**NV Series
NV3W (-V1)
NV4W
NV3Q**

Programmable Terminals

PROGRAMMING MANUAL

OMRON

NV Series
NV3W (-V1)
NV4W
NV3Q
Programmable Terminals

Revised January 2017

Notice

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

⚠ **DANGER**   Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

⚠ **WARNING**   Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

⚠ **Caution**   Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

OMRON Product References

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PLC" means Programmable Controller.

The abbreviation "host" means a controller, such as an IBM PC/AT or compatible computer, that controls a PT (Programmable Terminal).

Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Precautions for Safe Use	Indicates precautions on handling the product to ensure that the product is used safely.

Precautions for Correct Use	Indicates precautions to ensure that product functions and performances are realized, to ensure that the reliability of the product is maintained, and to ensure that the product is otherwise used correctly.

Note Indicates information of particular interest for efficient and convenient operation of the product.

Reference Indicates supplementary information on procedures, descriptions, and settings.

1,2,3... 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

CS1G-CPU☐☐-V1 Boxes in model numbers indicate variable characters. For example, "CS1G-CPU☐☐-EV1" indicates the following models: CS1G-CPU42-EV1, CS1G-CPU43-EV1, CS1G-CPU44-EV1, and CS1G-CPU45-EV1.

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION 8
Using PT Functions   171

SECTION 9
Transferring Screens   217

Appendix

Index   231

Revision History   235

About this Manual

This manual describes how to create screens for and maintain the NV-series PTs using the NV-Designer and includes the sections described below.

Please read this manual carefully and be sure you understand the information provided before attempting to use the NV-Designer. Be sure to read the precautions provided in the following section.

Precautions

This section provides general precautions for using the NV-series PTs and related devices.

Section 1 Overview

This section introduces the features and functions of the NV-Designer.

Section 2 PT Internal Data Structure and Display Methods

This section describes the internal data structure of an NV-series PT, how to control the screens displayed on the PT, and how to control the backlight.

Section 3 NV-Designer Outline and Configuration

This section gives the system requirements for running the NV-Designer, describes the windows and menus of the NV-Designer, and explains the parameters in the NV-Designer Configuration.

Section 4 Overall Flow of NV-Designer Operation

This section describes the overall procedure for using the NV-Designer to set up an NV-series PT for operation.

Section 5 Creating and Saving Projects (Including Screen Data)

This section describes how to create, save, and manipulate projects for NV-series PTs, including operations that can be performed between projects.

Section 6 NV Configuration

This section describes the parameters in the NV Configuration in detail.

Section 7 Descriptions of Parts

This section describes how to create screens using the various parts provided by the NV-Designer.

Section 8 Using PT Functions

This section describes special functions that can be used with NV-series PTs and the NV-Designer.

Section 9 Transferring Screens

This section describes how to transfer screens to and from an NV-series PT using both communications and SD memory cards.

Appendix

The appendix describes how to use the NV Memory Editor, which allow you to edit the internal memory of the PT from the NV-Designer.

x

Related Manuals

The following manuals are used for NV-series PTs. (The boxes at the end of the catalog numbers indicate the revision code.)

This Manual

NV-series PT Programming Manual .... V104-E1-□

This manual describes the software functionality of NV-series PTs, how to install the NV-Designer, and the features of the NV-Designer.

For more information on NV-Designer operating procedures, refer to the online help in the NV-Designer.

NV-series PT Setup Manual .... V103-E1-□

This manual describes how to connect an NV-series PT to an OMRON PLC, features and specifications, methods to set up communications and operation, and procedures for maintenance and troubleshooting.

Refer to the *NV-series PT Programming Manual* (V104-E1-□) for more information on PT functions and specific operating procedures.

NV-series PT Host Connection Manual .... V105-E1-□

This manual describes how to connect an NV-series PT to a PLC produced by a manufacturer other than OMRON, including PLC memory area designations, communications settings, and connection methods.

Terminology

The following terminology is used in this manual.

PT	In this manual, indicates an NV-series Programmable Terminal.
NV Series	Indicates products in the OMRON NV Series of Programmable Terminals.
PLC	Indicates a Programmable Controller in the OMRON SYSMAC CS/CJ/CP, C, or CVM1/CV Series of Programmable Controllers.
CPU Unit	Indicates a CPU Unit in the OMRON SYSMAC CS/CJ/CP, C, or CVM1/CV Series of Programmable Controllers.
NV-Designer	Indicates the OMRON NV-Designer.
Host	Indicates the PLC, IBM PC/AT or compatible computer, or personal computer functioning as the control device and interfaced with the NV-series PT.

Introduction

● **Intended Audience**

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing FA systems into production facilities.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and connecting FA systems.
- Personnel in charge of managing FA systems and facilities.

● **General Precautions**

- The user must operate the product according to the performance specifications described in the operation manuals.
- Do not use the PT touch switch input functions for applications where danger to human life or serious property damage is possible, or for emergency switch applications.
- Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.
- Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.
- This manual provides information for connecting and setting up an NV-series PT. Be sure to read this manual before attempting to use the PT and keep this manual close at hand for reference during installation and operation.

Safety Precautions

Notation Used for Safety Information

The following notation is used in this manual to provide precautions required to ensure safe usage of the product.

The safety precautions that are provided are extremely important to safety.

Always read and heed the information provided in all safety precautions.

The following notation is used.

Definition of Precautionary Information

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.

Symbols

🚫	**Prohibition** Indicates a general prohibition.
⚠	**Caution** Indicates general cautionary, warning, or danger level information.

⚠ WARNING	
Always ensure that the personnel in charge confirm that installation, inspection, and maintenance were properly performed for the PT. "Personnel in charge" refers to individuals qualified and responsible for ensuring safety during machine design, installation, operation, maintenance, and disposal.	⚠
Ensure that installation and post-installation checks are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.	⚠
Do not use the input functions of the PT, such as the function switches or switches on the touch panel, in applications that involve human life, in applications that may result in serious injury, or for emergency stop switches.	🚫
Do not attempt to disassemble, repair, or modify the PT. Doing so may impair the safety functions.	🚫
Do not attempt to take the Unit apart and do not touch any internal parts while the power is being supplied. Doing either of these may result in electrical shock.	🚫
The PT uses an analog touch panel. Never press more than two points on the panel at a time. Otherwise, it may activate a switch somewhere between the two points.	🚫

Precautions for Safe Use

1. When unpacking the Units, check carefully for any external scratches or other damage. Also, shake the Units gently and check for any abnormal sound.

2. The PT must be installed in a control panel.

3. The mounting panel must be between 1.6 and 4.8 mm thick. Tighten the Mounting Brackets evenly to a torque of between 0.1 and 0.25 N·m for the NV3W/NV3Q and between 0.2 and 0.3 N·m for the NV3W-V1 and NV4W to maintain water and dust resistance. Make sure the panel is not dirty or warped and that it is strong enough to hold the Units.

4. Do not let metal particles enter the Units when preparing the panel.

5. Do not connect an AC power supply to the DC power terminals.

6. Do not perform a dielectric voltage test.

7. Use a DC power supply that will provide a stable output even if the input is momentarily interrupted for 10 ms, and which has reinforced or double insulation.

Model	Rated power supply voltage	Capacity
NV3W-M□20L NV3W-M□20L-V1	5 VDC (allowable range: 4.5 to 5.5 VDC)	1 W min.
NV4W-M□□□	24 VDC (allowable range: 21.6 to 26.4 VDC)	1.7 W min.
NV3W-M□□□		2 W min.
NV3W-M□20 NV3W-M□40		1.9 W min.
NV3Q-MR□□		2.4 W min.
NV3Q-SW□□		3.6 W min.

8. Use a twisted-pair cable to connect to the power terminals. Tighten the terminal screws to a torque of between 0.22 and 0.30 N·m. Make sure the screws are properly tightened.

9. To prevent malfunctions caused by noise, ground the PT correctly.

10. Do not touch the surface of the circuit boards or the components mounted on them with your bare hands. Discharge any static electricity from your body before handling the boards.

11. Turn OFF the power supply before connecting or disconnecting cables.

12. The maximum tensile load for cables is 30 N. Do not apply loads greater than this.

13. Confirm the safety of the system before turning ON or OFF the power supply.

14. Cycle the power supply after changing the DIP switch settings.

15. Do not perform the following operations while the SD memory card is being accessed (NV4W/NV3Q only):
    - Turning OFF the power supply to the PT
    - Removing the memory card

    Always follow the specified procedure when removing the memory card.

16. Start actual system application only after sufficiently checking screen data and the operation of the program in the PLC (host).

17. Do not press the touch switch with a force greater than 30 N.

18. Do not use a screwdriver or any other tool to press a touch switch.

19. Confirm the safety of the system before pressing any touch switch.

20. Do not accidentally press touch switches when the backlight is not lit or when the display does not appear. Confirm the safety of the system before pressing touch switches.

21. Before initializing screen data, confirm that existing data is backed up at the NV-Designer.

22. When changing the password with the system menu, do not reset or turn OFF the power supply until writing is finished.

23. Before using the SPMA function to change memory values in the PLC or transfer ladder programming, confirm that the PT is operating. The SPMA function cannot be used unless the PT is operating.

24. Dispose of any battery that has been dropped on the floor or otherwise subjected to excessive shock.

25. Dispose of the Units and batteries according to local ordinances as they apply.

廢電池請回收

26. When mounting the Battery, be sure to use the correct Battery and mount it correctly.

27. Do not disassemble or short-circuit the battery.

28. Do not connect a USB connector to any device that is not applicable.

29. Before connecting a USB connector to a device, make sure that the device is free of damage.

30. Do not turn OFF the power supply to the PT while downloading or uploading screen data or the system program. Doing so may corrupt the screen data or system program.

31. Periodically inspect the installation condition of the PT if it is being used in an environment subject to contact with water.

32. The whole system may stop depending on how the power supply is turned ON or OFF. Turn ON or OFF the power supply according to the specified procedure.

33. Signals from the touch switches may not be input if the switches are pressed consecutively at high speed. Confirm each input before proceeding to the next one.

34. To use numeric input functions safely, always make maximum and minimum limit settings.

35. Do not use benzene, paint thinner, or other volatile solvents, and do not use chemically treated cloths.

36. The PT uses an analog touch panel. Deterioration over time can cause the touch points to move. Calibrate the touch panel if the touch points move too much.

37. Water resistance will be lost if the front sheet is torn or is peeling off. Do not use the PT if the front sheet is torn or is peeling off.

