)
Position From Top of String	Location to insert character (0 to ...)

* New line will be counted as 2 characters.

7.14.4 Add String to String End
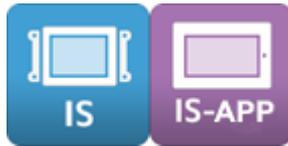
Description

Add memory string to end of String.

Parameter

Parameter	Description
Add SRC Memory Type	Category of parts or memories of string to be added
Add SRC Memory ID (String)	Parts or memories of string to be added
After Add Memory Type	Category of parts or memories after adding of string
After Add Memory ID (String)	Parts or memories after adding of string

7.14.5   Insert String to Specified Position
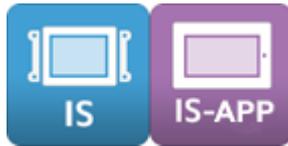
Description

Insert memory string to specified position.
If the inserting position is 0, then it will be inserted to the head of the strings.

Parameter

Parameter	Description
Before Insert Memory Type	Category of parts or memories of string to be added
Before Insert Memory ID (String)	Parts or memories of string to be added
After Insert Memory Type	Category of parts or memories of string insert destination
After Insert Memory ID (String)	Parts or memories of string insert destination
Position From Top of String (0 to ...)	Position to insert the String (0 to...)

*   New line will be counted as 2 characters.

7.14.6　Delete characters from String End
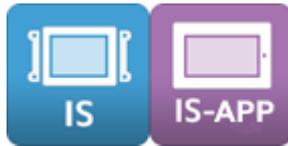
Description

Delete the number of characters specified from the end of string.

Parameter

Parameter	Description
Memory Type	Category of parts and memories of string to be deleted
Memory ID (String)	Parts and memories of string to be deleted
No. of Characters to Delete	Number of characters to delete (1 to ...)

*　　New line will be counted as 2 characters.

7.14.7   Search Character

Description

Search the target character (1 character) from the String Type memory of String parts.

When searching from the head of the strings, please specify "0" for the starting position.

Below values will be output to the search result memory.

*   "n" when found in the n-th letter from the head
*   "-1" when not found after the search position

Example: Search memory set to "ABCDE"

Search Start Position	Search Target	Output Value
0	A	0
0	E	4
0	K	-1
1	A	-1
2	E	4

Parameter

Parameter	Description
Target Memory Type	Category of parts and memories of string to be searched
Target Memory ID (String)	Parts and memories of string to be searched
Start Position (from Top)	Position to start search of specified character (0 to ...)
Search Target Character	Specify character to search (1 character)
Search Result Memory Type	Category of numeric parts and memories to store search results
Search Result Memory ID (Int)	Numeric parts and memories to store search results

*   New line will be counted as 2 characters.

7.14.8 Get No. of Characters from Position
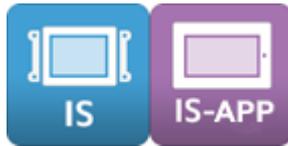
Description

Copy the string of specified number of characters from the specified location of string memory or part to a different string type memory or part.

When coping from the head of the string, please specify "0" for the starting position.

Parameter

Parameter	Description
Target String Memory Type	Category of parts and memories of string to acquire
Target String Memory ID (String)	Parts and memories of string to acquire
Start Position (from Top)	Start position of string to acquire (0 to ...)
No. of Characters to Get	Number of characters to acquire (1 to ...)
Storage DST Memory Type	Category of parts and memories to store the acquired string
Storage DST Memory ID (String)	parts and memories to store the acquired string

* New line will be counted as 2 characters.

7.15　Data Conversion Group
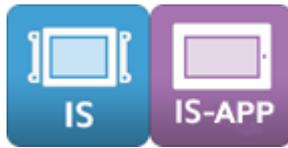
This is an action group that performs interconversion of numbers and strings.

The parts that data can be converted are as listed below:

Parts/Memories	String=> Num Value		Num Value =>String	
	Conversion source	Conversion Destination	Conversion source	Conversion Destination
Global Memory (Int)		○	○	
Global Memory (String)	○			○
Screen Memory (Int)		○	○	
Screen Memory (String)	○			○
Environment Variable (Int)		○	○	
EnvironmentEnvironment Variable (String)	○			△*
String Resources	○			
Button	○			○
NoImage Button	○			○
Screen Change Button	○			○
Switch		○	○	
Image Multi State Switch		○	○	
Color Multi State Switch		○	○	
Lamp		○	○	
NoImage Lamp		○	○	
Image Multi State Lamp		○	○	
Color Multi State Lamp		○	○	
Label	○			
Character Displaying Part	○			○
Number Displaying Part		○	○	
Telop*	○			○
Time Displaying Parts		○	○	

*　Environment variables are only compatible to those that can be written. For details, please refer to
[11.2 List of Environment Variables](#).

*　Telop is operated only to global memories of the link destination.

7.15.1　Convert Decimal String to Integer
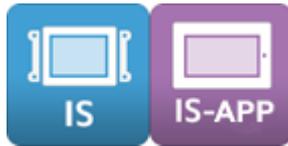
Description

Convert the decimal representing string to an integer (numerical value) and output to specified part or memory.

If there is a string other than the decimal string, any strings thereafter will not be converted.

Example: 123ABC →　123

Parameter

Parameter	Description
Convert SRC Memory Type	Category of parts or memories of conversion source
Convert SRC Memory ID (String)	Parts or memories of conversion source
Convert DST Memory Type	Category of parts or memories of output destination after conversion.
Convert DST Memory ID (Int)	Parts or memories of output destination after conversion.
Location from Head to Convert String	Start position of conversion string (0 to ...).
Character CNT of Object String	Character CNT of Object String (1 to ...)

7.15.2　Convert HEX String to Integer
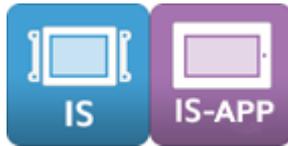
Description

Convert the hexadecimal representing string (upper case/lower case) to an integer (numerical value) and output to specified part or memory.

If there is a string other than the hexadecimal string, any strings thereafter will not be converted.

Example: 1Axyz -> 26

Parameter

Parameter	Description
Convert SRC Memory Type	Category of parts or memories of conversion source
Convert SRC Memory ID (String)	Parts or memories of conversion source
Convert DST Memory Type	Category of parts or memories of output destination after conversion.
Convert DST Memory ID (Int)	Parts or memories of output destination after conversion.
Position from Head to Convert String	Start position of conversion string (0 to ...).
Character CNT of Object String	Character CNT of Object String (1 to ...)

7.15.3 Convert Integer to Decimal String
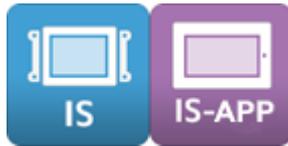
Description

Convert Integer (numerical value) to decimal representing string and output to specified part or memory.

Parameter

Parameter	Description
Convert SRC Memory Type	Category of parts or memories of conversion source
Convert SRC Memory ID (Int)	Parts or memories of conversion source
Convert DST Memory Type	Category of parts or memories of output destination after conversion.
Convert DST Memory ID (String)	Parts or memories of output destination after conversion.
Show/Hide Thousands Separator	Show or hide separator(,)
Decimal Position	Position of decimal point from the low-order of the Digit (0 to 9)

7.15.4 Convert Integer to HEX String
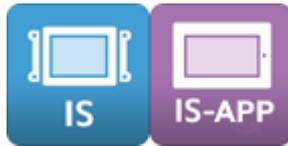
Description

Convert Integer (numerical value) to hexadecimal representing string and output to specified part or memory.

Parameter

Parameter	Description
Convert SRC Memory Type	Category of parts or memories of conversion source
Convert SRC Memory ID (Int)	Parts or memories of conversion source
Convert DST Memory Type	Category of parts or memories of output destination after conversion.
Convert DST Memory ID (String)	Parts or memories of output destination after conversion.
Upper / Lower Case Setting	Set output character (A to F) to upper or lower case

7.16   Image Operation Group
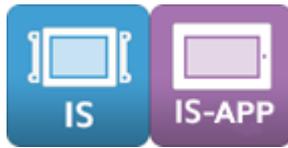
This is an action group to operate the image stored in the InfoSOSA.

The parts and memories that can operate the image are as follows:

Parts/Memories	Input Source	Output Destination
Image Resource	○	
Picture Box		○
Screens*		○

*   Specify Base Screen or Pop-up Screen.

7.16.1   Image Setting

Description

Set the image registered in Image Resource to the specified part or screen.

Parameter

Parameter	Description
Image Resource ID	Image Resource ID to set
Parts of Setting Target Screen ID	Screen which Target Part belongs to
Parts of Setting Target Parts ID	Target Part

*   Resizing to target part size cannot be done.

7.17　External Command Group

IS-APP exclusive action. From the InfoSOSA application, you can call another application.

Process

When a program is run on a computer, the process refers to the executable unit.
The process ID (PID) is so the system can identify each process.

On the panel computer, the user can run multiple applications (programs) at the same time. Running applications are assigned a process ID (PID) so the system can identify them.

By using External Command actions, the IS-APP can run or exit other applications.

7.17.1   Execute External Call

Description

You can run any commands on the system. While the command to call other applications is set up in the specified String Type memory, run this action.
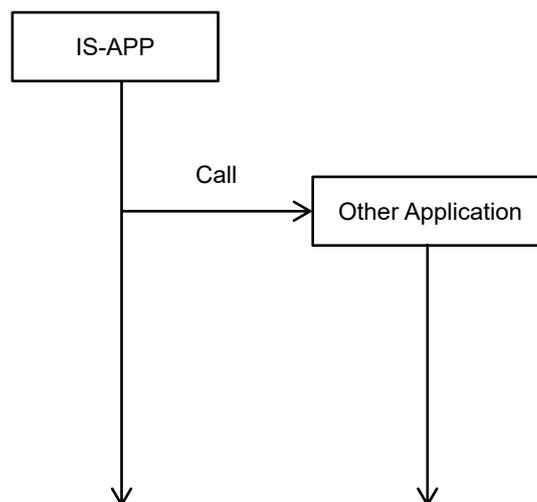
The process ID (PID) of the triggered process is stored in the memory defined in the [PID Storage DST Memory ID] field.
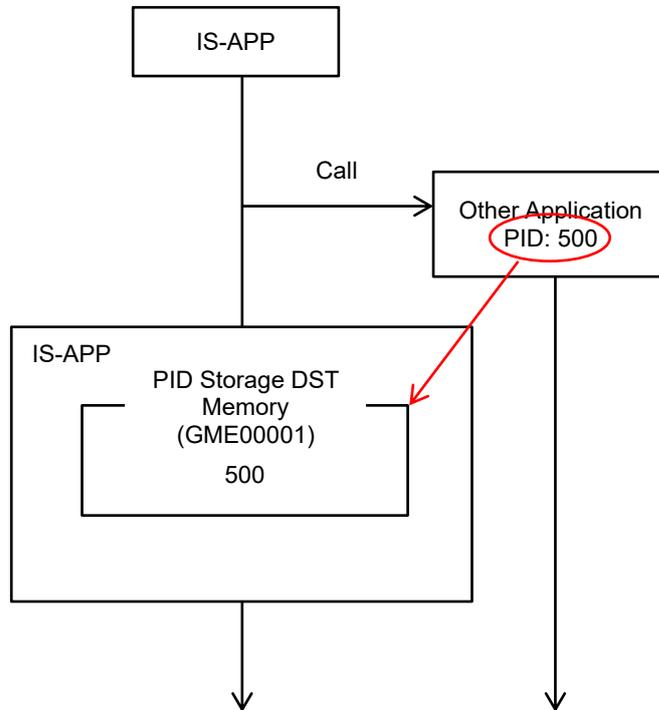
By specifying this memory in the [Exit process ID] action, you can end the triggered process.
* If [Wait for completion] is selected for the [External Command Complete] option, when the action is completed the process is ended and the value 0 is set.
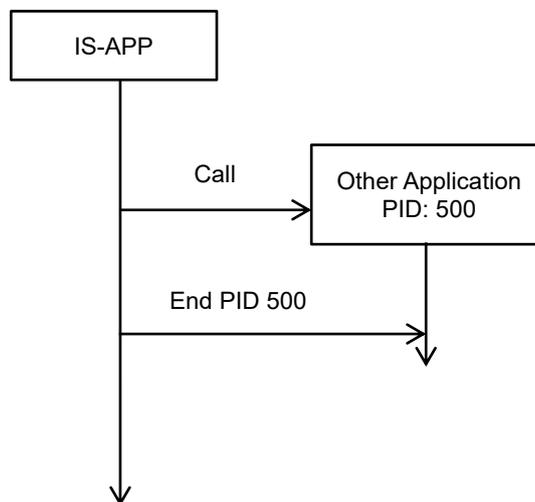
* If [Wait until process complete] is selected for [Running External Command IS Application Operation], execution of the action is paused until the process triggered by the action is complete. Use for applications such as scripts that need to be processed in sequential order and which complete in a short time.
* Note that while an action is stopped, actions (such as a timer process) run by other events are also stopped.
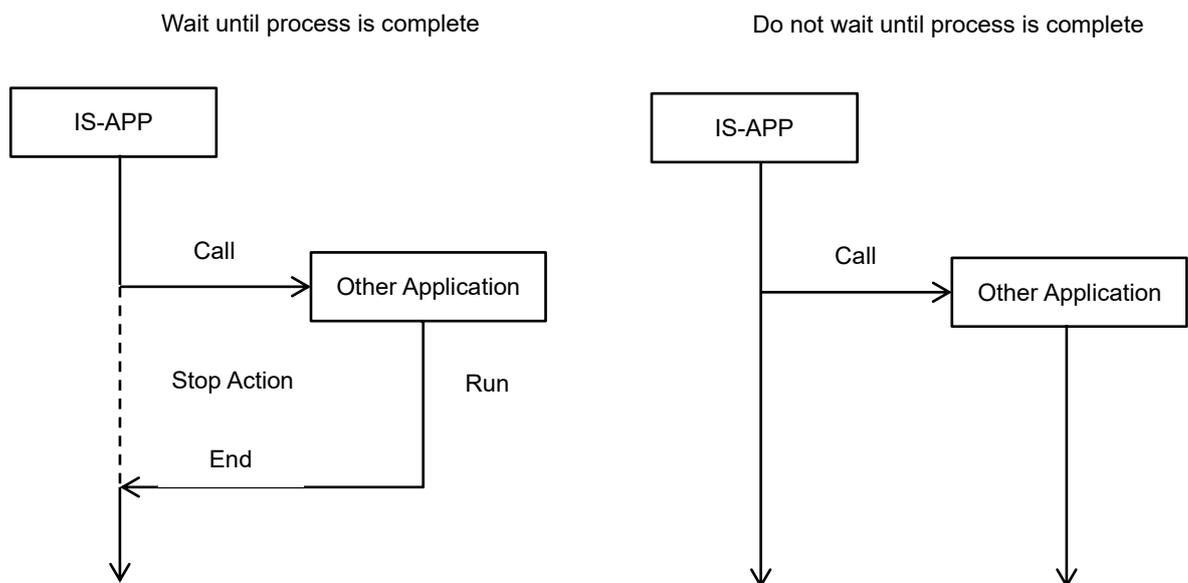
Parameters

Parameter	Description
Command Memory Type	Associated memory location where the command to execute is stored
Command Memory ID	Memory ID where the command to execute is stored
PID Storage Memory Type	Associated memory location where the ID of the process to execute is stored
PID Storage Memory ID	Memory ID where the ID of the process to execute is stored
Ext. Command to Process relation	Child Process / Independent Process
IS-APP wait behavior to Process	Wait until process is complete / Do not wait until process is complete (set up possible only when [Relationship with process executed by External Command] = [Child Process])

7.17.2   Terminate by Process ID

Description

Exits the specified process ID.

Parameters

Parameter	Description
Process ID Memory Type	Associated memory location where the ID of the process to exit is stored
Process ID Memory ID	Memory ID where the ID of the process to exit is stored

7.17.3   Terminate by Process Name

Description

Terminates the process specified by name.

Parameters

Parameter	Description
Process Name Memory Type	Associated memory location where the name of the process to exit is stored
Process Name Memory ID	Memory ID where the name of the process to exit is stored

8. Method

Chapter Contents

8.1   Method
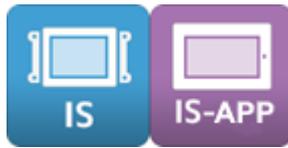
Method is a special function of memories and some of the parts.

It can be performed by Host Communication Command.

Please refer to "13.13 Communication Command Detail" for details.

8.1.1   List of Methods

Method of Parts

Picture Box

Method ID	Description
DPOINT	Draw a dot on the specified coordinate
DLINE	Draw a straight line or a rectangle between the two specified coordinates,
DCIRCLE	Draw a circle around the specified coordinate.
LPICTURE	Draw an image registered in the Image Resource to the specified coordinate.

Simple Graph

Method ID	Description
ADDLAST	Add data to end of graph data
ADDDATA	Add data to multiple lines
ALLCLR	Clear all data
DRAWAXIS	Change axis display numbers or top/bottom display limit of graph.
GETAXIS	Get axis display numbers or top/bottom display limit of graph.

Method of Memory

Numeric Global Memory

Method ID	Description
AUTOCNT	Count up (or down) to the specified value

9. Resources

Chapter Contents

9.1   Resources
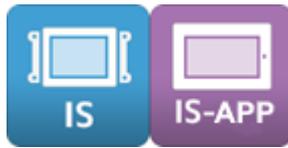
Resources are one of the global data that can be used on all screens.

By registering to a project beforehand, displaying on screens and calling from action or Host Communication will be possible.

Resources registered will be categorized as "Read-only" data and will not be changed while in operation.

There are Image Resources, String Resources, and Sound Resources.

Resource Type	Model	
	IS7	IS-APP
Image Resource	○	○
String Resources	○	○
Sound Resources	-	○

9.2 Image Resources

Image Resources are the image data that can be used in all screens.

Images registered to the Image Resource can be stored in the project file. When editing the image after registration, select the image and click "Edit".

File Format

The conditions for images to be registered are as follows:

Item	Description
File format	BMP (24 bit color), JPEG, GIF, PNG
Image size	Please refer to 14.1 Setting Range List .

* When images are captured to image resources, the color transparency setting will be lost.

* Not all files that meet the requirements can be used.

Image Resource Information

Image resource information displayed to image resource area.

Item	Default Value	Description
File Name	-	File name of the image captured
File Path	-	File path of the image captured
Image ID	IMG00001 -	ID given when image is added or copied. Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_).
Comment	(Blank)	0 to 256 characters can be input freely. Displayed following the memory ID at action or link setting.

[Note]

* Image cannot be registered under the same file name. (Same even if extension is different.)

* Same image ID cannot be used.

* File name cannot be changed.

* Display orders of the images in the resource are automatically sorted in the image ID.

* File path will display the address of the image when captured. It will not be reflected in the image of image resources to edit the image of the display address after captured.

9.3 String Resources

String Resources are read-only strings that can be used on all screens.

String Resources are linked to parts, such as labels.

Separate strings can be registered to each String Resource set registered to one "String ID".

The displayed string is a String Resource set registered to the string mode.

By switching the string mode, the display string of parts linked to the String Resource can be changed all together.

For example, switching the language from English to Japanese, or vice versa.

9.3.1 Register String Resources

String Resources can be registered or edited from the "Edit" tab.
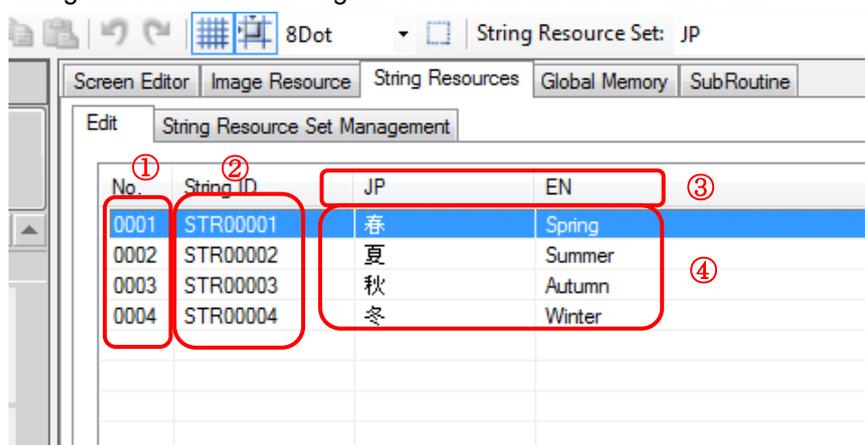
No.	Property Name	Property ID	Default Value	Description	Change by Host Communication	Change by Action
①	No.	-	0001 -	Number automatically given when a String Resource is added or copied (cannot be edited)	×	×
②	String ID	-	STR00001 -	ID given when String Resource is added or copied Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_).	×	×
③	String Resource Set Name	-	Not Set	String Resource set name registered at management tab of String Resource set is displayed	×	×
④	Strings	-	(Blank)	String according to each resource set can register. Maximum 256 characters (a single-byte or double-byte character counts as 1 character, and a line break counts as 2 characters).	×	×

9.3.2 Register String Resource Set

The String Resource set can be registered and edited from "Management Of String Resource Set".

A String Resource Set is made up of a String Resource Set ID and a String Resource name .

Please refer to "14.1 Setting Range List" for the maximum number of registrations possible.

You can change the order of priority for the display font by specifying the String Resource Set ID in [Define Font String Resource Set ID].

*Please refer to Font Display Order Priority for font order of priority.

No.	Property Name	Property ID	Default Value	Description	Change with Host Communication	Change with Action
①	No.	-	0001 -	Number given when string mode is added or copied. (Cannot be edited)	×	×
②	String Resource Set ID	-	STM00001 -	ID given when string mode is added or copied. Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_). In addition to the above, you can use a special ID (Define Font String Resource Set ID) that begins with the @ symbol.	×	×
③	String Resource Set Name	-	Not Set	String displayed on "String Resource Set" on toolbar. Number of characters: 1 to 256 characters. * In the string, single-byte and double-byte characters both count as 1 character.	×	×

Font Display Order Priority

InfoSOSA uses UNICODE (UTF-16LE) character encoding.
On the actual unit, appropriate characters are displayed using the downloaded font and character encoding.
With UNICODE (UTF-16LE), since multiple characters are assigned to one character code, the font that is used is decided based on the following.

1) A text string is displayed using one font.
2) If the text string can be displayed with European text (ISO8859) and the Latin Gothic font is downloaded, it is displayed in Latin Gothic.
3) Characters are determined in the following order of preference: Gothic (Japanese) > Traditional Chinese Gothic > Simplified Chinese Gothic > Hangul Gothic > Latin Gothic.

As the font is automatically determined as shown above, you do not have to specify a font. However, if you want to display using a specific font, set the [String Resource Set ID] to [Define Font String Resource Set ID].

[Define Font String Resource Set ID]

Define Font String Resource Set ID	Preferred Font
@JA, @JA_1 to @JA_9	Gothic (NORMAL) BOLD/NORMAL (Japanese)
@ZHBIG, @ZHBIG_1 to @ZHBIG_9	Traditional Chinese Gothic
@ZHGB, @ZHGB_1 to @ZHGB_9	Simplified Chinese Gothic
@KR, @KR_1 to @KR_9	Hangul Gothic (Korean)
@EN, @EN_1 to @EN_9	Latin Gothic (Europe)

*   When the preferred font is not downloaded, the font is determined using the normal method.

To create multiple sets in String Resources with the same font, as shown below specify a String Resource Set ID for different languages.

For example, when changing between German and French which both use the same Latin Gothic font

String Resource Set ID	Language
@EN_1	German
@EN_2	French

*   Please refer to "14.1 Setting Range List" for the maximum number of registrations possible.

9.3.3　　Switching of String Mode

There are several ways to change the string mode.

*　　* Please refer to "10.4 Font When Changing String Mode" for String Mode

1) Set Initial Value

Choose the String Resource Set Name of String Resource set to use in the initial state for "String Resource Set" of tool bar.
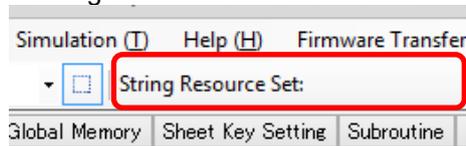
2) Change by Action

Copy String Resource Set ID to environment variable "STRMODE" by "Copy String" action

Registration of same string as the one set to ID at "String Resource Set ID" will be necessary.

[Setting Example of Memory]

[Setting Example of Action]

3) Change by Host Communication

Switch the environment variable "STRMODE" by using the "Property Setting" command.

By sending the below command by devices connected to the unit by serial or LAN, it can be switched to String Resource Set.

Property Setting Command

Command	Property specified	Set Value
PA01	@SYSENV.STRMODE.TEXT	String Resource Set ID

Example) Command to set String Resource Set ID "STM00002"("Chinese" in this example):

PA01,@SYSENV.STRMODE.TEXT,STM00002

* Please refer to "13 Host Communication" for details of communication settings and Message format of Host Communication.

