

MONITOUCH

Reference Manual [1]



Record of Revisions

Reference numbers are shown at the bottom left corner on the back cover of each manual.

Printing Date	Reference No.	Revised Contents
June, 2014	1065NE0	First edition
February, 2015	1065NE1	<div>Second edition</div> <div><ul style="list-style-type: none">• Chapter 1 \$s1674, Added \$s device memory (data transfer service, SYS (GET_SMPL) / SAMPLE macros)• Chapter 2 Overlaps, area transparency• Chapter 3 Switch functions, switching to Local mode, 80 Compatible HEX Key, 80 Compatible HEX Key Change• Chapter 7 Trend parts (real time), background operations• Chapter 11 Animation• Chapter 15 Recipes, semicolon delimiter, recipe switches, selection during execution (filtering window)• Chapter 16 Printing, added printer models (PR201, ESC-P, CBM292/293, MR-400)• Windows fonts, setting for smoothing edges• Partial modifications• Revisions for new print</div>

Preface

Thank you for selecting the MONITOUCH V9 series.

For correct setup of the V9 series, you are requested to read through this manual to understand more about the product.

For details on other operating procedures for the V9 series, refer to the following related manuals.

Manual Name	Contents	Reference No.
V9 Series Reference Manual [1]	Explains the functions and operation of the V9 series.	1065NE
V9 Series Reference Manual [2]		1066NE
V9 Series Setup Manual	Explains the installation procedure of V-SFT version 6, the creation process of simple screen programs as well as how to transfer a created screen program using V-SFT version 6.	1067NE
V9 Series Troubleshooting/Maintenance Manual	Provides an error list and explains the operating procedures for the V9 series.	1068NE
V9 Series Training Manual Beginner's Guide	Explains the screen creation process using V-SFT version 6 with examples in detail.	1069NE
V9 Series Training Manual Practical Guide		1070NE
V9 Series Macro Reference	Provides an overview of macros of V-SFT version 6 and explains macro editor operations and macro command descriptions in detail.	1071NE
V9 Series Operation Manual	Explains the configuration of V-SFT version 6, the editing process of each part and limitations regarding operation in detail.	1072NE
V9 Series Connection Manual [1]	Explains the connection and communication parameters for the V9 series and controllers in detail. Included Makers ALLEN BRADLEY, Automationdirect, Azbil, Baumuller, BECKHOFF, CHINO, CIMON, DELTA, DELTA TAU DATA SYSTEMS, EATON Cutler-Hammer, EMERSON, FANUC, FATEK AUTOMATION, FUFENG, Fuji Electric, Gammaflux, GE Fanuc, Hitachi, Hitachi Industrial Equipment Systems	2210NE
V9 Series Connection Manual [2]	Explains the connection and communication parameters for the V9 series and controllers in detail. Included Makers IAI, IDEC, JTEKT, KEYENCE, KOGANEI, KOYO ELECTRONICS, LS, MITSUBISHI ELECTRIC, MODICON, MOELLER, M-SYSTEM, OMRON, Oriental Motor, Panasonic, RKC, RS Automation	2211NE
V9 Series Connection Manual [3]	Explains the connection and communication parameters for the V9 series and controllers in detail. Included Makers SAIA, SAMSUNG, SanRex, SANMEI, SHARP, SHIMADEN, SHINKO TECHNOS, Siemens, SINFONIA TECHNOLOGY, TECO, Telemecanique, TOHO, TOSHIBA, TOSHIBA MACHINE, TURCK, UNIPULSE, UNITRONICS, VIGOR, WAGO, XINJE, YAMAHA, Yaskawa Electric, Yokogawa Electric, MODBUS, Barcode Reader, Slave Communication Function, Universal Serial Communication	2212NE
V9 Series Hardware Specifications	Explains hardware specifications and precautions when handling the V9 series.	2023NE

For details on devices including PLCs, inverters, and temperature controllers, refer to the manual for each device.

Notes:

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2. The information in this manual is subject to change without prior notice.
3. Windows and Excel are registered trademarks of Microsoft Corporation in the United States and other countries.
4. All other company names or product names are trademarks or registered trademarks of their respective holders.
5. This manual is intended to give accurate information about MONITOUCH hardware. If you have any questions, please contact your local distributor.

Notes on Safe Usage of MONITOUCH


In this manual, you will find various notes categorized under the following levels with the signal words "DANGER" and "CAUTION".



DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and could cause property damage.

Note that there is a possibility that items listed with  **CAUTION** may have serious ramifications.



DANGER

- Never use the output signal of the V9 series for operations that may threaten human life or damage the system, such as signals used in case of emergency. Please design the system so that it can cope with a touch switch malfunction. A touch switch malfunction may result in machine accidents or damage.
- Turn off the power supply when you set up the unit, connect new cables, or perform maintenance or inspections. Otherwise, electrical shock or damage may occur.
- Never touch any terminals while the power is on. Otherwise, electrical shock may occur.
- You must cover the terminals on the unit before turning the power on and operating the unit. Otherwise, electrical shock may occur.
- The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, do not ingest the leaked liquid crystal. If leaked liquid crystal makes contact with skin or clothing, wash it away with soap and water.
- Never disassemble, recharge, deform by pressure, short-circuit, reverse the polarity of the lithium battery, nor dispose of the lithium battery in fire. Failure to follow these conditions will lead to explosion or ignition.
- Never use a lithium battery that is deformed, leaking, or shows any other signs of abnormality. Failure to follow these conditions will lead to explosion or ignition.
- Switches on the screen are operable even when the screen has become dark due to a faulty backlight or when the backlight has reached the end of its service life. If the screen is dark and hard to see, do not touch the screen. Otherwise, a malfunction may occur resulting in machine accidents or damage.



CAUTION

- Check the appearance of the unit when it is unpacked. Do not use the unit if any damage or deformation is found. Failure to do so may lead to fire, damage, or malfunction.
- For use in a facility or as part of a system related to nuclear energy, aerospace, medical, traffic equipment, or mobile installations, please consult your local distributor.
- Operate (or store) the V9 series under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage, or deterioration.
- Observe the following environmental restrictions on use and storage of the unit. Otherwise, fire or damage to the unit may result.
 - Avoid locations where there is a possibility that water, corrosive gas, flammable gas, solvents, grinding fluids, or cutting oil can come into contact with the unit.
 - Avoid high temperatures, high humidity, and outside weather conditions, such as wind, rain, or direct sunlight.
 - Avoid locations where excessive dust, salt, and metallic particles are present.
 - Avoid installing the unit in a location where vibrations or physical shocks may be transmitted.
- Equipment must be correctly mounted so that the main terminal of the V9 series will not be touched inadvertently. Otherwise, an accident or electric shock may occur.
- Tighten the mounting screw on the fixtures of the V9 series to an equal torque of 0.6 N·m. Excessive tightening may distort the panel surface. Loose mounting screws may cause the unit to fall down, malfunction, or short-circuit.
- Check periodically that terminal screws on the power supply terminal block and fixtures are firmly tightened. Loosened screws or nuts may result in fire or malfunction.
- Tighten the terminal screws on the power supply terminal block of the V9 series to an equal torque of 7.1 to 8.8 inch-lbf (0.8 to 1.0 N·m). Improper tightening of screws may result in fire, malfunction, or other serious trouble.
- The V9 series has a glass screen. Do not drop the unit or impart physical shocks to the unit. Otherwise, the screen may be damaged.
- Correctly connect cables to the terminals of the V9 series in accordance with the specified voltage and wattage. Overvoltage, overwattage, or incorrect cable connection could cause fire, malfunction, or damage to the unit.
- Always ground the V9 series. The FG terminal must be used exclusively for the V9 series with the level of grounding resistance less than 100 Ω. Otherwise, electric shock or a fire may occur.
- Prevent any conductive particles from entering the V9 series. Failure to do so may lead to fire, damage, or malfunction.
- After wiring is finished, remove the paper used as a dust cover before starting operation of the V9 series. Operation with the dust cover attached may result in accidents, fire, malfunction, or other trouble.

CAUTION

- Do not attempt to repair the V9 series yourself. Contact Hakko Electronics or the designated contractor for repairs.
- Do not repair, disassemble, or modify the V9 series. Hakko Electronics Co., Ltd. is not responsible for any damages resulting from repair, disassembly, or modification of the unit that was performed by an unauthorized person.
- Do not use sharp-pointed tools to press touch switches. Doing so may damage the display unit.
- Only experts are authorized to set up the unit, connect cables, and perform maintenance and inspection.
- Lithium batteries contain combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. Read the related manuals carefully and correctly handle the lithium battery as instructed.
- Take safety precautions during operations such as changing settings when the unit is running, forced output, and starting and stopping the unit. Any misoperations may cause unexpected machine movement, resulting in machine accidents or damage.
- In facilities where the failure of the V9 series could lead to accidents that threaten human life or other serious damage, be sure that such facilities are equipped with adequate safeguards.
- When disposing of the V9 series, it must be treated as industrial waste.
- Before touching the V9 series, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or trouble.
- Insert an SD card into MONITOUCH in the same orientation as pictured on the unit. Failure to do so may damage the SD card or the slot on the unit.
- The SD card access LED flashes red when the SD card is being accessed. Never remove the SD card or turn off power to the unit while the LED is flashing. Doing so may destroy the data on the SD card. Check that the LED has turned off before removing the SD card or turning off the power to the unit.
- Be sure to remove the protective sheet that is attached to the touch panel surface at delivery before use. If used with the protective sheet attached, MONITOUCH may not recognize touch operations or malfunctions may occur.
- When using an analog resistive-film type V9 series unit, do not touch two positions on the screen at the same time. If two or more positions are pressed at the same time, the switch located between the pressed positions may be activated.
- When using a capacitive V9 series unit, take note of the following cautions.
 - Use a Class 2 power supply for a 24-VDC unit. If an unstable power supply is used, MONITOUCH may not recognize touch operations or malfunctions may occur.
 - Capacitive touch panel types support two-point touch operations. If a third point is touched, the touch operation will be cancelled.
 - Capacitive touch panel types are prone to the influence of conductive material. Do not place conductive material such as metals near the touch panel surface and do not use the panel if it is wet. Otherwise, malfunctions may occur.

[General Notes]

- Never bundle control cables or input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep control cables and input/output cables at least 200 mm away from high-voltage and large-current carrying cables. Otherwise, malfunction may occur due to noise.
- When using the V9 series in an environment where a source of high-frequency noise is present, it is recommended that the FG shielded cable (communication cable) be grounded at each end. However, when communication is unstable, select between grounding one or both ends, as permitted by the usage environment.
- Be sure to plug connectors and sockets of the V9 series in the correct orientation. Failure to do so may lead to damage or malfunction.
- If a LAN cable is inserted into the MJ1 or MJ2 connector, the device on the other end may be damaged. Check the connector names on the unit and insert cables into the correct connectors.
- Do not use thinners for cleaning because it may discolor the V9 series surface. Use commercially available alcohol.
- If a data receive error occurs when the V9 series unit and a counterpart unit (PLC, temperature controller, etc.) are started at the same time, read the manual of the counterpart unit to correctly resolve the error.
- Avoid discharging static electricity on the mounting panel of the V9 series. Static charge can damage the unit and cause malfunctions. Discharging static electricity on the mounting panel may cause malfunction to occur due to noise.
- Avoid prolonged display of any fixed pattern. Due to the characteristic of liquid crystal displays, an afterimage may occur. If prolonged display of a fixed pattern is expected, use the backlight's auto OFF function.
- The V9 series is identified as a class-A product in industrial environments. In the case of use in a domestic environment, the unit is likely to cause electromagnetic interference. Preventive measures should thereby be taken appropriately.

[Notes on the LCD]

Note that the following conditions may occur under normal circumstances.

- The response time, brightness, and colors of the V9 series may be affected by the ambient temperature.
- Tiny spots (dark or luminescent) may appear on the display due to the characteristics of liquid crystal.
- There are variations in brightness and color between units.

[Notes on Capacitive Touch Panels]

- Touch panel operability may not be optimal if used with dry fingers or skin. In such a case, use a capacitive stylus pen.
- Periodically clean the touch panel surface for optimum touch operations.

When cleaning, take note of the following points.

<When cleaning>

- The panel surface is made of glass. Be sure to clean the surface gently with a cloth or sponge. Otherwise, you may scratch or damage the glass.
- Take care not to let cleaning detergent seep into the touch panel unit.
Do not directly apply or spray cleaning detergent on the panel surface.

[Notes on Wireless LAN]

For details regarding supported wireless LAN standards, radio law certifications, and countries where wireless LAN can be used, refer to the "V9 Series About Wireless LAN" manual and the "V9 Series Hardware Specifications" manual provided with the V9 series unit at delivery.

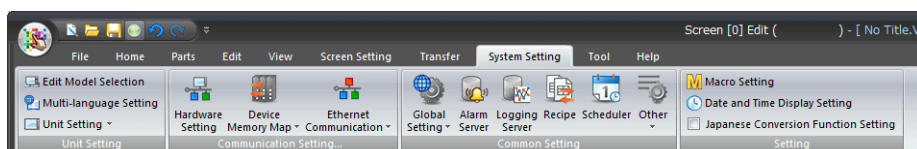
1.1 System Settings

1.1.1 System Setting

System settings cover a variety of settings including those initially required for the V9 series unit to communicate with the PLC, unit settings, and screen program settings. This section only describes the settings important for initial setup. For details, refer to the relevant item.



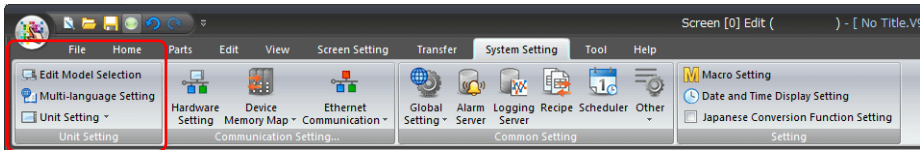
Before transferring a screen program to the V9 series unit, be sure to check the system settings.



Group	Item		Refer to
Unit Setting	Edit Model Selection		"Edit Model Selection" page 1-2
	Multi-language Setting		"Multi-language Setting" page 1-3
	Unit Setting	SRAM/Clock	"SRAM/Clock" page 1-5
		Backlight	"Backlight" page 1-7
		Buzzer	"Buzzer" page 1-8
		System/Mode Switch	"System/Mode Switch" page 1-9
		Blink/Flash	"Blink/Flash" page 1-9
		Overlap	"2 Overlap"
		Video/RGB	V9 Series Reference Manual 2 1.2 Network Camera
		Sound	V9 Series Reference Manual 2 2 Sound
		General Setting	"General Settings" page 1-10
		Local Mode	"Local Mode Prohibition Setting" page 1-17
Communication Setting	Hardware Setting		"Hardware Setting" page 1-18
	Device Memory Map		V9 Series Reference Manual 2 6 Ethernet Communication Function
	Ethernet Communication	Local Port Address	
		Network Table	
		E-Mail	
Common Setting	Global Setting	Global Function Switch Setting	"Global Function Switch Setting" page 1-22
		Global Overlap Setting	"2.5 Global Overlap"
	Alarm Server		"8.2 Alarm Server"
	Logging Server		"7.2.1 Logging Server"
	Recipe		"15 Recipes"
	Scheduler		V9 Series Reference Manual 2 3 Scheduler
	Other	Storage Setting	V9 Series Reference Manual 2 8 Storage Device
		MES Setting	6.7 MES Interface Function
		Operation log Setting	4 Operation Log
		Security Setting	5 Security
		Network Camera Table Setting	1.2 Network Camera
Setting	Macro Setting		V9 Series Macro Reference Manual
	Date and Time Display Setting		"8.3 Date and Time Display Setting"
	Japanese Conversion Function Setting		-

1.1.2 Unit Setting

This section explains the items in the [Unit Setting] group.



For information on other settings, refer to "1.1.1 System Setting" page 1-1.

Edit Model Selection

Select the model of the V9 series for which you wish to configure a screen program.
Location of setting: [System Setting] → [Edit Model Selection] or [System Setting] → [Hardware Setting] → [Edit Model]

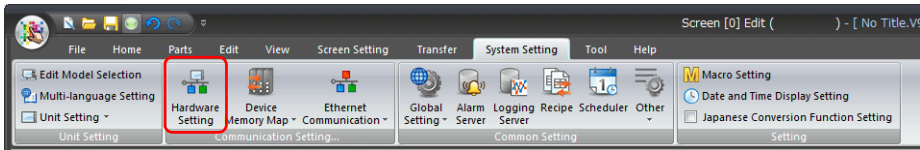
V9 Series Model	Edit Model	Installation	Size	Color
V910xiW	V910*iW	Landscape Portrait (Left 90) Portrait (Right 90)	1024 × 600	64K-Color w/o blinking 32K-Color w/ blinking
V907xiW	V907*iW		800 × 480	
V9120iS	V912*iS		800 × 600	
V9100iS	V910*iS		800 × 600	
V9080iS	V908*iS		800 × 600	
V9100iC	V910*iC		640 × 480	
V9080iC	V908*iC		640 × 480	



The screen program of the V9 series unit cannot be converted into an earlier version (for example, V8 or V7 series).

1.1.3 Communication Setting

This section explains the items in the [Hardware Setting] window.



For information on other settings, refer to ["1.1.1 System Setting" page 1-1](#).

Hardware Setting

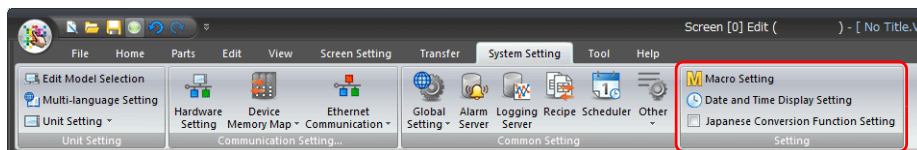
Click to add/change
devices.

Click to
add/change
devices.

Click to change the
menu.
([PLC Setting] and
[Other Devices])

1.1.5 Settings

This section explains the date and time display settings.



For information on other settings, refer to ["1.1.1 System Setting"](#) page 1-1.

Date and Time Display Setting

Use these settings to define a calendar data format.

For details, refer to ["8.3 Date and Time Display Setting"](#).

- \$s497

Outputs the result of accessing the storage device.

4	Card not mounted
6	Card size too small
7	Different card type
9	JPEG/BMP file read error
12	Card write error
15	Disk error (open failure)
16	Card read error

- \$s514, 515

These devices are relevant to the EREAD, EWRITE, SEND, and MES macro commands.

- \$s514: Macro wait request

In the case of successive accesses to the same port on a single macro sheet, always specify a value other than "0" (with wait). If "0" (no wait) is specified, macro commands issued afterward will not be accepted.

[0]: No wait

During the execution of a macro command, the execution of the next macro command takes place before the completion of the current command.

[Other than 0]: With wait

During the execution of a macro command, the next macro command is put on hold and is executed after the completion of the current command.

- \$s515: Storage of the macro execution result

When \$s514 is "0", the macro command request is stored (response not included). When a value other than "0" is set, the response returned to the command request is stored.

For details on values, refer to the V9 Series Connection Manual.

- \$s814 - 818

Stores the IP address of the network table number corresponding to the value* set for \$s818. If no network table exists, "0.0.0.0" is stored.

*1 Use the MOV (W) macro command to set the network table number.

- \$s1030

Outputs the result of access to the storage device at the built-in socket (drive: C).

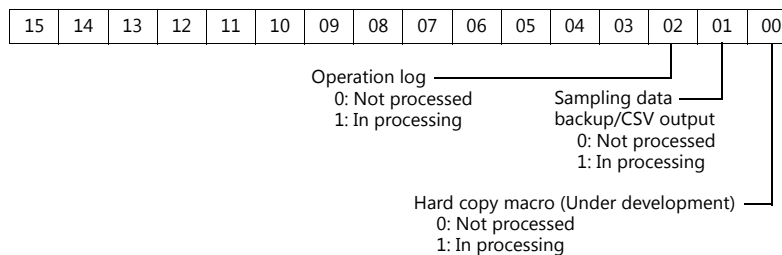
4	Card not mounted
6	Card size too small
7	Different card type
9	JPEG/BMP file read error
12	Card write error
15	Disk error (open failure)
16	Card read error

- \$s1035

Outputs the result of access to the storage device at USB-A (drive: D). Same details as \$s1030.

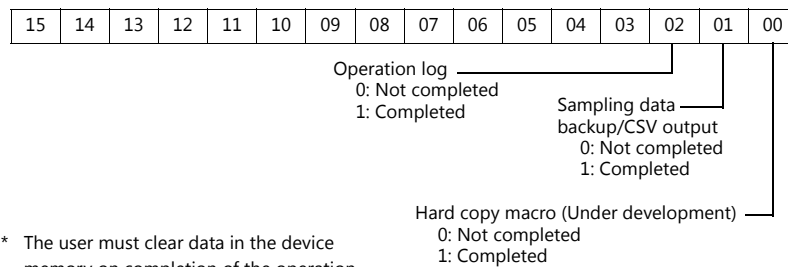
- \$s1050

Outputs the status of the operation related to the storage device.



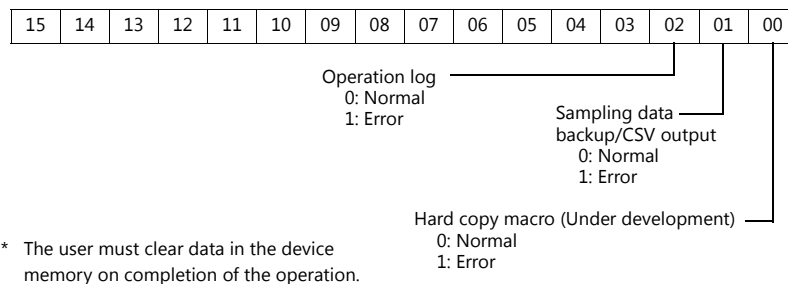
- \$s1051

Outputs the status of the completed operation related to the storage device.



- \$s1052

If an error occurs on completion of processing related to the storage device, the result is output.



- \$s1066

Outputs the status of printing performed on the PictBridge printer.

Value	Description	Cause and Remedy
0	The PictBridge printer is not connected or it is in the normal state.	-
1	Printing in progress using the PictBridge printer.	-
-1	Printer error (hardware related)	The cable is not connected. Check the USB cable connection. Check if the printer is out of order.
-2	Printer error (paper related)	The printer ran out of paper. Add paper. The type of paper is not correct. Set the correct type of paper.
-3	Printer error (related to ink) *	The ink is not installed. Install an ink cartridge. The ink level is low. Install a new ink cartridge.

- \$s1085

Stores information regarding forced formatting of the SRAM area.

This is available when the [Format the SRAM forcefully] checkbox is selected in the [General Settings] window.

[0]: Forced formatting not executed.

[1]: Forced formatting executed (cleared to "0" when the mode changes from RUN to STOP).

- \$s1098

Other than [0]:

Executes background processing of the "SMPL_BAK", "SMPL_CSV", and "SMPL_CSV_BAK" macro commands. However, if background processing is being executed to the buffer that has been specified, the next processing is started on completion of the current macro processing.

- \$s1108

The media status at the secondary storage destination, sampling formatting condition, etc. are comprehensively judged and the valid/invalid state of the secondary storage destination is output.

[0]: Writing or browsing the secondary storage destination is not possible.

[1]: Writing or browsing the secondary storage destination is possible.

- \$s1109

Outputs the status of creating a backup file or CSV output.

Other than [0]: Backup file being created or CSV file outputted

2.1.2 Overlap Display Formats

Overlap displays comprise the following four formats.

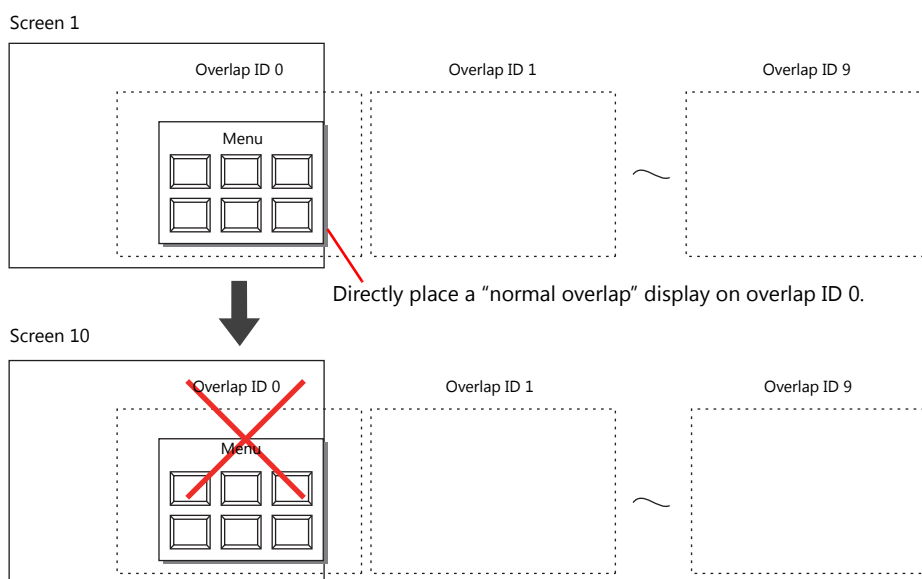
Overlap	Refer to
Normal overlap	page 2-3 , page 2-8
Call-overlap	page 2-4 , page 2-14
Multi-overlap	page 2-5 , page 2-17
Global overlap	page 2-6 , page 2-23

Normal Overlap

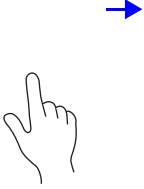
This overlap display format is unique to each screen.

An overlap display created for screen 1 cannot be displayed on other screens.

A normal overlap display can be shown or hidden using a switch or command from the PLC.



Scroll

Item		Description
Display Size Setting		Use [Magnification] to set the editing size of the overlap. 1 times vertical × 1 times horizontal / 1 times vertical × 2 times horizontal / 1 times vertical × 3 times horizontal / 1 times vertical × 4 times horizontal 2 times vertical × 1 times horizontal / 2 times vertical × 2 times horizontal / 3 times vertical × 1 times horizontal / 4 times vertical × 1 times horizontal
Detail Settings	Display a scroll bar during scroll	Display a scroll bar at the right edge and bottom when scrolling. The scroll bar itself cannot be operated.
	Enable inertial scrolling	Allow scrolling to continue after releasing your finger from the screen when scrolling. The speed of scrolling gradually decreases until it stops. 
	Enable bounce scrolling	Scrolling will bounce to indicate that movement in the particular direction has reached its limit. A black frame is displayed momentarily.



Refer to "7.1 Enlarging and Scrolling Screens" in the V9 Series Reference Manual 2.

Detail

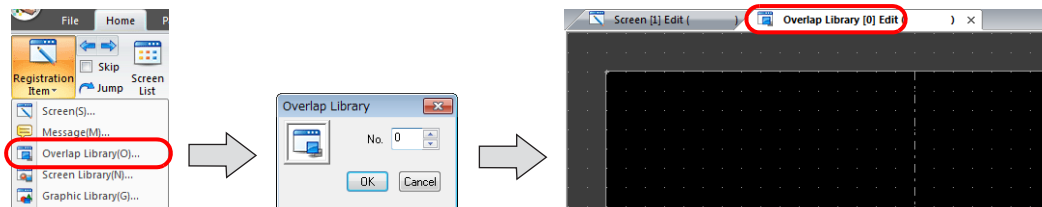
Item		Description
Auxiliary Function	System buttons	Select this checkbox to use system buttons. Refer to page 2-7 .
	Transparency Display	Select this checkbox to enable transparency. Refer to page 2-29 .
Input Cursor Movement Control Device		This setting is required to use the "entry function" on an overlap display. For details, refer to page 6-33 .
Coordinate	Start X/Start Y	Set the display position of the overlap using X and Y coordinates.
	Width/Height	Set the size of the overlap.

2.3 Call-overlap

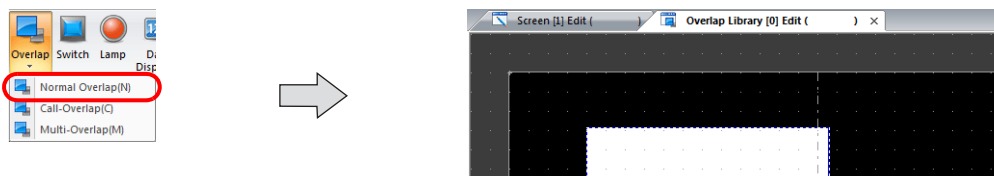
2.3.1 Creation Procedure

1. Creating from an Overlap Library

- 1) Display an [Overlap Library Edit] tab window by clicking [Home] → [Registration Item] → [Overlap Library].

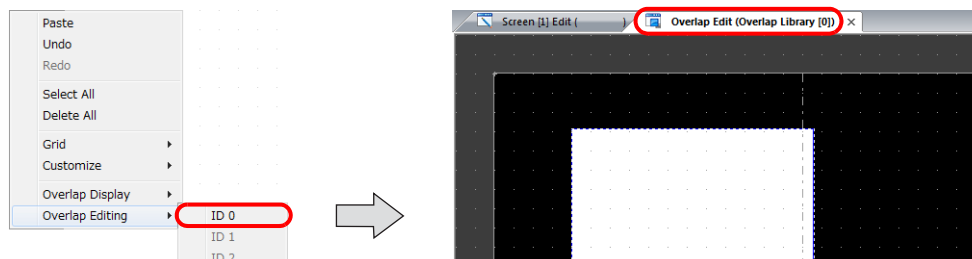


- 2) Click [Parts] or [Home] → [Overlap] → [Normal Overlap] and place an overlap.



- 3) Adjust the size of the overlap.

- 4) Select [Overlap Editing] → [ID 0] on the right-click menu. The overlap editing window is displayed.

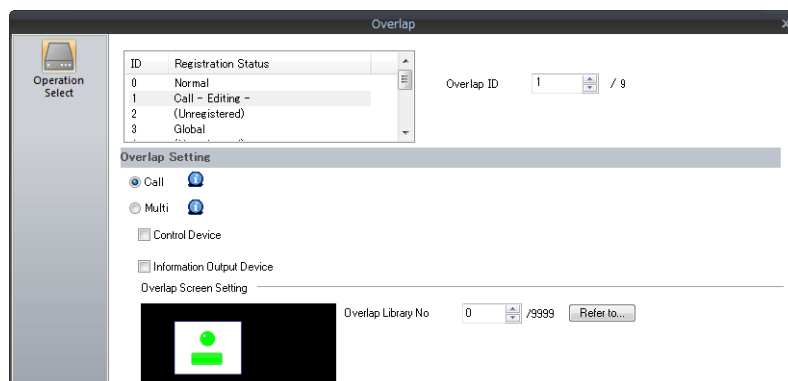


- 5) Place switches, lamps, and other items on the overlap.

- 6) Select [Overlap Editing] → [ID 0] on the right-click menu. The user is returned to the screen editing window.

2. Placing Call-Overlaps

- 1) In the screen editing window, click [Parts] → [Overlap] → [Call-Overlap] and place an overlap.
- 2) Click the icon and display the settings menu.
- 3) Configure the [Operation Select] settings.

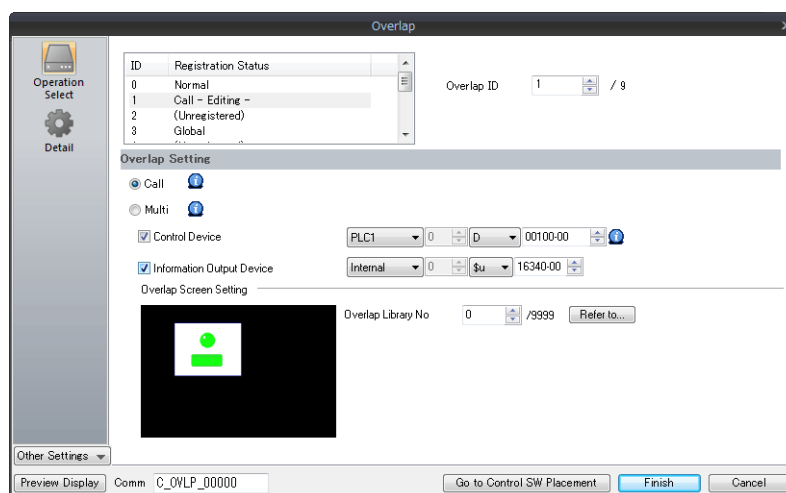


Overlap Setting	Call
Overlap Screen Setting	Set the overlap library number.

3. If performing showing/hiding with a switch, place a switch. [page 2-16](#)
4. If performing showing/hiding with commands from a PLC, configure the [Control Device] settings. [page 2-15](#)

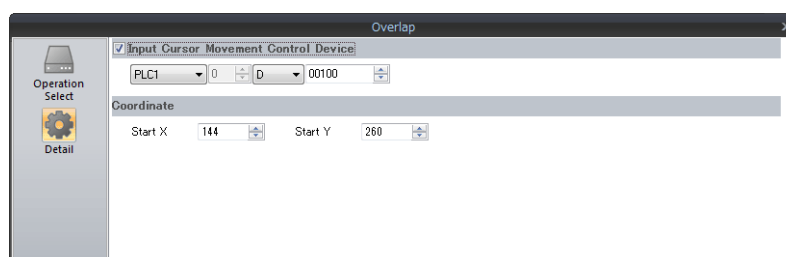
2.3.2 Detailed Settings

Operation Select



Item	Description
Registration Status	Check the registration status of overlap IDs 0 to 9. " - Editing - " is shown for the ID that is currently being edited. The overlap ID can also be changed to an unregistered ID.
Overlap Setting	Call Overlap library number Set the library number of the overlap for display from those registered in the overlap library. Click [Refer to] to select using a list display or thumbnails.
Control Device	Specify a device using one bit. Showing and hiding is performed according to the value of the least significant bit. 0 → 1: Show 1 → 0: Hide * Select the [Display Overlap during bit ON] checkbox at [System Setting] → [Unit Setting] → [General Setting] to allow level operation. Refer to page 2-13 .
Information Output Device	Specify a device using one bit. Stores the overlap display status. 0: Hide 1: Shown

Detail



Item	Description
Input Cursor Movement Control Device	This setting is required to use the "entry function" on an overlap display. For details, refer to page 6-33 .
Coordinate	<div>Start X/Start Y</div> <div>Set the display position of the overlap using X and Y coordinates.</div> <div> </div>

2.3.3 Show/Hide Settings

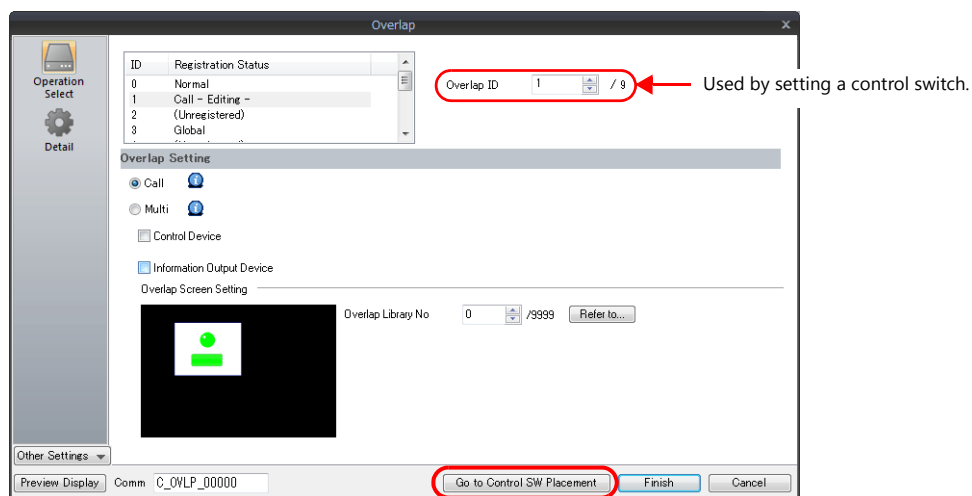
There are three methods for showing and hiding call-overlap displays.

Method		Error Detail	Refer to
Internal command	Switch	Function: Set Display No.: Unselected	page 2-15
	Macro	OVLP_SHOW OVLP_POS	page 2-12
External Command	Control device memory	0 → 1: Show 1 → 0: Hide	page 2-13

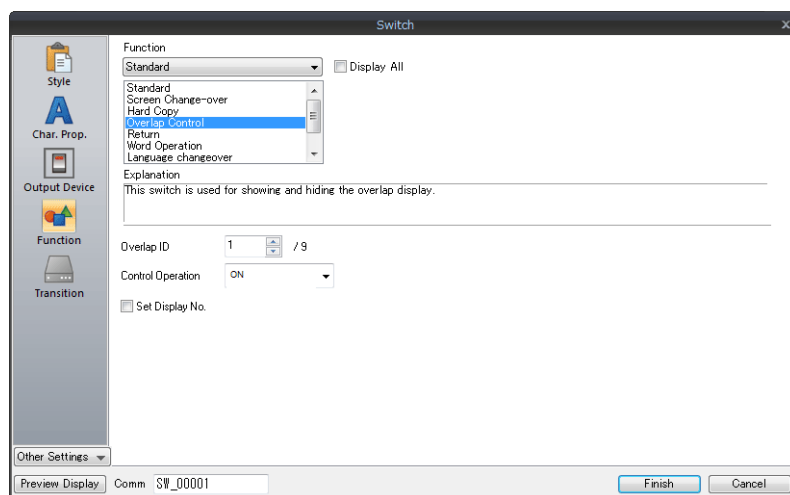
Switch

Setting

1. Display the settings menu of the call-overlap display.
2. Click [Go to Control SW Placement] and place a switch.



3. Set the function of the switch.



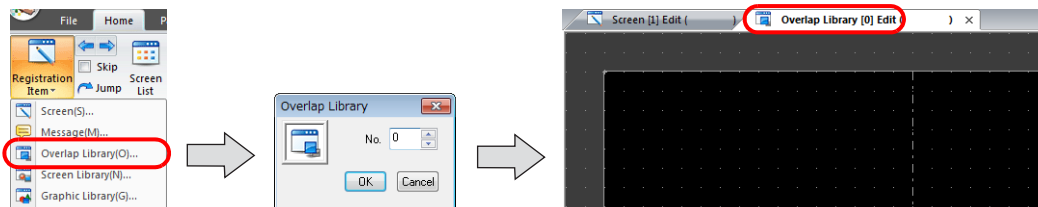
Function	Overlap Control
Overlap ID	Specify the same ID as the [Overlap ID] of the call-overlap.
Control Operation	ON: Show OFF: Hide ALT: Alternate between show and hide ICON: Show
Set Display No.	Unselected

2.4 Multi-overlap

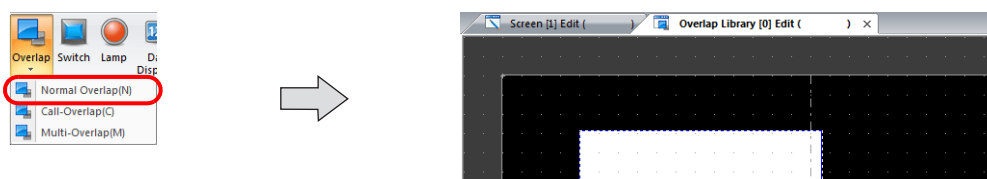
2.4.1 Creation Procedure

1. Creating from an Overlap Library

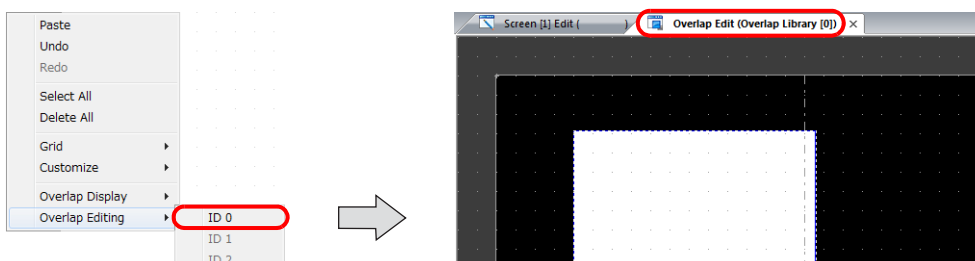
- 1) Display an [Overlap Library Edit] tab by clicking [Home] → [Registration Item] → [Overlap Library].



- 2) Click [Parts] or [Home] → [Overlap] → [Call-Overlap] and place an overlap.



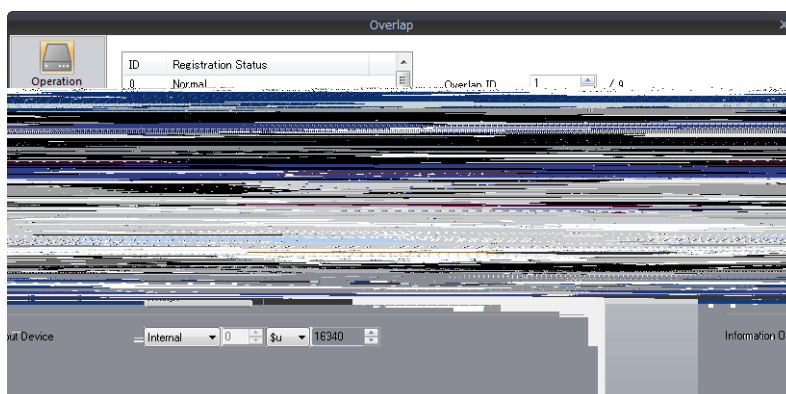
- 3) Adjust the size of the overlap.
- 4) Select [Overlap Editing] → [ID 0] on the right-click menu. The overlap editing window is displayed.



- 5) Place switches, lamps, and other items on the overlap.
- 6) Select [Overlap Editing] → [ID 0] on the right-click menu. The user is returned to the screen editing window.

2. Placing a Multi-Overlap

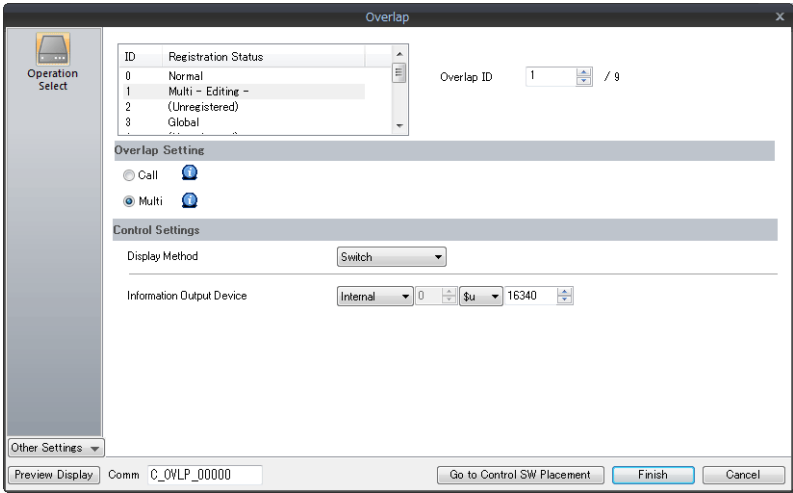
- 1) In the screen editing window, click [Parts] → [Overlap] → [Multi-Overlap] and place an overlap.
- 2) Click the icon and display the settings menu.
- 3) Configure the [Operation Select] settings.



Overlap Setting			Multi
Control Settings	Display Method	Switch	Use switches for showing and hiding. Refer to page 2-20 .
		Control Device	Use commands from a PLC for showing and hiding. Refer to page 2-21 .

2.4.2 Detailed Settings

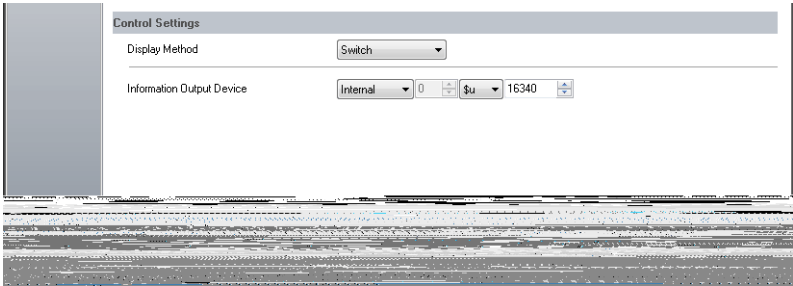
Operation Select



Item	Description
Registration Status	Check the registration status of overlap IDs 0 to 9. "- Editing -" is shown for the ID that is currently being edited. The overlap ID can also be changed to an unregistered ID.
Overlap Setting	Multi
Control Settings	Select the overlap display method (Switch/Control Device).

Display method

- Switch



Item	Description
Switch	Control showing and hiding of the overlap using the switch function.
Information Output Device	Store the overlap library number. Show: 0 to 9999 Hide: -1 (FFFFHex)

Macro

A macro can be used to show and hide global overlap displays. Use the "SET_MOVL" and "OVL_SHOW" commands. The "OVL_POS" command is used to specify the display position. For details, refer to the V9 Series Macro Reference Manual.

Setting

1. Creating a macro for showing an overlap display

- 1) Display the [Macro Block No. Editor] window.
- 2) Register the following macro.

\$u100 = 3 (W)	Set an overlap ID from 0 to 9 (ID3 in this example).
\$u101 = 12 (W)	Set an overlap library number from 0 to 9999 (No. 12 in this example).
\$u102 = 150 (W)	X coordinate
\$u103 = 50 (W)	Y coordinate
SYS (SET_MOVL) \$u100	Execute the command.

- 3) Execute the macro block in a switch ON macro or global macro.

2. Creating a macro for hiding an overlap display

- 1) Display the [Macro Block No. Editor] window.
- 2) Register the following macro.

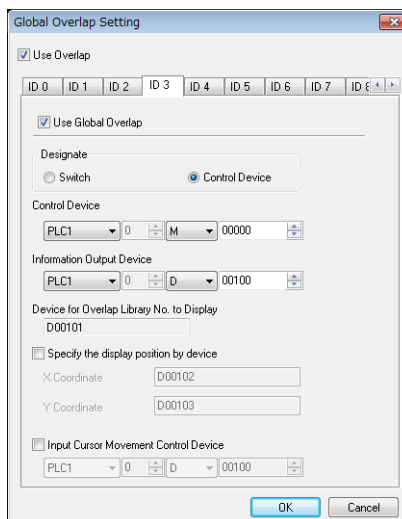
\$u100 = 3 (W)	Set an overlap ID from 0 to 9 (ID3 in this example).
\$u101 = 0 (W)	Hide the overlap display
SYS (OVL_SHOW) \$u100	Execute the command.

- 3) Execute the macro block in a switch ON macro or global macro.

Control Device Memory

Setting

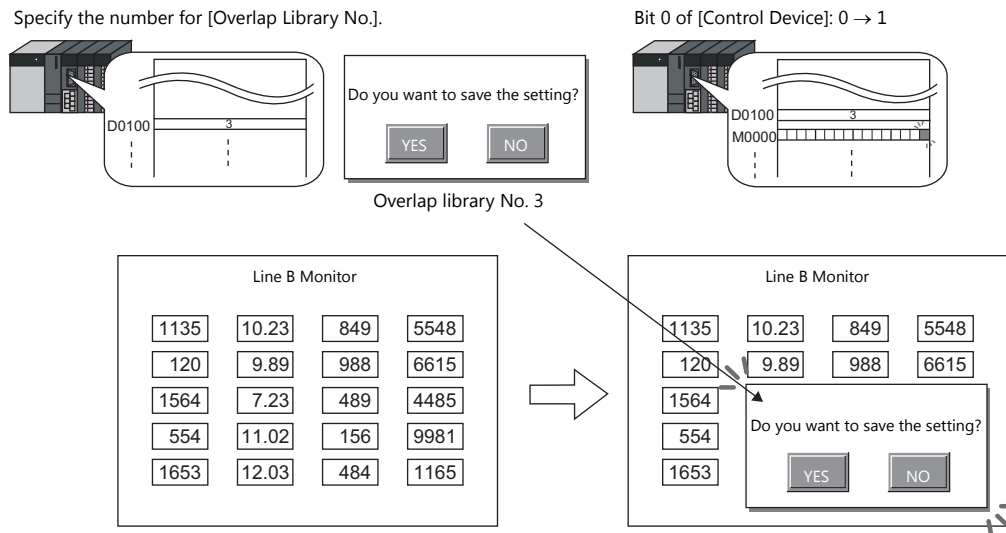
1. In the global overlap settings menu, configure the [Control Device] settings.



2. Set the library number of the overlap for display to the [Device for Overlap Library No. to Display]. When specifying the display position, also set the X and Y coordinates.

Information Output Device	n	Store the overlap library number. Show: 0 to 9999 Hide: -1 (FFFFHex)	V →
Device for Overlap Library No. to Display	n+1	Set the overlap library number of the overlap for display.	V ←
Specify the display position by device	n+2	Set the X coordinate.	V ←
	n+3	Set the Y coordinate.	V ←

3. The overlap is shown when the [Control Device] bit is ON and hidden when the bit is OFF.



* Notes on showing an overlap display using an external command

A switch for [Function: Overlap Display = OFF] can be used to hide the overlap display. Using this type of switch hides the overlap display with the bit of the control device memory still turned ON. To show the overlap display again, the bit needs to be turned OFF and ON again.

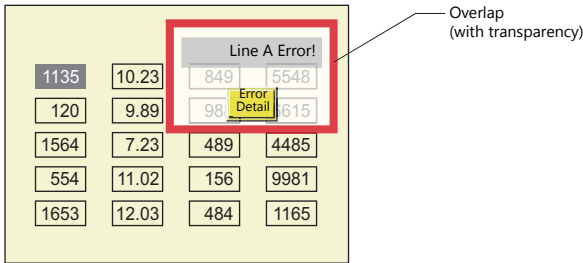
2.5.4 Notes

- Global overlaps are redisplayed when the display language is changed.
- Global overlap displays cannot be set for component parts nor called upon from component parts.

2.6 Display Transparency

2.6.1 Overview

- When an overlap is displayed, it blocks the display of anything behind it. By using transparency, an overlap can be displayed while retaining the ability to check information behind it.



- All overlaps from ID 0 to 9 can be set to be transparent.
- The level of transparency for the overlap can be determined by the [Blend] value setting which is available when [Transparency Display] is selected in the overlap settings window.
The transparent color and blend value for transparency can be set on the [Screen Setting] window that is displayed from the [Screen Setting] menu. These settings affect all overlaps. Individual overlap settings cannot be configured in this window.
- The transparent color and the blend value for superimposing a global overlap display depend on the settings made for the screen on which the overlap display appears first.

2.6.2 Setting Procedure

- Display the [Screen Edit] window.
- Click [Screen Setting] → [Screen Setting] → [Others].



- Set a [Blend] value under [Transparency Setting].

Item	Description
Blend	Set the ratio of transparency used for overlap display. 0 (transparent) to 255 (opaque)

- Click the [OK] button to close the window.

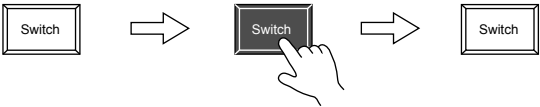
Normal overlap display:

Transparency can also be set by clicking [Detail] → [Transparency Display] in the overlap settings.
This setting is the same as the setting in [Screen Setting].

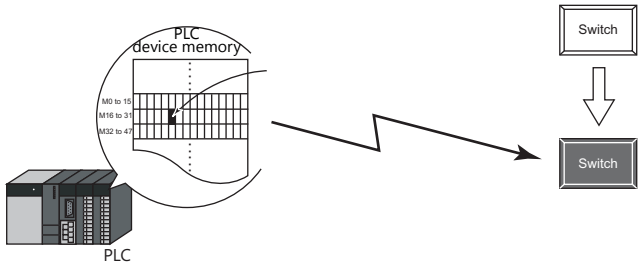


Lamps in Switches

- There are switches available with lamps that light up (ON color) when the switch is pressed and turn off (OFF color) when released.



- Lamp activation can be instructed from an external device memory.

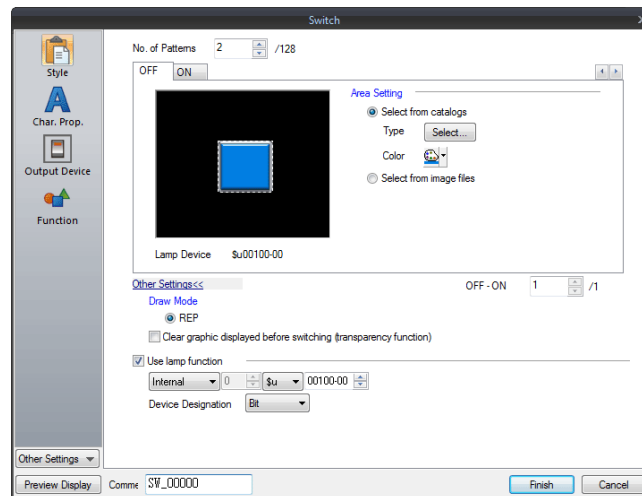


- When instructing lamp activation from an external device memory, a maximum of 128 patterns can be registered for a single lamp part.
Example: 3 patterns



3.1.3 Detailed Settings

Style



Item		Description
No. of Patterns (2 to 128)		Set the number of times the display of the switch lamp can be changed.
Area Setting	Select from catalogs	Select the part design. After selecting the part, select the part color.
	Select from image files	Select a PNG file. The PNG file can be set to all patterns by clicking [Apply to All Patterns].
Frame		This item is only available when [Shape: 2D] and [Group: Square2] are selected via [Select from catalogs].
	Type	Select the frame type of the switch.
	Color	Select the frame color of the switch.
Enable flash display function (flashing with OFF pattern)		This item is available when a 3D pattern type ^{*1} other than an OFF pattern (excluding "Sign" and "3D_128" parts) is selected. Select this checkbox to flash the display between the selected pattern and the OFF pattern.
Other Settings	Draw Mode REP/XOR	REP: Display using the color set in [Area Setting]. XOR: When the lamp device memory is ON, the frame and text are displayed in the color resulting from an XOR operation. For the difference between REP and XOR, refer to "4.4 Draw Mode" page 4-11.
	Clear graphic displayed before switching (transparency function)	The previous graphic is not retained when the checkbox is selected. For details, refer to "Draw Mode" page 4-11.
Use lamp function		Select this checkbox to change the display in the switch area. Unselected: When the switch is pressed, the lamp lights up automatically. The switch changes to the ON color when pressed and the OFF color when released. Selected: Setting for the lamp device memory become available. Specify a device memory address for the lamp display. * When placing multiple switches, set up consecutive addresses for the lamp device memory to ensure high-speed processing. For details, refer to "4 Lamp" .
	Device Designation	Bit: The lamp display is changed by setting (ON) and resetting (OFF) bits. The required number of bits depends on the number of display patterns. (127 bits maximum) When multiple bits are set (ON), the most significant bit has priority. Word: The lamp display is changed according to the value specified for the device memory. The range of setting values varies with the number of patterns. (Range: 0 to 127) If a value outside the specified range is set, the lamp display is not changed.
	Input Type (DEC/BCD)	Specify the input format of the device memory.

^{*1} Notes on 3D and 2D pattern types
Part shapes differ depending on the selection made in the catalog.

- 3D type: Real, Sign, 3D, 3D_128, HA
- 2D type: 2D

Selection of an image file corresponds to the 3D type.

Char. Prop.

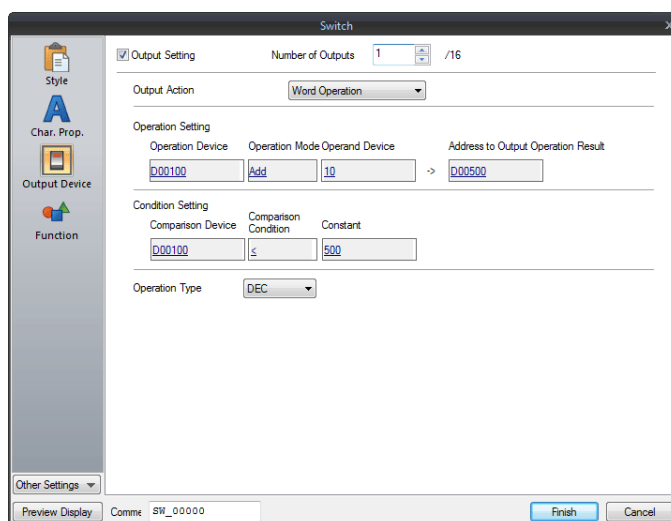
Item	Description
[OFF] [ON] - [P128]	When [Style] → [Other Settings] → [Draw Mode] is [XOR]: Only [OFF] can be selected. Specify the text to be displayed.
Pattern No. (0 to 127)	When [Style] → [Other Settings] → [Draw Mode] is [REP]: Specify the text to be displayed on each pattern.
Text	Enter the text to be displayed on the switch. Up to 4 lines can be registered. Text properties can be set for each line. Text can be justified within the switch part.
Color (text color, background color)	Set the color for text. The background color can also be set if set as "no transparency" in the following [Style] setting.
Style	Set the text style.
Character Size (1 to 8)	Specify the enlargement factor for text.
Point (6 to 999)	Set the text size.
Rotation + Direction	Set the combination of text rotation and direction. Four combinations are displayed in the drop-down menu.
	When selecting an option other than the above, click the icon at the bottom. The window that allows selection from all options is displayed.
Use Windows fonts	Select this checkbox to use a Windows font.
Smooth Font ^{*1}	Smooth the edges of text. (Only settable for TrueType Windows fonts.)
Alignment	Set the text alignment.
Text copy Copy only characters	The text and its attributes for the current pattern (OFF, ON, P3) are copied to the other patterns. Select the [Copy only characters] checkbox to copy text and coordinate information to all other patterns. Note that the text properties will not be copied. If the destination [annoSen]

^{*1} Cannot be set to transparent.

Word operation

Item		Description
Operation Setting	Operation Device	Specify the device memory address for operation.
	Operation Mode	Transfer
		Add
		Subtract
		Multiply
		Divide
		OR
		AND
		XOR
	Operand Device	Specify the device memory address for the operand. It is possible to use a constant.
	Address to Output Operation Result	Specify the device address where the operation result is output.
Condition Setting	Comparison Condition	None
		=, ≠
		<, >
		≤, ≥
	Comparison Device	Specify the device memory address where the comparison value is stored.
	Constant	Specify a constant.
Operation Type (DEC/BCD)		Specify the operation format (format of writing to the specified device memory address).

- Usage Example



Operation Setting

Operation Device	Operation Mode	Operand Device		Address to Output Operation Result
D500	Add	10	→	D500

Condition Setting

Comparison Device	Comparison Condition	Constant
D100	<	500

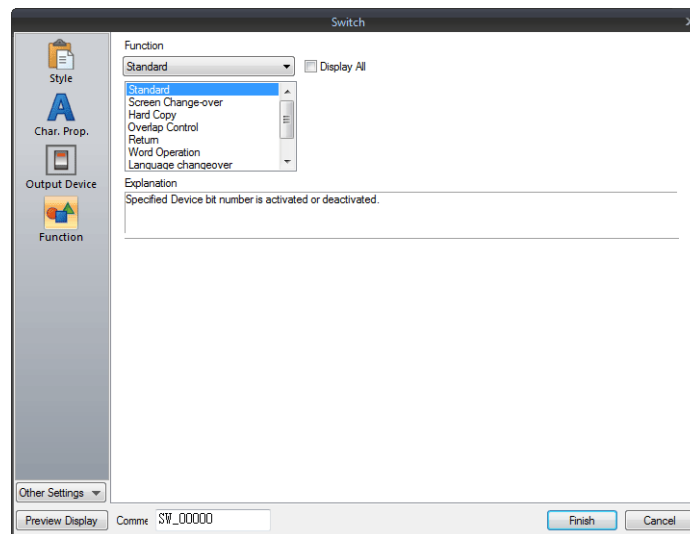
Operation Type: DEC

When the data in D100 is less than "500", the operation (D500 + 10 → D500) is executed.

- Notes

- If the value of the [Address to Output Operation Result] device memory is changed by an external command, the latter value has priority.
- MONITOUCH processes operations in the following order:
 - 1) Reads the [Operation Device] and [Operand Device].
 - 2) Operation processing
 - 3) Writes the operation result to the [Address to Output Operation Result] device memory.

Function



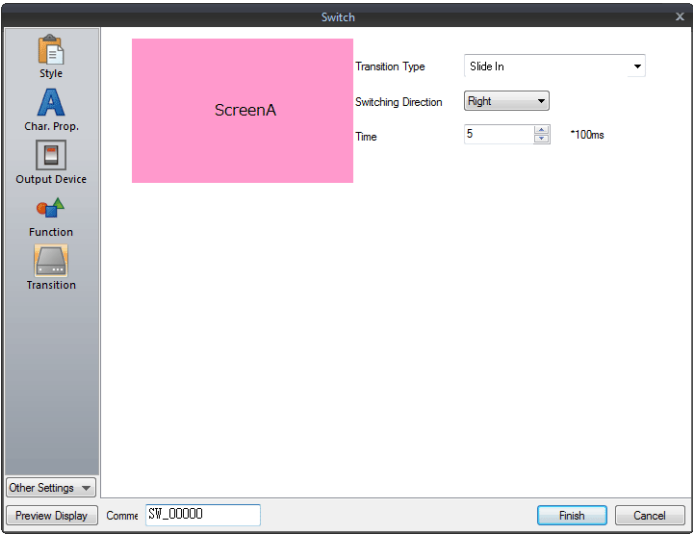
Item		Description
Function		Select the function to assign to the switch, that is, how the switch should work when pressed.
Standard	Standard	Set the bit of the specified device memory ON/OFF.
	Screen Change-over ^{*1 *2}	Change to the specified screen number (0 to 9999).
	Hard Copy ^{*3}	Print the currently displayed screen image. Operations can be performed normally on the screen during printing.
	Overlap Control	Show or hide an overlap. For details, refer to "2 Overlap" .
	Return ^{*4 *5}	Return to the previously displayed screen. Up to 8 previous screens can be displayed.
	Word Operation	Execute the set arithmetic expression. Select the [Changeover the screen] checkbox to change to the specified screen number after executing an operation. For details on word operations, refer to "Word operation" page 3-9.
	Language changeover	Change the display language. For details, refer to "9 Language Changeover" in the V9 Series Reference Manual 2.
	Storage Removal	Stop access to a storage device. For details, refer to "Storage Removal (Stopping Access to a Storage Device)" page 3-24.
	Operation Log Viewer Display	Used in conjunction with the operation log. For details, refer to "4 Operation Log" in the V9 Series Reference Manual 2.
	Recipe	
	Recipe Data Load	Used in conjunction with the recipe function.
	Recipe Data Save	For details, refer to "15 Recipes" .
	Recipe Data Delete	
Security	Log In	Used in conjunction with the security function.
	Log Out	For details, refer to "5 Security" in the V9 Series Reference Manual 2.
Display All		Display all switch functions. For details, refer to "3.1.4 Basic Function of Switches" page 3-19.

- *1 When the screen display is changed, all the switches and switch outputs should be turned OFF.
This is to prevent accidental activation of any switch that may be caused by inadvertent contact with the screen.
- *2 It is possible to change the screen display without using the switch function by instead using an external command from the PLC.
For information on changing the screen from a PLC, refer to ["1.1.3 Communication Setting"](#).
- *3 When the screen is printed with a [Function: Hard Copy] switch, the switch is also printed out.
To prevent the switch from appearing on the printout, use an external command to print instead.
For details on printing using an external command, refer to ["16 Print"](#).
- *4 When the screen display reverts using the [Function: Return] switch, the initial screen state is displayed, that is, the state in which no scrolling or block changes have been specified.
- *5 It is possible to disable returning for screens that are displayed by an external command.
Navigate to [System Setting] → [Unit Setting] → [General Setting] and select the [Return switch prohibited when switching the screen by an external command] checkbox on the [General Settings] tab. For details, refer to ["1.1 System Settings"](#).

Transition

This item is available when [Screen Change-over] or [Overlap Control] is selected for [Function] in the switch settings.

* **Transitions are disabled when performing screen changes or overlap control using a macro or from a PLC.**



Item	Description
Transition Type	Specify the animation effect to use when the screen changes or an overlap is displayed.
Switching Direction (Right, Left, Up, Down)	Specify the switching direction.
Switching Type (Type 1, 2, 3, 4)	Specify the switching type.
Time*	Specify the duration in which to execute the transition.

* The switching time range differs depending on the transition type.