38. The Rubber Packing will deteriorate, shrink, or harden depending on the operating environment. Inspect and replace the Rubber Packing periodically (approximately once per year).

39. To use the NV3W in an environment with strong noise, connect the following noise filter to the power supply line: RSEL-2001W manufactured by TDK-Lambda Corp.

40. A Waterproof Packing cannot be reused. To ensure waterproof performance, replace the Waterproof Packing with a new one each time you reinstall the PT.

41. Screen burn-in will occur if the same pattern is continuously displayed for a long period of time (24 hours or longer, as a guideline). To prevent screen burn-in, use a screen saver or switch displays periodically (NV3W only).

Precautions for Correct Use

1. Do not install the PT in any of the following locations.
   - Locations subject to rapid changes in temperature
   - Locations subject to temperatures or humidity outside the range specified in the specifications
   - Locations subject to condensation as the result of high humidity
   - Locations subject to splashing chemicals or solvents
   - Locations subject to oil splashes
   - Locations subject to continuous water splashing
   - Locations subject to corrosive or flammable gases
   - Locations subject to strong shock or vibration
   - Locations outdoors subject to direct wind and rain
   - Locations subject to strong ultraviolet light
   - Locations subject to dust
   - Locations subject to direct sunlight
2. Take appropriate and sufficient countermeasures when installing systems in the following locations.
   - Locations subject to static electricity or other forms of noise
   - Locations subject to strong electromagnetic or magnetic fields
   - Locations close to power supply lines
   - Locations subject to possible exposure to radioactivity

Conformance to EC Directives

This product is EMC compliant.

● Concepts

OMRON products are electronic devices that are incorporated in machines and manufacturing installations. OMRON PTs conform to the related EMC Directives (see note) so that the devices and machines into which they are built can more easily conform to EMC directives. However, customers may use a wide variety of equipment and manufacturing installations. Therefore the customer must check whether the Directives are satisfied for the actual system. EMC-related performance will vary depending on the configuration, wiring, and other conditions of the equipment or control panel in which the PT is installed. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

> **Note** The applicable EMC (Electromagnetic Compatibility) standards for NV-series PTs are as follows:
> NV3W: EN 61000-6-2, EN 61000-6-4
> NV3W-V1/NV4W/NV3Q: EN 61131-2

● Conformance to EC Directives

NV-series PTs conform to EC Directives. To ensure that the machine or device in which the NV-series PT is used complies with EC Directives, the PT must be installed as follows:

- The NV-series PT must be installed in a control panel.
- You must use reinforced insulation or double insulation for the DC power supply and the DC power supply must have minimal voltage fluctuations and provide a stable output even if the power supply input is interrupted for 10 ms.
- NV-series PTs complying with EC Directives also conform to the Common Emission Standard (EN 61131-2 or EN 61000-6-4). Radiated emission characteristics (10-m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment complies with EC Directives.
- This is a class A product. It may cause radio interference in residential areas, in which case the user may be required to take adequate measures to reduce interference.

Conformance to KC Standards

Observe the following precaution if you use NA-series PTs in Korea.

A급 기기 (업무용 방송통신기자재)
이 기기는 업무용(A급) 전자파적합기기로서
또는 사용자는 이 점을 주의하시기 바라며,
지역에서 사용하는 것을 목적으로 합니다.

Class A Device (Broadcasting Communications Device for Business Use)

This device obtained EMC registration for office use (Class A), and it is intended to be used in places other than homes. Sellers and/or users need to take note of this.

Terms and Conditions Agreement

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

● **WARRANTY**
- The warranty period for the Software is one year from the date of purchase, unless otherwise specifically agreed.
- If the User discovers defect of the Software (substantial non-conformity with the manual), and return it to OMRON within the above warranty period, OMRON will replace the Software without charge by offering media or download from OMRON's website. And if the User discovers defect of media which is attributable to OMRON and return it to OMRON within the above warranty period, OMRON will replace defective media without charge. If OMRON is unable to replace defective media or correct the Software, the liability of OMRON and the User's remedy shall be limited to the refund of the license fee paid to OMRON for the Software.

● **LIMITATION OF LIABILITY**
- THE ABOVE WARRANTY SHALL CONSTITUTE THE USER'S SOLE AND EXCLUSIVE REMEDIES AGAINST OMRON AND THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. IN NO EVENT, OMRON WILL BE LIABLE FOR ANY LOST PROFITS OR OTHER INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF USE OF THE SOFTWARE.
- OMRON SHALL HAVE NO LIABILITY FOR DEFECT OF THE SOFTWARE BASED ON MODIFICATION OR ALTERNATION TO THE SOFTWARE BY THE USER OR ANY THIRD PARTY.
- OMRON SHALL HAVE NO LIABILITY FOR SOFTWARE DEVELOPED BY THE USER OR ANY THIRD PARTY BASED ON THE SOFTWARE OR ANY CONSEQUENCE THEREOF.

● **APPLICABLE CONDITIONS**
USER SHALL NOT USE THE SOFTWARE FOR THE PURPOSE THAT IS NOT PROVIDED IN THE ATTACHED USER MANUAL.

● **CHANGE IN SPECIFICATION**
The software specifications and accessories may be changed at any time based on improvements and other reasons.

● **ERRORS AND OMISSIONS**
The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

SECTION 1
Overview

This section introduces the features and functions of the NV-Designer.

1-1 NV-Designer Features

The NV-series Programmable Terminals (PTs) are easy to operate and compact.

1-1-1 NV-Designer Features and Functions

The NV-Designer is a programming application used to create screens for NV-series PTs.

Design Screens Easily Like a Paint Application

The NV-Designer can be used to transfer screens to and data from an NV-series PT, to print data, and to perform other operations.

Drag and Drop Parts to the Screen

The libraries contain various "parts," such as bit switches that allow you to turn PLC I/O points ON and OFF by touching the bit switch, data parts for displaying PLC data, and keyboard parts that can rewrite PLC data.

Parts can be easily positioned by dragging and dropping them to the screen.
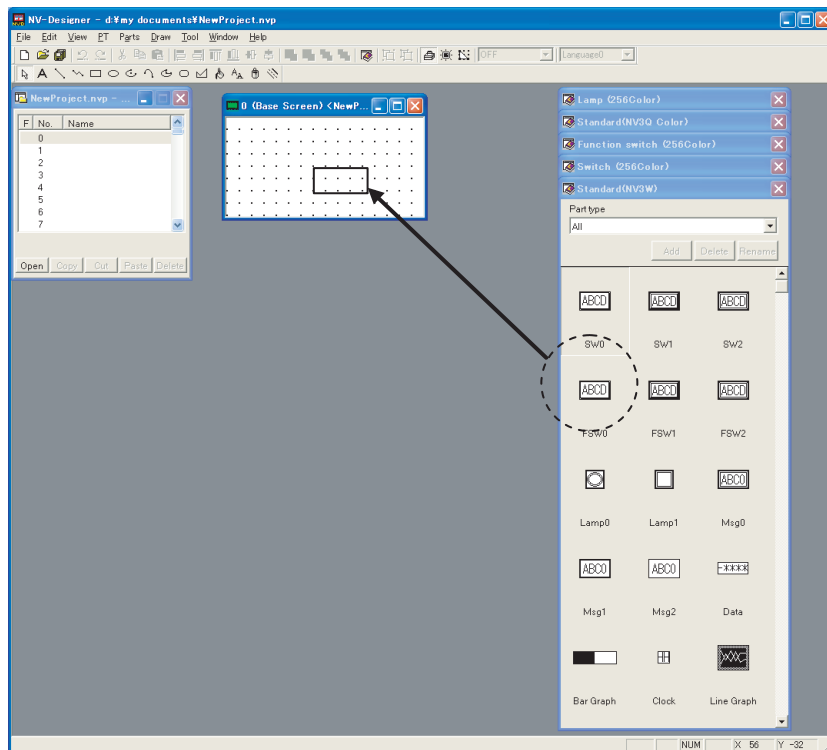
Easy to Register Original Parts

Custom parts created by the user can be dragged and dropped to a library to be registered and used like normal parts.

Easy to Print Design Status and Settings

Screen previews can be printed together with the properties of the edited base screen and edited part attributes.

Multi-language Support

With Windows you can use of various languages, such as Japanese, English (Europe), Simplified Chinese, Traditional Chinese, Korean, and Turkish.

Use True Type Fonts   The NV-Designer features the True Type fonts commonly used for Windows applications, MS Word, and Excel.

Characters can be displayed beautifully from small to large.

Exporting and Importing Character Strings Using the Display Language Switching Function

Character strings changed by using the Display Language Switching that appear on a base screen of the NV-Designer can be exported to a text file.

The text file can be opened and edited in Excel, then imported for use as the character string displayed on the base screen.

Transferring Screens with an SD Memory Card (NV4W/NV3Q Only)

The screens can be transferred using an SD memory card even if the PT cannot be connected to the NV-Designer.

Project data can be transferred directly by using SD memory cards.

Multifunction Objects (NV3W-V1/NV4W/NV3Q Only)

Multifunction Objects are parts that enable performing multiple operations with a single touch using a function switch or custom switch. The operations that are set will be executed in sequence when the Multifunction Object is touched. Up to 32 operations can be set. This enables using one touch to perform operations that were previously performed using combinations of multiple parts. (For the NV3Q, Multifunction Objects are supported for PT system version 1.1 and higher.)

Automatic Firmware Update

The NV-series PT firmware can be updated to the most recent version when screens are transferred from the NV-Designer.

1-2   System Versions

The system program version (abbreviated as "system version") in the NV-series PT determines the project system versions that can operate in the NV-series PT.

1-2-1   NV-series PT Models and System Versions

The system versions that can be installed depend on the model of the NV-series PT. The following table shows the possible combinations.

Applicable Versions for the NV-series PTs

NV Series	NV-Designer System Version
NV3W Series	Version 1.1 or higher
NV3W-V1 Series	Version 2.0 or higher
NV4W Series	Version 1.1 or higher
NV3Q Series	Version 1.1 or higher [*1]

*1 Version 1.2 or higher is required for an NV3Q-SW PT with lot number 111000 or later.