9.4　**Sound Resources**

Sound Resources are the sound data that can be used in all screens.
You can import linear pulse code modulation (LPCM) WAV files into Sound Resources.
Sound data registered to the Sound Resources are stored in the project file.

Sound playback requires the connection of external speakers.
See 12.3 Sound for details.

* The volume can be adjusted by changing the value of the "SOUNDVOL" environment variable.
* Actual volume depends on the speaker and individual sound file settings.
* When a speaker is connected to the "SPI/PWM Audio Interface", the volume cannot be adjusted using the "SOUNDVOL" environment variable.

File format

The conditions for registering in the Sound Resources are as follows:

Item	Conditions
File format	Linear PCM WAV file
Number of Channels	Stereo, mono
Number of Bits	16 / 8
Sample Rate	44100 / 22050 / 11025 48000 / 24000 / 12000 32000 / 16000
File Size	Please refer to 14.1 Setting Range List.

* Not all files that meet the requirements can be used.

* When a speaker is connected to the "SPI/PWM Audio Interface", RIGHT (1CH) playback is performed.

Sound Resources list

Items that display in the Sound Resources list.

Item	Default Value	Description
Sound ID	SOUND001~	ID applied when a sound is added. Number of characters: 1 to 8 characters. Character type: Alphanumeric, hyphens (-) and underscores (_).
File	-	File path of the loaded sound file.
Comment	(Blank)	0 to 256 characters can be input freely. Displayed following the memory ID at action or link setting.

[Note]

* You cannot register files with the same file name (even if the files are in different folders).

* You cannot use the same sound ID.

* Displays the address from when the file was loaded. After the file is loaded, the display is not reflected even if there are any changes to the file in the display address.

10. **Fonts**

Chapter Contents

10.1 Font Type
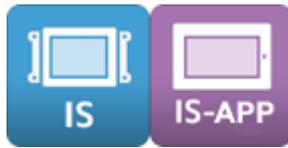
There are two main types of fonts that can be used in this product: "System Fonts" and "Image Fonts".

Font Type	Description
System Fonts	Dedicated font for the InfoSOSA unit. System Font is a kind of True Type Font. So project data size used by font-data is fixed to constant value and does not depend on the strings used in the project. It will allow displaying a large number of strings but typeface will be fixed. If you want to use character display of your image, we recommend a combination of the image font below. Selectable system font will vary depending on the model, at least one System Font is needed in each project.
Image Fonts	Display font installed in the computer as images. If number of fonts to display increases, the project size will also increase due to downloading of fonts to display as bitmaps to InfoSOSA. Also, because bitmaps will be created for each letter and downloaded, font to be displayed will need to be registered to the Builder beforehand.

*　Multiple selections can be made for system fonts for Multi-lingual models (referred to as ML hereafter) and only one for Non Multi-Lingual Models (referred to as Non-ML models).

*　There might be a slight difference of the fonts displayed between the Builder and the InfoSOSA unit. If little adjustments are necessary, please use the simulator to check the display.

*　When using the image fonts, please do so after confirming the terms of use of the fonts.

*　Note that you may not be able to use all the fonts installed on the computer as image fonts.

Comparison of Image Fonts and System Fonts

Item	System Fonts	Image Fonts
Project Data Size	Fixed according to system fonts selected for projects and will use data size whether displayed or not. If multiple system fonts are selected, project data size will increase.	Data size will increase depending on the number of characters to be displayed as image fonts. Also, data size will increase for each character size.
Font	Depends on the selected system font	Depends on the selected Windows® Font. Maximum of 255 types of image fonts can be used for 1 project.
Size	8 to 256 points in 2 increments	8 to 256 points in 2 increments
Multi-Lingual	Automatically distinguishes and displays displayable fonts from the system fonts selected in project.	Displays set image fonts. Cannot automatically distinguish fonts. Registration by customer of strings to displayable image fonts will be necessary.
Conditions which characters cannot be displayed	String cannot be displayed if system font selected in project cannot be displayed.	String cannot be displayed if the set image font cannot be displayed.
Behavior when characters cannot be displayed	Characters that cannot be displayed will be blank.	Attempts will be made to display system fonts alternatively with other fonts selected by project If that does not work, then the character will be left blank

*   Font size: 1 point = 1 pixel

10.2 System Font

10.2.1 List of System Fonts

List of system fonts:

Font	Language	Corresponding Model		Data Size	Remarks
		Non-ML	**ML**		
Gothic (BOLD)	Japanese	○	○	App. 900KB	Select either BOLD or NORMAL
Gothic (NORMAL)	Japanese	○	○	App. 800KB	
Traditional Gothic	Chinese	×	○	App. 1300KB	*1
Simplified Gothic	Chinese	×	○	App. 2500KB	
Hangul Gothic	Korean	○	○	App. 900KB	
Latin Gothic	European	○	○	App. 400KB	

*1 The character display and output device inside of China has been obligated to conform to GB18030 standard. Our product is equipped with the Chinese font that passed the GB18030 conformity inspection and is safe for use in China as is. (To prioritize the display to use a specific font, set the [String Resource Set ID] to [Define Font String Resource Set ID])

Please refer to 9.3.2 Register String Resource Set for the [Define Font String Resource Set ID].

Number of system fonts that can be selected per project:

Non-ML	ML
1 type	Max. of 5 types

Supported languages for each font

Font	Character encoding standard	Supported languages
Gothic (NORMAL)	JIS-X0201	Japanese (alphanumeric)
BOLD/NORMAL	JIS-X0208	Japanese (hiragana, katakana, kanji)
Traditional Chinese Gothic	Big5	Traditional Chinese
Simplified Chinese Gothic	GB18030	Simplified Chinese
Hangul Gothic	KSC-5601	Korean (Hangul characters)

Font	Character encoding standard	Supported languages
Latin Gothic	ISO8859-1 (Latin-1)	English, French, Spanish, German, Italian, Portuguese, Indonesian, Swedish, Dutch, Danish, Norwegian, Finnish, Icelandic, and Faroese
	ISO8859-2 (Latin-2)	Croatian, Czaech, Hungarin, Polish, Romanian, Slovakian, Slovenian, and Sorbian
	ISO8859-3 (Latin-3)	Esperanto, Maltese, and Turkish (old)
	ISO8859-4 (Latin-4)	Estonian, Latvian, and Lithuanian
	ISO8859-5	Bulgarian, Macedonian, Russian, Serbian, and Ukrainian
	ISO8859-7	Modern Greek
	ISO8859-9 (Latin-5)	Turkish (modern)

10.2.2　How to Display System Fonts

In order to display system fonts to parts, "Font Type" of "Advanced Properties Dialog" must be set to "System Font".
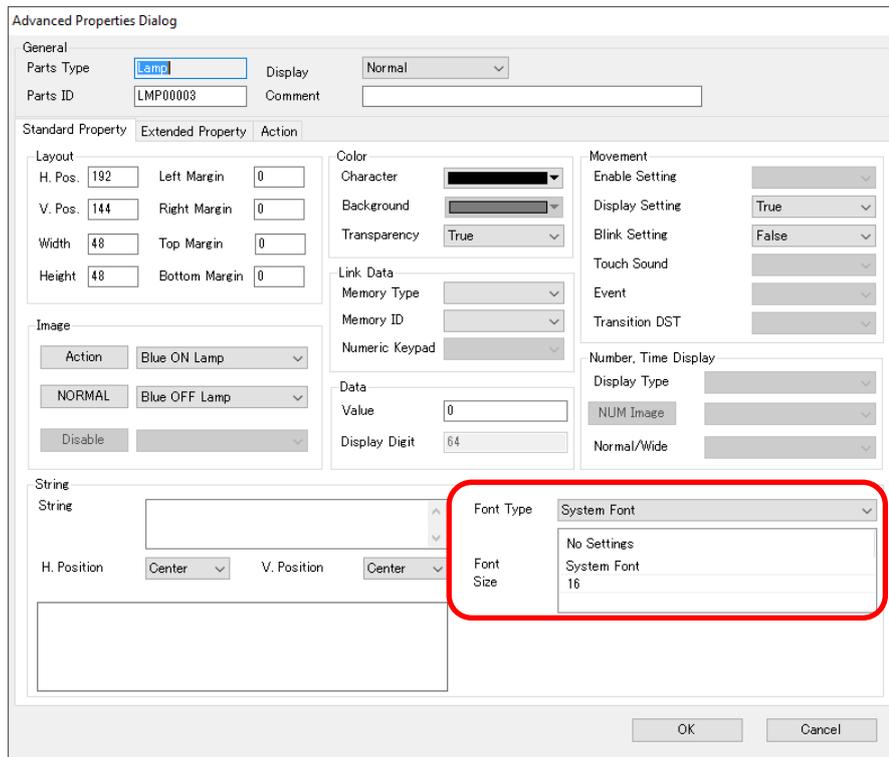
10.2.3　Platform Dependent Characters

Platform dependent characters as below cannot be displayed on both the InfoSOSA Unit and the Builder.

10.3   Image Font

10.3.1   How to Display Image Fonts

In order to display image fonts on parts, set the [Font Type] to [Image Font] and select the display font.
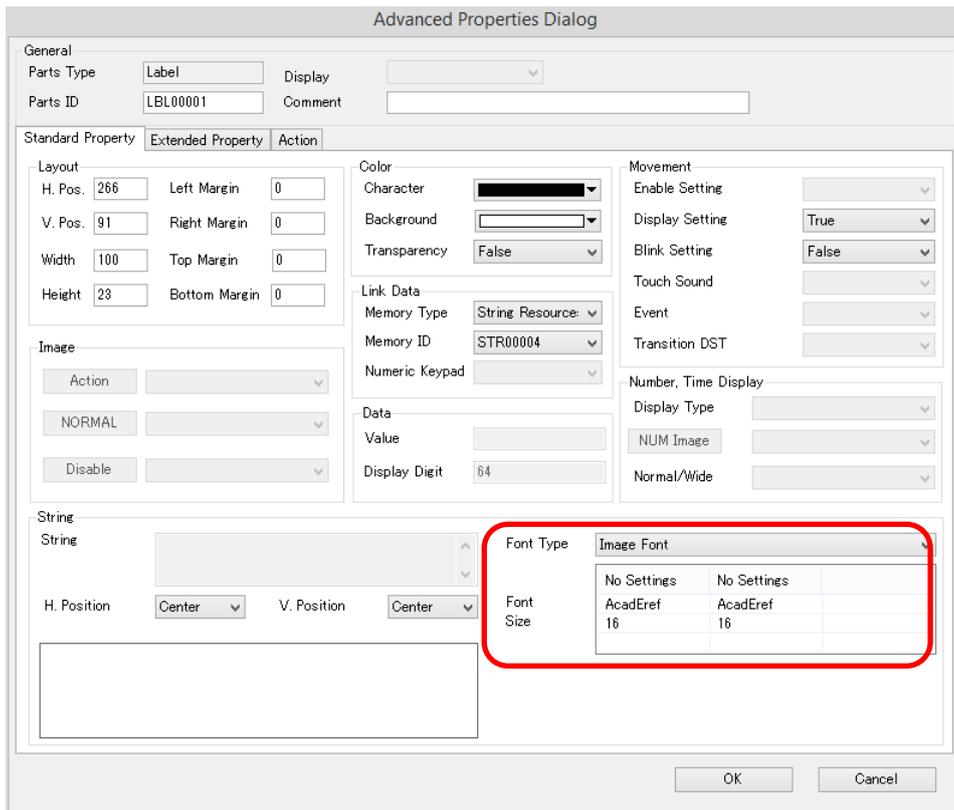
10.3.2 Register Image Fonts

Image fonts are automatically converted to bitmaps, but when changing with Action or Host Communication, it will be necessary to register beforehand the converted font to the Builder.

① From the [System Settings] select [Image Font Registration].
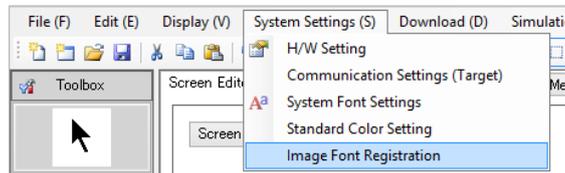
② Register strings for each font/size.
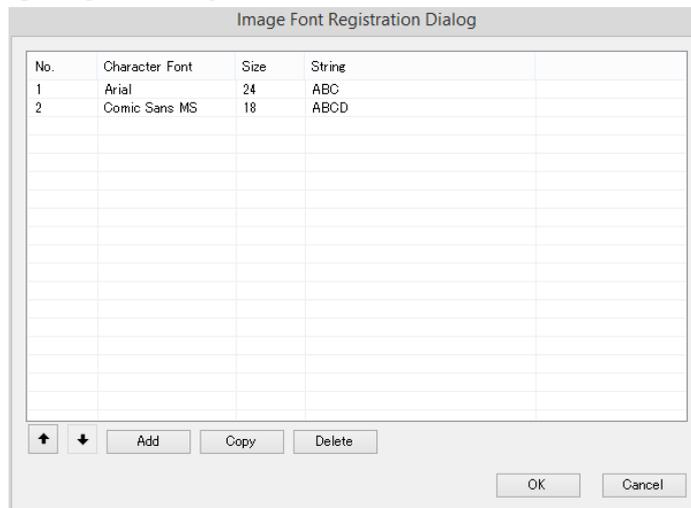
Image fonts will need to be registered according to each 'font typeface' and 'size'.

Bitmap of registered characters of above example.

Character	Font-size
あ	MS Mincho-16pt, MS P Gothic-24pt
い	MS Mincho-16pt, MS P Gothic -24pt
う	MS Mincho-16pt, MS P Gothic -24pt
え	MS Mincho-16pt, MS P Gothic -24pt
お	MS Mincho-16pt, MS P Gothic -24pt
A	MS Mincho-16pt
B	MS Mincho-16pt
C	MS Mincho-16pt
X	MS P Gothic -24pt
Y	MS P Gothic -24pt
Z	MS P Gothic -24pt

Below are the results of when the string is displayed with the registered data as above example.

Font Setting Font-size	String	String Displayed String	Remarks
MS Mincho-16pt	αβγABCXYZ	αβγABC	「X」「Y」「Z」do not come in MS Mincho and will not be displayed.
MS P Gothic-24pt	αβγABCXYZ	αβγXYZ	「A」「B」「C」do not come in MS P Gothic and will not be displayed.

* Some special characters "α", "β", "γ", "δ" , and "ε" are registered to both font types and size, so they can be displayed in both fonts.

10.3.3 Data Size of Image Fonts

Project size will increase according to the Image fonts used.

[Data size calculation]

*<Data size of 1 character>***=font width size X font height size (byte)***

*<Data size used by Image font>***=<Data size of 1 font> X all numbers of registered character**

*   **For double-byte characters, it will be font size to the 2nd power, and font size to the 2nd power divided by 2 for single-byte characters.**

Please note, above is just a rough idea just for reference.

10.3.4   Notes Concerning Image Font 1

When using Image Fonts, please do so upon confirming the terms and conditions of use for each font.

Also, when using inside of China, it is necessary to use fonts conforming the Bitmap Font Data Standards and Bitmap Font Data Size Standards of the GB18030. For more information, please contact us.

10.3.5   Notes Concerning Image Font 2

If the PC you are editing the project on has changed, there may be a situation where the fonts used in the project are not installed on the PC. In this case, an error dialog will appear when you open the project.

Please install the target font or change the font settings to resolve the error. You can check for errors by performing an "Error check". For more information about "Error check", please refer to the separate "InfoSOSA Builder Operation Manual".

10.4 Font When Changing String Mode
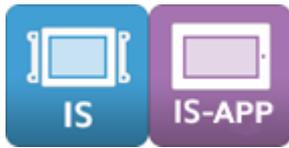
When changing the string mode, the font will be converted accordingly to the setting of the parts to display the font as below:

Character Drawing Method	Behavior
System Font	Selected automatically depending on the string to display. * When you change to the Define Font String Resource Set ID, you can set up a preferred font. Please refer to 9.3.2 Register String Resource Set for details.
Image Font	Display is based on the corresponding font settings for the string mode set up in each part.

11. Environment Variable

Chapter Contents

11.1 Environment Variables
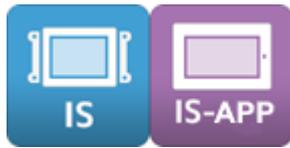
Environment variables are variables that are specified in the InfoSOSA.

Information such as current time and date, brightness of the LCD, and time of automatic power OFF are stored. Environment Variables can be referred to or setup via Action/ Host Communication.

Environment Variables cannot be added nor removed.

It cannot also be edited on the Builder.

For environment dedicated to Modbus communication that are not listed in this section, please refer to the separate "InfoSOSA ModbusDeviceConnection".

11.2 List of Environment Variables

Below is the list of Environment Variables. Part of it can store the values when power is turned OFF.

[IS Series Environment Variables]

ID	Data Type	Property	Value store at power OFF	Description
TRUE	Numeric Value	R[*2]	-	Indicates true logical value
FALSE	Numeric Value	R[*2]	-	Indicates false logical value
YEAR	Numeric Value	R/W	△	Indicates "year" of system clock.
MONTH	Numeric Value	R/W	△	Indicates "month" of system clock.
DAY	Numeric Value	R/W	△	Indicates "day" of system clock.
HOUR24	Numeric Value	R/W	△	Indicates "hour" as 24-hour system clock.
HOUR12	Numeric Value	R	-	Indicates "hour" as 12-hour system clock.
MINUTE	Numeric Value	R/W	△	Indicates "minute" of system clock.
SECOND	Numeric Value	R/W	△	Indicates "second" of system clock.
WEEK	Numeric Value	R	-	Indicates "day of week" of system clock. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
AMPM	Numeric Value	R	-	Indicates "AM / PM" of system clock. 0: AM 1: PM
TOTALSEC	Numeric Value	R	-	Indicates "total seconds" of system clock. January 1, 2000, 00:00:00a.m., is the starting point.
AUTOOFF	Numeric Value	R/W	○	indicates time until LCD is turned OFF automatically. Set in increments of 1 minute between the ranges of 0 to 1440. (0 is always ON)
RST_AOFF	Numeric value	R/W	-	Set "1" and the LCD auto-OFF counter is reset. After the value is updated, automatically returns to 0.
BRIGHT	Numeric Value	R/W	○	Indicates LCD brightness. Brightness can be adjusted from level 1 to 8.

ID	Data Type	Property	Value store at power OFF	Description
				Larger the number, the brighter.
LCD_MODE	Numeric Value	R/W	-	Indicates state of LCD. 0: OFF 1: ON 2: Screen Protected (Returns when touched)
STRMODE	String	R/W	-	Switch the String mode. Sets String Resource ID.
RECVCS1[*1] RECVCS2	Numeric value	R	-	Indicates message reception count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
RECVECS1[*1] RECVECS2	Numeric value	R	-	Indicates message reception error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SENDCS1[*1] SENDCS2	Numeric value	R	-	Indicates message transmissions count to host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SCMDCS1[*1] SCMDCS2	Numeric value	R	-	Indicates setting command reception count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SCMDECS1[*1] SCMDECS2	Numeric value	R	-	Indicates setting command execution error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
GCMDCS1[*1] GCMDCS2	Numeric value	R	-	Indicates acquisition command reception frequency from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
GCMDECS1[*1] GCMDECS2	Numeric value	R	-	Indicates acquisition command execution error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
ADDRESS1	Numeric Value	R/W	○	Indicates the address for SIO1 on the InfoSOSA unit. Valid only when the device for the target interface is RS485. You can set from 1 to 31.
ADDRESS2	Numeric value	R/W	○	Indicates the address for SIO2 on the InfoSOSA unit. Valid only when the device for the target interface is RS485.

ID	Data Type	Property	Value store at power OFF	Description
				You can set from 1 to 31.
DATACHK	Numeric value	R	-	The data check result is stored.

*   "R" of Property stands for "Read Only", and "R/W" stands for "Read/Write".

Please note, when a value is written by Host Communication to the environment variable with an "R" in the property, it will become "undefined".

*   "0" of "Value store at power OFF" will be stored, "△" will only store when connected to the battery, and "−" will be volatile.

 *1 Show Communication Status for each interface. Each end ID of environment variables represent the type of communication interface as shown below:

S1: Serial interface (SIO1)

S2: Serial interface (SIO2)

*2 Host communication acquisition (PA02 command) cannot run.

[IS-APP Environment Variables]

ID	Data Type	Property	Value store at power OFF	Description
TRUE	Numeric Value	R[*2]	-	Indicates true logical value
FALSE	Numeric Value	R[*2]	-	Indicates false logical value
YEAR	Numeric Value	R/W	△	Indicates "year" of system clock.
MONTH	Numeric Value	R/W	△	Indicates "month" of system clock.
DAY	Numeric Value	R/W	△	Indicates "day" of system clock.
HOUR24	Numeric Value	R/W	△	Indicates "hour" as 24-hour system clock.
HOUR12	Numeric Value	R	-	Indicates "hour" as 12-hour system clock.
MINUTE	Numeric Value	R/W	△	Indicates "minute" of system clock.
SECOND	Numeric Value	R/W	△	Indicates "second" of system clock.
WEEK	Numeric Value	R		Indicates "day of week" of system clock. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
AMPM	Numeric Value	R	-	Indicates "AM / PM" of system clock. 0: AM 1: PM
TOTALSEC	Numeric Value	R	-	Indicates "total seconds" of system clock. January 1, 2000, 00:00:00a.m., is the starting point.
AUTOOFF[*4]	Numeric Value	R/W	○[*5]	Indicates the amount of time before the LCD automatically turns off. Can be set in the range of 0 to 1092 in 1 minute increments. (0 means always ON)
BRIGHT[*4]	Numeric Value	R/W	○[*5]	Indicates the LCD brightness. The brightness is adjustable from 1 to 8. The larger the number, the brighter the LCD.
STRMODE	String	R/W	-	Switch the String mode. Sets String Resource ID.
IP1 to 4	Numeric value	R	-	Indicates IP Address of the panel computer.
NETMASK1 to 4	Numeric value	R	-	Indicates subnet mask of the panel computer.
GATEWAY1 to 4	Numeric value	R	-	Indicates default gateway of the panel computer.
TCP_IP11 to 14	Numeric	R	-	Indicates Host Communication destination IP

ID	Data Type	Property	Value store at power OFF	Description
	value			address. (TCP)
TCPPORT1	Numeric value	R	-	Indicates the Host Communication destination port. (TCP)
CONINVAL	Numeric value	R	-	Indicates LAN connection attempt interval.
UDP_IP11 to 14	Numeric value	R	-	Indicates Host Communication destination IP address. (UDP)
UDPPORT1	Numeric value	R	-	Indicates the Host Communication destination port. (UDP)
RECVCS1[*1] RECVCL	Numeric value	R	-	Indicates message reception count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
RECVECS1[*1] RECVECL	Numeric value	R	-	Indicates message reception error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SENDCS1[*1] SENDCL	Numeric value	R	-	Indicates message transmissions count to host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SCMDCS1[*1] SCMDCL	Numeric value	R	-	Indicates setting command reception count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SCMDECS1[*1] SCMDECL	Numeric value	R	-	Indicates setting command execution error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
GCMDCS1[*1] GCMDCL	Numeric value	R	-	Indicates acquisition command reception frequency from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
GCMDECS1[*1] GCMDECL	Numeric value	R	-	Indicates acquisition command execution error count from host. Initial value: 0 Value range: 0 to 2147483647 When the upper limit is reached, the counting stops.
SOUNDVOL[*3*4*5]	Numeric value	R/W	-	Volume level when playing any sound files. You can set from 0 (mute) to 100 (%).
DATACHK	Numeric value	R	-	The data check result is stored.

*   "R" of Property stands for "Read Only", and "R/W" stands for "Read/Write".

    Please note, when a value is written by Host Communication to the Environment variable with an "R" in the property, it will become "undefined".

*   "0" of "Value store at power OFF" will be stored, "△" will only store when connected to the battery, and "–" will be volatile.

*1 Show Communication Status for each interface. Each end ID of Environment variables represent the type of communication interface as shown below:

    S1: Serial interface

    L: LAN interface

*2 Host communication acquisition (PA02 command) cannot run.

*3 SOUNDVOL has the following precautions depending on the device used.
-     The actual volume depends on the speaker and individual sound file settings.
    (The value of SOUNDVOL may not be proportional to the volume.)

-     The value may be rounded off after setting because the volume range of the device is displayed as a percentage.

-     When a USB speaker that operates on bus power is connected, increasing the value of SOUNDVOL may increase power consumption and cause the product to operate unstable.

-     When a speaker is connected to the "SPI/PWM Audio Interface", SOUNDVOL cannot be used. Even in cases other than the above, SOUNDVOL may not be used depending on the connected device.

*4 AUTOOFF, BRIGHT, SOUNDVOL read the system settings in which IS-APP operates when IS-APP is started. If you change it from other than IS-APP after startup, the display will not be reflected.

*5 Do not exit IS-APP or turn off the power for several seconds after changing. It may return to the value before setting.