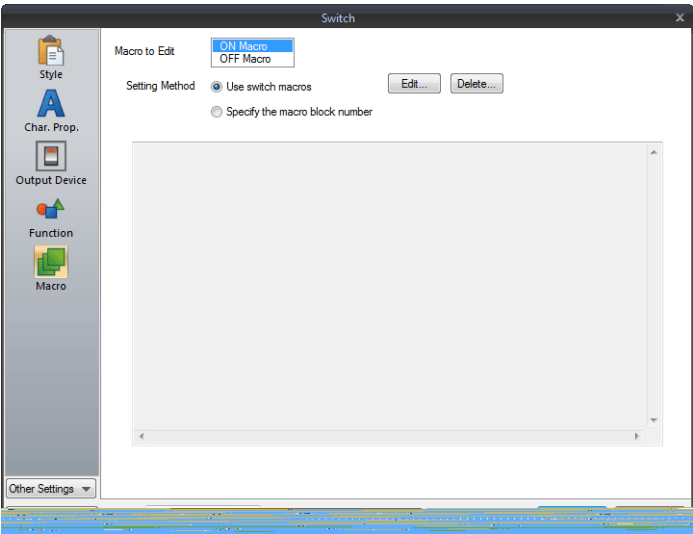
- For [Function: Screen Change-over]:

Transition Type	Time
Slide In	2 to 10 × 100 ms
Slide In (with fade effect)	
Box In	
Box In (with fade effect)	
Fade In	
Slide Out	
Slide Out (with fade effect)	
Box Out	
Box Out (with fade effect)	
Slide	
Slide (with fade effect)	
Switch	5 to 10 × 100 ms
Jump	
Card Flip	3 to 10 × 100 ms
Gallery	5 to 20 × 100 ms

- For [Function: Overlap Control]:

Transition Type	Time
Slide (from outside screen)	2 to 10 × 100 ms
Slide (from outside screen, with fade effect)	
Slide (short distance, with fade effect)	2 to 5 × 100 ms
Fade	

Macro



Item		Description
Macro to Edit		ON Macro Execute a macro once when the switch is pressed.
		OFF Macro Execute a macro once when the switch is released.
Setting Method	Use switch macros	Use a macro for the switch itself. Click the [Edit] button to register a macro.
	Specify the macro block number	Specify the macro registered to a macro block. If nothing is registered, click the [Edit] button to register a macro.

Storage Removal (Stopping Access to a Storage Device)

The switch lamp status changes as shown in the following table. Information on the switch status is stored at \$s500 in the system device memory.

Lamp	Storage Removal	Storage Access Status
OFF	Prohibited	Normal access
Blinking ON/OFF	Prohibited	Data writing triggered by switch turning ON
ON	Permitted	Access stopped

* If the [Upon storage removal] checkbox is selected in the storage output settings of the alarm server or logging server, alarm/logging data is output in CSV format.

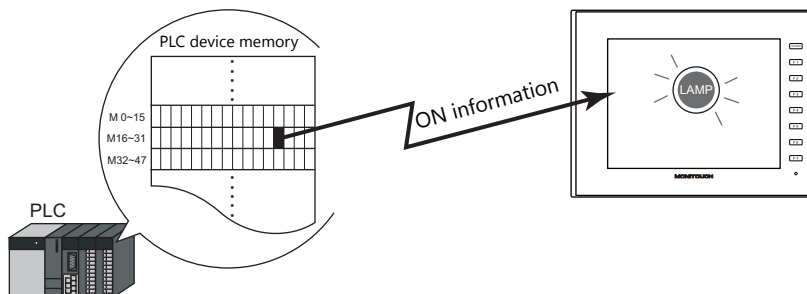
Notes

- The [Storage Removal] switch stops access to all connected storage devices (SD card and USB storage devices). To individually remove an SD card or USB storage device, perform removal from the system menu. For details, refer to the V9 Series Troubleshooting/Maintenance Manual.
- When intending to cancel the switch ON status (with access stopped) and start accessing the storage device, press the switch again.
- If the screen is changed when the switch is ON, the state of the storage device does not automatically return to the accessing state.
Always press the switch to change it to the OFF state (accessing).
- The lamp device memory address specified for the switch becomes unavailable.

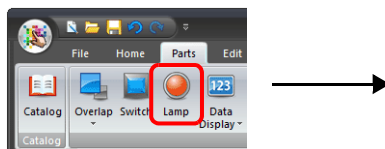
4.2 Setting Examples

Using Bit Lamps

When the M19 bit of the PLC device memory is ON, the lamp turns on, and when the M19 bit is OFF the lamp turns off.
Lamp device memory: M19



1. Click [Parts] → [Lamp] and place a lamp on the screen.



2. Double-click on the lamp to display the settings window.
Configure the following settings for [Style] and then click [Finish].



This completes the necessary settings.

REP

Shape: 2D, group: square2

Text

When placing text on a lamp part in "REP" draw mode, the following two modes are available.

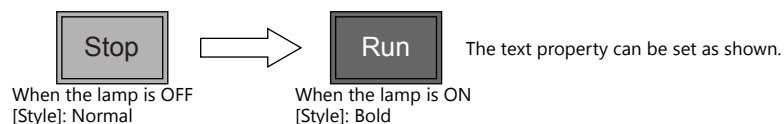
- When displaying different text when the lamp is ON and OFF:

OFF text

Set text on the [OFF] tab of [Char. Prop.].

ON text

Set text on the [ON] tab of [Char. Prop.].



- When displaying the same text when the lamp is ON and OFF:

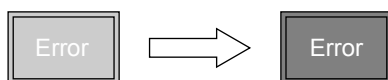
OFF text

Set text on the [OFF] tab of [Char. Prop.].

ON text

Nothing is set for the text on the [OFF] tab of [Char. Prop.].

The text set in the character input box [OFF] is displayed when the lamp is ON.



Color

- ON frame color, OFF frame color, ON color, OFF color
Set the lamp color via [Style] in the lamp settings window.
The same frame color is used when the lamp is ON and OFF.
- OFF text color
Set color on the [OFF] tab of [Char. Prop.].
- ON text color
Set color on the [ON] tab of [Char. Prop.].
The part is displayed in the selected colors.

For parts other than [Shape: 2D], [Group: Square2]

This case is mostly the same as when [Group] is set to "Square2". (Refer to [page 4-13](#).)

Differences

- ON frame color, ON color
Set the lamp color via [Style] in the lamp settings window.
A color different from the OFF frame color can be set.
- For P3 to P128, the selected colors are shown.

Notes

- When the OFF text color and the ON color are the same, the text cannot be shown when the lamp is turned ON.

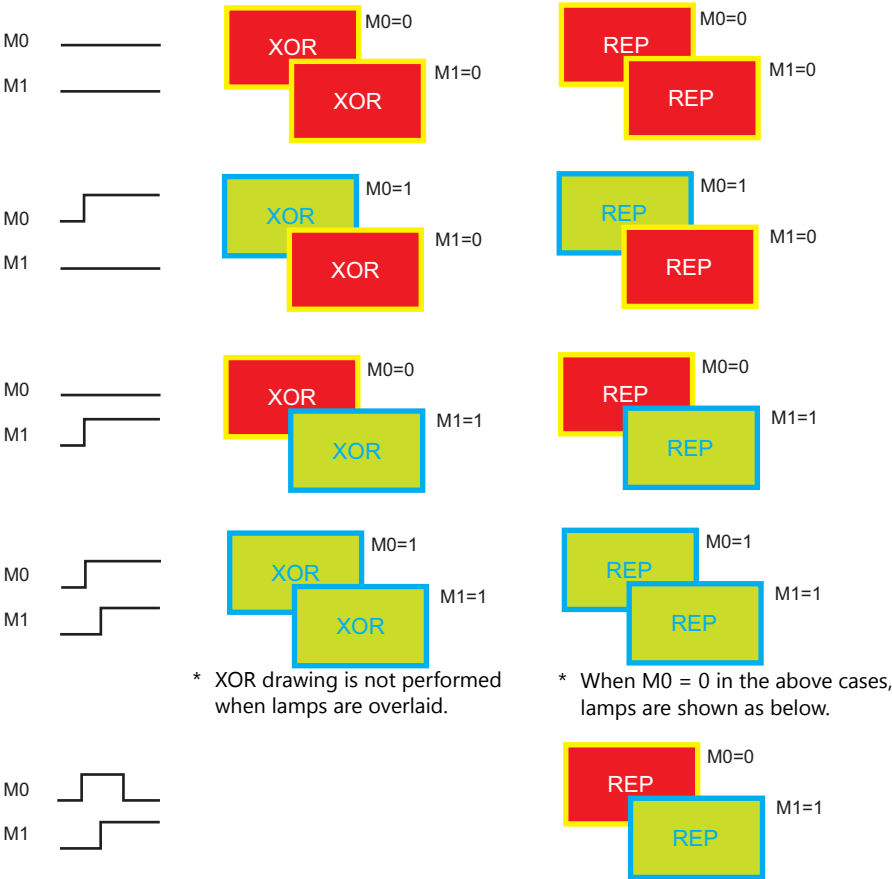
Other Notes

Number of lamps

A maximum of 4096 lamp parts can be created on a single screen.
For details, refer to the V9 Series Operation Manual.

Placing multiple lamp parts

When placing lamps overlaid, they are displayed as shown in the editor.
Take the following operations into consideration when creating screens.

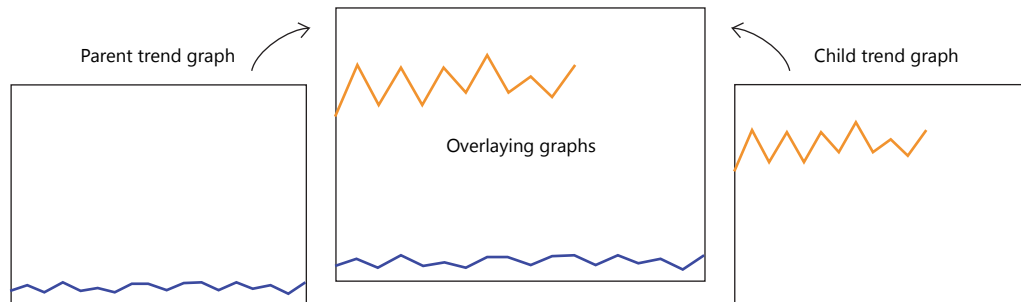


5 Data Display

- 5.1 Numerical Display
- 5.2 Character Display
- 5.3 Message Display
- 5.4 Table Data Display
- 5.5 Notes

7.3.5 Asynchronous Display of Multiple Trend Graphs

All the trend lines in the graph area are drawn at the same points and at the same timing because trend graphs have one word of control device memory. To draw multiple trend lines at different timings, two or more graphs must be overlaid and linked, thereby assigning priorities to respective control device memory.



Setting Procedure

This section explains drawing multiple graphs with an example of displaying two trend graphs asynchronously.

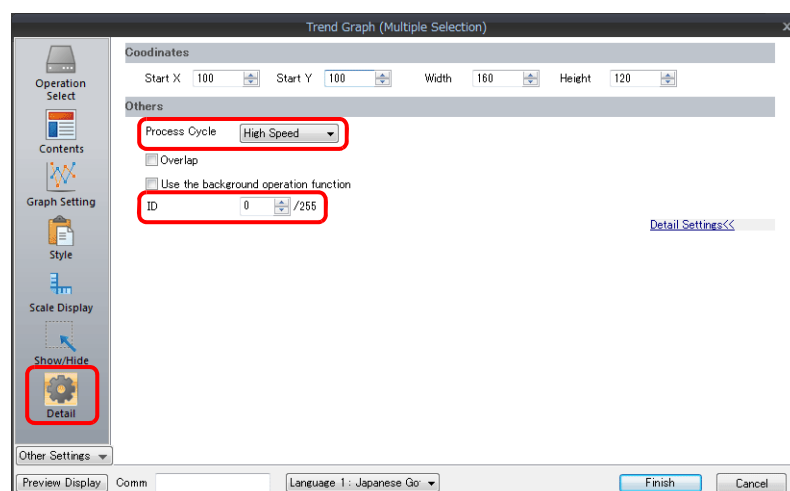
1. Place two trend graphs.

 Refer to ["7.3.1 Location of Settings" page 7-31.](#)

2. Set D120 to [Graph Setting] → [Control Device] in the [Trend] settings window.

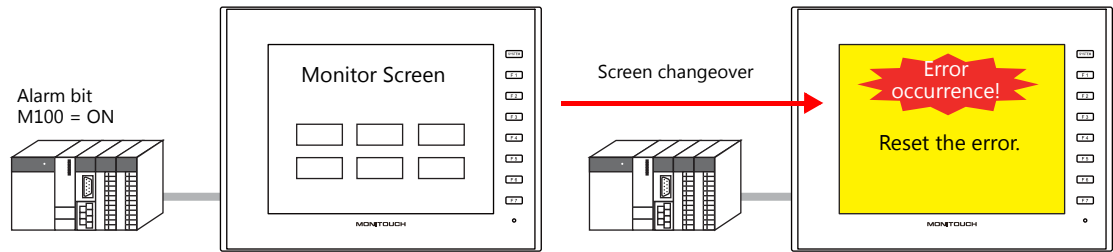


3. Set "High Speed" for [Detail] → [Process Cycle] and "0" for [ID] (parent trend graph).



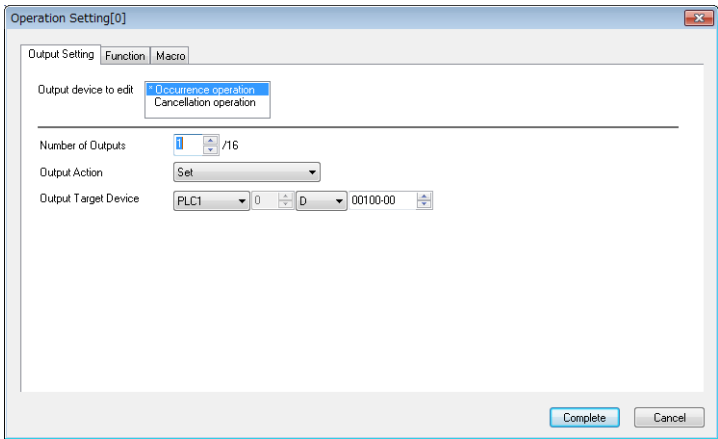
Operation Setting

Double-click [Alarm Block] → [Alarm Device] → [Operation Setting].
Perform operations including writing to the specified device memory address (output setting), screen changeover / overlap control (function), and macro execution (macro).



Output setting

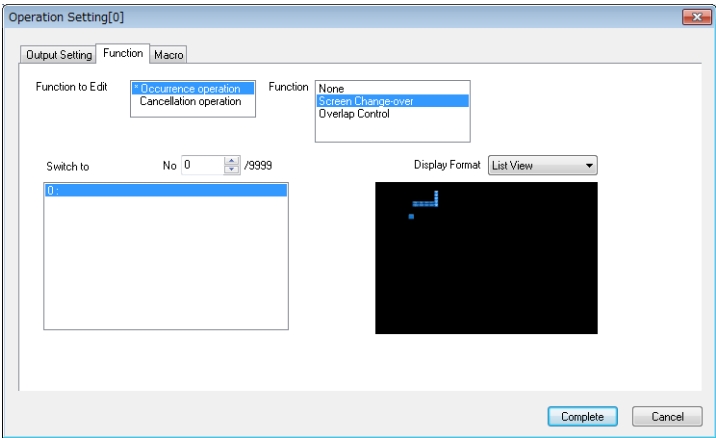
Turn the output device ON or OFF or write data when an alarm occurs or is canceled.



Item		Description																		
Output device to edit	Occurrence operation	Set the output operation to perform when an alarm occurs.																		
	Cancellation operation	Set the output operation to perform when an alarm is canceled.																		
Number of Outputs	0	No output operation																		
	1 - 16	Output operation performed Set the required items according to the output operation.																		
		<table><tr><th>Output Action</th><th>Output Target Device</th><th>Inversion Time</th><th>Data Length Write Value</th></tr><tr><td>Set Reset Alternate</td><td rowspan="2">Output bit</td><td>-</td><td>-</td></tr><tr><td>Momentary (ON) Momentary (OFF)</td><td>100ms - 3s Bit returns to original value after inversion time elapses.</td><td>-</td></tr><tr><td>Writing in Words</td><td>Output device</td><td>-</td><td>1-Word/2-Word Value to write</td></tr></table>				Output Action	Output Target Device	Inversion Time	Data Length Write Value	Set Reset Alternate	Output bit	-	-	Momentary (ON) Momentary (OFF)	100ms - 3s Bit returns to original value after inversion time elapses.	-	Writing in Words	Output device	-	1-Word/2-Word Value to write
		Output Action	Output Target Device	Inversion Time	Data Length Write Value															
		Set Reset Alternate	Output bit	-	-															
		Momentary (ON) Momentary (OFF)		100ms - 3s Bit returns to original value after inversion time elapses.	-															
		Writing in Words	Output device	-	1-Word/2-Word Value to write															

Function

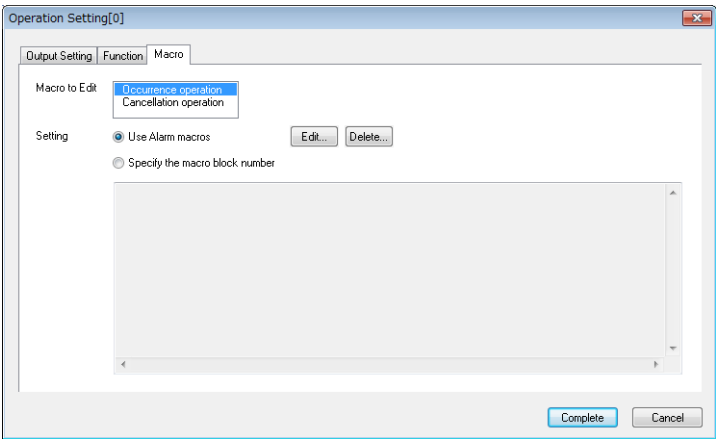
Perform screen changeover / overlap control when an alarm occurs or is canceled.



Item		Description
Function to Edit	Occurrence operation	Set the function used when an alarm occurs.
	Cancellation operation	Set the function used when an alarm is canceled.
Function	None	No function
	Screen Changeover	Perform screen changeover automatically. Set [Switch to] and [List View] or [Thumbnail].
	Overlap Control	Display a global overlap. Set [Global Overlap ID] and [Overlap Library No.].

Macro

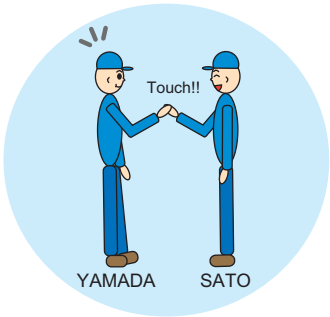
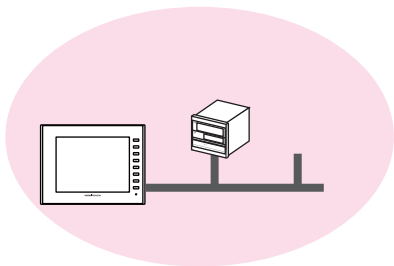
Execute a macro when an error occurs or is canceled.



Item		Description
Macro to Edit	Occurrence operation	Set the macro to execute when an alarm occurs.
	Cancellation operation	Set the macro to execute when an alarm is canceled.
Setting	Use Alarm macros	Register a macro via the [Edit] button.
	Specify the macro block number	Specify the macro block number.

Parameters

When an alarm occurs, the data (parameters) associated with the alarm can be saved/displayed together with an alarm message. Logging the history of such alarm-relevant parameters will make it easier to locate and investigate the causes of alarms.



Settings

- Double-click [Alarm Block] → [Alarm Device] → [Parameter].
Configure the following settings.

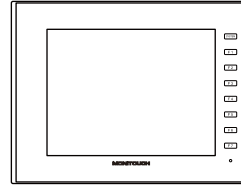
Parameter table

Item	Description
Parameter table number 0 to 7	Create parameters with the [Add] button. Up to 8 parameters can be registered per alarm device memory address.
Add	Add a new parameter.
Delete	Delete the selected parameter.
Up/Down	Change the order of parameters.
Device	Set the parameter device memory address.

9.2.2 Setting Examples

Displaying Current Values (Standard Display)

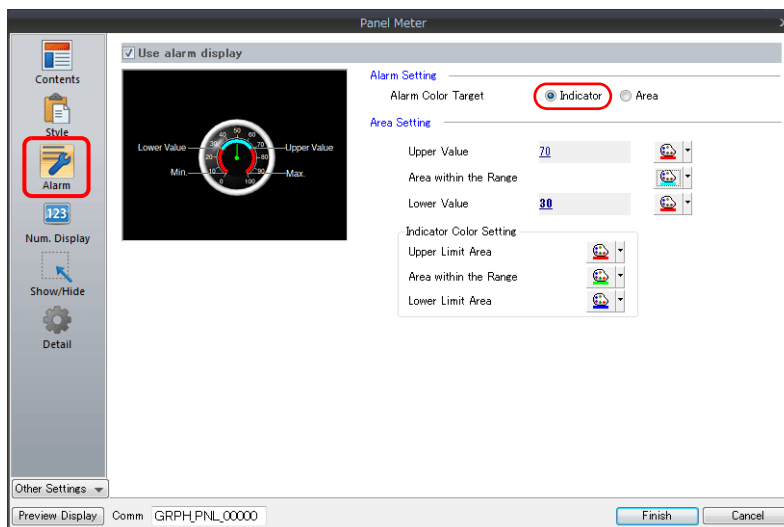
The current value of a device memory within the range of the minimum and maximum values can be displayed (standard display).



1. Click [Parts] → [Graph] → [Pie Graph] and place a pie graph on the screen.
2. Double-click on the pie graph to display the settings window.
Configure the [Contents] settings as shown below.
 - Set the device memory address to display on the graph with [Current Value] → [Device].
 - Select [Standard] for [Type].
 - Specify the graph display area using [Range].

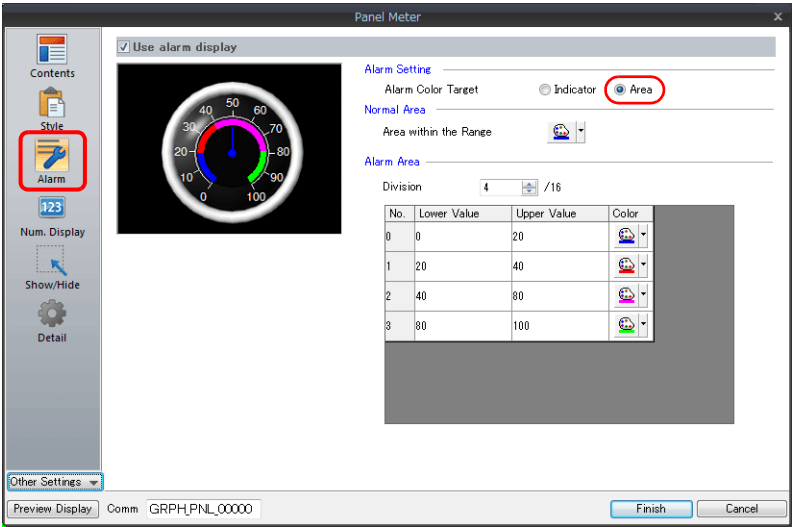
Alarm

Alarm color target: indicator



Item			Description
Use alarm display			Select this checkbox to use the alarm function.
Alarm Setting	Alarm Color Target	Indicator	The indicator color is displayed using three alarm colors according to the upper and lower limit values. The meter is displayed using the two colors for within the range of the upper and lower limits, and outside of the range.
		Area	The meter color can be divided into a maximum of 16 colors according to the [Alarm Area] settings. The indicator color is fixed. For details on settings, refer to "Alarm color target: area" page 9-38 .
Area Setting	Upper Value		Set the color of the meter for the upper limit value and outside the range of the upper and lower limits of the alarm display.
	Area within the Range		Set the within range color.
	Lower Value		Set the color of the meter for the lower limit value and outside the range of the upper and lower limits of the alarm display.
	Indicator Color Setting	Upper Limit Area	Set the indicator color when the current value exceeds the upper limit value.
		Area within the Range	Set the indicator color when the current value is within the range of the upper and lower limits.
		Lower Limit Area	Set the indicator color when the current value is less than the lower limit value.

Alarm color target: area

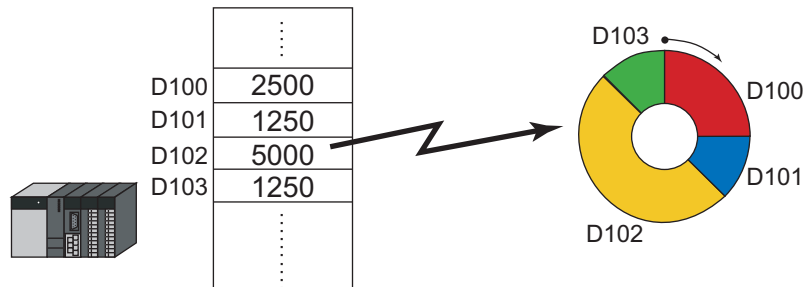


Item			Description	
Use alarm display			Select this checkbox to use the alarm function.	
Alarm Setting	Alarm Color Target	Indicator	The indicator color is displayed using three alarm colors according to the upper and lower limit values. The meter is displayed using the two colors for within the range of the upper and lower limits, and outside of the range. For details on settings, refer to "Alarm color target: indicator" page 9-37.	
		Area	The meter color can be divided into a maximum of 16 colors according to the [Alarm Area] settings. The indicator color is fixed.	
Normal Area	Area within the Range		Specify the color of the area not included in the alarm range in the display range of the panel meter.	<div>Example: Divisions: 4, clockwise</div> <div></div> <div>* Drawing is performed in order from "Data 0 property" to "Data 15 property". When a range overlaps with another when drawn, the color of the data property with the higher number is displayed in the foreground.</div>
Alarm Area	Division		Set the number of alarm areas.	
	No. 0 - 15	Lower Value	Set the lower limit value of the alarm area.	
		Upper Value	Set the upper limit value of the alarm area.	
		Color	Set the display color of the alarm area.	

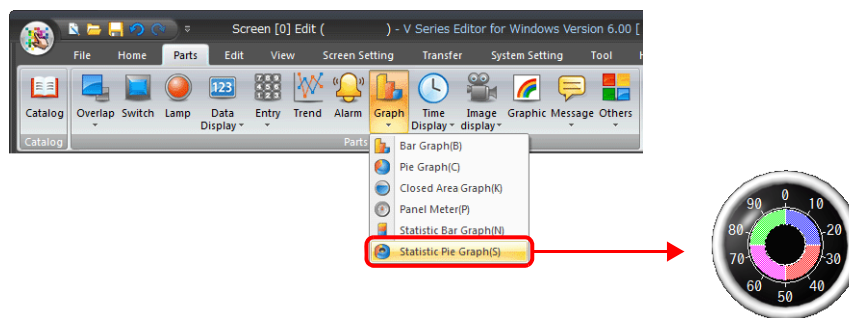
9.6.2 Setting Examples

Displaying a Pie Graph of the Ratio of D100 to D103 Values

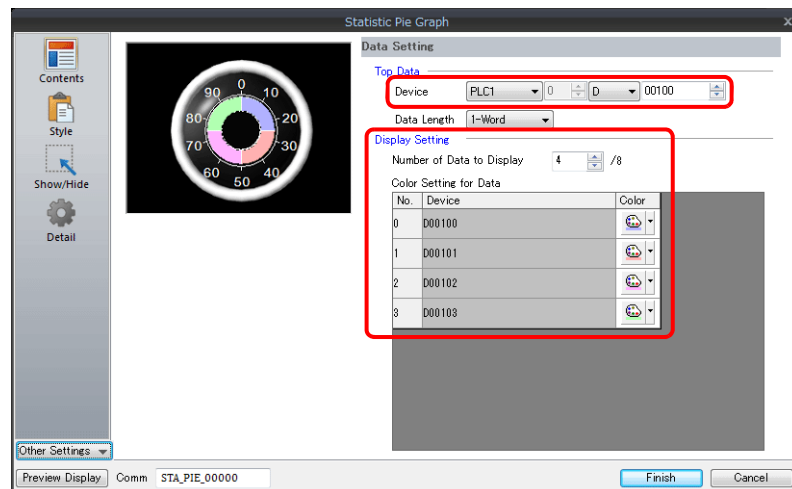
The following example shows how to display the ratio between the values of four device memory addresses on a pie graph.



1. Click [Parts] → [Graph] → [Statistic Pie Graph] and place a statistic pie graph on the screen.

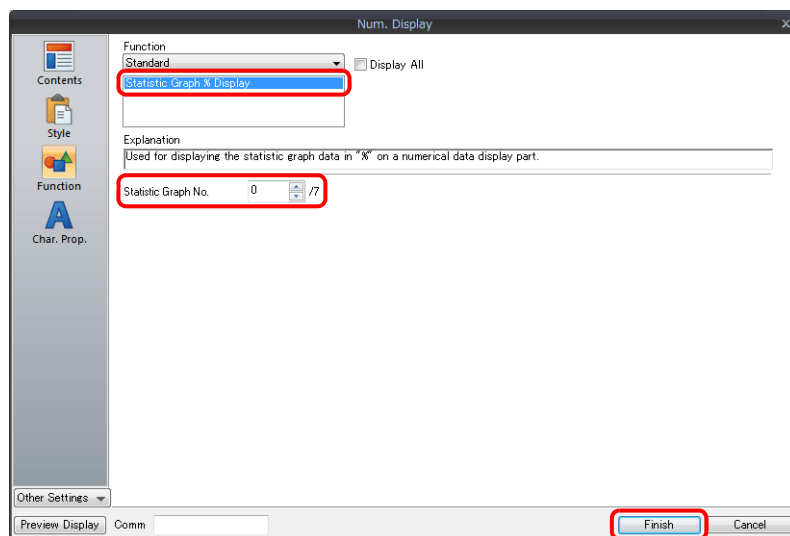


2. Double-click on the statistic pie graph to display the settings window.
Configure the [Contents] settings as shown below.
 - Set the top device memory address to display on the graph with [Top Data] → [Device].
 - Set the number of device memory addresses to display on the graph with [Display Setting] → [Number of Data to Display].
 - Set the color of each device memory address on the graph display with [Display Setting] → [Color Setting for Data].



This completes the necessary settings.

3. The settings window for the numerical data display is displayed. Select [Statistic Graph % Display] for [Function] and specify a value for [Statistic Graph No.]. Click [Finish] to close the settings window of the numerical data display.

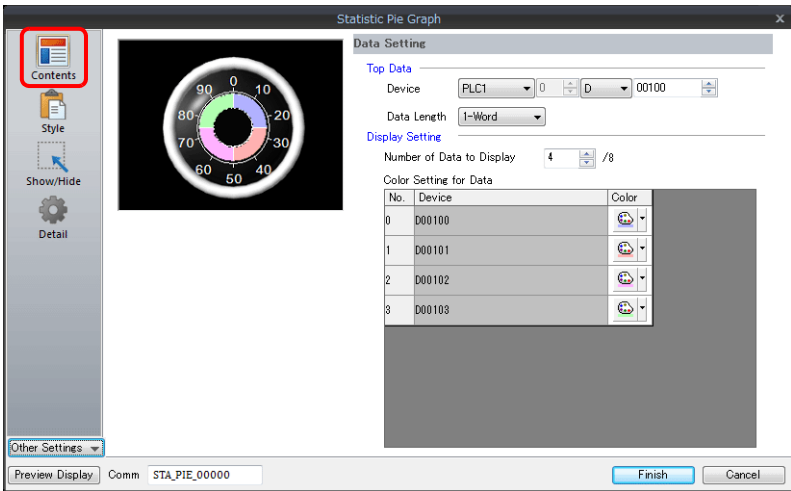


4. Repeat steps 2 and 3 to place multiple numerical data displays.

This completes the necessary settings.

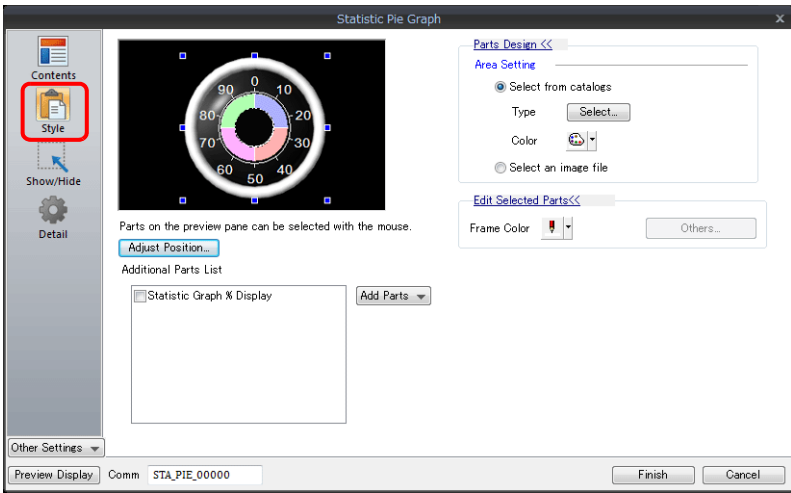
9.6.3 Detailed Settings

Contents



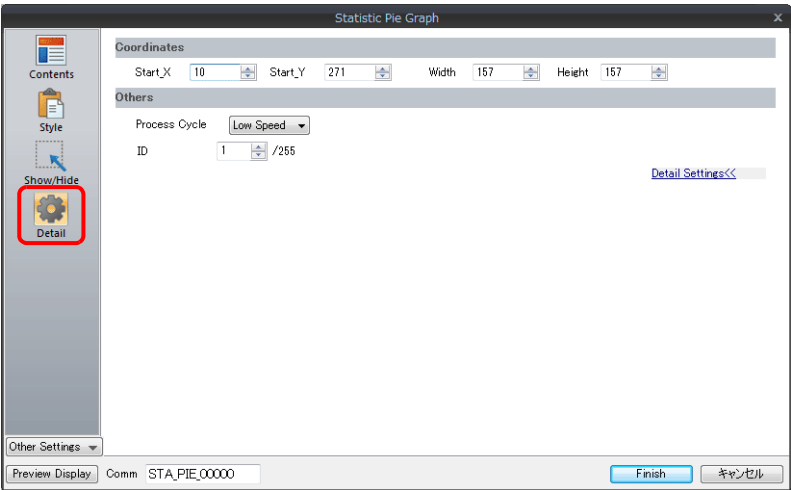
Item			Description
Data Setting	Top Data	Device	Set the top device memory address to display on the statistic graph. The required device memory are automatically allocated to the statistic graph. * The data format relies on the setting at [Code: DEC/BCD] under [Communication Setting] in the [PLC Properties] window accessible via [System Setting] → [Hardware Setting].
		Data Length (1-Word, 2-Word)	Select data length of the device memory.
	Display Setting	Number of Data to Display	Set the number of devices to display on the statistic graph.
		Color Setting for Data	Set the color for each data displayed on the statistic graph.

Style



Item			Description
Select from catalogs			Type Set the part design. Color Set the part color.
Select an image file			Load an image file.
Frame Color			Set the color of the frame around the graph area.
Additional Parts List		Statistic Graph % Display	Add [Statistic Graph % Display].
Add Parts		Num. Display	Add a numerical data display part.

Detail



Item		Description
Coordinates	Start X/Start Y	Specify the placement coordinates. (Coordinates at top left of part)
	Width/Height	Specify the width and height of the part.
Others	Process Cycle	Specify the process cycle of the part.
	ID	Set the ID.

10 Calendar

10.1 Overview

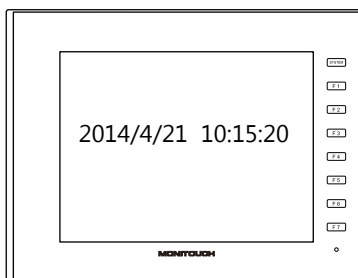
10.2 Time Display

10.3 Calendar

10.4 Calendar Data Correction

10.1 Overview

- The calendar part is used to show the year, month, day, hour, minute, second, and day of the week on the screen.
- The range of the calendar display on the V9 series is from 01/01/2012 to 19/01/2038.
- On the V9 series, "21.04.14 9:00:00" is displayed when the power is turned on immediately after purchase (before communication with a PLC with a calendar function and before using the built-in calendar of the V9 series).

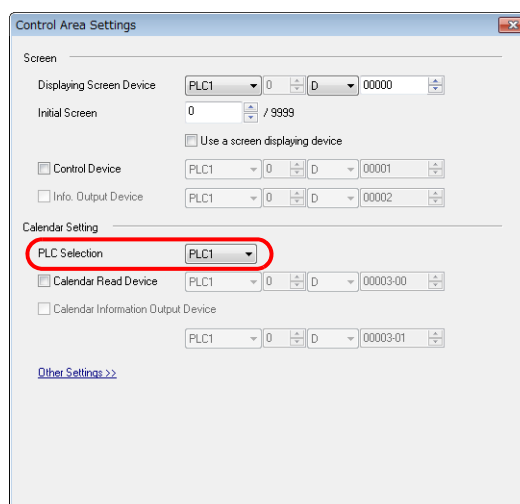


- Depending on the calendar data to be used, the setting and correction methods vary. Refer to the following table.

	PLC Calendar ^{*1}	V9 Series Calendar ^{*2}	User Format ^{*3}
Part	<ul style="list-style-type: none"> • Time display • Calendar 	<ul style="list-style-type: none"> • Time display • Calendar 	<ul style="list-style-type: none"> • Time display
Required Settings	Connected device settings ^{*1} [Calendar] and SRAM/clock settings ^{*4} Built-in clock not used	SRAM/clock settings ^{*4}	Time display format setting
At Power ON	The PLC calendar ^{*1} is automatically read and displayed.	The V9 series calendar is displayed.	Data in the device memory set for the time display part is read and displayed.
RUN Mode	V9 series CPU clock	V9 series CPU clock	
Auto Correction	The PLC calendar ^{*1} is automatically read when the date is changed.	—	—
Correction	The bit of the device memory set for the calendar is turned ON. or Macro: SET_CLND PLC1 PLC_CLND ^{*5} PLC2 - 8	Main Menu screen or Macro: SET_SYS_CLND	—
Backup at Power OFF	×	○	×

^{*1} PLC calendar: Calendar that the PLC retains in the CPU

Because a maximum of 8-way communication is possible on the V9 series, the PLC calendar data to be read must be determined. This can be configured using the [Calendar] setting at [System Setting] → [Hardware Setting] → [Control Area]. When [PLC Selection] is set to [PLC1], the calendar of PLC1 is read; when [PLC Selection] is set to [PLC3], the calendar of PLC3 is read. However, if the PLC specified for [PLC Selection] is not equipped with a built-in calendar, it is regarded as "no calendar".



^{*2} V9 series calendar: Calendar on the V9 series unit

^{*3} User format: Calendar in the user-defined format created in the PLC

*4 SRAM/Clock Setting

Always set this option when using the built-in calendar in the V9 series unit.



- Select [System Setting] → [Unit Setting] → [SRAM/Clock] and select the [Use SRAM Calendar] checkbox.
- Always install a backup battery.



For details on batteries, refer to the V9 Series Hardware Specifications Manual.

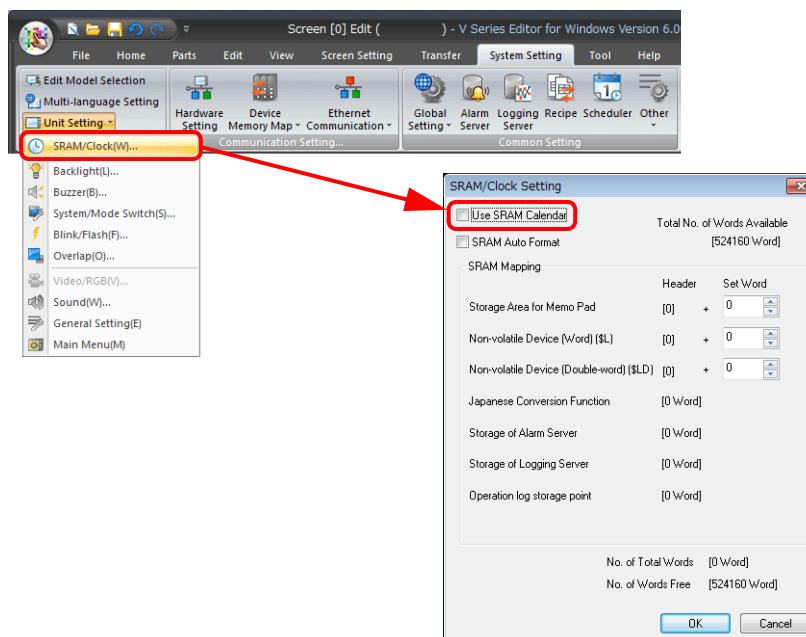
*5 In the case of PLC2 to PLC8, calendar correction is performed by the execution of macro commands "PLC_CLND" and "SYS (SET_SYS_CLND)".

When the bit of the device set for calendar reading is turned ON, the calendar data of the PLC specified for [Calendar] will be read as explained in Note 1 (*1).

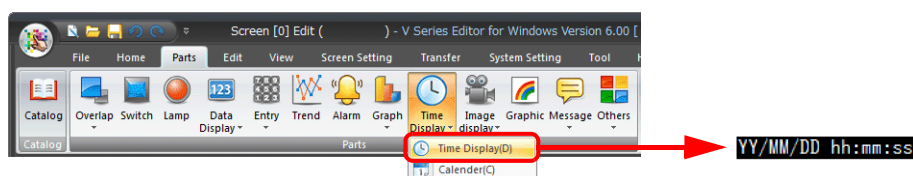


For details, refer to the V9 Series Macro Reference Manual.

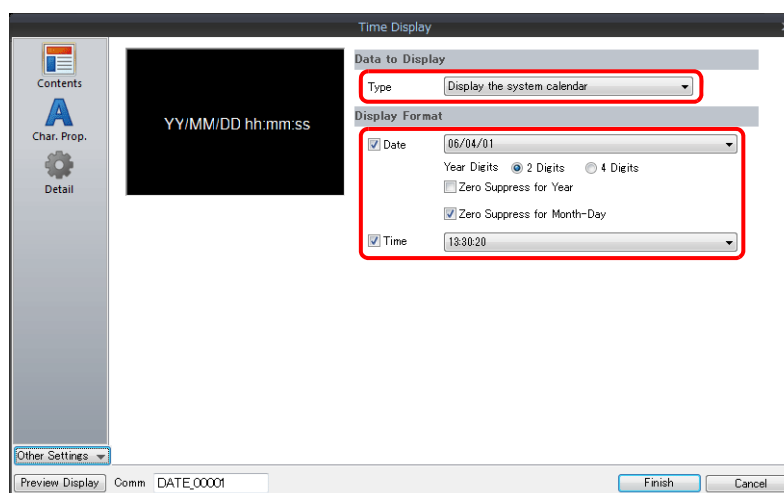
3. Click [System Setting] → [Unit Setting] → [SRAM/Clock] and deselect the [Use SRAM Calendar] checkbox.



4. Click [Parts] → [Time Display] → [Time Display] and place a time display part.



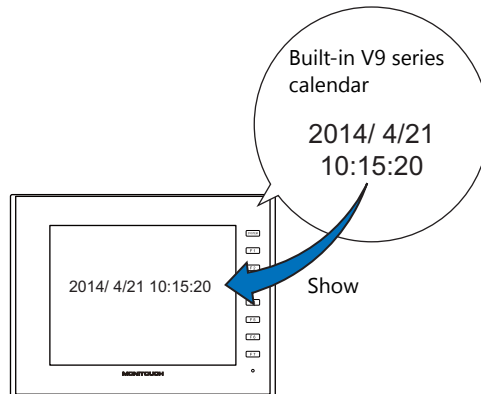
5. Double-click on the time display part to display the settings window. Configure the [Contents] settings as shown below.
- Select [Type] → [Display the system calendar].
 - Specify the format of the date and time under [Display Format].



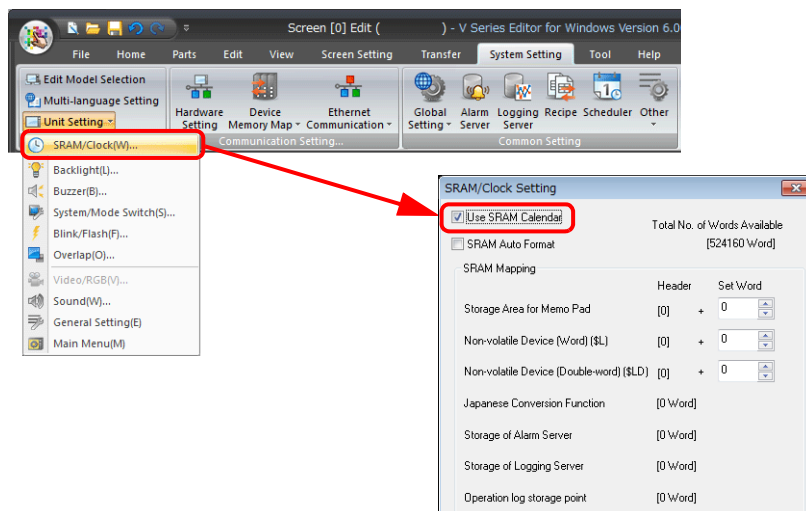
This completes the necessary settings.

Displaying the Built-in V9 Series Calendar

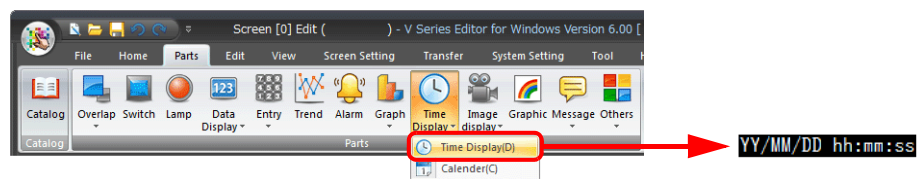
The following example shows how to display the built-in V9 series calendar.



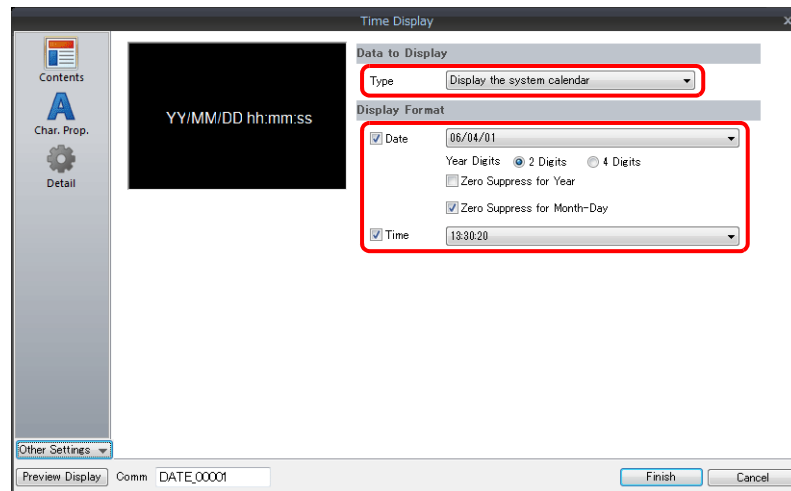
1. Click [System Setting] → [Unit Setting] → [SRAM/Clock] and select the [Use SRAM Calendar] checkbox.



2. Click [Parts] → [Time Display] → [Time Display] and place a time display part.

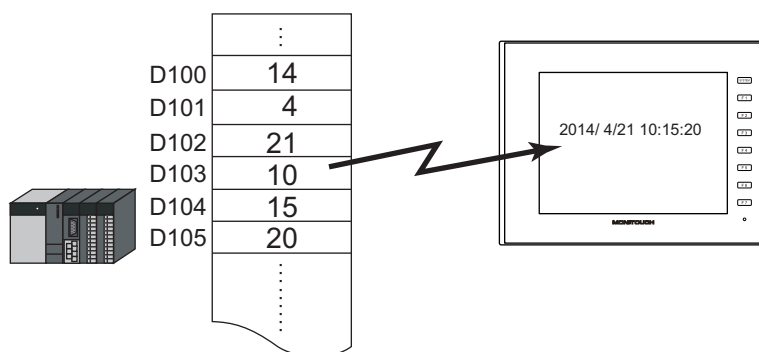


3. Double-click on the time display part to display the settings window.
Configure the [Contents] settings as shown below.
 - Select [Type] → [Display the system calendar].
 - Specify the format of the date and time under [Display Format].

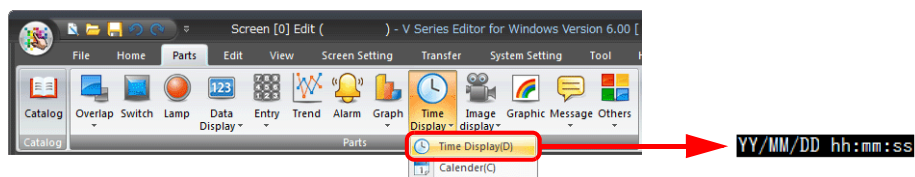


This completes the necessary settings.

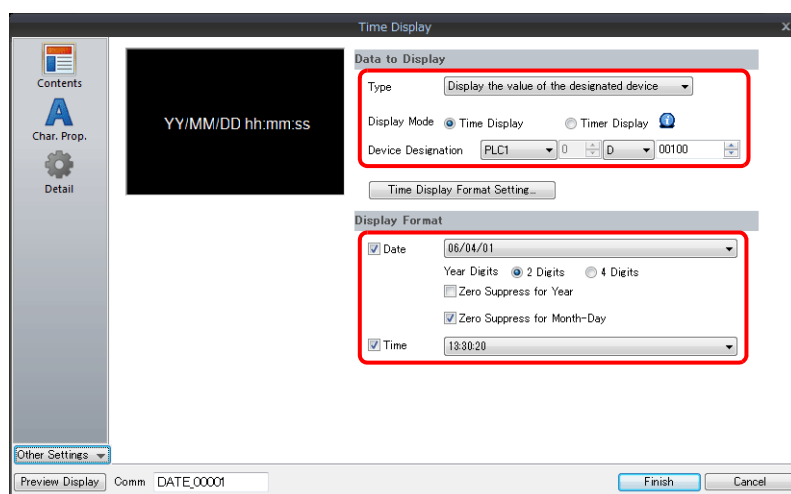
Display Using the Time Display Format Setting



1. Click [Parts] → [Time Display] → [Time Display] and place a time display part.



2. Double-click on the time display part to display the settings window.
Configure the [Contents] settings as shown below.
 - Select [Type] → [Display the value of the designated device].
 - Select [Display Mode] → [Time Display].
 - Specify the top device memory address to use for time display with [Device Designation].
 - Specify the display format of the date and time under [Display Format].



3. Specify the format of the data to read with [Time Display Format Setting].

Example 1: Read Word Count: 6

Data Unit: Word

Code Type: BCD

0000: Year

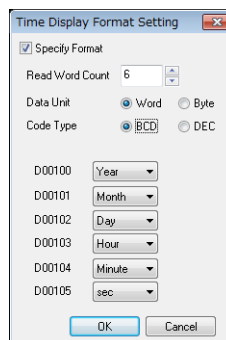
0001: Month

0002: Day

0003: Hour

0004: Minute

0005: Sec



Time Display Format Setting

☒ Specify Format

Read Word Count: 6

Data Unit: ☒ Word ☐ Byte

Code Type: ☒ BCD ☐ DEC

D00100: Year

D00101: Month

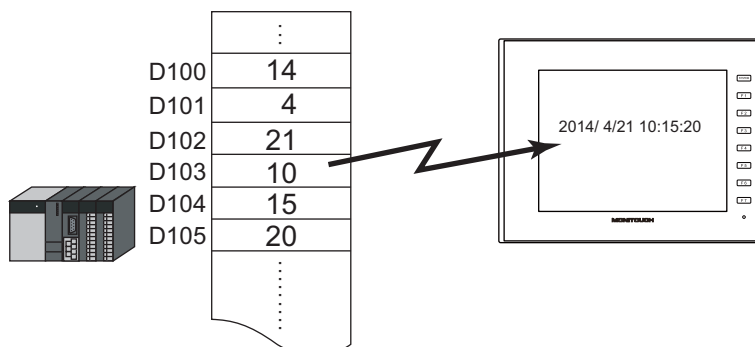
D00102: Day

D00103: Hour

D00104: Minute

D00105: sec

OK Cancel



Example 2: Read Word Count: 3

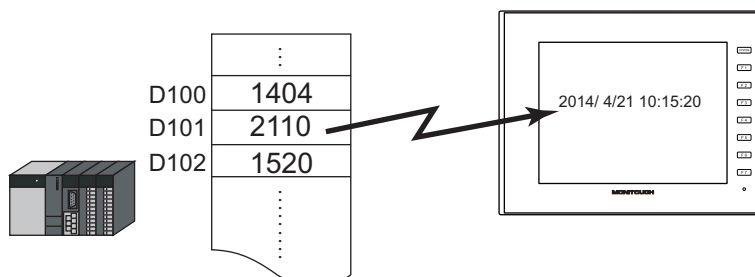
Data Unit: Byte

Code Type: BCD

0000: Year Month

0001: Day Hour

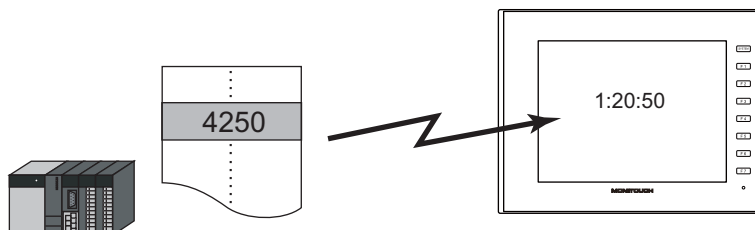
0002: Minute Sec



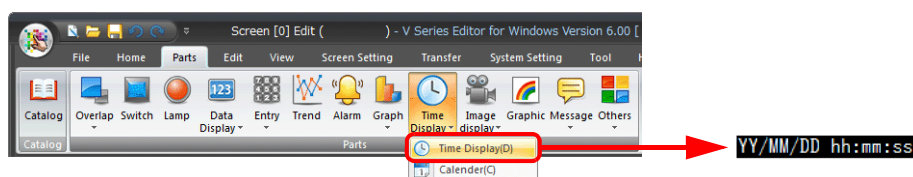
This completes the necessary settings.

Displaying Seconds Data Stored in Device Memory in Timer Format

The following example shows how to display the seconds data stored in device memory in timer format on a V9 series unit.



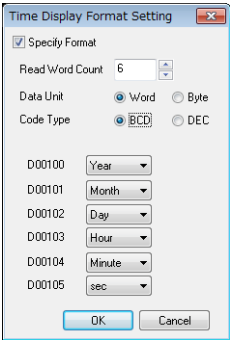
1. Click [Parts] → [Time Display] → [Time Display] and place a time display part.



2. Double-click on the time display part to display the settings window.
Configure the [Contents] settings as shown below.
 - Select [Type] → [Display the value of the designated device].
 - Select [Display Mode] → [Timer Display].
 - Specify the device memory address for storing the seconds data with [Device Designation].
 - Specify the display format of the time under [Display Format].

This completes the necessary settings.

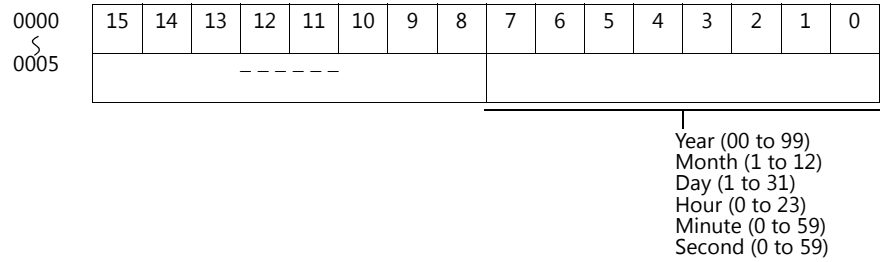
Time display format setting



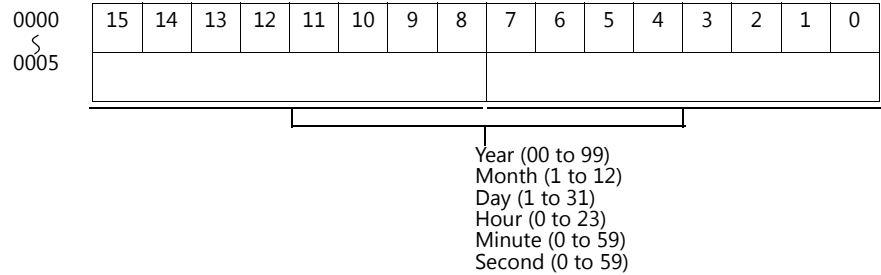
Item	Description
Specify Format	Select this checkbox if [Data Display] → [Type] → [Display the value of the designated device] is selected and [Display Mode] is set to [Time Display].
Read Word Count (1 - 6)	Data for the number of words to be read starting at [Device Designation] are read as the calendar data.
Data Unit *1 (Word, Byte)	Select [Word] or [Byte] for data unit when reading data from the PLC.
Code Type (BCD/DEC)	Select the code to be used at the time of reading data from the PLC.
0000 - 0005	Specify the contents of data for each device memory address.

*1 Device memory allocation for each data unit

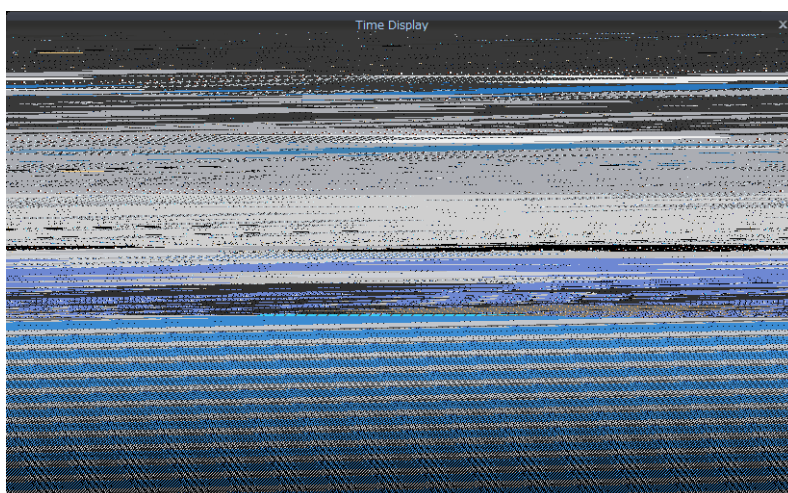
• Word



• Byte



Character Properties



Item	Description
Color	Set the text color and area background color.
Style	Set the text style.
Character Size	Set the text size. This changes to point specification when using a Windows font or 7-segment font.
1-byte / 2-byte	Select one-byte or two-byte display.
Rotation + Direction	Set the orientation of text. This cannot be set when using a Windows font.
Spacing	To set a text spacing, select this checkbox and specify a spacing. This cannot be set when using a Windows font.
System Font Windows Font 7-segment Font	Select the font of the numerical data display.
Display light-out segments	This setting is available when [7-segment Font] is selected. Select this checkbox to display unlit segments.

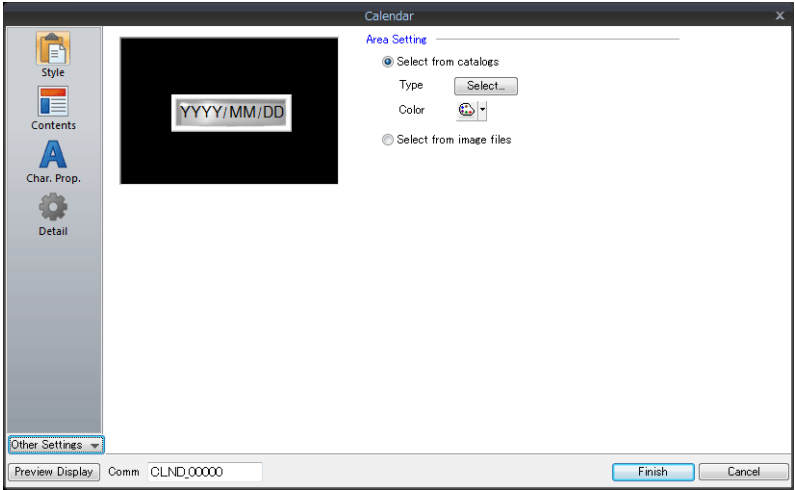
Detail

Item		Description
Coordinates	Start X/Start Y	Specify the placement coordinates. (Coordinates at bottom left of part)
Others	Process Cycle	Set the process cycle.
	ID	Set the ID.

10.3 Calendar

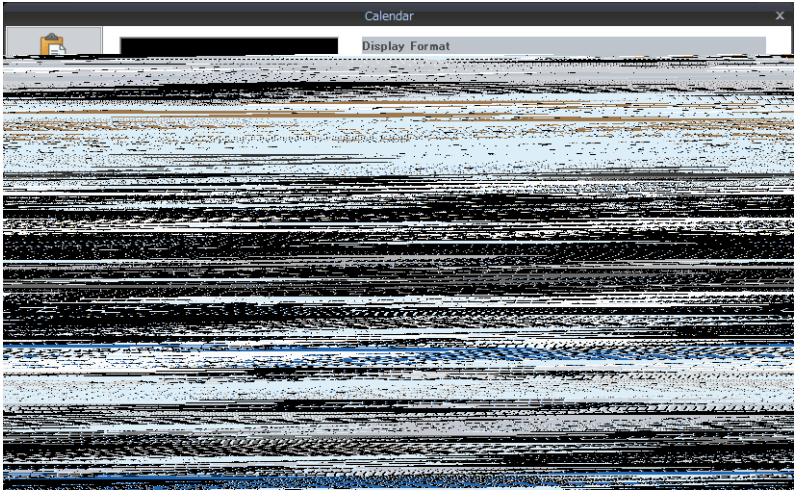
10.3.1 Detailed Settings

Style



Item		Description
Area Setting	Select from catalogs	Type Set the part design. Color Set the part color.
	Select from image files	Load an image file.

Contents



Item		Description
Display Format	Item to Display	Set the items to display on the calendar. The year in Western calendar format and the hour (0 to 24) are displayed. Year Month Day Hour Minute Second Year Month Day Hour Minute Second User format Select the checkbox of the items to display from year, month, day, hour, minute, and second.
	Year	Select either two digits or four digits to indicate the year. Display example: Two digits indicate the year 2014 as "14", and four digits as "2014".
Display days of the week		Register the display names of each day of the week. A maximum 13 one-byte characters (6 two-byte characters) can be used.

When [Edit Date/Time Individually] is selected

The character properties of the year, month, day, hour, minute, and second can be set individually.

Item		Description
Year/Month/ Day/Hour/ Minute/sec	Color	Set the text color and area background color.
	Style	Set the text style.
	Rotation + Direction	Set the orientation of text. This cannot be set when using a Windows font.
	Spacing	To set a text spacing, select this checkbox and specify a spacing. This cannot be set when using a Windows font.
	Zero Suppress	Select this checkbox to use zero suppression.
	1-byte / 2-byte	Select one-byte or two-byte display.
Character Size		Set the text size. This changes to point specification when using a Windows font or 7-segment font.
System Font		
Windows Font		
7-segment Font		Select the font of the numerical data display.
Display light-out segments		

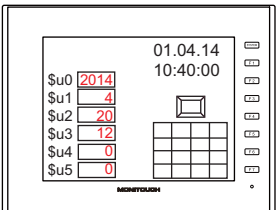
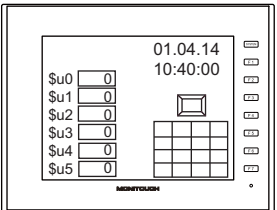
10.4.2 Correcting Using a Macro

The calendar data in PLC 1 can be corrected by executing the macro command "SYS (SET_CLND)".

1. According to the macro format, set data for "year, month, day, hour, minute, and second" correctly at the relevant device memory.
The calendar data is written to PLC1.
The corrected calendar data will be read.
2. Execute the "SYS(SET_CLND)" macro command as the ON macro of a switch, etc.

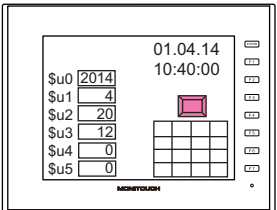
(Operation Example)

- (1) Set the data.
Set 20.04.14, 12:00:00.
\$u0000 = 2014 (W)
\$u0001 = 4 (W)
\$u0002 = 20 (W)
\$u0003 = 12 (W)
\$u0004 = 0 (W)
\$u0005 = 0 (W)

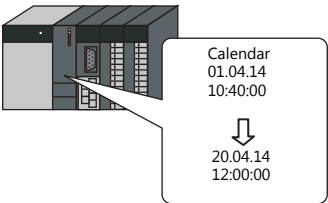


- (2) Execute the macro command.
Set the calendar of PLC1, port 1 to 20.04.14 12:00:00.