Functions and NV System Versions

	NV system version	Vertical displays	Alarm lists and histories	Operation security	Multifunction objects	PLC multiple connections	Continued PT operation for non-fatal errors in OMRON PLCs	Larger SD memory cards (from 1 GB to 2 GB)	NV-Designer version
NV3W	Version 1.1 or higher	Supported.	Not supported.	Not supported.	Not supported.	Not supported.	Supported.	Not supported.	Version 1.1 or higher
	Version 1.0 or higher	Supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Version 1.0 or higher
NV3W-V1	Version 2.0 or higher	Supported	Supported	Supported	Supported	Supported	Supported	Not supported	Version 2.0 or higher
NV4W	Version 1.1 or higher	Supported.	Supported.	Supported.	Supported.	Supported.	Supported.	Supported.	Version 1.1 or higher
NV3Q	Version 1.1 or higher	Not supported.	Supported.	Supported.	Supported.	Supported.	Supported.	Supported.	Version 1.1 or higher
	Version 1.0 or higher	Not supported.	Supported.	Supported.	Not supported.	Not supported.	Not supported.	Not supported.	Version 1.0 or higher

The most recent NV system version can be installed using the Support Software.

1-2-2   NV System Version Upgrade Procedure

The NV system version must be upgraded to use new features. The most recent firmware is included with the NV-Designer. Upgrade your NV-Designer designer before you attempt to update the system version of your NV-series PTs.

**Upgrading the System Program Version with an SD Memory Card (NV4W/ NV3Q Only)**

With the NV4W or NV3Q, the version of the system program can be updated using an SD memory card. When saving data to the SD memory card, save the newest version of the system program on the same card. When the data is read by the PT, the firmware and screen data for the newest version will automatically be transferred to the PT.

Version Upgrades when Transferring Screens

The firmware can be updated when transferring screens from the NV-Designer by selecting the automatic firmware update.

Note
(1) Updating the firmware in the NV-series PT and transferring the project are performed at the same time from the NV-Designer. It is not possible to update only the firmware. (The NV Ver_UP Tool is required.)

(2) When screen data that was created on an old version of the NV-Designer is read with the new version of the NV-Designer, the screen data is automatically updated to the new version. (The following confirmation dialog box will be displayed.)
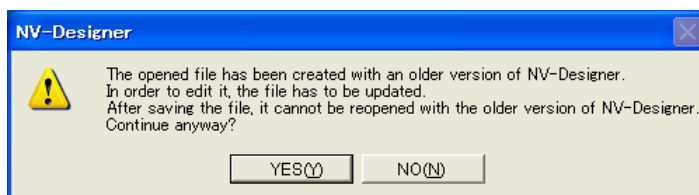
The following dialog box will be displayed when **Transfer** is selected from the PT Menu of the NV-Designer.

Data Transfer Dialog Box
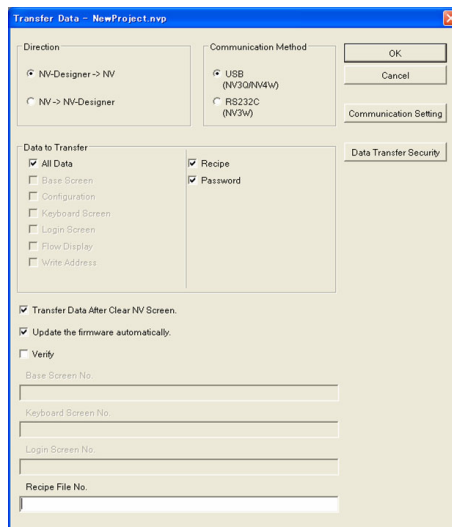
Data to Transfer: All Data

Direction: NV-Designer → NV

Select the *Update the firmware automatically* Check Box, and then click the OK Button.

Updating the firmware and transferring the project will start at the same time.

Note Automatically updating the firmware is possible only when all data is transferred.

Note
(1) Never turn OFF the power supply to the PT while the version is being upgraded. Also, do not unplug the cable between the computer and the NV-series PT. The PT may not restart if transferring the system fails.

(2) The SPMA function cannot be used while the version is being upgraded or screens are being transferred.

Version Upgrade Procedure Using NV Ver_UP Tool

NV Ver_UP is a special tool to upgrade the firmware version of the PT.

The NV Ver_UP version upgrade tool is installed at the same time as the NV-Designer.

Click the **Start** Button at the bottom left of the window or select *All Programs* from the menu displayed by pressing the **Ctrl** Key and the **Esc** Key, and then select *CX-One - NV-Designer - Tools - NV Ver_UP* from the OMRON Menu.
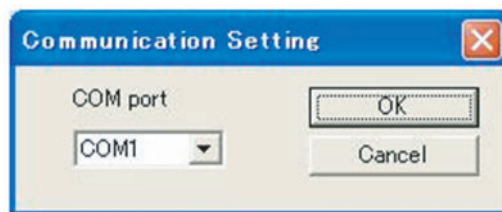
NV Ver_UP Dialog Box
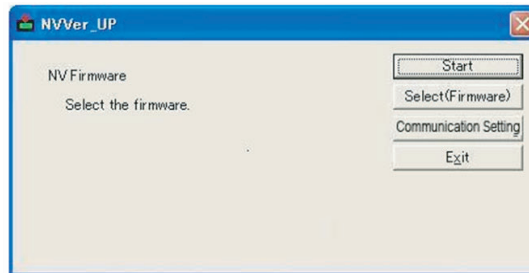
Select the firmware (Select (Firmware) Button) and set the communications conditions (Communication Setting Button). The applicable settings dialog box will be displayed when either of the buttons is clicked.

Select NV Firmware Dialog Box
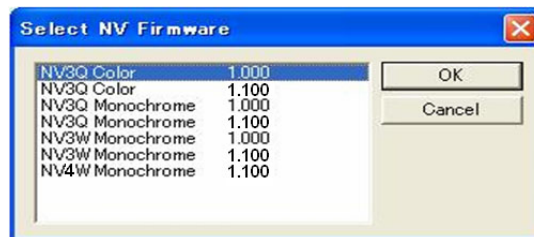
Select the most recent firmware version (i.e., highest version number) for the model that you are using. Click the OK Button to return to the NV Ver_UP Dialog Box.

Communication Setting Dialog Box

Make the communications setting, and then click the OK Button to return to the NV Ver_UP Dialog Box. These selections cannot be made for the NV3W-V1, NV4W and NV3Q.

For the NV3W, select the COM port that you are actually using.

Upgrading the version will start when the Start Button is clicked.

The NV Ver_UP version upgrade tool will end when the Exit Button is clicked.

Note (1) Never turn OFF the power supply to the PT while the version is being upgraded.

(2) Do not unplug the cable between the computer and the NV-series PT. Otherwise, the PT may not restart.

6

SECTION 2
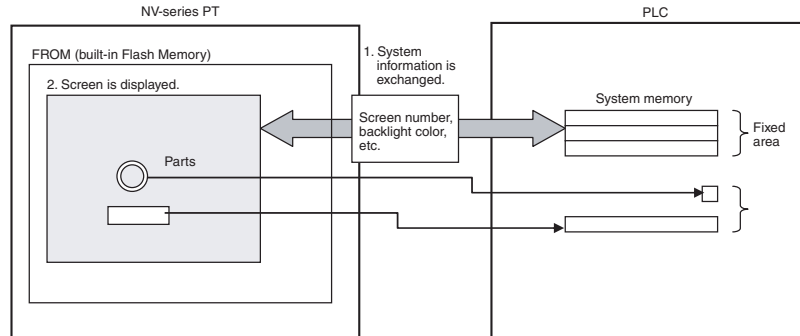# PT Internal Data Structure and Display Methods

This section describes the internal data structure of an NV-series PT, how to control the screens displayed on the PT, and how to control the backlight.

2-1 Internal Data Types and Structure

2-1-1 Overview of Internal Operation

This section describes the structure of internal data of an NV-series PT.

The internal data can be largely divided into two parts.

1. System information is exchanged.

System information is constantly exchanged between the PT and PLC, including the screen number and backlight color from the PLC, or to notify the PLC of PT status.

The system information area is stored in an area called the system memory. System memory must be initialized using the NV-Designer before use.

2. Screen is displayed.

The NV-series PT has multiple screens that contain functional parts selected from the parts libraries. One of the screens can be displayed.

The functional parts specify the desired PLC address and they read/write data.

2-1-2   Details of Internal Operation

The NV-series PT has FROM (internal Flash Memory) and SRAM (built-in RAM). Data is exchanged with the PLC as shown in the following diagram.
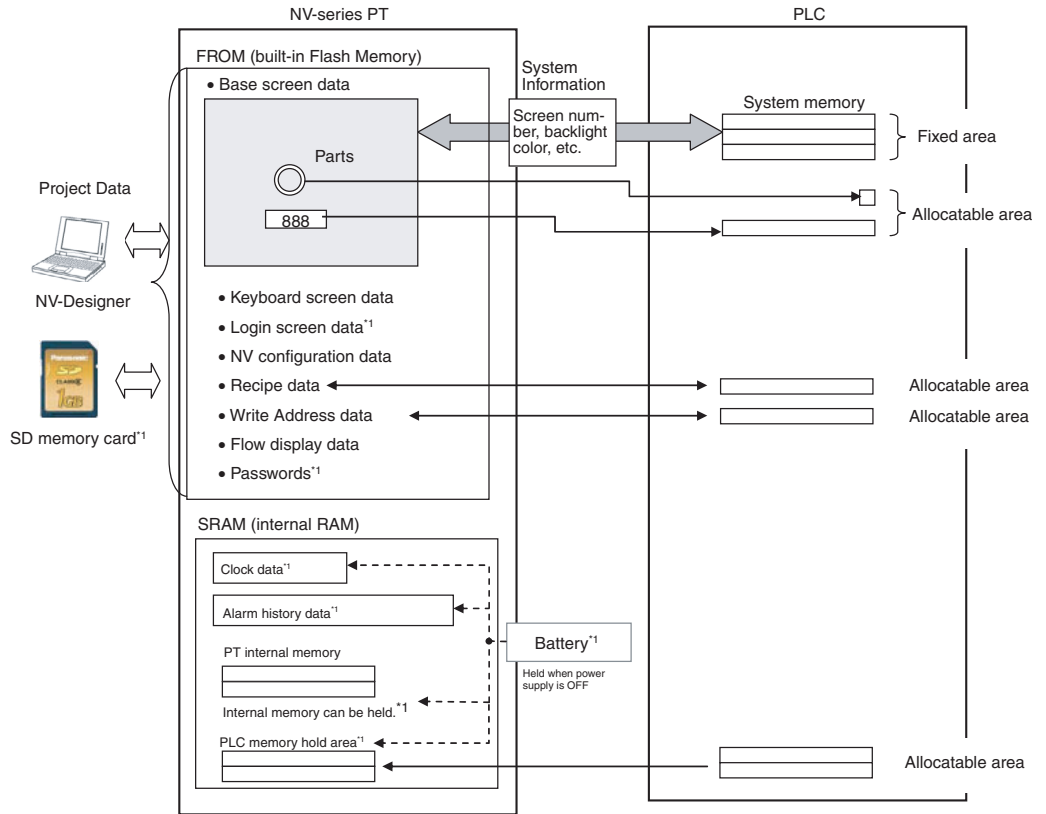
*1: Not supported by the NV3W.