12. Function Description of InfoSOSA Unit

Chapter Contents

12.1　Backlight Control of LCD

This section describes the backlight control of the LCD.
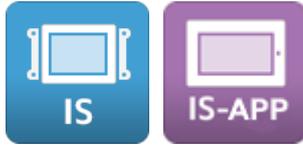
Using actions or Host Communication commands, you can change the brightness of the LCD backlight or turn it ON/OFF. Details are as follows.

12.1.1　LCD Backlight ON/OFF Function

The LCD backlight setting can be done by rewriting the value of the Environment Variable "LCD_MODE" in Action or by Host Communication command "Backlight ON/OFF Setting".

Set Value	State	State of the backlight	Touch input
0	Backlight ON	On	Enable
1	Backlight OFF	Off	Disable
2	Screen protection mode	Off	Enable (When restoring only)

*　The backlight will change to ON state when touch input during Screen Protection Mode. Only the restore process is done and the buttons on the touch location will not work at this point.

*　Host Communication command is needed to change the state of the Backlight OFF to ON.

*　Host Communication and Timer Type Memory is enabled even in the state of Backlight OFF

IS-APP is not supported.

12.1.2 Automatic Backlight OFF Function

This is a feature in which LCD Backlight is automatically turned off if touch input and sheet key input are not in use for a certain time.

When the LCD is in "Backlight OFF" state, it enters "Screen Protection Mode".

Touch input or sheet key input returns the LCD to the "Backlight ON" state.

The initial value can be set from H/W Setting Dialog.

Change during operations can be made by rewriting the value of the Environment Variable of "AUTOOFF" in Action, or by Host Communication command "Backlight auto-off setting" to change in operation.

Automatic backlight OFF time setting is retained even when the power is turned OFF.

Set 1 to the environment variable RST_AOFF either with an action or with a Host Communication command (Property Setting), and the auto-OFF counter is reset. After the value is updated, automatically returns to 0. By setting 1 to the environment variable RST_AOFF periodically, you can temporarily stop the backlight auto OFF function.

List of settable initial values for automatic OFF time

Settings	Description
"No"	Backlight will not automatically shut OFF over time
1 to 10 minutes	It can be set in 1 minute increment
20 to 50 minutes	It can be set in 10 minute increments
1 to 24 hours	It can be set in 1 hour increment

This is a list of setting of configurable initial value in the H/W Setting Dialog Change during operation can be set by minutes from 1 to 1440 minutes (24 hours)

[Note]

If you turn off the power at the same time as changing the Backlight Auto OFF Time, its value may revert to the initial value as set in InfoSOSA Builder.

This function automatically turns off the LCD backlight when there is no touch input for a certain period of time.
It returns to the lighting state of the backlight of the liquid crystal by touch input.
The initial value reads the system settings of the panel computer on which IS-APP operates.

Changes during operation can be done by rewriting the value of the environment variable "AUTOOFF" with an action, or by using the host communication command "Backlight automatic OFF time setting".
The automatic backlight OFF time setting is reflected in the system settings of the panel computer that runs IS-APP and is retained even when the power is turned off.

Settings	Description
0	Backlight will not automatically shut OFF over time
1 to 1092	It can be set in 1 minute increments from 1 minute to 1092 minutes.

* The backlight specification of the panel computer can be set from 1 second to 65535 seconds in 1-second increments, but when IS-APP is started, 1-59 seconds are converted to 1 minute, and 60 seconds or more are converted to minutes (decimal point truncated below) and the system settings are changed.

[Note]
- Do not exit IS-APP or turn off the power for several seconds after changing. It may return to the value before setting.
- If the automatic OFF time setting of the panel computer is changed from other than IS-APP after IS-APP is started, the operation will be changed, but it will not be reflected in the display (set value) on IS-APP.

12.1.3   LCD Brightness Adjustment Function

LCD brightness can be set in 8-stage.

The initial value can be set from H/W Setting Dialog.

Rewrite the value of the Environment Variable "BRIGHT" in action, or Host Communication command "Backlight Brightness Setting" to change during operation.

Brightness setting is retained even when the power is OFF.

Setting	Description
1 - 8	1: Darkest to 8: Brightest

[Note]

If you turn off the power at the same time as changing the brightness, its value may revert to the initial value as set in InfoSOSA Builder.

The brightness of the liquid crystal can be set in 8 steps.

The initial value reads the system settings of the panel computer on which IS-APP operates.

Changes during operation can be done by rewriting the value of the environment variable "BRIGHT" with an action or by using the host communication command "backlight brightness setting".

The brightness setting is reflected in the system settings of the panel computer that runs IS-APP and is retained even when the power is turned off.

Setting	Description
1 - 8	1: Darkest to 8: Brightest

[Note]

- Do not exit IS-APP or turn off the power for several seconds after changing. It may return to the value before setting.
- After starting IS-APP, if you change the brightness setting of the panel computer from other than IS-APP, the brightness will be changed, but it will not be reflected in the display (set value) on IS-APP.

12.2 Buzzer
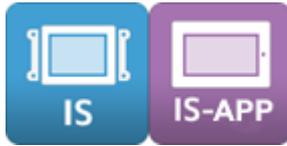
This section describes the ON/OFF of the buzzer.

ON/OFF of the buzzer can be set in the Action Setting of Builder or by Host Communication command.

The buzzer sound can be set from predefined 9 patterns by Action setting, and the Host Communication command allows you to set the frequency (500 - 5,000Hz) and ring time (100 milliseconds to 10 seconds).

Pattern of Buzzer Sound

Name	Frequency
Pattern 1 - 9	1: Lowest to 9: Highest

Enable/Disable as a command line argument when starting the InfoSOSA application.

If disabled, the buzzer will not sound even if it is sounded in Action/Higher-level communication.

12.3　**Sound**

To play sound, an external speaker must be connected to the product.
Connection methods vary by product.

12.3.1　External speaker connection method

EM(G)8-W104A7 / EM(G)8-205A7 Series

Connect the USB speaker to the "USB Host Interface" with the power off.
* 　Operation of all USB speakers is not guaranteed.
* 　When a USB speaker that operates on bus power is connected, increasing the value of the "SOUNDVOL" environment variable may increase power consumption and cause the product to operate unstable.

EM(G)8-W207A7 Series

Use SPI/PWM Audio Interface (default)

Connect a speaker to the "SPI/PWM Audio Interface".
* 　Please refer to the product specifications for the connection method.
* 　The volume cannot be adjusted by the environment variable "SOUNDVOL".
* 　Only RIGHT (1CH) playback is available.

Use USB speaker (Setting change required)

By default, the default sound device is set to "SPI/PWM Audio Interface", so if you want to use USB speakers, you need to change the default sound device.

[Setting Example]
Add the following description to "/etc/asound.conf" (Need to remove write protection)

```
pcm.!default {
    type hw
    card 1
}

ctl.!default {
    type hw
    card 1
}
```

After changing the settings, connect the USB speaker to the USB host interface with the power off.

* Operation of all USB speakers is not guaranteed.
* When a USB speaker that operates on bus power is connected, increasing the value of the "SOUNDVOL" environment variable may increase power consumption and cause the product to operate unstable.
* Sound devices cannot be used with other applications at the same time.

EMG7 Series

Connect a speaker to the "Audio Interface(LINE OUT)".
The connector is a φ3.5 Stereo JACK.

12.3.2　How to Use

Register a WAV file to the sound resource.
The file format that can be imported into the sound resource is WAV files in LPCM format.
For details, please refer to 9.4 Sound Resources.

* Operation of all WAV files is not guaranteed.
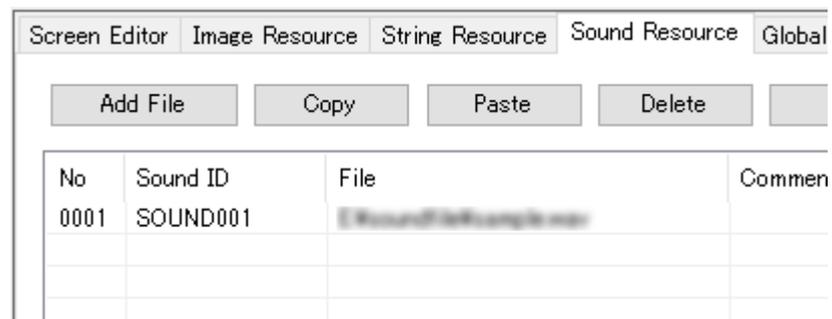
Sound can be played with the action "Sound ON".

Action Settings Dialog

ID: BTN00002

Event: Press

Action Routine
    Sound ON(Sound ON : SOUND001)
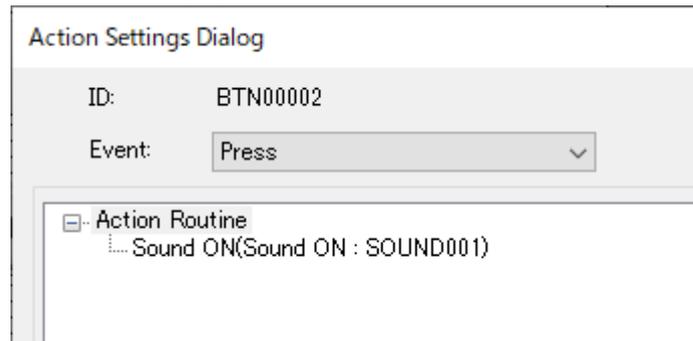
Alternatively, it can also be played back with the higher-level communication command "SD01".

The volume can be changed by changing the value of the "SOUNDVOL" environment variable.

* The actual volume depends on the speaker and individual sound file settings.
  (The value of SOUNDVOL may not be proportional to the volume.)

* The environment variable "SOUNDVOL" cannot be used when a speaker is connected to the "SPI/PWM Audio Interface".

* The value of the environment variable "SOUNDVOL" is not saved. It returns to the initial value when the power is turned off.

12.4　Input from Touch Screen
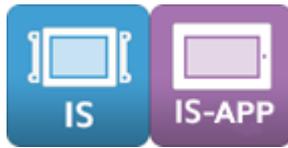
This section describes the input function from the touch screen.

The input from the touch screen will be referred to as "Touch Input" in this manual.

Event is generated when touch input is performed.

12.4.1　Touch Input

Series	Number of simultaneous touches[1]	Gesture operation
IS Series	1	No

[1]　Do not perform multiple touches that exceed the number of simultaneous touches that are possible as it can cause incorrect input.

Differs depending on the number of simultaneous touches.

For the number of touches, please refer to the product specifications for your panel computer.

Series	Number of simultaneous touches[1]	Gesture operation
EM Series	1	Yes[2]
EMG Series	2	Yes

[1]　Do not perform multiple touches that exceed the number of simultaneous touches that are possible as it can cause incorrect input.

[2]　Gestures that require two-point inputs are not executed.

12.4.2 Touch Sound
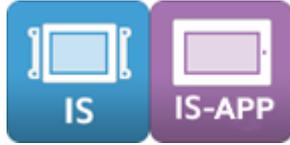
When touch input to touch valid parts, the buzzer will sound.
The buzzer sound that goes off at this time is referred to as "Touch Sound".

Duration and volume of the Touch Sound cannot be changed.

Buzzer execution is overwritten. If you touch the touchscreen, the buzzer started by the Host Communication command will stop.

Touch sound can be set from 9 patterns to each part.
Pattern 1 has the lowest sound and pattern 9 has the highest.
The default setting is "Pattern 6".

With command line arguments at start up of the InfoSOSA application, if you disable the buzzer even touch sounds are not emitted.

12.5   Calibration

If the input coordinate has shifted, it is possible to properly correct the coordinates of the touch screen by using the calibration function.
Calibration is done by Action Setting of the Builder or by Host Communication command.
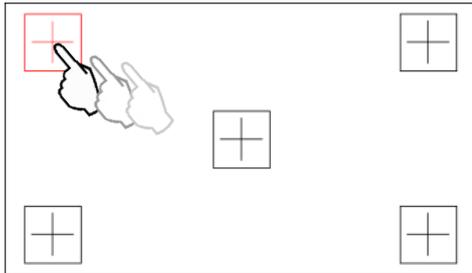
How to Start by Action

Perform the following actions.

Action	Content
To display the calibration screen	Calibrate the coordinates by displaying the built-in screen

How to Start by Host Communication Command

Use the display screen switching command (SC10) by Host Communication during the run. Send a command to switch to the coordination calibration screen.

Screen ID	Content
OSD00001	Calibrate the coordinates by displaying the built-in screen

Command example (data portion only)   * <CR> indicates 0x0d.

SC10,OSD0001[CR]

Other Starting Procedures

If the calibration data is corrupted, it will start at start up.

Execution Procedure

Calibration should be performed using a touch pen.

Touch the center of the cross for more than one second until the beep of confirmation sounds.

Touch all of the crosses that will appear in the following order shown below.

If the operation is not completed within a certain time, it will fail.

Two beeps will sound if failed, so please try again.

① ②

③ ④

⑤ ⑥

⑦ ⑧

⑨ ⑩
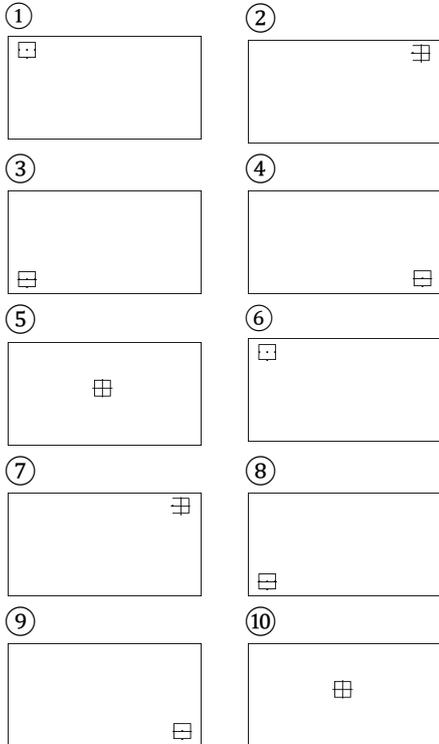
As the IS-APP is one of many applications on a generic panel computer, you cannot run calibration from the InfoSOSA application. Run with either the setting tools for the panel computer or libraries provided for users. For more information, please refer to the "Setting Tool Manual" and "Software Development Manual" for your panel computer.

12.6 Input to Sheet Key and Output to LED

This section describes the functions that can be used if you wish to use the sheet key.
Sheet key is structured of switches and LEDs.

Switch

LED
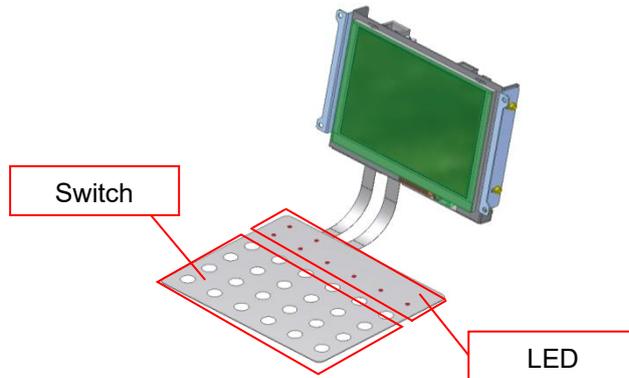
*   Design of the sheet key in the figure is only an example.

*   Sheet key is optional.

*   If sheet key is connected while the power of InfoSOSA is ON, it will cause failures.
    Turn the power of InfoSOSA OFF when connecting or disconnecting the sheet key.

IS-APP does not support the sheet key.

12.6.1   Input of Sheet Key

Input of sheet key switch can be made to a maximum of 24 points.
Input of the switch generates an event in the same way as the touch input.
Different actions can be set to the switch for each screen.
The sound when the switch is pressed will be the same settings as the touch sound.
(Refer to "12.4.2 Touch Sound".)

*   Do not simultaneously press the switch since it is likely to be erroneously recognized.

*   Switch does not retain the state of the ON/OFF.

Properties

Below describes the properties of the sheet key switch.

Property Name	Default value	Description	Changes with Host Communication	Changes with Action
SW existence	(Blank)	Target switch is disabled when x.	×	×
SW ID	XSW01 - 24	ID to determine switch No.	×	×
SW Name	(Blank)	Comments can be added in order to determine on the Builder.	×	×
Input Method	Operation SW input	Currently operation SW input is fixed.	×	×
Screen ID	BAS00001	Settings can be made for each screen.	×	×
Touch Sound	None	Sound when sheet key is pressed can be selected	×	×
Holding Time	0	Time until LongPress event occurs	×	×
Start Time	0	Time until RepeatPress event occurs	×	×
Interval	0.2	Basic interval of RepeatPress events generated	×	×
Minimum Interval	0.2	Minimum interval of RepeatPress events generated	×	×
Step Up	0	Time shortened for each RepeatPress event occurrence	×	×

*   SW ID is fixed for each switch.

*   If the LongPress event is used, set the number of seconds to long press to one or more.

*   If the RepeatPress event is used, set the start time to one or more.

*   Number of seconds for Long Press and the start time cannot be set at the same time. (One or the other must be 0)

*   For more information about the properties, refer to "6.4 Event Details".

Events

Event	Description
Press	Generated when pressed
Release	Generated when released
Long Press	Generated when pressed and held
Repeat Press	Generated repeatedly when pressed and held

* Please refer to "6. Events" for details.

12.6.2　ON/OFF of LED

The output to the LED can be made up to a maximum of 8 points.
The initial value of the LED is OFF.
LED ON/OFF can be set in the action setting of the Builder or by Host Communication command.

Properties

Below describes the properties of the sheet key switch.

Property Name	Default Value	Description	Changes in Host Communication	Changes in action
LED Enable/Disable	(Blank)	Target LED is disabled when ×.	×	×
LED ID	XLED01 - 08	The ID to determine the LED No.	×	×
LED Name	(Blank)	A comment can be added in order to determine on the Builder.	×	×

* LED ID is fixed for each LED.

12.7　Clock Function

This section describes the clock function.

- InfoSOSA is equipped with a clock valid from 0:00:00 of January 1, 2000 to 23:59:59 of December 31, 2037.

- Clock can be displayed/set on InfoSOSA, or acquired/set by Host Communication.

To display on the InfoSOSA, link individually the following Environment Variables and the Number Indicator Parts.
To set on the InfoSOSA, change the following Environment Variable in the action.
＊＊ Attribute "R" cannot be changed.

ID	Attribute	Content
YEAR	R/W	Shows "year" of system clock.
MONTH	R/W	Shows "month" of system clock.
DAY	R/W	Shows "day" of system clock.
HOUR 24	R/W	Indicates "hour" as 24-hour system clock.
HOUR12	R	Indicates "hour" as 12-hour system clock.
MINUTE	R/W	Shows "minute" of system clock.
SECOND	R/W	Shows "seconds" of system clock.
WEEK	R	Shows "day of week" of system clock. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
AMPM	R	Indicates "AM / PM" of system clock. 0: AM 1: PM

Use the "Time Acquisition" command to acquire with the Host Communication.
Use the "Time Setting" command to set with the Host Communication.

* The attribute "R" cannot be set.

* The setting is disabled if set to a time that does not exist.

* The Environment Variable is set to a value (0-6) in "WEEK" and "AMPM". It is possible to display the value as character or image by using Multi-State Lamp.

- By connecting a battery (optional), the clock will operate even when the power is OFF. The battery will go back to the setting 00:00:00 of January 1, 2000 at start up if it is not connected.

* If the power is OFF just for a split second, the time might be maintained.

The IS-APP clock displays the time from the panel computer itself.

*   The supported range is 00:00:00 January 1, 2000 to 23:59:59 December 31, 2037. If you set the date outside the supported range, the clock will not work properly.

The clock of the panel computer can be displayed/set on InfoSOSA, or obtained/set via host communication.

To display on InfoSOSA, link the numeric display parts and the following environment variables individually.
To set it on InfoSOSA, change the following environment variables in your action.

ID	Attribute	Content
YEAR	R/W	Shows "year" of system clock.
MONTH	R/W	Shows "month" of system clock.
DAY	R/W	Shows "day" of system clock.
HOUR24	R	Indicates "hour" as 24-hour system clock.
HOUR12	R/W	Indicates "hour" as 12-hour system clock.
MINUTE	R/W	Shows "minute" of system clock.
SECOND	R/W	Shows "seconds" of system clock.
WEEK	R	Shows "day of week" of system clock. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
AMPM	R	Indicates "AM / PM" of system clock. 0: AM 1: PM

Please use the "RTC Acquisiton" command to get it via host communication.
Use the "RTC Setting" command to set the clock using host communication.

*   The attribute "R" cannot be set.

*   The setting is disabled if set to a time that does not exist.

*   The Environment Variable is set to a value (0-6) in "WEEK" and "AMPM". It is possible to display the value as character or image by using Multi-State Lamp.

12.8 Operation Mode

12.8.1 Normal Mode
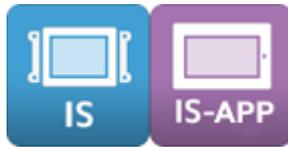
This mode is for running the project (screen data) created with the Builder.
When turning on the power (when IS-APP starts the executable file), it will start up in normal mode.

12.8.2 OSD Mode

This mode displays the setting menu on the LCD display.
You can download projects (screen data) and change settings such as backlight brightness.

Refer to the following for how to start in OSD mode.

- With the USB cable connected to the PC, turn on the power.
- Run the action [Restart in OSD mode].
- Run the Host Communication command RS03 (restart in OSD mode).

OSD mode has the following features.
For more information, please refer to the "IS731 Series Startup Guide".

Items	Contents
Project download	Feature for connecting with InfoSOSA Builder and downloading a project.
USB mode	Feature for connecting InfoSOSA (as a storage device) to a computer.
Communication Settings	You can change the communication settings with a microcontroller board.
LCD Settings	You can set the brightness of the backlight or change its Auto OFF Time.
RTC Setting	Runs the Time Setting.
Touch Screen Calibration	You can run calibration of the touch screen.
Display System Version	Displays the system software version.
Display Model Name	Displays the unit's model name.
Display Unit Serial No.	Displays the unit's serial number.

12.9 Data check function

Describes the function to self-check the screen data downloaded at startup.

Setup

No settings required. It will be done automatically at startup.

Usage

When the data check is complete, the "Data Check Complete" event is fired.
The execution result is stored in the environment variable "DATACHK".
* The "Data Check Complete" event occurs regardless of the display screen.

You can set the action for the "Data Check Complete" event from the "Action Settings (Global)" button in the "Global Memory-General" tab.

The following values are set for the environment variable "DATACHK".

Value	Description
-1	Data check is in progress. Incomplete.
0	Data check completed. No problem.
1	Data check completed. There is data corruption.

Please use this function as follows.

Example 1: Display the implementation result with a multi-state lamp

Set the environment variable "DATACHK" to the multi-state lamp, and set the image for "-1", the image for "0", and the image for "1", respectively.
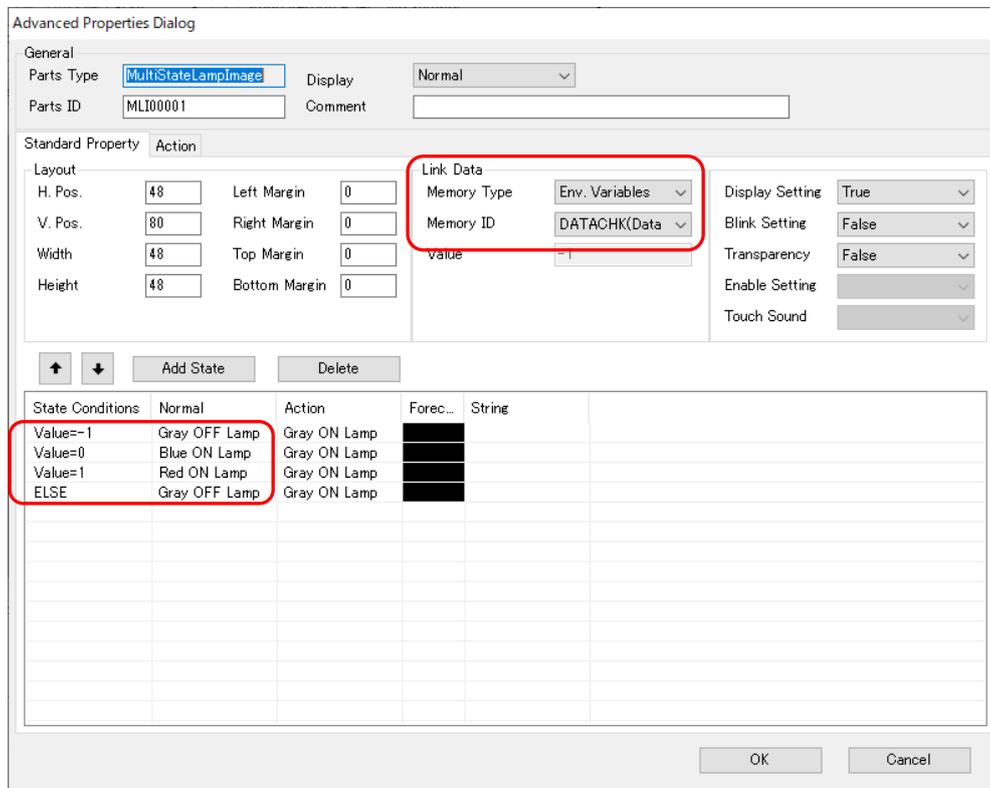
This multi-state lamp should look like this.