[ON Macro Edit]
SYS(SET_CLND) \$u0000

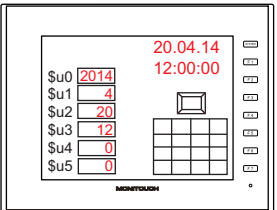


Rewrite the PLC calendar.



Calendar readout


Macro commands "PLC_CLND" and "SYS(SET_SYS_CLND)" are used to correct the calendar data in PLC2 to PLC8. For details, refer to the V9 Series Macro Reference Manual.



10.4.3 Correcting in Local Mode

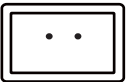
Calendar data can be set on the [SRAM/Clock] screen that can be displayed in Local mode.

* **Correction can only be performed when using the built-in clock.**

 For details on settings, refer to the V9 Series Troubleshooting/Maintenance Manual.

MEMO

MONITOUCH



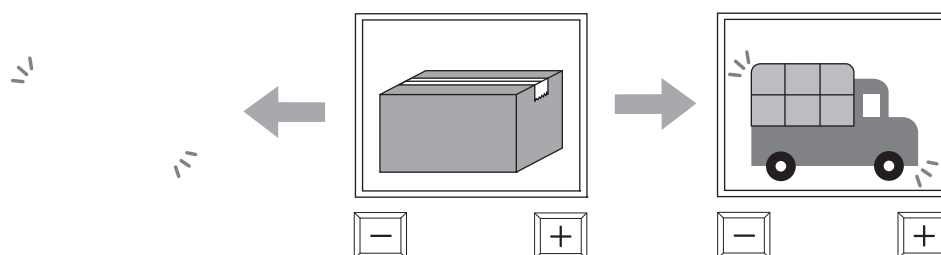
11.1 Graphics

11.1.1 Overview

A variety of pre-registered graphics can be displayed on the screen or changed based on bit activation and the graphic number.

The graphic display method differs depending on the [Operation Select] setting.

- Switch
Switches can be used to display or change between graphics and text registered in the graphic library.
In this case, the displayed graphics cannot be moved or transformed.



- Device (No. Designation)
A graphic number can be specified for display using the [Device (No. Designation)] setting.

The displayed graphics can be moved or transformed.

To animate or transform graphics or text, set up parameters for these items in the graphic library.

When parameters are set, the required device memory addresses are allocated for animation and transformation.

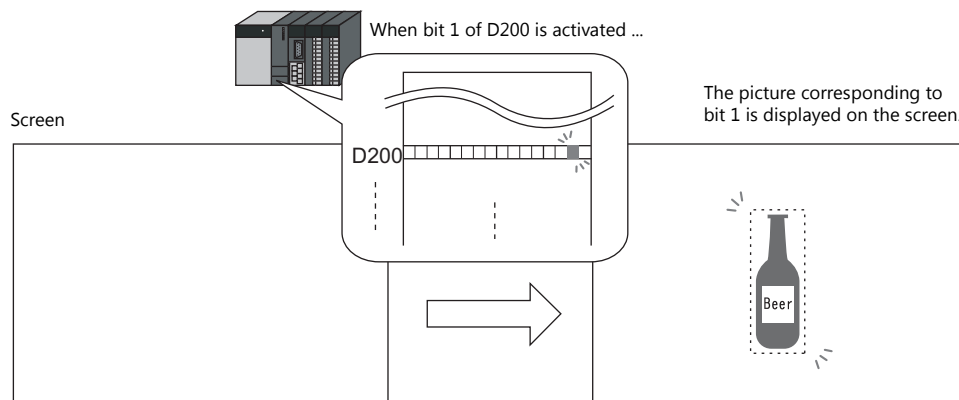
For details on the procedure for setting parameters, refer to ["11.1.4 Graphic Library \(Parameter Settings\)" page 11-14](#).

- Device (Bit Designation)

The graphics or text registered in the graphic library can be shown or hidden according to bit activation. There are two display types.

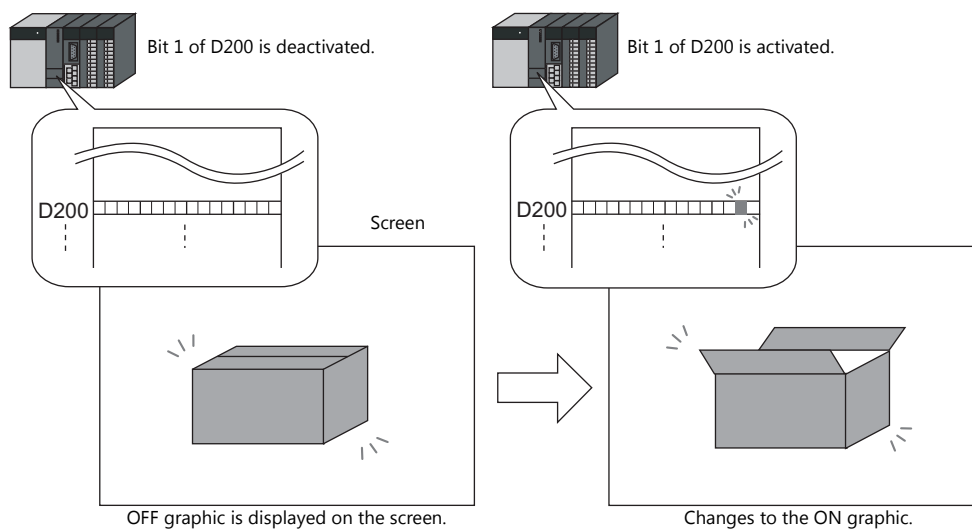
- Type: 1-Graphic

When the bit is set to ON, the corresponding graphic is shown, and when the bit is set to OFF, the graphic is hidden.



- Type: 2-Graphic

Two graphics are assigned to one bit. When the bit is set to OFF, the OFF graphic is displayed, and when the bit is set to ON, the ON graphic is displayed.

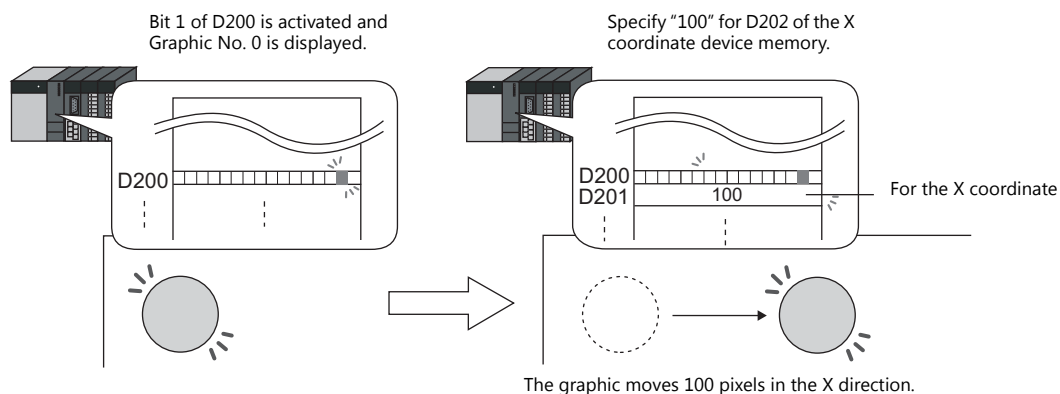


- It is possible to move or transform the graphics or text set for [1-Graphic] and [2-Graphic].

To animate or transform graphics or text, set up parameters for these items in the graphic library.

When parameters are set, the required device memory addresses are allocated for animation and transformation.

For details on the procedure for setting parameters, refer to ["11.1.4 Graphic Library \(Parameter Settings\)"](#) page 11-14.

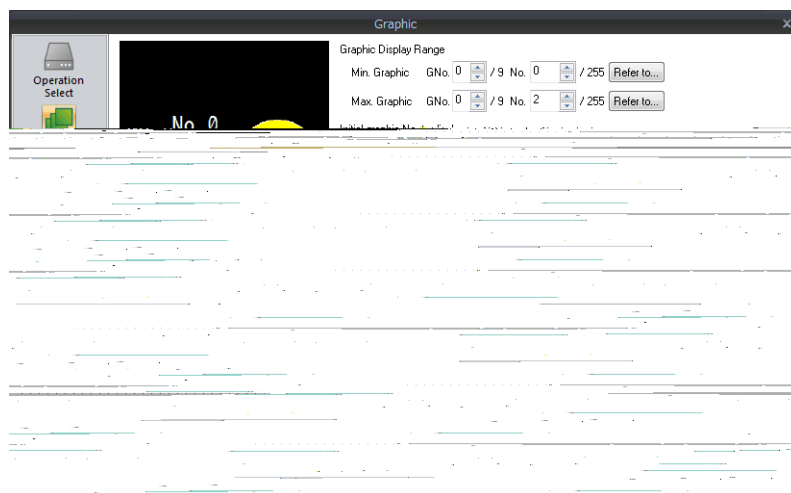


* The graphic mode display is possible without placing a display area part. For details, refer to [page 11-7](#).

11.1.2 Detailed Settings

Operation Select: Switch

Graphic Select



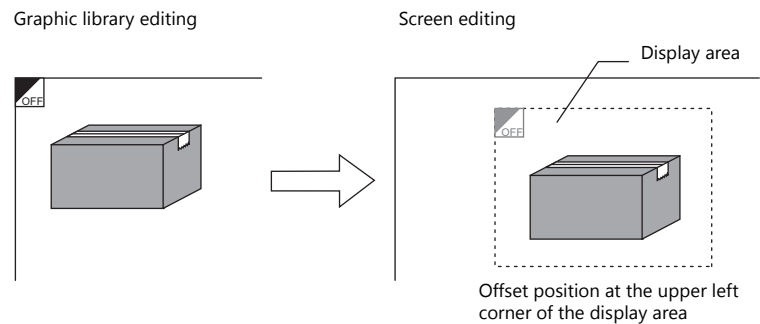
Item	Description
Min. Graphic	Set the graphic with the lowest number among those to be displayed on the screen.
Max. Graphic	Set the graphic with the highest number among those to be displayed on the screen.
Initial Graphic	Set the initial graphic to show when the screen is displayed. Select an initial graphic number between the minimum and maximum graphic numbers.

Style

Item	Description
Additional Parts List	Select an operation switch. Parts can be added to the list using the [Add Parts] button.
+ Block	Switches to the next graphic.
– Block	Switches to the previous graphic.
Block Call	Switches to the specified graphic number. The graphic number is specified via [Edit Selected Parts] → [Others].
Parts Design	Set the design and color of parts.
Edit Selected Parts	Configure the part selected in the [Additional Parts List] or preview pane. Part size can also be changed.
Adjust Position	Displays the window for adjusting the placement position of each part.
Select from catalogs	Set the part design from the catalog.

Display area

The size of the display area must be changed to accommodate the graphic for display.
The position of the "OFF" mark (offset mark) of the graphic library corresponds to the upper left corner of the display area part on the screen. Take this position into consideration when determining the size of the display area part.

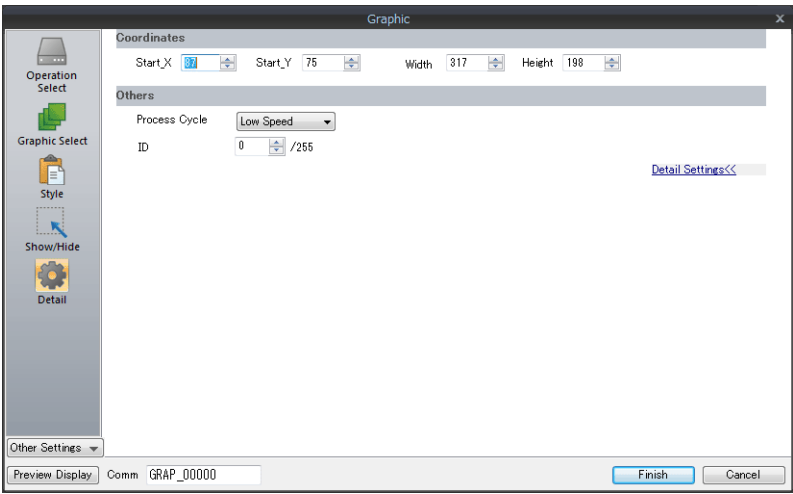


Show/Hide

Set the show and hide settings of graphic items.

For details, refer to "14 Item Show/Hide Function".

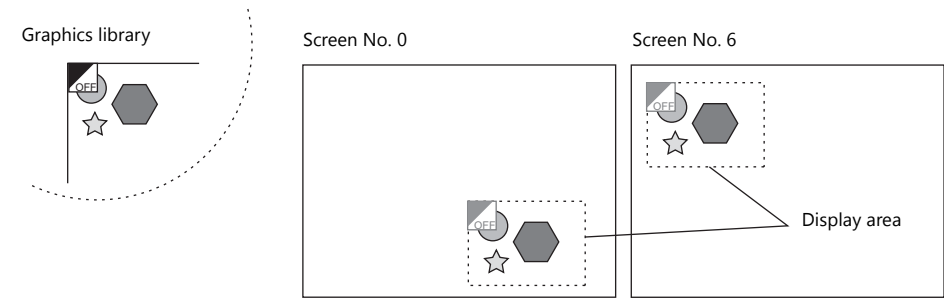
Detail



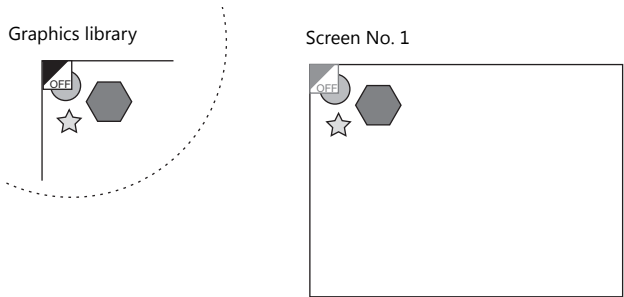
Item		Description
Coordinates	Start X/Start Y	Specify the coordinates of the display area.
	Width/Height	Set the size of the display area.
Others	Process Cycle	Set the cycle for the V9 series to read PLC data.
	ID	Set an ID number.

Display area

- When [Display Graphic] is set to [Display area]
The offset position of the graphic library corresponds to the upper left corner of the display area part. Take this position into consideration when determining the size of the display area part. Refer to [page 11-4](#).



- When [Display Graphic] is set to [Base screen]
The offset position of the graphic library corresponds to the upper left corner of the screen.



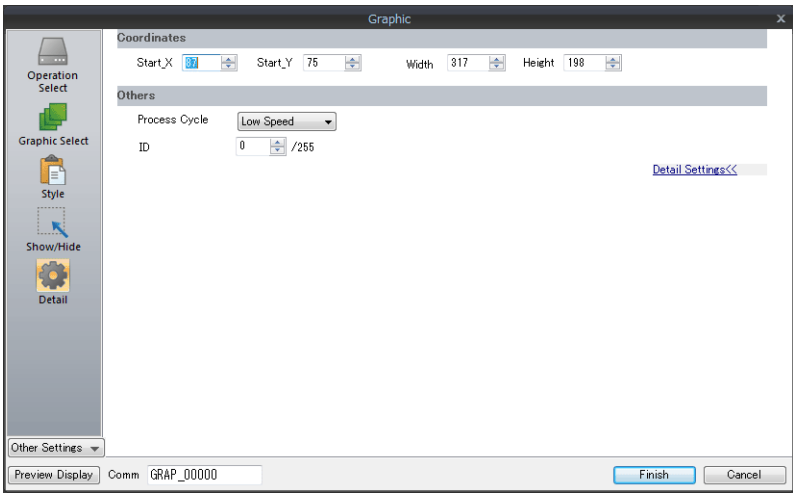
- If [Base area] for [Display Graphic] is selected and there is no display area, the previous picture may remain on the screen when the picture is changed.

Show/Hide

Set the show and hide settings of graphic items.

For details, refer to ["14 Item Show/Hide Function"](#).

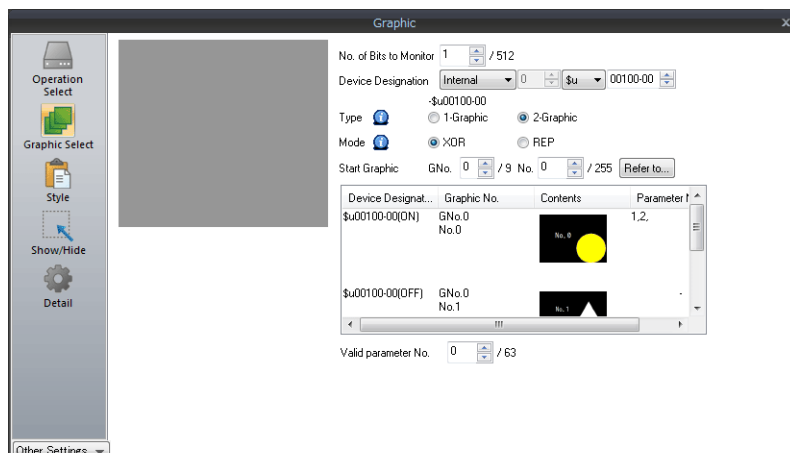
Detail



Item		Description
Coordinates	Start X/Start Y	Specify the coordinates of the display area.
	Width/Height	Set the size of the display area.
Others	Process Cycle	Set the cycle for the V9 series to read PLC data.
	ID	Set an ID number.

Operation Select: Device (Bit Designation)

Graphic Select



Item	Description
No. of Bits to Monitor ^{*1}	Set the total number of bits used for displaying graphics. 1 - 512
Device Designation ^{*1}	Set the device memory used for displaying graphics. Consecutive bits are used for the number of monitored bits.
Type ^{*1}	Select the graphic display method.
1-Graphic	A graphic is displayed when the bit is set to ON. OFF: Graphic hidden ON: Graphic shown
2-Graphic	A graphic is displayed when the bit is set to either ON or OFF. OFF: OFF graphic shown ON: ON graphic shown
Mode ^{*3}	Specify the display state when changing between graphics. This setting is available when [Type] is set to [2-Graphic]. When [Type] is set to [1-Graphic], the mode is fixed to [XOR].
XOR	Bit OFF: OFF graphic is displayed. Bit OFF → ON: OFF graphic is cleared and ON graphic is displayed. Bit ON → OFF: ON graphic is cleared and OFF graphic is displayed.
REP	Bit OFF: OFF graphic is displayed. Bit OFF → ON: ON graphic is displayed over the OFF graphic. Bit ON → OFF: OFF graphic is displayed over the ON graphic. The graphics are not XORed with the base screen and are instead displayed in their original colors.
Start Graphic ^{*1}	Set the starting graphic group number and graphic number of the graphic to display.
Valid parameter No. ^{*2}	This is required when moving or transforming the graphics. Specify the total number of parameters set for each graphic. The number of words for the device memory and allocation is determined from this total and the parameter numbers. (For details on the parameter setting, refer to the V9 Series Operation Manual.)

^{*1} Display example:

[Device Designation]: D200, [Start Graphic]: GNo. 0, No. 0, [No. of Bits to Monitor]: 12

- Type: 1-Graphic

	MSB											LSB						
D200 bit No.	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00		
Graphic No. 0 graphic No. (Bit ON)	X	X	X	X	11	10	9	8	7	6	5	4	3	2	1	0		

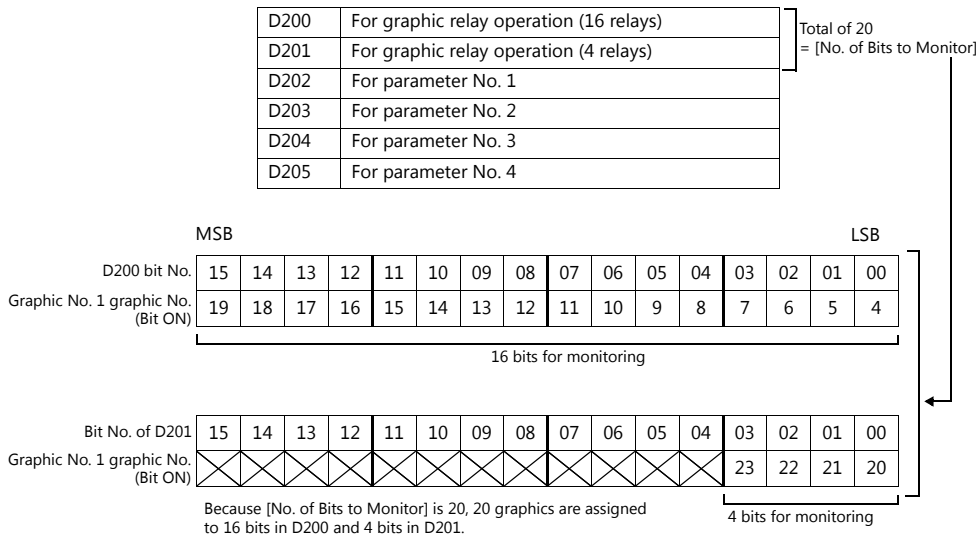
Because [No. of Bits to Monitor] is 12, 12 graphics can be assigned to these bits (bit 0 to bit 11).

- Type: 2-Graphic

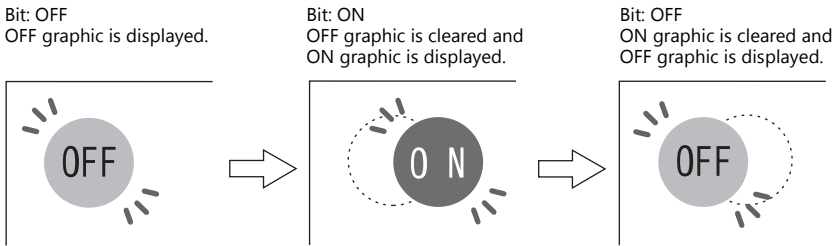
	MSB											LSB						
D200 bit No.	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00		
Graphic No. 0 graphic No. (Bit ON)	X	X	X	X	22	20	18	16	14	12	10	8	6	4	2	0		
(Bit OFF)	X	X	X	X	23	21	19	17	15	13	11	9	7	5	3	1		

Because [No. of Bits to Monitor] is 12, 24 graphics can be assigned to these bits (bit 0 to bit 11).

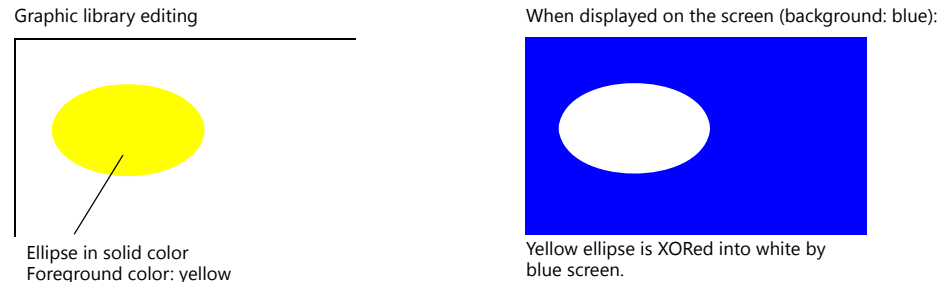
*2 Display example:
[Device Designation]: D200, [Type]: 1-Graphic, [Start Graphic]: GNo. 1, No. 4, [No. of Bits to Monitor]: 20, [Valid parameter No.]: 4



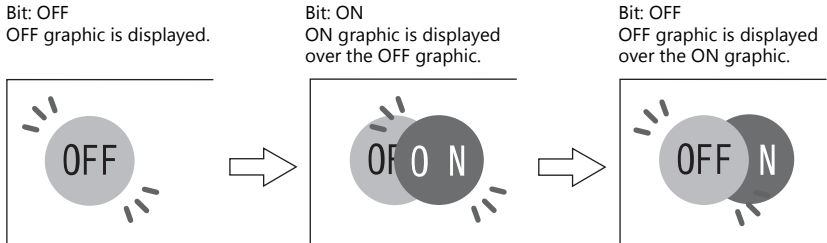
*3 Display example:
- Mode: XOR



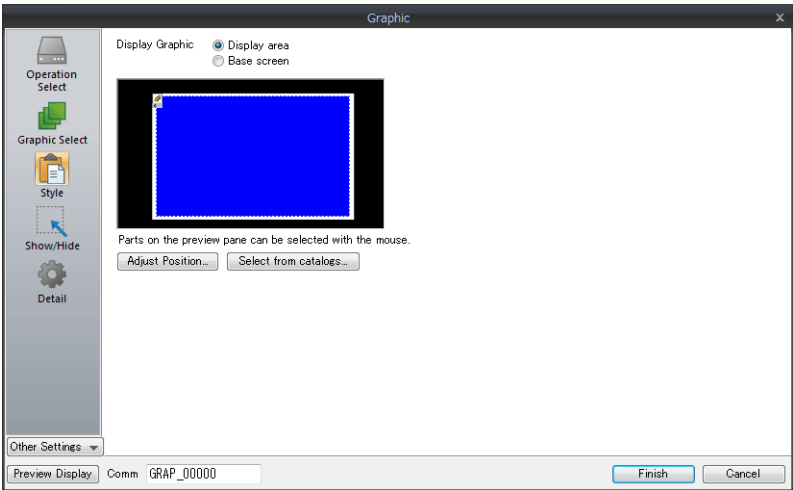
In XOR mode, the graphic color is XORed with the colors of the base screen (display area). Therefore, the graphic is displayed in the color XORed with the base color (= XORed color), rather than the color specified during editing. For details on XORed color, refer to [page 11-12](#).



- Mode: REP



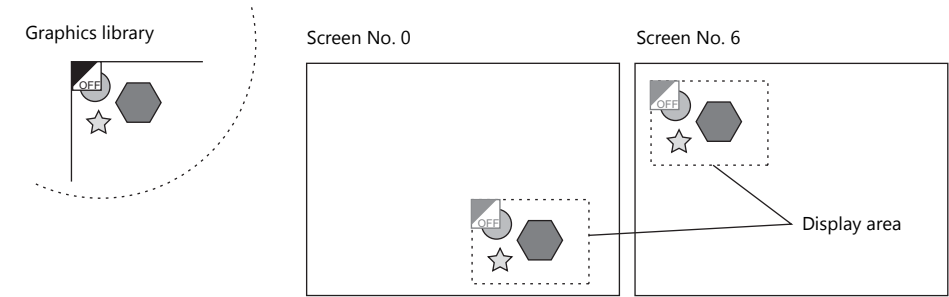
Style



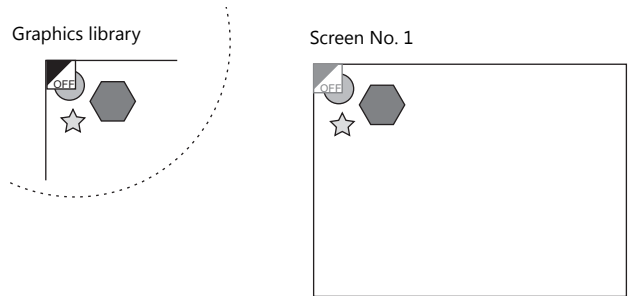
Item	Description
Display Graphic	Select the area for displaying graphics. Display area/Base screen
Adjust Position	Displays the window for adjusting the placement position of each part. Part size can also be changed.
Select from catalogs	Set the part design from the catalog.

Display area

- Offset
 - When [Display Graphic] is set to [Display area]
The offset position of the graphic library corresponds to the upper left corner of the display area part. Take this position into consideration when determining the size of the display area part.



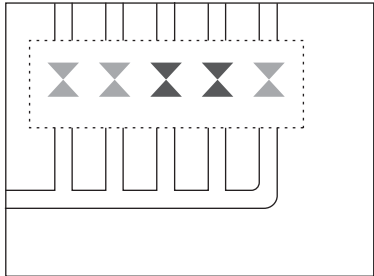
- When [Display Graphic] is set to [Base screen]
The offset position of the graphic library corresponds to the upper left corner of the screen.



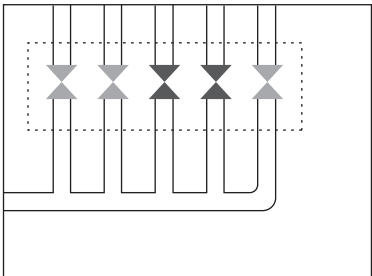
- Transparency
Select the [Transparent] checkbox for the display area part to add transparency to the display area part properties. Select this checkbox to avoid a situation where graphics under the display area part are hidden. For details on part changes, refer to the V9 Series Operation Manual.

- Example with transparent setting

- Not transparent




- Transparent

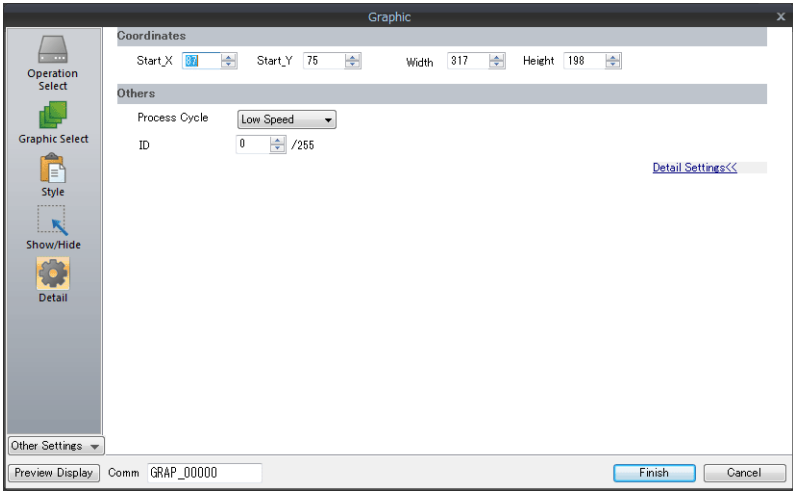


Show/Hide

Set the show and hide settings of graphic items.

 For details, refer to “14 Item Show/Hide Function”.

Detail



Item		Description
Coordinates	Start X/Start Y	Specify the coordinates of the display area.
	Width, Height	Set the size of the display area.
Others	Process Cycle	Set the cycle for the V9 series to read PLC data.
	ID	Set an ID number.

11.1.3 Graphic Display Color

Display Modes

When graphics are displayed on the screen, there are two types of display modes.

- XOR: Graphic colors are XORed with the colors of the base screen.
- REP: Original graphic colors are shown.

Whether XOR or REP is used for the display state is determined by the mode and parameter settings. Refer to the following table.

Graphic Registration			Parameter	
Graphic Switching Method	Type		Action: Replace	Action: Animation
Switch			REP	XOR
Device (No. Designation)			REP	XOR
Device (Bit Designation)	1-Graphic		XOR	XOR
	2-Graphic	Mode: XOR	XOR	XOR
		Mode: REP	REP	XOR

* When the graphic to be displayed is a "Paint" graphic, it cannot be displayed in XORed colors.

* When a pattern with a [Transparent Color Setting] is used, the graphic can be displayed with the original colors even if [Mode] is set to [XOR]. For details, refer to [page 11-13](#).

XORed Colors

When [XOR] is selected, graphic colors are XORed with the colors of the base screen (display area). The resulting color is called "XORed color." The basic eight XORed colors are shown below.

		Overlaid picture colors (basic eight colors)							
		Black	Blue	Red	Magenta	Green	Cyan	Yellow	White
Base screen picture colors (basic eight colors)	Black	Black	Blue	Red	Magenta	Green	Cyan	Yellow	White
	Blue	Blue	Black	Magenta	Red	Cyan	Green	White	Yellow
	Red	Red	Magenta	Black	Blue	Yellow	White	Green	Cyan
	Magenta	Magenta	Red	Blue	Black	White	Yellow	Cyan	Green
	Green	Green	Cyan	Yellow	White	Black	Blue	Red	Magenta
	Cyan	Cyan	Green	White	Yellow	Blue	Black	Magenta	Red
	Yellow	Yellow	White	Green	Cyan	Red	Magenta	Black	Blue
	White	White	Yellow	Cyan	Green	Magenta	Red	Blue	Black

XOR operations

Each of the basic eight colors has an identification code as given below:

64k-color		32k-color	
Color	Code HEX	Color	Code HEX
Black	0000	Black	0000
Blue	001F	Blue	001F
Red	F800	Red	7C00
Magenta	F81F	Magenta	7C1F
Green	07E0	Green	03E0
Cyan	07FF	Cyan	03FF
Yellow	FFE0	Yellow	7FE0
White	FFFF	White	7FFF

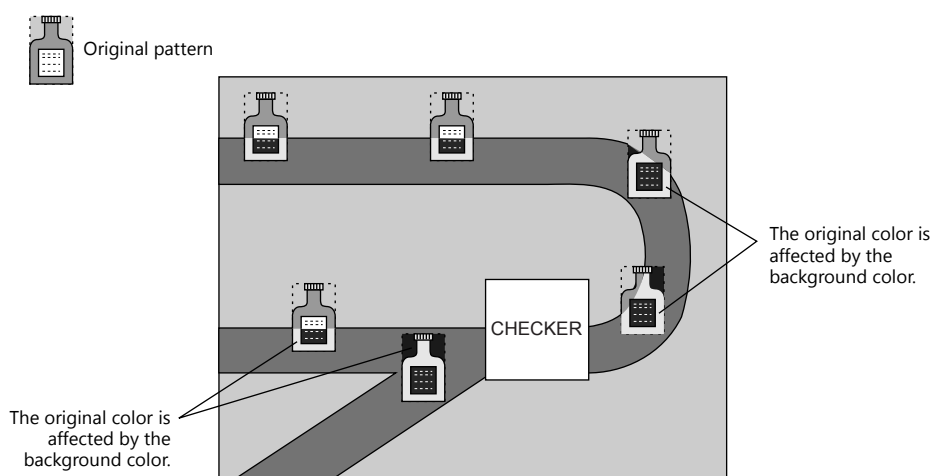
When a color is XORed with another color, it means that the two color codes are XORed to obtain another code.

	64k-color XORed color of blue and white	32k-color XORed color of blue and white
Blue	0000 0000 0001 1111 (001F)	0000 0000 0001 1111 (001F)
White	1111 1111 1111 1111 (FFFF)	0111 1111 1111 1111 (7FFF)
	XOR ↓	XOR ↓
Yellow	1111 1111 1110 0000 (FFE0)	0111 1111 1110 0000 (7FE0)

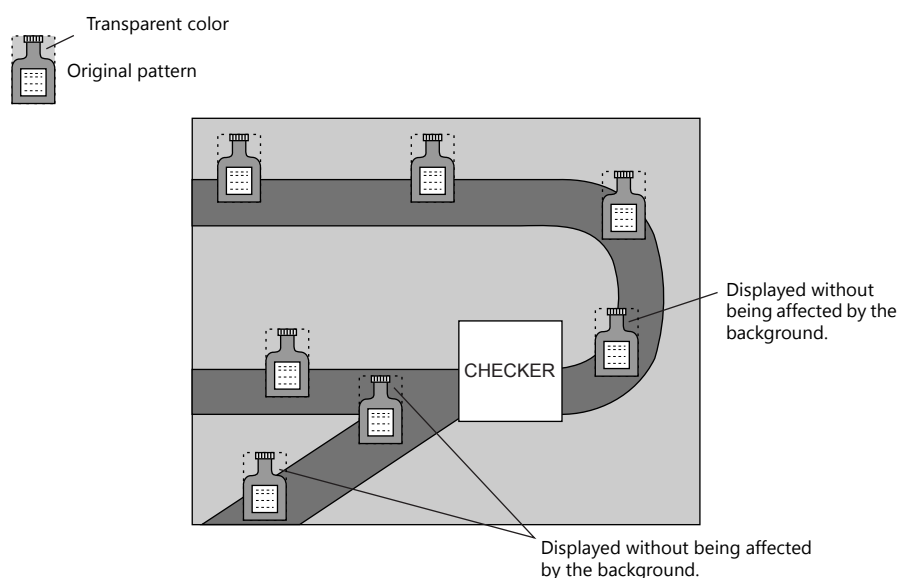
XOR Display Transparency (Pattern Transparency)

Because animation on a graphic display is always XORed, it is impossible to display the same colors on the screen as initially set for the background color (other than black).

Additionally, because the XORed color is affected by the base color, when animation is performed on multiple background colors, the color changes whenever the background does.



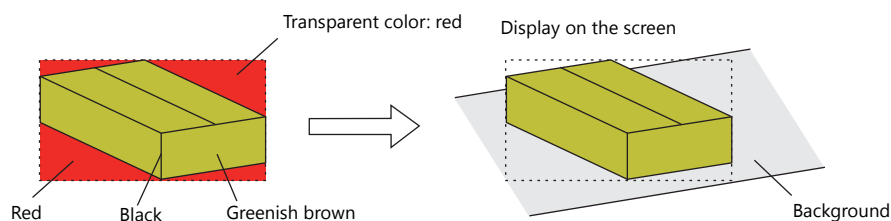
When a transparent pattern is used for animation, colors can be displayed just as they were originally created.



* Always select the [With Transparent] checkbox for the pattern when using this function.

Pattern editing

- Set the color not to show on the screen for the [Transparent Color Setting] in the [Pattern Edit] window.
- Only one transparent color can be set per pattern.
- For a pattern like the one below, the perimeter color (red) is set as the transparent color. Consequently, when this pattern is displayed on the screen, the red area becomes transparent and the background color is displayed.



For details on pattern editing, refer to the V9 Series Operation Manual.

11.1.4 Graphic Library (Parameter Settings)

Configure parameter settings to move, transform, and change graphics registered in the graphic library.

Parameter Targets and Settings

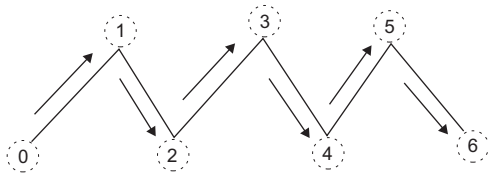
The following drawing items can be set using parameters.

Graphics	Item Specified by Parameter	Refer to
Straight line	Start point, end point	
Continuous line	Point 0 (to n) coordinates	page 11-14
Rectangle	Start point, end point	
Parallelogram	Start point, PX2, PY2, PX3, PY3	page 11-14
Polygon	Center coordinates, radius, start angle, number of corners	
Circle	Center coordinates, radius	
Arc, sector	Center coordinates, radius, start angle, end angle	
Ellipse, elliptical arc, elliptical sector	Center coordinates, X radius, Y radius	
Text	Start point (coordinates at the bottom left of the first character)	
Pattern	Start point (coordinates of the top left corner), (pattern) No.	page 11-15
Paint ^{*1}	Start point	page 11-15
Graphic call	Start point (library) No.	
Pixel	Start point	
Data display	Start point (coordinates of the bottom left of the first digit), No.	page 11-15

^{*1} Paint is not drawn correctly if operation of the graph is set to animation in the parameter settings.

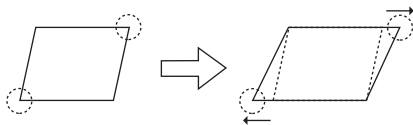
Continuous line (point 0 (to n) coordinates)

If a continuous line is drawn as shown below, there are seven points at which parameters can be set.

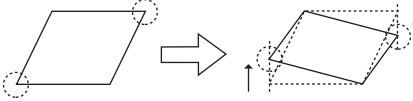


Parallelogram

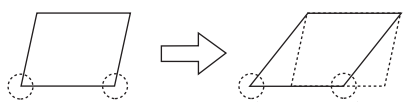
- PX2



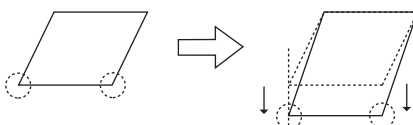
- PY2



- PX3

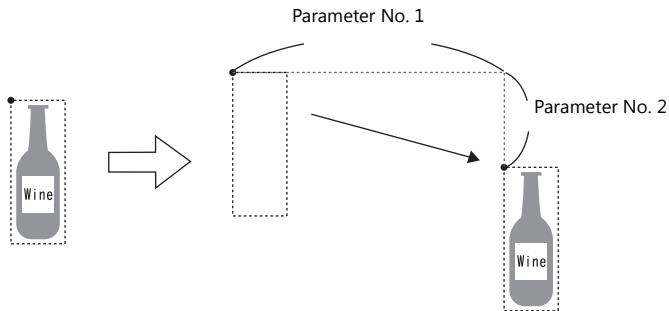


- PY3

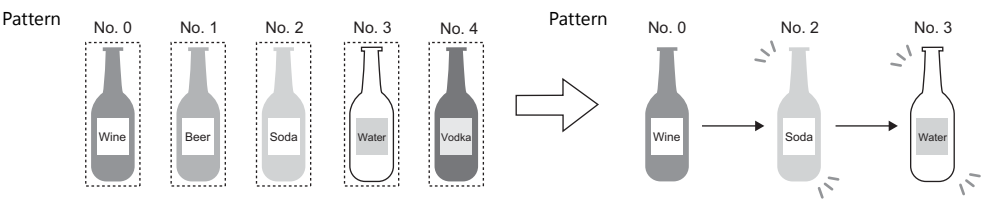


Pattern

- Start point
The start point is the top left corner of the pattern, as shown below.

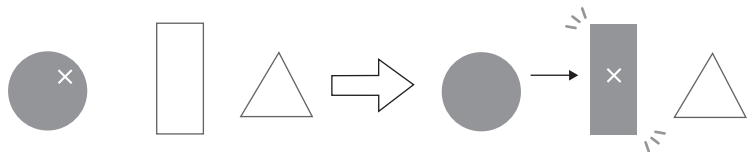


- Pattern No.
Set the parameters for the numbers to change the picture by specifying a number.



Paint (start point)

The coordinates of the paint start point can be changed using a parameter device memory.
Note that drawing is performed using REP instead of XOR so the previous paint display (e.g. circle) will remain.



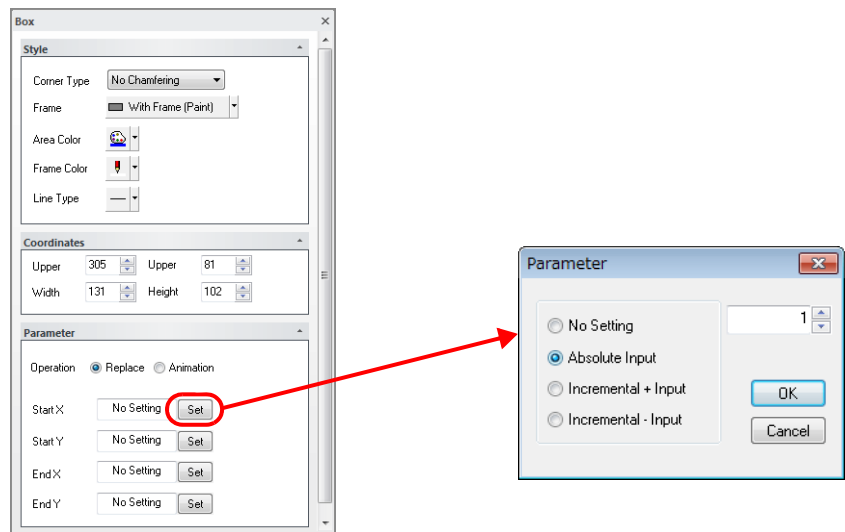
Data display

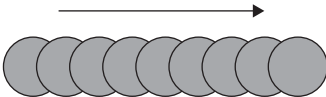
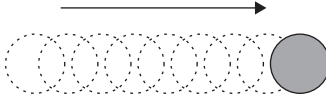
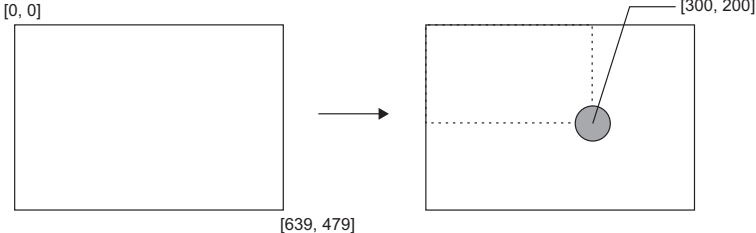
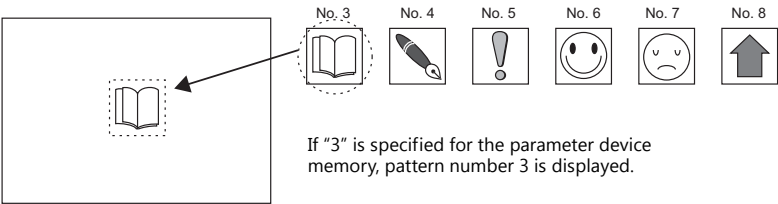
The position of the data display can be moved.

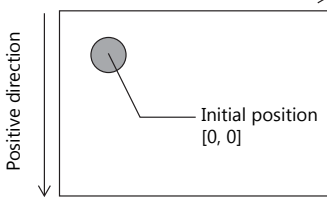
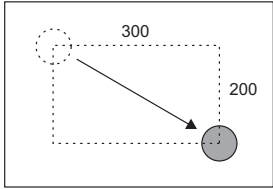
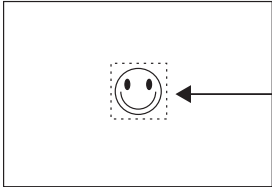
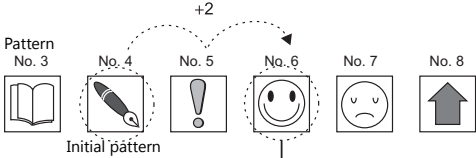
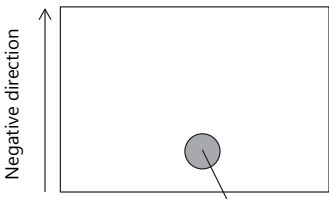
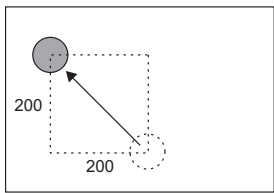
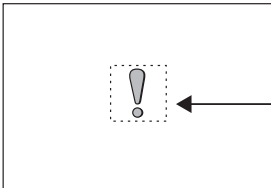
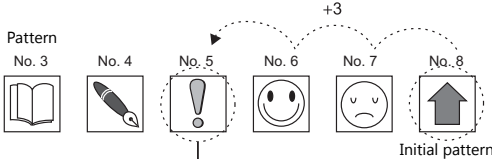


Parameter Settings

Set parameters in the graphic editing window of each graphic.



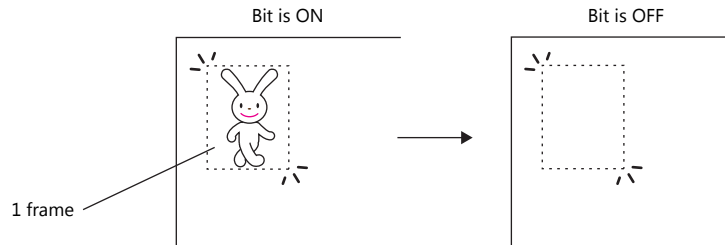
Item	Description
Operation	Select whether to overwrite the previous state or erase the previous state before drawing anew.
Replace	Overwrite the previous state. The previous state will remain. <div></div> <p>* This setting is available when there is no display area and the [System Setting] → [Unit Setting] → [General Setting] → [General Settings] tab → [Retain previous picture in graphic mode (V8 compatible)] checkbox is selected.</p>
Animation	Always draw the latest state. <div></div>
Set	Set the parameter of each setting item using the [Set] button.
No Setting	Do not secure a device memory for the parameter.
Absolute Input	Specify the parameter value using absolute coordinates. <p>When specifying coordinates The following shows an example when target coordinate values are specified in a device memory where the coordinates of the top left corner of the screen are [0, 0] and the coordinates of the bottom right corner are [639, 479] (or [319,239]/[799, 599]/[1023, 767]).</p> <p>A circle specified at X = 300 and Y = 200 is displayed at the following location.</p> <div></div> <p>When specifying numbers (pattern, graphic call) The following shows an example when a registered pattern number or graphic library graphic number is specified directly.</p> <div></div> <p>If "3" is specified for the parameter device memory, pattern number 3 is displayed.</p>

Item	Description
Incremental + Input	<p>Specify the input parameter value using relative coordinates in the positive direction.</p> <p>When specifying coordinates</p> <p>The following shows how the graphic moves in the positive direction when a positive value is specified to the device memory and in the negative direction when a negative value is specified to the device memory where the placement position of the graphic is [0, 0].</p> <div><div><p>Positive direction</p></div><div><p>The circle set at [300, 200] moves from its initial position as shown below.</p></div></div> <p>When specifying numbers (pattern, graphic call)</p> <p>The following shows how a number higher than the placed one is called when a positive value is specified to the device memory and a number lower than the placed one is called when a negative value is specified to the device memory where "0" is set for the number of the placed pattern or graphic.</p> <div><div></div><div><p>Pattern No. 3 No. 4 No. 5 No. 6 No. 7 No. 8</p></div><div><p>When the initial pattern number is "4" and "2" is specified for the parameter device memory, pattern number 6 is displayed.</p></div></div>
Incremental - Input	<p>Specify the input parameter value using relative coordinates in the negative direction.</p> <p>When specifying coordinates</p> <p>The following shows how the graphic moves in the negative direction when a positive value is specified to the device memory and in the positive direction when a negative value is specified to the device memory where the placement position of the graphic is [0, 0].</p> <div><div><p>Negative direction</p></div><div><p>The circle set at [200, 200] moves from its initial position as shown below.</p></div></div> <p>When specifying numbers (pattern, graphic call)</p> <p>The following shows how a number lower than the placed one is called when a positive value is specified to the device memory and a number higher than the placed one is called when a negative value is specified to the device memory where "0" is set for the number of the placed pattern or graphic.</p> <div><div></div><div><p>Pattern No. 3 No. 4 No. 5 No. 6 No. 7 No. 8</p></div><div><p>When the initial pattern number is "8" and "3" is specified for the parameter device memory, pattern number 5 is displayed.</p></div></div>

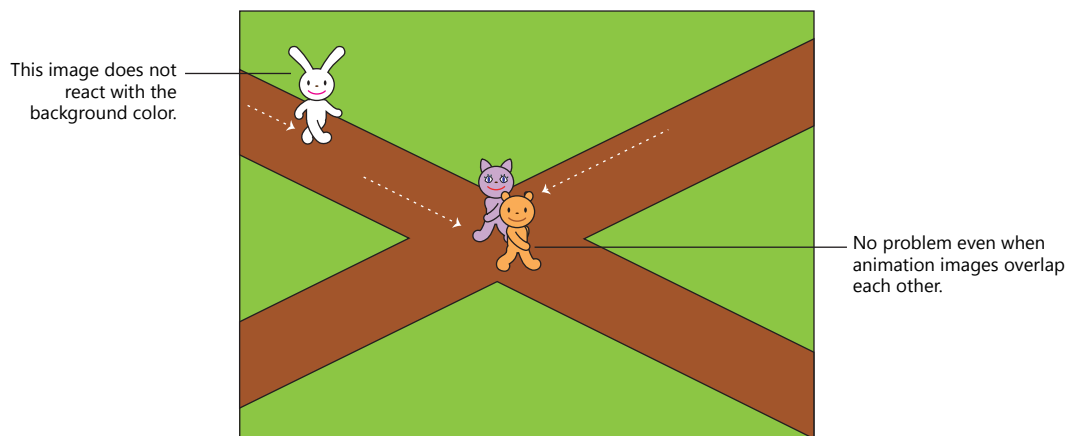
11.2 Animation

11.2.1 Overview

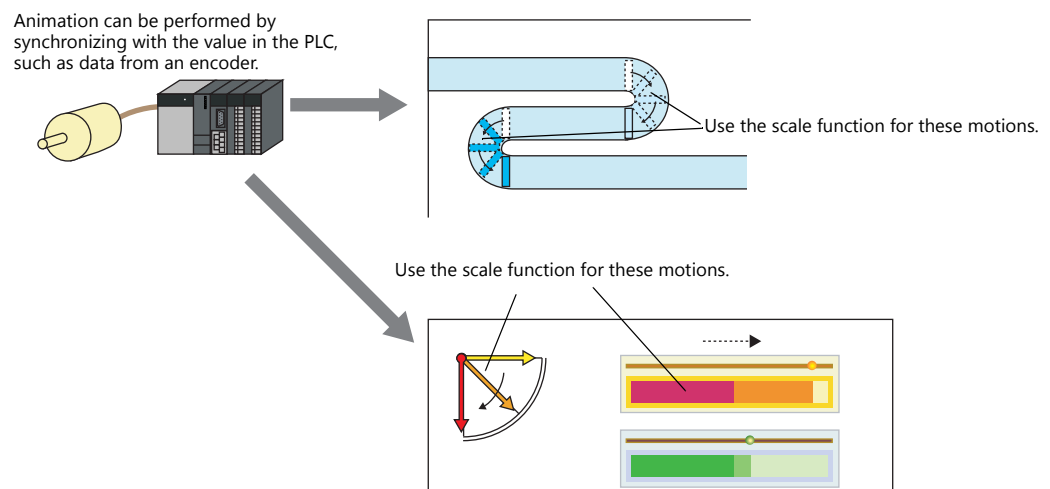
- When the configured bit is set to ON, the picture is displayed. When the bit is set to OFF, the picture is cleared. Movement can be easily set by switching pictures in a position or by moving a picture.



- Graphics can be created with pixels in the "Frame Edit" area. Bitmap data can be imported and used for animation easily.
- An animation image can be made opaque to the background color and display a picture exactly as registered (when transparent color is set). In this case, even if animation pictures overlap each other, the image will not be corrupted or change color.



- It is not necessary to create a complicated program on the PLC for animation. Because animation can be created easily using the settings on the V9 series, interesting screens such as screen savers or logo displays can be created with minimal effort.
- Using the scale function, screens can be created in synchronization with the PLC, which reflect the field conditions in real time.

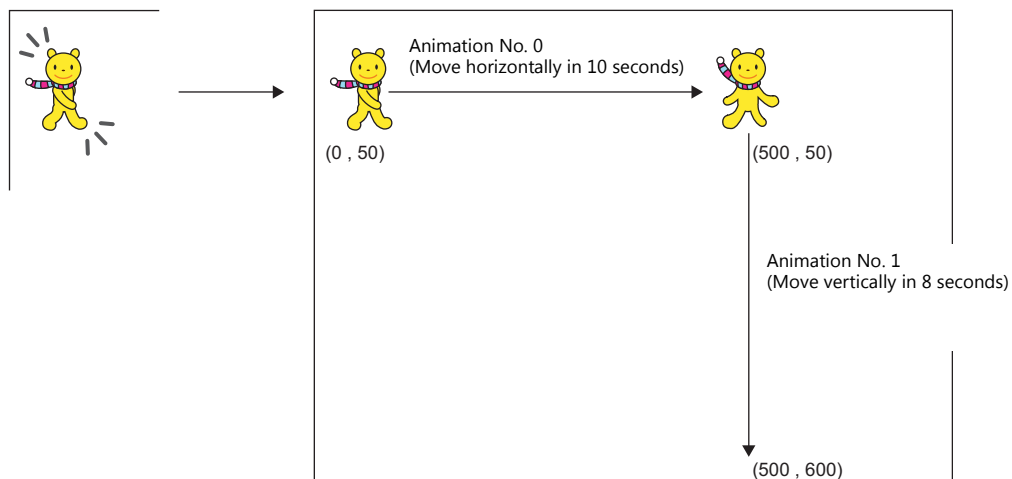


11.2.2 Setting Example

Using an Animation Table

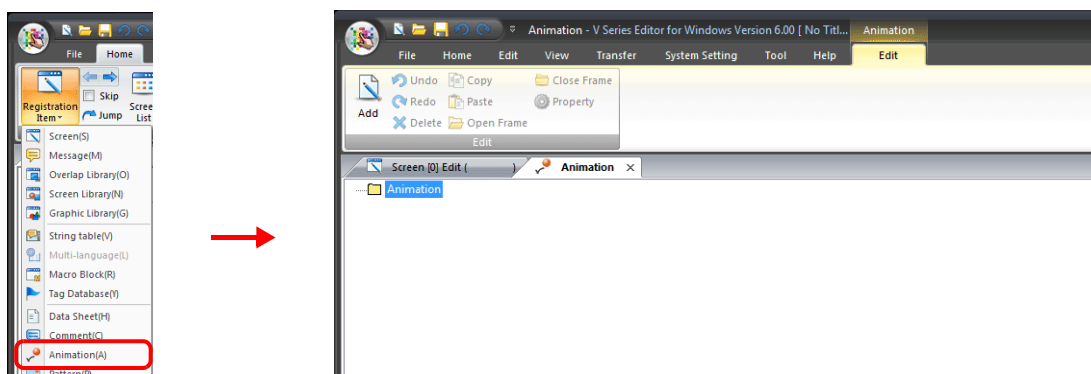
Create the following animation using an animation table.

Display when bit 0 of D100 is set to ON

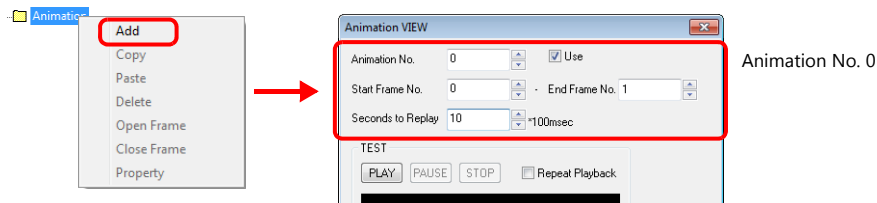


1. Registering animation

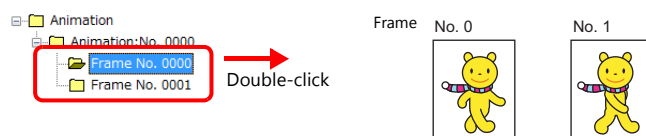
- 1) Click [Home] → [Registration Item] → [Animation]. The [Animation] tab window is displayed.



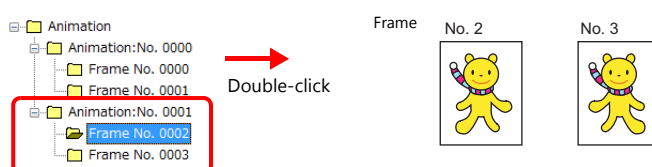
- 2) Right-click on [Animation], select [Add], and set the [Animation VIEW] settings.



- 3) Register frame numbers 0 and 1.

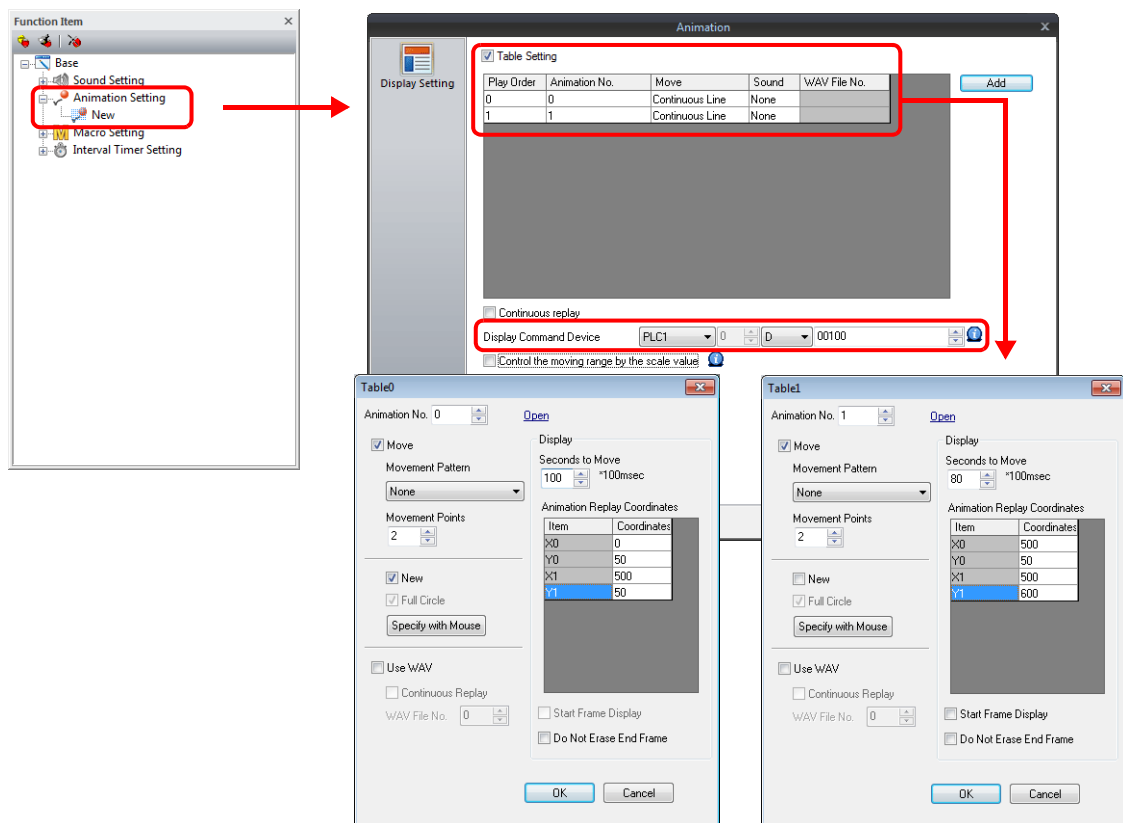


- 4) In the same manner, create a new animation (animation number 1) and frame numbers 2 and 3.



2. Setting animation on the screen

Click [View] → [Function Item] → [Animation Setting] → [New] and configure the animation settings.



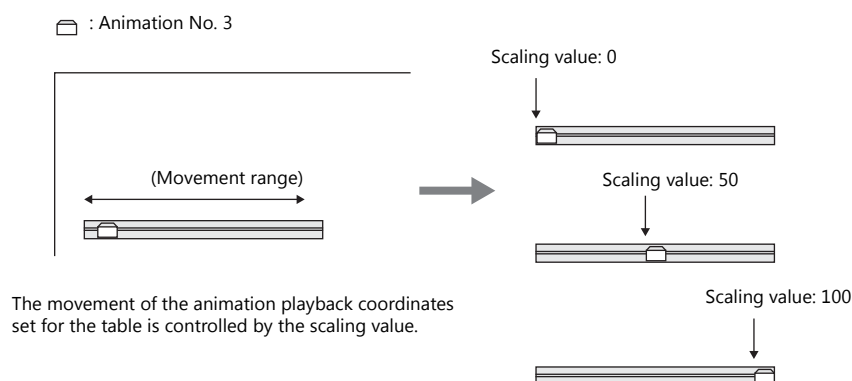
Item	Setting
Table Setting	Selected
Table 0	Animation No. 0
	Move: Continuous Line
	Move
	Movement Pattern: None Movement Points: 2 Seconds to Move: 100* 100 msec Animation Replay Coordinates X0:Y0 0,50 X1:Y1 500,50
Table 1	No sound
	Animation No. 1
	Move: Continuous Line
	Move
	Movement Pattern: None Movement Points: 2 Seconds to Move: 80* 100 msec Animation Replay Coordinates X0:Y0 500,50 X1:Y1 500,600
	No sound
Continuous replay	None
Display Command Device	D100
Control the moving range by the scale value	None

3. Unit Operation

Set bit 0 of D100 to ON. The animation is displayed.

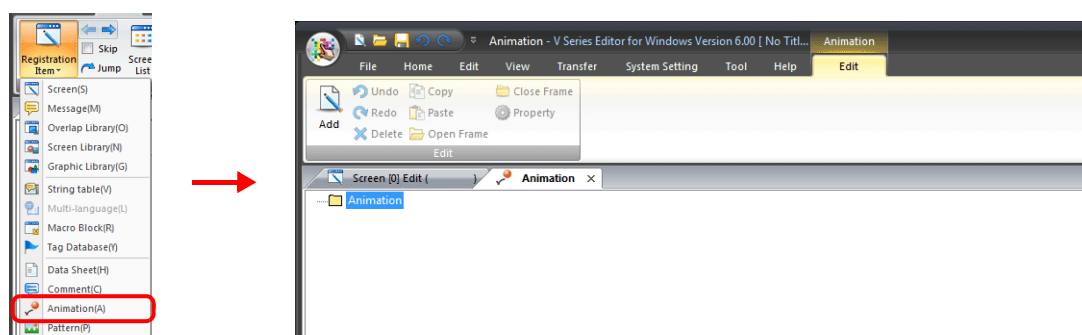
Using Scaling (With Movement)

Create the following animation using scaling. Animation movement is controlled by the change in the scaling value.