■ **FROM (built-in Flash Memory)**

Stores project data created with the NV-Designer (function data, such as base screens and NV Configuration).

Project data can be backed up or restored using SD memory cards.

Data		Description
Screen data	Base screen data	Screen data containing parts that have been selected from the parts libraries.
	Keyboard screen data	Screen data containing keyboard parts that open when the corresponding data parts are pressed.
	Login screen data	The Screen data is used to enter passwords according to the password levels specified for operation security. (Not supported by the NV3W)
	NV configuration data	Configuration data related to the NV-series PT that includes the setting information for functions, such as the system memory, startup screen number, language switching, and other functions.
	Recipe data	Settings to read/write multiple values at one time from or to PLC memory.
	Write Address data	Condition and operation settings for writing data to the PLC according to the status of a memory location in the PLC while the specified screen is displayed.
	Flow display data	Settings for character flows displayed on the bottom of the screen and the display conditions.
	Passwords	Settings to restrict displays and operations depending on the part and user.
		(Not supported by the NV3W)

■ **SRAM (Internal RAM)**

Stores alarm history data collected by the PT, internal memory values, and clock data.

Data saved in the built-in RAM will be deleted 1 minute after power supply is turned OFF, but it can be backed up with an optional Battery. (These functions are not supported by the NV3W (-V1).)

Data	Description
Clock data	Clock data in PT.
Alarm history data	PLC data defined as alarms is constantly monitored and the time when the alarm occurred and was removed is recorded as history data.
PT internal memory	NV-series PT internal memory.
	The specified area can be held while the power supply is OFF.
PLC memory hold area	PLC data that is constantly read from the specified memory locations and can be held even when the power supply is turned OFF.

2-2 Displaying Screens

2-2-1 Startup Screen

Screen 0 is displayed as default when the PT is started.

This screen can be changed in NV Configuration from the NV-Designer.

2-2-2 Switching Screens

One of the following three methods can be used to change the displayed screen registered in the NV-series PT.

- Switching screens using function switches (functional parts) on PT screens
- Switching screens using the ladder program
- Switching screens after a specified time (automatic paging)

Switching Screens Using Function Switches (Functional Parts) on PT Screens

The PT screen can be switched using a function switch from a parts library.

The operation depends on the operating mode set for the function switch.

■ **Operating Mode: Change Screen**

When the function switch is touched, the screen will change to the preset screen number.

However, the information in the PLC internal system memory (first word in the Word Area (screen number specified by PLC)) will not be updated.

You can also return to the previous screen by using a function switch with the operating mode set to.

Example:

NV

Changes to screen 2.

Switch turned ON.
Operating mode = Change screen
Screen 2

Screen 2

Screen 2

Return to previous screen

Switch turned ON.
Operating mode = Return to previous screen
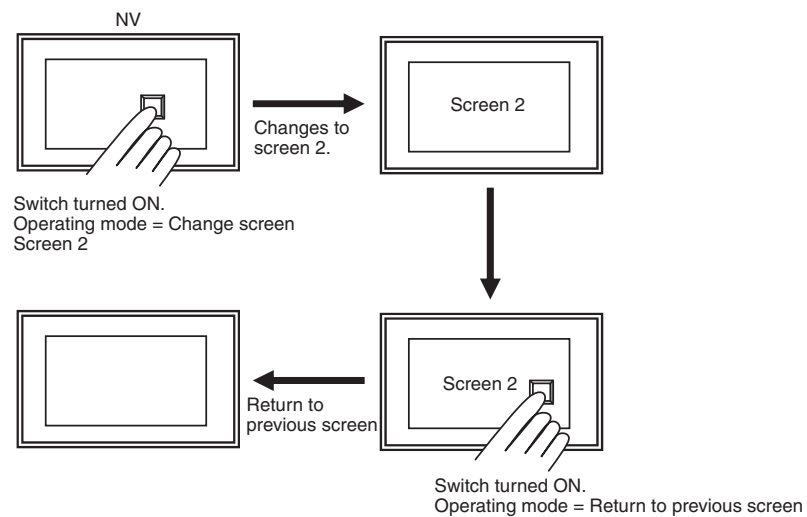
■ **Operating Mode: Set Value**

When the switch is touched, the PT writes the screen number to switch to in the PLC internal system memory (first word in the Word Area (screen number specified by PLC)) and the screen is switched.

Example: Data format: 1 word

Output word: D100 (first word in the Word Area of System Memory)

Value: 2 (desired screen number in hexadecimal)

Switch turned ON.
A value is set.
Set D100 to 2. (D100 is the first word in the Word Area of the Basic Communications Area.)

Changes to screen 2.
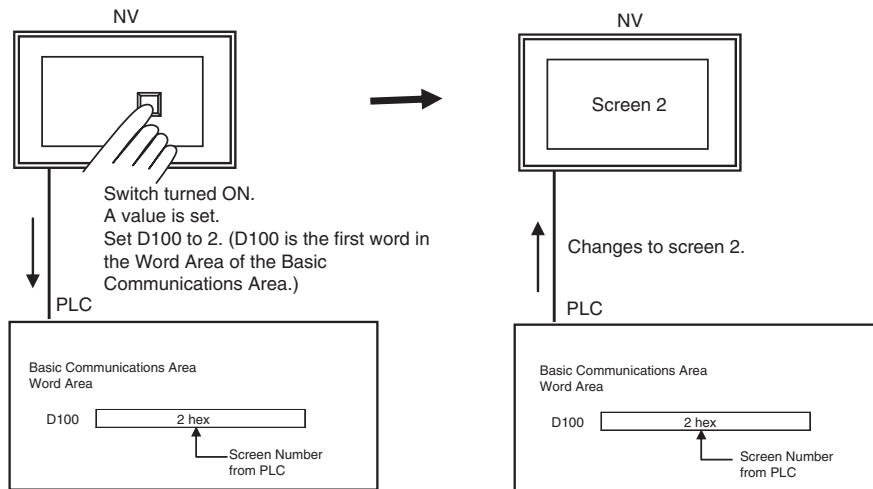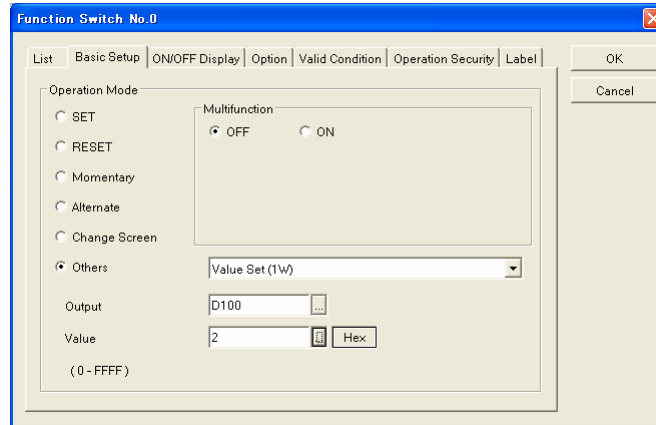
Refer to *7-5 Function Switches* for details on Switch Functions.

| **Switching Screens Using the Ladder Program** | Create a ladder program that writes the screen number to the first word of the PLC system memory to switch the screen. |

Communications between the PT and the PLC
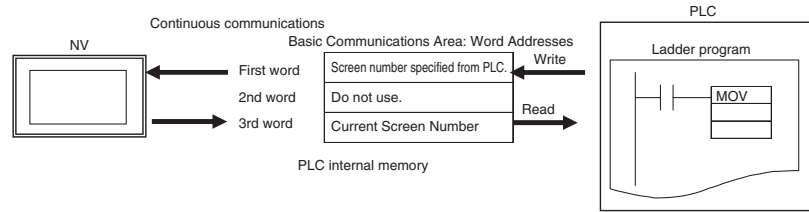
Example: Changing from Screen 1 to Screen 2
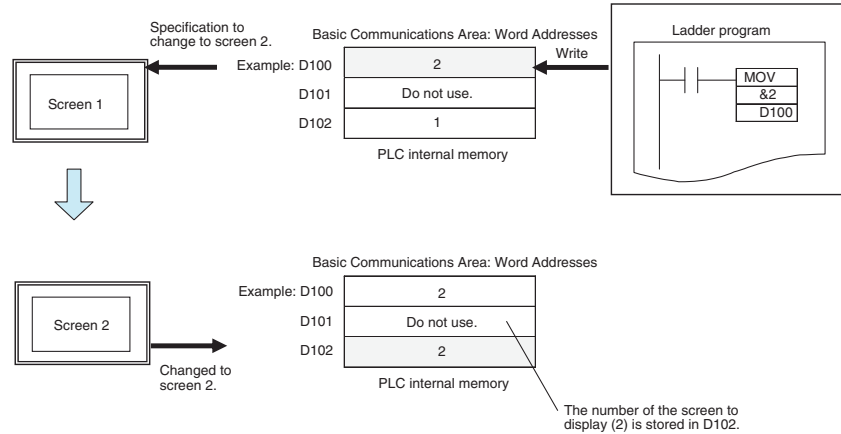
Precaution for Correct Operation

Screen numbers are displayed in decimal on the NV-Designer but they must be in hexadecimal when writing the screen number to the PLC internal system memory.

| **Switching Screens after a Specified Time (Auto-Paging)** | The automatic paging function can be used to automatically switch to a specified screen after a specified period of time has passed. Settings are made in the NV Configuration of the PT. |

Application Example:

    1. Screen 1 is displayed for 10 seconds and then screen 2 is displayed.

    2. Screen 2 is displayed for 5 seconds and then screen 3 is displayed.
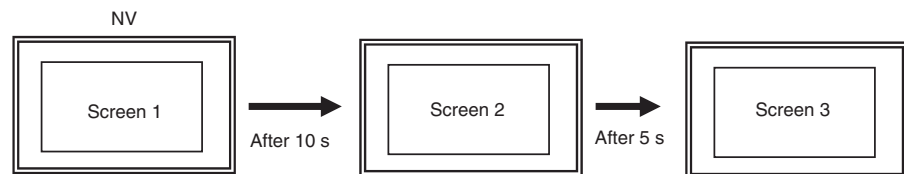
Refer to *6-2-6 Auto-Paging Tab Page* for details.