State	Display
Data check is in progress. Incomplete.	
Data check completed. No problem.	
Data check completed. There is data corruption.	

Example 2: Display a pop-up screen when an error occurs

In the "Data Check Complete" event, set to display the pop-up screen when the value of the environment variable "DATACHK" is "1".
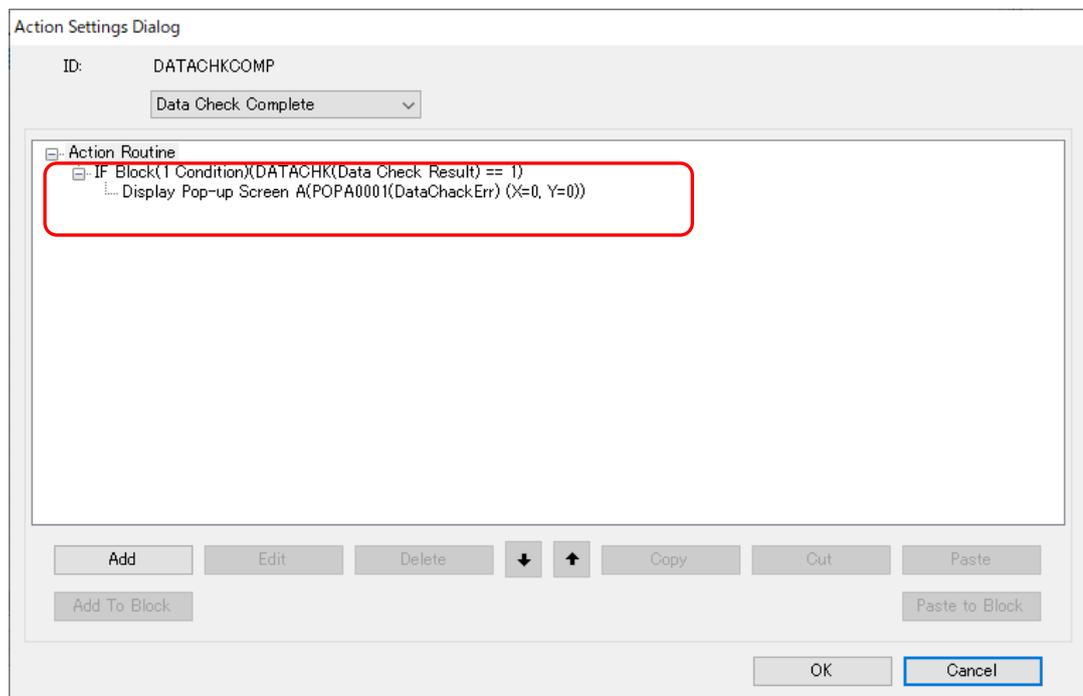
A pop-up screen will be displayed when an error occurs.

Response in case of data corruption

If there is data corruption, please do the following.

For IS731

Format the storage area.
For the format method, refer to the attached "IS731 Series Startup Guide".

For IS-APP

Delete the transferred "data" folder and perform the transfer again.

13. Host Communication

13.1 About InfoSOSA communication functions
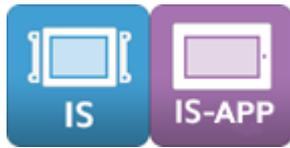
InfoSOSA has a "Host Communication" function using a dedicated protocol and a communication function using the Modbus protocol.
This chapter describes the "Host Communication" function.
For communication using the Modbus protocol, please refer to the separate "InfoSOSA ModbusDeviceConnection".

13.2 Communication Specifications (Serial)
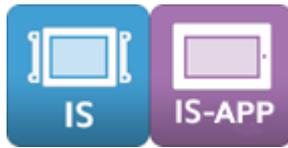
13.2.1 Communication Spec (RS232/422)

Below shows the communication specifications when Host Communication interface is RS232/422 (full duplex).

Items	Specifications
Communication Speed	4800/9600/19200/38400/57600/115200bps
Character Bit	8 Bit
Parity	None/Even/Odd (Set with InfoSOSA Builder)
Stop Bit Length	1 Bit
Flow Control	Yes (RTS/CTS Control) / No * For RS422, fixed to [None]
Transmission Code	ASCII Code However, string uses ASCII code or Unicode (UTF-16LE) (Character code can be switched by communication command)

Items	Specifications
Communication Speed	4800/9600/19200/38400/57600/115200bps
Character Bit	8 Bit
Parity	None/Even/Odd (Set with InfoSOSA Builder)
Stop Bit Length	1 Bit
Flow Control	None
Transmission Code	ASCII Code However, string using the ASCII code or Unicode (UTF-16LE) (Character code will be switched by communication command)

13.2.2　Communication Format (RS232/422)

Below shows the communication format when Host Communication interface is RS232/422 (full duplex).

Type	Items	No. of bytes	Set value	Description
Header	Start	1	0x02	STX code (0x02)
	Destination Address	2	'00'	Not used in RS232/422
	Message Type	1	-	Indicates type of message. For more information, refer to "13.2.5 Message Type (Serial)".
	Sequence Number	1	'0'	Sequence number indicates that it is invalid.
			'1' - 'F'	Shows sequence number. [1] For more information, refer to "13.4 Communication Mode".
	Transmission Source Address	2	'00'	Not used in RS232/422
	Reserved	1	'0'	Not used
	Data Length	4	'0000' - '0200'	Number of data in the data portion[1][2]
Data	Data	0 - 512	-	Command + parameters and response
Footer	Checksum	4	-	Error detection sign[1][3]
	End	1	0x03	ETX code (0x03)

*1　Send the setting value as a hexadecimal string in ASCII code.

*2　There is a case more than 512 bytes in case of the response of a multi-command.

*3　Checksum calculation method: Checksum targets the transmission data between <STX> and the end of the data part
 (1)　Add the message 1 byte at a time from the beginning to the end of the target range.
 (2)　Divide the sum of (1) with 65536 and round to 2 byte value.
 (3)　Express the 2 byte value of (2) in 4 digit ASCII character code.

[Example]
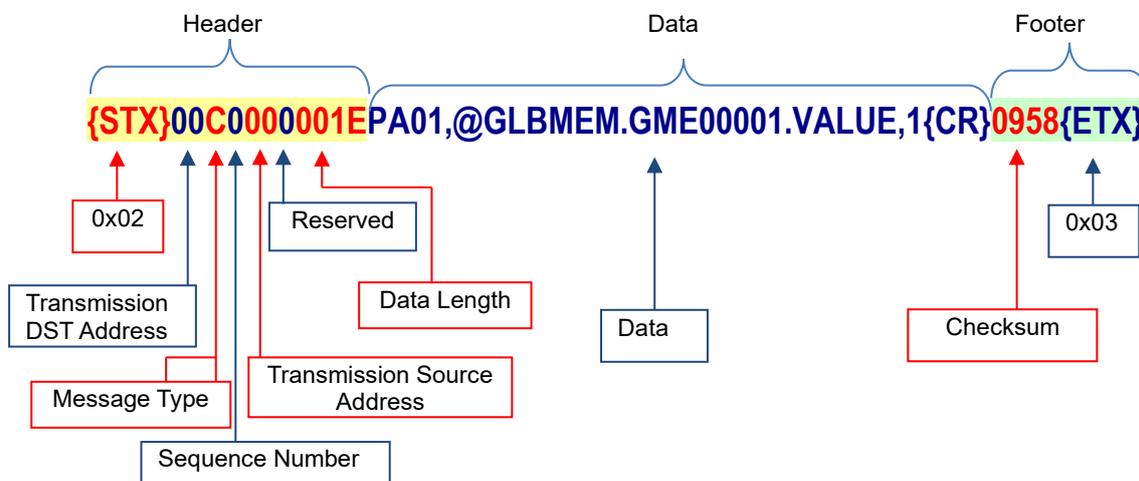
13.2.3   Communication Spec (RS485)

Below shows the communication specifications when Host Communication interface is RS485 (half duplex).

Items	Specifications
Communication Speed	4800/9600/19200/38400/57600/115200bps
Character Bit	8 Bit
Parity	None/Even/Odd
Stop Bit Length	1 Bit
Flow Control	None
Transmission Code	ASCII Code However, string using the ASCII code or Unicode (UTF-16LE) (Character code will be switched by communication command)
Device ID	0: Indicates Host device. 1 to 31: Configurable device ID

*   After receiving command from InfoSOSA, do not send data from the host device for 20 milliseconds. There is a possibility that it cannot be carried out correctly.

13.2.4   Communication Format (RS485)

Below shows the communication format when Host Communication interface is RS485 (half duplex).

Type	Items	No. of bytes	Set value	Description
Header	Start	1	0x02	STX code (0x02)
	Destination Address	2	'00'	RS485 address of Host Device
			'01' ~ '1F'	RS485 address of InfoSOSA Unit [*1]
	Message Type	1	-	Indicates type of message. For more information, refer to "13.2.5 Message Type (Serial)".
	Sequence Number	1	'0'	Sequence number indicates that it is invalid.
			'1' - 'F'	Shows sequence number. [*1] For more information, refer to "13.4 Communication Mode".
	Transmission Source Address	2	'00'	RS485 address of Host Device
			'01' ~ '1F'	RS485 address of InfoSOSA Unit [*1]
	Reserved	1	'0'	Unused
	Data length	4	'0000' - '0200'	Number of data in the data portion [*1] [*2]
Data	Data	0 - 512	-	Command + parameters and response
Footer	Checksum	4	-	Error detection sign [*1] [*3]
	End	1	0x03	ETX code (0x03)

*1   Send the setting value as a hexadecimal string in ASCII code.

*2   There is a case more than 512 bytes in case of the response of a multi-command.

*3   Checksum calculation method: Checksum targets the transmission data to the end of the data part. Add the message 1 byte at a time from the beginning to the end of the target range. Divide the sum of (1) with 65536 and round to 2 byte value. Express the 2 byte value of (2) in 4 digit ASCII character code. InfoSOSA will not execute the command if the checksum of the message received is incorrect. However, if the checksum is '0000' it will run without detecting the error.

[Example]
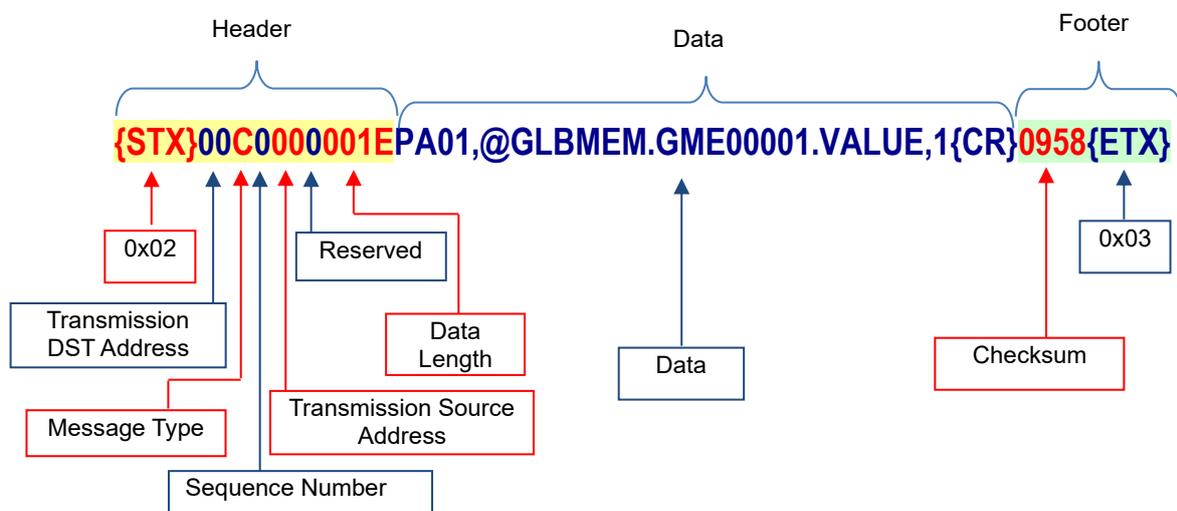
13.2.5 Message Type (Serial)

Below shows the transmission type of communication with the serial communication.

Message type	Direction of Communication Message	Description
'C'	Host device to InfoSOSA unit	Command Message Please refer to 13.6 Command Message (C) and Response Message (r) for details.
'A'	Host device to InfoSOSA unit	Acknowledgment Message Please refer to 13.8 ACK Message (A) (a) for details.
'N'	Host device to InfoSOSA unit	Negative Response Message Please refer to 13.9 NAK Message (N) (n) for details.
'P'	Host device to InfoSOSA unit	Polling Message Please refer to 13.11 Polling Message (P) for details.
's'	InfoSOSA unit to Host device	Start Message (When InfoSOSA unit is started, notifies it to Host device) Please refer to 13.5 Start Message (s) for details.
'r'	InfoSOSA unit to Host device	Response Message Please refer to 13.6 Command Message (C) and Response Message (r) for details.
'b'	InfoSOSA unit to Host device	Busy Response Message (At command receive, transmitted when execution of wait command exceeds specified amount) Please refer to 13.10 Busy Message (b) for details.
'a'	InfoSOSA unit to Host device	Acknowledgment Message Please refer to 13.8 ACK Message (A) (a) for details.
'n'	InfoSOSA unit to Host device	Negative Response Message Please refer to 13.9 NAK Message (N) (n) for details.
'e'	InfoSOSA unit to Host device	Notification Message Please refer to 13.7 Notification Message (e) for details.

13.3   Communication Specifications (LAN)

13.3.1   Communication Specifications (LAN)

Below shows the communication specifications when Host Communication interfaces is a LAN. Set up the IP address and ports of the host device with the startup arguments. For more information, please refer to the "IS-APP Startup Guide".

Items	Specifications
Transport Layer Protocol	TCP/IP, UDP/IP (Set with InfoSOSA Builder)
The panel computer unit's IP address	Please refer to the manual of your panel computer.
InfoSOSA Unit Receiving port	Value set in host device's receive port is used.
The panel computer unit's Sub-net mask	Please refer to the manual of your panel computer.
The panel computer unit's Default gateway	Please refer to the manual of your panel computer.
Host Device IP address	IP address of host device to communicate with InfoSOSA
Host Device Receive Port	Port of host device to communicate with InfoSOSA * Use same number of both sending port and receiving port of host device.
Transmission Code	ASCII code However, string uses ASCII code or Unicode (UTF-16LE) (change the character code with communication commands)

Communication Ports

When set up as shown in the following table, set up the host device as illustrated.

Items	Set value
Panel Computer Unit IP Address	192.168.0.130
Host Notification IP address	192.168.0.100
Host Notification port	51111

TCP/IP

InfoSOSA (TCP Client)

Host Device (TCP Server)

IP Address：
192.168.0.130

IP Address：
192.168.0.100

Transceiver port: Any

Transceiver port: 51111

UDP/IP

InfoSOSA

Receive port: 51111

Transmitter port: 51111

Host Device

IP Address：
192.168.0.130

IP Address：
192.168.0.100

Transmitter port: Any

Receiver port: 51111
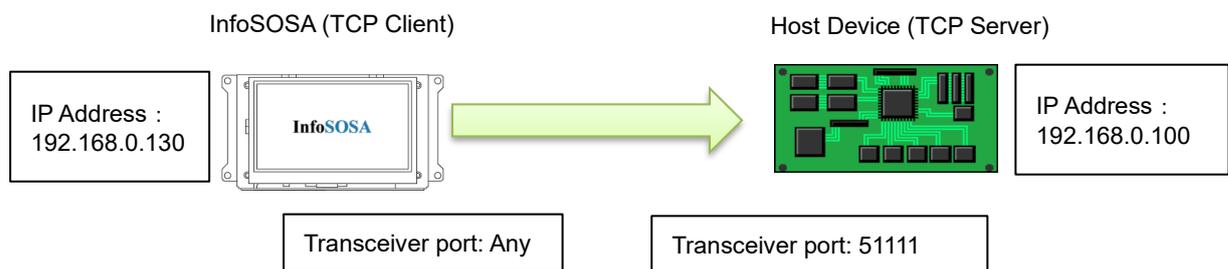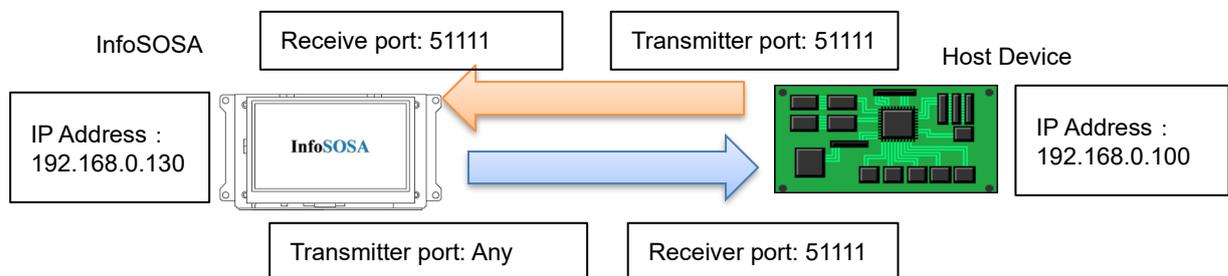
13.3.2   Communication Format (LAN）

Below shows the communication format when Host Communication interface is a LAN.

Type	Items	No. of bytes	Set value	Description
Header	Message Type	1	-	Indicates type of message For more information, refer to "13.3.3 Message Type (LAN)".
	Sequence Number	1	'0'	Indicates that sequence number is invalid.
			'1' ~ 'F'	Shows sequence number. [*1] For more information, refer to "13.4 Communication Mode".
	Reserved	2	'00'	Unused
	Data Length	4	'0000' - '0200'	Number of data in the data portion[*1 *2]
Data	Data	0~512	-	Command + parameters and response

*1   Send the setting value as a hexadecimal string in ASCII code.

*2   May exceed 512 bytes when responding to a multi-command.

[Example]

Header   Data

C000001EPA01,@GLBMEM.GME00001.VALUE,1{CR}

Reserved

Data Length

Data

Message Type

Sequence Number
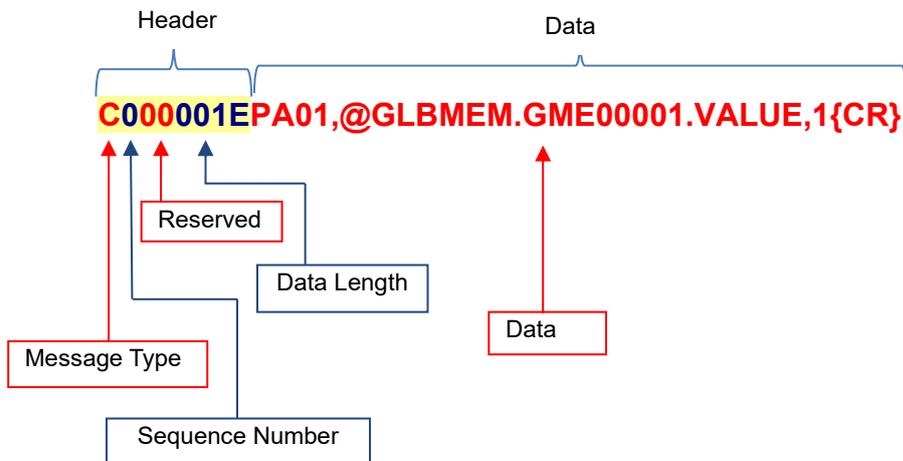
13.3.3　Message Type (LAN)

Below shows the transmission type of communication with the LAN communication.

Message type	Direction of communication Message	Description
'C'	Host device to InfoSOSA unit	Command Message Please refer to 13.6 Command Message (C) and Response Message (r) for details.
'A'	Host device to InfoSOSA unit	Acknowledgment Message Please refer to 13.8 ACK Message (A) (a) for details.
'N'	Host device to InfoSOSA unit	Negative Response Message Please refer to 13.9 NAK Message (N) (n) for details.
'P'	Host device to InfoSOSA unit	Polling Message Please refer to 13.11 Polling Message (P) for details.
'K'	Host device to InfoSOSA unit	Connection confirmation Message at time of TCP/IP communication Please refer to 13.12 Connection Confirmation Message (K) for details.
's'	InfoSOSA unit to Host device	Start Message (When InfoSOSA unit is started, notifies it to Host device) Please refer to 13.5 Start Message (s) for details.
'r'	InfoSOSA unit to Host device	Response Message Please refer to 13.6 Command Message (C) and Response Message (r) for details.
'b'	InfoSOSA unit to Host device	Busy Response Message (At command receive, transmitted when execution of wait command exceeds specified amount) Please refer to 13.10 Busy Message (b) for details.
'a'	InfoSOSA unit to Host device	Acknowledgment Message Please refer to 13.8 ACK Message (A) (a) for details.
'n'	InfoSOSA unit to Host device	Negative Response Message Please refer to 13.9 NAK Message (N) (n) for details.
'e'	InfoSOSA unit to Host device	Notification Message Please refer to 13.7 Notification Message (e) for details.

13.4   Communication Mode
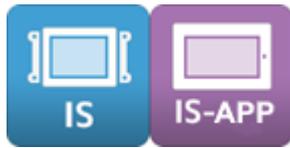
There are two types of communication mode in the InfoSOSA. One is "Normal Protocol" and the other is "InfoSOSA Protocol".

Normal Protocol

InfoSOSA unit always returns a response message to the message from the host device.
Normal Protocol is the "handshake" communication mode in which the host device and the InfoSOSA unit communicates with a handshake.

[The Behavior of InfoSOSA Unit]
- InfoSOSA will return a NACK if the message from the host device is the same sequence number as the previous one.
- InfoSOSA will return a response message in the same sequence number to the message from the host device.
- The sequence number added to the transmission message of action "Notify event (value) to Host" will increase by 1 each time executed.* The range is "1 to F". After "F" it will return to "1".
- InfoSOSA will be in ACK wait after the execution of the action "Notify event (value) to Host".
- ACK wait of InfoSOSA will terminate upon reception of ACK of the same sequence number as the transmission message from the Host.
- InfoSOSA will ignore ACK and NACK received from the Host while in ACK wait.
- InfoSOSA will resend the same sequence number after "Event Response Monitoring Time" has elapsed or if NACK is received after the start of ACK wait.
- Commands other than ACK and NACK will be executed as usual even if in ACK wait.
  * InfoSOSA will hold the response transmission until ACK is complete while communicating with RS485.
- InfoSOSA will hold the action "Notify event (value) to Host" if it is re-executed while in ACK waits.

InfoSOSA Protocol

InfoSOSA Protocol is the "no handshake" communication mode that returns only the necessary response to the message from the host device.

*   Sequence number cannot be managed because there is no response message.

*   Only the necessary response is performed in multi-command.

*   A busy response will be sent if the execution waiting command exceeds the specified amount when commands are received.

13.5 Start Message (s)
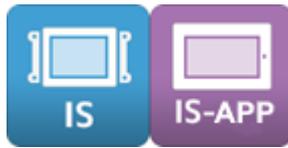
Start Message is the communication data that notifies the start from the "InfoSOSA" to the "Host devices".

Port	Notification on/off
SIO1	Yes*
SIO2	Yes*
LAN	Yes*

* Only when enabled

* Start packet will be sent even if the Notification Method is set to "Upon Request".

InfoSOSA   Host Device
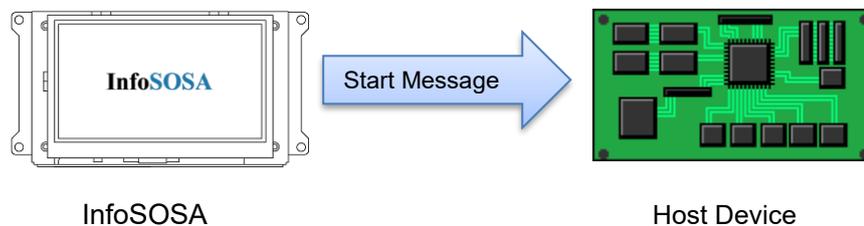
Detail

<<Message Type>>

    s

<<Data>>

    < Host Communication major version> <Host Communication minor version>

Parameters	Contents
<Host Communication major version>	4 byte Host Communication major version ASCII code string. It will be in ASCII Code
<Host Communication minor version>	4 byte Host Communication minor version ASCII code string. It will be in ASCII Code

* Sequence number is always 0.