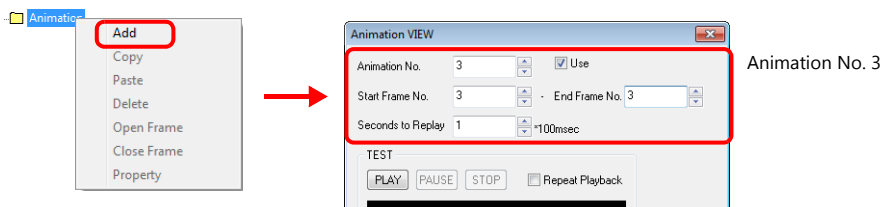


1. Registering animation

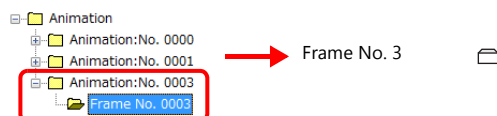
- 1) Click [Home] → [Registration Item] → [Animation]. The [Animation] tab window is displayed.



- 2) Right-click on [Animation], select [Add], and set the [Animation VIEW] settings.

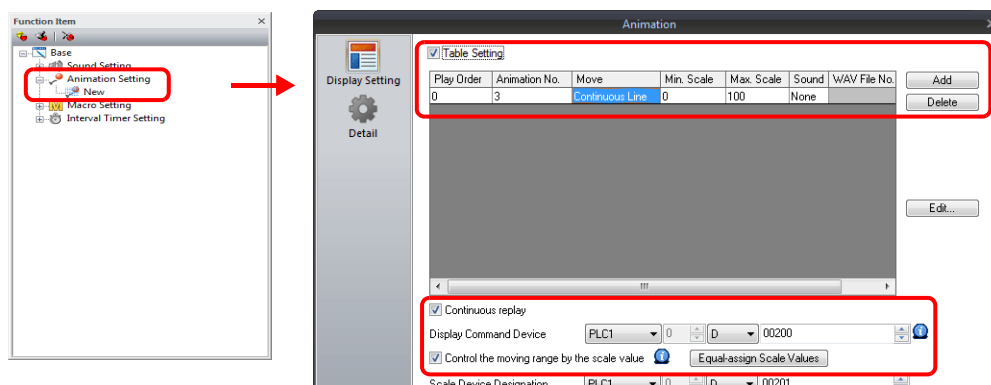


- 3) Register frame number 3.



2. Setting animation on the screen

- Click [View] → [Function Item] → [Animation Setting] → [New] and configure the animation settings.



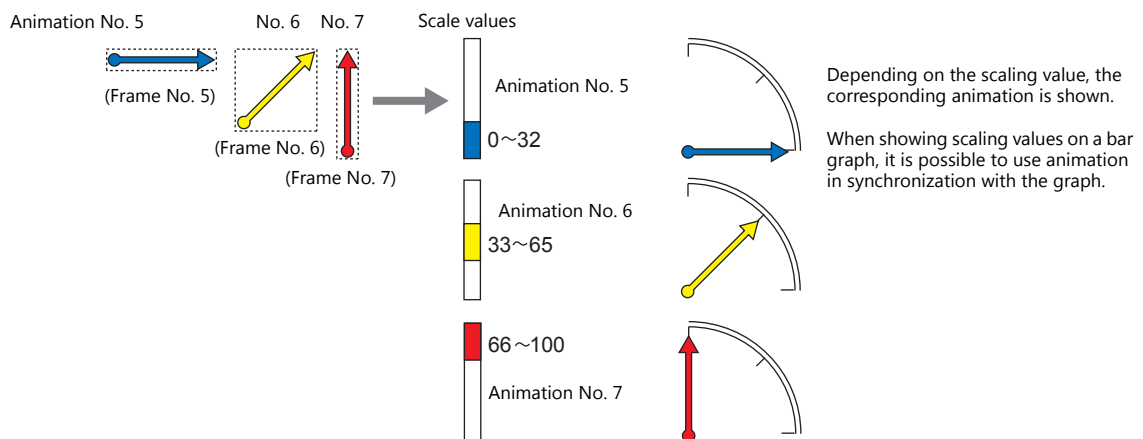
Item		Setting	
Table Setting		Selected	
		Animation No. 3	
		Move: Continuous Line	Move
			Movement Pattern: None
			Movement Points: 2
			Animation Replay Coordinates X0:Y0 0,50 X1:Y1 500,50
			Scale values
		No sound	
Continuous replay		None	
Display Command Device		D200	
Control the moving range by the scale value		Selected	
	Scale Device Designation	D201	

3. Unit Operation

- 1) Set bit 0 of D200 to ON. The animation is displayed.
- 2) Set the scaling value of D201 to move the animation.

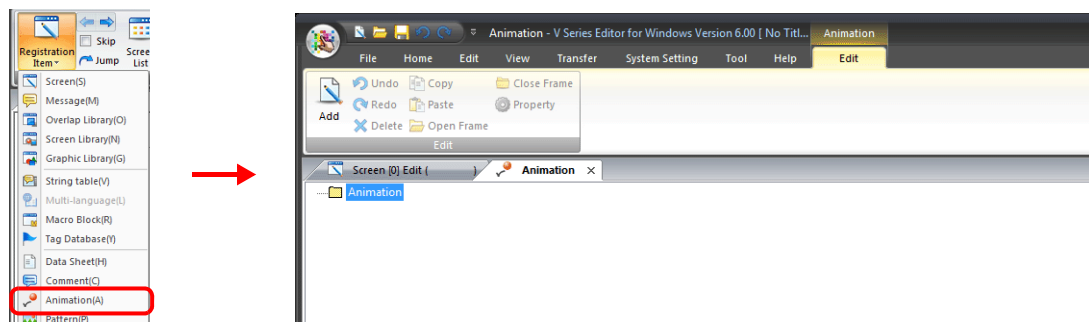
Using Scaling (Without Movement)

Create the following animation. The timing to switch the animation number can be specified using a scaling value.

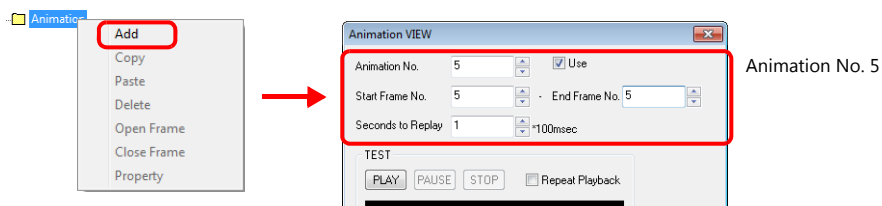


1. Registering animation

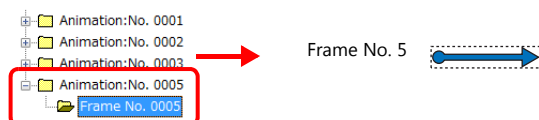
- 1) Click [Home] → [Registration Item] → [Animation]. The [Animation] tab window is displayed.



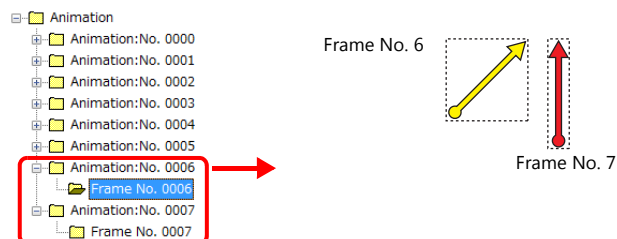
- 2) Right-click on [Animation], select [Add], and set the [Animation VIEW] settings.



3) Register frame number 5.

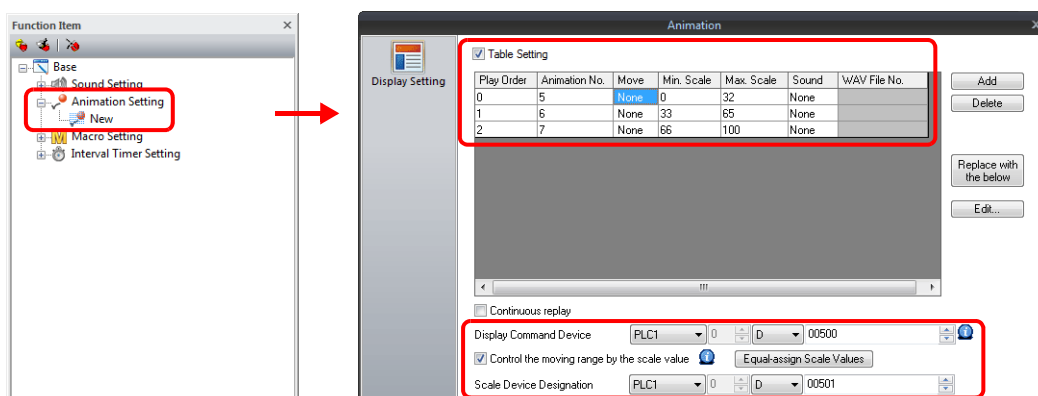


4) In the same manner, register animation number 6 (frame number 6) and animation number 7 (frame number 7).



2. Setting animation on the screen

1) Click [View] → [Function Item] → [Animation Setting] → [New] and configure the animation settings.



Item	Setting
Table Setting	Selected
Table 0	Animation No. 5
	No movement
	Animation playback coordinates X, Y 100, 100
	Scale values
	0 to 32
	No sound
	Animation No. 6
	No movement
	Animation playback coordinates X, Y 100, 100
	Scale values
	33 to 65
	No sound
Table 1	Animation No. 7
	No movement
	Animation playback coordinates X, Y 100, 100
	Scale values
Table 2	66 to 100
	No sound
Continuous replay	None
Display Command Device	D500
Control the moving range by the scale value	Selected
Scale Device Designation	D501

3. Unit Operation

- Set bit 0 of D500 to ON. The animation is displayed.
- Set the scaling value of D501 to change the animation number.

11.2.3 Detailed Settings

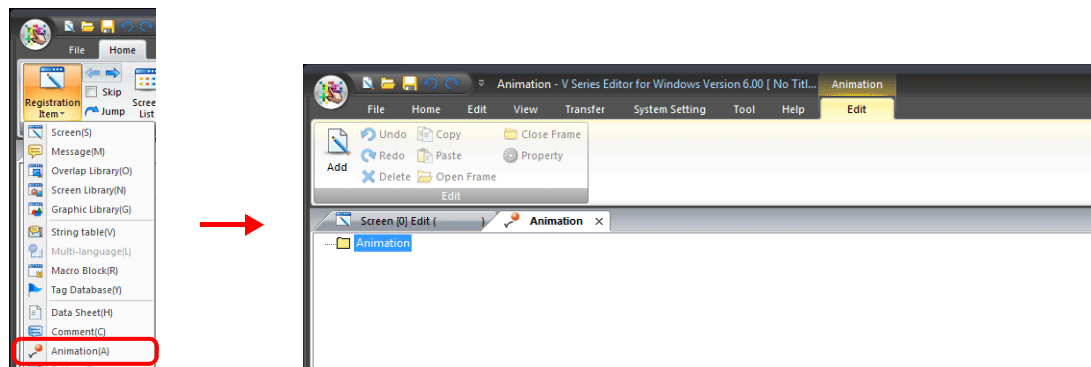
Registering Animation

Animations are defined and registered in the [Animation] tab window.

Opening the Registration Window

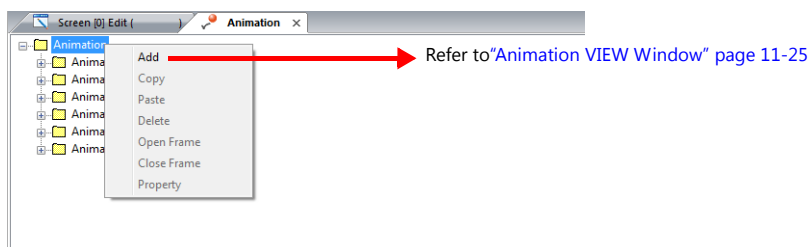
Click [Home] → [Registration Item] → [Animation] to display the [Animation] tab window.

Configure settings in the [Animation VIEW] window and perform frame editing in this window.

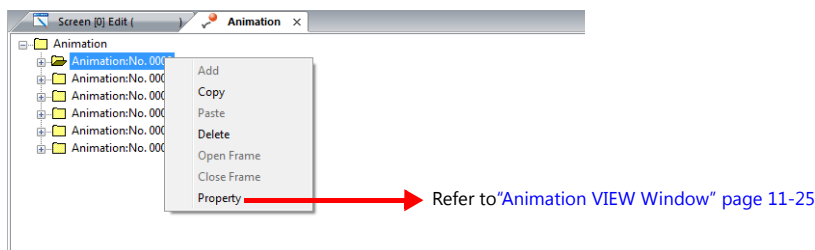


The menu items on the right-click menu differ depending on the folder that was right-clicked, [Animation], [Animation No. xxxx] or [Frame No. xxxx].

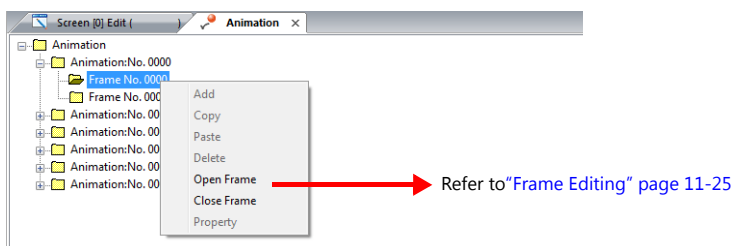
- [Animation] folder



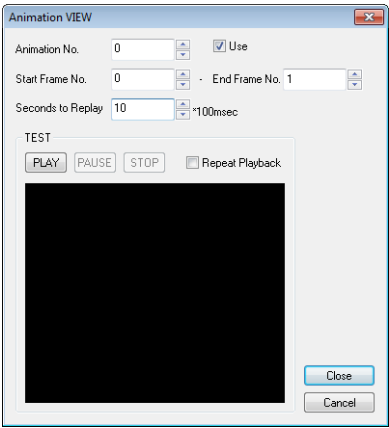
- [Animation No. xxxx] folder



- [Frame No. xxxx] folder

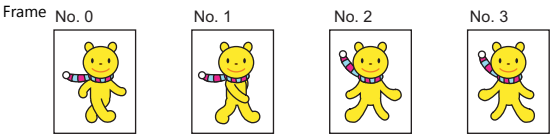


Animation VIEW Window

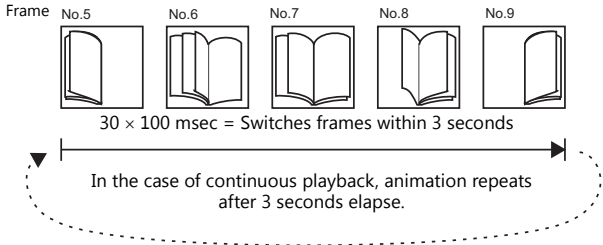


Item	Description								
Use	When this checkbox is selected, an animation number is set. To clear the setting, deselect this checkbox.								
Animation No.	Displays the animation number currently being edited. The animation number can be changed by clicking the up/down arrow buttons. Values can also be entered directly without using the up/down buttons. Setting range: 0 to 1023								
Start Frame No. - End Frame No.	Set the range (number) of frames ^{*1} to be used for animation. Setting range: 0 to 1022								
Seconds to Replay (× 100 msec) ^{*2}	Set the cycle (speed) for changing the frames specified for [Start Frame No.] and [End Frame No.].								
TEST	When the frames have been registered, the actual motion of the animation can be checked. <table><tr><td>PLAY</td><td>The set frame is displayed within the time set for [Seconds to Replay].</td></tr><tr><td>PAUSE</td><td>Pause playback.</td></tr><tr><td>STOP</td><td>Stop playback.</td></tr><tr><td>Repeat Playback</td><td>Normally playback is only performed once when the [PLAY] button is clicked. Select this checkbox to enable continuous playback.</td></tr></table>	PLAY	The set frame is displayed within the time set for [Seconds to Replay].	PAUSE	Pause playback.	STOP	Stop playback.	Repeat Playback	Normally playback is only performed once when the [PLAY] button is clicked. Select this checkbox to enable continuous playback.
PLAY	The set frame is displayed within the time set for [Seconds to Replay].								
PAUSE	Pause playback.								
STOP	Stop playback.								
Repeat Playback	Normally playback is only performed once when the [PLAY] button is clicked. Select this checkbox to enable continuous playback.								

^{*1} A "frame" refers to a single image used in animation. Drawing is performed on a pixel unit basis.



^{*2} Display example
Start Frame No.: 5
End Frame No.: 9
Seconds to Replay: 30 × 100 msec
Animation is performed as shown below.



Frame Editing

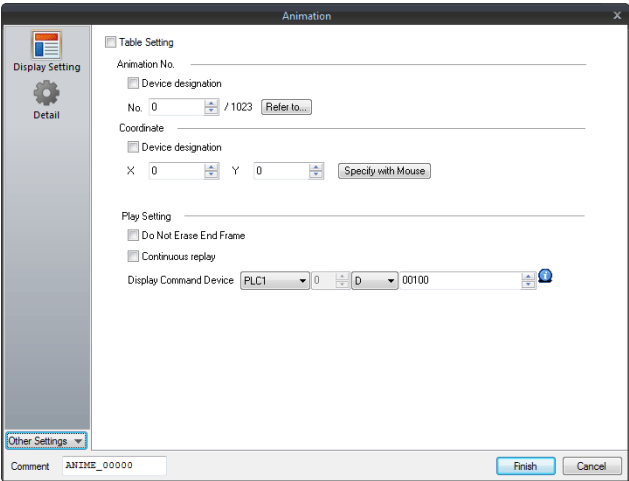
- For details on frame editing and registration, refer to the V9 Series Operation Manual.
- A maximum of 1023 frames can be registered (0 to 1022).

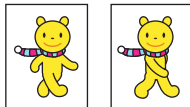

Animation Settings

Display Settings

[Table Setting]: Unselected

Specify one animation number for playback. Specifying a device memory address allows changing the animation number and display position.

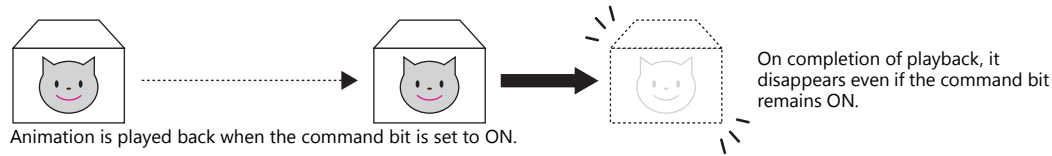


Item		Description																																															
Animation No.		Set the animation number specification method. Unselected: Set one animation number. Selected: Set the animation number using a device memory.																																															
Coordinate		Set the display position of the animation. Unselected: Set the X and Y coordinates. Selected: Set the X and Y coordinates using a device memory.																																															
Play Setting	Do Not Erase End Frame *1	Set the operation to perform when animation playback ends. Unselected On completion of playback, the image disappears even if the command bit remains ON. Selected The end frame is shown even after completion of replay while the command bit remains ON. When the command bit is set to OFF, the end frame disappears.																																															
	Continuous replay	Set the number of times to play back the animation. Unselected: The animation is played back only once. Selected: The animation is played back continuously.																																															
	Display Command Device	<p>This is the device memory to be used for displaying the animation on the screen.</p> <table><tr><td colspan="10">MSB</td><td colspan="6">LSB</td></tr><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td><td></td></tr></table> <p>System reserved ("0" setting) (3) Pause/resume movement (2) Pause/resume playback (1) Show/hide animation</p> <p>(1) Show/hide animation (bit 0) [1] (ON): Show the corresponding animation number. [0] (OFF): Hide the currently displayed animation.</p> <p>(2) Pause/resume playback (bit 1) [1] (ON): Pause the currently playing animation. [0] (OFF): Resume playback of the paused animation.</p> <div><div><p>Playing</p><p>Frames are switched in accordance with the animation setting.</p></div><div><p>Paused</p><p>The animation pauses with the frame displayed when bit 1 is set to ON.</p></div><p>Set bit 1 to ON.</p></div>	MSB										LSB						15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0		
MSB										LSB																																							
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																																		
0	0	0	0	0	0	0	0	0	0	0	0	0																																					

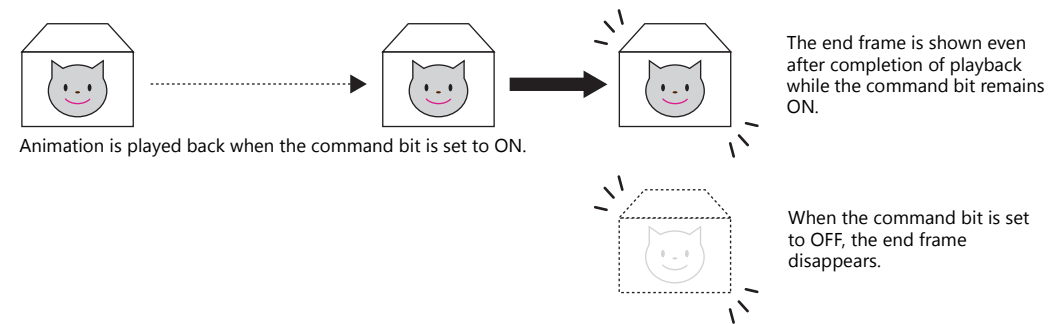
Continued

Item		Description
Play Setting	Display Command Device	(3) Pause/resume movement (bit 2) *2 [1] (ON): Pause the currently moving animation. [0] (OFF): Resume movement of the animation.

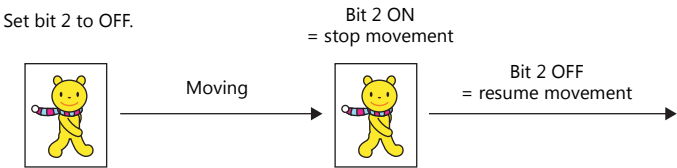
- *1 Do Not Erase End Frame
- Checkbox unselected



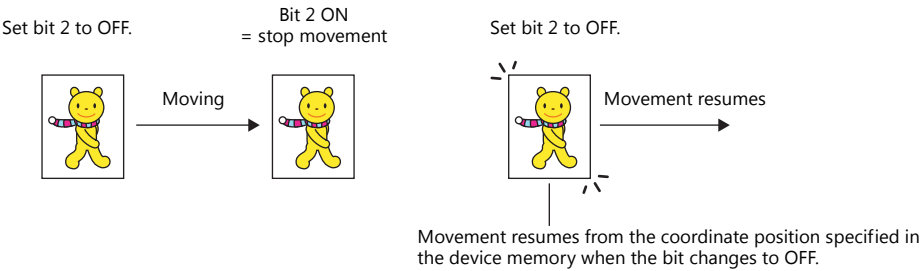
- Checkbox selected
- Animation can be shown or hidden according to the status of the command device memory, which facilitates display control from an external device.



- *2 Pause/resume movement (bit 2)
- When movement is selected on the animation table ([Table Setting]: selected), movement is resumed from the position where it was paused.

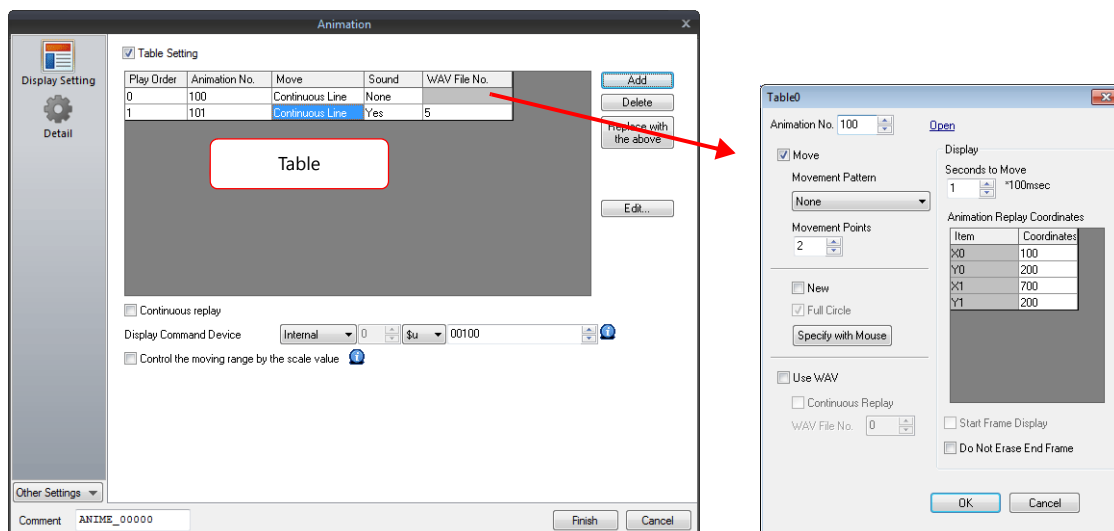


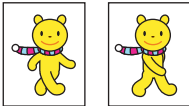

- When movement occurs using the coordinates specified by a device memory address, movement resumes according to the value specified for [Display Command Device].



[Table Setting]: selected

The multiple animations registered in the table are played back in order.



Item	Description																																
Table	Register animation numbers to play back using the [Add] button. Refer to “Table 0 to 15” page 11-29.																																
Continuous replay	Set the number of times to play back the animation. Unselected: The animation is played back only once. Selected: The animation is played back continuously.																																
Display Command Device	<p>This is the device memory to be used for displaying the animation on the screen.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>System reserved (“0” setting)</div><div>(3) Pause/resume movement</div><div>(2) Pause/resume playback</div><div>(1) Show/hide animation</div></div> <p>(1) Show/hide animation (bit 0) [1] (ON): Show the corresponding animation number. [0] (OFF): Hide the currently displayed animation.</p> <p>(2) Pause/resume playback (bit 1) [1] (ON): Pause the currently playing animation. [0] (OFF): Resume playback of the paused animation.</p> <div><div><div>Playing</div><div></div><div>Frames are switched in accordance with the animation setting.</div></div><div><div>Paused</div><div></div><div>The animation pauses with the frame displayed when bit 1 is set to ON.</div></div><div>Set bit 1 to ON.</div></div> <p>(3) Pause/resume movement (bit 2) ^{*1} [1] (ON): Pause the currently moving animation. [0] (OFF): Resume movement of the animation.</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0			
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0																					
Control the moving range by the scaling value	Use a scaling value. The settings for scaling values are available when this checkbox is selected. Refer to “Scaling” page 11-32.																																

*1 For details, refer to [page 11-27](#).

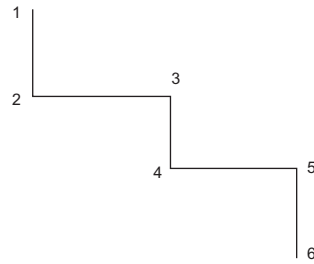
Table 0 to 15

Register up to 16 animations to play back in sequence.

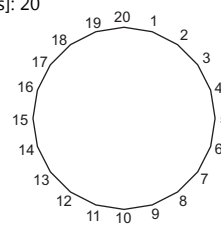
Item	Description																						
Animation No.	Set the animation number to play back.																						
Move	<p>Set whether or not to move the animation.</p> <p>Unselected: No movement Selected: Move</p>																						
No movement	<p>Configure the following settings.</p> <table> <tr> <td>Animation Replay Coordinates</td><td>Set the display position of the animation.</td></tr> <tr> <td>Seconds to Move (× 100 msec)</td><td>Set the playback time for the set animation number.</td></tr> </table>	Animation Replay Coordinates	Set the display position of the animation.	Seconds to Move (× 100 msec)	Set the playback time for the set animation number.																		
Animation Replay Coordinates	Set the display position of the animation.																						
Seconds to Move (× 100 msec)	Set the playback time for the set animation number.																						
Move	<p>Set the following items for straight line path.</p> <table> <tr> <td>Movement Pattern ^{*1}</td><td>None</td></tr> <tr> <td>Movement Points</td><td>Specify the number of movement points. Range: 2 to 32</td></tr> <tr> <td>Animation Replay Coordinates</td><td>Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.</td></tr> <tr> <td>New ^{*2} Specify with Mouse</td><td>Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected</td></tr> <tr> <td>Seconds to Move (× 100 msec)</td><td>Set the movement time for the set animation number.</td></tr> </table> <p>Set the following items for circular and arc-like paths.</p> <table> <tr> <td>Movement Pattern ^{*1}</td><td>Circle (Clockwise) Circle (Counterclockwise)</td></tr> <tr> <td>No. of Divisions ^{*1}</td><td>Specify the number of divisions of the circumference. Range: 2 to 31</td></tr> <tr> <td>Animation Replay Coordinates</td><td>Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.</td></tr> <tr> <td>New ^{*2} Specify with Mouse</td><td>Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected</td></tr> <tr> <td>Full Circle ^{*2}</td><td>Select this checkbox when a full circle is used for the path.</td></tr> <tr> <td>Seconds to Move (× 100 msec)</td><td>Set the movement time for the set animation number.</td></tr> </table>	Movement Pattern ^{*1}	None	Movement Points	Specify the number of movement points. Range: 2 to 32	Animation Replay Coordinates	Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.	New ^{*2} Specify with Mouse	Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected	Seconds to Move (× 100 msec)	Set the movement time for the set animation number.	Movement Pattern ^{*1}	Circle (Clockwise) Circle (Counterclockwise)	No. of Divisions ^{*1}	Specify the number of divisions of the circumference. Range: 2 to 31	Animation Replay Coordinates	Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.	New ^{*2} Specify with Mouse	Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected	Full Circle ^{*2}	Select this checkbox when a full circle is used for the path.	Seconds to Move (× 100 msec)	Set the movement time for the set animation number.
Movement Pattern ^{*1}	None																						
Movement Points	Specify the number of movement points. Range: 2 to 32																						
Animation Replay Coordinates	Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.																						
New ^{*2} Specify with Mouse	Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected																						
Seconds to Move (× 100 msec)	Set the movement time for the set animation number.																						
Movement Pattern ^{*1}	Circle (Clockwise) Circle (Counterclockwise)																						
No. of Divisions ^{*1}	Specify the number of divisions of the circumference. Range: 2 to 31																						
Animation Replay Coordinates	Specify the coordinates of the movement points. These can be specified with direct input or by using the mouse.																						
New ^{*2} Specify with Mouse	Specify the coordinates of the movement points using the mouse. Not set: Selected Already set: Unselected																						
Full Circle ^{*2}	Select this checkbox when a full circle is used for the path.																						
Seconds to Move (× 100 msec)	Set the movement time for the set animation number.																						
Use WAV	<p>Set whether or not to play an audio file.</p> <p>Unselected: No playback. Selected: Play back an audio file. The following movement settings become available when this checkbox is selected.</p>																						
Continuous Replay	Continuously play back an audio file.																						
WAV File No.	Set the audio file number.																						
Start Frame Display ^{*3}	Baton pass animation can be performed. This setting is available for tables other than table number 0.																						
Do Not Erase End Frame ^{*4}	<p>Set the operation to perform when animation playback ends.</p> <p>Unselected On completion of playback, the image disappears even if the command bit remains ON.</p> <p>Selected The end frame is shown even after completion of replay while the command bit remains ON. When the command bit is set to OFF, the end frame disappears.</p>																						

*1 Movement Pattern/Movement Points/No. of Divisions

Example: Straight line
[Movement Points]: 6

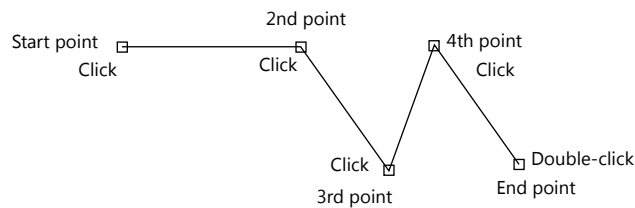


Example: Circle
[No. of Divisions]: 20

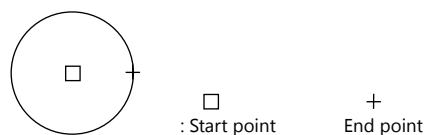


*2 [Specify with Mouse]/[New]

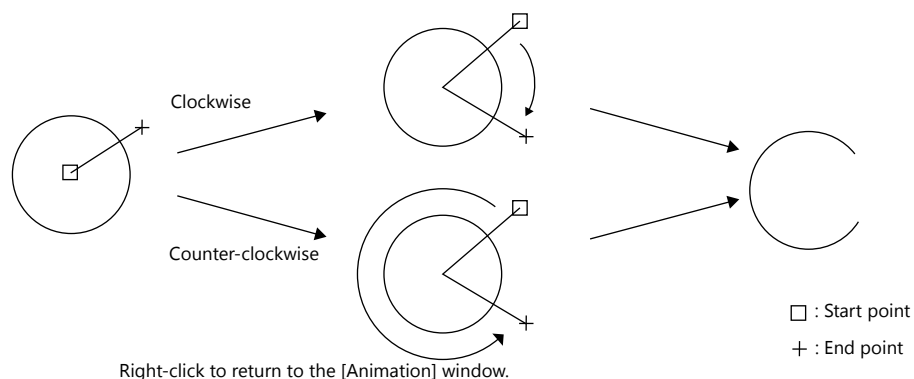
- When [Movement Pattern] is set to "None", click the desired points on the screen in the same way as drawing a continuous straight line. The coordinates are defined in order. Double-click to accept the points and display the window again. The number of clicks is automatically set for [Movement Points]. Specifying with mouse is automatically finished when 32 points are set.



- When [Movement Pattern] is set to "Circle (Clockwise/Counterclockwise)" with [Full Circle], specify the start and end points.

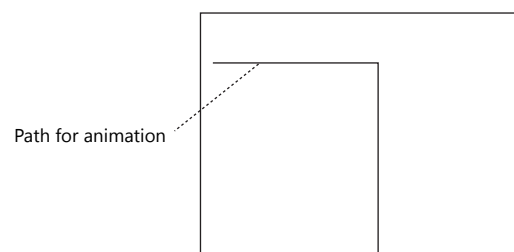
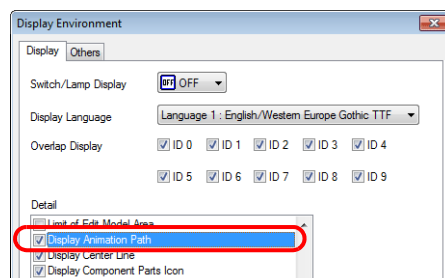


- When [Movement Pattern] is set to "Circle (Clockwise/Counterclockwise)" with [Arc], specify the start and end points.

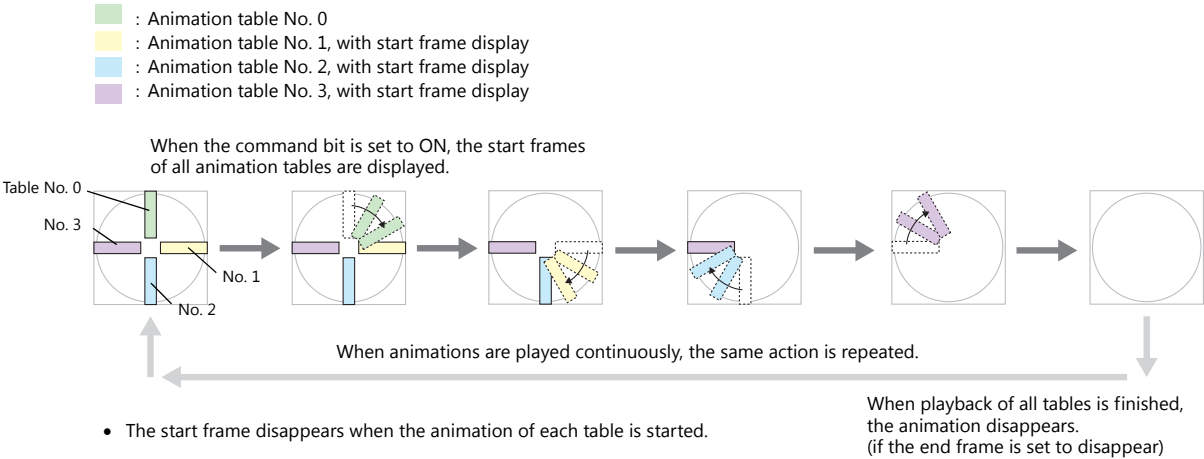


Right-click to return to the [Animation] window.

A configured path can be modified by clicking [Specify with Mouse] when the [New] checkbox is unselected. To show the path on the editing screen, select the [Display Animation Paths] checkbox in the [Display Environment] window. A straight line, continuous straight line, circle, or arc created by drawing is displayed in the editing window.

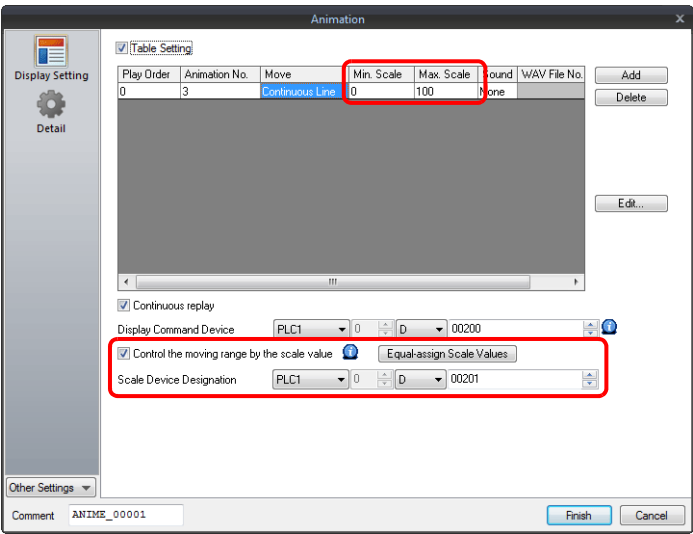


*3 Start Frame Display



*4 For details, refer to [page 11-27](#).

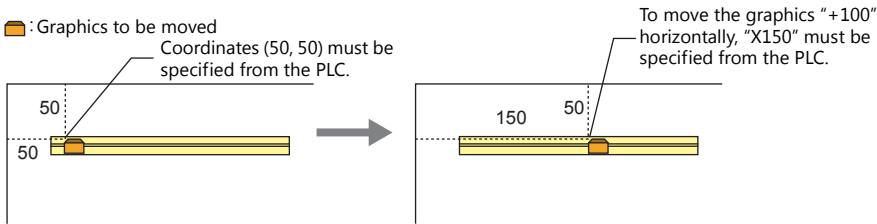
Scaling



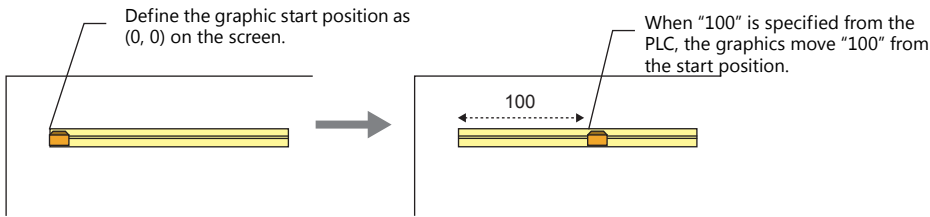
Item	Description
Control the moving range by the scaling value *1	Use a scaling value. The following setting items for scaling values become active.
Scale Device Designation	Set the device memory that specifies the scaling value.
Min. Scale	Set the minimum scaling value of the animation table.
Max. Scale	Set the maximum scaling value of the animation table.
Equal-assign Scale Values *2	Equally assign scaling values to the animation in the table.

*1 Difference between using and not using scaling values

- When scaling values are not used:

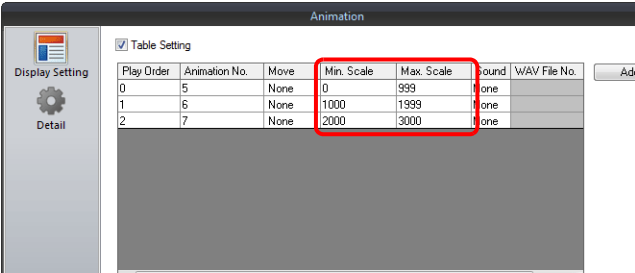
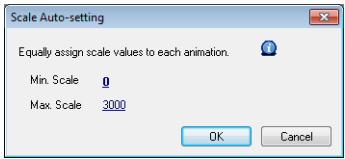


- When scaling values are used:

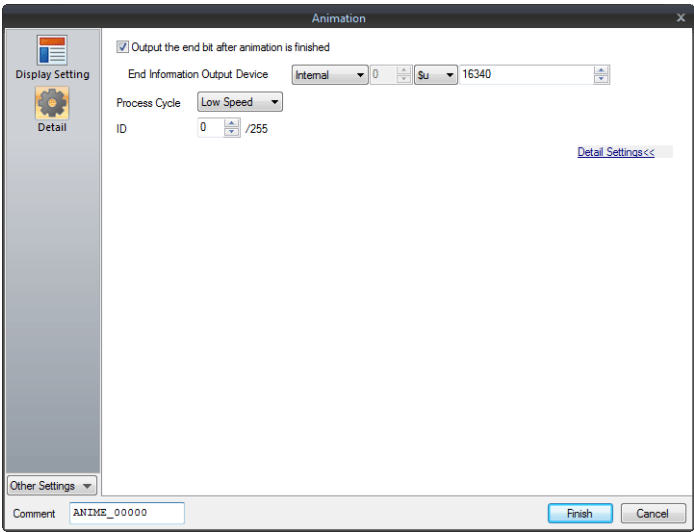


*2 Setting example

When assigning scaling values equally in the range from 0 to 3000 using animation tables No. 0 to No. 2 :



Detail



Item	Description																																
Output the end bit after animation is finished	<p>This is the device memory to be used for checking the status of animation.</p> <ul style="list-style-type: none">• In the case of device memory designation, the end bit is output when the animation playback time (seconds) has elapsed.• In the case of using an animation table, the end bit is output when all of the animations in the animation table have been played back.• If the animation is finished halfway through playback, the end bit is not output.• The end bit is not output when using scaling. <div><div>MSB</div><div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table></div><div>LSB</div></div> <div><div></div><div>System reserved ("0" setting)</div><div>End of animation</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
Process Cycle	Set a cycle for the V9 series to read the PLC data while it is communicating with the PLC. For details, refer to "1.2 Process Cycle".																																
ID	Set the ID.																																

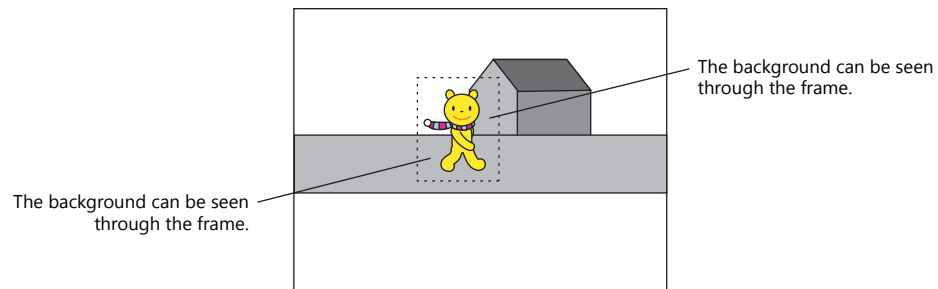
11.2.4 Notes

Animation Setting Position

An animation can be set only on a base screen. Note that you cannot register it on an overlap screen.

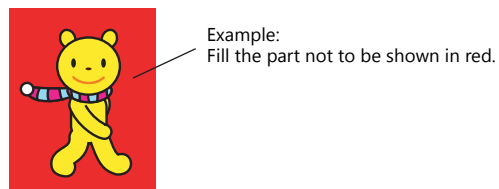
Transparency

A part of a picture (frame) in the registered animation can be hidden.

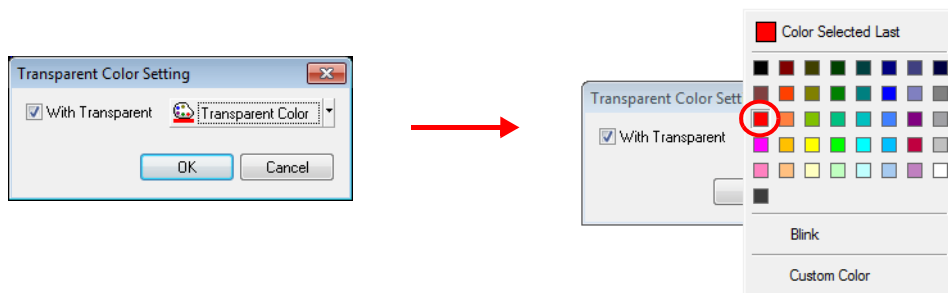


Transparent color setting for frame

1. Fill out the non-display area of each frame using a color different from the color of the display area in the [Frame Edit] tab window.



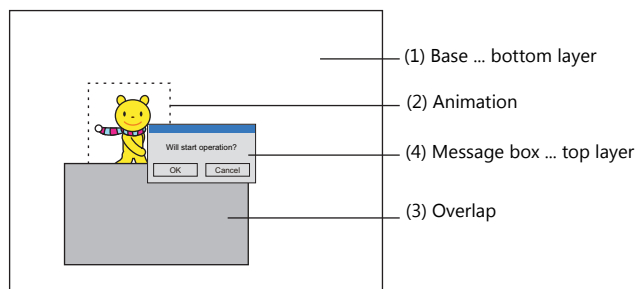
2. Click [Transparent Color Setting] on the [Edit] menu. Select the [With Transparent] checkbox and select the red color used in step 1.



This makes the color in the non-display area transparent. When displaying the frame on the screen, the background can be seen through the non-display area.

Structure of Layers

Animations are displayed behind overlaps on the V9 series unit.



Restrictions

- **Frame size limit**
The maximum capacity per frame is 1 MB.
In the case of capturing a bitmap or JPEG file larger than 1 MB, the file will be automatically divided into 1 MB segments so that the bitmap or JPEG can be captured. (Files with a resolution of up to 1920×1080 can be captured.)
- **Maximum number of movements**
Up to 256 animation settings can be configured for each screen. However, the maximum number of animations that can be displayed simultaneously is 64.
Even if the bit is set to ON, the 65th and subsequent animations will not be displayed.

MEMO

MONITOUCH



12 Message

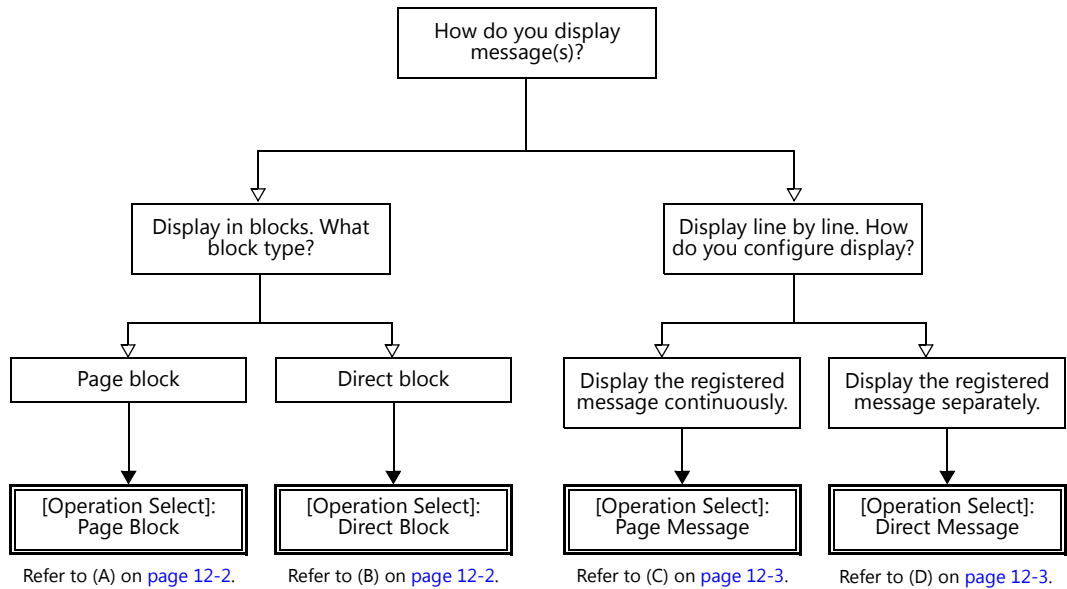
12.1 Message Mode

12.2 Displaying Comments

12.1 Message Mode

12.1.1 Overview

This function displays messages on the screen by specifying the line number of a message previously registered in the message registration area (message editing) or by grouping these messages into blocks and specifying the block number(s). The message mode has four kinds of display configurations as shown below.



Other message display methods are described in "5.3 Message Display" page 5-28 and "8 Alarm".

How to Specify Block Numbers

If [Operation Select] is set to [Page Block] or [Direct Block] in the message mode, specify the [Page Block] or [Direct Block] number to which the message to display is registered.

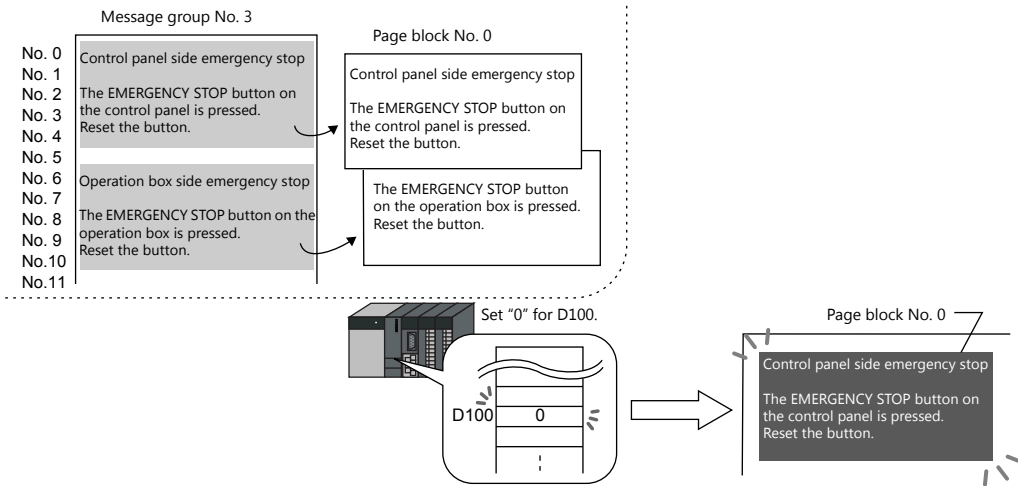
A [Operation Select]: Page block

Register the message that was previously registered in the message editing area as [Page Block].

The corresponding "page block" is displayed on the screen.

To display a page block on the screen, there are two ways: changeover with a switch or changeover with respect to data in a device memory address.

For setting examples, refer to "Displaying Messages (Page Blocks)" page 12-4.

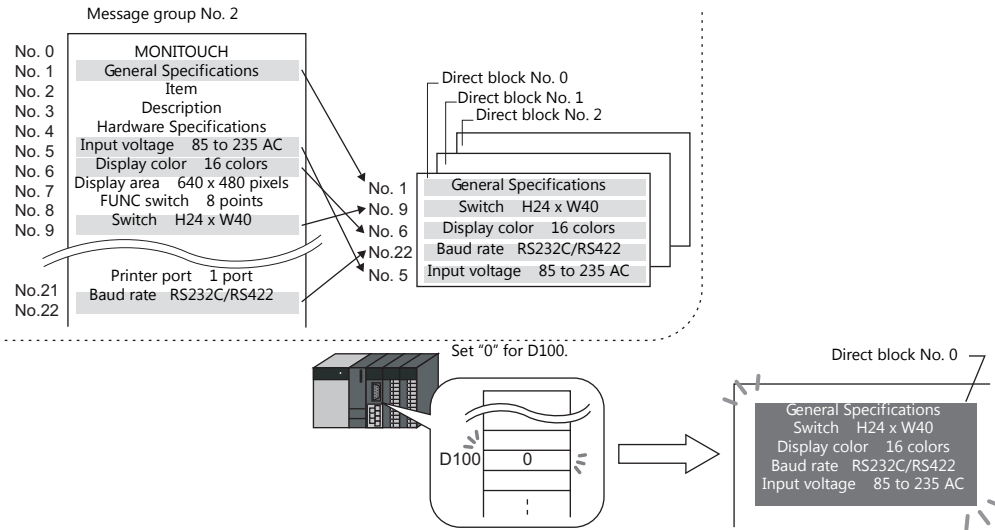


B [Operation Select]: Direct block

Register the message that was previously registered in the message editing area as [Direct Block].

The corresponding "direct blocks" are displayed on the screen.

To display a direct block on the screen, there are two ways: changeover with a switch or changeover with respect to data in a device memory address.

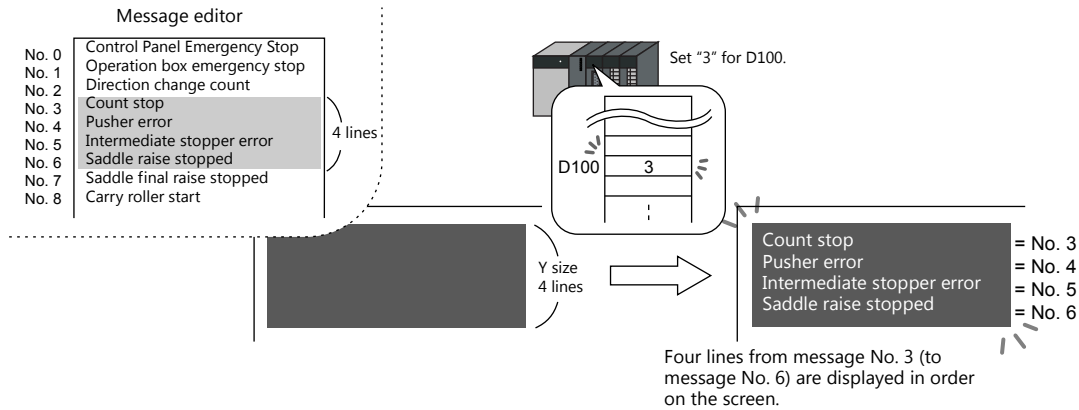


How to Specify Message Numbers

If [Operation Select] is set to [Page Message] or [Direct Message] in the message mode, always specify the number of the message to display.

C [Operation Select]: Page message

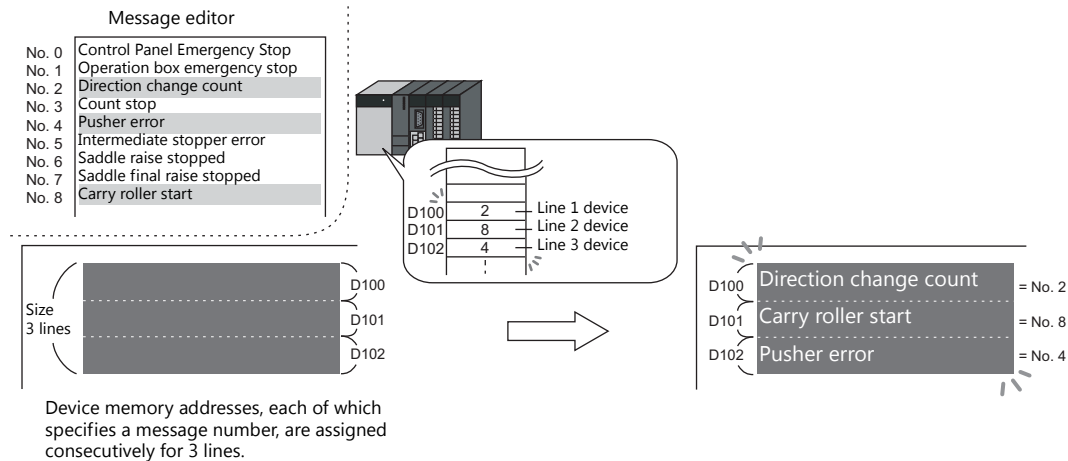
Specify the line number of the top message to display. Several lines of the message, of the number specified, are continuously displayed within the display area on the screen.



D [Operation Select]: Direct message

One device memory address is automatically assigned to each line in the message display area. Specify the message number to display based on the assigned device memory address.

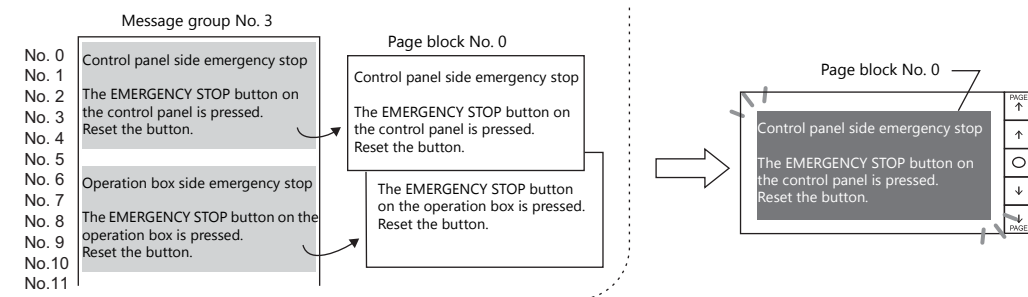
A message specified by the device memory address is displayed on the screen.



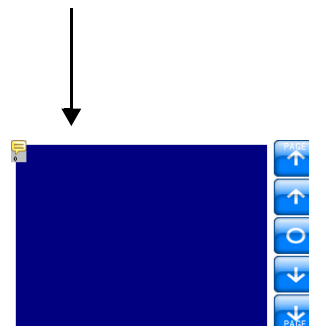
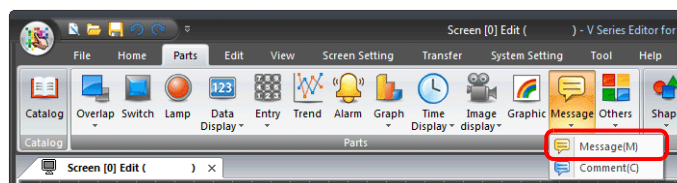
12.1.2 Setting Examples

Displaying Messages (Page Blocks)

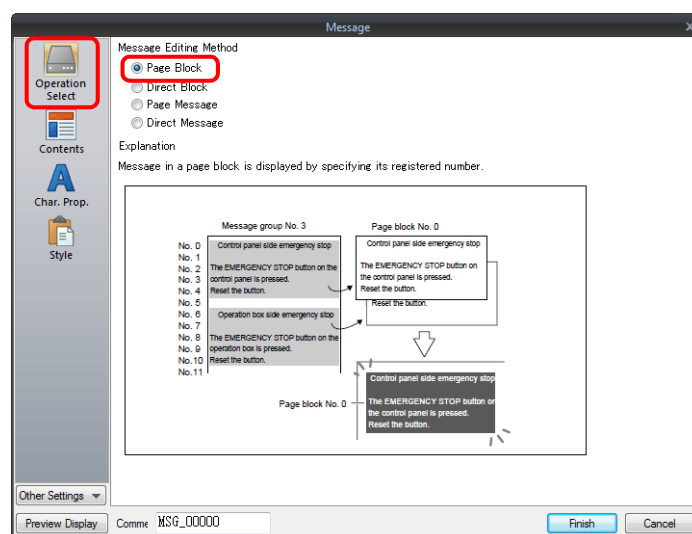
Register a message to a page block and display the message by changing the block number using a switch.



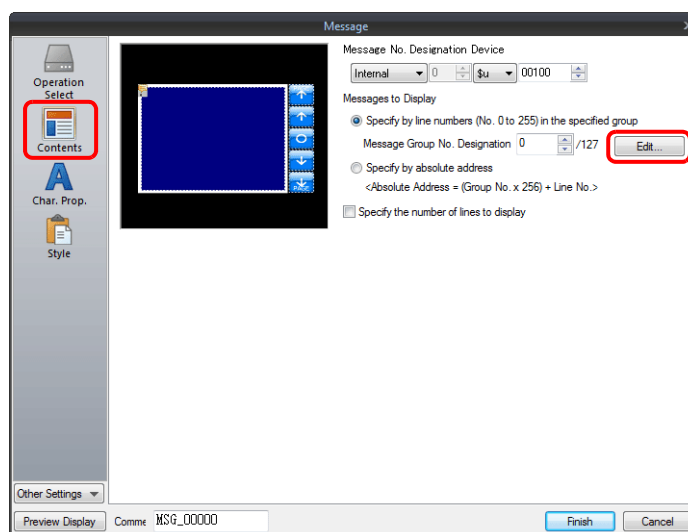
1. Click [Parts] → [Message] → [Message] and place a message mode part on the screen.



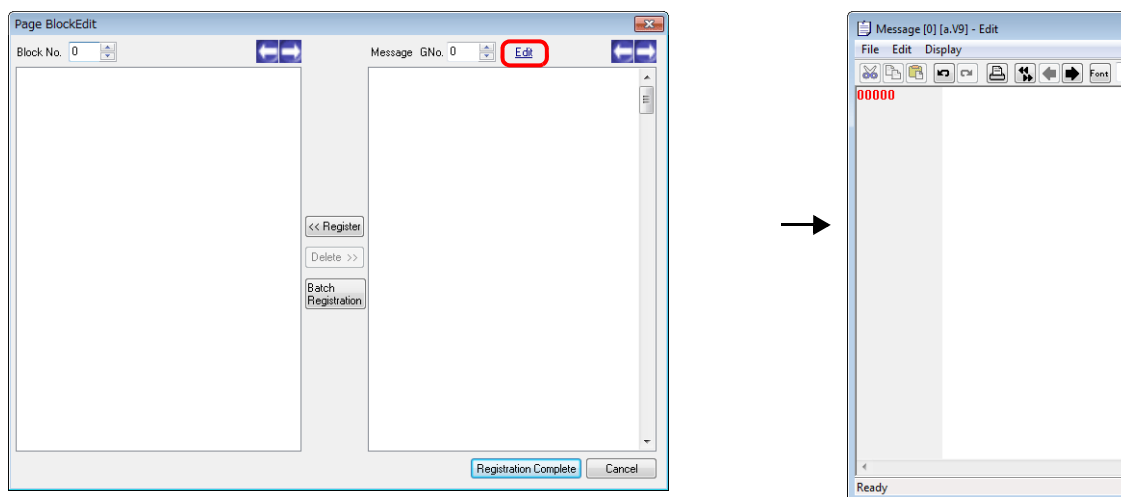
2. Double-click on the message mode part to display the settings window. Configure the [Operation Select] settings as shown below.



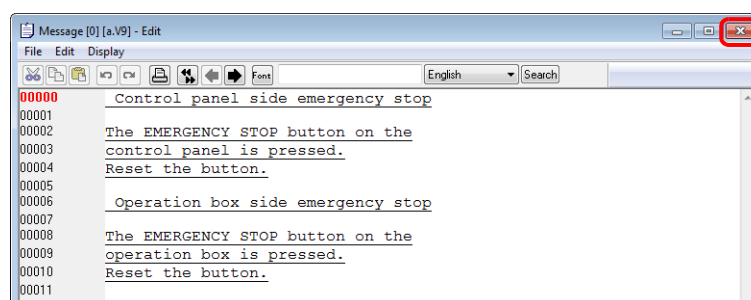
- Click [Contents] and configure the settings as shown below.
Click [Edit] to register a message for display.



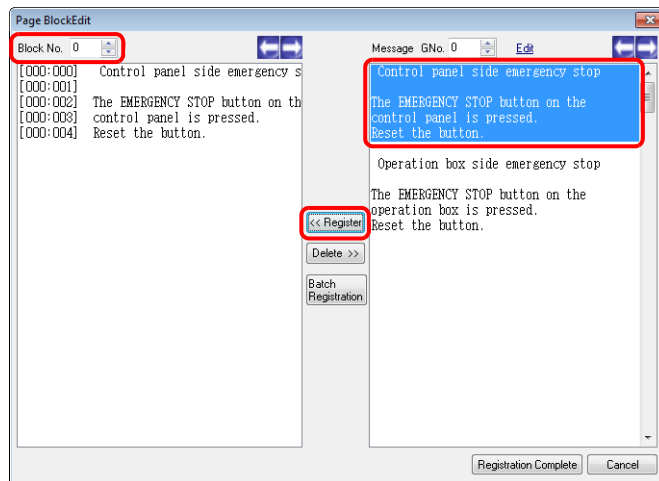
- Click [Edit] in the [Page Block Edit] window to display the [Message Edit] window.



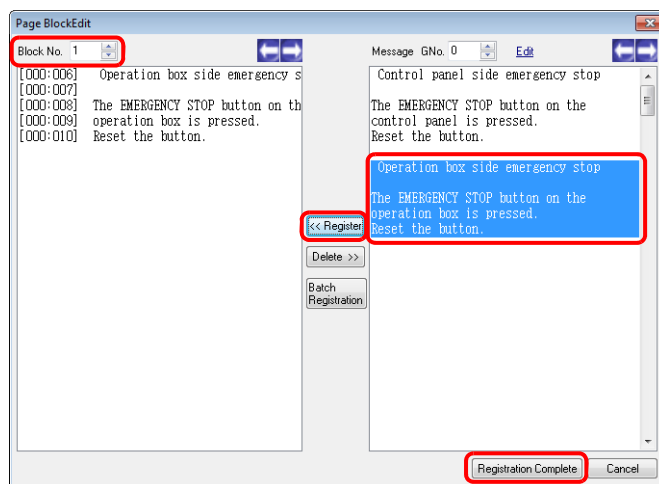
- Register the following message and then close the [Message Edit] window.