2-3   Backlight Display Methods

2-3-1   Specifying Backlight Colors

The backlight color of a monochrome NV3W (-V1), NV4W or NV3Q can be specified.

It can be specified using one of the following two methods.

1. Initial Settings   Backlight colors and operation are set in the base screen properties from the NV-Designer.

Model	Backlight color	Operation
NV3W (-V1), NV4W	White (green), pink (orange), or red	Lit or flashing
NV3Q monochrome	White, pink, or red	Lit or flashing
NV3Q color	Not supported.	Not supported.

The specified backlight color will be displayed in a rectangle on the left edge of the title bar.

Indicates that the base screen is white or green.
The backlight colors depend on the model of the PT.
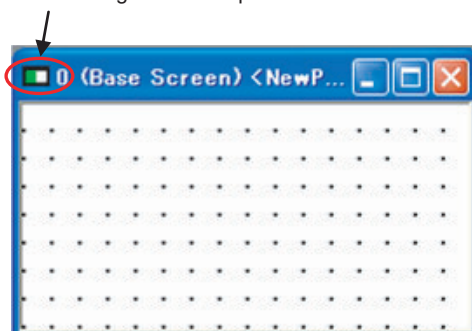
2. Changing the Backlight during Operation

The backlight color can be changed by using specifications from the PLC.

Application Example That Switches the Backlight Color
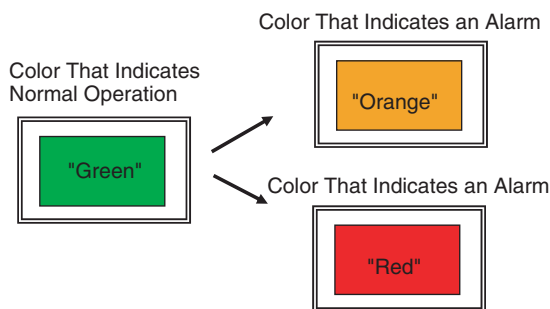
Specify the color and either lit or flashing in the Bit Area in system memory. Refer to *8-1 Switching Backlight Colors* for details.

2-3-2   Automatic Backlight OFF Function

The PT can be set so that the backlight automatically turns OFF if the touch screen not touched for a specified period of time. This can be done on the Setup 1 Tab Page of the NV Configuration. The time can be set between 1 and 30 minutes.

SECTION 3
NV-Designer Outline and Configuration

This section gives the system requirements for running the NV-Designer, describes the windows and menus of the NV-Designer, and explains the parameters in the NV-Designer Configuration.

3-1   System Requirements

3-1-1   System Requirements

Refer to the *CX-One Version 4.□ Setup Manual* (Cat. No. W463) for the system requirements to operate the NV-Designer.

3-1-2   Installation

Install the NV-Designer using the CX-One or CX-One Lite Installer.

For details, refer to the *CX-One Version 4.□ Setup Manual* (Cat. No. W463) provided with the CX-One.

3-1-3   Re-installation

Uninstall the NV-Designer and then re-install it.

For details on how to uninstall the NV-Designer, refer to the *CX-One Version 4.□ Setup Manual* (Cat. No. W463) provided with the CX-One.

3-1-4   Precautions for the OS of Windows other than Windows XP

Because of the operating specifications of Windows, the file may be saved in a different location to that of a previous version of Windows. Be careful of the following points if you are using Windows XP.

Having Multiple Users of NV-Designer

Files saved in the Program Files Folder or other system folders cannot be shared. To share the Parts Libraries, use a file that can be shared, or copy the file to each user.

File Save Location

If you try to save a file in the Program File Folder or other system folders, it will be saved in another location. We recommend that you save files in another folder, such as the My Documents Folder.

> **Note**   The screen data cannot be saved in the Program File Folder or other system folders.

Files Saved in the Program File Folder or Other System Folders

The file will not be displayed in Explorer even if you open the folder where it is saved.

Open the folder where the file is saved and click the Compatible Files Button displayed at the top of the screen to display the file screen.

Additional Information

Additional Information Operating Specifications of Windows

When using Windows, files cannot be saved in the Program File Folder or other system folders even if it is specified as the save location in application software, such as NV-Designer. They will be saved it in a virtual folder (VirtualStore). VirtualStore is a unique folder for each user. It cannot be shared with other users.

3-2   NV-Designer Window Names and Menus

3-2-1   Names of Window Components

Graphic bar

Toolbar

Menu bar   Screen Manager   Base Screen   Parts Library
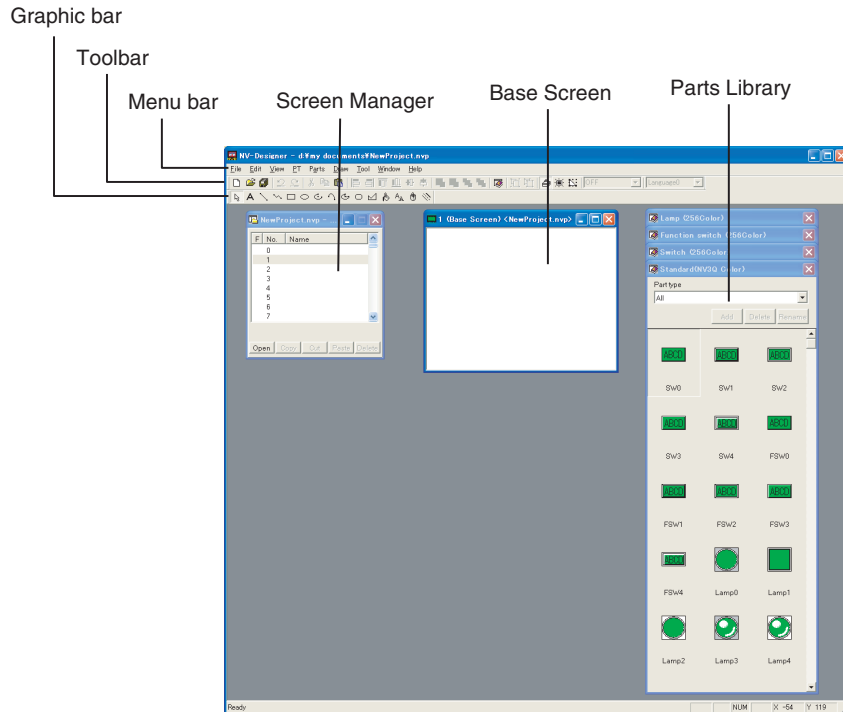
Menu Bar	All NV-Designer functions are displayed in the menus.
Toolbar	Frequently used commands are displayed as icons on the menu bar.
Graphic Bar	Frequently used drawing commands are displayed as icons on the menu bar.
Screen Manager	The screens are managed by base screen numbers.
Base Screen	Creates a screen. The screen is displayed at the PT's screen size. The size cannot be changed, but the display can be zoomed in or out.
Parts Library	Parts used for creating screens are displayed in parts libraries.

Additional Information

When the NV-Designer is started, the Standard Parts Libraries for all parts for the model that is set will be displayed in front.

3-2-2   Menus

The NV-Designer's operations and functions are displayed on menus according to their application.

Menu	Submenu/Command		Description
File	New		Displays the Model Selection Dialog Box.
	Open		Opens the specified NV-Designer project file (*.nvp).
	Close		Closes an open NV-Designer project file (*.nvp).
	Save		Saves the specified NV-Designer project file (*.nvp).
	Save As		Saves the specified NV-Designer project file (*.nvp) with a different name.
	Delete		Deletes the specified NV-Designer project file (*.nvp).
	Print		Displays the Print Dialog Box. Specifies the data to be printed.
	Print Style Setup		Prints the selected items.
	Printer Setup		Sets up the printer before printing.
	Keyboard Screen		Displays the Edit Keyboard Screen Dialog Box. Used to name or delete keyboard screens.
	Login Screen		Displays the Edit Login Screen Dialog Box. The Login Screens are used to enter passwords according to the password levels specified for the operation security function.
	Export Text		The character strings for switching the display language can be exported to a text file. The text data can also be edited and imported.
	Import Text		Imports text from a text file. The imported text can be checked by selecting PT - Multi Language Exchange String List.
	Verify Projects		Compares the currently opened project with the specified project for verification.
	Exit		Exits the NV-Designer.

Menu	Submenu/Command		Description
Edit	Undo		Undoes the previous operation.
	Redo		Redoes the previous operation.
	Cut		Cuts the selected parts.
	Copy		Copies the selected parts.
	Repeat		Creates a base part which is copied to enable the creation of multiple parts with different functions.
	Paste		Pastes the parts that were last cut or copied.
	Copy Bitmap of Base Screen		Copies the base screen contents as bitmap data.
	Align	Left	Aligns the left sides of the selected graphics.
		Right	Aligns the right sides of the selected graphics.
		Top	Aligns the top edges of the selected graphics.
		Bottom	Aligns the bottom edges of the selected graphics.
		Horizontal Center	Aligns the horizontal centers of the selected graphics.
		Vertical Center	Aligns the vertical centers of the selected graphics.
	Centering		Centers multiple graphics figures.
	Justify Horizontal		Aligns the selected graphics with equal horizontal spaces.
	Justify Vertical		Aligns the selected graphics with equal vertical spaces.
	Rotate		Rotates the selected graphics.
	Flip	Right/Left	Flips the selected graphics left to right.
		Top/Bottom	Flips the selected graphics top to bottom.
	Delete		Deletes the selected items.
	Erase Screen		Deletes the base screen
	Bring Previous		Moves the selected graphic up one layer.
	Bring Next		Moves the selected graphic back one layer.
	Bring Forefront		Places the selected graphics on the top.
	Bring Behind All		Places the selected graphics on the back.
	Group		Creates a group of character strings, graphics, or parts.
	Ungroup		Ungroups a group of parts.
	Select		Selects character strings, graphics, and parts.
	Select All		Selects all character strings, graphics, and parts on the base screen.