Message Example

[Serial]

Header   Data   Footer

{STX}00**s**00000008**00010000**03DC{ETX}

Message Type
(s)

Data

[LAN]

Header   Data

s00000008**00010000**
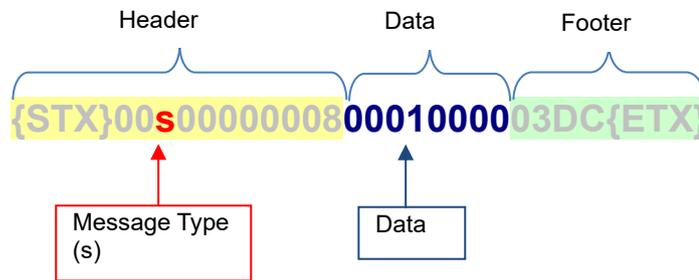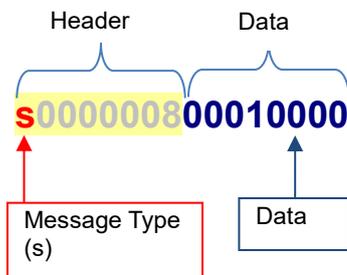
Message Type
(s)

Data

13.6 Command Message (C) and Response Message (r)
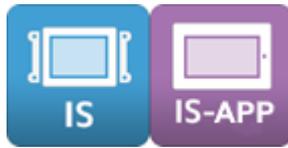
The command message is a communication data that gives commands to the "InfoSOSA" from the "host device".
Depending on the type of instruction, communication command will change.
The response message is a communication data that notifies the execution results of the command message from the "InfoSOSA unit" to the "host device".

Command Message(C)

Response Message (r)*

InfoSOSA

Host Device
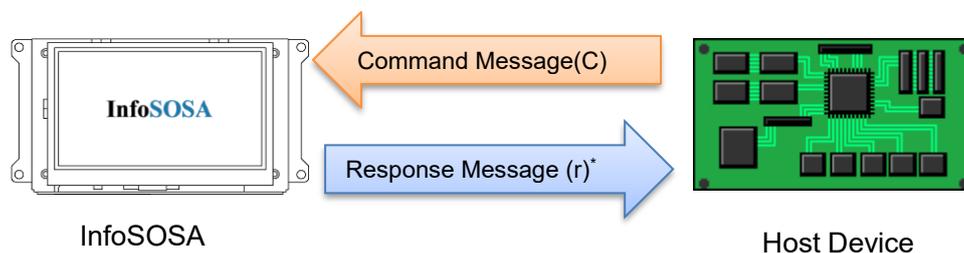
For InfoSOSA protocol, response message of the set command will not be sent.

Communication Mode	Command section	Response from InfoSOSA
InfoSOSA Protocol	Setting	No
	Acquisition	Yes
Normal Protocol	Setting	Yes
	Acquisition	Yes

Detail

<<Message Type>>

Command Message：C

Response Message：r

<<Data>>

It will vary by communication command.

For more information on communication commands, refer to

"13.13 Communication Command Detail".

Message Example

[Serial (Command Message)]

Header   Data   Footer

{STX}00**C**0000001CPA02,@GLBMEM.GME00001.VALUE{CR}08FA{ETX}

Message Type
(C)

Data

[Serial (Response Message)]

Header   Data   Footer

{STX}00**r**0000001EPA02,@GLBMEM.GME00001.VALUE,1{CR}0988{ETX}

Message Type
(r)

Data

[LAN(Command Message)]

Header   Data

C000001CPA02,@GLBMEM.GME00001.VALUE{CR}

Messae Type
(C)

Data

[LAN(Response Message)]

Header   Data

r000001EPA02,@GLBMEM.GME00001.VALUE,1{CR}

Message Type
(r)

Data
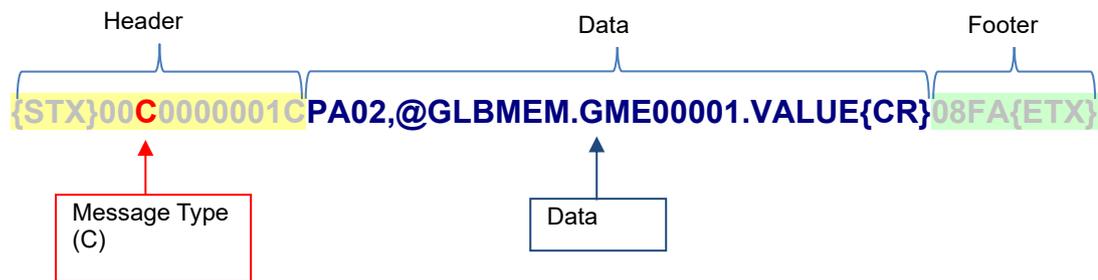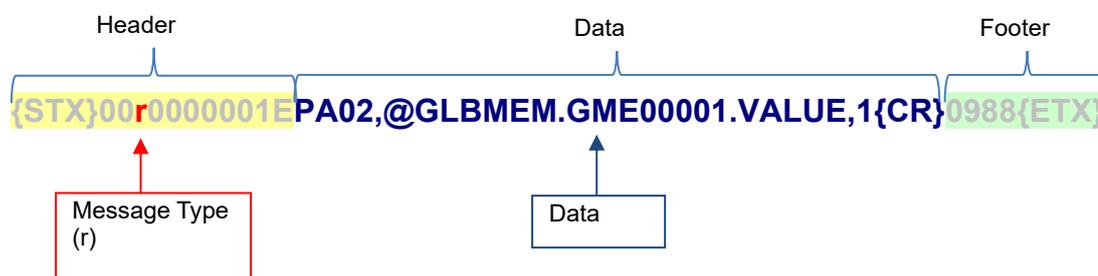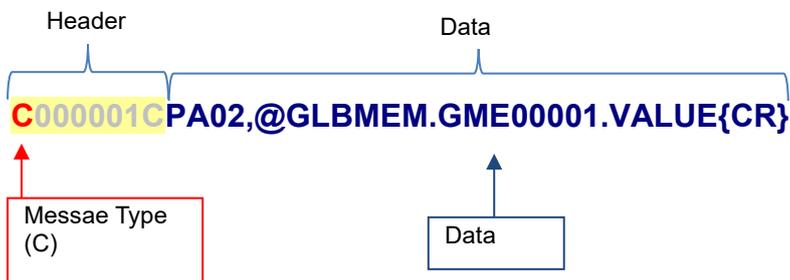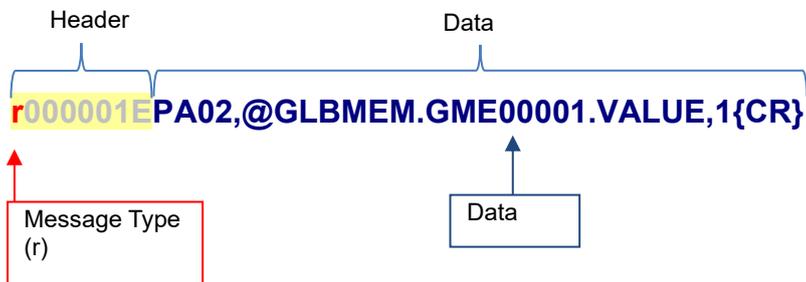
13.6.1 Communication Command List

Communication command has the following types.

[Common Communication Command]
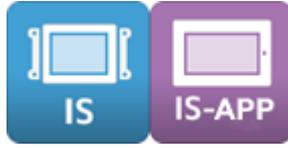
Communication Command	Communication Command Name	Classification	IS7	IS-APP	Description
SI02	Version acquisition	Acquisition	○	○	Acquire the version of InfoSOSA Application.
SI03	Character code setting	Configuration	○	○	Set the character code to be used in the specified string.
SC04	Backlight auto-off time setting	Configuration	○	○	Set auto-off time of backlight.
SC05	Backlight auto-off time acquisition	Acquisition	○	○	Acquire auto-off time of backlight.
SC06	Brightness setting of the backlight	Configuration	○	○	Set the brightness of backlight.
SC07	Brightness acquisition of backlight	Acquisition	○	○	Acquire brightness of backlight.
SC10	Display screen switching	Configuration	○	○	Switch display screen.
SC11	Display screen acquisition	Acquisition	○	○	Acquire screen being displayed.
SC13	Display Pop-up Screen A	Configuration	○	○	Display Pop-up Screen A
SC14	Display Pop-up Screen B	Configuration	○	○	Turn ON display of Pop-up Screen B.
SC15	Display OFF of Pop-up Screen A	Configuration	○	○	Turn OFF display of Pop-up Screen A.
SC16	Display OFF of Pop-up Screen B	Configuration	○	○	Turn OFF display of Pop-up Screen B.
SC17	Display state acquisition of Pop-up Screen	Acquisition	○	○	Acquire display state of Pop-up Screen.
BZ01	Buzzer ON	Configuration	○	△ *	Turn ON buzzer.
BZ02	Buzzer state acquisition	Acquisition	○	△ *	Acquire ON/OFF state of buzzer.
TC01	Time setting	Configuration	○	○	Set time.
TC02	Time acquisition	Acquisition	○	○	Acquire time.
PA01	Property setting	Configuration	○	○	Set property.
PA02	Property acquisition	Acquisition	○	○	Acquire property.
PA03	Method execution	Configuration	○	○	Run method.
PA05	Group data set	Configuration	○	○	Set value to group data.
PA06	Group data	Acquisition	○	○	Acquire value of group data.

Communication Command	Communication Command Name	Classification	IS7	IS-APP	Description
	acquisition				
PA07	Subroutine execution	Configuration	○	○	Run any of subroutine.

* You can use these parts only when buzzer is enabled.

[IS only Communication Command]

Communication Command	Communication Command Name	Classification	IS7	IS-APP	Description
SI01	Model name acquisition	Acquisition	○	-	Acquire the model name.
SC01	Backlight ON/OFF Setting	Configuration	○	-	Set ON/OFF of backlight.
SC02	Backlight ON/OFF State Acquisition	Acquisition	○	-	Acquisition of ON/OFF state of the backlight.
TP01	Touch input enable/disable setting	Configuration	○	-	Set enable/disable setting of touch input.
TP02	Touch input enable/disable acquisition	Acquisition	○	-	Acquire enable/disable state of touch input.
TP06	Touch input coordinate acquisition	Acquisition	○	-	Acquire coordinates of last pressed touch screen.
SW01	State acquisition of sheet key switch	Acquisition	○	-	Acquire state of switch sheet key.
LD01	Output to sheet key LED	Configuration	○	-	Turning ON/OFF of the sheet key LED.
LD02	Output state acquisition of sheet key LED	Acquisition	○	-	Acquire output state of LED of sheet key.
RS01	Reboot	Acquisition	○	-	Reboot InfoSOSA.
RS03	Restart in OSD mode	Acquisition	○	-	Restarts in OSD mode.

[IS-APP Communication Command]

Communication Command	Communication Command Name	Classification	IS7	IS-APP	Description
SD01	Sound ON / OFF	Configuration	-	○	Turns sound ON/OFF.
SD02	Get Sound Status	Acquisition	-	○	Gets the sound's ON/OFF status.

13.6.2　Single Command and Multi-Command

Command message has a single command that sends one communication command and a multi-command that sends multiple communication commands.

Single Command

One communication message executes one communication command.

[Example]

{STX}00C0000001E**PA01,@GLBMEM.GME00001.VALUE,1{CR}**0958{ETX}

Communication Command

Multi-Command

One communication message executes communication commands with multiple communication commands.
The response will be returned only to the acquisition command for InfoSOSA protocol.
Please note that it will not run if the data portion exceeds 512 bytes.

[Example]

{STX}00C0000003C**PA01,@GLBMEM.GME00001.VALUE,1{CR}****PA01,@GLBMEM.GME00002.VALUE,5{CR}**107C{ETX}

Communication Command 1　　**Communication Command 2**

13.7 Notification Message (e)
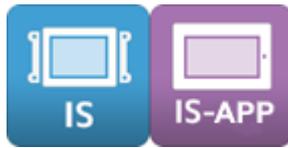
The notification message is a communication data that notifies from the "InfoSOSA" to the "host device".

It transmits by executing action "7.5.1 Notify Event to Host" or "7.5.3 Notify value to Host". It can inform events to the host device such as the button of InfoSOSA has been pressed.
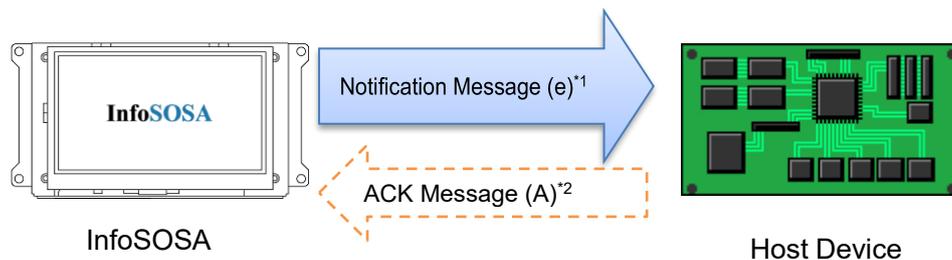
*1   Transmission will be held until "13.11 Polling Message (P)" is received when Notification Method is set to "Upon Request".

*2   ACK message is not required for InfoSOSA protocol.

Communication Mode	Acknowledgment of Host Device
InfoSOSA protocol	Unnecessary
Normal protocol	Necessary

13.7.1   Event Notification

When the action "7.5.1 Notify Event to Host" is executed in the InfoSOSA unit, it will notified in the following format.

Detail

<<Message Type>>
    e
<<Data>>
    PA04,<Event>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   If the Communication Mode is "Normal Protocol", the host device should send an ACK message.

Parameter	Contents
<Event>	Shown in the following format. Format: [Screen ID].[Parts ID].[Event ID] * Delimiter of each ID is "." Period (0x2e) Please refer to "13.14.1Property/Event" for details.

Message Example

[Serial]

Header   Data   Footer

{STX}00**e**1000001DPA04,BAS00001.BTN00001.PRESS{CR}090E{ETX}

Message Type
(e)

Data

[LAN]

Header   Data

e100001DPA04,BAS00001.BTN00001.PRESS{CR}

Message Type
(e)

Data
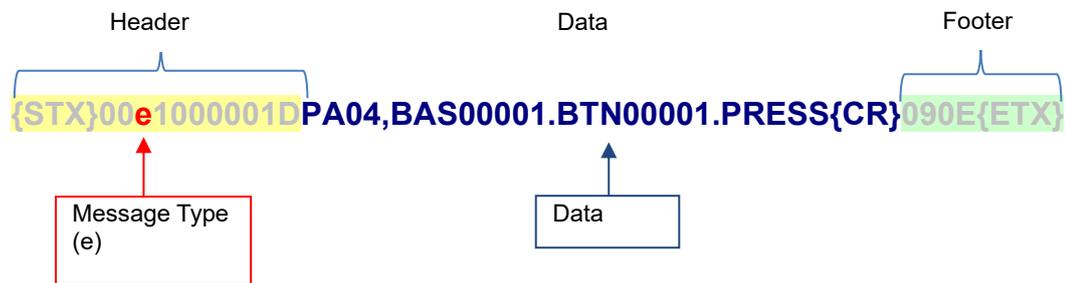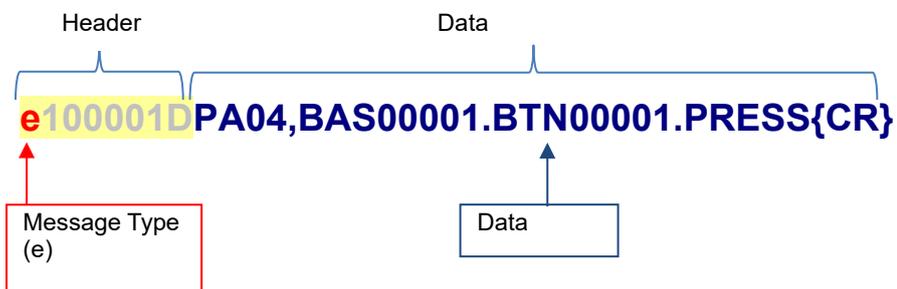
13.7.2   Value Notification

When the action "7.5.3 Notify value to Host" is executed in the InfoSOSA unit, it will notified in the following format.

Detail

<<Message Type>>
>   e

<<Data>>
>   PA04,<event>,<value 1>,<value 2>,<value 3>,<value 4>,<value 5>,<value 6>{CR}

* Only the parameters set in the Builder of <value 1> to <value 6> is sent.

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* If the communication mode is "Normal Protocol", host shall send an ACK message.

Communication Mode	Acknowledgment of Host Device
InfoSOSA protocol	Unnecessary
Normal protocol	Necessary

Parameter	Contents
<Event>	Shown in the following format. Format: [Screen ID].[Parts ID].[Event ID] * Delimiter of each ID is "." Period (0x2e). Please refer to "13.14.1 Property/Event" for details.
<Value*>	Shown in the following format. For numeric memory [Memory ID]=[Value] * Delimiter of [Memory ID] and [Value] is "=" Equal (0x3d). For string type memory [Memory ID]='[String]' * Delimiter of [Memory ID] and '[String]' is "=" Equal (0x3d). * [String] is enclosed in " ' " single quotation marks (0x27).

Message Example

[Serial]

Header — Data

{STX}00**e**10000034**PA04,BAS00001.BTN00001.PRESS,GME00001=23,GME00002=5{CR}**0E01{ETX}

Messag Type (e)

Footer

Data

【LAN】

Header — Data

e1000034**PA04,BAS00001.BTN00001.PRESS,GME00001=23,GME00002=5{CR}**

Message Type (e)
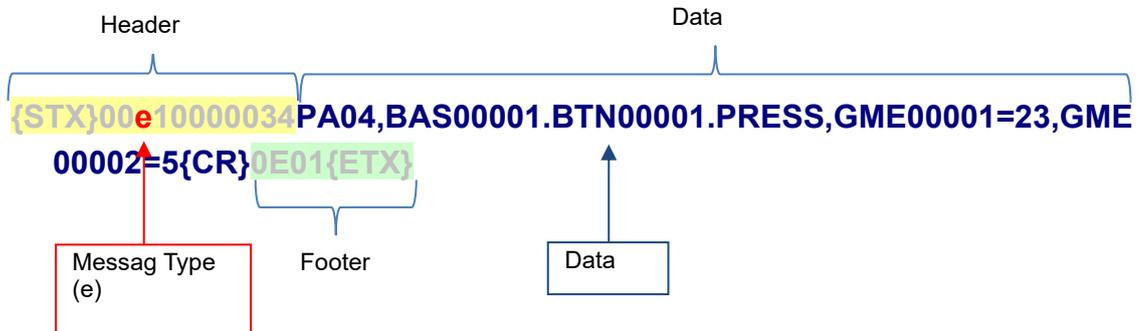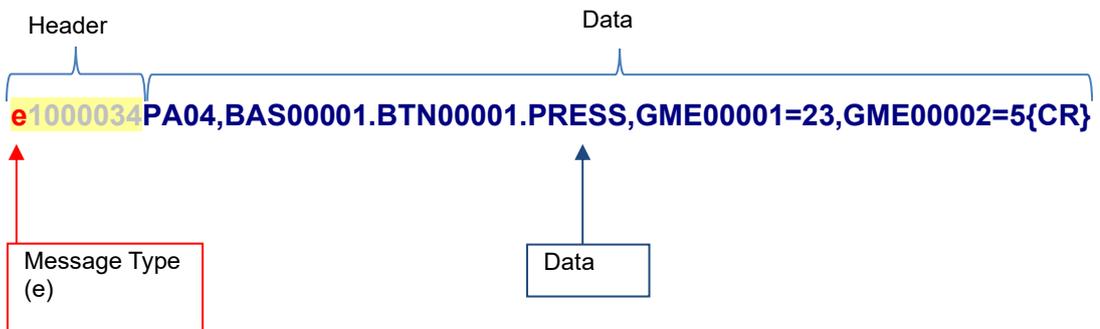
Data

13.8 ACK Message (A) (a)
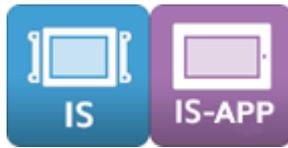
The ACK message is a communication data for indicating that the receiver has received correctly to the transmitter. There are 2 cases of transmissions. One is from the "host devices" to "InfoSOSA", and the other is from "InfoSOSA" to the "host device".

13.8.1 Host device to InfoSOSA

For normal protocols, the host device always sends an ACK message to the notification message from the InfoSOSA unit. If an ACK message is not sent within the set time, InfoSOSA will resend the notification message. Resend will continue as per the "Retry Count" set up in the Builder.

* Setting can be done from the "Communication Settings (Target Side) Dialog" of the InfoSOSA Builder.
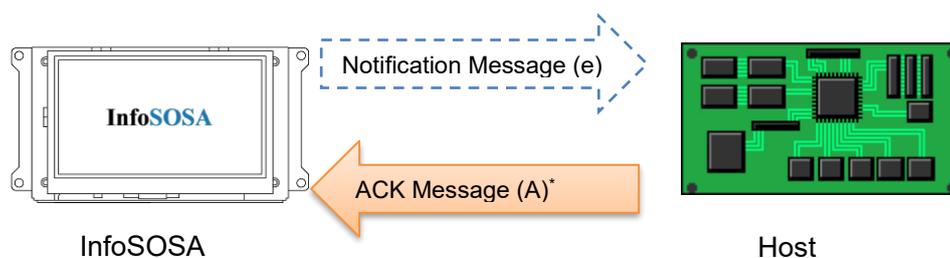
InfoSOSA   Host

* ACK message is not required in the case of InfoSOSA protocol.

Communication Mode	Acknowledgment of Host Device
InfoSOSA protocol	Unnecessary
Normal protocol	Necessary

Details

<<Message Type>>
    A
<<Data>>
    None

* Data length is 0.

Message Example

[Serial]

Header

Footer

{STX}00**A**100000000222{ETX}

Message Type
(A)

[LAN]

Header

A1000000

Message Type
(A)
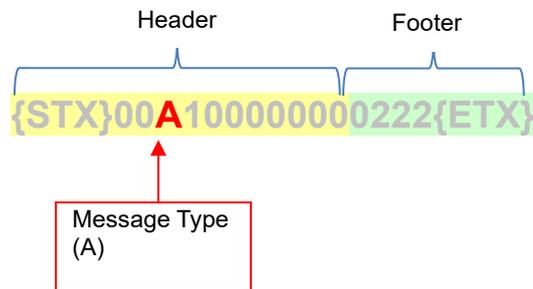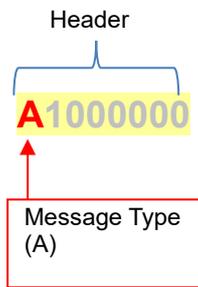
13.8.2 InfoSOSA to Host Device

Here described is ACK from InfoSOSA unit to the host device.

*   A response message will be returned to the command message and an ACK message will not be returned in this case. (NAK message will not be returned in this case).

InfoSOSA   Host Device
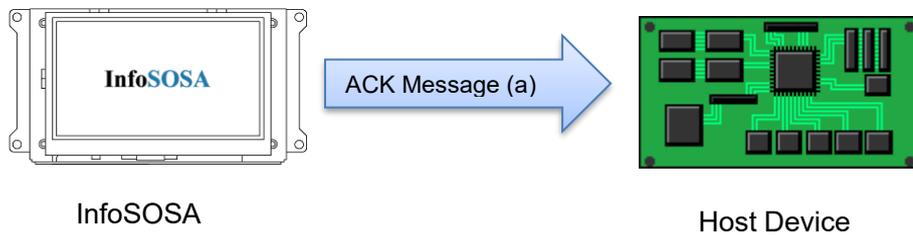
Detail

<<Message Type>>
        a
<<Data>>
        None

*   Data length is 0.

Message Example

[Serial]

Header   Footer

{STX}00**a**100000000242{ETX}

Message Type (a)

[LAN]

Header

a1000000

Message Type (a)
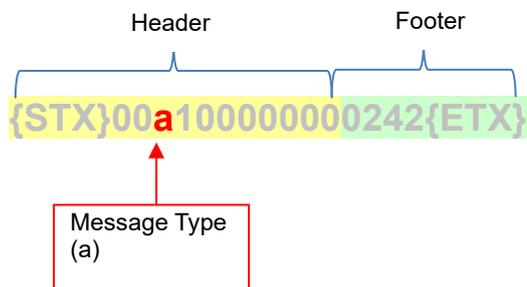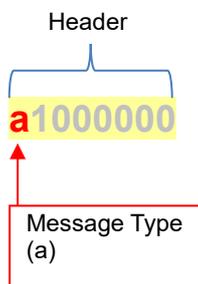
13.9 NAK Message (N) (n)
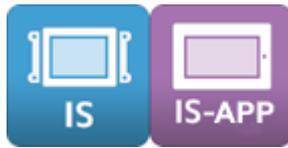
The NAK message is a communication data for indicating to the transmitter that the receiver could not receive correctly. There are 2 cases of transmissions. One is from the "host devices" to "InfoSOSA" and the other is from "InfoSOSA" to the "host device".