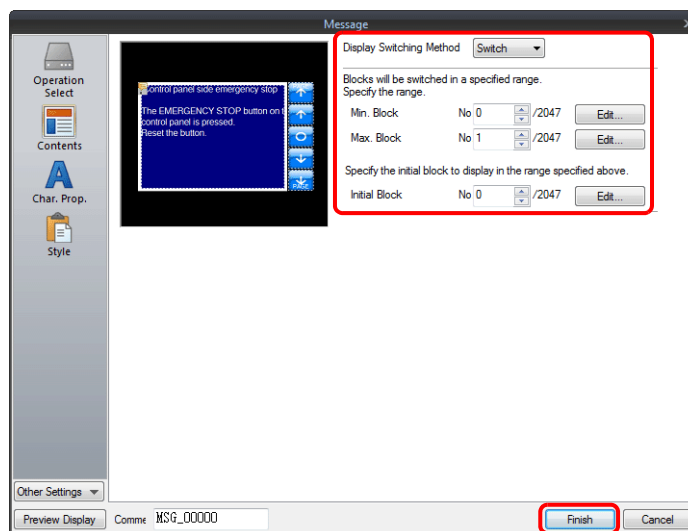
6. Register the message registered in the [Message Edit] window to page block number 0 as shown below.



7. In the same manner, register the message again to page block number 1 as shown below and click [Registration Complete].



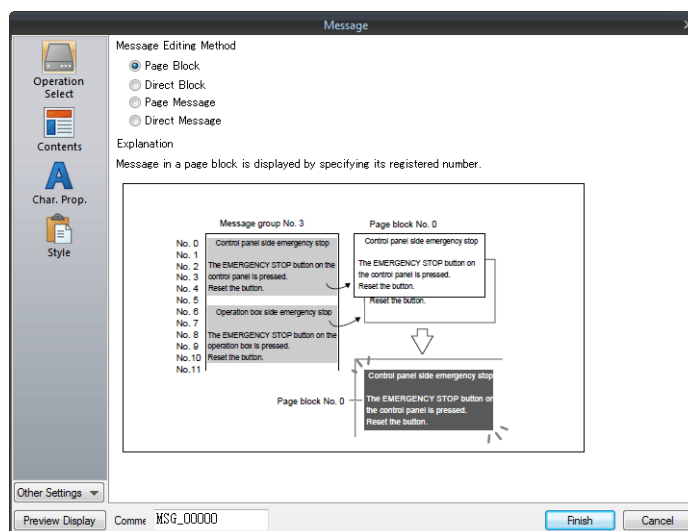
8. Configure the settings as shown below and click [Finish].



This completes the necessary settings.

12.1.3 Detailed Settings

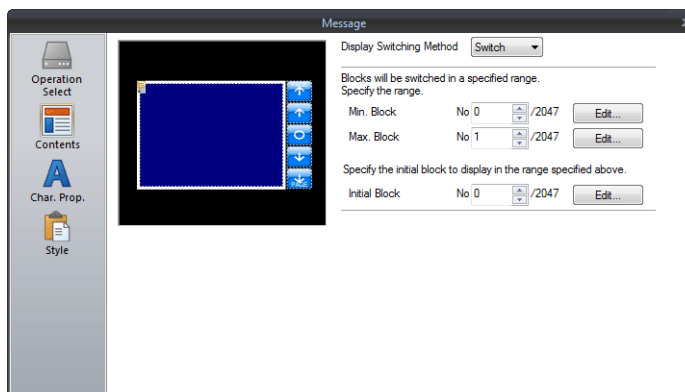
Operation Select



Item	Description
Message Editing Method	Select the display method for message mode.
Page Block	Page blocks are displayed on the screen. There are two methods for changing the display: switches and device memory addresses
Direct Block	Direct blocks are displayed on the screen. There are two methods for changing the display: switches and device memory addresses.
Page Message	Specify the line number of the top message to display using [Message No. Designation Device] (described later). Several lines of the message, of the number specified, are continuously displayed within the area at the top of the screen.
Direct Message	One device memory address is automatically assigned to each line in the message display area. Specify the message number to display for the assigned device memory address. A message specified by the device memory address is displayed on the screen.

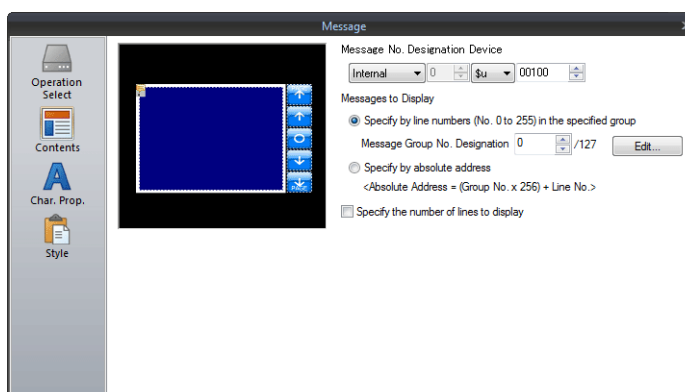
Displayed information

[Operation Select]: Page block/direct block



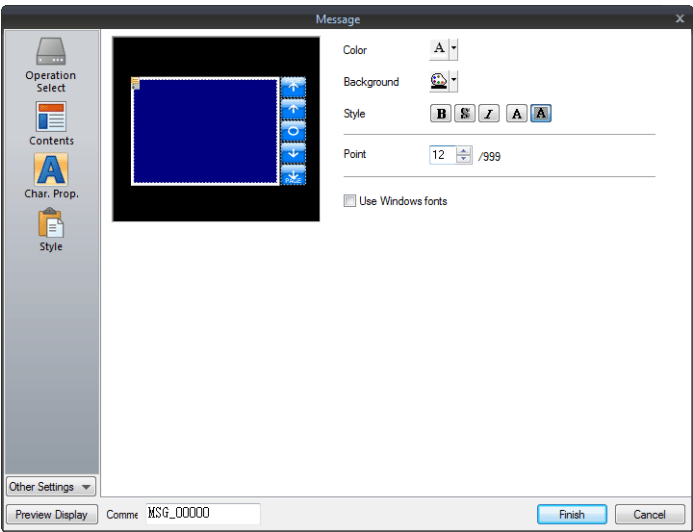
Item	Description
Display Switching Method	Select how to call up blocks. Switch: Change the block number to display using a switch placed on the screen. Device: Directly specify the block number using [Block No. Setting Device] (described later) to display the corresponding block.
Min. Block	Set the lowest block number for the page blocks or direct blocks to display. The page block or direct block can be edited by clicking [Edit].
Max. Block	Set the highest block number for the page blocks or direct blocks to display. The page block or direct block can be edited by clicking [Edit].
Initial Block	Set the initial block number to show when the screen is displayed. The page block or direct block can be edited by clicking [Edit].
Block No. Setting Device	Specify the block number to display on the screen. The page block or direct block can be edited by clicking [Block Edit].

[Operation Select]: Page message/direct message



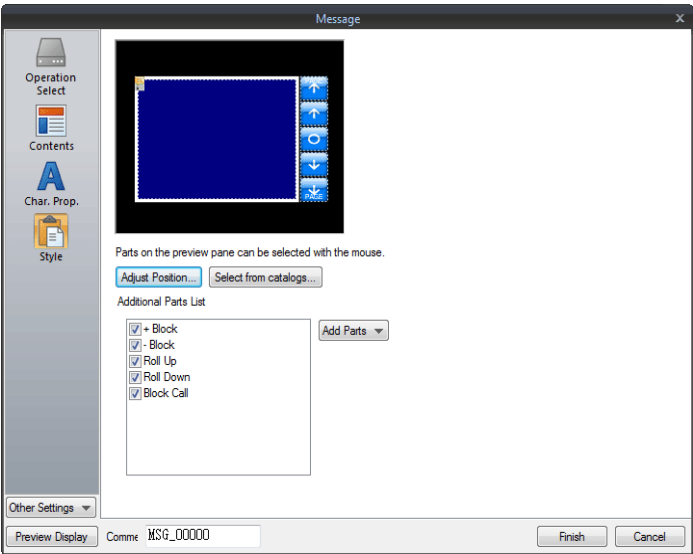
Item	Description
Message No. Designation Device	Specify the message number to display on the screen. One device memory address is automatically assigned to each line for direct messages. Device memory addresses are allocated sequentially from the first device memory address specified for [Message No. Designation Device]. The number of words to use is based on the display area's Y size divided by the character enlargement factor value.
Messages to Display	Specify by line numbers (No. 0 to 255) in the specified group Set a group number. The message displayed on the screen is limited to a message within the specified group number. Specify a message number (0 to 255) in a single group for [Message No. Designation Device]. Specify by absolute address Specify the message number to be displayed as an absolute address. Messages from more than one group can be specified. Specify a message number (0 to 32767) among all groups for [Message No. Designation Device].
Specify the number of lines to display	Select this checkbox to specify the number of lines of the message to display.

Char. Prop.



Item	Description
Color	Set the message color.
Background	Set the background color.
Style	Set the message style.
Character Size (1 - 8)	Set the character enlargement factor value of the message. When [Switch] or [Lamp] is selected for [Others] → [Action Area] (described later), the enlargement factor values for X and Y are fixed to "1".
Point (6 - 999)	Set the text size. When [Switch] or [Lamp] is selected for [Others] → [Action Area] (described later), the point size is fixed to "12".
Use Windows fonts	Select this checkbox to use a Windows font. Message character properties are configured in the [Message Edit] window.

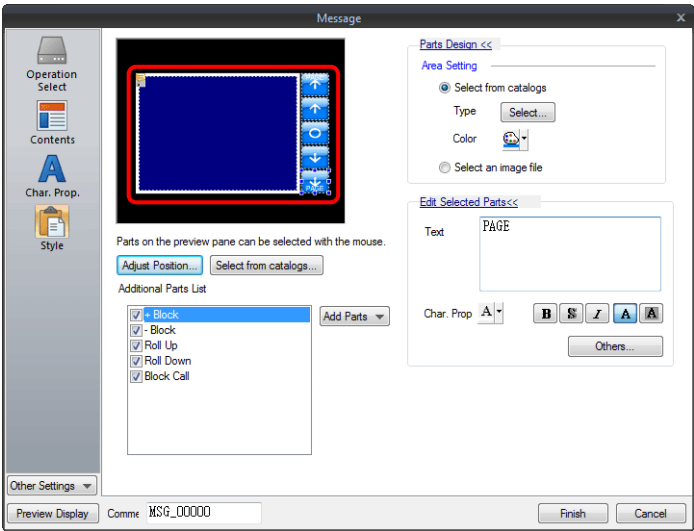
Style



Item	Description
Adjust Position	Adjust the position and size of parts.
Select from catalogs	Select the part design.
Additional Parts List	Add and delete switch parts used in message mode. Each switch is used for page blocks or direct blocks.
+ Block	Changes to the next message block.
- Block	Changes to the previous message block.
Roll Up	Scrolls up through messages.
Roll Down	Scrolls down through messages.
Block Call	Changes to the specified block number.

Editing parts

Select a part in the preview pane to change the part's style settings.

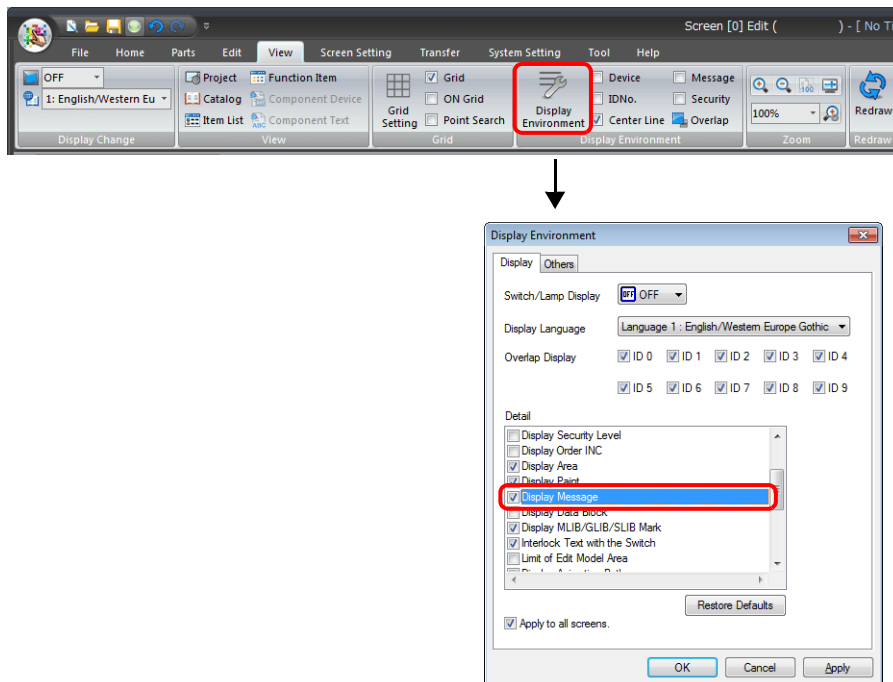


Item			Description
Parts Design	Area Setting	Select from catalogs	Select the part design. After selecting the part, select the part color.
		Select an image file	Select a PNG file.
Edit Selected Parts	Text		Enter the text to be displayed on the switch. (Up to 4 lines can be registered. Text properties can be set for each line.) Text can be justified within the switch part.
	Char. Prop.		Set the text properties and style.
	Others		Edit switch settings other than those related to text and style. For details on switch settings, refer to "3.1 Switch" page 3-1.

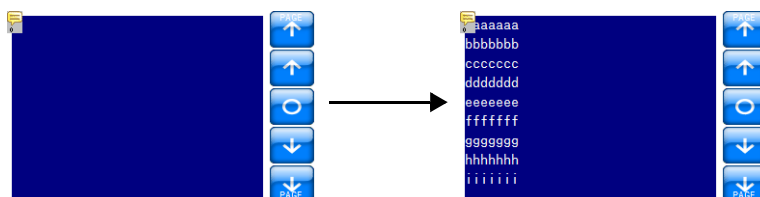
Checking the display area size

Whether messages are displayed as intended in display areas can be checked on the screen.

With messages registered, click [View] → [Display Environment] → [Display] tab and select the [Display Message] checkbox.

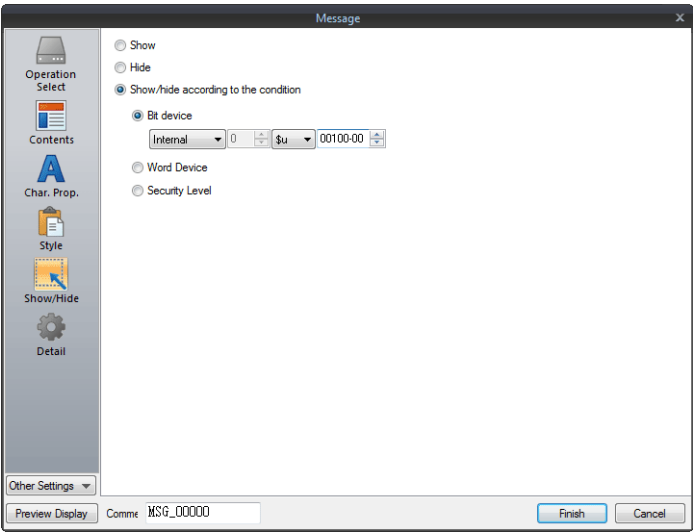


The registered messages are displayed on the screen.



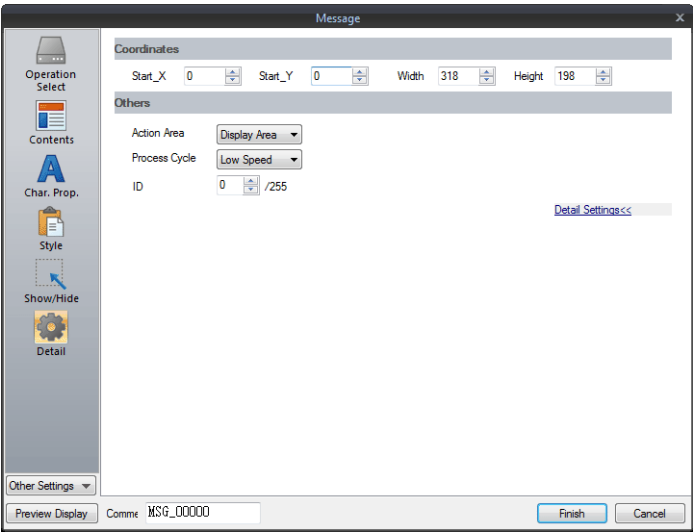
To adjust the size and other settings, perform adjustments via the [Adjust Position] button described in ["Style" page 12-10](#).

Show/Hide



Item		Description	
Show		Display the message mode part on the screen.	
Hide		Do not display the message mode part on the screen.	
Show/hide according to the condition	Bit device	Display the message mode part if the device memory bit is ON and hide the message mode part if the device memory bit is OFF.	
	Word Device	Show the message mode part if the condition is satisfied and hide the message mode part if the condition is not satisfied.	
		Constant Display Type	Select the data type of the conditional expression. [DEC+ -]/[DEC]/[BCD]
		Condition expression	Set an equal sign, value, and device memory address as the conditions for comparison.
	Security Level	This setting is available when using the security function. The “show/hide” attribute can be controlled according to the user’s login level. For details, refer to “5 Security” in the V9 Series Reference Manual 2.	

Detail

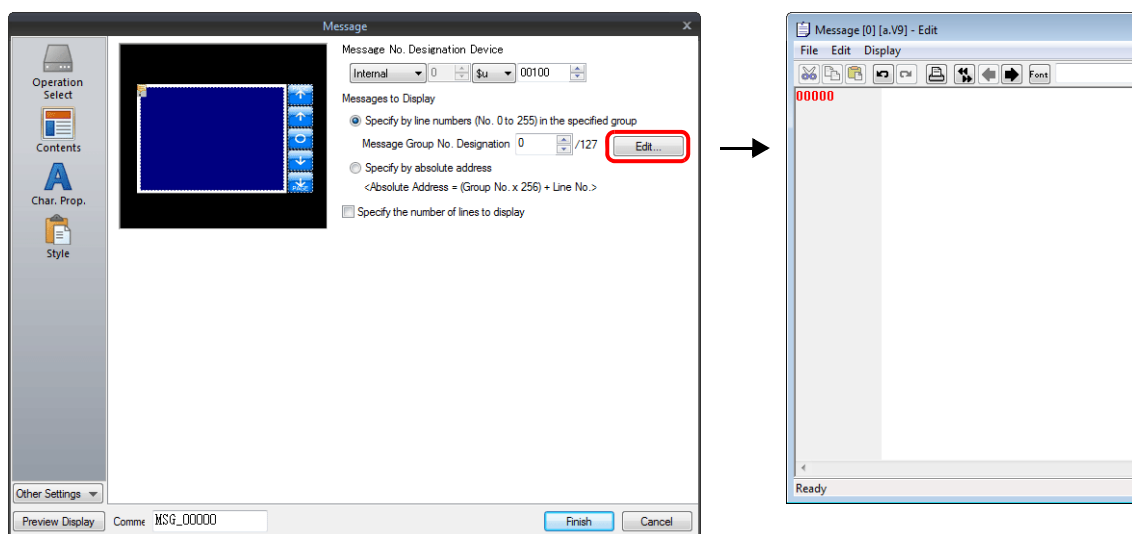


Item		Description
Coordinates	Start X/Start Y	Set the display position of the message mode part using X and Y coordinates.
	Width/Height	Set the size of the message mode part by specifying width and height.
Others	Action Area	<p>Set the position to display the message on the screen.</p> <p>Display area: Display on provided display area parts.</p> <p>Switch: Display on provided switch parts. Switches are automatically set to "Mode" for [Function]. Each switch has [Display Order] (0 to 23) as an auxiliary setting where the message to display on each switch can be specified. When [Display Order] settings are all the same, messages are displayed in the same order that switches were placed.</p> <p>* One switch part shows one message line.</p> <p>Lamp: Display on provided lamp parts. Lamps are automatically set to "Mode" for [Function]. As with switch parts, each lamp has [Display Order] (0 to 23) as an auxiliary setting.</p> <p>* One lamp part shows one message line.</p>
	Process Cycle	Set a cycle for the V9 series to read PLC data while the V9 series is communicating with the PLC. For details, refer to "1.2 Process Cycle" .
	ID	Set the ID.
	(0 - 255)	For details on IDs, refer to the V9 Series Operation Manual.

12.1.4 Registering Messages

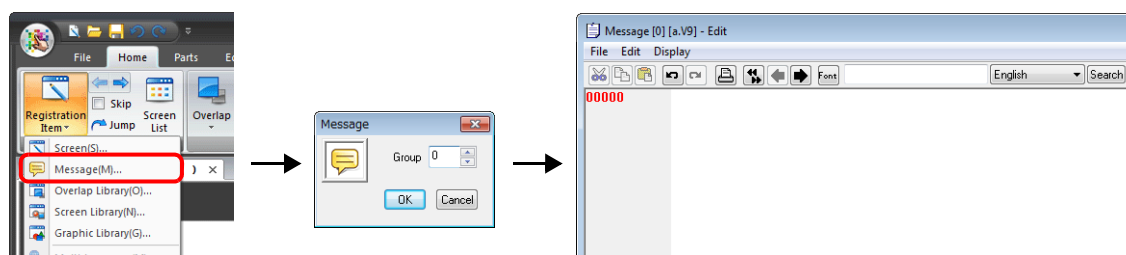
There are two ways of registering messages.

- [Message] settings window → [Contents] → [Edit]



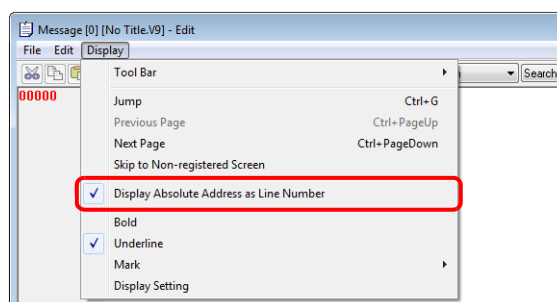
- * When [Operation Select] is set to [Page Block] or [Direct Block], the [Message Edit] window cannot be displayed using this method.
- * When a message group number is specified, the cursor appears at the start line of the group.

- [Home] → [Registration Item] → [Message] → (specify group number)



In the [Message Edit] window, line numbers denote absolute addresses as default.

When a message group number is specified, deselect [Display] menu → [Display Absolute Address as Line Number] before commencing editing.

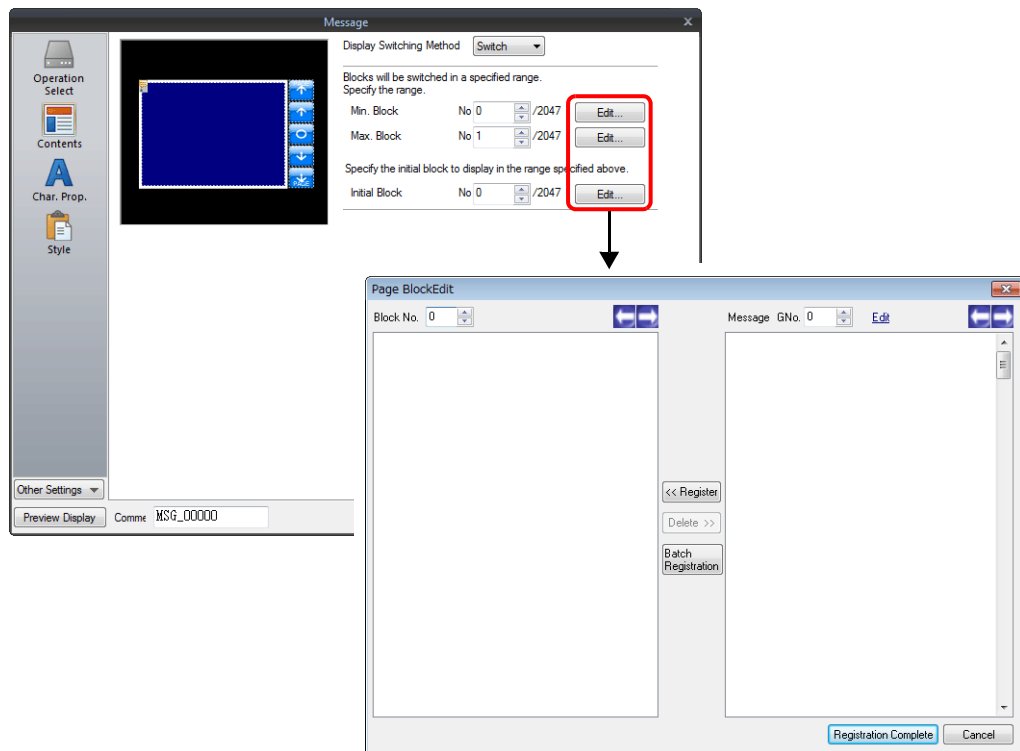


For details on the editing procedure in the [Message Edit] window, refer to the V9 Series Operation Manual.

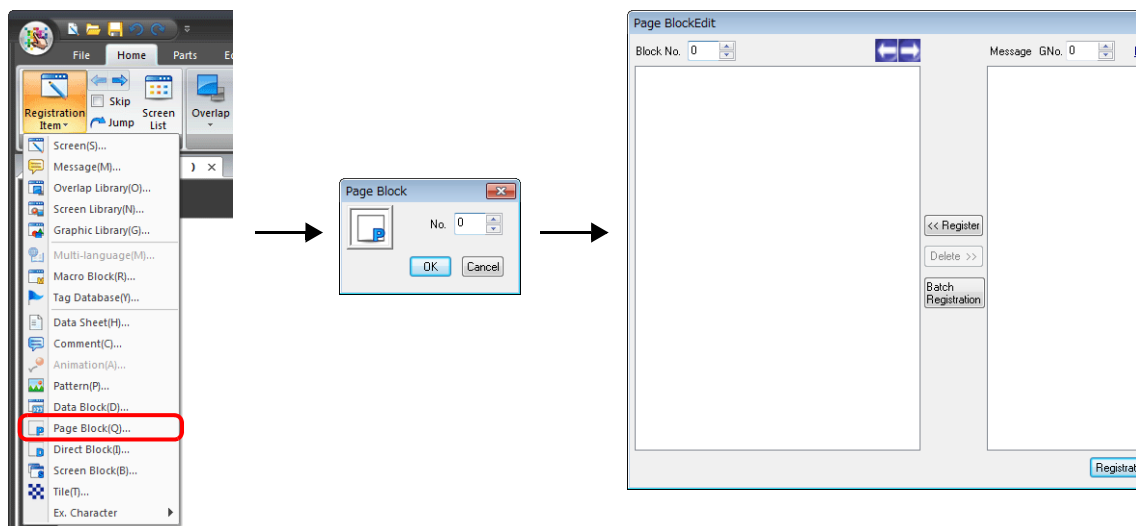
12.1.5 Registering Page Blocks

There are two ways of registering page blocks.

- [Message] settings window → [Contents] → [Edit]



- [Home] → [Registration Item] → [Page Block] → (specify block number)

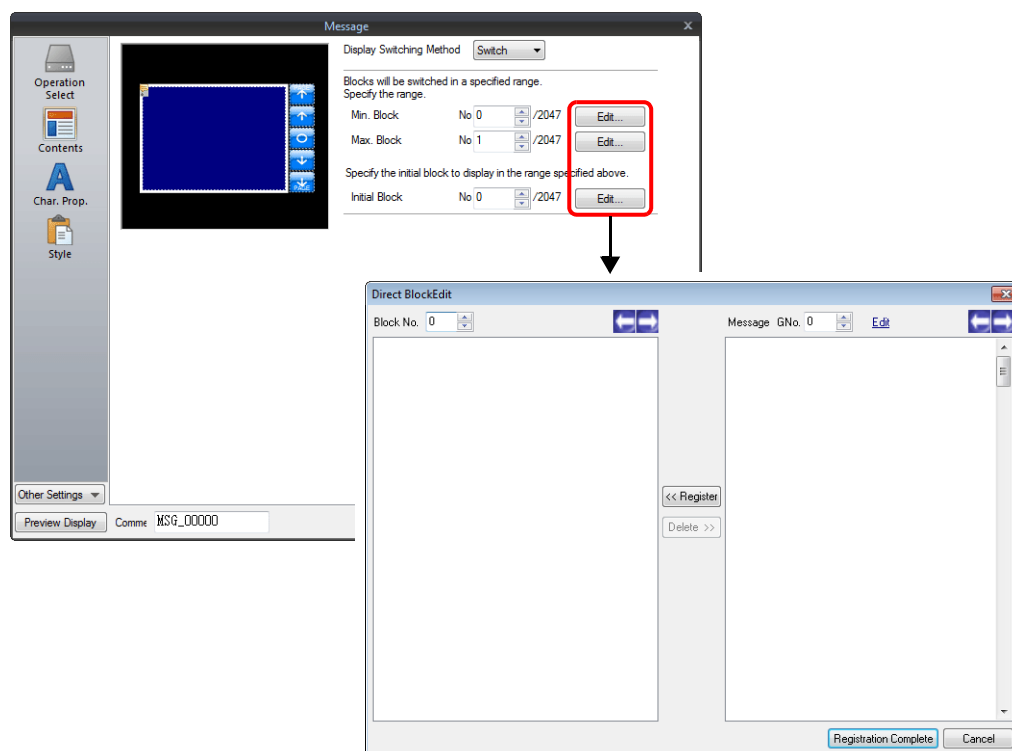


For details on the editing procedure in the [Page Block Edit] window, refer to the V9 Series Operation Manual.

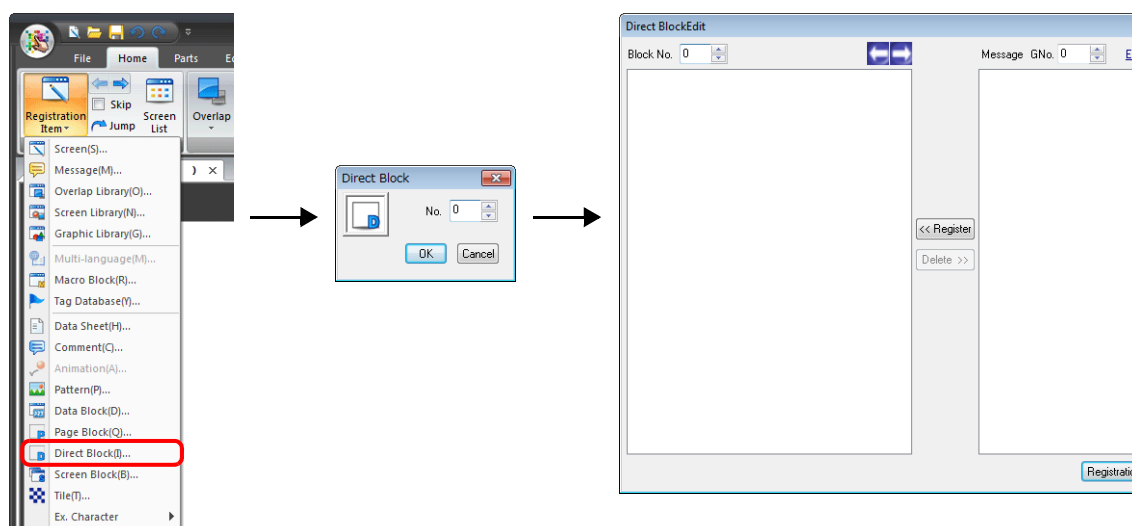
12.1.6 Registering Direct Blocks

There are two ways of registering direct blocks.

- [Message] settings window → [Contents] → [Edit]



- [Home] → [Registration Item] → [Direct Block] → (specify block number)



For details on the editing procedure in the [Direct Block Edit] window, refer to the V9 Series Operation Manual.

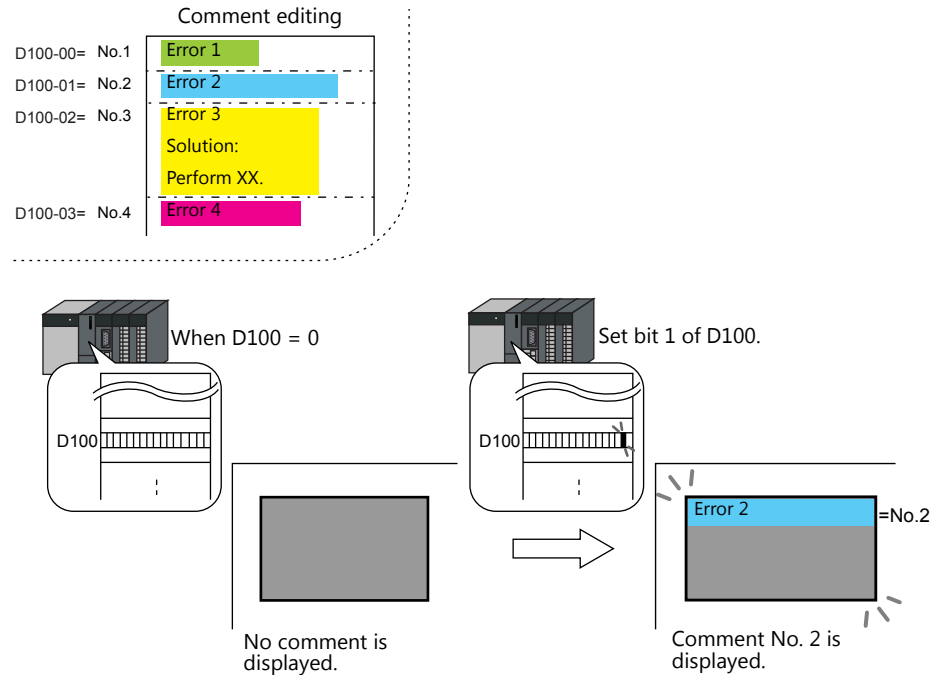
12.2 Displaying Comments

12.2.1 Overview

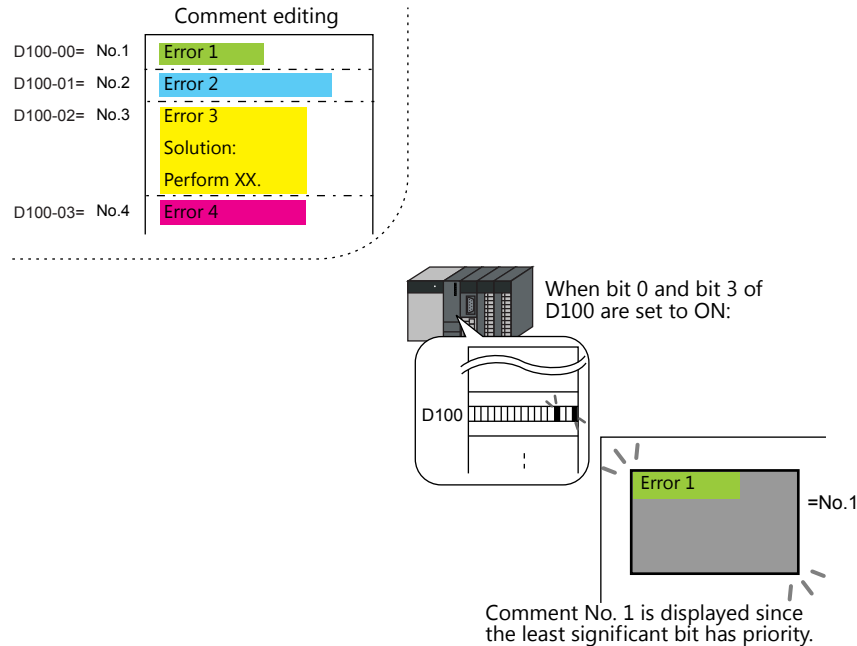
Register comments in advance and display them using bit designation or number designation.
A maximum of 32,767 comments can be registered. Character properties, such as color or size, can be set for each comment.
One comment can include multiple lines.

Bit Designation

Display the comment that corresponds to bit ON of the assigned device memory address.



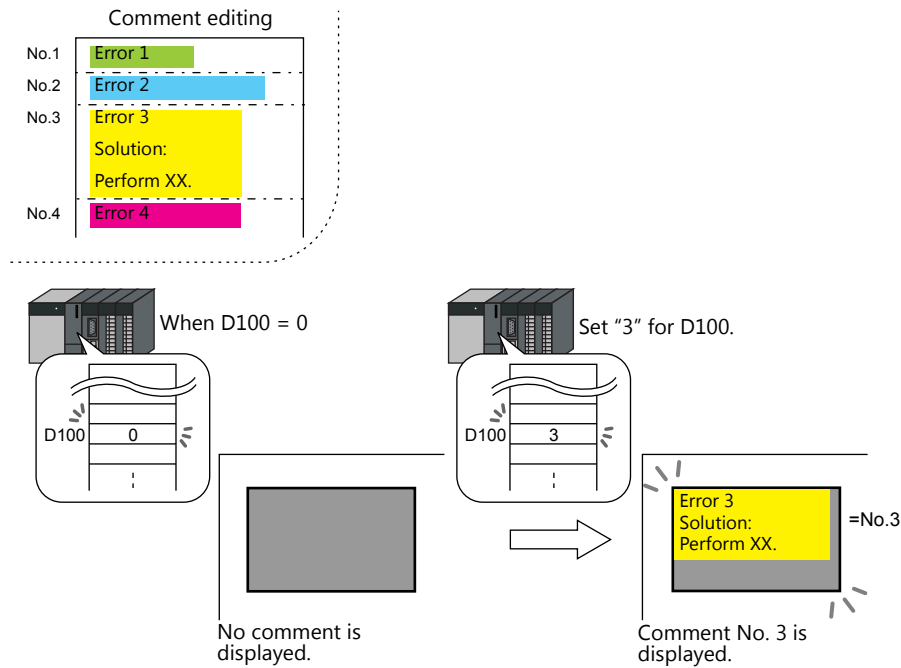
When multiple bits are set to ON, the least significant bit has priority.



Number Designation

Set the comment number to the assigned device memory address and display the comment.

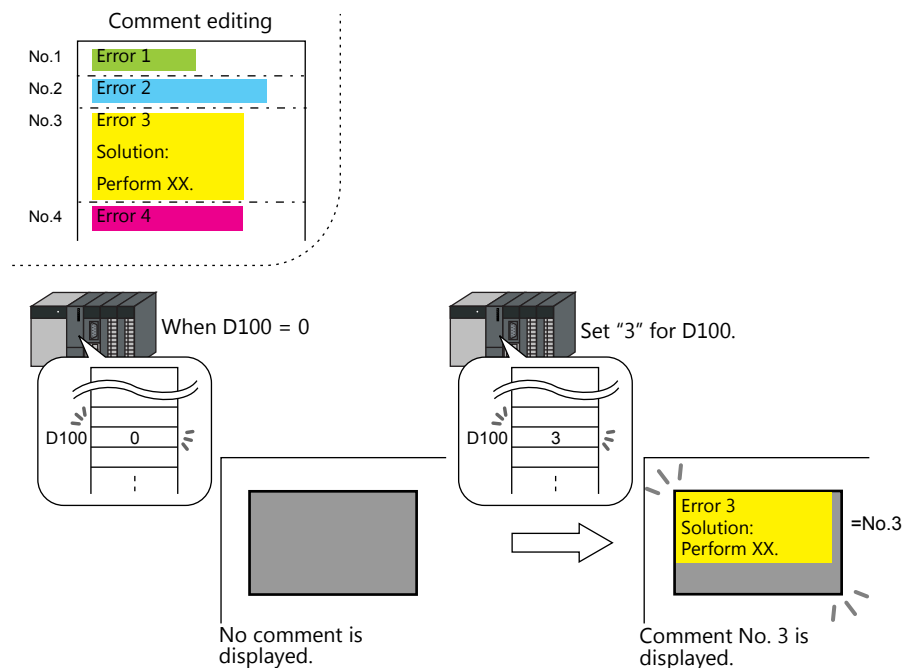
☞ For setting examples, refer to “Displaying Comments (Number Designation)” page 12-20.



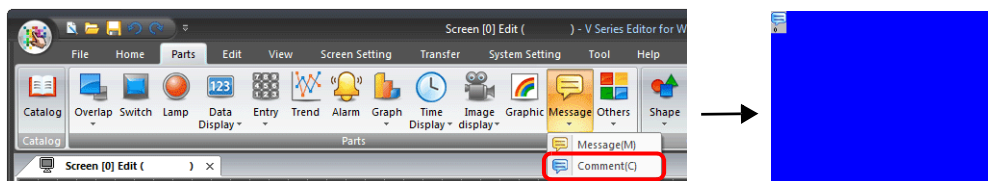
12.2.2 Setting Examples

Displaying Comments (Number Designation)

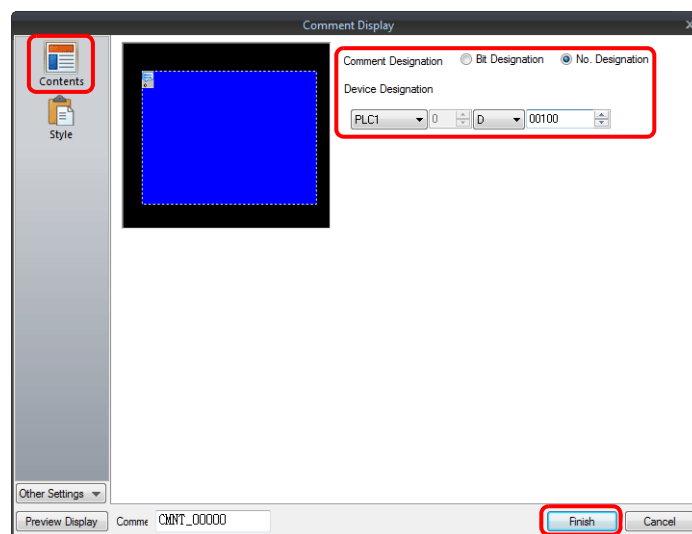
Register the comment to display in advance and specify the comment number to D100.



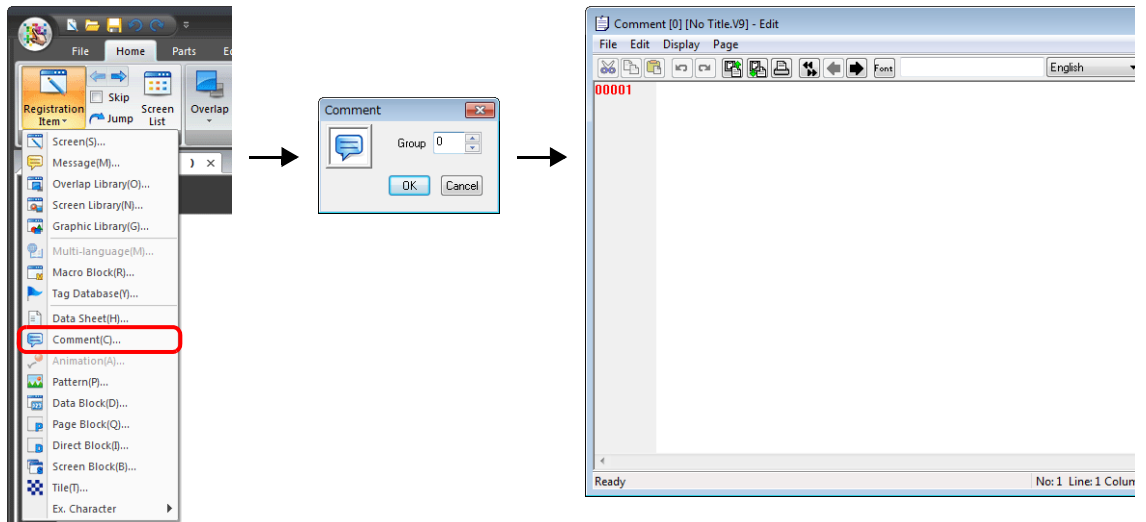
1. Click [Parts] → [Message] → [Comment] and place a comment display on the screen.



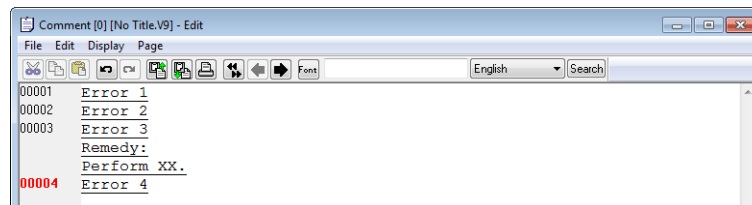
2. Double-click on the comment display to display the settings window. Configure the following settings for [Contents] and then click [Finish].



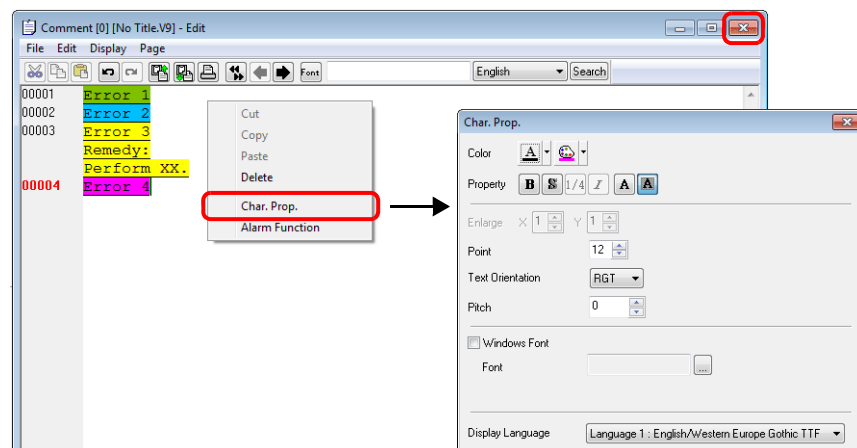
3. Click [Home] → [Registration Item] → [Comment] → [OK] with group number 0.



4. Register a comment as shown below.
Press the [Alt] and [Enter] keys together to enter a new line.



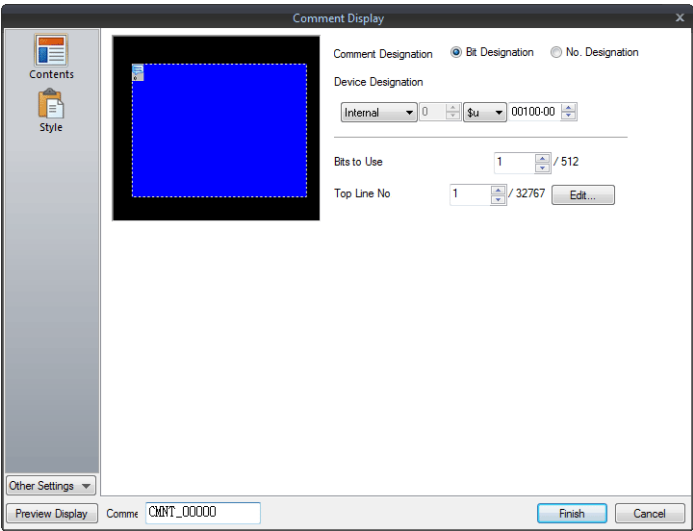
5. Select the comment line for setting character properties, right-click, and click [Char. Prop.].
Set the following character properties and then close the [Comment Edit] window.



This completes the necessary settings.

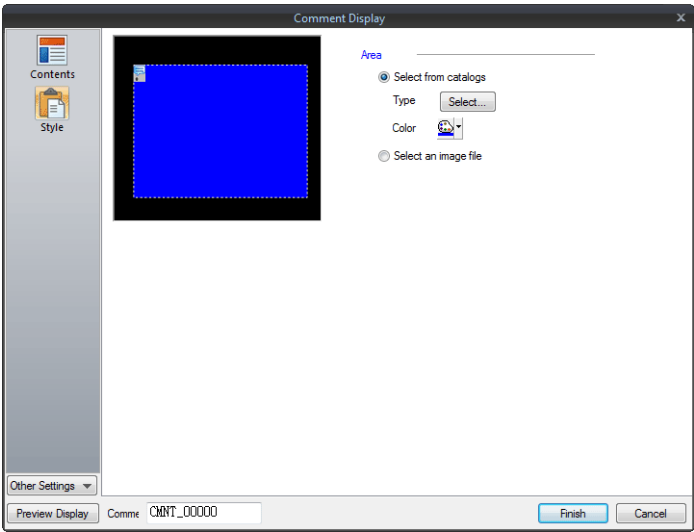
12.2.3 Detailed Settings

Operation Select



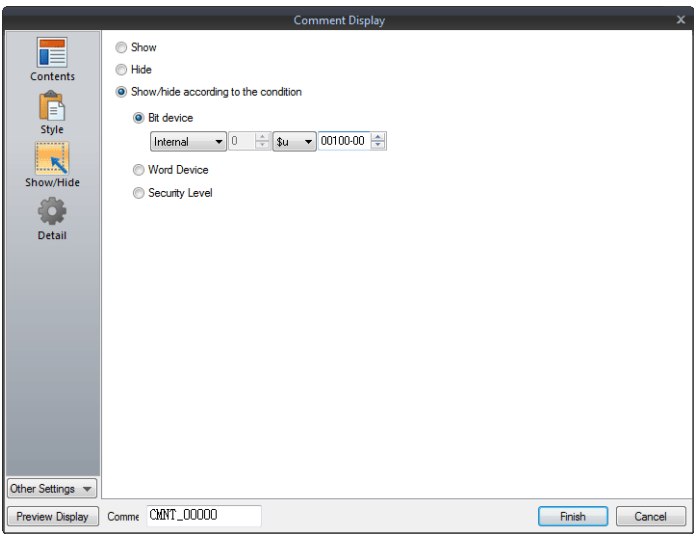
Item	Description
Comment Designation	Select the comment display method. Bit Designation Select this option to display the comment using bit activation. No. Designation Select this option to display the comment by specifying the comment number.
Device Designation	Specify the command device memory address to use for displaying comments on the screen. The setting should vary depending on which of [Bit Designation] or [No. Designation] was selected. Bit Designation: Set the device memory address (1 bit) to display the comment set for [Top Line No.]. When multiple bits are set to ON, the least significant bit has priority. No. Designation: Set the device memory address (1 word) for specifying the comment number. When "0" is specified, no comment is displayed. When "1 to 32767" is specified, the corresponding comment is displayed. However, if the BCD code is used on the PLC, the available range is limited to "0 to 9999".
Bits to Use (1 - 512)	Set the number of bits to use for comment display (total number of comments to be displayed). From the bit set for [Device Designation], as many bits as set for [Bits to Use] are consecutively allocated to the comment specified for [Top Line No.] and later.
Top Line No. (1 - 32767)	Specify the top comment number for display by activation of the bit set for [Device Designation]. Click [Edit] to display the [Comment Edit] window.

Style



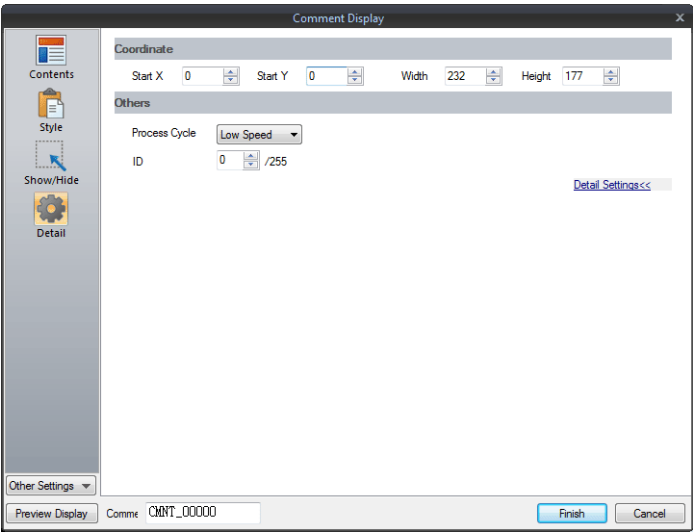
Item		Description
Area	Select from catalogs	Select the part design. After selecting the part, select the part color.
	Select an image file	Select a PNG file.

Show/Hide



Item		Description	
Show		Display the message mode part on the screen.	
Hide		Do not display the message mode part on the screen.	
Show/hide according to the condition	Bit device	Display the message mode part if the device memory bit is ON and hide the message mode part if the device memory bit is OFF.	
	Word Device	Show the message mode part if the condition is satisfied and hide the message mode part if the condition is not satisfied.	
		Constant Display Type	Select the data type of the conditional expression. [DEC+ -]/[DEC]/[BCD]
		Condition expression	Set an equal sign, value, and device memory address as the conditions for comparison.
	Security Level	This setting is available when using the security function. The “show/hide” attribute can be controlled according to the user’s login level. For details, refer to “5 Security” in the V9 Series Reference Manual 2.	

Detail



Item		Description
Coordinates	Start X/Start Y	Set the display position of the comment display using X and Y coordinates.
	Width/Height	Set the size of the comment display by specifying width and height.
Others	Process Cycle	Set a cycle for the V9 series to read PLC data while the V9 series is communicating with the PLC. For details, refer to "1.2 Process Cycle" .
	ID (0 - 255)	Set the ID. For details on IDs, refer to the V9 Series Operation Manual.

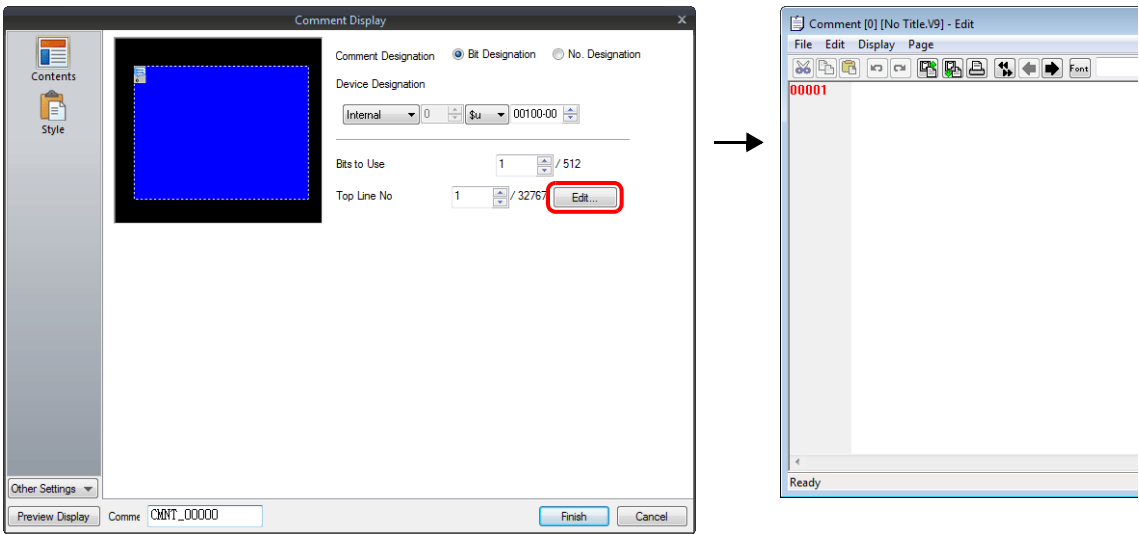
Checking the display area size

Whether comments are displayed as intended in display areas can be checked on the screen.
The procedure is the same as described for the message mode. Refer to [page 12-12](#).

12.2.4 Registering Comments

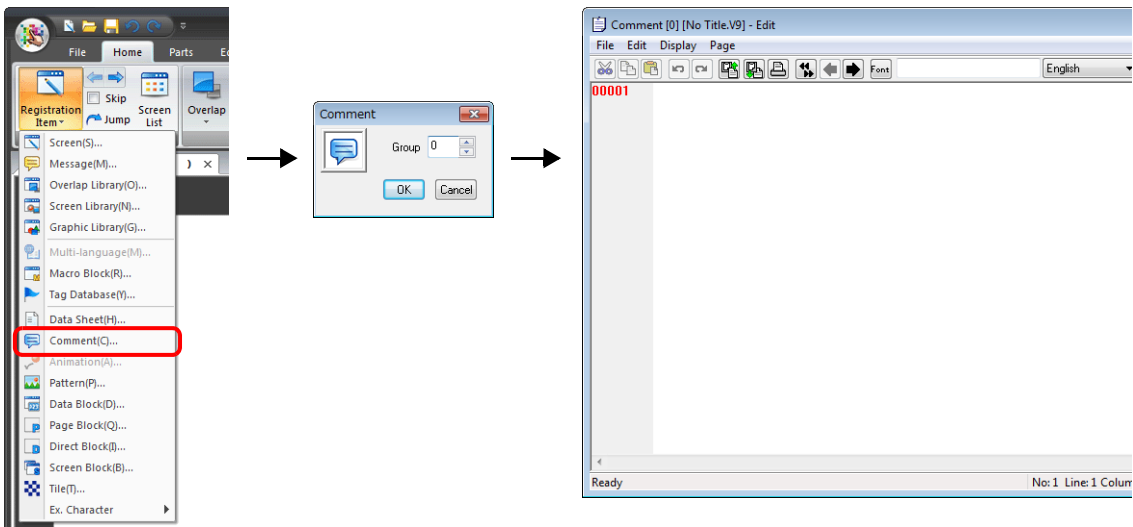
There are two ways of registering comments.

- [Comment] settings window → [Contents] → [Edit]



- * When [No. Designation] is selected, the window for comment registration will not be displayed in this way.
- * The cursor is displayed at the start line of the group that includes the line number specified for [Top Line No.].

- [Home] → [Registration Item] → [Comment] → (specify group number)



For details on the editing procedure in the [Comment Edit] window, refer to the V9 Series Operation Manual.

MEMO

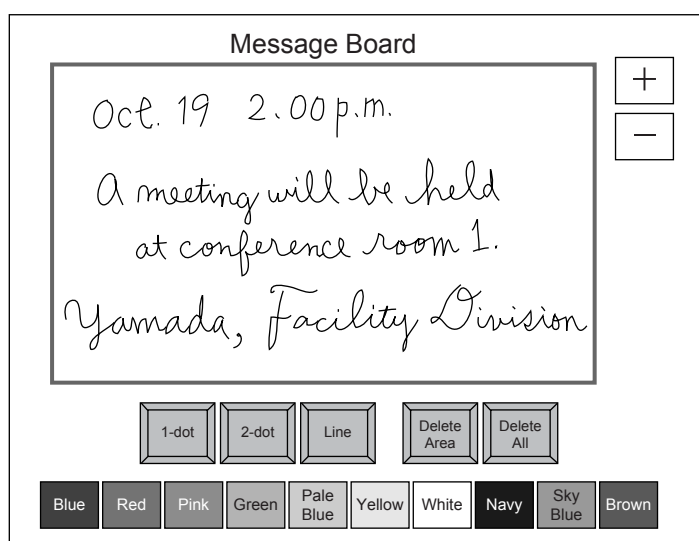
MONITOUCH



13.1 Memo Pad

13.1.1 Overview

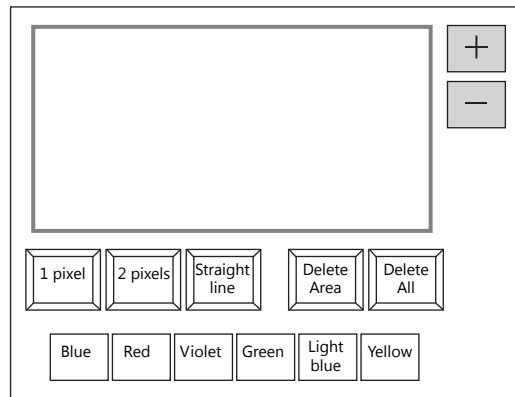
- Message board function
The message board function is available for leaving daily messages in a workshop, etc.
This is particularly useful for exchanging messages among operators working in shifts.
- Pen input
Message entry is made simple by writing on the screen directly with a special pen.
- A maximum of eight memo pad areas
Memo pad areas are common to every screen. Up to 8 memo pad areas can be registered.
- Saved in the SRAM area
When a memo pad area is secured in the built-in or separate SRAM area, the data is retained even after the power is turned off.
- Also, it is possible to use a storage device to save memo pad data without using the SRAM area.



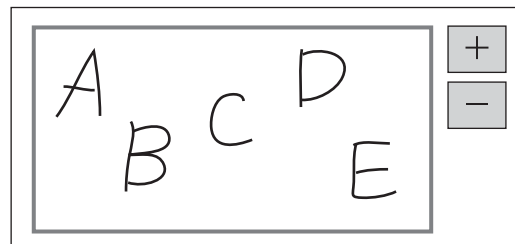
Only one memo pad function can be used on one screen.

13.1.2 Usage Example

Suppose that the following screen is created.



1. When the screen is first opened, the following settings are set as default.
 Pen size: 1 pixel
 Pen color: White
 Pen state: Free
 To change the setting, press the corresponding switch and set the desired option.
2. Write a message within the memo pad area.

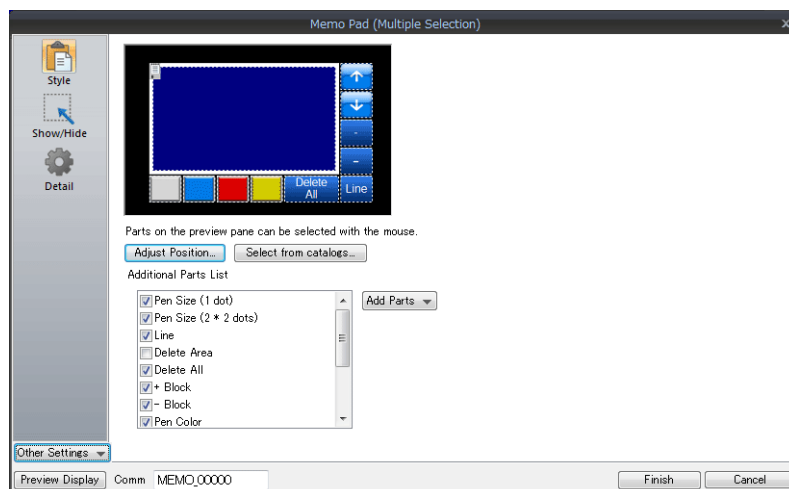


Use the dedicated pen when writing messages.

3. When deleting the message, press the [Delete All] switch.
4. When deleting part of the message, press the [Delete Area] switch (ON display), and enclose the desired data.
 The enclosed data is deleted.
 On completion, press the [Delete Area] switch (OFF display).
5. When drawing a straight line, press the [Line] switch (ON display).
 Moving the pen on the memo pad area draws a straight line.
 To cancel the function that draws straight lines, press the [Line] switch again (OFF display).
6. Pressing the [+] switch brings up a new memo pad area (up to 8 areas).
 Pressing the [-] switch brings up the previous memo pad area.

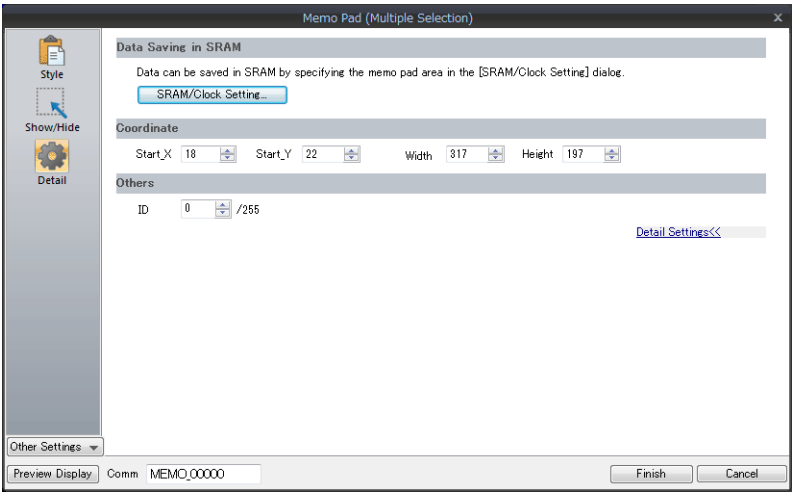
13.1.3 Detailed Settings

Style



Item		Description
Additional Parts List	Pen Size (1 dot)	Add a [Pen Size (1 dot)] switch. Selects the pen thickness.
	Pen Size (2 × 2 dots)	Add a [Pen Size (2 × 2 dots)] switch. Selects the pen thickness.
	Line	Add a [Line] switch. Select the pen state. This is an alternate switch. ON: Line OFF: Free
	Delete Area	Add a [Delete Area] switch. This switch deletes the selected memo pad area. This is an alternate switch. ON: Delete the rectangular area selected on the display area. OFF: Deletion is not possible.
	Delete All	Add a [Delete All] switch. This switch deletes data from the displayed memo pad area.
	+ Block	Add a [+ Block] switch. Brings up the next memo pad area (up to 8).
	– Block	Add a [– Block] switch. Brings up the previous memo pad area (up to 8).
	Pen Color	Add a [Pen Color] switch. This switch is used to select the pen color.
	Block Call	Add a [Block Call] switch. Brings up the memo pad area of the specified number.
Add Parts	Switch	Add a switch.