Menu	Submenu/Command		Description
View	Redraw		Redraws the contents of the screen that is being edited.
	Grid		Sets the grid on base screens edited with the NV-Designer.
	Toolbar		Displays and hides the toolbar.
	Status bar		Displays or hides the status bar.
	Graphic bar		Displays and hides the graphic bar.
	Zoom	400%	Changes the magnification of the base screen that is being edited.
		200%	
		100%	
		75%	
		50%	
	Zoom Box		Displays a Zoom Box so that detailed sections can be drawn and fine adjustments can be made to positions when creating a base screen.
	Parts No.		Displays the parts numbers of all parts on the base screen that is being edited.
	Parts Attribute		Displays the attributes of all parts on the base screen that is being edited.
	Status	OFF	Places a bit switch, function switch, or lamp on the screen in OFF status.
		ON	Places a bit switch, function switch, or lamp on the screen in ON status.
	Language No.		Changes the language number when switching the display language is being used.
	Keyboard Parts		Displays or hides the keyboard parts.
	Address Cross Reference		The system memory used for communications with the PLC and the communications addresses used by parts on the screen are displayed in a list.

Menu	Submenu/Command		Description
PT	Transfer	Transfer	Transfers the base screen data, NV Configuration data, and other data created on the NV-Designer to the PT.
		Verify	Compares the file that is open on the NV-Designer and the file transferred to an NV-series PT. If the contents differ, the differences will be displayed. Compares files read to the NV-Designer.
		Create SD Memory Card File	Names a file in the SD memory card and saves the base screen data in it.
		Read from SD Memory Card File	Reads base screen data from a file on the SD memory card.
	NV Configuration		Displays the NV Configuration Dialog Box.
			Sets basic items, such as the PT's system memory, parameters for communications with PLCs and computers (NV-Designer), PLC multiple connection, auto-paging, startup screen settings, Setup 1 settings (clock, backlight, key press sound, battery error display, file compression, system menu language, switching display language, backlight brightness, contrast adjustment), Setup 2 settings (SD memory card menu), memory hold, recipes, alarm history, line graphs, and operation security.
	Recipes		Specifies the first control address and creates the settings for each model for the function that reads and writes the settings for a model from and to the specified PLC address as commanded by the PLC.
	SD Recipe		Creates the recipe files to be used during use of SD recipe.
	Flow displays		Text messages can be displayed like an electric scoreboard moving across the Flow Display Dialog Box from right to left.
	Writing memory (Write Address)		Used to set operations to set or reset bits, set values, perform calculations, etc. in PLC memory when conditions in the PLC are met while the specified screen is displayed.
	Password		Displays the Edit Operation Security Password Dialog Box so that you can set the passwords when the operation security password function is being used.
	Multi Language Exchange String List		If the Switch Display Language Option is selected in the NV-Designer Configuration, the language number and language type can be selected. The character string for each language number can also be edited in the list.
	Data Log		Performs settings related to the data log.
	Screen Properties		Used to set the properties of a base screen (i.e., the name, background, and backlight operation).
Parts	Open Parts Library		Opens the Parts Library Selection Dialog Box. Select the parts library to use and click the Open Button.
	Edit Attributes		Edits the selected parts.
	Draw		Used to edit screens of custom switch parts.
	Parts List		Displays the parts attributes used by a base screen in a list.

Menu	Submenu/Command		Description
Draw	Select		Used to select a character string, graphic, functional part, etc.
	Text		Creates a character string.
	Line		Creates a straight line.
	Continuous line		Creates continuous lines.
	Rectangle		Creates a rectangle.
	Pie/Oval		Creates a circle or oval.
	Arc		Creates a circular or oval arc.
	Spline		Creates a curved line.
	Sector		Creates a circular or oval sector.
	Rounded Rectangle		Creates a square with rounded corners.
	Polygon		Creates a polygon.
	Fill In		Fills areas enclosed by lines and graphics with a color.
	Character Type		Sets the language, font, character size, attributes (e.g., bold), and colors (character and background colors).
	Color Setup		Sets the colors and patterns for graphics.
	Line Type		Sets the line thickness and type.
Toolbar	Resource Report		Displays the resource report (amount of free memory and memory used by NV configuration, base screens, and keyboard screens).
	Base Screen Memory Usage		Displays the amount of memory used by the base screens.
			Displays the amount of memory and the communications addresses used by the parts.
	NV-Designer Configuration		Displays the NV-Designer Configuration Dialog Box.
			Sets the configuration of the NV-Designer screen display, the folder where the parts libraries used by the NV-Designer are stored, the current folder, whether to enable automatic backup, the backup time interval, items for creating graphics, menu and dialog languages, and whether to enable switching the display language.
	Convert	PLC Model Convert	Changes the model of the selected PLC in the file that is being edited.
		NV Model Convert	Changes the model of PT in the file that is being edited.
	Convert Fixed (NV-Designer) Font		Converts the fixed (NV-Designer) font as a batch to another font.
	Change Address		Converts the addresses set in the projects according to the specified conditions.
Window	Close All		Closes all open base screens.
	Cascade		Overlaps more than one base screen and displays them.
	Arrange		Displays more than one base screen side-by-side.
	Arrange Icons		Returns the toolbar icons to the defaults.
Help	Contents		Displays the contents of NV-Designer help.
	Keyword		Displays the window for keyword-based searches of NV-Designer help.
	About NV-Designer		Displays the version of the NV-Designer.

Pop-up Menus on Base Screens

Pop-up Menus	Description
Paste	Pastes the parts.
Screen Attribute	Sets the background colors and patterns.

Pop-up Menus When a Functional Part or Character String Is Selected

Pop-up Menus		Description
Cut		Cuts the selected parts.
Copy		Copies the selected parts.
Paste		Pastes the parts that were last cut or copied.
Functional Parts: Attribute		Sets the attributes of a part.
Character String: Character Type		Sets the language, font, character size, attributes (e.g., bold), and colors (character and background colors).
Status	ON	Places a bit switch, function switch, or lamp on the screen in OFF status.
	OFF	Places a bit switch, function switch, or lamp on the screen in ON status.
Align	Left	Aligns the left sides of the selected graphics.
	Right	Aligns the right sides of the selected graphics.
	Top	Aligns the top edges of the selected graphics.
	Bottom	Aligns the bottom edges of the selected graphics.
	Horizontal Center	Aligns the horizontal centers of the selected graphics.
	Vertical Center	Aligns the vertical centers of the selected graphics.
	Justify Vertical	Aligns the selected graphics with equal vertical spaces.
	Justify Horizontal	Aligns the selected graphics with equal horizontal spaces.
Delete		Deletes the selected items.
Order	Bring Forefront	Places the selected graphics on the top.
	Bring Behind All	Places the selected graphics on the bottom.
	Bring Previous	Moves the selected graphic up one layer.
	Bring Next	Moves the selected graphic back one layer.
Group		Creates a group of character strings, graphics, or parts.
Ungroup		Ungroups a group of parts.

3-2-3   Toolbar Functions

Part Names and Functions

The names of icons and other items on the toolbar are given below.
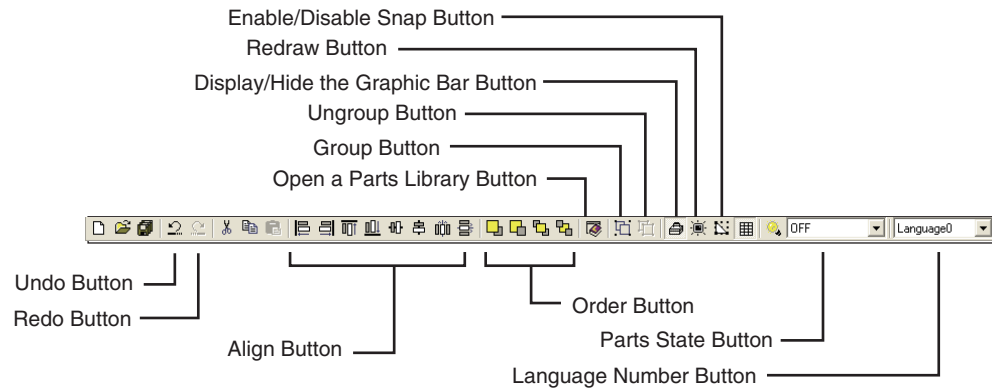
Undo Button
Undoes the previous operation.

Redo Button
Redoes the operation that was undone using the Undo Button.

Align Button
Aligns character strings, graphics, and parts.

Order Button

Changes the order of character strings, graphics, and parts if they are over-lapped.

Parts are set at the foreground as a default.

Open a Parts Library Button

Opens a parts library.

Group Button

Creates a group of character strings, graphics, or parts.

Ungroup Button

Ungroups a group of parts.

Display/Hide the Graphic Bar Button

Displays and hides the graphic bar.

Redraw Button

Redraws the contents of the screen that is being edited.

Enable/Disable Snap Button

Enables/disables the snap function when positioning character strings, graph-ics, or parts.

Parts State Button

Turns ON/OFF the selected switches and lamps or changes the message part number.

Language Number Button

Changes the language number of the selected base screen.

Precaution for Correct Operation

The Undo Button is effective only for operations such as drawing and editing character strings, graphics, and parts, and some operations in editors activated from the menu bar.

The Undo Button cannot be used for other operations.

3-2-4   Graphic Bar Functions

Part Names and Functions

The names of icons and other items on the graphic bar are given below.
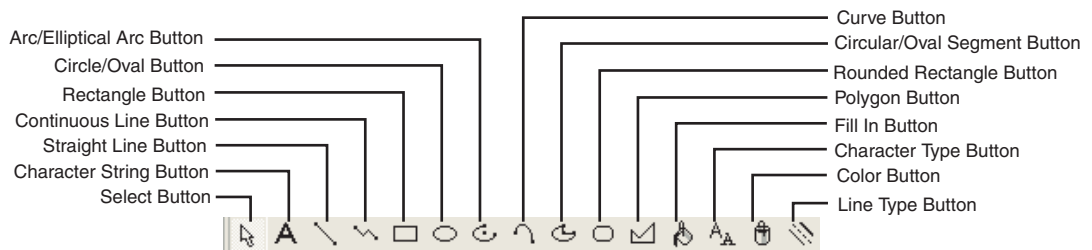
Select Button

Used to select a character string, graphic, functional part, etc.

Character String Button

Creates a character string.

Straight Line Button

Creates a straight line.

Continuous Line Button

Creates continuous lines.

Rectangle Button

Creates a rectangle.

Circle/Oval Button

Creates a circle or oval.

Arc/Elliptical Arc Button

Creates a circular or oval arc.

Curve Button

Creates a curved line.

Circular/Oval Segment Button

Creates a circular or oval sector.

Rounded Rectangle Button

Creates a square with rounded corners. The radius of the rounded corners can be changed in the line settings.