13.9.1 Host Device to InfoSOSA

For normal protocols, InfoSOSA retransmits the event message to NAK from the host device.
*Only the number of "Retry</g> Count" still remains.
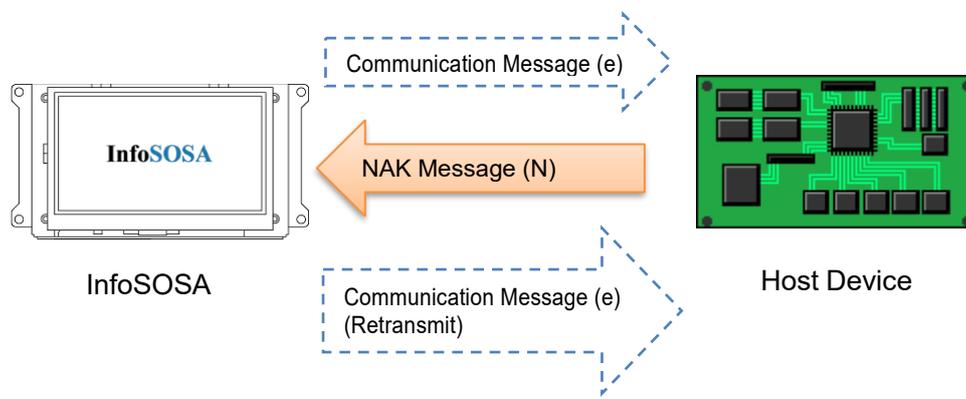
Detail

<<Message Type>>
    N
<<Data>>
    None

*   Data length is 0.

Message Example

[Serial]

Header   **Footer**

{STX}00**N**10000000022F{ETX}

**Message Type
(N)**

[LAN]

Header

N1000000
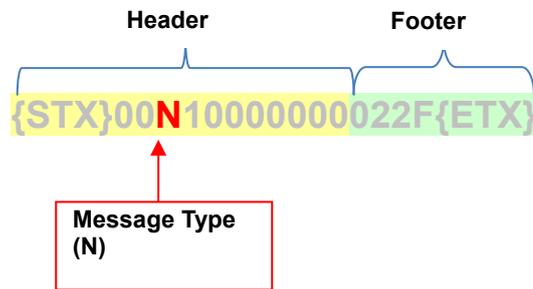
**Message Type
(N)**
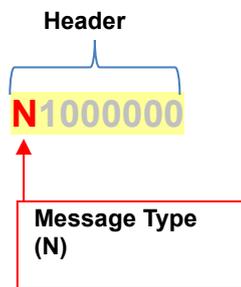
13.9.2   InfoSOSA to Host Device

Here described is NAK from InfoSOSA unit to the host device.

*   InfoSOSA will return the response message for the command message. (NAK message will not be returned in this case).

InfoSOSA

Host Device
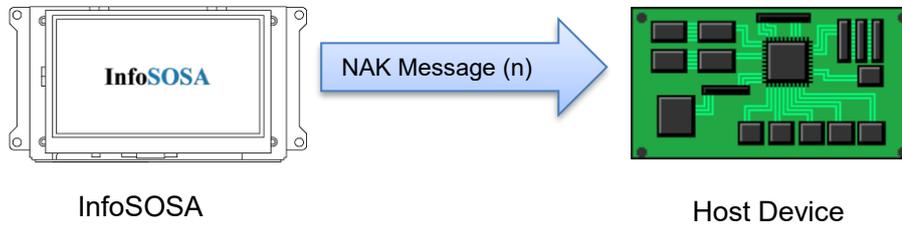
Detail

<<Message Type>>
     n
<<Data>>
     <Error Code>

Parameter	Contents
<Error Code>	8-byte error code 00000001: Data error 00000002: Sequence No. error It will be ASCII code string.

Message Example

[Serial]

Header | Data | Footer

{STX}00**n**10000008**00000002**03D1{ETX}

↑ Message Type (n)

[LAN]

Header | Data

n1000008**00000002**
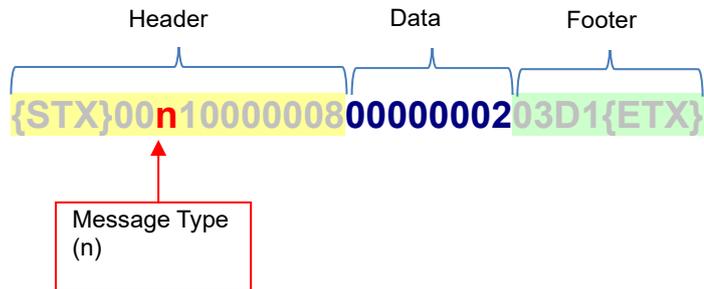
↑ Message Type (n)
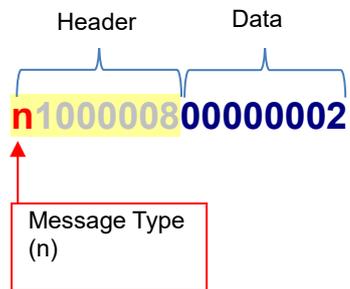
13.10 Busy Message (b)
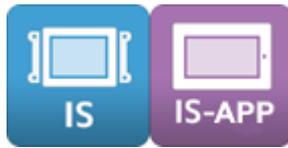
A busy response message is communication data that is returned in response to a command message from a host device when the number of commands waiting to be executed exceeds a specified amount. If a busy response occurs, please allow an interval between commands from the host device. The required interval will vary depending on various factors such as the model, command type, and other processing, so it will differ depending on how you use it, but as a guideline it is around 30ms to 100ms.

It applies to the InfoSOSA protocol and the normal protocol.

Communication Mode	Busy Response
InfoSOSA protocol	Yes
Normal protocol	Yes

Command Message(C)

Busy Message (b)*

InfoSOSA
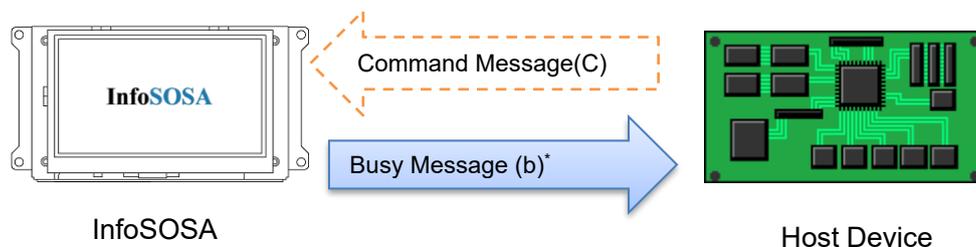
Host Device

* There maybe cases where busy response may not be returned to the host from InfoSOSA such as host device sending large numbers of commands that cannot be received, or commands could not be reached properly due to noises, and etc.

Detail

<<Message Type>>
    b
<<Data>>
    <Command at time of busy>

Parameter	Contents
<Command when busy>	Command received when busy will be returned from InfoSOSA

Message Example

[Serial]

Header   Data   Footer

{STX}00**b**1000001CPA02,@GLBMEM.GME00001.VALUE{CR}091A{ETX}

Message Type
(b)

[LAN]

Header   Data

b100001CPA02,@GLBMEM.GME00001.VALUE{CR}

Message Type
(b)
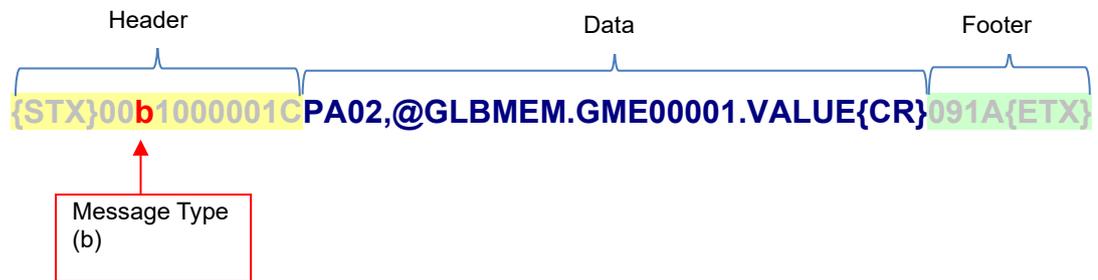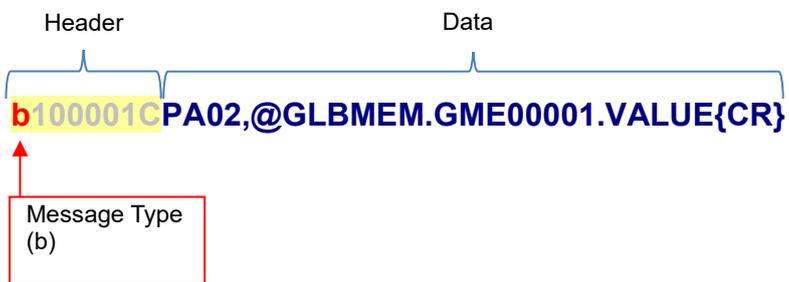
13.11 Polling Message (P)
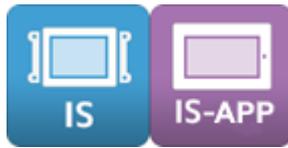
The Polling message is a communication data to acquire the notification messages that are pending.

The sending of the notification message from InfoSOSA is kept pending when "Notification Method" is set to "Upon Request".

One pending event can be acquired when a Polling message is sent to InfoSOSA.

The maximum number of events can be held in the InfoSOSA unit is 10 events.

If 10 events are already pending, it is likely that they will be lost from the old ones.

InfoSOSA   Host Device
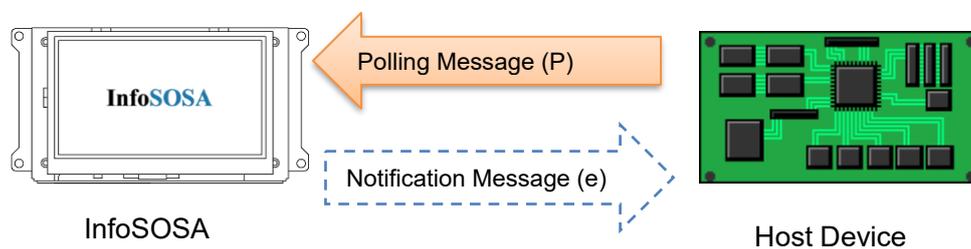
Detail

<<Message Type>>
    P
<<Data>>
    PL01{CR}

<<Reply Format>>
  When the pending number of events is 0
    PL01,0{CR}
  The pending number of events is 1 or more
    PL01,<notification remaining number>,<notification>

  *   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameter	Contents
<Notification Remaining Number>	Remaining number of notification message pending in InfoSOSA unit. ASCII code string.
<Notification>	Pending notification

Message Example

[Serial (Polling Message)]

Header   Data   Footer

{STX}00P10000005PL01{CR}0340{ETX}

Message Typ
(P)
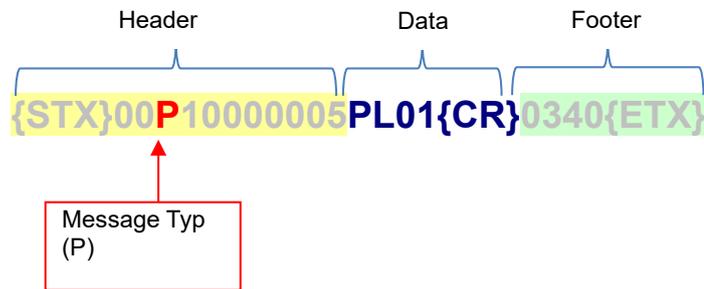
[Serial (Notification Message)]

Header   Data   Footer

{STX}00e1000001FPL01,0,BAS00001.BTN00002.PRESS{CR}0955{ETX}

Message Type
(e)

[LAN (Polling Message)]

Header   Data

P1000005PL01{CR}

Message Type
(P)

[LAN (Notification Message)]

Header   Data

e100001FPL01,0,BAS00001.BTN00002.PRESS{CR}
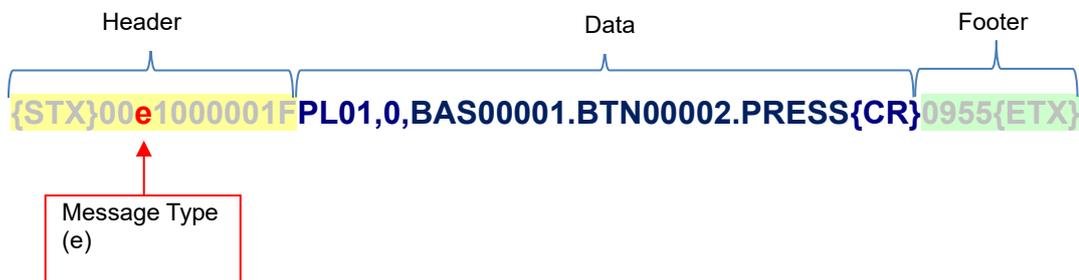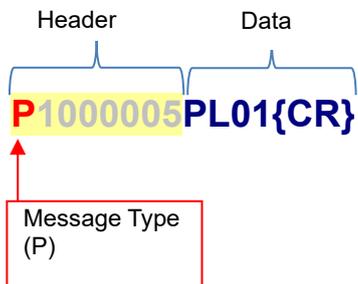
Message Type
(e)

13.12 Connection Confirmation Message (K)

The connection confirmation message is the communication data to confirm that the host device has a valid connection to InfoSOSA while communicating with TCP/IP. InfoSOSA will return an ACK message.

Communication Method	Connection Confirmation Message
Serial	×
LAN (UDP/IP)	×
LAN (TCP/IP)	○
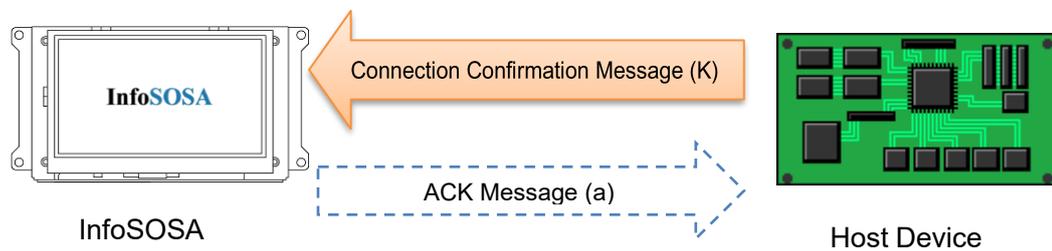
Detail

<<Message Type>>
    K
<<Data>>
    None

*   Data length is 0.

Message Example

[LAN]

Header

K000000
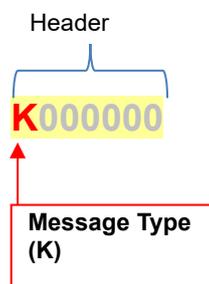
Message Type (K)

13.13   Communication Command Detail

This section describes the details of the communication command.

13.13.1 Model Name Acquisition

Command Name

Command name: SI01

Message Type   : 'C'

Function

Acquire model name and serial number of the InfoSOSA unit.

Detail

<<Command Format>>

    SI01{CR}

<<Response Format>>

     SI01, <model name>, <serial number> {CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameters	Contents
<Model name>	ASCII code string
<Serial number>	ASCII code string

13.13.2 Version Acquisition

Command Name

Command Name：SI02

Message Type ：'C'

Function

Gets the versions of the operating system, application*, and user version from the InfoSOSA unit.

*IS Series: the versions of the project execution application(standard mode version)
*IS-APP Series: the versions of the IS_APP application

Detail

<<Command Format>>
    SI02{CR}

<<Response Format>>
     SI02, <OS version>,<application version>,<user version>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma(0x2c).

Parameters	Contents
<OS Version>	ASCII code string
<Application version>	ASCII code string
<User Version>	ASCII code string User version shows the value set in the "H/W Settings Dialog" in the Builder.

13.13.3 Character Code Setting

IS   IS-APP
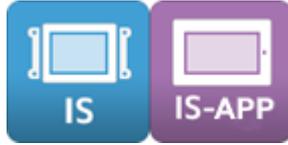
Command Name

Command Name：SI03

Message Type ：'C'

Function

Set character code of string used in the string type property and string type Memory such as PA01 (property settings) and PA02 (property acquisition).

*   Numeric Type Memory will be ASCII code.

*   When set to UTF-16LE, a distinguishing code indicating that it is UTF-16LE must be attached to the beginning and end of the string. For more information, check the following about the string transmission in Unicode (UTF-16LE)

*   When connecting to IS-API, the character code setting (SI03) is automatically set to "Unicode (UTF-16LE)". When using IS-API, do not set it to "Shift JIS". IS-API will not work properly.

Detail

<<Command Format>>
    SI03,<Character Code>{CR}

<<Response Format>>
    SI03,< execution result>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   Character code setting will be valid only during power On and will go back to its default setting (ASCII) at power OFF.

*   Response will not return for InfoSOSA protocol.

Parameters	Contents
<Character code>	Set the character code. 0: Treat string as ASCII code 1: Treat string as Unicode (UTF-16LE). Specify the ASCII code string. Available characters are 0 or 1 (0x30 or 0x31).
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

Restrictions When Using Multi-commands

When the SI03 command is used in the multi-command, the switching of the character code will be executed "after all of the commands contained within the multi-command has been processed".

Please note, character code will not be applied to string transmission when character code changes and string transmitting commands are sent with the same multi-command.

Example) When changing a character code to Unicode (UTF-16LE) and string transmission of string "Name" are combined.

{STX}00C0000002BSI03,1{CR}
PA01,@GLBMEM.GME00001.TEXT,{0xfe}{0xff}Name{0xff}{0xfe}{CR}0F4A{ETX}
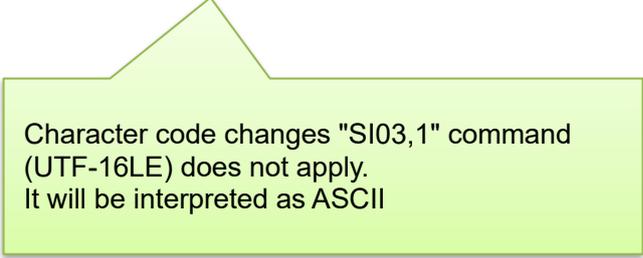
> Character code changes "SI03,1" command (UTF-16LE) does not apply.
> It will be interpreted as ASCII

Be sure to send the string transmission command after sending the SIO3 command as a single command.

String Transmission With Unicode (UTF-16LE)

An identification code indicating that the string is set to Unicode(UTF-16LE) must be added to the beginning and end of string when character code is set to UTF-16LE.

UTF-16LE identification code

Start code	0xfe, 0xff
Exit code	0xff, 0xfe

Example)When the string "Name" in UTF-16LE is sent
[Serial]

{STX}00C00000024PA01,@GLBMEM.GME00001.TEXT,{0xfe}{0xff}Name{0xff}{0xfe}{CR}0DD9{ETX}

Start Code

UTF16-LE String

End Code

Data length and checksum
must be a value that includes the start code/exit code.

[LAN]

C00000024PA01,@GLBMEM.GME00001.TEXT,{0xfe}{0xff}Name{0xff}{0xfe}{CR}

Start Code

UTF16-LE String

End Code

Data length
must be a value that includes the start code/exit code.
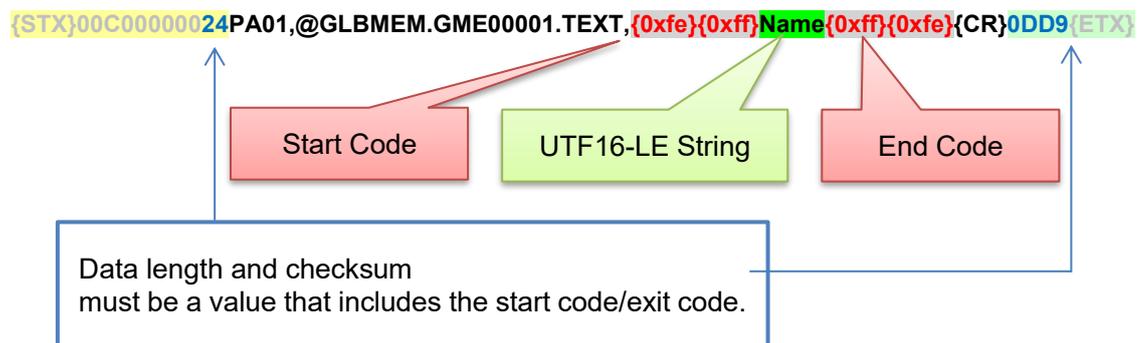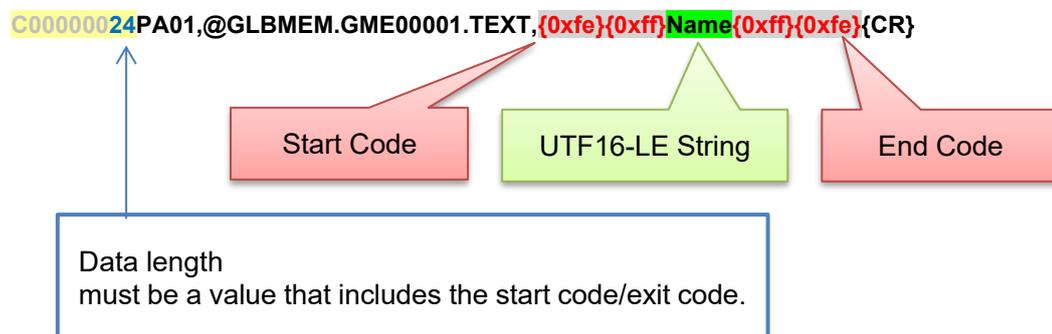
* Be sure to enclose the entire string in between start code/exit code
  If you want to send more than one string in the group data transmission, etc., be sure to enclose at the start code/exit code each string individually.

* Valid only in Unicode (UTF-16LE).
  Any other will be considered as invalid message.

* This is the specification of communication only for [Host Device to InfoSOSA].
  Start /Exit code will is not needed for "InfoSOSA to Host Device"

* It is possible to send the Unicode the (UTF-16LE) string without enclosing it between start/exit command. However, if the entire message that contain characters such as those shown below, it might be determined as invalid.

[References]

Characters with same codes as {STX} 0x02.

Byte code	Character	Byte code	Character	Byte code	Character
0x0222	∂	0x0225			0x0230	。
0x0253	勾	0x0258	堂	0x025c	專
0x025e	市	0x0266	昂	0x0268	栂
0x026f	漂	0x0278	砂	0x0281	脂
0x0283	茂	0x0287	蜂	0x028a	訂
0x028b	謂	0x0298	頂		

Characters with same codes as {ETX} (0x03)

Byte code	Character	Byte code	Character	Byte code	Character
0x9103	A	0x9203	B	0x9303	Γ
0x9403	Δ	0x9503	E	0x9603	Z
0x9703	H	0x9803	Θ	0x9903	I
0x9a03	K	0x9b03	Λ	0x9c03	M
0x9d03	N	0x9e03	Ξ	0x9f03	O
0xa003	Π	0xa103	P	0xa303	Σ
0xa403	T	0xa503	Y	0xa603	Φ
0xa703	X	0xa803	Ψ	0xa903	Ω
0xb103	α	0xb203	β	0xb303	γ
0xb403	δ	0xb503	ε	0xb603	ζ
0xb703	η	0xb803	θ	0xb903	ι
0xba03	κ	0xbb03	λ	0xbc03	μ
0xbd03	ν	0xbe03	ξ	0xbf03	o
0xc003	π	0xc103	ρ	0xc303	σ
0xc403	τ	0xc503	υ	0xc603	φ
0xc703	χ	0xc803	ψ	0xc903	ω
0x0321	℃	0x0322	Ǝ	0x0325	∣
0x0330	″	0x034e	七	0x0352	刃
0x0354	吃	0x0357	囲	0x035a	娃
0x035e	布	0x0368	栃	0x0374	球
0x0380	考	0x038f	較	0x0390	逃
0x0398	頃	0x03ff	♯		

Characters with same codes as {CR} (0x0d)

Byte code	Character	Byte code	Character	Byte code	Character
0x0d30	」	0x0d4e	不	0x0d4f	伍
0x0d50	倍	0x0d54	名	0x0d64	損
0x0d67	服	0x0d69	植	0x0d7d	納
0x0d92	鈍	0x0d9c	鰍		

*   The above is only a part of an example.

13.13.4 Backlight ON/OFF Setting

Command Name

Command Name：SC01

Message Type ：'C'

Function

Set ON/OFF of backlight.

Detail

<<Command Format>>

　　SC01,<backlight ON/OFF>{CR}

<<Response Format>>

　　SC01,<execution results>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Backlight ON/OFF>	Set ON/OFF of backlight. 0: OFF the backlight. 1: ON the backlight 2: Screen protection mode. Specify ASCII code string. Available characters are 0 to 2 (0x30 to 0x32).
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are defined outside 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

* If the backlight OFF (set value: 0) is set, touch screen and sheet key input will be disabled. The backlight must be set to ON by S01 to release this mode.

* When the backlight is in Screen Protection Mode, the backlight will turn ON by touch screen and sheet key input even if it is in the OFF state.

* *Refer to "12.1.1 LCD Backlight ON/OFF Function".

13.13.5 Backlight ON/OFF State Acquisition

Command Name

Command Name ：SC02

Message Type ：'C'

Function

Acquisition of ON/OFF state of the backlight.