Detail



Item	Description
SRAM/Clock Setting	Configure the settings to save memo pad data to the SRAM area. For details, refer to “13.1.4 Memo Pad Data Storage” page 13-5.
Coordinate	Set the Start X/Start Y (top left coordinates).
ID	Set the ID.


13.1.4 Memo Pad Data Storage

Memo pad data can be saved to the built-in RAM, SRAM, or a storage device.
Data saved to RAM is cleared when MONITOUCH is turned off or when the local mode screen is displayed.
To retain data even when the power is turned off, save data to SRAM or a storage device.

Memo Pad Storage Area Size

Storage Target	Capacity (Words)
RAM	32,000
SRAM *	262,000
Storage device	262,000

* This is the maximum capacity available provided that the entire SRAM area is used for the memo pad function.

 For details of the procedure for dividing the SRAM area, etc., refer to "1.1 System Settings".

Saving to RAM

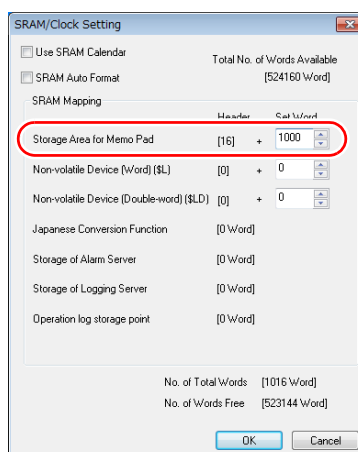
No settings are required.

Saving to SRAM

To save data to the SRAM area, settings must be configured in the [SRAM/Clock Setting] window.

[SRAM/Clock Setting] window

- Storage area for memo pad
Set the storage area size for the memo pad function in the SRAM area.
Refer to the list shown above to set an appropriate size.



 For details on other settings, refer to "1.1 System Settings".

Saving to a Storage Device

No settings are required. Insert the storage device into MONITOUCH.

Note that when the memo pad area is configured in the [SRAM/Clock Setting] window, data is stored in the SRAM area even if a storage device is inserted.

- Filename: MEMxxxx.png (xxxx=0000 to 0007)

Timing for Saving Data

The memo pad data is saved to the memo pad area at the following timing.

- When switching pages using the [Function: + Block, – Block] switches
- When changing the screen
- When switching from RUN mode to Local mode (only for SRAM)

If data cannot be saved due to insufficient memory, the memo pad display area flashes and the unit beeps. Reduce the memo pad data.

The remaining space of the memo pad data storage area is stored in the system memory addresses \$s108 and 109.

*** Notes on SRAM usage**

- If the power is shut down before data is saved, the data is lost.
- If the power is shut down while data is being saved, all the data may be lost.
The data save status is stored in the system memory address \$s720.

System Memory

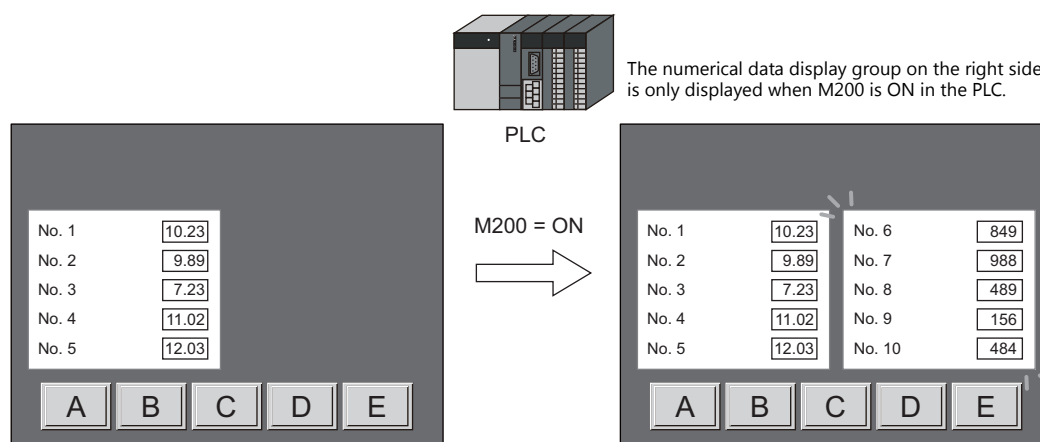
Memo pad data is stored in system memory \$s.

Address (\$s)	Description	Device Type
106	Memo pad number (0 to 7)	← V Data is written from the V9 series unit.
107	<div><div><div>15141312111009080706050403020100</div><div>Page 0</div><div>Page 1</div><div>Page 2</div><div>Page 3</div><div>Page 4</div><div>Page 5</div><div>Page 6</div><div>Page 7</div></div><div>0: Data not registered 1: Data registered</div></div>	
108 109	Remaining space of memo pad data storage area (unit: bytes)	
720	Result of SRAM area save 0: Successfully saved 1: Error in data. The previous data is cleared.	
727	0: Save possible 1: Save impossible due to insufficient memory	

14 Item Show/Hide Function

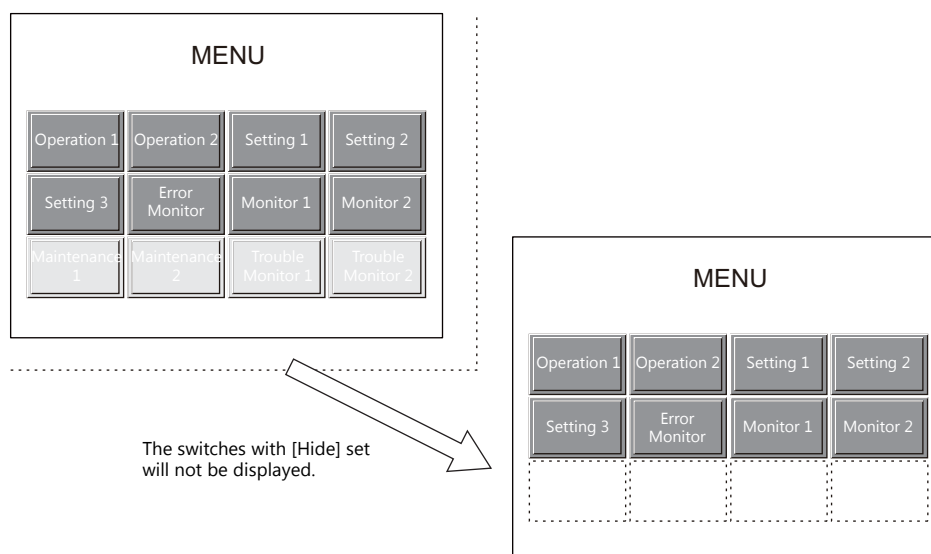
14.1 Overview

- The switch or numerical data display parts registered on the screen can be shown or hidden according to its operating status.
The “show/hide” attribute can be set using methods including device memory bit activation in the PLC, bit/word designation, or commands.



Refer to "14.2 Setting Examples" page 14-2

- Registered items can be set with the show/hide attribute even if they will not be actually used. For example, if future additions of items are planned, the items to be added can be registered in advance and set with the hide attribute, which will make future programming easier.



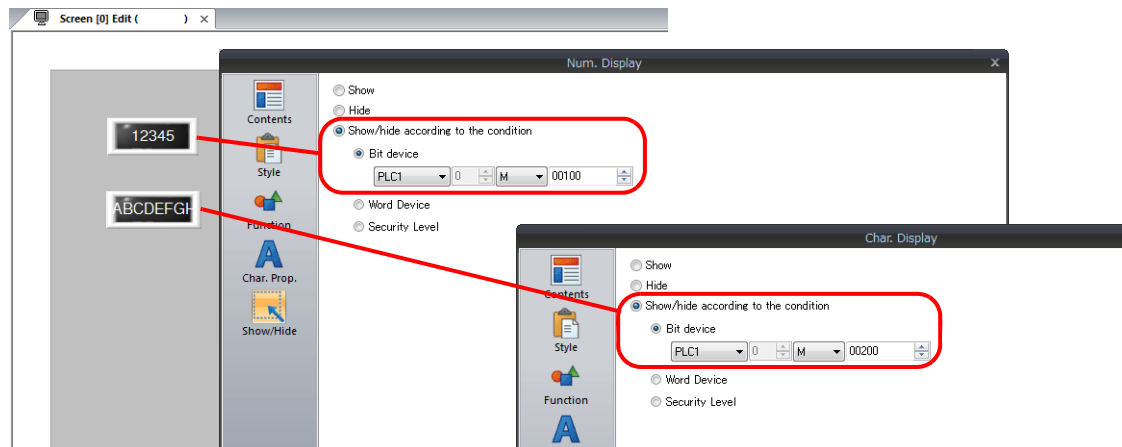
- Items which were placed overlapping will be displayed in the same order that they were placed even if they are hidden and shown again.

14.2 Setting Examples

14.2.1 Displaying Items when the Corresponding Bit Turns ON

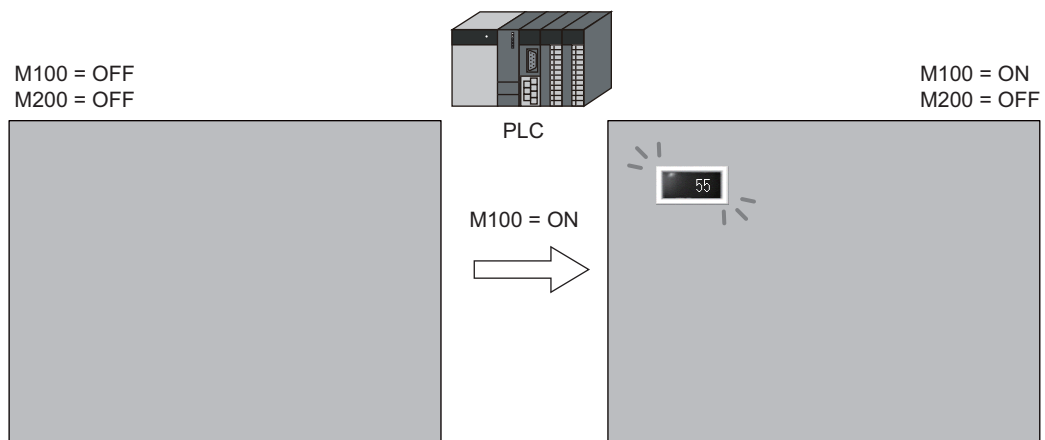
Screen Creation

1. Place a numerical data display and character display on the screen.
2. Configure the [Bit device] settings via [Show/Hide].

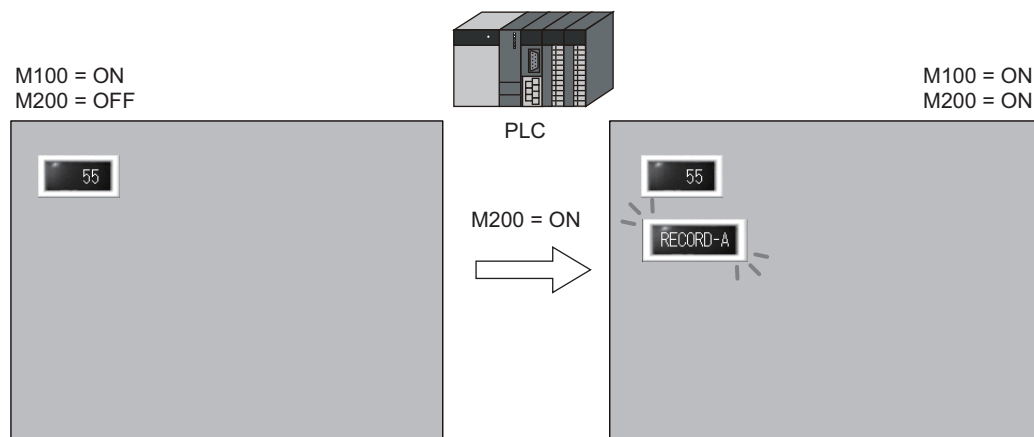


Unit Operation

1. When M100 is set to ON via the PLC, the numerical data display is shown.



2. When M200 is set to ON via the PLC, the character display is shown.

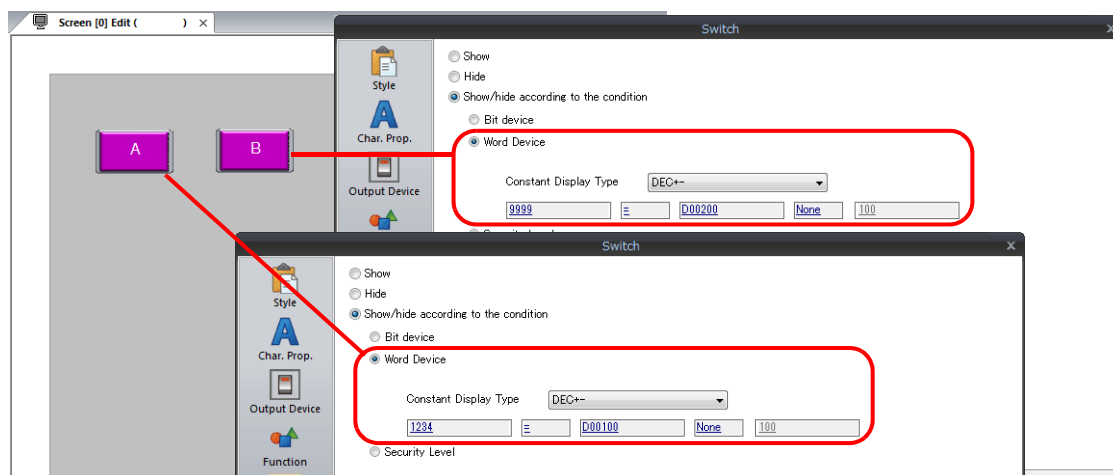


3. When M100 and M200 are set to OFF, the numerical data display and character display are hidden.

14.2.2 Displaying Items Using Device Memory Values

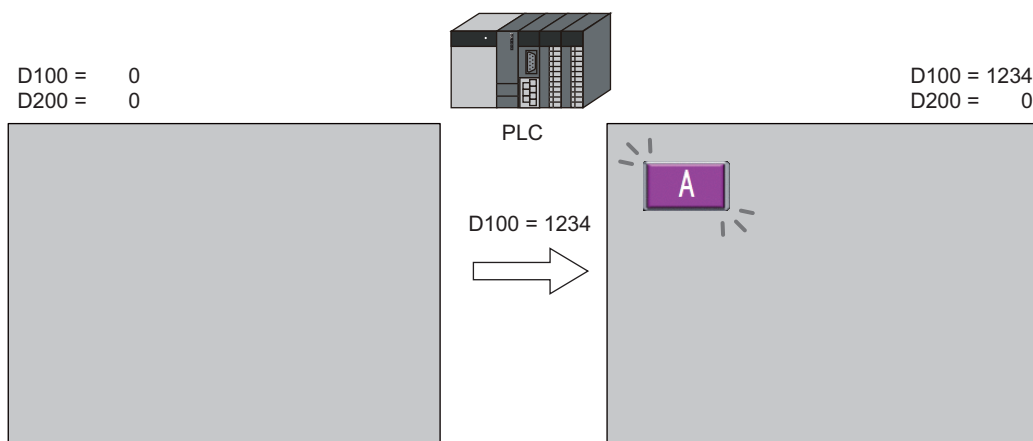
Screen Creation

1. Place a switch.
2. Configure the [Word Device] settings via [Show/Hide].

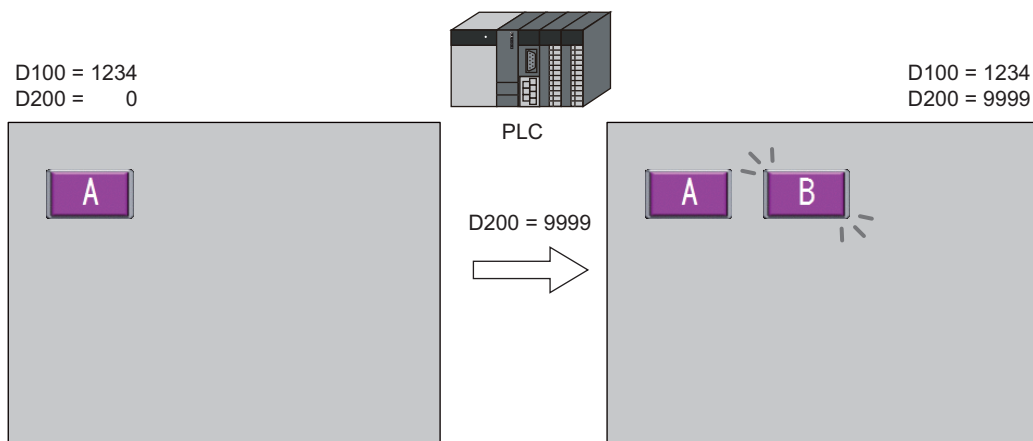


Unit Operation

1. When D100 is set to "1234" via the PLC, switch A on the left is shown.



2. When D100 is left as "1234" and D200 is set to "9999" via the PLC, switch B on the right is shown.

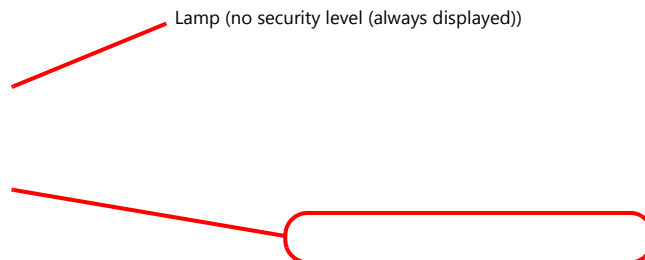


3. When D100 and D200 are both set to "0", the switches are hidden.

14.2.3 Displaying Items Using the Level of the Security Function

Screen Creation

1. Place a switch that initiates operation.
2. Set the level of [Security Level] to "2" via [Show/Hide].



* Always turn on the security function. Items with security levels will not be displayed if the security function is not turned on.

Unit Operation

1. A lamp is displayed on the screen (security level 0).
2. Enter the ID and password for level 2 on the login screen of the security function. The login level changes to level 2 and the operation switch is displayed.

Security

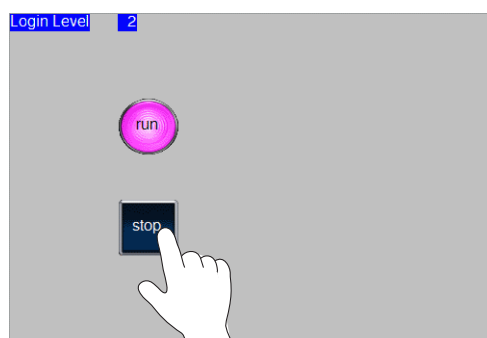
Security Level : 0

User Name

Password



3. Users with a login level of 2 to 15 can operate the operation switch.

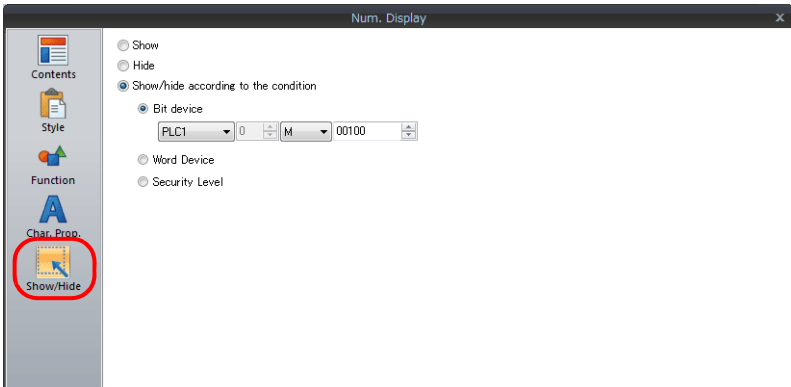


4. When a user logs off, the login level changes to 0 and the operation switch becomes hidden.

14.3 Detailed Settings

Show/Hide

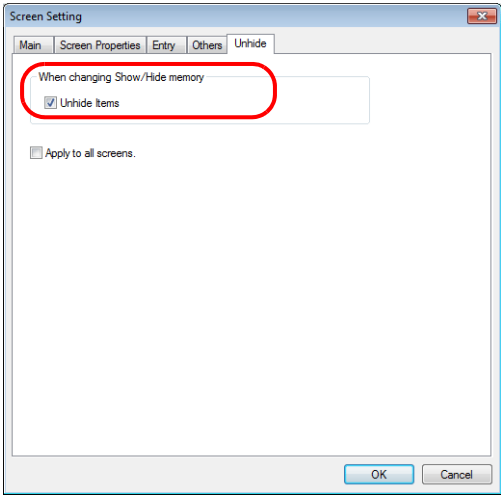
Configure the [Show/Hide] settings for each item.



Item	Description
Show	Always show the item on the screen.
Hide	Always hide the item on the screen.
Show/Hide according to the condition	Items are shown or hidden depending on the specified condition.
Bit device	The item is shown or hidden according to the activation at the address specified in a bit device memory. Bit ON: Item shown Bit OFF: Item hidden
Word Device	The item is shown or hidden according to the status at the address specified in a word device memory. Set the range of item display using the < ≤ = ≠ operators.
Security Level	Used in conjunction with the security function. Items are shown or hidden according to the login level. For details on the security function, refer to "5 Security" in the V9 Series Reference Manual 2.

Screen Settings

Set the timing of item drawing via [Screen Setting] → [Screen Setting] → [Unhide].



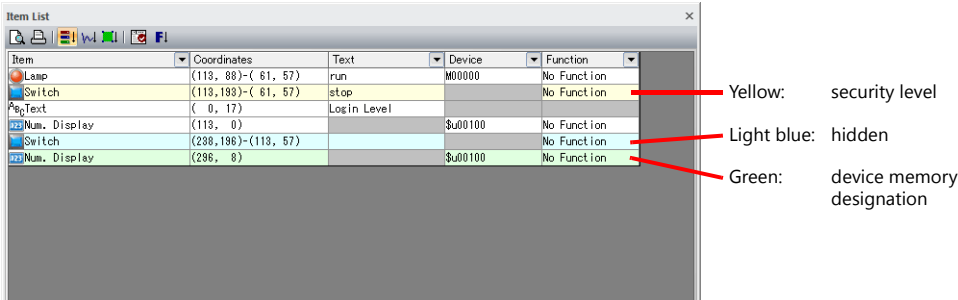
Item	Description
Unhide items	Selected Perform item redisplay when the state of [Show/Hide] for an item changes. Unselected Perform redisplay immediately after changing screens or only when executing the "SYS (RESET_SCRN)" macro.
Apply to all screens	Apply the above settings to all screens.

14.4 Checking Settings

Use the following method to check the [Show/Hide] settings of items.

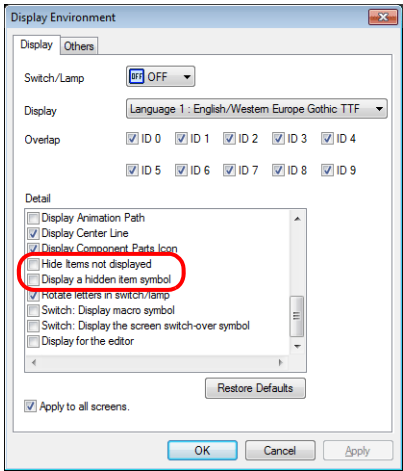
Item List

Display the [Item List] window from the [View] menu.
Items with [Show/Hide] settings are shown in green, yellow or light blue. Uncolored items correspond to items for which [Show] is selected.



Display Environment Settings

Select [View] → [Display Environment].



Item	Description										
Hide Items not displayed	Items with [Show/Hide] settings are not displayed on the screen.										
Display a hidden item symbol	Display a hidden item symbol for items with [Show/Hide] settings. <table><tr><th>Symbol</th><th>Setting</th></tr><tr><td>None</td><td>Show</td></tr><tr><td>Light blue</td><td>Hide</td></tr><tr><td>Green</td><td>Show/hide according to the condition</td></tr><tr><td>Yellow</td><td>Security Level</td></tr></table>	Symbol	Setting	None	Show	Light blue	Hide	Green	Show/hide according to the condition	Yellow	Security Level
Symbol	Setting										
None	Show										
Light blue	Hide										
Green	Show/hide according to the condition										
Yellow	Security Level										

* The same settings can be made via the right-click menu on the screen.

15 Recipes

15.1 Overview

15.1.1 Recipes

In manufacturing, the conditions and data that are critical for making products are collectively referred to as a “recipe”. For example, when beverages are produced on the factory floor of a beverage manufacturer, the conditions for producing apple juice and orange juice differ with respect to ingredients and production processes for each type of beverage.

Apple juice

Ingredients	
Fruit juice	xxx g
Sugar	xx g
Flavoring	xx g
Acidulant	x g

Process	
Agitation	xxx min
Sterilization	xxx min
Cooling	xxx min

Production	
9:00 to 11:00	xxxxx
11:00 to 15:00	xxxxx
15:00 to 18:00	xxxxx



The required data is managed for each product type and applied during production.

Orange juice

Ingredients	
Fruit juice	xxx g
Sugar	xx g
Flavoring	xx g
Acidulant	x g

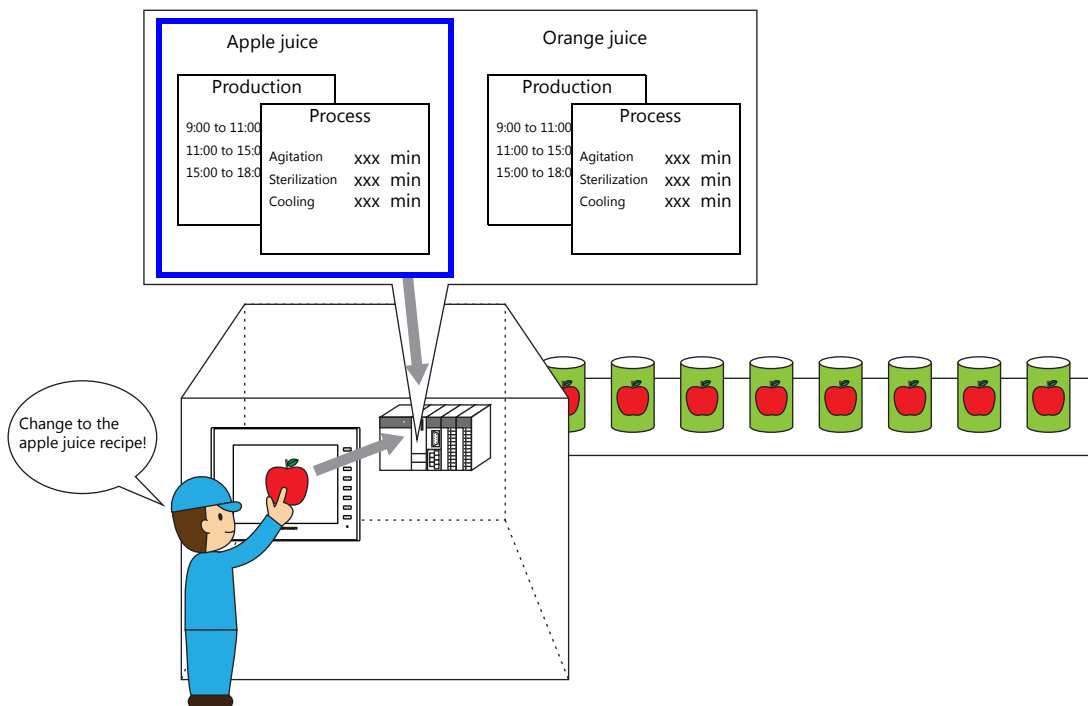
Process	
Agitation	xxx min
Sterilization	xxx min
Cooling	xxx min

Production	
9:00 to 11:00	xxxxx
11:00 to 15:00	xxxxx
15:00 to 18:00	xxxxx



In order to produce and deliver products at a constant quality, the use of recipe information specific to each product is very important.

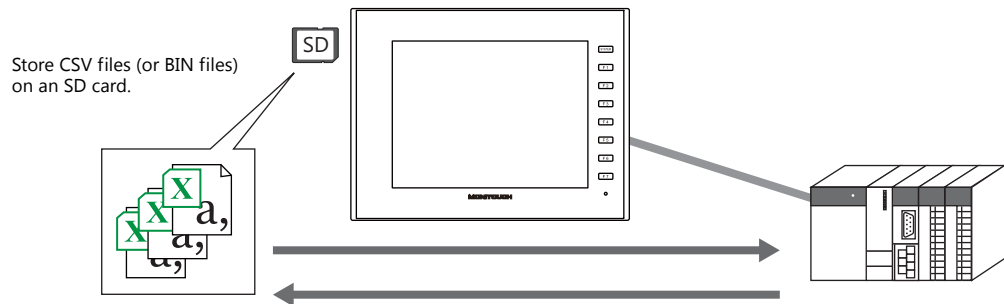
Recipes for products to be made on a particular day are managed on the factory floor, and smoothly changing between recipes according to the production conditions results in efficient production of higher quality products.



15.1.2 Recipe Function

Precise and easy management of recipes, as described in the previous section, on the factory floor is a requirement. Recipes comprise different information depending on product type and may undergo modification on the factory floor. Recipe data can be managed without stress by managers on the factory floor if data on a PLC can be substituted or changed according to circumstance. The advantages of using the recipe function of the V9 series unit can be realized in various situations.

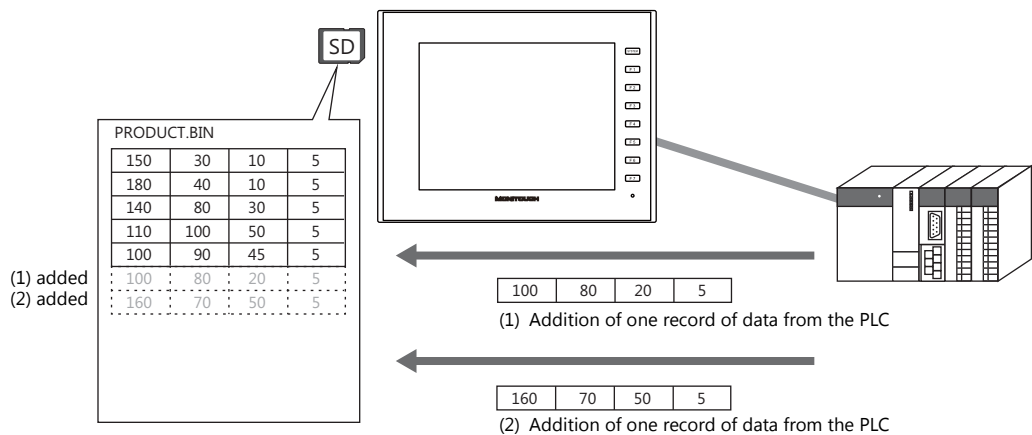
Structure



- Recipe data is stored in the CSV or BIN file format and can be read or written by the V9 series unit. An external storage device (i.e. SD card) is required to store files.
- Data can be read and written in units of files or records.

	A	B	C		
APPLE	60	110	250	3	
ORANGE	60	110	220	10	Data G
GRAPE	50	85	240	8	4200
LEMON	40	60	220	11	4500
PEACH	80	120	240	15	800
Type D		2200	1500	8	5000
Gross		1100	1200		1000

- Not only can data on an SD card be read or written, additions to data and new data can also be created.



- CSV and BIN files can be easily created and edited using the screen configuration software.
- Settings including the format of each file and bits for commanding transfer are specified in the recipe settings in the screen configuration software.

Operations

The recipe function performs the following operations.

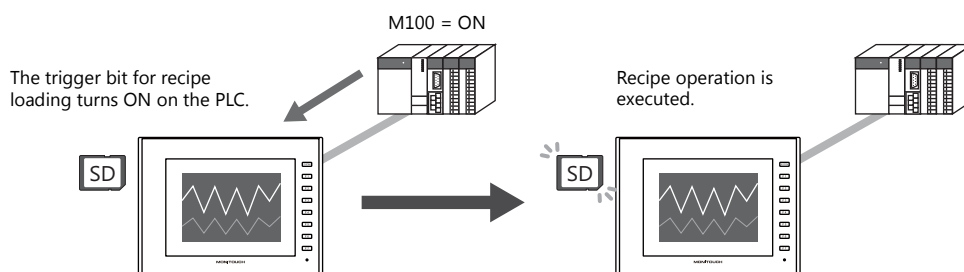
- Reading and writing of files (CSV/BIN)
For details on these operations, refer to ["15.3 Reading Recipes in Units of Files When the PLC Bit Turns ON"](#) and ["15.4 Reading Recipes in Units of Files with Switch Operations"](#).
- Reading and writing of records
For details on these operations, refer to ["15.5 Reading Recipes in Units of Records"](#) and ["15.6 Writing Recipes in Units of Records"](#).

There are two types of control modes in which operation execution commands can be issued. "Global control" allows commands to be executed regardless of the display state of MONITOUCH, and "local control" only accepts commands when a specific screen is displayed.

These modes are described below.

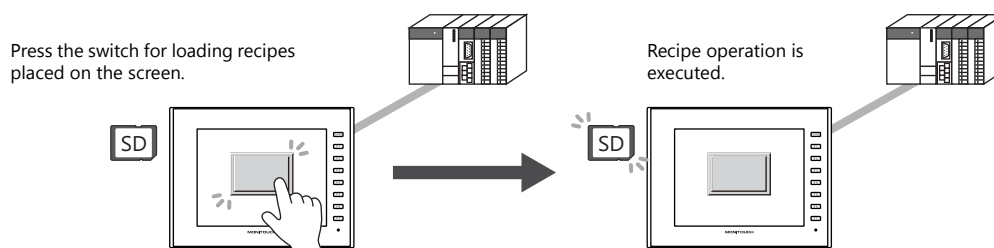
Global Control

Recipe operations can be performed when any screen is displayed using commands from a PLC because reading and writing of data is performed according to a control bit from the PLC, as specified in the recipe settings.



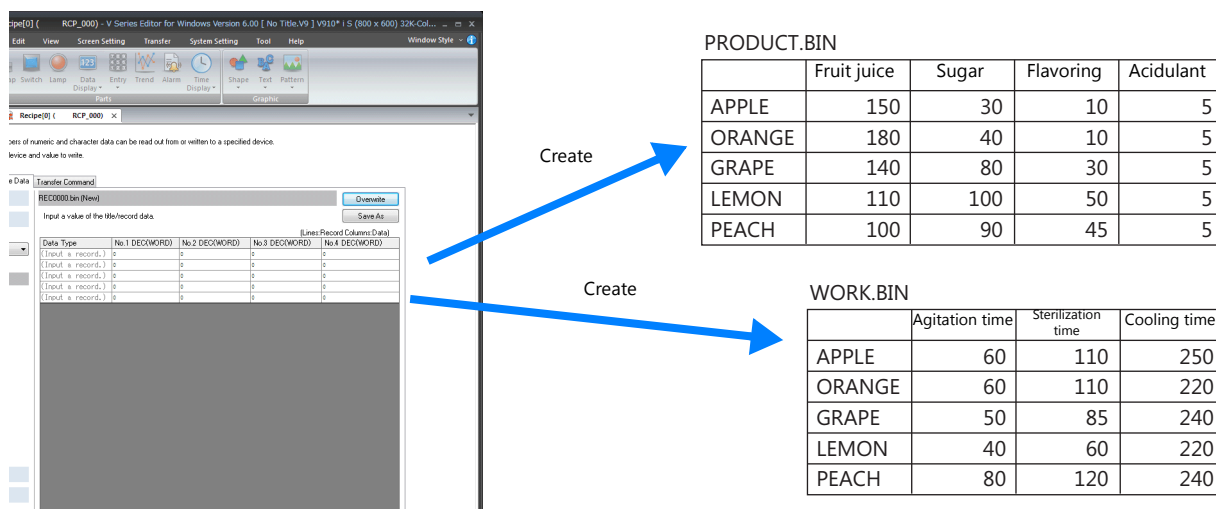
Local Control

Recipe operations are only possible using switches placed on a screen for executing the relevant recipe operations.



15.2 Creating Recipe Data (BIN/CSV Files)

15.2.1 Using the Screen Configuration Software



This section explains the procedure for creating BIN files such as the above two as an example.

Setting Procedure

File Format/Format Settings

- Because two BIN files of different formats are being created, recipe registration is separated into number 0 and number 1. The creation procedure for number 0, PRODUCT.BIN, is explained first. Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
- On the [Standard Operation] tab window, select [File-based transfer] for [Data to Transfer]. Configure the other settings as shown below.

Storage Target Folder	(Blank = directly under the "RECIPE" folder)
File Type	BIN
Storage Target File	File Name Designation
Filename	PRODUCT (bin)

- Next, select the [File Format] tab window. Configure the following settings.

Add record name	Selected
Add title to data	Selected
Number of Records	5
Number of Data	4
Record Name: Characters	8
Record Name: Text Process	LSB->MSB
Data Type	DEC
Data Length	1-Word
Decimal Point	0
Transfer Target	Data
Device Designation	Specify consecutively
Top device	D100

Creating BIN Files

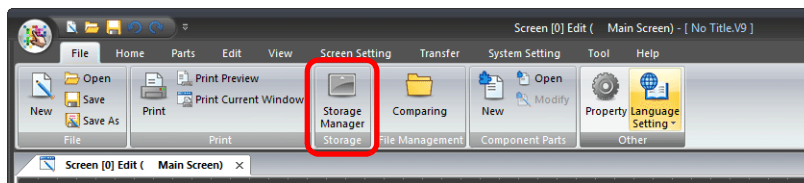
1. Select the [Recipe Data] tab window. Click [Create File].
[PRODUCT.bin (New)] is shown as the title of the creation area on the right and a creation menu is displayed.
2. First, enter title names. Double-click each title name to enter text.
3. Next, enter record names. Double-click each record in the same manner to enter text.
4. Edit each entry of recipe data.
5. After editing the required number of entries, click [Save As] and save the file.

Creating Recipe No. 1

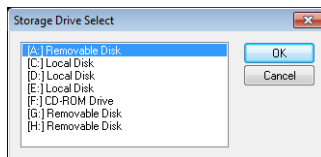
1. Create recipe number 1 in the same manner as recipe number 0.
Click [System Setting] → [Recipe] and select "1" for [No.].
The [Recipe 1]] window is displayed.
2. Create a file in the same manner as number 0.
However, set "3" for [Number of Data] because WORK.BIN has three columns in this example.

Storing on an SD Card

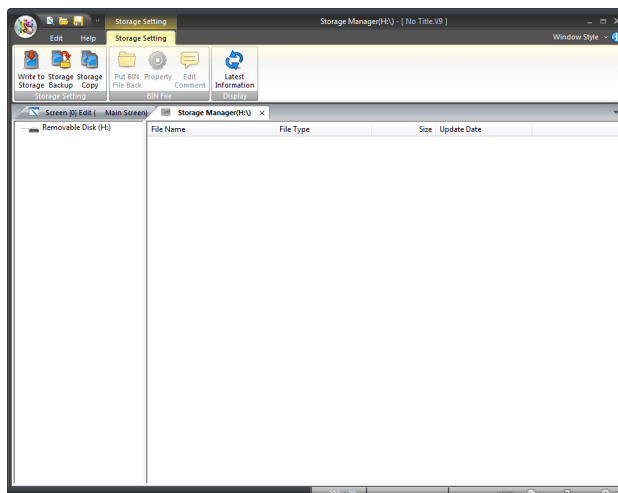
1. Connect the SD card to the PC and click [File] → [Storage Manager].



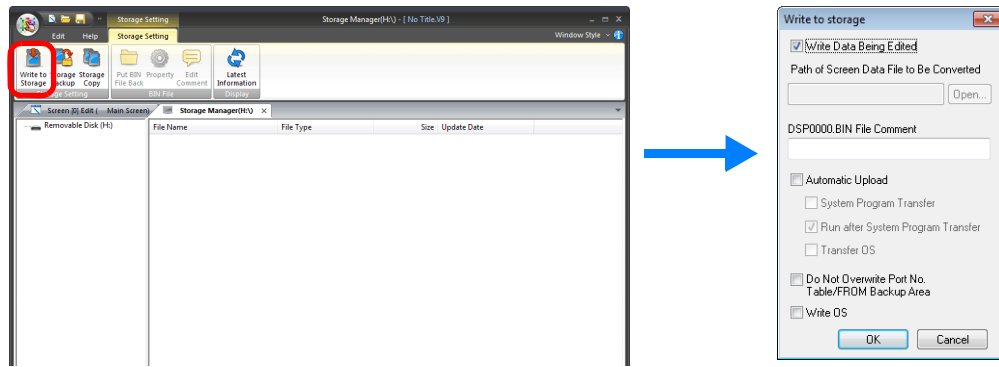
2. The [Storage Drive Select] window is displayed.



3. Specify the drive of the SD card connected in step 1 and click [OK].
The [Storage Manager] window is displayed.



4. Click the [Write to Storage] button on the [Storage Setting] menu.



5. In the [Write to storage] window, check that the [Write Data Being Edited] checkbox is selected and click [OK].
6. An access folder is created on the SD card drive in the [Storage Manager] window. Check that a "RECIPE" folder is created along with some other folders on the SD card drive and then close the [Storage Manager] window.
7. Next, save the created BIN files to the "Recipe" folder that was confirmed to exist in step 6.
Either use Windows Explorer to copy the files or click the [Save As] button on the [Recipe Data] tab window in the recipe settings to save the files directly to the "Recipe" folder.

15.2.2 Creating Recipes Using Excel (CSV Files Only)

Setting Procedure

File Format/Format Settings

1. Configure the [Standard Operation] and [File Format] tab windows with the same settings as the BIN files in the previous section.

- [Standard Operation] tab window

Storage Target Folder	Any location on the SD card
File Type	CSV
Storage Target File	File Name Designation
Filename	PRODUCT (csv)

- [File Format] tab window

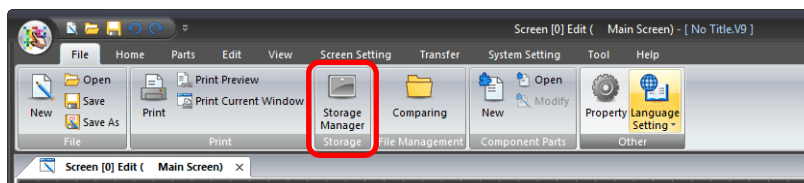
Add record name	Selected
Add title to data	Selected
Number of Records	5
Number of Data	4
Record Name: Characters	8
Record Name: Text Process	LSB->MSB
Data Type	DEC
Data Length	1-Word
Decimal Point	0
Transfer Target	Data
Device Designation	Specify consecutively
Top device	D100

Creating CSV Files

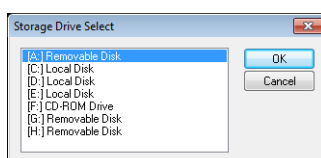
1. Start Excel.
Edit the data in Excel in the intended format.
2. Save the data. Click [File] → [Save As].
3. Select "CSV (Comma delimited) (*.csv)" for [Save as type], specify a filename, and save the file.

Storing on an SD Card

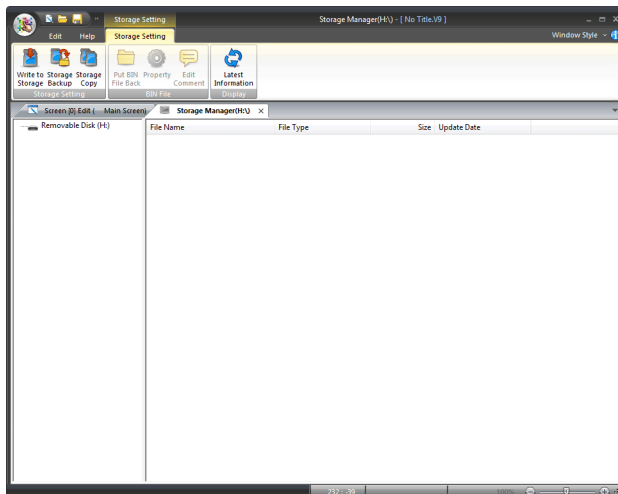
1. Connect the SD card to the PC and click [File] → [Storage Manager].



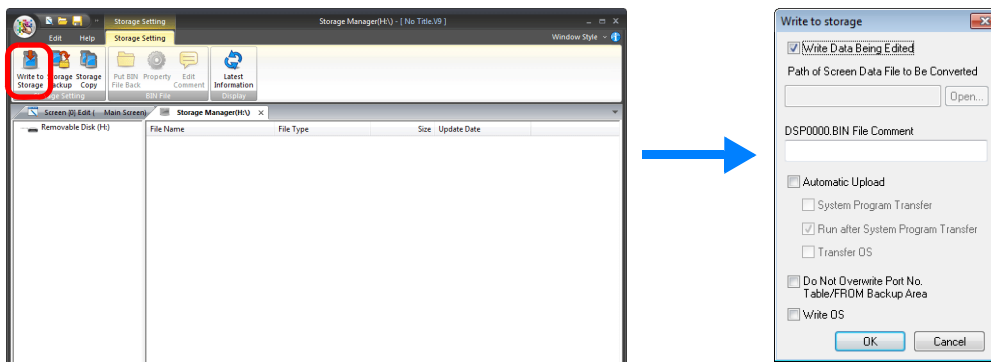
2. The [Storage Drive Select] window is displayed.



- Specify the drive of the SD card connected in step 1 and click [OK].
The [Storage Manager] window is displayed.



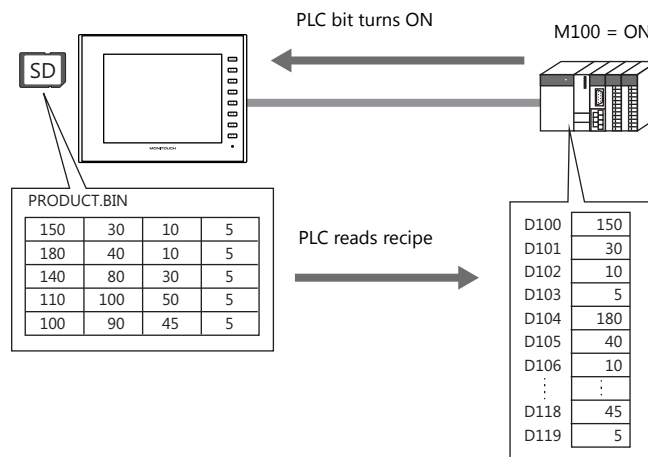
- Click the [Write to Storage] button on the [Storage Setting] menu.



- In the [Write to storage] window, check that the [Write Data Being Edited] checkbox is selected and click [OK].
- An access folder is created on the SD card drive in the [Storage Manager] window. Check that a "RECIPE" folder is created along with some other folders on the SD card drive and then close the [Storage Manager] window.
- Next, save the created CSV file to the "RECIPE" folder that was confirmed to exist in step 6.
Copy the file using Windows Explorer.

15.3 Reading Recipes in Units of Files When the PLC Bit Turns ON

15.3.1 Conceptual Operation



* PLC data can also be written to files. PLC data is written to a BIN file when the relevant bit turns ON.
If a BIN file does not exist, a new BIN file is created automatically.

15.3.2 Setting Procedure

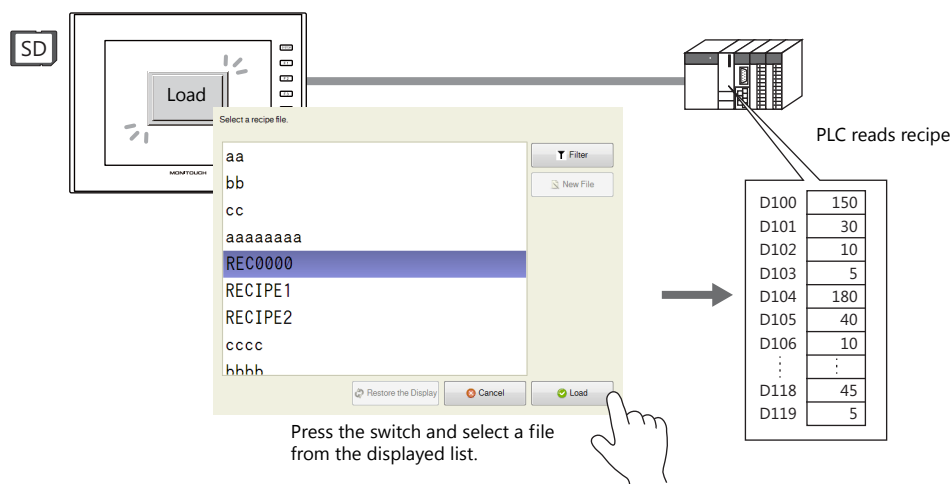
- Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
 - On the [Standard Operation] tab window, select [File-based transfer] for [Data to Transfer].
 - Select [File Name Designation] for [Storage Target File] and define the name of the file for reading (e.g. PRODUCT.bin).
* Select the [Designate by device] checkbox under the filename to allow reading by a specified device memory address such as of a PLC. A fixed file is targeted in this example.
 - Display the [File Format] tab window.
 - Select [Specify consecutively] for [Device Designation] under [Transfer Device Setting] and specify the top device memory address (e.g. D100).
 - Display the [Transfer Command] tab window.
 - Select the [MONITOUCH → PLC] checkbox under [Add Transfer Condition].
Define the PLC bit (e.g. M100) for [Device].
Select [Transfer when bit [ON]] for [Trigger Select].
- This completes the necessary settings. The screen program can be transferred to MONITOUCH.

15.3.3 Operating Procedure

- With the recipe file stored on an SD card, the relevant bit (e.g. M100) on the PLC turns ON.
- The data of the file defined in step 3 of the previous section is read out sequentially to the reading destination starting from the top device memory address (e.g. D100).

15.4 Reading Recipes in Units of Files with Switch Operations

15.4.1 Conceptual Operation



* PLC data can also be written to files. Pressing the switch writes the PLC data to the selected file. If a file does not exist, a new file is created automatically.

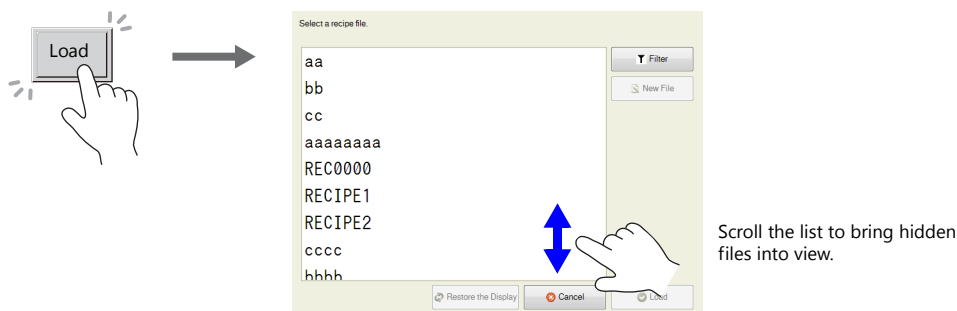
15.4.2 Setting Procedure

1. Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
2. On the [Standard Operation] tab window, select [File-based transfer] for [Data to Transfer].
3. Display the [File Format] tab window.
4. Select [Specify consecutively] for [Device Designation] under [Transfer Device Setting] and specify the top device memory address (e.g. D100).
5. Next, configure the switch settings.
In the switch settings window, change "Standard" to "Recipe" under [Function] in the [Function] settings and then select "Recipe Data Load".
6. Select [0], which was specified in step 1, for [Recipe]. The switch settings differ depending on the selection made here.
7. Select the [Select at the time of execution] checkbox for [File Selection].
(When there is only one file, specify a value for [Specify the number] or [Specify the name].)

This completes the necessary settings. The screen program can be transferred to MONITOUCH.

15.4.3 Operating Procedure

1. With the recipe file stored on an SD card, press the switch (set with "Recipe Data Load" for [Function]) on the screen. A list window for automatic file selection is displayed.



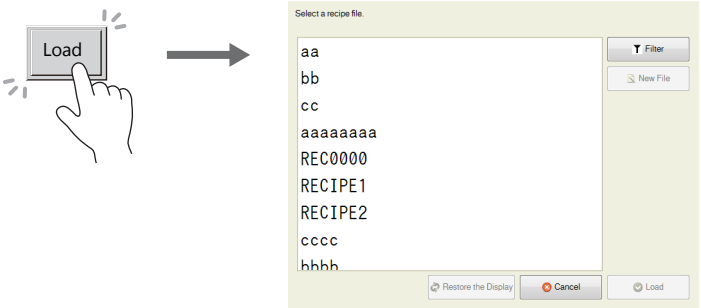
2. Select a file and press the [Load] button to sequentially read out to the reading destination starting from the top device memory address (e.g. D100). When there are files that cannot be viewed in the window at once, either scroll or perform filtering to bring them into view. For more information on filtering, refer to the next page.

Reading Out by Searching for Filenames (Filtering)

When there are many files, searching for filenames (filtering) can be used to find files.

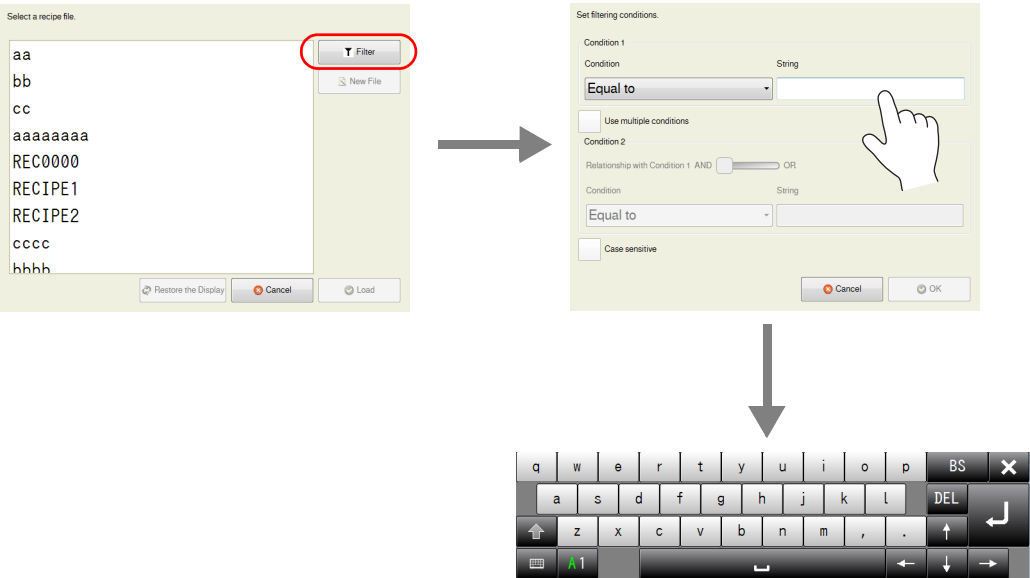
* Searching for record names (filtering) is also possible.

1. With the recipe file stored on an SD card, press the switch (set with "Recipe Data Load" for [Function]) on the screen.
A list window for automatic file selection is displayed.



2. Press the [Filter] button to display the following filtering window.
Enter the first few characters of the filename.

* Press the text field to automatically display the system keyboard. Use this keyboard to enter text.



3. Press [OK] to display a list of files with filenames that contain the entered text.
When there are files that cannot be viewed in the window at once, the entire list can be checked by scrolling.



4. Find the target file, select it, and press [Load]. The target file is read out sequentially to the reading destination starting from the top device memory address (e.g. D100).



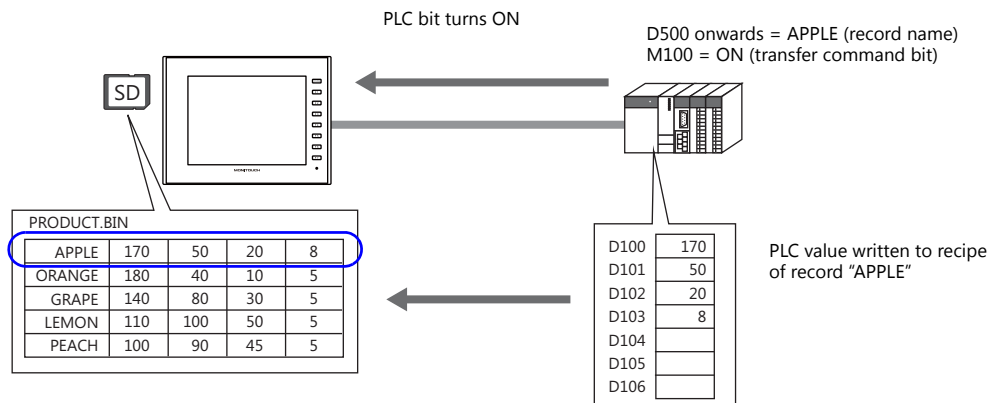
The recipe data of the file is read into the PLC.



15.6 Writing Recipes in Units of Records

15.6.1 Specifying Record Names for Writing

Conceptual Operation



Setting Procedure

1. Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
2. On the [Standard Operation] tab window, select [Record-based transfer] for [Data to Transfer].
3. Select [File Name Designation] for [Storage Target File] and define the name of the file for reading (e.g. PRODUCT.bin).
4. For the [Transfer Record] settings, select the [Designate by device] checkbox next to [Record Name Designation].
Define the device memory address for record name designation (e.g. D500).
5. Display the [File Format] tab window.
6. Select [Data] for [Transfer Target] under [Transfer Device Setting] and specify the top device memory address (e.g. D100).
7. Display the [Transfer Command] tab window.
8. Select the [PLC → MONITOUCH] checkbox under [Add Transfer Condition].
Define the PLC bit (e.g. M100) for [Device].
Select [Transfer when bit [ON]] for [Trigger Select].

This completes the necessary settings. The screen program can be transferred to MONITOUCH.

Operating Procedure

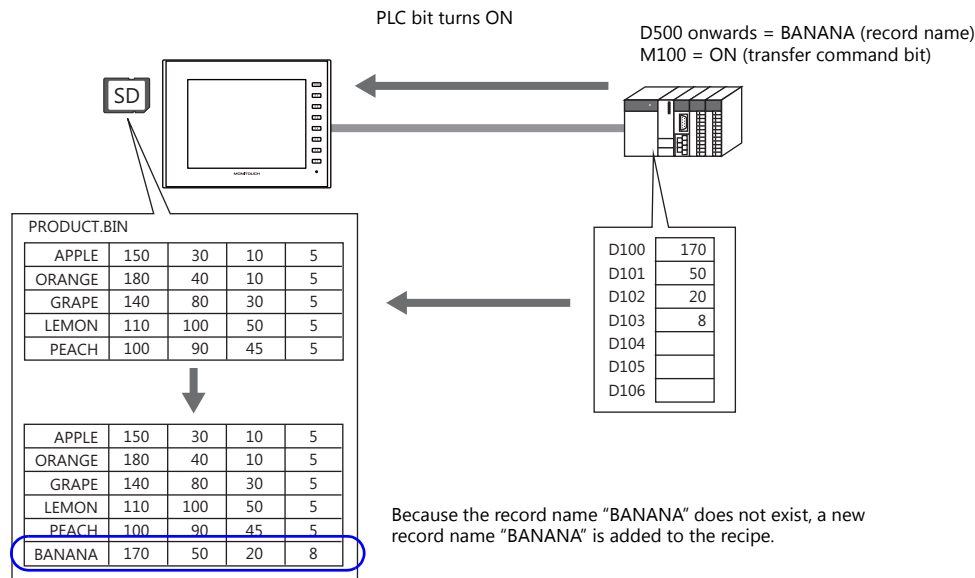
1. With the recipe file stored on an SD card, specify the record name (e.g. "APPLE") to the device memory address (e.g. D500) on the PLC using ASCII code characters.
2. In addition, set the relevant bit (e.g. M100) to ON.
3. The data stored in the transfer device memory (e.g. D100) is written sequentially starting from the top address to the "APPLE" record in the file defined in step 3 of the previous section.

15.6.2 Creating New Records

New records can be created by defining record numbers or records names that do not currently exist and executing writing.

* Files can also be created in the same manner.

Conceptual Operation



Setting Procedure

1. Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
2. On the [Standard Operation] tab window, select [Record-based transfer] for [Data to Transfer].
3. Select [File Name Designation] for [Storage Target File] and define the name of the file for reading (e.g. PRODUCT.bin).
4. For the [Transfer Record] settings, select the [Designate by device] checkbox next to [Record Name Designation].
Define the device memory address for record name designation (e.g. D500).
5. Display the [File Format] tab window.
6. Select [Data] for [Transfer Target] under [Transfer Device Setting] and specify the top device memory address (e.g. D100).
7. Display the [Transfer Command] tab window.
8. Select the [PLC → MONITOUCH] checkbox under [Add Transfer Condition].
Define the PLC bit (e.g. M100) for [Device].
Select [Transfer when bit [ON]] for [Trigger Select].

This completes the necessary settings. The screen program can be transferred to MONITOUCH.

Operating Procedure


1. With the recipe file stored on an SD card, specify the record name (e.g. "BANANA") to the device memory address (e.g. D500) on the PLC using ASCII code characters.
2. In addition, set the relevant bit (e.g. M100) to ON.
3. Because the record name "BANANA" does not exist in the file defined in step 3 of the previous section, the data in the transfer device memory (e.g. D100) is written sequentially starting from the top address to a newly added record named "BANANA".

Difference in Operation Between Record Name Designation and Record Number Designation

When creating in units of records, operation differs between creating a new record name and creating a record number.

- Record name
When a new record name is created that did not previously exist, records are added by inserting a line at the end of the relevant file.


APPLE	60	110	250
GRAPE	50	85	240
LEMON	40	60	220
PEACH	80	120	240



APPLE	60	110	250
GRAPE	50	85	240
LEMON	40	60	220
PEACH	80	120	240
ORANGE	60	110	220

- Record number
When a new record number is created that did not previously exist, a new record is created with the specified record number. If there is a gap between the end number and the new number, empty lines are registered.

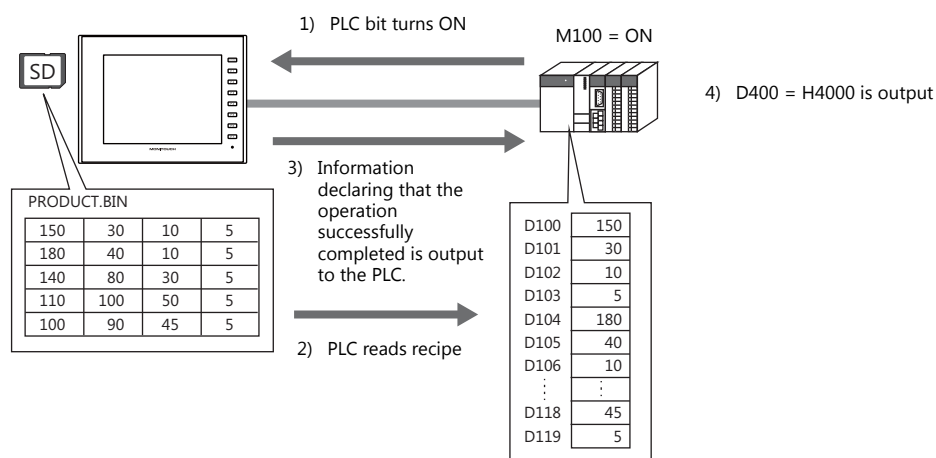
No. 1	60	110	250
No. 2	50	85	240
No. 3	40	60	220



No. 1	60	110	250
No. 2	50	85	240
No. 3	40	60	220
No. 4	0	0	0
No. 5	0	0	0
No. 6	0	0	0
No. 7	0	0	0
No. 8	60	110	220

15.7 Checking that the Recipe Function is Operating Correctly

15.7.1 Conceptual Operation



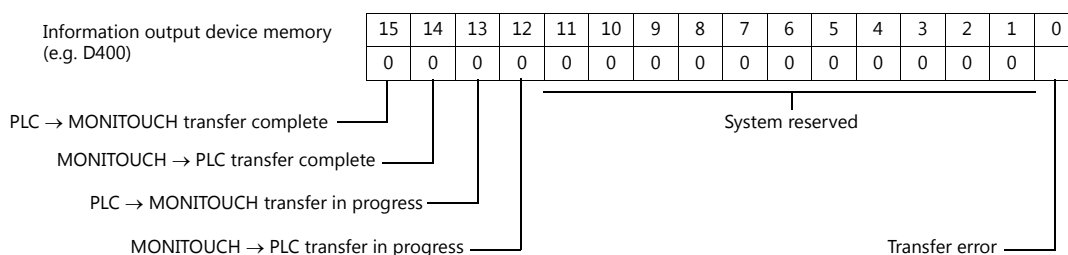
15.7.2 Setting Procedure

- Click [System Setting] → [Recipe] and select "0" for [No.]. The [Recipe [0]] window is displayed.
- On the [Standard Operation] tab window, select [File-based transfer] for [Data to Transfer].
- Select [File Name Designation] for [Storage Target File] and define the name of the file for reading (e.g. PRODUCT.bin).
 - * Select the [Designate by device] checkbox under the filename to allow reading by a specified device memory address such as of a PLC. A fixed file is targeted in this example.
- Display the [File Format] tab window.
- Select [Specify consecutively] for [Device Designation] under [Transfer Device Setting] and specify the top device memory address (e.g. D100).
- Display the [Transfer Command] tab window.
- Select the [MONITOUCH → PLC] checkbox under [Add Transfer Condition].
 - Define the PLC bit (e.g. M100) for [Device].
 - Select [Transfer when bit [ON]] for [Trigger Select].
- Select the [Use Info Output Device] checkbox under [Device Setting] and specify a device memory address (e.g. D400). This completes the necessary settings. The screen program can be transferred to MONITOUCH.