Polygon Button

Creates a polygon.

Fill In Button

Fills areas enclosed by lines and graphics with a color.

Character Type Button

Sets the size and style (bold, outline, underline) of characters.

Color Button

Changes the color of character strings and graphics.

Line Type Button

Sets the line thickness and type.

3-2-5   Screen Manager

The Screen Manager is a dialog box for managing the base screens in a project.

It can be used as a list for opening screens.

Screens can be copied, pasted, cut, and deleted using the Screen Manager.

Multiple projects can be started simultaneously and editing can be performed between the Screen Managers.

Project Name and Base Screen List

The project name is displayed at the upper left of the window.

Serial numbers starting from 0 will be assigned to projects that have not yet been saved.

This is how projects can be distinguished if multiple projects are created.
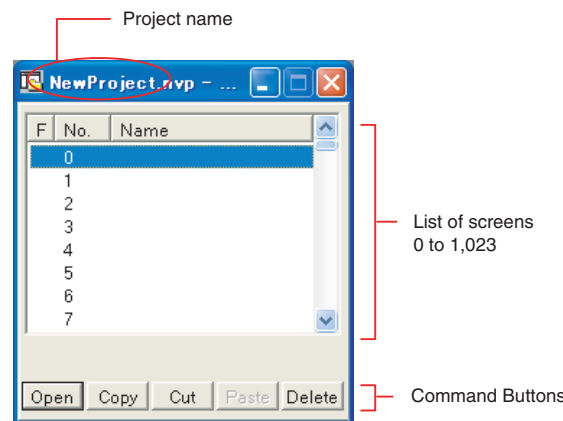
A base screen is displayed by its number and name.

> **Note**   The number of screens that can be registered depends on the contents of the screens.

Creating Screens

Double-click the number of the base screen that you want to create, or select the number and click the Open Button.

Editing the Screen

Copy: Select the screen to copy, click the Copy Button, input a different screen number, and click the Paste Button.

Move: Select the screen to move, click the Cut Button, input a different screen number, and click the Paste Button.

Delete: Select the screen to delete and then click the Delete Button.

Additional Information

- The copy, paste, cut, and delete functions can also be accessed by right-clicking on the desired screen.
- The "+" sign will be displayed in the F column if a screen is copied and pasted.
- Multiple Screen Managers can be displayed simultaneously and screens can be copied or moved between files. However, if the models of NV-series PT are different and the screen cannot be pasted, a message saying so will be displayed.

3-2-6 Base Screens

Base screens are essentially the same size as the screens displayed on the PT.

(You can zoom the screen display in and out.)

Character strings and parts are positioned on the screen to create a base screen.

Opening a Base Screen

Double-click a number in the number column in the Screen Manager (or select the number and click the Open Button) to open a base screen.

Double-click a number, or select the number and click the Open Button.
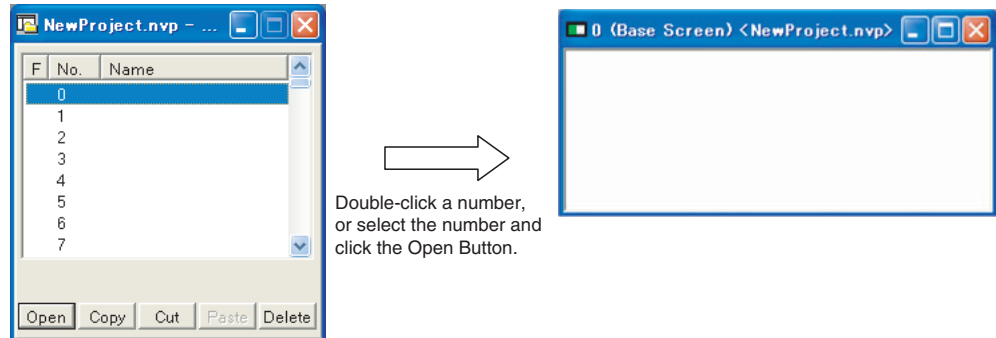
Parts of Base Screens

The screen number will be displayed on the top left of the base screen, and the project name will be displayed on the right of "Base Screen."

The backlight color is displayed on the top left of the base screen.

Screen number   Project name

Base Screen

Backlight color
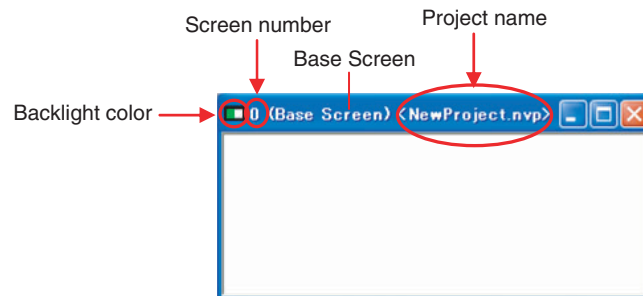
Closing a Base Screen

Click the Close Button in the title bar to close the base screen.

If anything has been created on the base screen, the base screen will be registered in the Screen Manager when the base screen is closed.

If nothing has been created on the base screen, the base screen will simply close.

To close multiple screens at once, select Window – Close All from the Menu Bar.

Precaution for Correct Operation

1. The base screen will not be saved even it is registered in the Screen Manager. To save the base screen, select Save from the File Menu and save the entire project.
2. After the base screen is changed and then closed, when you attempt to close the Screen Manager for that project, there will be a warning message asking whether you want to save it before closing.

3-2-7   Parts Libraries

A parts library contains parts, such as switches, lamps, data displays, and keyboards, that you can use to create screens.

They can be easily positioned on base screens by dragging and dropping them.

After starting the NV-Designer and then opening an arbitrary project, when you open a Base Screen, the Standard Parts Libraries for all parts for the model that is set will be displayed in front.

Standard Parts Library
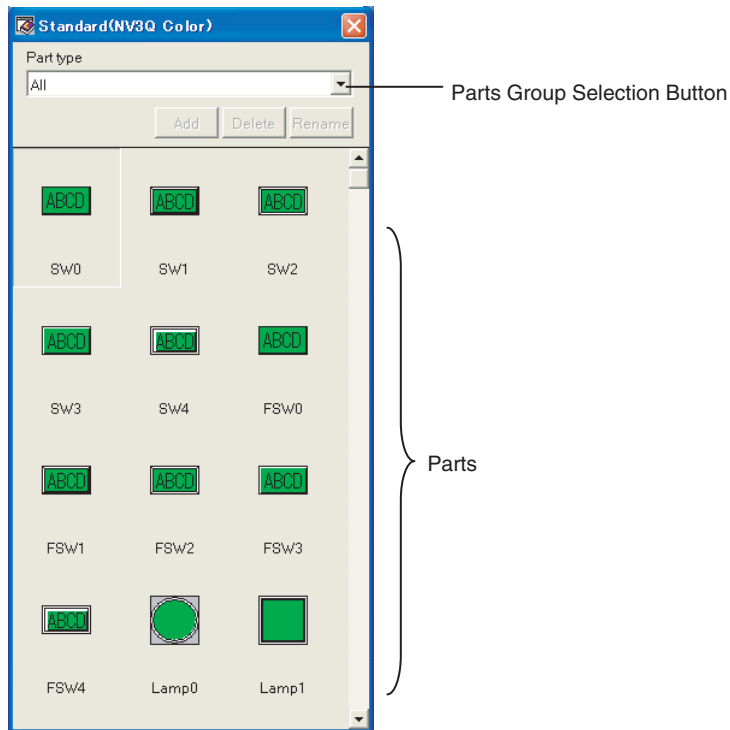
Refer to *7-2-2 Parts Libraries* for details on the parts libraries.

3-3 NV-Designer Configuration

The display while creating base screens and the data save location can be changed in the NV-Designer Configuration.

3-3-1 Customizing the Screen Creation Display

Grid Display and Setup

1,2,3... 1. Click the Grid Tab from the View Menu.
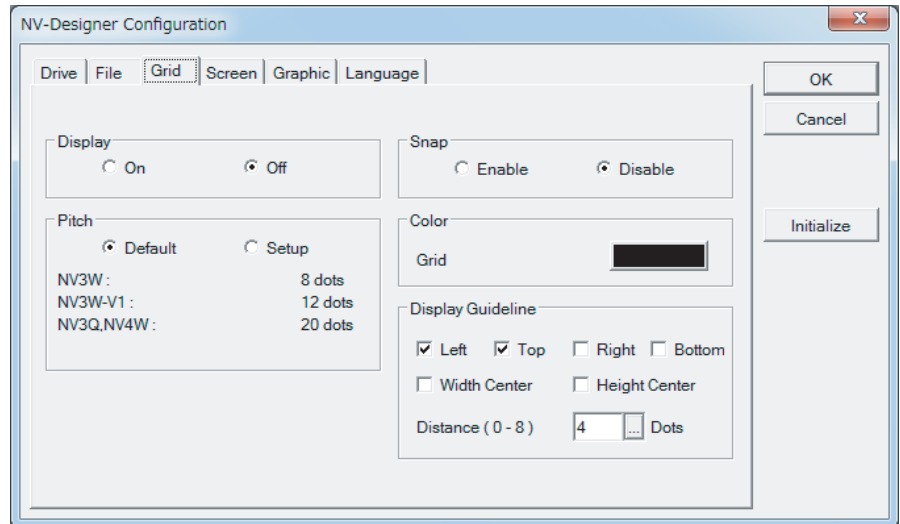
2. Select the On Option under Display.
3. Specify the pitch, snap, color and guideline as required and click the OK Button.

   The grid will be displayed on the base screen as shown in the following figure.

Grid
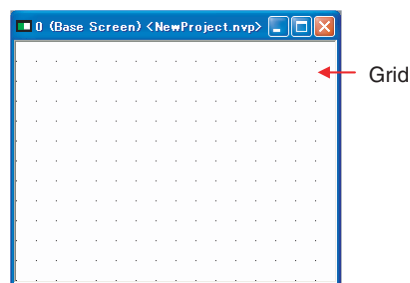
Changing Base Screen Properties (Background and Backlight)

1,2,3...   1. Right-click on the base screen and select Screen Properties from the pop-
                 up menu.

                 Or select Screen Properties from the PT Menu.
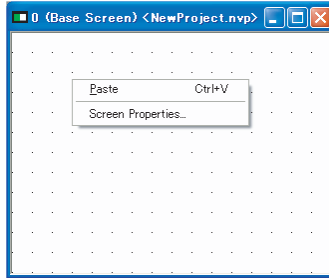
The following Screen Properties Dialog Box will be displayed.