Detail

<<Command Format>>

    SC02{CR}

<<Response Format>>

    SC02, < backlight state>{CR}

    *   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameters	Contents
<Backlight State>	Indicates state of the backlight. 0: Backlight is OFF. 1: Backlight is ON. 2: Screen protection mode. It will be ASCII code string.

13.13.6 Backlight Auto-off Setting
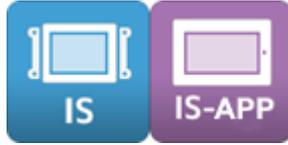
Command Name

Command Name：SC04

Message Type ：'C'

Function

Set the automatic OFF time of the backlight. The value is retained even after the power is turned off. Do not exit IS-APP or turn off the power for several seconds after changing. It may return to the value before setting.

Detail

<<Command Format>>
　　SC04,<Auto OFF time>{CR}

<<Response Format>>
　　SC04,<execution result>{CR}

* 　　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Auto OFF Time>	Set the automatic OFF time of the backlight. 0: Backlight does not turn OFF automatically. 　Backlight Auto OFF function is disabled. [IS731] 1 to 1440: Backlight Auto OFF time (in minutes) [IS-APP] 1 to 1092: Backlight Auto OFF time (in minutes) 　　　　Backlight Auto OFF function is enabled. 　　　　Set time until backlight off. Specify ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution Result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

* 　　Also refer to "12.1.2 Automatic Backlight OFF Function".

13.13.7 Backlight Auto-OFF Acquisition
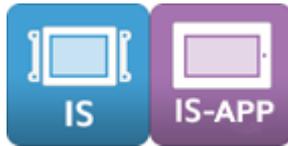
Command Name

Command Name：SC05

Message Type ：'C'

Function

Acquisition of automatic OFF time of the backlight.

Detail

<<Command Format>>
    SC05{CR}

<<Response Format>>
    SC05,<Auto OFF time>{CR}

 *   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameter	Contents
<Auto OFF Time>	Acquisition of automatic OFF time of the backlight. 0: Backlight does not turn OFF automatically. [IS731] 1 to 1440: Backlight Auto OFF time (in minutes) [IS-APP] 1 to 1092: Backlight Auto OFF time (in minutes) It will be ASCII code string.

13.13.8 Brightness Setting
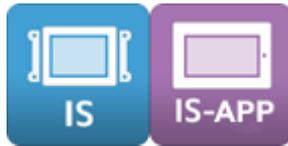
Command Name

Command Name：SC06

Message Type ：'C'

Function

Sets the brightness of the backlight. The value is retained even after the power is turned off. Do not exit IS-APP or turn off the power for several seconds after changing. It may return to the value before setting.

Detail

<<Command Format>>
    SC06,<brightness>{CR}

<<Response Format>>
    SC06,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Brightness>	Set the brightness of backlight. 1: backlight brightness level 1 (dark) 2: backlight brightness level 2 3: backlight brightness level 3 4: backlight brightness level 4 5: backlight brightness level 5 6: backlight brightness level 6 7: backlight brightness level 7 8: backlight brightness level 8 (bright) Specify ASCII code string. Available characters are 1 to 8 (0x31 to 0x38).
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.9 Brightness Acquisition
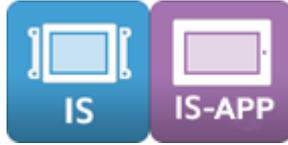
Command Name

Command Name：SC07

Message Type ：'C'

Function

Acquisition of the backlight brightness.

Detail

<<Command Format>>
　　SC07{CR}

<<Response Format>>
　　SC07,<brightness>{CR}

*　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameter	Contents
<Brightness>	Set the brightness of backlight. 1: backlight brightness level 1 (dark) 2: backlight brightness level 2 3: backlight brightness level 3 4: backlight brightness level 4 5: backlight brightness level 5 6: backlight brightness level 6 7: backlight brightness level 7 8: backlight brightness level 8 (bright) It will be ASCII code string.

13.13.10 Change Screen
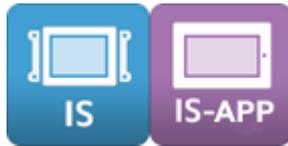
Command Name

Command Name ：SC10

Message Type ：'C'

Function

Switch the screen displayed.

* When Change Screen command is executed while other actions are being executed, it may interrupt the action in process and execute Change Screen.If the action that was in process had been referring to a resource from the screen before the switch, it will lose access to that resource. Therefore, please note any executing of a communication command while other action is in process will make that action indefinite.

Detail

<<Command Format>>
　　SC10, <screen ID> {CR}

<<Response Format>>
　　SC10, <execution result> {CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Screen ID>	Specifies screen ID of screen transition destination. Screen ID and Pop-up screen cannot be specified. Display of Pop-up Screen is done with SC13 or SC14. Specify by ASCII code string. The available characters are according to the ID rule.
<Execution result>	Execution result of the command 　0: Normal termination 　1: The number of command parameters are defined out of range 　2: There is a non-specified value in the command 　9: An error other than the above It will be ASCII code string.

Differences by Series

Specify the [Screen ID] with the following to run special operations.

OSD00001: Calibrate the coordinates

13.13.11 Acquire Current Screen
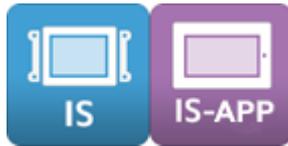
Command Name

Command Name：SC11

Message Type ：'C'

Function

Acquisition of the Screen ID being displayed.

Detail

<<Command Format>>

SC11{CR}

<<Response Format>>

SC11, <screen ID> {CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* When you issue this command during the screen transition you might get the screen ID of the previous screen due to the screen transition.

Parameters	Contents
<Screen ID>	Acquire the screen ID of the screen being displayed. It will be in ASCII Code

13.13.12 Display Pop-up Screen A
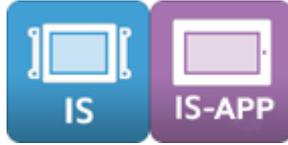
Command Name

Command Name：SC13

Message Type ：'C'

Function

Turn ON the display of Pop-up Screen A.

Detail

<<Command Format>>

SC13,<screen ID of Pop-up Screen A>,<X coordinate>,<Y coordinate>{CR}

<<Response Format>>

SC13,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

* Note that there is a case where the pop-up might be displayed outside of the screen area depending on the specified position of the coordinates.

* If "Display Pop-up Screen A" is executed when Pop-up Screen A is already displayed, it will erase the Pop-up Screen A that was originally displayed and the specified Pop-up Screen A will be displayed.

* If the command type and popup type are different, the command type takes precedence. For example, if "popup screen B" is displayed with "SC13", it will be displayed as "popup screen A".

Parameter	Contents
<Screen ID of the Pop-up Screen A>	Set screen ID of Pop-up Screen A to be displayed. Specify by ASCII code string. The available characters are according to the ID rule.
<X coordinate>	Set display location of Pop-up screen (upper left X coordinate). X coordinate = 0 to (Maximum base screen width minus 1) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Y coordinate>	Set display location of Pop-up screen (upper left Y coordinate). Y coordinate = 0 to (Maximum base screen height minus 1) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution Result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above

Parameter	Contents
	It will be ASCII code string.

Differences by Series

For the popup screen display position, the top-left corner of the InfoSOSA application window is the origin point (0,0). (Displays inside the InfoSOSA application window)

13.13.13 Display Pop-up Screen B
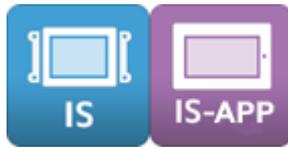
Command Name

Command Name ：SC14

Message Type ：'C'

Function

Turn ON the display of Pop-up Screen B.

Detail

<<Command Format>>

SC14,<screen ID of Pop-up Screen B>,<X coordinate>,<Y coordinate>{CR}

<<Response Format>>

SC14,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

* Note that there is a case where the pop-up might be displayed outside of the screen area depending on the specified position of the coordinates.

* If "Display Pop-up Screen B" is executed when Pop-up Screen B is already displayed, it will erase the Pop-up Screen b that was originally displayed and the specified Pop-up Screen B will be displayed.

* If the command type and popup type are different, the command type takes precedence. For example, if "popup screen A" is displayed with "SC14", it will be displayed as "popup screen B".

Parameter	Contents
<Screen ID of the Pop-up Screen B>	Set screen ID of Pop-up Screen B to be displayed. Specify by ASCII code string. The available characters are according to the ID rule.
<X coordinate>	Set display location of Pop-up screen (upper left X coordinate). X coordinate = 0 to (Maximum base screen width minus 1) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Y coordinate>	Set display location of Pop-up screen (upper left Y coordinate). Y coordinate = 0 to (Maximum base screen height minus 1) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution Result>	Execution result of the command 0: Normal termination

| Parameter	Contents
	1: The number of command parameters are out of range
	2: There is a non-specified value in the command
	9: An error other than the above
	It will be ASCII code string.

Differences by Series

For the popup screen display position, the top-left corner of the InfoSOSA application window is the origin point (0,0). (Displays inside the InfoSOSA application window)

13.13.14 Erase Pop-up Screen A
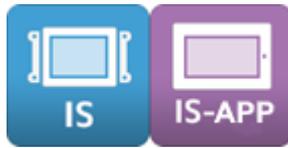
Command Name

Command Name ： SC15

Message Type ： 'C'

Function

Turn OFF the display of Pop-up Screen A with respect to the display screen.

Detail

<<Command Format>>

SC15{CR}

<<Response Format>>

SC15,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.15 Erase Pop-up Screen B
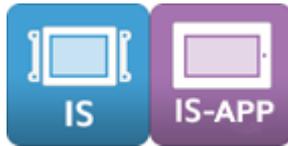
Command Name

Command Name：SC16

Message Type ：'C'

Function

Turn OFF the display of Pop-up Screen B with respect to the display screen.

Detail

<<Command Format>>
　　SC16{CR}

<<Response Format>>
　　SC16,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　* For InfoSOSA protocol, response will not be returned.

| Parameters	Contents
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.16 Acquires Current Pop-up Screen
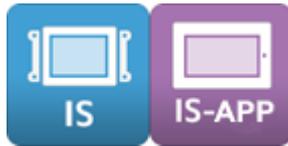
Command Name

Command Name：SC17

Message Type ：'C'

Function

Acquisition of the state of the Pop-up Screen that is displayed on the screen.

Detail

<<Command Format>>
    SC17{CR}

<<Response Format>>
    SC17,<display state of the Pop-up Screen A>,<display state of the Pop-up Screen B>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   Time is necessary for the screen to turn ON/OFF after turning ON/OFF the Pop-up screen with commands SC13 to SC16. If SC17 is executed during this procedure, unintended results might be obtained due to the screen still being displayed.

Parameters	Contents
<Display state of the Pop-up Screen A>	If Pop-up Screen A is displayed, then 1(0x31), otherwise 0 (0x30).
<Display state of the Pop-up Screen B>	If Pop-up Screen B is displayed, then 1(0x31), otherwise 0 (0x30).

13.13.17 Touch Input Setting

Command Name

Command Name：TP01

Message Type ：'C'

Function

Enable/disable touch input

Detail

<<Command Format>>

TP01,<touch input Enable/Disable>{CR}

<<Response Format>>

TP01,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

* This setting is valid only when the power is ON.

| Parameters	Contents
<Touch Input Enable/Disable>	Set the input enable/disable of the touch screen. 0: Touch screen input is disabled 1: Touch screen input is enabled Specify the ASCII code string. Available characters are 0 or 1 (0x30 or 0x31).
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.18 Touch Input Acquisition

Command Name

Command Name：TP02

Message Type ：'C'

Function

Acquisition of the touch input enable/disable state.

Detail

<<Command Format>>
TP02{CR}

<<Response Format>>
TP02,<touch input Enable/Disable>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameters	Contents
<Touch Input Enable/Disable>	Shows the input enable/disable of the touch screen. 0: touch panel input is disabled 1: Touch panel input is enabled It will be ASCII code string.

13.13.19 Touch Input Axis Acquisition

Command Name

Command Name：TP06

Message Type ：'C'

Function

Acquisition of the last touched coordinates of the touch screen.

Detail

<<Command Format>>

　　TP06{CR}

<<Response Format>>

　　TP06,<X coordinate>,<Y coordinate>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* If not pressed from the start, the return value is (0,0).

* Physical coordinates are returned regardless of the screen rotation angle.

Parameters	Contents
<X coordinate>	X coordinate of the touch screen 0 to LCD Horizontal resolution -1 It will be ASCII code string.
<Y coordinate>	Y coordinates of the touch screen 0 to LCD Vertical resolution -1 It will be ASCII code string.

13.13.20 Sheet Key State Acquisition

Command Name

Command Name：SW01

Message Type ：'C'

Function

Acquisition of the sheet key switch state.

Detail

<<Command Format>>
    SW01,<switch ID>{CR}

<<Response Format>>
    SW01,<switch ID>,<switch state>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* This command cannot be used by models that do not have the sheet key functions.

* If a non-existent <Switch ID> is specified, "9" is returned.

Parameters	Contents
<Switch ID>	Set the switch ID. Switch ID: XSW01 to XSW24 Specify by ASCII code string.
<Switch state>	It indicates the state of the switch. 0: switch OFF 1: switch ON It will be ASCII code string.

13.13.21 LED State Setting

Command Name

Command Name ：LD01

Message Type ：'C'

Function

Turning ON/OFF of the sheet key LED.

Detail

<<Command Format>>
    LD01,<LED ID>,<LED output>{CR}

<<Response Format>>
   LD01,<execution result>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   For InfoSOSA protocol, response will not be returned.

*   This command cannot be used by models that do not have the sheet key functions.

Parameters	Contents
<LED HID>	Set the LED ID. LED ID: XLED01 to XLED08 Specify the ASCII code string.
<LED output>	Set the output of the LED. 0: OFF the LED 1: ON the LED Specify by ASCII code string. Available characters are 0 or 1 (0x30 or 0x31).
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.22 LED State Acquisition

Command Name

Command Name：LD02

Message Type ：'C'

Function

Acquire the output state of the sheet key LED.

Detail

<<Command Format>>
    LD02,<LED ID>{CR}

<<Response Format>>
    LD01,<LED ID>,<LED output>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* This command cannot be used by models that do not have the sheet key functions.

* If a non-existent < LED ID> is specified, "9" is returned.

Parameters	Contents
<LED ID>	Set the LED ID. LED ID: XLED01 to XLED08 Specify the ASCII code string.
<LED output>	It shows the output state of the LED. 0: LED is OFF 1: LED is ON It will be in ASCII Code

13.13.23 Ring Buzzer
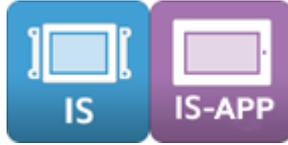
Command Name

Command Name：BZ01

Message Type ：'C'

Function

Activate the buzzer.

Detail

<<Command Format>>

BZ01,<buzzer ON ring time>,<buzzer ON time>{CR}

<<Response Format>>

BZ01,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

* Please refer to "12.2 Buzzer" for frequency of the buzzer.

* Frequency will be fixed regardless of the specified frequency if the buzzer sound is a single tone model.

* If Buzzer ON Setting is made again during Buzzer ON, the last Ring Buzzer command will overwrite the previous one.

Parameters	Contents
<Buzzer ON Frequency>	Set the frequency to sound the buzzer. Value: 500 to 5000 (unit: Hz) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Buzzer ON Time>	Set the time to sound the buzzer. Setting: 100 to 10,000 (unit: msec) Set in 100msec unit. Specify with ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are defined outside 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

Differences by Series

You can enable or disable the buzzer on IS-APP with a startup parameter. When disabled, this command does not run.

13.13.24 Buzzer State Acquisition

Command Name

Command Name：BZ02

Message Type ：'C'

Function

Acquire the state of the buzzer.

Detail

<<Command Format>>
    BZ02{CR}

<<Response Format>>
    BZ02,<buzzer state>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameter	Contents
<Buzzer state>	It indicates the state of the buzzer. 0: Buzzer OFF 1: Buzzer ON It will be ASCII code string.

13.13.25 Sound ON / OFF

Command Name

Command Name：SD01

Message Type ：'C'

Function

Turns ON/OFF sound files registered in the Sound Resources.

Detail

<<Command Format>>
　　SD01,<Movement>,<Sound ID>{CR}

<<Response format>>
　　SD01,<Running result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

* 　Sound playback automatically stops at the end of sound data.

* 　You can adjust the volume by changing the value in the environment variable SOUNDVOL.

* 　While the sound is on, if the Sound ON Setting is run again, the last command that is sent overwrites the previous one.

Parameters	Contents
Behavior	It indicates the state of the buzzer. 0: Sound OFF 1: Sound ON It will be in ASCII Code
Sound ID	Set up the Sound Resources ID. Specify by ASCII code string. The available characters are according to the ID rule. * When you use the Sound OFF command, the current sound turns OFF regardless of the sound ID.
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.26 Get Sound Status

Command Name

Command Name：SD02

Message Type ：'C'

Function

Gets the sound's ON/OFF status.

Detail

<<Command Format>>
    SD02{CR}

<<Response format>>
    SD02,<Sound Status>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameter	Contents
Sound Status	It indicates the state of the buzzer. 0: Sound OFF 1: Sound ON It will be in ASCII Code

13.13.27 RTC Setting
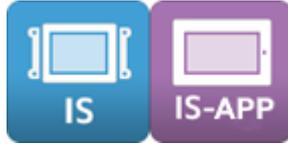
Command Name

Command Name：TC01

Message Type ：'C'

Function

Set the clock of InfoSOSA.

Detail

<<Command Format>>

TC01,<year>,<month>,<day>,<hour>,<minute>,<seconds>{CR}

<<Response Format>>

TC01,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

* If an invalid time is set, the setting will be ignored.

Parameters	Contents
<Year>	Set the "year". Value: 2000 to 2038 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Month>	Set the "month". Value: 1 to 12 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Day>	Set the "day". Value: 1 to 31 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Hour>	Set the "hour". Value: 0 to 23 (24-hour time) Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Minutes>	Set the "minute". Value: 0 to 59 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).

Parameters	Contents
<Seconds>	Set the "seconds". Value: 0 to 59 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution Result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.28 RTC Acquisition
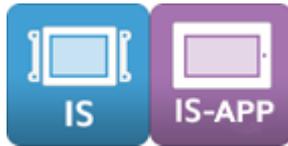
Command Name

Command Name ：TC02

Message Type ：'C'

Function

Acquire the time of InfoSOSA.

Detail

<<Command Format>>

TC02{CR}

<<Response Format>>

TC02,<year>,<month>,<day>,<hour>,<minute>,<seconds>{CR}

*　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

Parameters	Contents
<Year>	Shows "year" in ASCII code string It will be in ASCII Code
<Month>	Shows "month" in ASCII code string It will be in ASCII Code
<Day>	Shows "day" in ASCII code string It will be in ASCII Code
<Hour>	Shows "hour" in ASCII code string (24-hour time) It will be in ASCII Code
<Minutes>	Shows "minute" in ASCII code string It will be in ASCII Code
<Seconds>	Shows "second" in ASCII code string It will be in ASCII Code

13.13.29 Property Setting

Command Name

Command Name：PA01

Message Type ：'C'

Function

Set the properties of parts, memories, etc.

Detail

<<Command Format>>

　　PA01,<property>,<setting value>{CR}

<<Response Format>>

　　PA01,<property>,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	Refer to "13.14.1 Property/Event" to specify the properties.
<Setting value>	Refer to "13.14.2 How to Specify Setting Value" to configure settings.
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.30 Property Acquisition

IS   IS-APP

Command Name

Command Name：PA02

Message Type ：'C'

Function

Set the properties of parts, memories, etc.

Detail

<<Command Format>>

PA02,<property>,<setting value>{CR}

<<Response Format>>

PA02,<property>,<execution result>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   If a non-existent < Property> is specified, "2" is returned.

Parameters	Contents
<Property>	Property is retrieved in format of "13.14.1 Property/Event".
<Setting value>	Setting value is acquired in format specified in "13.14.2 How to Specify Setting Value".

13.13.31 DPOINT Method Execution (Picture Box)

Command Name

Command Name：PA03

Message Type ：'C'

Method ID：DPOINT

Function

Draw a point of one dot in a Picture Box Part.

Detail

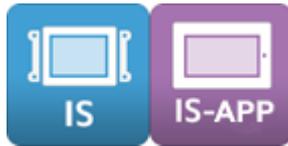<<Command Format>>

　　PA03,<property>,<X coordinate>,<Y coordinate>,<color>{CR}

<<Response Format>>

　　PA03,<property>,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). Please refer to "13.14.1Property/Event" for details.
<X coordinate> <Y coordinate>	<X coordinate>: Sets the X coordinate of point to be drawn. <Y coordinate>: Sets the Y coordinate of point to be drawn. * The upper left corner of the parts will be the origin (0, 0). Specify the ASCII code string. Available characters are 0 ~ 9 (0x30 ~ 0x39).
<Color>	Specify with the format of "R-G-B". R: Red (0 to 255) G: Green (0 to 255) B: Blue (0 to 255) Color number is specified in the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39) and delimiter "-", hyphen (0x2d).
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.32 DLINE Method Execution (Picture Box)

Command Name

Command Name：PA03

Message Type ：'C'

Method ID：DLINE

Function

Draw a line or a rectangle in a Picture Box part.

Detail

<<Command Format>>

　　PA03,<property>,<starting point X>,<starting point Y>,<end point X>,
　　<end point Y>,<color>,<instruction>{CR}
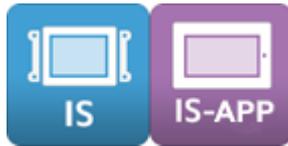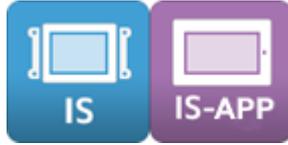
<<Response Format>>

　　PA03,<property>,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). 　Please refer to "13.14.1 Property/Event" for details.
<Starting point X> <Starting point Y> <End point X> <End point Y>	<Starting point X>: starting point X-coordinate <Starting point Y>: starting point Y-coordinate <End point X>: end point X-coordinate (line drawing), or width (square drawing) <End point Y>: end point Y coordinates (line drawing), or height (square drawing) * The upper left corner of the parts will be the origin (0, 0). Specify the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Color>	Specify with the format of "R-G-B". R: Red (0 to 255) G: Green (0 to 255) B: Blue (0 to 255) Color number is specified in the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39) and delimiter "-", hyphen (0x2d).

Parameters	Contents

<Instruction>	Specify the behavior when you run the DLINE method.
	0: line drawing
	   (Draw a line with <Starting point X>,<starting point Y> - <end point X>,<end point Y>).
	1: rectangle (frame only, not filled)
	2: rectangle drawing (inside of shape filled)
	   (Draw or fill a rectangle with <Starting point X>,<starting point Y> as a starting point, and width (<end point X>) or height (<end point Y>).
	Specify the ASCII code string.
	Available characters are 0 to 2 (0x30 to 0x32).

<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are defined out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.33 DCIRCLE Method Execution (Picture Box)

Command Name

Command Name：PA03
Message Type ：'C'
Method ID：DCIRCLE

Function

Draw a circle in a Picture Box part.

Detail

<<Command Format>>
　　　PA03,<property>,<X coordinate>,<Y coordinate>,<radius>,<color>,<instruction> {CR}
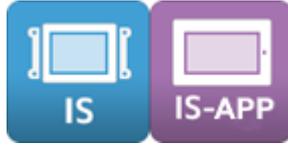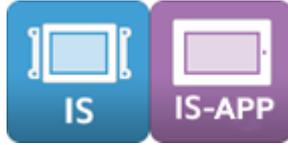
<<Response Format>>
　　　PA03,<property>,<execution result>{CR}

* 　　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). Please refer to "13.14.1 Property/Event" for details.
<X coordinate> <Y coordinate>	It shows the coordinates of the center of the circle. * The upper left corner of the parts will be the origin (0,0). Specify the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Radius>	It shows the radius of the circle. Specify the ASCII code string. Usable the characters are 0 to 9 (0x30 to 0x39).
<Color>	Specify with the format of "R-G-B". R: Red (0 to 255) G: Green (0 to 255) B: Blue (0 to 255) Color number is specified in the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39) and delimiter "-", hyphen (0x2d).
<Instruction>	Specify the filling of the inside of the shape . 0: not fill 1: filled Available characters are 0 or 1 (0x30 or 0x31).

Parameters	Contents
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are defined out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.34 LPICTURE Method Execution (Picture Box)

Command Name

Command Name：PA03
Message Type ：'C'
Method ID：LPICTURE

Function

Draw an image to a Picture Box part. Image must be registered to the Image Resource in advance using the Builder.

Detail

<<Command Format>>
    PA03,<property>,<X coordinate>,<Y coordinate>,<image resourceID>{CR}

<<Response Format>>
    PA03,<property>,<execution result>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   For InfoSOSA protocol, response will not be returned.

*   Image will be displayed in the size registered in the Image Resource.

*   It will not be resized to match the size of the Picture Box part.