15.7.3 Checking Procedure

- With the recipe file stored on an SD card, the relevant bit (e.g. M100) on the PLC turns ON.
- The data of the file defined in step 3 of the previous section is read out sequentially to the reading destination starting from the top device memory address (e.g. D100).
- Check the D400 setting. If transfer was completed successfully, the 14th bit turns ON (D400 = H4000).

* The content of the information output device memory is shown below. For details, refer to [page 15-21](#).



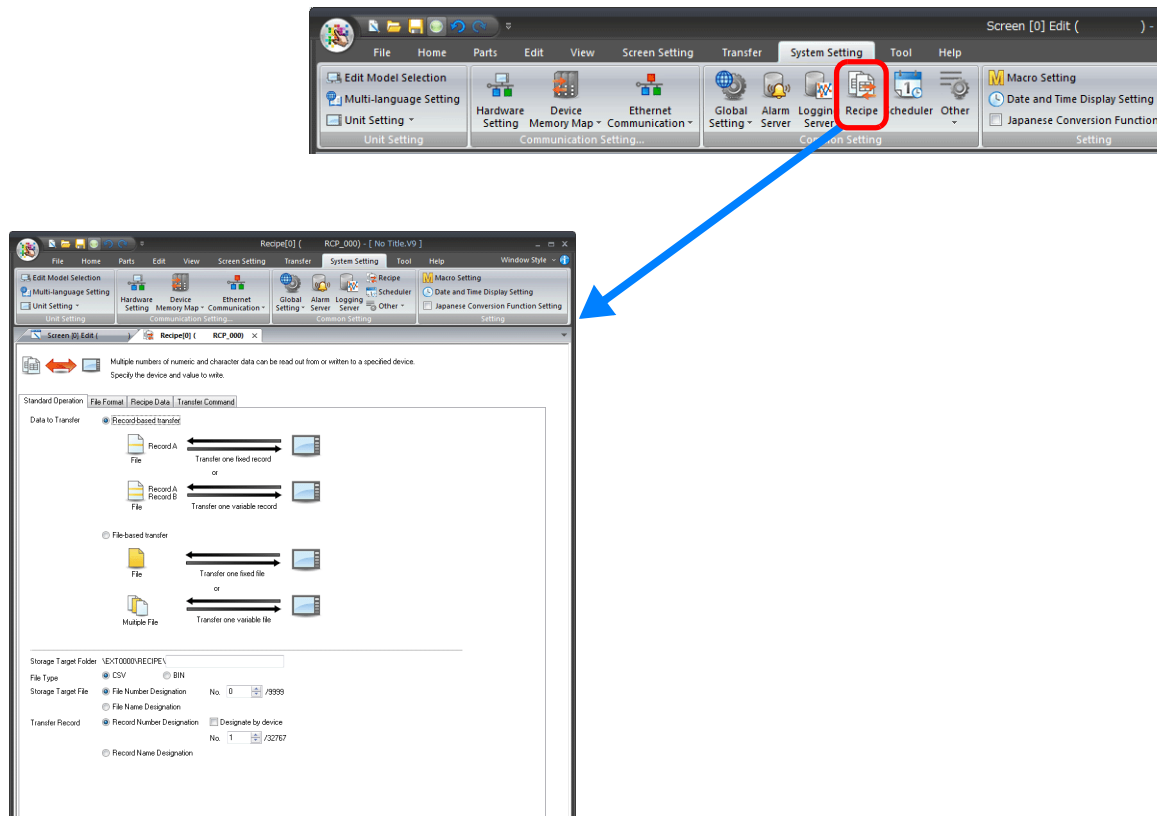
15.8 Detailed Settings

15.8.1 Location of Settings

Click [System Setting] → [Recipe].

A window for specifying the recipe number is displayed. Select a number and click [OK].

The [Recipe] settings window is displayed.



15.8.2 Recipe Settings (0 to 255)

The recipe settings area is used to newly register information when there are differences in the settings required for recipe management, such as the format of files that store recipe data and execution start bits etc. First, a number is set to the recipe setting.

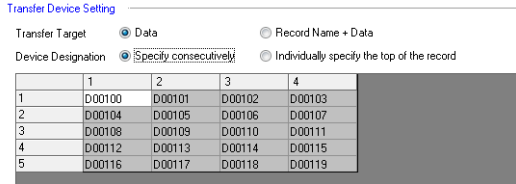
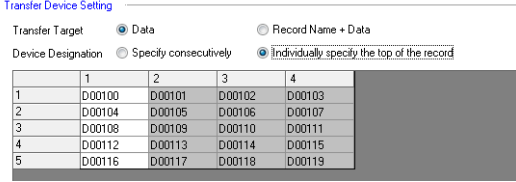
[Standard Operation] Tab Window

Item		Description
Data to Transfer	Record-based transfer	Select this option to read and write recipe data in units of records (rows or columns).
	File-based transfer	Select this option to read and write recipe data in units of files.
Storage Target Folder		Define the storage target folder for files on the SD card. Define one folder per recipe setting.
File Type		Select the file format of the data to store.
Storage Target File	File Number Designation (0 to 9999)	Set the file number of the storage target. When the <input type="checkbox"/> Designate by device checkbox is selected, the storage target can be defined by specifying a number to a device memory address.
	File Name Designation	Set the filename of the storage target. When the <input type="checkbox"/> Designate by device checkbox is selected, the storage target can be defined by specifying a name to a device memory address.
Transfer Record	Record Number Designation (0 to 32767)	Set the record number of the storage target. When the <input type="checkbox"/> Designate by device checkbox is selected, the storage target can be defined by specifying a number to a device memory address.
	Record Name Designation	Set the record name of the storage target. When the <input type="checkbox"/> Designate by device checkbox is selected, the storage target can be defined by specifying a name to a device memory address.

* BIN files result in faster processing speed on MONITOUCH than CSV files.
However, checking and editing of BIN file content requires Hakko Electronics' "V-SFT" software.

[File Format] Tab Window

Item		Description																																															
Line/Column Contents	Line: Record, Column: Data	Records <table><tr><td>APPLE</td><td>60</td><td>110</td><td>250</td></tr><tr><td>ORANGE</td><td>60</td><td>110</td><td>220</td></tr><tr><td>GRAPE</td><td>50</td><td>85</td><td>240</td></tr><tr><td>LEMON</td><td>40</td><td>60</td><td>220</td></tr><tr><td>PEACH</td><td>80</td><td>120</td><td>240</td></tr></table> Data				APPLE	60	110	250	ORANGE	60	110	220	GRAPE	50	85	240	LEMON	40	60	220	PEACH	80	120	240																								
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LEMON	40	60	220																																														
PEACH	80	120	240																																														
	Line: Data, Column: Record *1	Records <table><tr><td>APPLE</td><td>ORANGE</td><td>GRAPE</td><td>LEMON</td><td>PEACH</td></tr><tr><td>60</td><td>60</td><td>50</td><td>40</td><td>80</td></tr><tr><td>110</td><td>110</td><td>85</td><td>60</td><td>120</td></tr><tr><td>250</td><td>220</td><td>240</td><td>220</td><td>240</td></tr></table> Data				APPLE	ORANGE	GRAPE	LEMON	PEACH	60	60	50	40	80	110	110	85	60	120	250	220	240	220	240																								
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Add record name		Set how to handle the first column (or first line) in the CSV/BIN file. <ul style="list-style-type: none">Unselected The first column is handled as data. <table><tr><td>60</td><td>110</td><td>250</td></tr><tr><td>60</td><td>110</td><td>220</td></tr><tr><td>50</td><td>85</td><td>240</td></tr><tr><td>40</td><td>60</td><td>220</td></tr><tr><td>80</td><td>120</td><td>240</td></tr></table>Selected The first column is handled as a record name (2 to 255). <table><tr><td>APPLE</td><td>60</td><td>110</td><td>250</td></tr><tr><td>ORANGE</td><td>60</td><td>110</td><td>220</td></tr><tr><td>GRAPE</td><td>50</td><td>85</td><td>240</td></tr><tr><td>LEMON</td><td>40</td><td>60</td><td>220</td></tr><tr><td>PEACH</td><td>80</td><td>120</td><td>240</td></tr></table>				60	110	250	60	110	220	50	85	240	40	60	220	80	120	240	APPLE	60	110	250	ORANGE	60	110	220	GRAPE	50	85	240	LEMON	40	60	220	PEACH	80	120	240									
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LEMON	40	60	220																																														
PEACH	80	120	240																																														
Add title to data		Set how to handle the first line (or first column) in the CSV file. <ul style="list-style-type: none">Unselected The first line is handled as data. <table><tr><td>APPLE</td><td>60</td><td>110</td><td>250</td></tr><tr><td>ORANGE</td><td>60</td><td>110</td><td>220</td></tr><tr><td>GRAPE</td><td>50</td><td>85</td><td>240</td></tr><tr><td>LEMON</td><td>40</td><td>60</td><td>220</td></tr><tr><td>PEACH</td><td>80</td><td>120</td><td>240</td></tr></table>Selected The first line is handled as the title. <table><tr><td></td><td>Agitation time</td><td>Sterilization time</td><td>Cooling time</td></tr><tr><td>APPLE</td><td>60</td><td>110</td><td>250</td></tr><tr><td>ORANGE</td><td>60</td><td>110</td><td>220</td></tr><tr><td>GRAPE</td><td>50</td><td>85</td><td>240</td></tr><tr><td>LEMON</td><td>40</td><td>60</td><td>220</td></tr><tr><td>PEACH</td><td>80</td><td>120</td><td>240</td></tr></table>				APPLE	60	110	250	ORANGE	60	110	220	GRAPE	50	85	240	LEMON	40	60	220	PEACH	80	120	240		Agitation time	Sterilization time	Cooling time	APPLE	60	110	250	ORANGE	60	110	220	GRAPE	50	85	240	LEMON	40	60	220	PEACH	80	120	240
APPLE	60	110	250																																														
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GRAPE	50	85	240																																														
LEMON	40	60	220																																														
PEACH	80	120	240																																														
Delimiter (Comma, Tab, Period *2, Semicolon)		This setting is only available when [CSV] is selected for [File Type] on the [Standard Operation] tab window. Select the character for delimiting data.																																															
Number of Records (1 to 32767)		This setting is only available when [File-based transfer] is selected for [Data to Transfer] on the [Standard Operation] tab window. Set the number of records per file.																																															
Number of Data (1 to 4096)		Set the number of data entries on the first line (or first column) (per record) in the CSV/BIN file.																																															

Item		Description
Data Type (DEC/DEC-/HEX/OCT/BIN/CHAR/BCD/FLOAT)		Set the data format.
Data Length (1-Word/2-Word)		
Decimal Point (0 to 32)		
Characters (2 to 255)		
Text Process (LSB → MSB)		
Transfer Target		This setting is only available when the [Add record name] checkbox is selected.
	Data	Only transfer data.
	Record Name + Data	Transfer record names and data.
Device Designation		This setting is only available when [File-based transfer] is selected for [Data to Transfer] on the [Standard Operation] tab window.
	Specify consecutively	Specify the top device memory address only. The number of bits required for the data is assigned consecutively. 
	Individually specify the top of the record	A top device memory address for each record in the file can be specified. 
V8 Compatible Setting		The automatically converted settings when a V8 recipe screen is converted.

*1 This setting is only available when [CSV] is selected for [File Type] on the [Standard Operation] tab window.

*2 The decimal point is indicated using a comma for German, Italian, French and other relevant languages. For this reason, a period character may be used as the delimiter in CSV files. Note that when editing this data in Excel, the relevant option must be changed for the display format.

[Recipe Data] Tab Window

Item		Description
Create File		Select when creating a new CSV or BIN file.
	Overwrite	Save the created file to an existing file.
	Save As	Save the created file using a different filename. The save destination is not limited to the storage device drive and can be changed to any location on the PC.
	Page	Switch the screen for editing.
	Interface Language	Switch the language for editing.
File Editing		Select when loading an existing CSV or BIN file.
	Storage Drive Select	Select the drive of the SD card/USB flash drive connected to the PC.
	Storage Target Folder	The folder specified on the [Standard Operation] tab window is displayed automatically.
	File List	The files in the specified folder are displayed.
	Edit	Select a CSV/BIN file displayed under [File List] and click the [Edit] button. The file is loaded into the editing window on the right.
	Copy	Select a CSV/BIN file displayed under [File List] and click the [Copy] button. This makes a copy of the file.
	Delete	Select a CSV/BIN file displayed under [File List] and click the [Delete] button. This deletes the file.
	Rename	Select the CSV/BIN file displayed under [File List] and click the [Rename] button. The file name can be changed.
Edit a file in another folder		Edit a file in a folder other than the storage target folder. Click to display a window for specifying the folder.
Newest File		Select when loading an existing CSV or BIN file that was used recently.

[Transfer Command] Tab Window

Item	Description																		
Add Transfer Condition	Specify the operation to perform and trigger bit to use when transferring the recipe.																		
	PLC → MONITOUCH/MONITOUCH → PLC	Select [PLC → MONITOUCH] to store the data on the PLC onto an SD card. Select [MONITOUCH → PLC] to transfer the data on an SD card to the PLC.																	
	Device	Specify the trigger bit used for outputting transfer commands.																	
	Trigger Select *	The timing of the transfer command trigger can be selected. <ul style="list-style-type: none">Transfer when bit ONTransfer when bit OFF																	
Device Setting	Use command device	Select this checkbox to prohibit recipe transfer operations. Turning this bit ON prevents execution of transfer even if a recipe is selected and a transfer command is issued.																	
	Use Info Output Device	Select this checkbox to check the state of recipe transfer operations on the specified device memory address. Information is divided across different bit numbers. Refer to the following table for details. <table><tr><th>Device</th><th>Bit No.</th><th>State</th></tr><tr><td rowspan="5">n</td><td>0</td><td>Transfer error 0: No error 1: Transfer error</td></tr><tr><td>12</td><td>MONITOUCH → PLC transfer in progress 1: Transferring (changes to 0 when transfer is complete)</td></tr><tr><td>13</td><td>PLC → MONITOUCH transfer in progress 1: Transferring (changes to 0 when transfer is complete)</td></tr><tr><td>14</td><td>MONITOUCH → PLC transfer complete 1: Transfer complete (must be cleared manually after checking)</td></tr><tr><td>15</td><td>PLC → MONITOUCH transfer complete 1: Transfer complete (must be cleared manually after checking)</td></tr><tr><td>n+1</td><td>-</td><td>External media error 4: Media disconnected 12: Writing error 16: Reading error</td></tr></table>	Device	Bit No.	State	n	0	Transfer error 0: No error 1: Transfer error	12	MONITOUCH → PLC transfer in progress 1: Transferring (changes to 0 when transfer is complete)	13	PLC → MONITOUCH transfer in progress 1: Transferring (changes to 0 when transfer is complete)	14	MONITOUCH → PLC transfer complete 1: Transfer complete (must be cleared manually after checking)	15	PLC → MONITOUCH transfer complete 1: Transfer complete (must be cleared manually after checking)	n+1	-	External media error 4: Media disconnected 12: Writing error 16: Reading error
	Device	Bit No.	State																
	n	0	Transfer error 0: No error 1: Transfer error																
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15		PLC → MONITOUCH transfer complete 1: Transfer complete (must be cleared manually after checking)																	
n+1	-	External media error 4: Media disconnected 12: Writing error 16: Reading error																	
Output Transfer File No.	This setting is only available when [File-based transfer] is selected for [Data to Transfer] and [File Number Designation] is selected for [Storage Target File] on the [Standard Operation] tab window. Select this checkbox to specify a device memory address. The transferred file number can be output.																		
Output Transfer File Name	This setting is only available when [File-based transfer] is selected for [Data to Transfer] and [File Name Designation] is selected for [Storage Target File] on the [Standard Operation] tab window. Select this checkbox to specify a device memory address. The transferred file name can be output using the relevant number of characters.																		
Output Transfer Record No.	This setting is only available when [Record-based transfer] is selected for [Data to Transfer] and [Record Number Designation] is selected for [Storage Target File] on the [Standard Operation] tab window. Select this checkbox to specify a device memory address. The transferred record number can be output.																		
Output Transfer Record Name	This setting is only available when [Record-based transfer] is selected for [Data to Transfer] and [Record Name Designation] is selected for [Storage Target File] on the [Standard Operation] tab window. Select this checkbox to specify a device memory address. The transferred record name can be output using the relevant number of characters.																		

* Operation when MONITOUCH is starting up
Transfer is executed when the trigger bit is ON or OFF during startup.

15.9 Switch Operated Functions

15.9.1 Switch Types

Operation	Switch Function	Attached Setting	Details of Operation
Filter	Recipe Data Save Recipe Data Load Recipe Data Delete	Select the [Select at the time of execution] checkbox for [File Selection]/[Record Selection].	Filter and display filenames or record names for when selecting a recipe.
New	Recipe Data Save	Select the [Select at the time of execution] checkbox for [File Selection]/[Record Selection].	Create new recipe data by naming a file or record and save to an SD card.
Save	Recipe Data Save	Select the [Select at the time of execution] checkbox for [File Selection]/[Record Selection].	Write data on a PLC to the recipe on an SD card. (Filter and display filenames or record names for when selecting a recipe.)
	Recipe Data Save	Select [Specify the number] or [Specify the name] for [File Selection]/[Record Selection].	Write data on a PLC to the recipe (file/record specified with the switch) on an SD card.
Load	Recipe Data Load	Select the [Select at the time of execution] checkbox for [File Selection]/[Record Selection].	Load recipe data on an SD card to a PLC. (Filter and display filenames or record names for when selecting a recipe.)
	Recipe Data Load	Select [Specify the number] or [Specify the name] for [File Selection]/[Record Selection].	Load recipe data (file/record specified with the switch) on an SD card to a PLC.
Delete	Recipe Data Delete	Select the [Select at the time of execution] checkbox for [File Selection].	Delete the recipe file on an SD card. (Filter and display filenames or record names for when selecting a recipe.)
	Recipe Data Delete	Select [Specify the number] or [Specify the name] for [File Selection].	Delete the specified recipe file on an SD card.
	Recipe Data Delete	Select the [Select at the time of execution] checkbox for [Record Selection].	Empty (delete) a record on an SD card. (Filter and display record names for when selecting a recipe.)
	Recipe Data Delete	Select [Specify the number] or [Specify the name] for [Record Selection].	Empty (delete data) the specified record on an SD card.

Filter

Target/Conditions

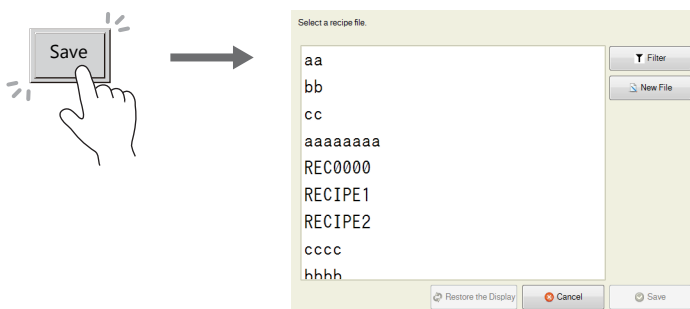
Filter target	Filenames and record names
Filter length	Max. 64 characters (both two-byte and one-byte)
Filter conditions *	Equal to/Not equal to/Begin with/Not begin with/End with/Not end with/Include/Not include
Location of execution	Executable by pressing switches with [Function] set to [Recipe Data Save], [Recipe Data Load], or [Recipe Data Delete].

* Not case-sensitive for file name targets.
Case-sensitive for record names.

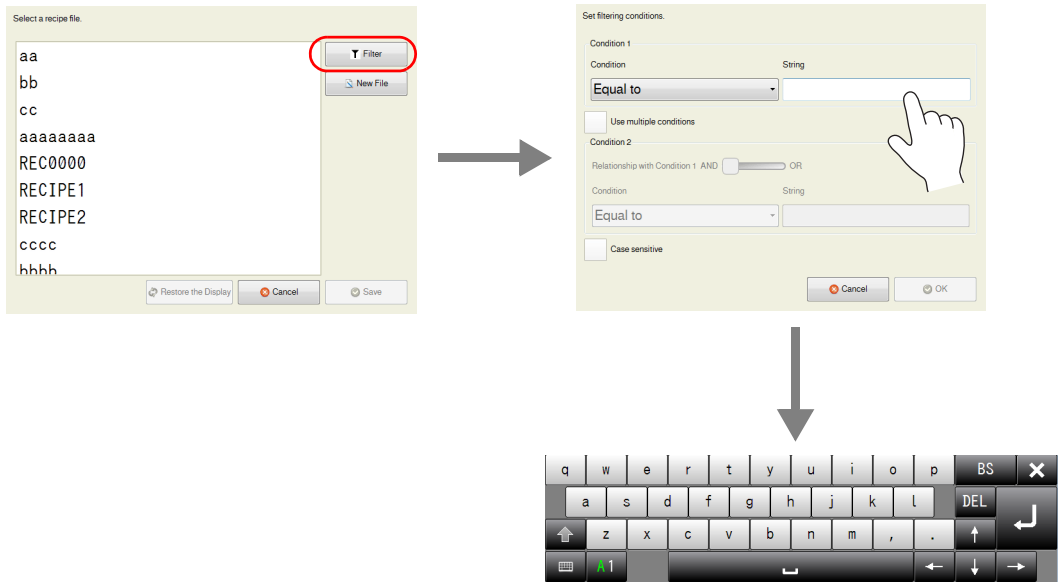
Operating Procedure

The operating procedure is explained using the example of pressing a [Recipe Save Data] switch.

1. Set the recipe number in the editor and transfer a [Recipe Data Save] switch with the [Select at the time of execution] checkbox selected for [File Selection]/[Record Selection] to the V9 series unit in advance.
2. Press the [Recipe Save Data] switch on the V9 series unit. The following list window is displayed.



3. Press the [Filter] button to display the following text filtering window.
Enter the first few characters of the filename or record name.
- * Press the text field to automatically display the system keyboard. Use this keyboard to enter text.



4. Selecting the [Include] filter condition and pressing the [OK] button displays a list of files or records with names that contain the entered text. (When the entire list cannot be viewed in the window at once, hidden items can be checked by scrolling.)



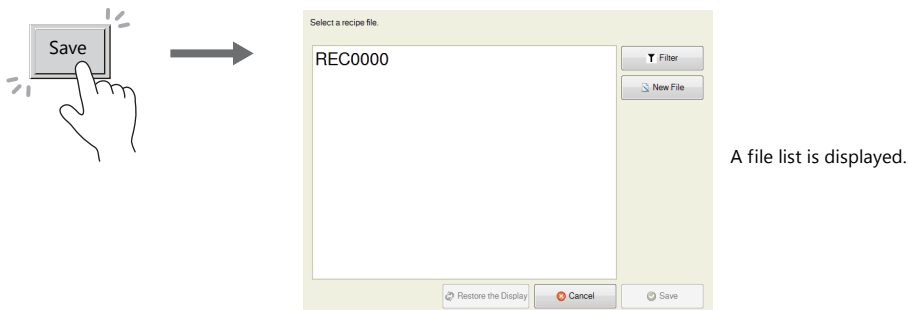
5. Find the target file or record, select it, and press [Save]. The following confirmation message is displayed. Press [Yes] to overwrite.



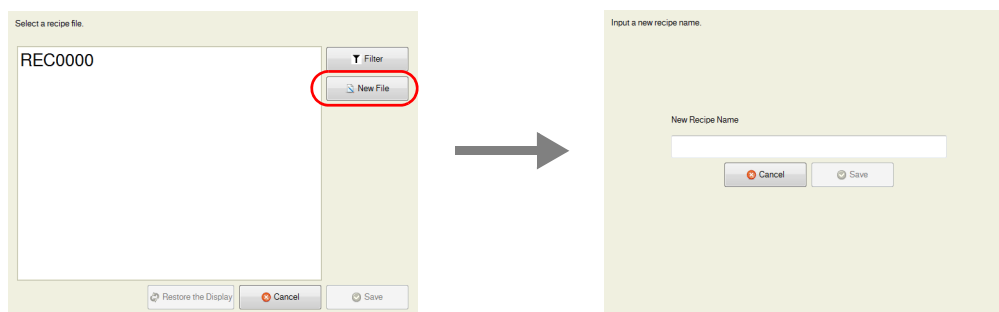
New

File-Based Targets

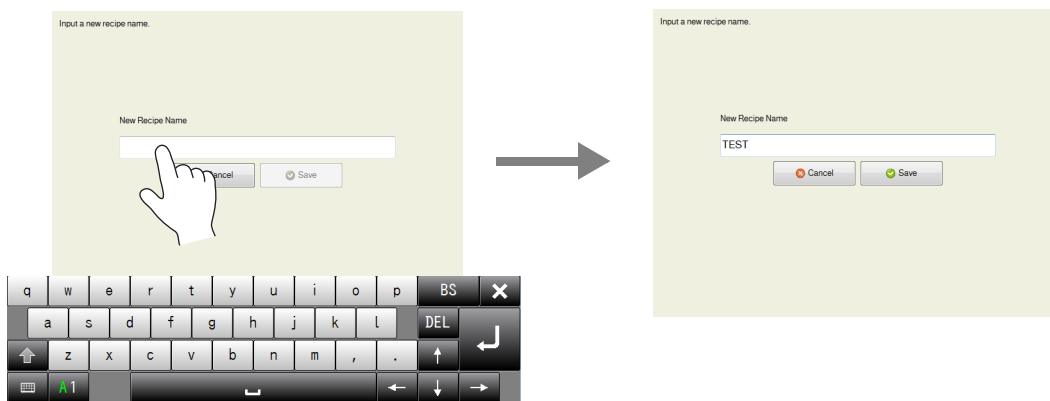
1. Set the recipe number in the editor and transfer a [Recipe Save Data] switch with the [Select at the time of execution] checkbox selected for [File Selection] to the V9 series unit in advance.
2. Press the [Recipe Save Data] switch on the V9 series unit. The window shown below is displayed.



3. Click the [New File] button. The window for entering a new recipe name is displayed.

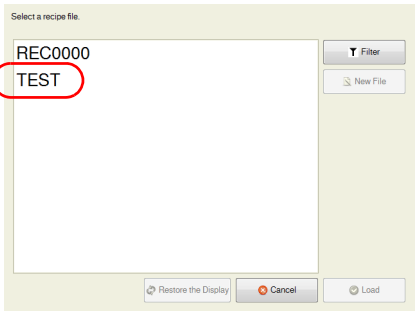


4. Press the text field to automatically display the system keyboard. Use this keyboard to enter the name of the new file to create.



Press the text field to display the system keyboard.

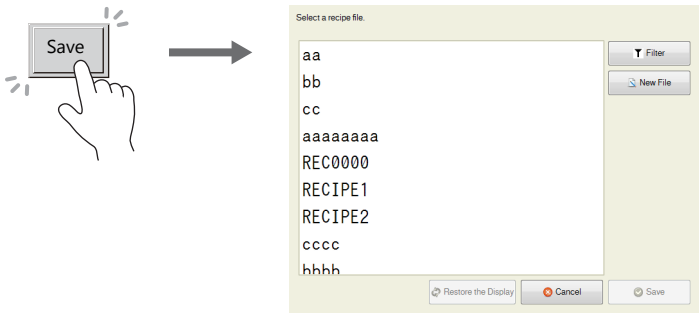
- 5. Press the [Save] button to create a new file.
Press the [Recipe Load Data] switch to display a list that contains the newly created file.



Record-Based Targets

When the target is a record, select [Record Name Designation] for [Transfer Record] in the recipe settings in advance.

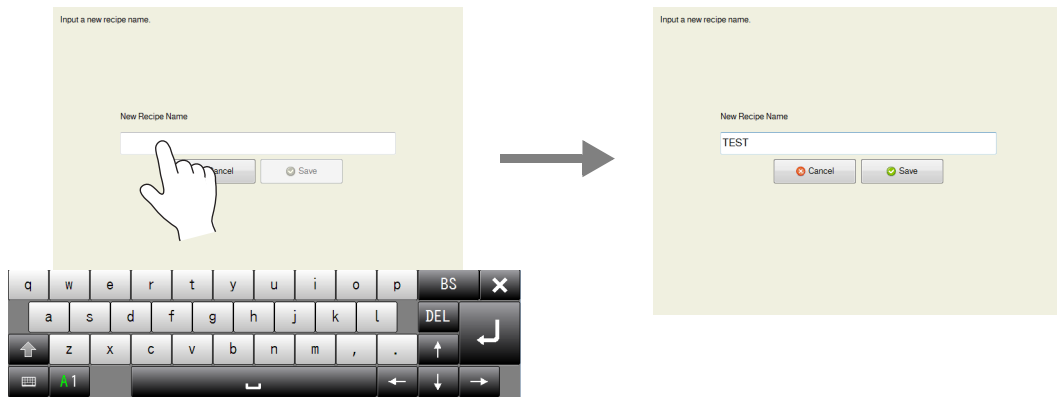
- 1. Set the recipe number in the editor and transfer a switch with the [Select at the time of execution] checkbox selected for [Record Selection] to the V9 series unit in advance.
- 2. Press the [Recipe Save Data] switch on the V9 series unit. The window shown below is displayed.



- 3. Click the [New File] button. The window for entering a new recipe name is displayed.



4. Press the text field to automatically display the system keyboard. Use this keyboard to enter the name of the new record to create.



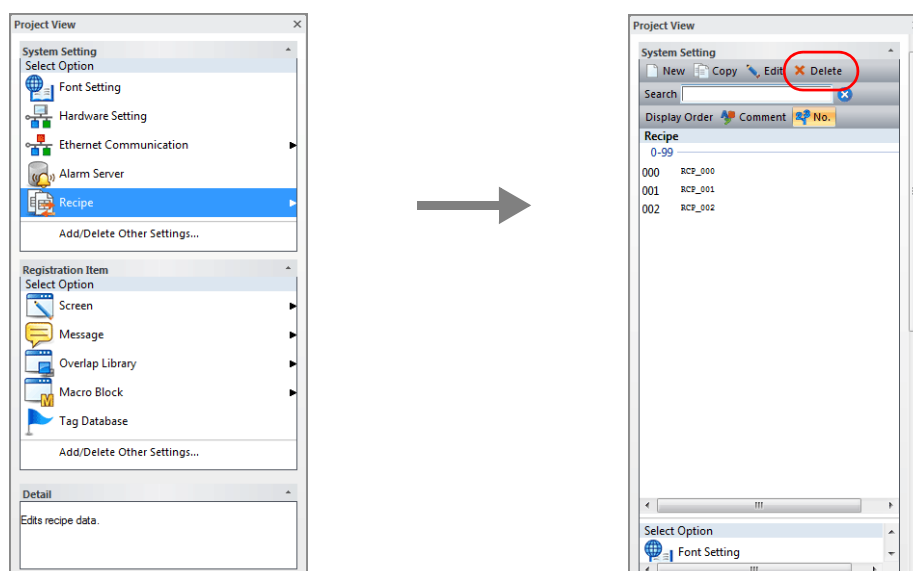
Press the text field to display the system keyboard.

5. Press the [Save] button to create a new record.

15.10 Specifications

Number of recipes	256 ^{*1}
Number of files	No limit (up to the capacity of the target storage device)
Number of records per file	32767
Number of data entries per record	4096 (number of words per record: 65535)
Number of folder name characters	Maximum of 255 characters (one-byte) for the full path name ^{*2}
Number of filename characters	Maximum of 64 characters (one-byte) or 32 characters (two-byte) ^{*2}
Number of record name characters	Maximum of 255 characters (one-byte) ^{*2}
Number of transferable words	No limitation ^{*3}
Number of recipes executable at the same time	Maximum of 4 recipes ^{*4}
Number of files transferable at the same time	1
Number of records transferable at the same time	When [Record-based transfer] is set for [Data to Transfer]: 2 When [File-based transfer] is set for [Data to Transfer]: Number set for [Number of Records] on the [File Format] tab window (max. 32767 records).

- ^{*1} Check how many recipes are currently registered by clicking [Tool] → [List of Memory Use] or [View] → [Project]. Delete registered recipes by first displaying the [Project] view window via [View] → [Project], and then clicking [Recipe] via [Add/Delete Other Settings] under [System Setting]. Double-click on [Recipe] to display the current recipes in the list. Select the recipes for deletion and click the [Delete] button.



- ^{*2} Not case-sensitive for one-byte characters.
^{*3} Note that if 4096 words is exceeded, transfer processing is executed by internally dividing the number of records into units of 4096 words.
^{*4} Execution of a fifth recipe does not generate an error. The data of the fifth recipe is put on standby until the execution of any one of the four recipes is completed, and the recipe data on standby is executed.

Notes

- Global operations and local operations cannot be executed at the same time on the same recipe number.
- When the screen is changed during recipe operation:
 - Global: Not affected.
 - Local: Screen is changed after transfer processing is complete.
- When record data is deleted, the record data is written as empty data.
- If the data format is a character string (including the record name), the recipe data cannot be read or written correctly if the language in the file (character code) and the language set on MONITOUCH do not match.

Recipe Parts

- Click [Parts] → [Others] → [Recipe] to place a recipe part on the screen.
This part is a replacement for the recipe display used by the V8 series. Converting a V8 series screen program with recipe display parts on the screen to a V9 series screen program will automatically convert it to this item.
- Compatibility is maintained with recipe settings for this recipe part with the [V8 Compatible Setting] at [System Setting] → [Recipe] (No.) → [File Format].

16 Print

16.1 Overview

16.2 Hard copy

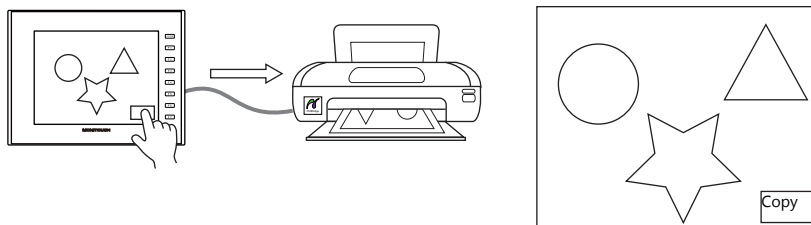
16.3 Printing Data Sheets

16.4 Connecting to a Sato MR-400 Barcode Printer

16.1 Overview

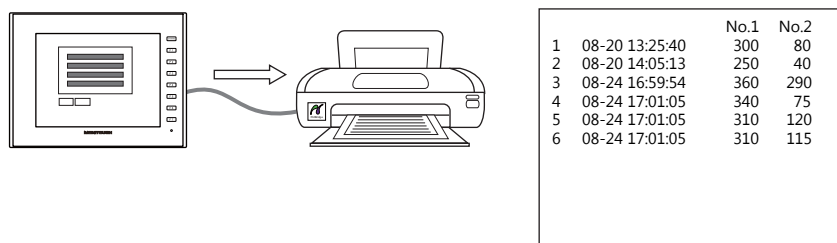
When the V9 series is operating in RUN mode, the displayed screen and the internal buffer information can be printed from a connected printer.

- Hard copy
Print the displayed screen.



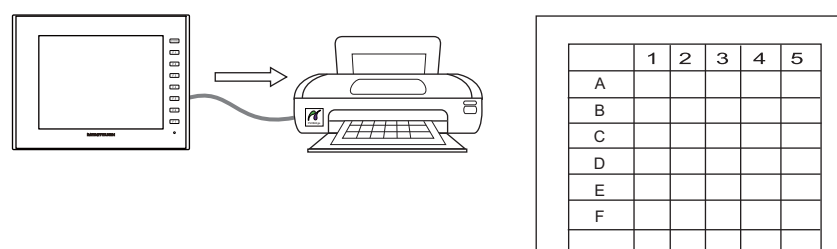
For details, refer to ["16.2 Hard copy" page 16-15.](#)

- Printing logs
Print collected log data.

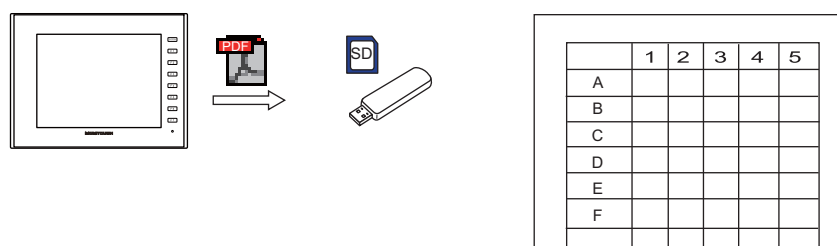


For details, refer to ["Log Printing" page 7-28.](#)

- Data sheet print
 - Print data registered as a data sheet.



- Data registered as a data sheet is output to a storage device in PDF file format.



For details, refer to ["16.3 Printing Data Sheets" page 16-17.](#)

16.1.1 Compatible Printers

The following printers can be connected to the V9 series.

Editor Setting	Supported Models	V9 Connection Port
EPSON ESC/P-R	EPSON printers that support “ESC/P-R” control codes	USB-A
PictBridge	PictBridge-compatible printer	USB-B
PR201 Monochrome	PC-PR201 series models with which printing from MS-DOS is possible	MJ1 MJ2 USB-A
PR201 Color		
ESC-P Monochrome	MS-DOS-compatible printer models ESC/P24-J84, ESC/P-J84, and ESC/P Super	
ESC-P Color		
CBM292 / 293	Citizen Systems Line Thermal Printer	
MR - 400	Sato MR-400 series barcode printer	

List of compatible printers



For a list of compatible printer models, visit our website (<http://www.monitouch.com>).

Printable Items

The table below shows the items printable by each printer.

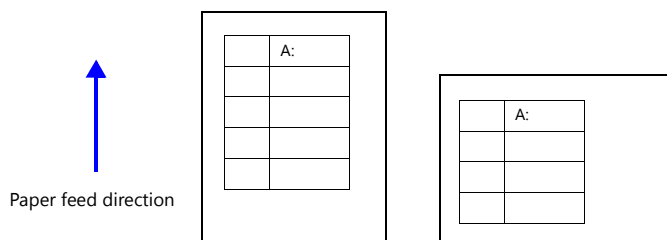
Printable Items	ESC/P-R	PictBridge	PR201 ESC-P	CBM292/293	MR-400
Screen hard copy	○ *1	○ *1	○ *3	×	×
Printing logs	○	○	○	○	×
Data sheet print	○ *2	○	○	○	×
Data sheet print (expanded)	○	○	×	×	×
Printing using the "OUT_PR" macro command	○	○	○	○	×
Printing using the "MR_REG"/"MR_OUT" macro command	×	×	×	×	○

*1 A color or monochrome hard copy can be designated with the system device memory (\$s1007).

\$s1007	Hard copy
0	Color (32-k colors)
1	Grayscale

*2 Landscape printing on A4/15-inch paper is not supported.


Data is printed in portrait orientation regardless of the paper setting.



*3 When PR201 Color or ESC-P Color is selected, printing is performed using 16 colors.

16.1.2 EPSON Printers that Support “ESC/P-R” Control Codes

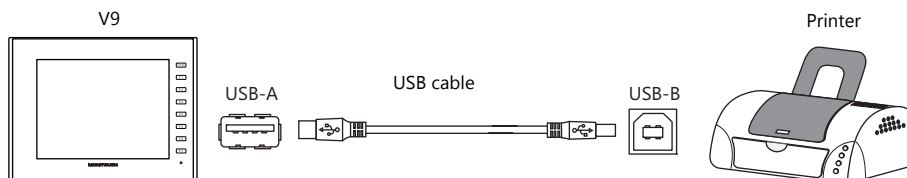
EPSON printers that support “ESC/P-R” control codes can be connected to the V9 series.

 For information on compatible models, visit our website (<http://www.monitouch.com>).

Connection

USB-A port connection

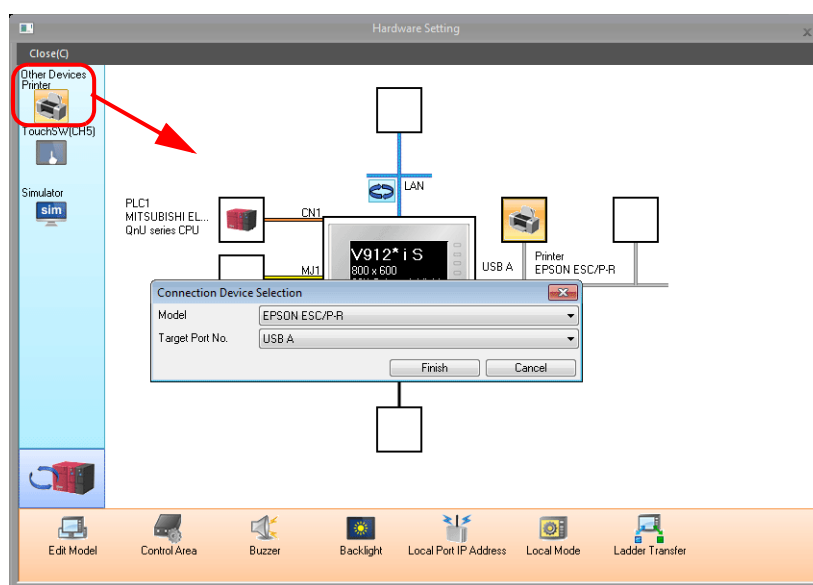
- Connect the USB-A port of the V9 series unit to the USB port of the printer with a commercially available USB cable.



Hardware Settings

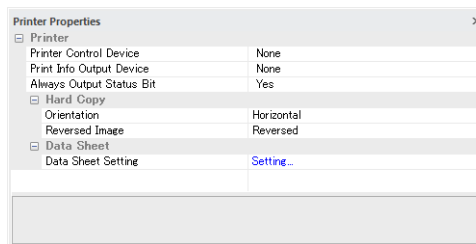
Configure the [System Setting] → [Hardware Setting] → [Printer] settings.

Printer model



Item	Description
Model	Select the connected printer. EPSON ESC/P-R
Target Port No.	Select the port where the printer cable is connected. USB-A: Connect a printer using a commercially available USB cable.


Printer properties



Item	Description																																
Printer Control Device (Yes/None)	<p>When using a device memory for printer control, printing of screen hard copies and data sheets can be performed by setting the bit from “0” to “1”.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0 →1: Screen hard copy</div><div>0 → 1: Data sheet output</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Printer Info Output Device (Yes/None)	<p>When using a device memory for outputting printer information, the printer state is output to the specified address.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0: End (standby)</div><div>1: Transferring data for printing</div><div>0: Not busy state</div><div>1: Busy state</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Always Output Status Bit (Yes/None)	<p>When the V9 series receives a print command, “0 → 1” is output at the start of data transmission and “1 → 0” is output at the end of transmission. However, if the print data is minimal, the signal may not be output. Set to “Yes” when bit output is required regardless of the data size.</p> <p>The output area is shown below.</p> <ul style="list-style-type: none">Bit 1 of the device memory for outputting printer informationBit 0 of internal device memory \$s16 <div><div>\$s16</div><div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table><div>LSB</div></div><div><div>0: End (standby)</div><div>1: Transferring data for printing</div></div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
Hard copy	Reversed Image (Reversed, Normal)	Reversed: White and black are reversed for printing. Normal: The exact state of the screen on the unit is printed.																															
Data Sheet	Data Sheet Setting	Configure settings for data sheet printing. For details, refer to page 16-17 .																															

16.1.3 PictBridge Printers

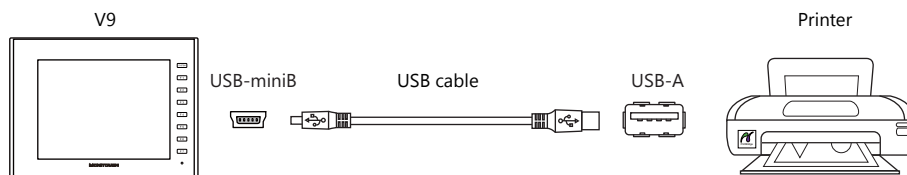
A PictBridge-compatible printer can be connected.

 For information on compatible models, visit our website (<http://www.monitouch.com>).

Connection

USB-B port connection

Connect the USB-B port of the V9 series unit to the USB-A port of the printer with a commercially available USB cable.

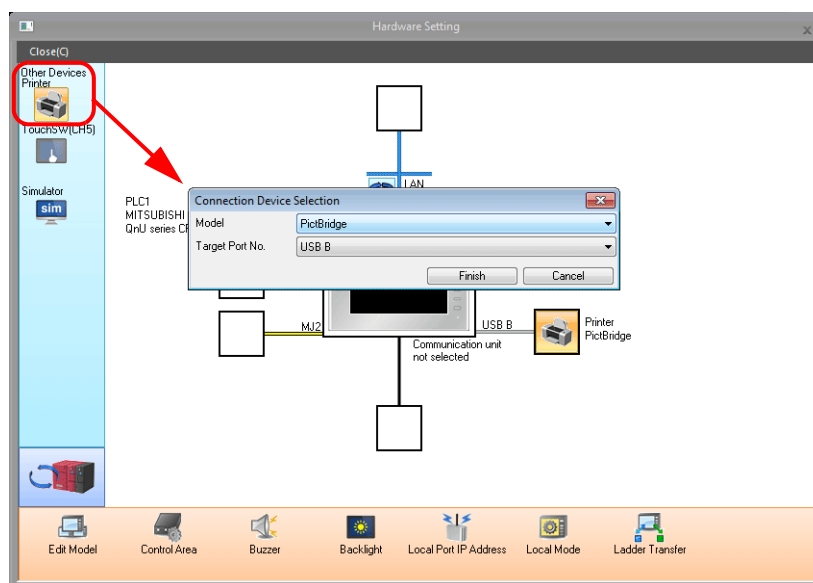


* When transferring screen programs via the USB-B port, change the cable connection.

Hardware Settings

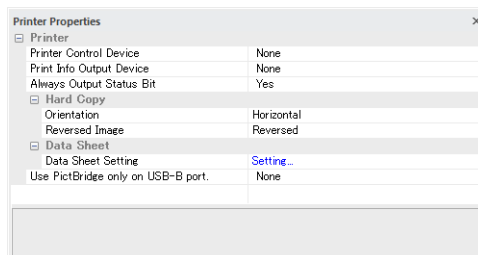
Configure the [System Setting] → [Hardware Setting] → [Printer] settings.

Printer model



Item	Description
Model	PictBridge
Target Port No.	USB-B (automatically set when "PictBridge" is selected for [Model])

Printer properties



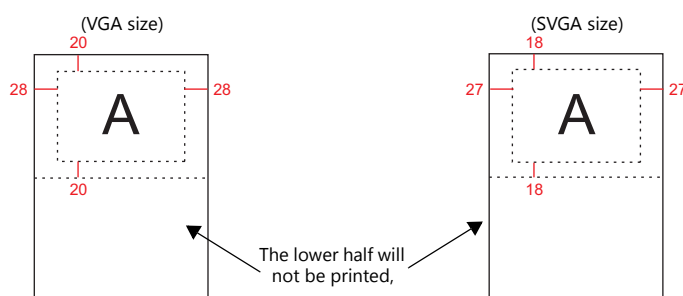
Item		Description																																
Printer Control Device (Yes/None)		<p>When using a device memory for printer control, printing of screen hard copies and data sheets can be performed by setting the bit from "0" to "1".</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0 → 1: Screen hard copy</div><div>0 → 1: Data sheet output</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Printer Info Output Device (Yes/None)		<p>When using a device memory for outputting printer information, the printer state is output to the specified address.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0: End (standby)</div><div>1: Transferring data for printing</div><div>0: Not busy state</div><div>1: Busy state</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Always Output Status Bit (Yes/None)		<p>When the V9 series receives a print command, "0 → 1" is output at the start of data transmission and "1 → 0" is output at the end of transmission. However, if the print data is minimal, the signal may not be output. Set to "Yes" when bit output is required regardless of the data size.</p> <p>The output area is shown below.</p> <ul style="list-style-type: none">Bit 1 of the device memory for outputting printer informationBit 0 of internal device memory \$s16 <div><div>\$s16</div><div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table><div>LSB</div></div><div><div>0: End (standby)</div><div>1: Transferring data for printing</div></div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Hard copy	Orientation (Horizontal/Vertical)	<p>Select the orientation of the screen image printed on paper.</p> <p>When [Vertical] is selected, the image for printing is rotated 90 degrees on the paper.</p> <p>* This setting is disabled for edit models of SVGA (800 × 600 pixels) or higher.</p> <ul style="list-style-type: none">Hard copy example <div><div>Horizontal</div><div>Vertical</div></div> <div><div>↑</div><div><div><div>A</div></div><div><div>A</div></div></div></div>																																
	Reversed Image (Reversed/Normal)	<p>Reversed: White and black are reversed for printing.</p> <p>Normal: The exact state of the screen on the unit is printed.</p>																																
Data Sheet	Data Sheet Setting	Configure settings for data sheet printing. For details, refer to page 16-17 .																																
Use PictBridge only on USB-B port (Yes/None)		<p>Select "Yes" when using the USB-B port to connect to a PictBridge printer during operation in RUN mode.</p> <p>When transferring screen programs via the USB-B port, switch to Local mode.</p>																																

Print Size

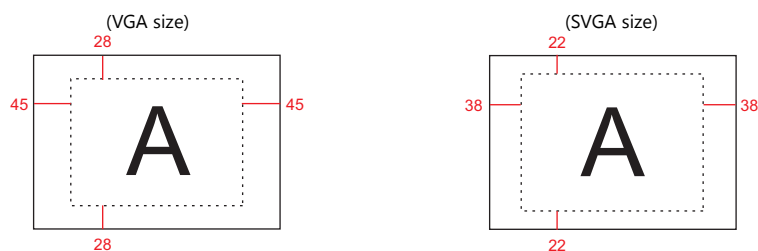
The print size varies depending on the item to be printed and the paper setting.

Screen hard copy

- The paper size is fixed to "A4".
- The print start position and print size cannot be changed. The actual margins, however, may differ from the one shown below depending on the printer used.
- When [Vertical] (portrait) is selected (unit: mm):
The landscape output is available when the printer supports A4 paper and 2-up printing. If not supported, printing is performed in the landscape orientation.

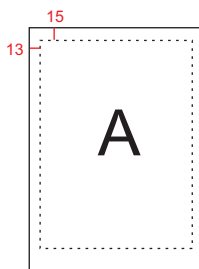


- When [Horizontal] (landscape) is selected (unit: mm):
The landscape output is available when the printer supports A4 paper and 1-up printing. If not supported, printing is performed in the orientation set on the printer.



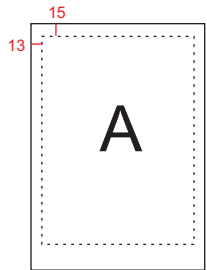
Printing logs

- Printing is fixed to "A4 vertical (portrait)". If a line cannot be held within the paper width, the remaining section will be printed while wrapping around and going down to the next line.
- The print start position and print size cannot be changed. The actual margins, however, may differ from the one shown below depending on the printer used.



Data sheet print

- Printing orientation is fixed to “portrait”.
- Select the printer in the [Hardware Setting] window, select [Setting] next to [Data Sheet Setting], and select a paper size for [Paper Size]. If a selected print size is different from the paper size set for the printer, printing cannot be performed correctly. (Data outside the printing area is not printed.)
- The print start position and print size cannot be changed. The actual margins, however, may differ from those shown below depending on the printer used.



Data sheet print (expanded)

- The print size is A4 only. Use a printer that handles A4 paper. If A4 paper is fed in landscape orientation or a selected paper size is different from the paper size set for the printer, printing cannot be performed correctly. (Data outside the printing area is not printed.)
- The print start position and print size cannot be changed. Note that margins will vary slightly between different printer models.
- For parts placed on an expanded data sheet screen, the [Show/Hide] setting takes effect.
When a part should always be printed, select [Show] for the [Show/Hide] setting.

Status Output

The status of the connection between the V9 series unit and a PictBridge printer is output to the internal device memory \$s1066.

Value	Description	Cause and Remedy
0	The PictBridge printer is not connected or it is in the normal state.	-
1	Printing in process using the PictBridge printer.	-
-1	Printer error (hardware related)	The cable is not connected. Check the USB cable connection. Check if the printer is out of order.
-2	Printer error (paper related)	The printer ran out of paper. Add paper. Paper is not correct. Set correct paper.
-3	Printer error (ink related) *	The ink is not set. Install an ink cartridge. The ink level is low. Install a new ink cartridge.

* The error may be output as “-1” (printer error related to hardware) depending on the printer used.


Notes

- Color printing is performed.
- Error handling varies depending on the printer model. For details, refer to the instruction manual for the printer.

16.1.4 PR201 and ESC-P Printers

The V9 series can connect to MS-DOS-compatible printers.

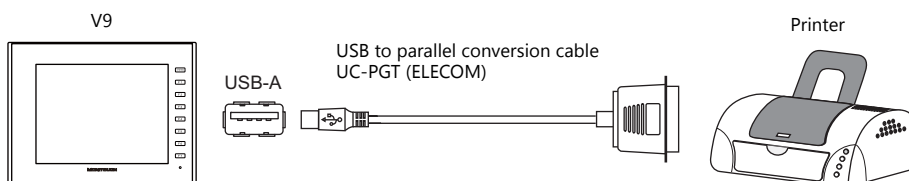
- MS-DOS-compatible printer models in the PR201 series
- MS-DOS-compatible printer models ESC/P24-J84, ESC/P-J84, and ESC/P Super

 For information on connectable models, visit our website at <http://www.monitouch.com>.

Connection Method

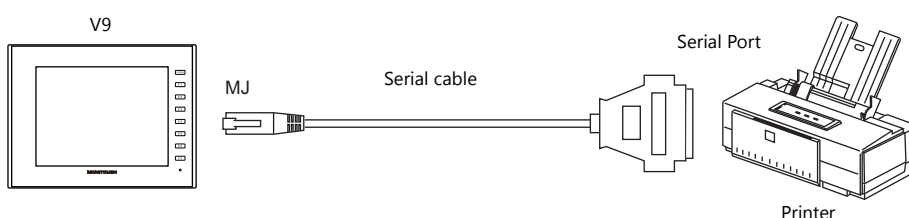
USB-A port connection

- Connect the USB-A port of the V9 series unit to the parallel port of the printer with a USB-parallel conversion cable (commercially available).



Serial connection (MJ1 or MJ2)

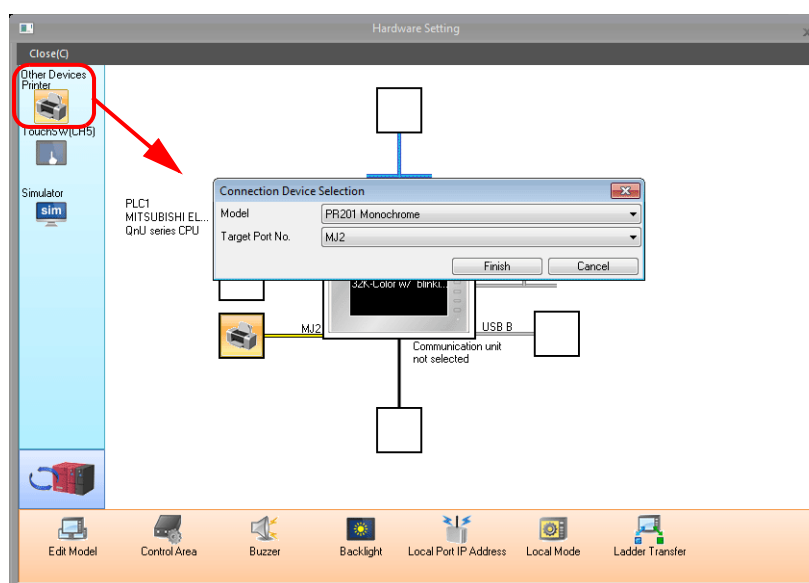
- Connect the MJ port of the V9 series unit with the serial port of the printer.



Hardware Settings

Configure the [System Setting] → [Hardware Setting] → [Printer] settings.

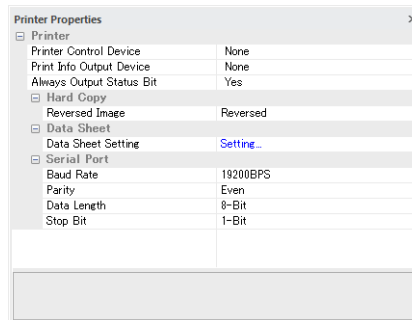
Printer model



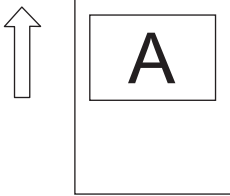
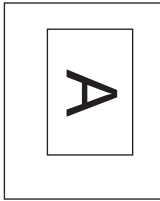
Item	Description
Model	<p>Select the control code of the target printer from the following options:</p> <ul style="list-style-type: none"> • PR201 Monochrome • PR201 Color • ESC-P Monochrome • ESC-P Color

Item	Description
Target Port No.	<p>Select the port where the printer cable is connected.</p> <p>USB-A: Select this option when connecting to a parallel interface printer with a USB-parallel conversion cable (commercially available).</p> <p>MJ1/MJ2: Select this option when connecting to a printer equipped with a serial interface. Select either MJ1 or MJ2 on the V9 series unit.</p>

Printer properties




Item	Description																																
Printer Control Device (Yes/None)	<p>When this setting is enabled and the bit is set to ON (0 → 1), screen images and data sheets can be printed out.</p> <p>MSB</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table> <p>0 → 1: Screen image output</p> <p>0 → 1: Data sheet output</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Printer Info Output Device (Yes/None)	<p>When using a device memory for outputting printer information, the printer state is output to the specified address.</p> <p>MSB</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table> <p>0: End (standby)</p> <p>1: Transferring print data</p> <p>0: Not busy</p> <p>1: Busy</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Always Output Status Bit (Yes/None)	<p>The V9 series outputs [0 → 1] when starting to transfer data upon receiving a print command, and outputs [1 → 0] upon finishing transfer. However, these signals may not be output if the print data is small.</p> <p>Set to “Yes” when bit output is required regardless of the data size.</p> <p>The output area is shown below.</p> <ul style="list-style-type: none">Bit 1 of the device memory for outputting printer informationBit 0 of internal device memory \$s16 <p>\$s16</p> <p>MSB</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table> <p>0: End (standby)</p> <p>1: Transferring print data</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			

Item		Description
Hard Copy	Orientation (Horizontal, Vertical)	<p>Select the orientation of the screen image printed on paper. When [Vertical] is selected, the image for printing is rotated 90 degrees on the paper.</p> <p>* This setting is disabled for edit models of SVGA (800 × 600 pixels) or higher.</p> <ul style="list-style-type: none"> Hard copy example <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Horizontal</p>  </div> <div style="text-align: center;"> <p>Vertical</p>  </div> </div>
	Reversed Image (Reversed, Normal)	<p>Reversed: White and black are reversed for printing. Normal: The exact state of the screen on the unit is printed.</p>
Data Sheet	Data Sheet Setting	Configure settings for data sheet printing. For details, refer to page 16-17 .
Serial Port *	Baud Rate	Specify the baud rate. 4800 / 9600 / 19200 / 38400 / 57600 / 76800 / 115K BPS
	Parity	Set the parity. None, Odd, Even
	Data Length	Set the number of bits for data. 7-Bit, 8-Bit
	Stop Bit	Set the number of stop bits. 1-Bit, 2-Bit

* This setting is only available when MJ1 or MJ2 is selected for [Target Port No].

16.1.5 CBM292/293 Printer

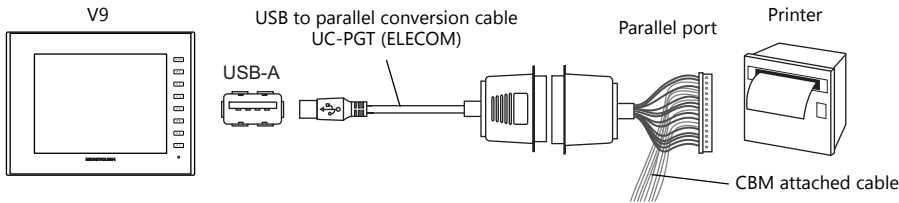
The V9 series can connect to CBM line thermal printers (Citizen).

 For information on connectable models, visit our website at <http://www.monitouch.com>.

Connection Method

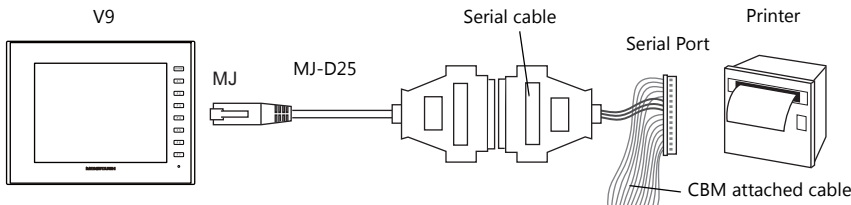
USB-A port connection

- Connect the USB-A port of the V9 series unit to the parallel port of the printer with a USB-parallel conversion cable (commercially available).



Serial connection (MJ1 or MJ2)

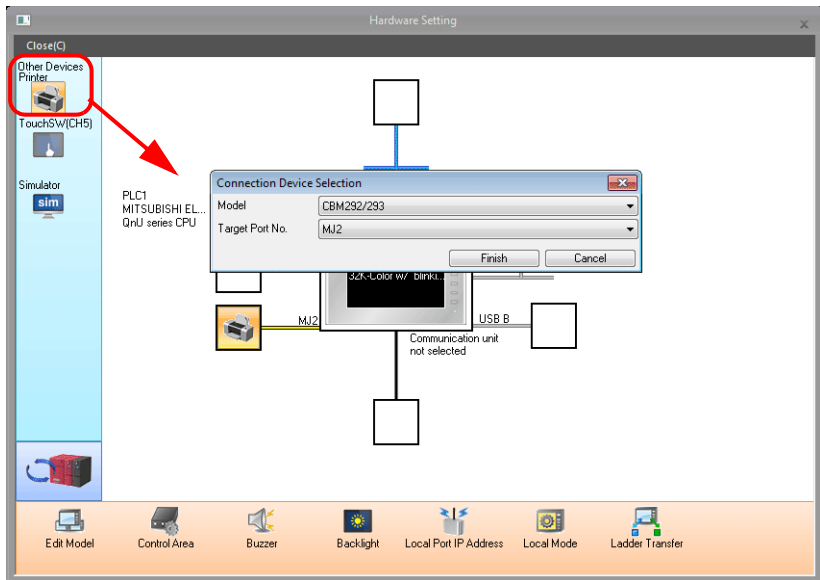
- Connect the MJ port of the V9 series unit with the serial port of the printer.



Hardware Settings

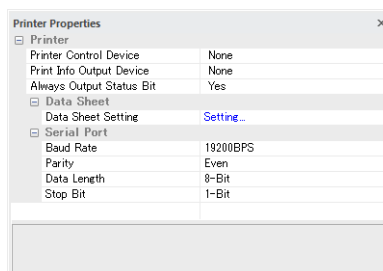
Configure the [System Setting] → [Hardware Setting] → [Printer] settings.

Printer model



Item	Description
Model	Select CBM292/293.
Target Port No.	Select the port where the printer cable is connected. USB-A: Select this option when connecting to a parallel interface printer with a USB-parallel conversion cable (commercially available). MJ1/MJ2: Select this option when connecting to a printer equipped with a serial interface. Select either MJ1 or MJ2 on the V9 series unit.

Printer properties



Item		Description																																
Printer Control Device (Yes/None)		<p>When this setting is enabled and the bit is set to ON (0 → 1), screen images and data sheets can be printed out.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0 → 1: Screen image output</div><div>0 → 1: Data sheet output</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Printer Info Output Device (Yes/None)		<p>When using a device memory for outputting printer information, the printer state is output to the specified address.</p> <div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table><div>LSB</div></div> <div><div>0: End (standby)</div><div>1: Transferring print data</div><div>0: Not busy</div><div>1: Busy</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Always Output Status Bit (Yes/None)		<p>The V9 series outputs [0 → 1] when starting to transfer data upon receiving a print command, and outputs [1 → 0] upon finishing transfer. However, these signals may not be output if the print data is small. Set to “Yes” when bit output is required regardless of the data size.</p> <p>The output area is shown below.</p> <ul style="list-style-type: none">Bit 1 of the device memory for outputting printer informationBit 0 of internal device memory \$s16 <div><div>\$s16</div><div><div>MSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table><div>LSB</div></div><div><div>0: End (standby)</div><div>1: Transferring print data</div></div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Data Sheet	Data Sheet Setting	Configure settings for data sheet printing. For details, refer to page 16-17 .																																
Serial Port *	Baud Rate	Specify the baud rate. 4800 / 9600 / 19200 / 38400 / 57600 / 76800 / 115K BPS																																
	Parity	Set the parity. None, Odd, Even																																
	Data Length	Set the number of bits for data. 7-Bit, 8-Bit																																
	Stop Bit	Set the number of stop bits. 1-Bit, 2-Bit																																

* This setting is only available when MJ1 or MJ2 is selected for [Target Port No.].

16.1.6 Sato's MR-400 Barcode Printer

The V9 series can connect to Sato's barcode printer for printing barcodes.



Read the instruction manual and command reference book for Sato's MR-400 series barcode printer before using this function.

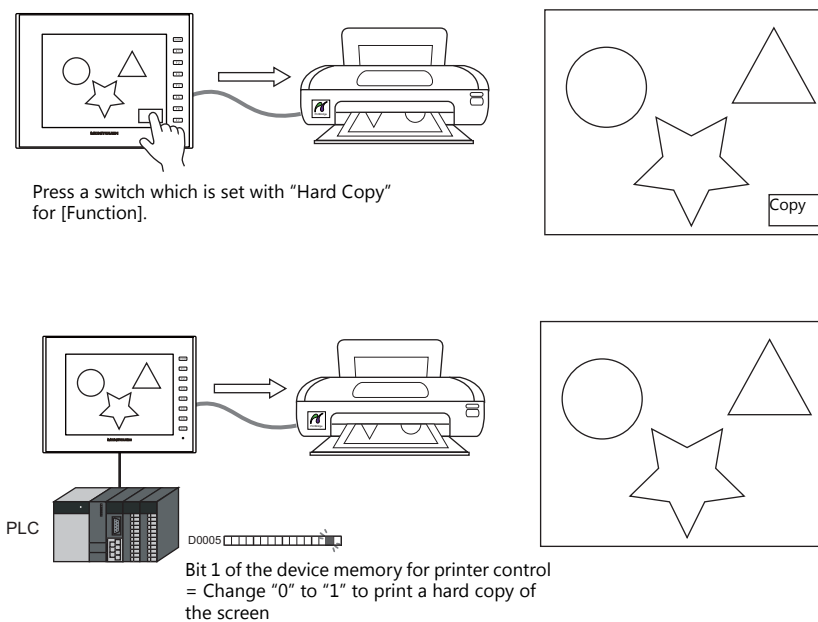


- For details on configuration and printing, refer to ["16.4 Connecting to a Sato MR-400 Barcode Printer" page 16-26](#).
- For information on connectable models, visit our website at <http://www.monitouch.com>.

16.2 Hard copy

16.2.1 Overview

The displayed screen can be printed using the switch function or a command from the PLC.



16.2.2 Printing

Two methods are available for printing the currently displayed screen.

Command from a Switch

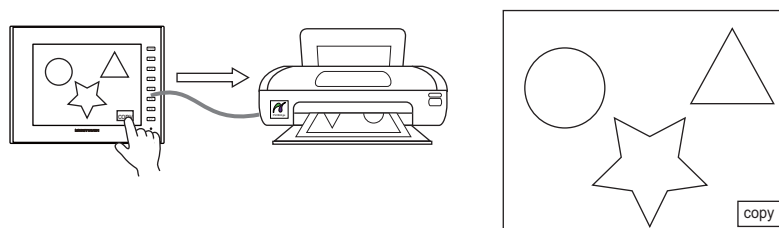
A hard copy is produced by pressing the switch. The switch placed on the screen is also printed out.

Screen program setting

- 1) Place a switch set with "Hard Copy" for [Function] on the screen targeted for printing.
- 2) Transfer the screen data to the V9 series unit.

Printing procedure

- 1) Display the screen to be printed.
- 2) Press the hard copy switch.
- 3) Printing starts.

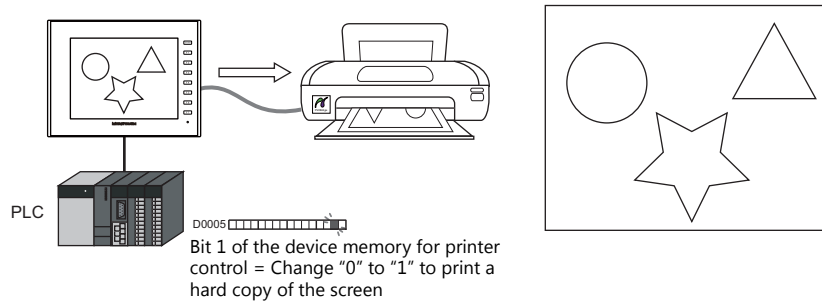


Command from a Device Memory for Printer Control

Bit 1 of the device memory for printer control is the screen hard copy bit.
When this bit changes from "0" to "1", a hard copy is printed.

Printing procedure

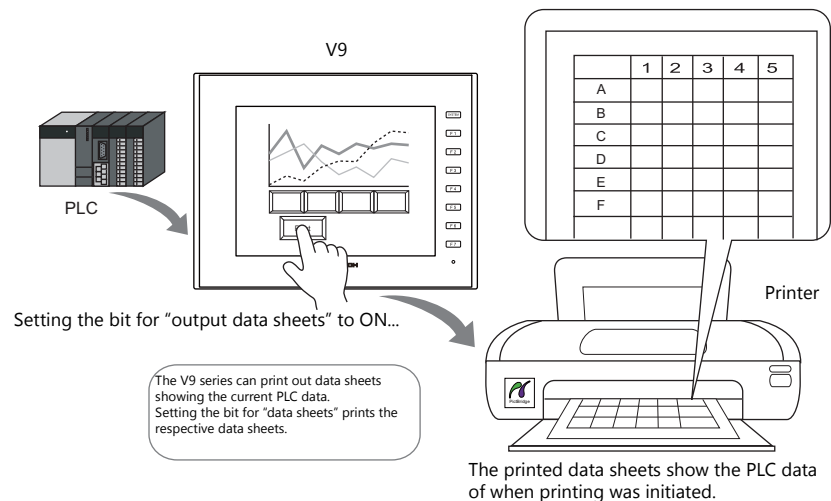
- 1) Display the screen to be printed.
- 2) Change bit 1 of the device memory for printer control from "0" to "1".
- 3) Printing starts.



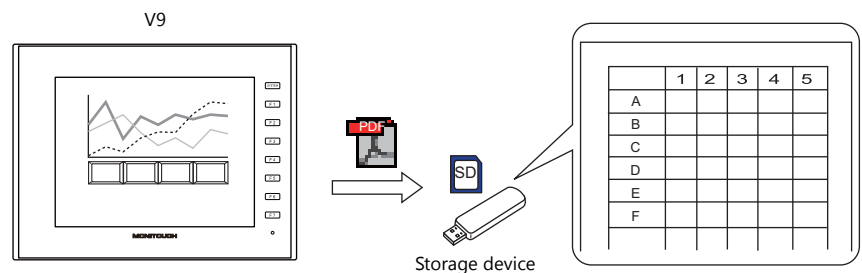
16.3 Printing Data Sheets

16.3.1 Overview

This section explains printing the data currently displayed on numerical data displays or character displays that are registered on a data sheet.
This print function also enables real-time printing of device memory data that is not shown on the V9 series.

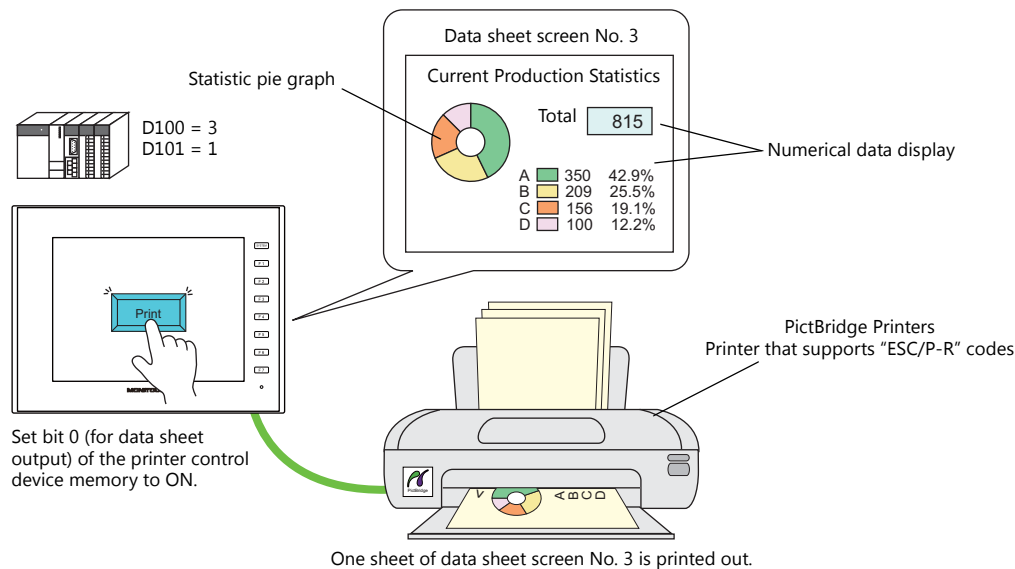


Data can also be output in PDF file format to a storage device.



Expanded functions

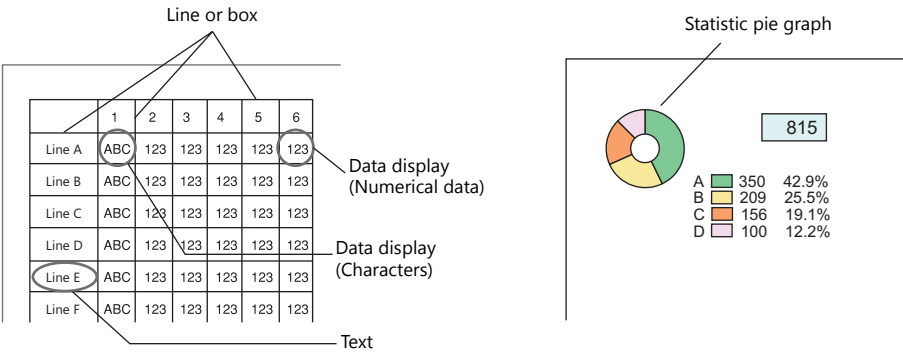
The data sheet expanded functions are available with the PictBridge printer or EPSON printer that supports "ESC/P-R" codes. The expanded functions allow additional parts, such as lamps and graphs, to be used and changing of the sizes of those parts. Moreover, the expanded functions allow for part placement regardless of the grid, thereby diversifying layouts on data sheet screens. These data sheets can be printed in color.



Data sheet screen

The print screen is formatted in “Data Sheet” in the V9 series screen program file.
Items usable on data sheets vary depending on whether the expanded functions are used.

- Without the expanded functions
- With the expanded functions



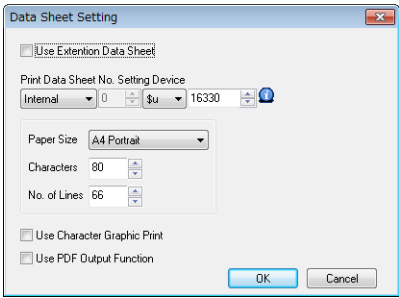
Item	Without Expanded Functions	With Expanded Functions (With PictBridge only)
Graphics	Straight line Rectangle Text	Line/continuous line Box/circle Text/multi text Pixel Paint Scaling Pattern
Parts	Numerical data display Character display	Lamp Numerical data display Character display Message display Bar graph Pie graph Panel meter Statistic bar graph Statistic pie graph Time display/calendar

For details on the data sheet editing procedure, refer to the V9 Series Operation Manual.

16.3.2 Detailed Settings

Data Sheet Setting

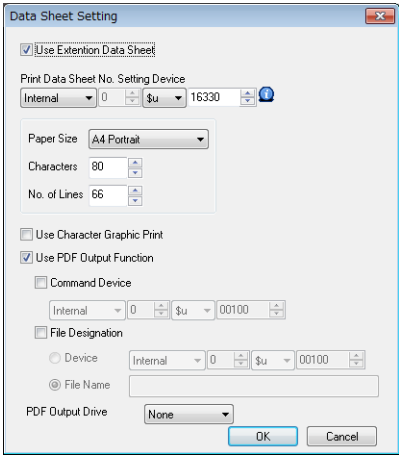
Use extension data sheet: unselected

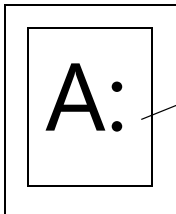
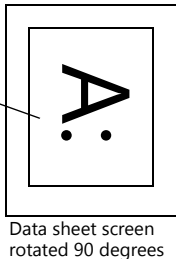
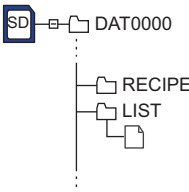


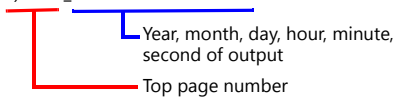
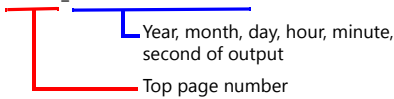
Item	Description																		
Print Data Sheet No. Setting Device	<p>Use this device memory when printing data sheets using a device memory for printer control (refer to page 16-23). Two words are used.</p> <table><tr><td>n</td><td>Print start data sheet number (→ V)</td></tr><tr><td>n+1</td><td>Number of pages to be printed (→ V)</td></tr></table>	n	Print start data sheet number (→ V)	n+1	Number of pages to be printed (→ V)														
n	Print start data sheet number (→ V)																		
n+1	Number of pages to be printed (→ V)																		
Paper Size (A4 Portrait, A4 Landscape, 15-Inch Landscape, User Designation)	<p>Select a paper size. According to the size selected, the numbers of characters and lines are set. Printed images are always in portrait orientation.</p> <p>* Only A4 portrait and A4 landscape are supported when outputting a PDF to a storage device.</p>																		
Characters (16 to 152)	Specify the number of characters per line on a data sheet page.																		
No. of Lines (2 to 152)	Specify the number of lines per data sheet page.																		
Use Character Graphic Print	<p>Select this checkbox to change the set number of lines. The numbers of characters and lines are automatically set as shown below.</p> <table><tr><th rowspan="2">Paper Size</th><th rowspan="2">No. of Characters</th><th colspan="2">No. of Lines</th></tr><tr><th>Character Graphics Not used</th><th>Character Graphics Used</th></tr><tr><td>A4 Portrait</td><td>80</td><td>66</td><td>108</td></tr><tr><td>A4 Landscape</td><td>114</td><td>40</td><td>64</td></tr><tr><td>15-Inch Landscape</td><td>136</td><td>64</td><td>64</td></tr></table> <p>* This setting is valid only for Japanese printers. (ESC/P-R and PictBridge are not supported)</p> <p>* All characters and lines on the data sheet screen are handled as text. Consequently, the printed data sheet looks slightly different from the one on the editor screen.</p>	Paper Size	No. of Characters	No. of Lines		Character Graphics Not used	Character Graphics Used	A4 Portrait	80	66	108	A4 Landscape	114	40	64	15-Inch Landscape	136	64	64
Paper Size	No. of Characters			No. of Lines															
		Character Graphics Not used	Character Graphics Used																
A4 Portrait	80	66	108																
A4 Landscape	114	40	64																
15-Inch Landscape	136	64	64																

Item	Description
Use PDF Output Function	<p>Select this checkbox to output data sheets to a storage device in PDF format.</p> <p>Storage target: \access folder\LIST\year month folder\year month day folder</p> <div><div><div>SD</div><div></div><div>DAT0000</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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Use extension data sheet: selected



Item	Description																																
Print Data Sheet No. Setting Device	<p>Use this device memory when printing data sheets using commands from a device memory for printer control (refer to page 16-23). Two words are used.</p> <table><tr><td>n</td><td>Print start data sheet number (→ V)</td></tr><tr><td>n+1</td><td>Number of pages to be printed (→ V)</td></tr></table>	n	Print start data sheet number (→ V)	n+1	Number of pages to be printed (→ V)																												
n	Print start data sheet number (→ V)																																
n+1	Number of pages to be printed (→ V)																																
Paper Size (A4 Portrait, A4 Landscape)	<p>Select the orientation of the data sheet screen. (Paper size: A4 fixed)</p> <table><tr><th>Paper Size (Graphic area: height × width)</th><th>Orientation</th></tr><tr><td>A4 Portrait (912 × 640 pixels)</td><td>Vertical</td></tr><tr><td>A4 Landscape (640 × 912 pixels)</td><td>Horizontal</td></tr></table> <p>Example: Print on A4 paper fed in portrait orientation</p> <div><div><p>A4 portrait</p></div><div><p>A4 landscape</p></div></div>	Paper Size (Graphic area: height × width)	Orientation	A4 Portrait (912 × 640 pixels)	Vertical	A4 Landscape (640 × 912 pixels)	Horizontal																										
Paper Size (Graphic area: height × width)	Orientation																																
A4 Portrait (912 × 640 pixels)	Vertical																																
A4 Landscape (640 × 912 pixels)	Horizontal																																
Use PDF Output Function	<p>Select this checkbox to output data sheets to a storage device in PDF format. Storage target: \access folder\LIST\year month folder\year month day folder</p> <div></div>																																
Command Device	<p>Select this checkbox to select the bit status for data sheet output.</p> <p>* When using the “STA_LIST” macro, set “\$s1656” for the output target. The device memory information is the same as the device memory selected for output.</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <p>0: Printer 1: Storage device (PDF output)</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																		

Item		Description
Use PDF Output Function	File Designation (Maximum of 64 one-byte alphanumeric characters)	<p>Specify a filename. Selecting a device memory address allows the output filename to be changed when the unit is in RUN mode. 32 consecutive words are used from the specified address.</p> <ul style="list-style-type: none"> * This is only available for the internal device memory of the V9 series. - When specifying a filename Filename: (filename)XXXX_YYYYMMDDHHMMSS  <ul style="list-style-type: none"> - When not specifying a filename or when the device memory contains "null" Filename: LISTXXXX_YYYYMMDDHHMMSS  <ul style="list-style-type: none"> * If space on the storage device is insufficient, the file is saved after automatically deleting the oldest folder.
	PDF Output Drive (None, SD, USB)	<p>Select the output target drive for the PDF file.</p> <ul style="list-style-type: none"> * If "None" is specified, the PDF file is output to [Storage Connection Target] in the [Storage Setting].

16.3.3 Printing

There are two methods for printing configured data sheets from the V9 series unit.

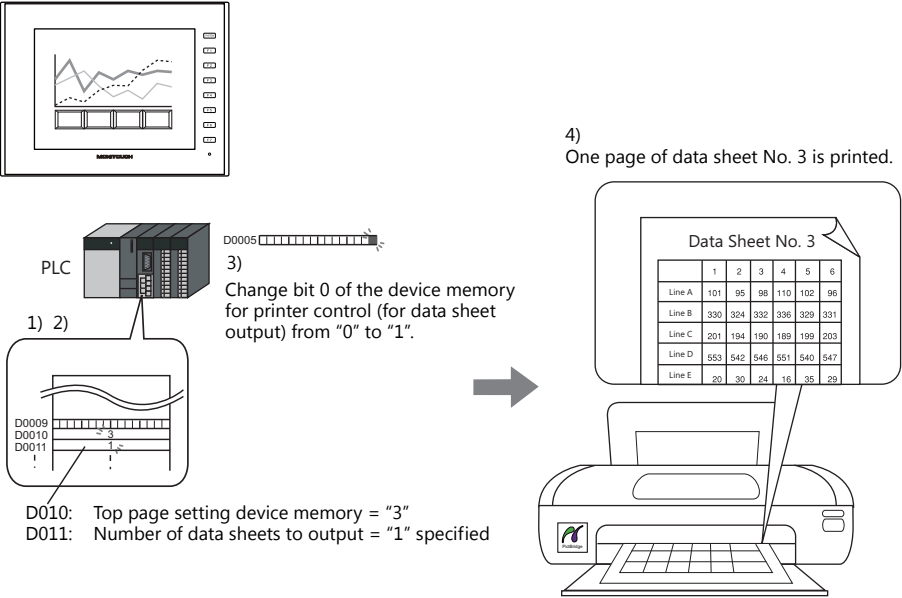
Command from a Device Memory for Printer Control

Bit 0 of the device memory for printer control is the data sheet output bit.
When this bit changes from "0" to "1", a data sheet is printed.

Printing/PDF output procedure

- 1) Set the data sheet number that is the top page to [Print Data Sheet No. Setting Device] "n".
- 2) Specify the number of output pages for [Print Data Sheet No. Setting Device] "n + 1".
* **When [Print Data Sheet No. Setting Device] "n + 1" is "0", the printer will not print any data sheets.**
- 3) Change bit 0 of the device memory for printer control from "0" to "1".
- 4) Data sheet printing starts.

Usage Example
[Printer Control Device] = D0005
[Designation Device for Print Data Sheet No.] = D0010



Command with Macro

Use the "STA_LIST" macro command to print data sheets.

Device memory used

	Internal Device Memory	PLC1 to PLC8 Device Memory	Memory Card	Constant
F1	◎			

○: Setting enabled (indirect designation disabled) ◎: Setting enabled (indirect designation enabled)

Range

	Value	Remarks
F0	STA_LIST	
F1	Print start data sheet number	
F1 + 1	Number of pages to be printed: 1 to 1,024 *	
F1 + 2	ASCII code: Output filename (maximum of 64 one-byte alphanumeric characters)	Only available when \$s1656 = 1 (PDF output)
:		
F1 + 33		

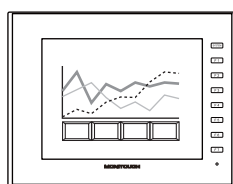
* No printing is executed when "0" is set as the number of pages to be printed. When the range specified for printing includes an unregistered number, the page corresponding to the number will not be printed.

Printing procedure

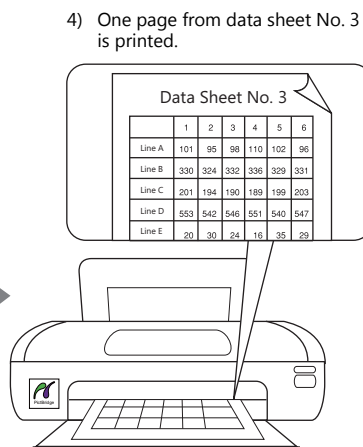
- 1) Set the data sheet number which is to be the top page to the device memory "F1 + 0".
- 2) Set the number of output pages to the device memory "F1+1".
- 3) Execute the "STA_LIST" macro command.
- 4) Data sheet printing starts.

Print example:

To print data sheet No. 3 with F1 = \$u100:



- 1) \$u100 = 3 (W) Print start data sheet number
- 2) \$u101 = 1 (W) Number of pages to be printed
- 3) SYS (STA_LIST) \$u100 Macro execution

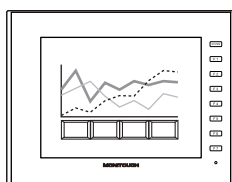


PDF output procedure

- 1) Set \$s1656 = 1.
- 2) Set the data sheet number which is to be the top page to the device memory "F1 + 0".
- 3) Set the number of output pages to the device memory "F1+1".
- 4) To add a filename to the PDF file, set the filename to "F1 + 2" onwards.
- 5) Execute the "STA_LIST" macro command.
- 6) The data sheet is output to a PDF file on the storage device.

Operation Example

To output data sheet No. 3 to a PDF with F1 = \$u100:

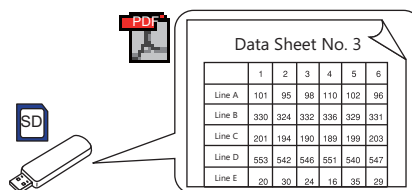


- 1) \$s1656 = 1 (W)
- 2) \$u100 = 3 (W)
- 3) \$u101 = 1 (W)
- 4) \$u102 = TEST (STRING)
- 5) SYS (STA_LIST) \$u100

Selected output target: PDF
Print start data sheet number
Number of pages to be printed
Filename
Macro execution



- 6) One page of data sheet No. 3 is output as a PDF file.



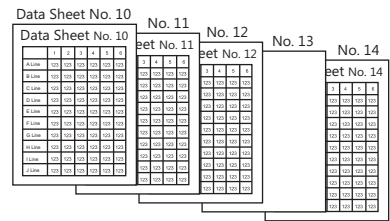
Notes

When no data sheet screen has been registered, data sheets cannot be printed even if they are specified by number.

Print example:

[Printer Control Device] = D0005

[Print Data Sheet No. Setting Device] = D0010



If data sheet pages are registered as shown on the left

Data sheet No. 10 to 12 and 14 are printed.
The page that is not stored, No. 13, is ignored, and four pages are output.

D0010 (top page number of data sheet for printing) = 10
D0011 (number of pages of data sheet to output) = 5

Change bit 0 (data sheet output) of D0005 from "0" to "1".



16.4 Connecting to a Sato MR-400 Barcode Printer

The V9 series can connect to Sato's barcode printer for printing barcodes.



Read the instruction manual and command reference book for Sato's MR-400 series barcode printer before using this function.

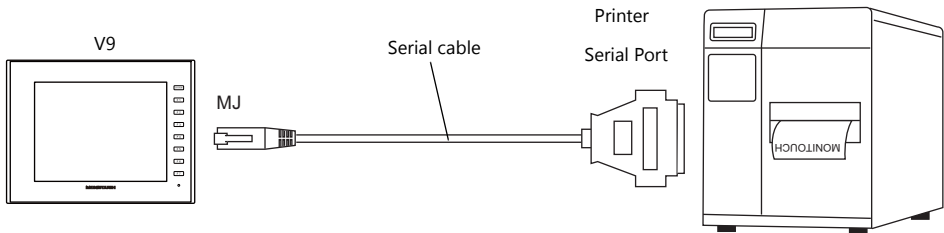


For information on connectable models, visit our website at <http://www.monitouch.com>.

16.4.1 Connection Method

Serial connection (MJ1 or MJ2)

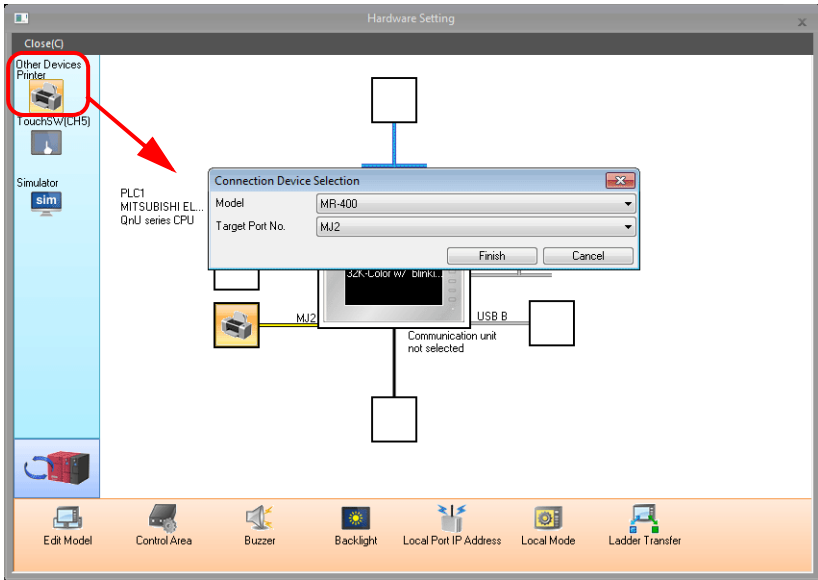
- Connect the MJ port of the V9 series unit with the serial port of the printer.



Hardware Settings

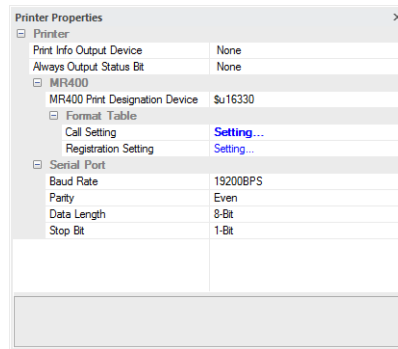
Configure the [System Setting] → [Hardware Setting] → [Printer] settings.

Printer model



Item	Description
Model	Select MR400.
Target Port No.	MJ1/MJ2 Select either MJ1 or MJ2 on the V9 series unit.

Printer properties



Item		Description																																
Print Info Output Device (Yes/None)		<p>When using a device memory for outputting printer information, the printer state is output to the specified address.</p> <p>MSB</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td></tr></table> <p>0: End (standby) _____ 0: Not busy 1: Transferring print data 1: Busy</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Always Output Status Bit (Yes/None)		<p>The V9 series outputs [0 → 1] when starting to transfer data upon receiving a print command, and outputs [1 → 0] upon finishing transfer. However, these signals may not be output if the print data is small. Set to "Yes" when bit output is required regardless of the data size.</p> <p>The output area is shown below.</p> <ul style="list-style-type: none">• Bit 1 of the device memory for outputting printer information• Bit 0 of internal device memory \$s16 <p>\$s16</p> <p>MSB</p> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table> <p>0: End (standby) _____ 0: Not busy 1: Transferring print data 1: Busy</p>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
MR400	MR400 Print Designation Device	This setting can be configured when MR400 is selected for the printer model. Set the device memory used to issue printing commands to the MR400. For details, refer to "Print Command Device" page 16-37 .																																
	Format Table	Register the printing format. For details, refer to "16.4.3 Format Tables" page 16-28 .																																
Serial Port	Baud Rate	Specify the baud rate. 4800 / 9600 / 19200 / 38400 / 57600 / 76800 / 115K BPS																																
	Parity	Set the parity. None, Odd, Even																																
	Data Length	Set the number of bits for data. 7-Bit, 8-Bit																																
	Stop Bit	Set the number of stop bits. 1-Bit, 2-Bit																																

16.4.2 Notes on Memory Cards

Memory Cards

To use this function, a memory card is required for the MR400.

For the memory card type and mounting procedure, refer to the instruction manual for the MR-400 series.

Card Slot Number Setting and Memory Card Formatting

To enable the use of memory cards, set the memory card slot number and format the memory card on the MR-400.

* **"Memory card formatting" means the same as media initialization for USB flash drives etc.**

- 1) Turn off the power to the MR-400 and insert a memory card into the card slot on the rear of the MR-400.
 - 2) Hold down the LINE key on the front of MR-400, and turn the power ON.
"USER MODE" is displayed on the front panel.
 - 3) Press the LINE key and FEED key at the same time.
"ADVANCED MODE" is displayed.
 - 4) Press the LINE key and FEED key at the same time again.
"CARD MODE" is displayed.
 - 5) Press the FEED key until "CARD DRIVE NO / 1 2" is displayed.
Set the memory card slot number.
(Press the LINE key to select, and press the FEED key to accept.)
This drive number is the memory card slot number.
 - 6) Press the FEED key to accept the options. Select "YES" for "CARD FORMAT / YES NO" and format the memory card.
If no error is given, formatting has completed successfully.
 - 7) To quit "CARD MODE," turn the printer off.
- Formatting is required if the screen program is transferred after editing the MR-400 format table (registration setting) described in the following section.
In addition to the above formatting procedure, it is possible to format the memory card by outputting the control command of MR-400 from the V9 series. For details, refer to [Example 1: When the following commands are set in No. 22: \(page 16-36\)](#).
 - When printing two-byte characters, select "JIS" for "Kanji Code" on MR-400.

16.4.3 Format Tables

Format Table Types

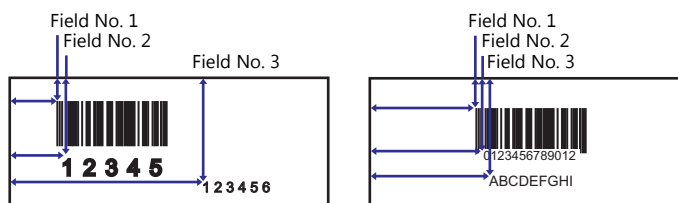
There are two types of format tables.

When the MR-400 commands are registered in this table, desired formats or data can be printed.

MR-400 format table (registration setting)

Set the print format.

* **The "format" used in the format table includes settings for digits, position, typeface, barcode, etc. for the MR-400.**

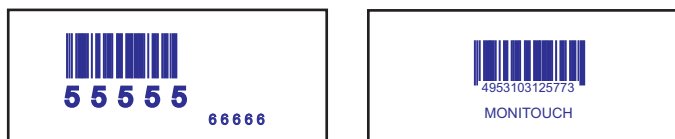


Write these settings on the memory card using the MR_REG macro command.

Once they are written on the memory card, it is not necessary to repeat this step until the registration setting is changed.

MR-400 format table (call setting)

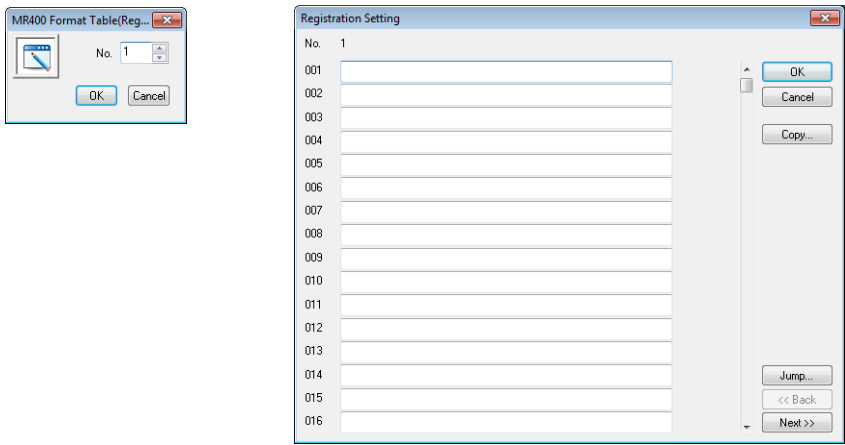
Use the format (registration setting), and change the print data. Set the storage target, type, etc. of the changed data.



Print the data using the MR_OUT macro command.

Format Table (Registration Setting)

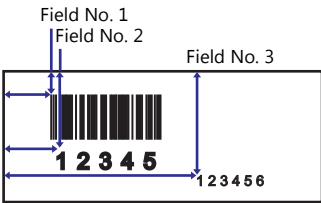
Configure the [System Setting] → [Communication Setting] group → [Hardware Setting] → [Printer] → [Format Table (Registration Setting)] settings.
Format table settings (registration settings) range from No. 1 to No. 128.



Item	Description
OK	The format table setting is ended.
Cancel	Format table editing is canceled.
Copy	The currently open format table is copied into the specified table.
Jump	The specified format table is opened.
Back	The previous format table number is opened.
Next	The following format table is opened.

Setting example

To print in the following format:



- Description of escape sequence

<A>
<Data send start>

<CC> 2
<Card slot> Slot number

<YS>, 1 0
<Format register>, Format register number Match this number to the registration setting number.

</N>, 1, 1 0
<Field register>, field number, print digits

<V> 1 0 <H> 5 0
<Vertical print position> dots <Horizontal print position> dots

 2 0 2 0 8 0 1 2 3 4 5 6 7 8 9 0
<Barcode> Bar code type, bar width enlargement, bar top/bottom size (dots), data

Data registered for field No. 1

</N>, 2, 5

<V> 1 0 0 <H> 5 0 <L> 0 2 0 2 <P> 2

<X22>, 1 2 3 4 5
<X22 characters>, data

Data registered for field No. 2

</N>, 3, 6

<V> 1 5 0 <H> 3 0 0 <L> 0 1 0 1 <P> 2

<X2 2>, 1 2 3 4 5 6
<X2 2 characters>, data

Data registered for field No. 3

<Z>
<Data send end>

- Description of the format table

Match these numbers.

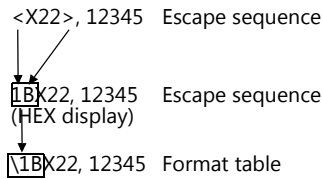
No.	10
001	\1bA\1bCC2
002	\1bY3,10
003	\1b/N,1,10
004	\1b/V10\1bH50
005	\1bB2020801234567890
006	\1b/N,2,5
007	\1b/V100\1bH50\1bL0202\1bP2
008	\1bX22,1,123456
009	\1b/N,3,6
010	\1b/V150\1bH300\1bL0101\1bP2
011	\1bX22,1,123456
012	\1bZ

OK

Cancel

Copy...

Notes on inputting



The escape character (ESC) at the top of the escape sequence is expressed as "<>" on MR-400 and as "1B(H)" in hexadecimal notation.

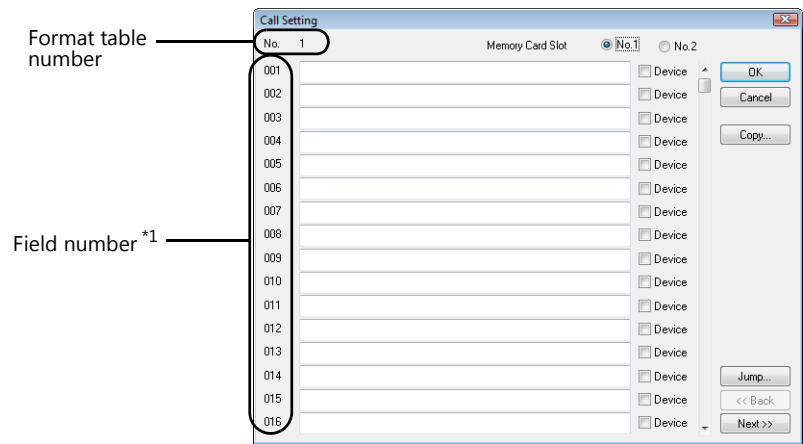
In the format table, "\" denotes hexadecimal data.

Consequently, "1B(H)" is shown as "\1B".

To use "\" as a character, enter "\\".

MR400 Format Table (Call Setting)

Configure format table settings (call setting) at [System Setting] → [Unit Setting] → [MR400 Format Table] → [Call Setting]. Numbers 1 to 128 can be set in the format table.

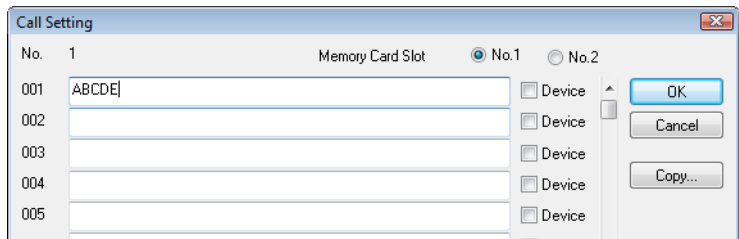


Item	Description
Memory Card Slot (No. 1 / No. 2)	Select the card slot drive number set on the MR-400.
Device	Select the checkbox when field data is stored in device memory.
OK	The format table setting is ended.
Cancel	Format table editing is canceled.
Copy	The currently open format table is copied into the specified table.
Jump	The specified format table is opened.
Back	The previous format table number is opened.
Next	The following format table is opened.

*1 Field numbers 1 to 99 are used.
Settings for numbers 100 to 512 are invalid.

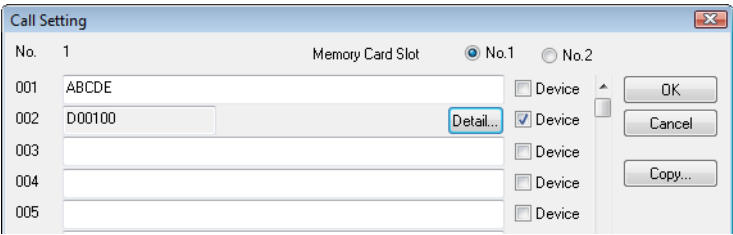
Setting example (1)

Printing "ABCDE" as a fixed string in field No. 1



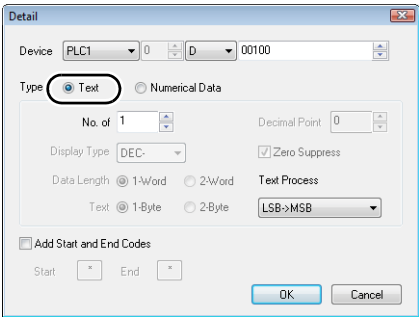
Setting example (2)

Printing data stored in a device memory in field No. 2



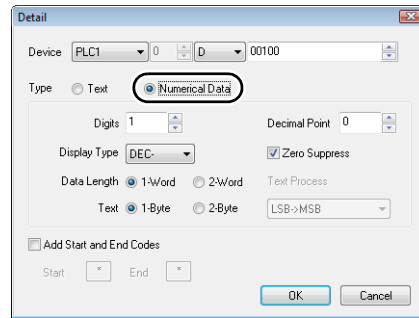
Select the [Device] checkbox of field No. 2.
Press the [Detail] button to display the [Detail] window.

- Select [Text] for [Type].



Item	Description						
Device	Specify the top device memory address where data for printing is stored.						
No. of Bytes	<div>The specified number of bytes is output in order from the device memory address specified for [Device].</div> <div>* To print "ABCDEF" in one-byte characters, specify as shown below in the Shift JIS code.</div> <table><tr><td>D100</td><td>4241 [H]</td></tr><tr><td>D101</td><td>4443 [H]</td></tr><tr><td>D102</td><td>4645 [H]</td></tr></table>	D100	4241 [H]	D101	4443 [H]	D102	4645 [H]
D100	4241 [H]						
D101	4443 [H]						
D102	4645 [H]						
Text Process	LSB → MSB/MSB → LSB Set the order of the first and second bytes within one word.						
Add Start and End Codes	Configure this setting when using "CODE 39" type barcodes. (Refer to page 16-34.)						

- Select [Numerical Data] for [Type].



Item	Description
Device	Print data in the specified device memory address in numerical form. * When [Numerical Data] is selected, binary data is converted into characters (JIS code). Example: When "0100 (BIN)" is set for D100, the characters 0100 (= "100") are printed.
Digits	Specify the number of digits for the display type.
Decimal Point	Specify the number of decimal places.
Display Type	Select from DEC-, HEX, OCT, DEC or BIN. When [DEC-] is selected, data is shown in decimal notation with a \pm sign.
Zero Suppress	Select whether or not to use the zero suppress function. When the [Zero Suppress] checkbox is selected, any suppressed zeros are filled with spaces.
Data Length	Set the data length for the device memory.
Text	Select one-byte or two-byte characters.
Add Start and End Codes	Configure this setting when using "CODE 39" type barcodes. (Refer to page 16-34.)

Barcode Type "CODE 39"

CODE 39 has "*" at the beginning and the end of each barcode.
When the format table is created, set "*" in the following two positions

- [MR-400 Format Table (Registration Setting)] settings
Set the number of digits including "*" for format registration.
For the following case for example, set "12" (10 characters + 2).

Registration Setting

No.	1
001	\1bA\1bCC2
002	\1bY\$10
003	\1bN,12
004	\1bV10\1bH50
005	\1bB1020E(*1234567890*)
006	\1b/N,2,12
007	\1bV100\1bH50\1bL0202\1bP2
008	\1bK22,*123456789*
009	\1bZ
010	
011	
012	
013	
014	
015	
016	

Buttons: OK, Cancel, Copy..., Jump..., << Back, Next >>

- [MR-400 Format Table (Call Setting)] settings
 - Select [Text] for [Type].

Call Setting

Memory Card Slot: No. 1 (selected), No. 2

Detail

Device: PLC1, 0, D, 00700

Type: ☒ Text, ☐ Numerical Data

No. of: 1

Decimal Point: 0

Display Type: DEC

Zero Suppress: ☒

Data Length: ☒ 1-Word, ☐ 2-Word

Text Process: LSB>MSB

Text: ☒ 1-Byte, ☐ 2-Byte

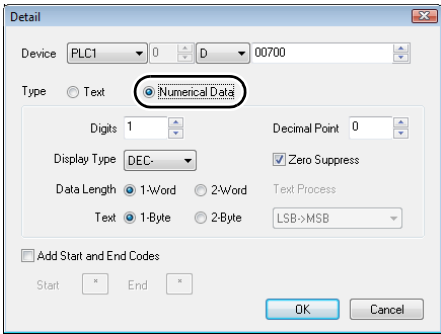
Add Start and End Codes: ☐

Start: *, End: *

Buttons: OK, Cancel, Jump..., << Back, Next >>

Item	Description
No. of Bytes	Specify the number of bytes including "*".
Add Start and End Codes	Selected: "*" is not included in the data of [Device]. Unselected: "*" is included in the data of [Device].

- Select [Numerical Data] for [Type].



Item	Description
Add Start and End Codes	Selected: "*" is not included in the data of [Device]. Unselected: "*" is included in the data of [Device].

16.4.4 Printing

Macros

The "MR_REG" macro command is available to write the setting data from format tables (registration setting or call setting) to the MR-400. The "MR_OUT" macro command is available to print out the data.

MR_REG

Device memory used

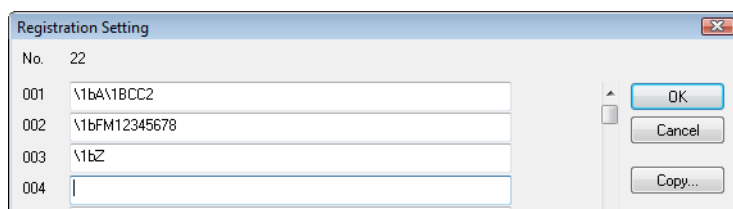
	Internal Device Memory	PLC1 to PLC8 Device Memory	Memory Card	Constant
F1	⊙	⊙	○	○

○: Setting enabled (indirect designation disabled) ⊙: Setting enabled (indirect designation enabled)

Range

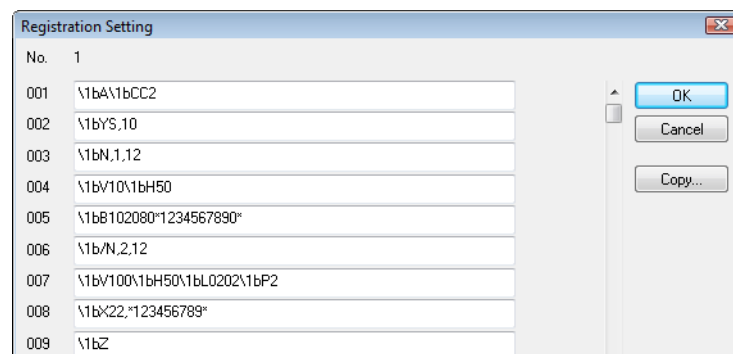
	Value
F0	Format table registration setting numbers 1 to 128

- Example 1: When the following commands are set in No. 22:



When the "MR_REG 22" macro command is executed, the memory card is formatted.

- Example 2: When the following commands are set in No. 1:



Execute the "MR_REG 1" macro command as the ON macro of a switch.

First: The format is registered on the memory card of the MR-400.

Second: The registered data is printed and the format can be checked.

MR_OUT

Device memory used

	Internal Device Memory	PLC1 to PLC8 Device Memory	Memory Card	Constant
F1	⊙	⊙	○	○

○: Setting enabled (indirect designation disabled) ⊙: Setting enabled (indirect designation enabled)

Range

	Value
F0	Format table call setting numbers 1 to 128

- Example 1: When the "MR_OUT 50" macro command is executed:
Data of the MR-400 format table (call setting No. 50) is printed.

Print Command Device

Printing can be executed using an external command.

Item	Description																																
n	<div>Control device memory</div> <div><div>MSB</div><div>LSB</div><table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>09</td><td>08</td><td>07</td><td>06</td><td>05</td><td>04</td><td>03</td><td>02</td><td>01</td><td>00</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table><div>0: Standby 1: Printing</div><div>* This is automatically reset when printing has been completed.</div></div>	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
n+1	<div>Format table No. designation device</div> <div>Set the number of the format table (call setting) to be printed.</div>																																

MEMO

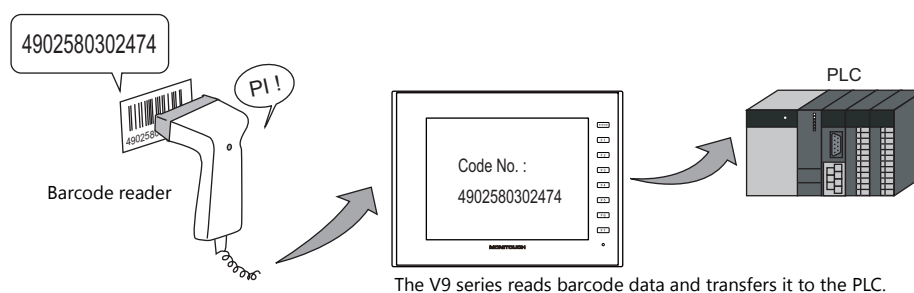
MONITOUCH



17 Barcode


17.1 Overview

The V9 series reads barcode data, converts the necessary data into ASCII code, and stores the result in the specified PLC device memory address. This allows various types of information to be transferred immediately using a barcode reader. Also, the V9 series can show the read barcode data on the screen.



- The V9 series does not perform "handshake" processing with the barcode reader. (The barcode reader is not synchronized with the V9 series.)
- A barcode reader is connectable to either modular jack (MJ1 or MJ2), CN1, or the USB-A port of the V9 series.
- A 2D barcode reader can be connected for data read/write operations.
- The V9 series recognizes a barcode reader connection as a type of 8-way communication. This means that the setting procedure is the same as that for 8-way communication.

 For setting examples, refer to [page 17-2](#).


 For details on compatible barcode readers, refer to the following.

- Out website at: <http://www.monitouch.com/>
- V9 Series Connection Manual



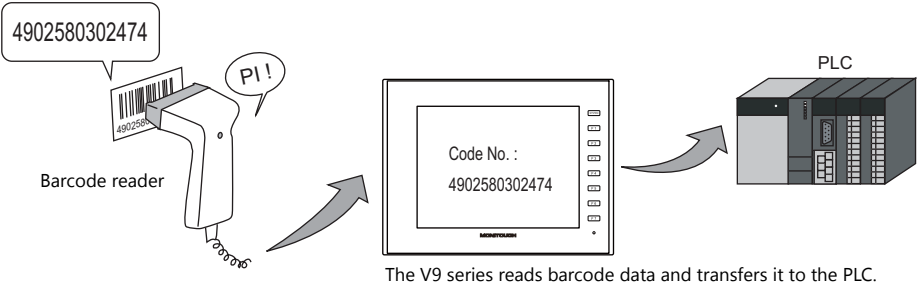
Note on serial connection

The cable for connecting the barcode reader to the V9 series differs depending on the type of barcode reader. Users should prepare an appropriate conversion cable if necessary.

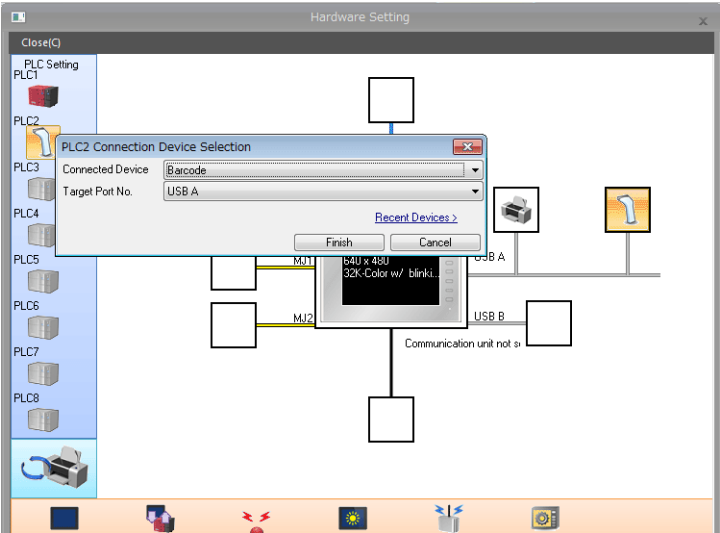
 For details on wiring, refer to ["17.4 Wiring" page 17-7](#).

17.2 Setting Examples

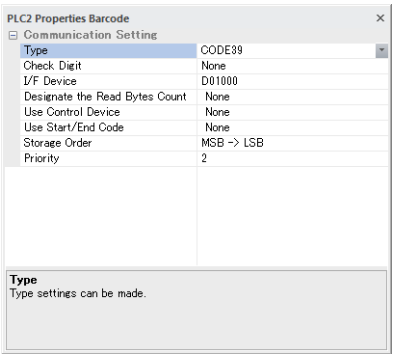
The following describes the procedure for reading "CODE 39" barcode data using a barcode reader and transferring the data as ACSII codes to PLC device memory D1001.



1. Click [System Setting] → [Hardware Setting] to display the [Hardware Setting] window.
2. Double-click an empty position between [PLC2] and [PLC8] and select "Barcode" for [Connected Device] and set [Target Port No.].



3. Set the parameters of the barcode reader in the [Barcode Properties] window.
Set [I/F Device] to D1000.



D1000: Flag/amount of data read
D1001: Barcode data

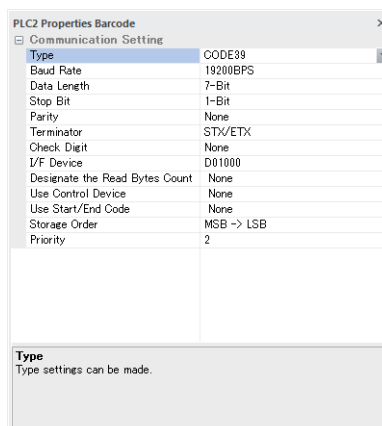
For details, refer to "Detailed Settings" page 17-3.

4. Place a character display to display the read barcode data and set the PLC device memory to D1001.

This completes the necessary settings.

17.3 Detailed Settings

Location of settings: [System Setting] → [Hardware Setting] → "Barcode"



Item	Description																																
Type	Specify the type of barcode reader. JAN (UPC, EAN)/ITF (Interleaved 2 of 5)/CODABAR (NW-7)/CODE39/CODE128/ANY (2D barcode)																																
Baud Rate (serial connection)	Set the transmission speed.4800/9600/19200 BPS																																
Data Length (serial connection)	Set the number of bits for data. 7-Bit, 8-Bit																																
Stop Bit (serial connection)	Set the number of stop bits. 1-Bit, 2-Bit																																
Parity (serial connection)	Set the parity. None, Odd, Even																																
Terminator (serial connection)	Set the terminator.STX/ETX/CR/LF/CR																																
Check Digit	Set the check digit. None, Do Not Delete, Delete																																
I/F Device	This device memory stores the barcode data and the number of read bytes. Specify the top device memory address. For details, refer to page 17-4 .																																
Designate the Read Bytes Count	Specify the maximum number of bytes to be read. Always specify an even number of bytes. For details, refer to page 17-5 .																																
Use Control Device	Control reading operations of the barcode reader. When the 0th bit is set to "1" (permitted), store data using the I/F device memory. <table border="1" style="margin: 10px auto; text-align: center;"><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr></table> <div style="display: flex; justify-content: space-around; margin-top: 10px;"><div style="text-align: center;"><div style="border-top: 1px solid black; width: 100px; height: 10px; margin: 0 auto;"></div><p>Not used (always set to "0")</p></div><div style="text-align: center;"><p>Read permission bit 0: Not permitted 1: Permitted</p></div></div>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
Use Start/End Code (Type: CODE 39)	Set whether or not to add a start and end code of "*" to the barcode data. Yes: Add an "*" code. None: Do not add an "*" code.																																
Storage Order	Set the order in which barcode data is stored in the I/F device memory. For details, refer to page 17-6 .																																
Priority	Set the order of precedence among PLC2 to PLC8.																																

I/F Device

I/F device memory allocation is shown below.

Type: JAN/ITF/CODABAR/CODE39/CODE128

Device Memory	Description																																
n	<div>Flag / amount of data read</div> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>0</td><td></td><td>0</td><td></td><td>0</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> <div><div></div><div>1: Reading complete</div><div>1: Communication error</div><div>0 to 256 bytes: Amount of data read</div></div> <div>* All unused bits are reset to "0".</div>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0		0		0	0										
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																		
0		0		0	0																												
n + 1 - n + m	<div>Data read (ASCII)</div> <div>* "0" (null code) is attached to the end of the data</div>																																

Type: ANY

Device Memory	Description																																
n	<div>Flag</div> <table><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>0</td><td></td><td>0</td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <div><div></div><div>1: Reading complete</div><div>1: Communication error</div><div>Not used (always set to "0")</div></div> <p>* All unused bits are reset to "0".</p>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0		0		0	0	0	0	0	0	0	0	0	0	0	0
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																		
0		0		0	0	0	0	0	0	0	0	0	0	0	0																		
n + 1	Amount of data read: 0 to 2,048 bytes																																
n + 2 - n + m	Data read (ASCII) * "0" (null code) is attached to the end of the data																																

Flag details

Flag	Description
Communication error (bit 14)	<p>When an error occurs in communication between the barcode reader and the V9 series, bit 14 changes to "1".</p> <p>Check that the barcode reader settings match the connected barcode reader and whether wiring has been performed correctly.</p>
Reading complete (bit 12)	<p>When data from the barcode reader is received and written to the I/F device memory, bit 12 (reading complete) changes to "1".</p> <p>Check that the bit is set to "1" and prepare for reading subsequent data.</p> <p>To read the next barcode data, reset the bit to "0" when the data has been read.</p>
Amount of data read	The number of bytes read by the barcode reader is stored.

Read Bytes Setting

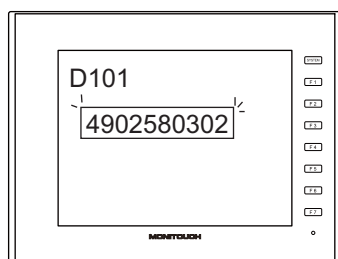
The number bytes to be read depends on the setting for [Type] and [Read Bytes Setting].

Type	Read Bytes Setting	Number of Bytes Used
JAN ITF CODERBAR CODE39 CODE128	None	Variable for codes to be read, maximum of 254 bytes
	Selected	Fixed to the set number of words, 2 to 254 bytes
ANY	None	Variable for codes to be read, maximum of 2046 bytes
	Selected	Fixed to the set number of words, 2 to 2046 bytes

Operation example

- I/F Device: D1000
- Read Bytes Setting: Selected
- No. of Bytes: 10 bytes
- Text Processing: LSB → MSB

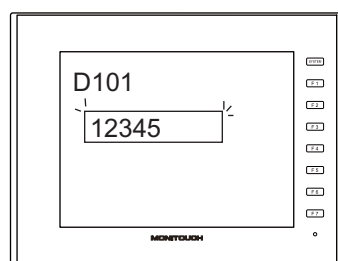
- When data of "4902580302474" that exceeds 10 bytes is read:



I/F Device	Value
D1000	Flag Amount of data read
D1001	3934HEX
D1002	3230HEX
D1003	3835HEX
D1004	3330HEX
D1005	3230HEX
D1006	Not used

10 bytes of data is stored and the remainder is deleted.

- When data of "12345" that is less than 10 bytes is read:



I/F Device	Value
D1000	Flag Amount of data read
D1001	3231HEX
D1002	3433HEX
D1003	0035HEX
D1004	0000HEX
D1005	0000HEX
D1006	Not used

"0" is stored as the HEX value in device memory addresses when there is no corresponding data.

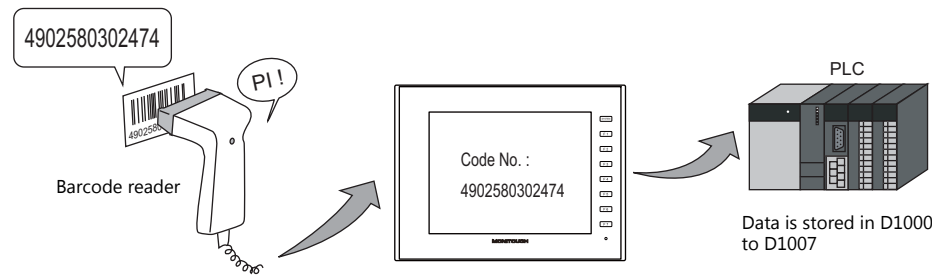
Storage Order

Data is read in the following manner according to the [Storage Order] setting.

Storage Order	Description
LSB → MSB	<div>Data is read in the order of LSB → MSB</div> <div><div>151</div><div><div>MSB</div><div>LSB</div></div><div>2nd byte1st byte</div></div>
MSB → LSB	<div>Data is read in the order of MSB → LSB</div> <div><div>151</div><div><div>LSB</div><div>MSB</div></div><div>1st byte2nd byte</div></div>

Operation example

- I/F Device: D1000
- Barcode data: 4902580302474 (13 digits)



- Storage Order: LSB → MSB

I/F Device	Value (Description)
D1000	100DHEX (reading complete, 13 bytes)
D1001	3934HEX (94)
D1002	3230HEX (20)
D1003	3835HEX (85)
D1004	3330HEX (30)
D1005	3230HEX (20)
D1006	3734HEX (74)
D1007	0034HEX (04)

- Storage Order: MSB → LSB

I/F Device	Value (Description)
D1000	100DHEX (reading complete, 13 bytes)
D1001	3439HEX (49)
D1002	3032HEX (02)
D1003	3538HEX (58)
D1004	3033HEX (03)
D1005	3032HEX (02)
D1006	3437HEX (47)
D1007	3400HEX (40)

17.4 Wiring

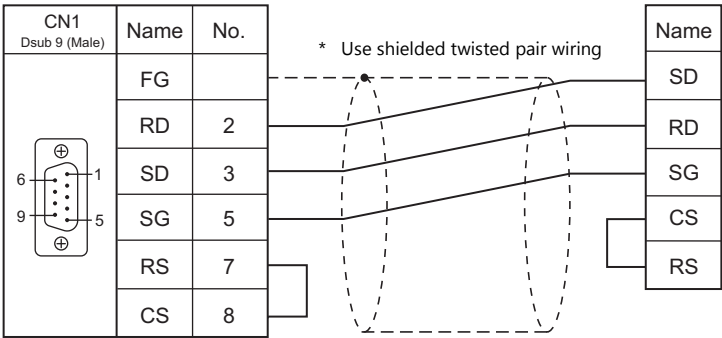
17.4.1 USB Connection

Barcode readers connect to the USB-A port of the V9 series unit.
Connect the barcode reader using the USB cable provided with the barcode reader.

17.4.2 Serial Connection

Use CN1 or a modular jack (MJ1/MJ2) to connect the barcode reader to the V9 series unit.

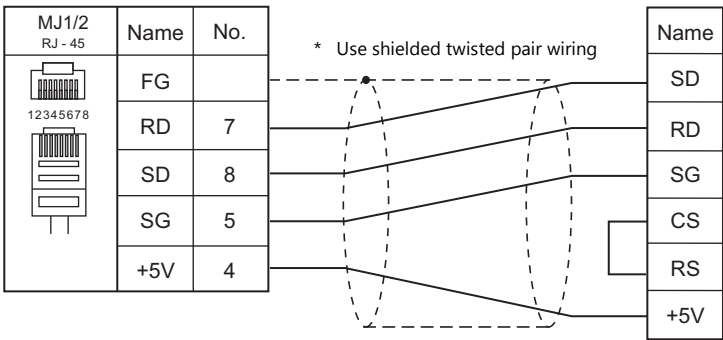
Connector: CN1



Modular jack: MJ1, MJ2



- For barcode readers with CS/RS control, it may be necessary to install a jumper between CS and RS to maintain proper operation.
- For details on the +5 V external power supply of MJ1/MJ2, refer to the V9 Series Hardware Specifications Manual.



- * When using Hakko Electronics' cable (model: V6-BCD)
 - Length: 3 m
 - With modular plug



17.5 Notes

- When connecting multiple USB devices to the V9 series, refer to the V9 Series Hardware Specifications Manual for precautions when using a USB hub.

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