Parameters	Contents
<Property>	It is shown in the following format. Format [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). Please refer to "13.14.1 Property/Event" for details.
<X coordinate> <Y coordinate>	It shows the upper left corner of the coordinates of the image. The upper left corner of the parts will be the origin (0,0). Specify the ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Image resource ID>	It sets the image resource ID. Specify by ASCII code string. The available characters are according to the ID rule.
<Execution result>	Execution result of the command 0: Normal termination 1: The number of command parameters are defined out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.35 ADDLAST Method Execution (Simple Graph)

Command Name

Command Name：PA03

Message Type ：'C'

Method ID：ADDLAST

Function

Add data to the end of the Simple Graph part.

Detail

<<Command Format>>

PA03, <property>,<Setting data>{CR}

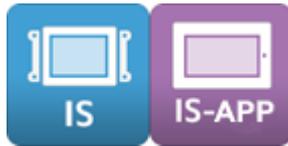<<Response format>>

PA03,<property>,<execution result>{CR}

* {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). Please refer to "13.14.1 Property/Event" for details.
<Setting data>	Set data in order of CH1, CH2, CH3... and CH8. Data to be set is optional, and omitted value is set (-2,147,483,648). Setting value is -2,147,483,647 to 2,147,483,647 (double word type). Double word type will be in range up to -2,147,483,648, as setting value because it is treated as a missing value. -2,147,483,648 cannot be used. Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39). Delimiter of each parameter is "," comma (0x2c).
<Execution result>	Execution result of command 0 :Normal termination 1: number of command parameters are defined out of range 2: re is a non-specified value in command 9: An error or than above It will be ASCII code string.

13.13.36 ADDDATA Method Execution (Simple Graph)

Command Name

Command Name：PA03

Message Type ：'C'

Method ID：ADDDATA

Function

Add the data of lines that have been set in the "CH Number" property to the end of the Simple Graph part.

Detail

<<Command Format>>

　　PA03, <property>,<Setting data>{CR}
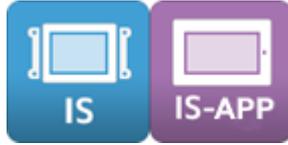
<<Response format>>

　　PA03,<property>,<execution result>{CR}

*　　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*　　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). 　　Please refer to "13.14.1 Property/Event" for details.
<Setting data>	It is possible to add data to line of maximum 40 ÷ "CH Number" property. Data is set in following order. 　CH1[n],CH2[n],...,CHX[n],CH1[n+1], ...,CHX [n+40÷X] 　n indicates end line of graph data. 　X will be value specified in "CH Number" property. If you set number of data is less than a multiple of X, lack of data is set as value (-2,147,43,648). Setting value is -2,147,483,647 to 2,147,483,647 (double word type). Double word type will be in range up to -2,147,483,648, as setting value because it is treated as a missing value. -2,147,483,648 cannot be used. Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39). Delimiter of each parameter is "," comma (0x2c).
<Execution result>	Execution result of command 0 :Normal termination 1: number of command parameters are defined out of range 2: re is a non-specified value in command 9: An error or than above It will be ASCII code string.

13.13.37 ALLCLR Method Execution (Simple Graph)

Command Name

Command Name：PA03

Message Type ：'C'

Method ID：ALLCLR

Function

Clear the data of the Simple Graph part.

Detail

<<Command Format>>

　　PA03,<property>{CR}
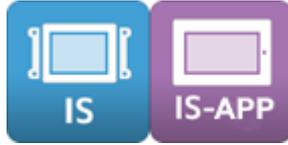
<<Response format>>

　　PA03,<property>,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). 　　Please refer to "13.14.1 Property/Event" for details.
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.38 DRAWAXIS Method Execution (Simple Graph)
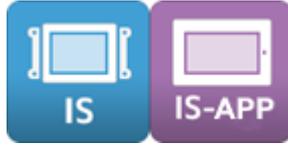
Command Name

Command Name：PA03

Message Type ：'C'

Method ID：DRAWAXIS

Function

The graph's appearance will be updated after this operation

Detail

<<Command format>>

　　PA03,<property>,<X-Axis No. of Data>,<Y-Axis Upper Limit>, <Y-Axis Lower Limit>,
　　<X-Axis Scale Unit>,<Y-Axis Scale Unit>, <Y-Axis Scale Interval>,
　　<Y-Axis Characters>{CR}

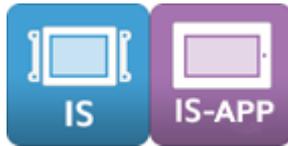<<Response format>>

　　PA03,<property>,<execution result>{CR}

*　　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*　　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	It is shown in the following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). 　　Please refer to "13.14.1 Property/Event" for details.
<Number of data displayed on X axis>	Set number of data to be displayed on X-axis. Setting range: 1 to 400 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Y axis display upper limit value>	Set display upper limit of Y-axis. Setting range: -2147483645 to 2147483647 * Specify value greater than Y axis display lower limit. * If there is a large difference in the Y-axis upper display limit value and the lower limit value, it may not be able to setup. * In order to display scale value, please set digit number bigger than or equal to the Y-axis display digit number * Depending on Y-axis scale interval, it displays Y-axis upper limit value or more. Specify ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).

Parameters	Contents
\<Y axis display lower limit value\>	Set display lower limit value of Y-axis. Setting range: -2147483646 to 2147483646 * Specify value smaller than Y-axis display upper limit. * If there is a large difference in the Y-axis upper display limit value and the lower limit value, it may not be able to setup. * In order to display scale value, please set digit number bigger than or equal to the Y-axis display digit number Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
\<X-axis scale interval\>	Set scale interval of X-axis. Setting range: 1 to 400 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
\<Y-axis scale interval\>	Set scale interval of Y-axis. Setting range: 1 to 2147483647 * Specify interval to be 1 to 100. * Cannot be set to interval to be greater than or equal to number of pixels graph display area. Specify ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
\<Y-axis scale display interval\>	Based on Y-axis scale interval, set value display interval of Y-axis. Setting range: 0 to 5 * If you specify 0, scale value does not display. Specify ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
\<Y axis display digits\>	Set number of digits of display value of Y-axis. * Scale value will not be displayed if specified number of digits is greater than scale value. Setting range: 1 to 12 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
\<Execution Result\>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.39 GETAXIS Method Execution (Simple Graph)
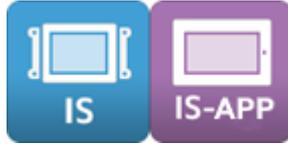
Command Name

Command Name：PA03

Message Type ：'C'

Method ID：GETAXIS

Function

Acquire the X-axis/Y-axis configuration of the Simple Graph part.

Detail

<<Command format>>

　　PA03,<property>{CR}

<<Response format>>

　　PA03,<property>,<execution result>,<X-Axis No. of Data><Y-Axis Upper Limit>,
　　<Y-Axis Lower Limit>,<X-Axis Scale Unit>,<Y-Axis Scale Unit>, <Y-Axis Scale Interval>,
　　<Y-Axis Characters>{CR}
　　Or
　　PA03,<property>,<execution result>{CR} (* at the time of error)

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

All parameters will be in ASCII code string.

Parameters	Contents
<Property>	Shown in following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). 　　Please refer to "13.14.1 Property/Event" for details.
<Execution result>	Execution result of command 　0: Normal termination 　1: Number of parameters command provisions out of range 　2: There is a non-specified value in command 　9: An error other than above
<Number of data displayed on X axis>	Indicates number of data to be displayed on X-axis.
<Y axis display upper limit>	Indicates an upper limit value of Y-axis.
<Y axis display lower limit value>	Indicates display lower limit value of Y-axis.
<X axis scale interval>	Shows scale interval of X-axis.
<Y axis scale interval>	Shows scale interval of Y-axis.
<Y axis scale display interval>	Shows value display interval of Y-axis relative to Y-axis scale interval,.
<Y axis display digits>	Indicates number of digits of display value of Y-axis.

13.13.40 AUTOCNT Method Execution (Global Memory)
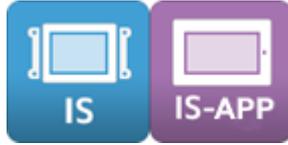
Command Name

Command Name：PA03

Message Type ：'C'

Method ID：AUTOCNT

Function

The value of the Global Memory (numeric type) will automatically be counted.
When this command is executed, the Global Memory will either count up or count down from the current value to the directed value

Detail

<<Command format>>

　　PA03,<property>,<target value>,<increment or decrement per one time>{CR}

<<Response format>>

　　PA03,<property>,<execution result>{CR}

*　　{CR} indicates 0x0d. Delimiter of each parameter is a "," comma (0x2c).

*　　For InfoSOSA protocol, response will not be returned.

*　　Count display does not necessarily show all of the value increased or decreased. There may be a skip in numeric display.

Parameters	Contents
<Property>	It is shown in following format. Format: [Screen ID].[Parts ID].[Method ID] * Delimiter of each ID is "." period (0x2e). Please refer to "13.14.1 Property/Event" for details.
<Count end point>	Set count end point. Set within range of numeric memory. Specify ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Count increase or decrease amount>	Set count increase or decrease value. Set value: 1 to (count end point - current count) -1 Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39).
<Execution Result>	Execution result of the command 0: Normal termination 1: The number of command parameters are out of range 2: There is a non-specified value in the command 9: An error other than the above It will be ASCII code string.

13.13.41 Group Data Setting

Command Name

Command Name：PA05

Message Type ：'C'

Function

Set value in Global Memory that is grouped in batch.

Detail

<<Command format>>

　　PA05,<Group ID>,<value 1>,<value 2>, ...,<value n>{CR}

<<Response format>>

　　PA05,<Group ID>,<execution result>{CR}

* 　Values should be aligned in order of "No." property in the <Group ID>.

* 　Number n of setting value must match the number of memories that belong to <group ID>. If they do not, the entire command will be ignored.

* 　{CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

* 　For InfoSOSA protocol, response will not be returned.

Parameters	Contents
<Property>	Set group ID set by group memory of InfoSOSA Builder. Specify ASCII code string. Available characters are according to ID rule.
<Setting value>	Refer to "13.14.2 How to Specify Setting Value" to configure settings.
<Execution result>	Execution result of command 0: Normal termination 1: The number of command parameters are outside of defined 2: There is a non-specified value in the command 9: Error other than the above It will be ASCII code string.

13.13.42 Group Data Acquisition

Command Name

Command Name：PA06

Message Type ：'C'

Function

Acquire the value of Global Memory that is grouped in batch.

Detail

<<Command format>>

    PA06,<Group ID>{CR}

<<Response format>>

    PA06,<Group ID>,<value 1>,<value 2>,...,<value n>{CR}

*   Values should be aligned in order of "No." property in the <Group ID>.

*   The number n of the set value is the number of memory that belongs to <group ID>.

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   If a non-existent <Group ID> is specified, "2" is returned.

Parameters	Contents
<Group ID>	Set group ID set by group memory of InfoSOSA Builder. Specify ASCII code string. Available characters are according to ID rule.
<Setting value>	Refer to "13.14.2 How to Specify Setting Value" to configure settings.

13.13.43 Subroutine Call
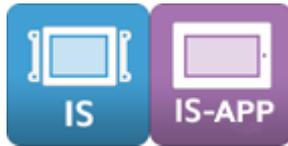
Command Name

Command Name：PA07

Message Type ：'C'

Function

Execute the subroutines that have been pre-registered to InfoSOSA.

Detail

<<Command format>>

    PA07,<subroutine ID>{CR}

<<Response format>>

    PA07,<subroutine ID>,<execution result>{CR}

*   {CR} indicates 0x0d. Delimiter of each parameter is "," comma (0x2c).

*   For InfoSOSA protocol, response will not be returned.

*   Execution results for the subroutine execution will return to 0 at the time the execution starts. Therefore execution results will be "0=normal termination" even when an error occurs in subroutine.

Parameters	Contents
<Subroutine ID>	Set subroutine ID that has been set in InfoSOSA Builder. Specify ASCII code string. Available characters are according to ID rule.
<Execution result>	Execution result of command 0: Normal termination 1: Number of command parameters out of range 2: Non-specified value in command 9: Error other than above It will be in ASCII Code

13.13.44 Restart

Command Name

Command Name：RS01

Message Type ：'C'

Function

Reboot the InfoSOSA unit.

Detail

<<Command Format>>

　　RS01{CR}

<<Response Format>>

　　RS01,<execution result>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is a "," comma (0x2c).

* 　Response is sent regardless of the communication mode.

Parameters	Contents
<Execution result>	Execution result of command 0: Normal termination 1: Number of command parameters out of range 2: Non-specified value in command 9: Error other than above It will be in ASCII Code

13.13.45 Restart in OSD mode

Command Name

Command Name：RS03

Message Type ：'C'

Function

Reboot the InfoSOSA unit.

After restarting, starts up in OSD mode.

It will go back to normal mode with below operations

- Turn power off and on again
- Run Download (USB)

Detail

<<Command Format>>

　　RS03{CR}

<<Response format>>

　　RS03,<execution result code>{CR}

* 　{CR} indicates 0x0d. Delimiter of each parameter is a "," comma (0x2c).

* 　Response is sent regardless of the communication mode.

Parameters	Contents
<Execution result>	Execution result of command 0: Normal termination 1: Number of command parameters out of range 2: Non-specified value in command 9: Error other than above It will be in ASCII Code

13.14 The Parameters of the Communication Command

This section describes the parameters of the communication command.

13.14.1 Property/Event
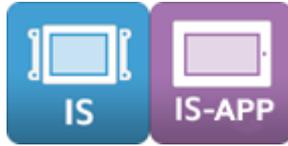
When using Property Setting (PA01), Property Acquisition (PA02), and Method Execution (PA03) command, the way of specifying ID should follow the format below.

In addition, the notification from the InfoSOSA (PA04) will also be represented in the same format.

Format: *[Affiliation ID].[parts/memory ID].[property/method/event ID]*

The message should be represented with ASCII string.

The characters that can be used in ID are 0 to 9 (0x30 to 0x39), A to Z (0x41 to 0x5A), a hyphen "-" (0x2D), and "_" underscore (0x5F).

Delimiter of each ID is a ".", a period (0x2e).

*   In the case of the screen (BASE), *[parts/memory ID]* is no longer required.
    Example: PA01.BAS00001.BCOLOR.0-240-0[CR]
    PA04.BAS00001.ON_DISPLAY[CR]

[Affiliation ID]

Below specifies the affiliation area that the parts and memories belong to.

Type	ID	Description
Parts	Screen ID	Specify screen ID set with Builder. Example: BAS00001
Screen Memory	Screen ID	Specify screen ID set with Builder. Example: BAS00001
Global Memory	@GLBMEM	Specify ID in left column when specifying Global Memory.
String Resources	@STRRES	Specify ID in left column when specifying String Resource.
Environment Variable	@SYSENV	Specify ID in left column when specifying environment variable.
Sheet Key	Screen ID	Screen ID of screen being displayed. Specify screen ID set with Builder. Example: BAS00001

[Parts/Memory ID]

Below specifies the ID representing the target of the Parts/Memory.

Type	ID	Description
Parts	Parts ID	Specify Parts ID set with Builder. Example: BTN00001
Screen Memory	Memory ID	Specify Memory ID set with Builder. Example: MEM00001
Global Memory	Memory ID	Specify Memory ID set with Builder. Example: GME00001
String Resources	String ID	Specify String ID set with Builder. Example: STR00001
Environment Variable	Memory ID	Specify memory ID listed in 11.2 List of Environment Variables. Example: BRIGHT
Sheet Key	Sheet key ID	Specify memory ID listed in 12.6 Input to Sheet Key and Output to LED Example: XSW01

[Property/Method/Event ID]

Below specifies the properties, method IDs, etc. of the target Parts/Memories.
Event ID will also be in the same format.

| Type	ID	Description
Parts	Property ID Method ID Event ID	Refer to section of each part in 4 Parts about operation possible/viable properties/methods and occurrence event.
Screen Memory		Refer to 5.1 Memory about operation possible/viable properties/methods and occurrence event.
Global Memory		
String Resources	TEXT	String Resource is read only.
Environment Variable	Property ID	Refer to 11.2 List of Environment Variables about operation possible/viable property.
Sheet Key	Event ID	Refer to 12.6 Input to Sheet Key and Output to LED for occurrence event.

13.14.2 How to Specify Setting Value

Specify by the following format when specifying a set value by property setting (PA01), method execution (PA03), and etc.

Type	Target ID	Description
Numeric value	VALUE	Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39). * Specify by decimal and integer. * Do not fill 0 in significant digit.
String	TEXT	String is specified in character code set. When power is turned on ASCII is set. If you change to UTF-16LE, a string UTF-16LE identification code (must be enclosed between start code (0xfe, 0xff) and end code (0xff, 0xfe)). "\n" (0x5c, 0x6e) is treated as a new line. "\\" (0x5c, 0x5c) will display as a character "\". Characters you cannot use are "," comma (0x2c) and control characters.
Color	FCOLOR BCOLOR	Specify with the format of "R-G-B". R: Red (0 to 255) G: Green (0 to 255) B: Blue (0 to 255) Color number is specified in decimal ASCII code string. Available characters are 0 to 9 (0x30 to 0x39) and delimiter "-", hyphen (0x2d). * Value actually set will be corrected depending on number of colors that can be used.
Others	-	Specify by ASCII code string. Available characters are 0 to 9 (0x30 to 0x39). For True, set 1 (0x31) For False, set 0 (0x30). * Specify a decimal integer. * Do not fill 0 in significant digit.

13.14.3 Operable Property List

The combinations of the operable properties in the Host Communication are shown below.
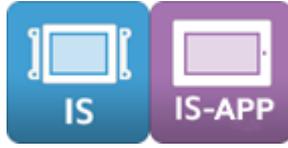
Parts

Parts name	Standard Properties									
	NAME	FCOLOR	BCOLOR	TEXT	VALUE	ENABLED	VISIBLE	BLINK	ZEROSPRS	OVERFLOW
Button	R	RW	-	RW	-	RW	RW	RW	-	-
NoImage Button	R	RW	RW	RW	-	RW	RW	RW	-	-
Touch Screen Button	R	-	-	-	-	RW	-	-	-	-
Change Screen Button	R	RW	-	RW	-	RW	RW	RW	-	-
Switch	R	RW	-	RW	R	RW	RW	RW	-	-
Image Multi State Switch	R	-	-	-	RW	RW	RW	RW	-	-
Color Multi State Switch	R	-	-	-	RW	RW	RW	RW	-	-
Numeric Keypad	R	-	-	-	-	-	R	-	-	-
Bit Map Lamp	R	RW	-	RW	RW	-	RW	RW	-	-
NoImage Lamp	R	RW	RW	-	RW	-	RW	RW	-	-
Image Multi State Lamp	R	-	-	-	RW	-	RW	RW	-	-
Color Multi State Lamp	R	-	-	-	RW	-	RW	RW	-	-
Label	R	RW	RW	R	-	-	RW	RW	-	-
Character Display Parts	R	RW	RW	RW	-	RW	RW	RW	-	-
Number Display Parts	R	-	RW	-	RW	RW	RW	RW	R	-
Telop	R	RW	RW	RW	-	RW	RW	RW	-	-
Time Display Parts	R	-	RW	-	RW	-	RW	RW	R	R
Frame	R	-	-	-	-	-	RW	-	-	-
NoImage Frame	R	RW	RW	-	-	-	RW	-	-	-
Simple Graph[1]	R	-	RW	-	-	-	RW	-	-	-
Bar Meter	R	-	RW	-	-	-	RW	-	-	-
Picture Box	R	-	RW	-	-	-	RW	-	-	-
Line Parts	R	-	-	-	-	-	RW	RW	-	-
Arrow Parts	R	-	-	-	-	-	RW	RW	-	-
Rectangular Parts	R	-	-	-	-	-	RW	RW	-	-
Table Parts	R	-	-	-	-	-	RW	-	-	-

*1 Simple graph Extended Properties of the following is also operable.

Property Name	Property	R/W
Graph Point Size	PNTSIZE	RW
Graph Line Color	GL_COL01 to 08	RW
Graph Line Display Setting	GL_VIS01 to 08	RW
AUX Line Color	AL_COL01 to 03	RW
AUX Line Display Setting	AL_VIS01 to 03	RW
AUX Line Value	AL_VAL01 to 03	RW
Y-Axis Setting Scale Interval	Y_SCLVAL	RW

* R: Only read value
* RW: Read and write value
* - : No read/write value

IS-APP

Parts Name	Standard Properties									
	NAME	FCOLOR	BCOLOR	TEXT	VALUE	ENABLED	VISIBLE	BLINK	ZEROSPRS	OVERFLOW
Scroll Frame	R	-	-	-	-	RW	RW	-	-	-
Screen Zoom Frame	R	-	-	-	-	RW	RW	-	-	-
Image Zoom Frame	R	-	-	-	-	RW	RW	-	-	-
Grid Button	R	-	-	-	-	RW	RW	-	-	-
Slider	R	-	-	-	-	RW	RW	-	-	-

Memory

Memory category	Memory type	Property ID					
		NAME (Memory ID)	TEXT (String)	VALUE (Value)	TIMEUP (Timeup value)	LOOPCNT (Loop count)	STATE (Timer state)
Global Memory	Numerical type (Int)	R	-	RW	-	-	-
	String type	R	RW	-	-	-	-
	Timer type	R	-	-	RW	RW	RW
Screen Memory	Numerical type (Int)	R	-	RW	-	-	-
	String type	R	RW	-	-	-	-
	Timer type	R	-	-	RW	RW	RW
	Array queue type	R	-	-	-	-	-

* R: Only read value
* RW: Read and write value
* - : No read/write value

13.14.4 Executable Method List
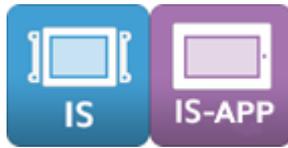
Combinations of executable method in the Host Communication are shown below.

Parts Name	Method															
	DPOINT	DLINE	DCIRCLE	LPICTURE	ADDLAST	ADDDATA	ALLCLR	DRAWAXIS	GETAXIS	SETOP	GETOP	SCROLL	SETTSA	SETTSB	GETTS	AUTOCOUNT
Simple Graph	-	-	-	-	○	○	○	○	○	-	-	-	-	-	-	-
Picture Box	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-
Global Memory Numeric Type	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○

* O: Can be executed
* -: Cannot be executed

* There are no executable methods in other parts.

14. **Appendix**

Chapter Contents

14.1   Setting Range List

Screen creating restrictions vary depending on the model.
It may be less than the maximum number depending on the screen configurations (such as project data size, etc.).

IS731 Series

Items	Specifications
Maximum number of screens that can be created	255 screens[1]
Base Screen Size	Fixed Resolution
Pop-up Screen Size	48x48 to resolution
Maximum Image Size	800x800
Maximum number of Image Resources	500
Maximum number of Global Memory	2,000
Maximum number of String Resources	2,000
Maximum number of String Resource set	10
Maximum number of Subroutine	500 [2] [3]
Size of Part	8x8 to resolution
Maximum number of parts you can register in one screen	255
Maximum amount of screen memory you can register in one screen	100
Maximum number of actions you can register in one part	200
Maximum number of telop parts you can register in one screen	3
Upper limit for telop data you can set up	32MB [4]
Available font size	8 to 256 point

[1]   Sum of Base Screens and Pop-up Screens.

[2]   Number of actions that can be registered in one subroutine is the same as the number that can be registered in one part.

[3]   Includes the number of "Action Settings (global)".

[4]   Telop data is created in RAM, as a result its data is not included in the project data size saved in ROM. Please refer to "4.9.4 Telop" to calculate the Telop data size.

IS-APP

Items	Specifications
Maximum number of screens that can be created	255 screens [1]
Base Screen Size	48x48 to 2000x2000
Pop-up Screen Size	48x48 to 2000x2000
Maximum Image size	1920x1600
Maximum number of Image Resources	1000
Maximum Sound size	16MB per file
Maximum Sound Resources	200
Maximum number of Global Memory	2,000
Maximum number of String Resources	2,000
Maximum number of String Resource set	10
Maximum number of Subroutine	500 [2] [3]
Size of Part	8x8 to 1600x1600
Maximum number of parts you can register in one screen	255
Maximum amount of screen memory you can register in one screen	100
Maximum number of actions you can register in one part	200
Maximum number of telop parts you can register in one screen	5
Maximum telop data you can display at the same time	No limit [4]
Available font size	8 to 256 point

[1] Sum of Base Screens and Pop-up Screens.

[2] Number of actions that can be registered in one subroutine is the same as the number that can be registered in one part.

[3] Includes the number of "Action Settings (global)".

[4] Telop data is created in RAM. While there is no limit to the size, if RAM capacity is low, operations may become unstable. Adjust to allow for usage by other applications.

15. **Others**

Chapter Contents

15.1　Inquiries

If you have any questions, feel free to contact us.

By E-mail

North South America area

⊠　technical-global@dush.co.jp

Asia Pacific area

⊠　technical-global-asia@dush.co.jp

Europe, Middle East, Africa area

⊠　technical-global-eu@dush.co.jp

FAQ

🌐　www.dush.co.jp/english/support/faq/