Example for the NV3W
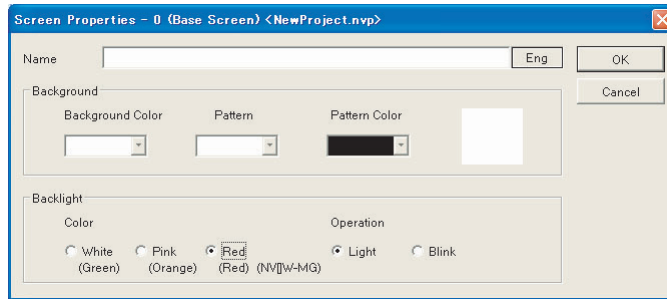
• The background pattern and color can be changed for the NV3W-
  M□□□(□) (-V1), NV4W-M□□□, and NV3Q-MR□□.

• The background color can be changed for the NV3Q-SW□□.

3-3-2   NV-Designer Configuration

Setting Method   Select NV-Designer Configuration from the Tool Menu.

NV-Designer Configuration and Initial Values

Tab	Description	Item			Initial Value
Drive	Specify the data folder of the parts libraries that are used by the NV-Designer.	Parts Library			Installation folder/STP
File	Enables/disables automatic backup and sets the backup interval.	Current Folder			C:\documents and set-tings\ UserName\
		Auto-Backup: Every 5 to 30 minutes			Not selected.
Grid	Displays/hides the grid, enables/disables snapping to the grid, and sets the grid interval, color, etc.	Display: On/Off			Off
		Pitch	Default		NV3W: 8 dots NV3W-V1: 12 dots NV3Q: 20 dots NV4W: 20 dots
			Setup	X direction	16 dots
				Y direction	16 dots
		Snap: Enable/Disable			Disabled
		Color: Grid			Black
		Display Guideline			Only left and upper sides are checked.
			Distance		4
Screen	NV-Designer Screen Display Set-tings	Toolbar: Display/Hide			View
		Graphic Bar: Display/Hide			View
		Zoom Box: Display/Hide			Hide
		Parts Informa-tion	Parts No.		Hide
			Parts Attribute		Hide
		Fill Pointer	Display/Hide		View
			Fill Pointer Color		Black
		Keyboard Parts			Display/Hide
		Tips Display	Shows Tips before Sav-ing a Project.		View
Graphic	Sets the drawing method for cir-cles and ovals.	Circle/Oval: Start from Center Point/Start from Top Left Corner			Start from Top Left Cor-ner
Language	Sets the language to use by default.	Default Character Set: English, Japa-nese, Simplified Chinese, Traditional Chi-nese, Korean, Turkish, Russian, or Vietnamese			Japanese
		Menu and Dialog Language: Japanese, English, Simplified Chinese, Traditional Chinese, or Korean			English
		Multi-Language Exchange: On/Off			Off

3-3-3 Drive Tab Page

This tab page is used to specify the data folder of the parts libraries that are used by the NV-Designer.
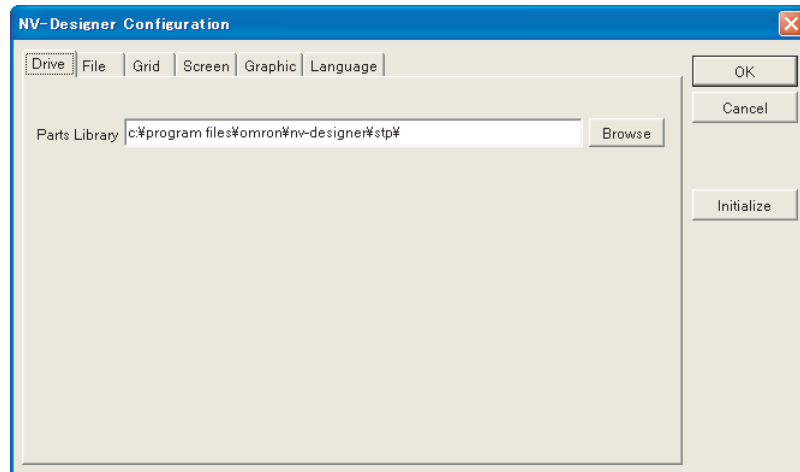
Setting	Description
Parts Library	The parts libraries where the data folder is stored is displayed.
	To change the folder of the parts libraries, click the Browse Button and specify the folder for the parts libraries in the dialog box that is displayed.

3-3-4   File Tab Page

This tab page is used to enable/disable automatic backup and sets the backup interval.

Setting	Description
Current Folder	The default folder for saving and reading files is set on the File Tab Page.
Auto-Backup	Data is periodically backed up to the disk when the Auto-Backup Check Box is selected.
	The backup interval can be set in 1 minute increments between 5 and 30 minutes.
	If the NV-Designer is forced to close, backed up project files will be automatically recovered when it is restarted.
	Click the ▣ Button and set the time to automatically backup in the Set Value Dialog Box that is displayed.

3-3-5   Grid Tab Page

This tab page is used to display/hide the grid, enable/disable snapping to the grid, and set the grid pitch, color, etc.

Setting	Description
View	Displays or hides the grid on base screens edited with the NV-Designer.
Pitch	Sets the grid pitch if grids are displayed. (2 to 80)
	Default: The grid display is fixed in the X-direction and Y-direction with the following pitch.
	NV3W: 8 dots
	NV3W-V1: 12 dots
	NV3Q/NV4W: 20 dots
	Setup: The pitch of the grid display can be adjusted in units of dots.
Snap	Enables/disables the snap function which aligns the position of parts or the starting/ending points of graphics with the grid.
Color (grid color)	Sets the color of the grid displayed on the base screen. Click the ▭ Button and select the color from the dialog box that appears.
Display Guideline	Sets whether to display the guideline to seize the positional relationship with other parts when moving a part.
	Left, Top, Right, Bottom, Width Center, and Height Center
	Sets where to display the guideline on the part.
	Distance (0-8)
	When the distance between parts becomes less than the value set here, the guideline appears. Select a value within the range from 0 to 8 dots.

Display Guideline　　　　Sets whether to display the guideline to seize the positional relationship with other parts when moving a part.

 Additional Information

The grid settings can also be displayed from the Menu Bar.

Select View – Grid from the Menu Bar.

It can also be selected using the Alt + G shortcut keys.

Enable/Disable Snap with Toolbar Button

Click the Snap ON/OFF Button on the toolbar.

3-3-6   Screen Tab Page

This tab page is used to set the screen display setting for the NV-Designer.
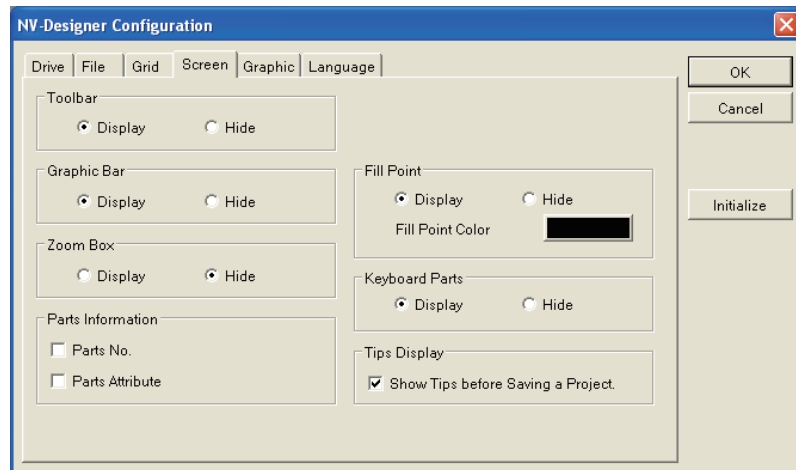
Setting	Description
Toolbar	Sets whether to display or hide the toolbar on the editing screens when the NV-Designer is started.
	The toolbar can also be displayed and hidden from the View Menu on the menu bar.
Graphic Bar	Sets whether to display or hide the graphic bar on the editing screens when the NV-Designer is started.
	The graphic bar can also be displayed and hidden from the View Menu on the menu bar.
Zoom Box	Characters and parts drawn on the screen can be zoomed for checking.
Parts Information	Enables/disables the communications address used by the part.
	Parts No.: Displays the parts numbers of all parts on the base screen.
	Parts Attribute: Displays the communications address of the main attribute PLC of the parts on the base screen.
Fill Point	Displays/Hides the fill pointer for filling closed areas.
Fill Point Color	Click the [▇▇▇] button and select the color from the dialog box that will be displayed.
Keyboard Parts	Displays/Hides the keyboard parts.
Tips Display	Displays/hides the message that indicates that there will be multiple saved files from the NV-Designer.
Shows Tips before Saving a Project	

3-3-7 Graphic Tab Page

Sets the drawing method for circles and ovals.
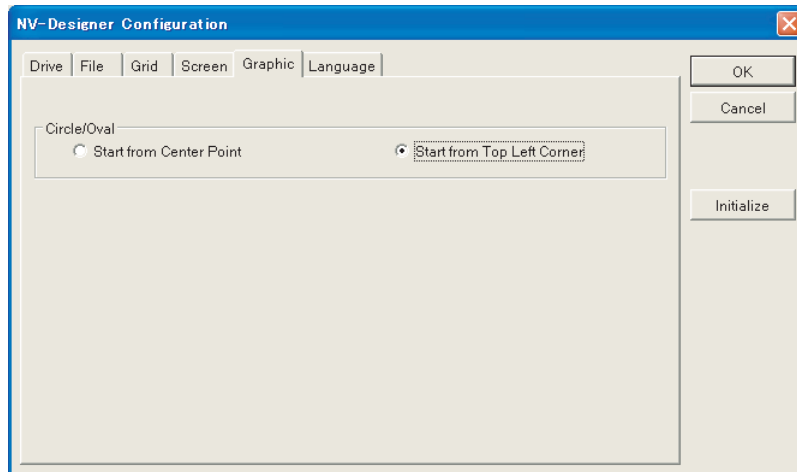
Setting		Description
Circle/Oval		Changes the method for drawing circles and oval, either starting from the center or from the top left.
	Start from Center Point	A circle or oval is drawn inscribed in a rectangle that has the specified start point as the center of the circle or oval and for which the specified start point to the end point is half of the distance between diagonally opposed corners of the rectangle.
	Start from Top Left Corner	A circle or oval is drawn inscribed in a rectangle that has the start and end points as a diagonal line.

3-3-8   Language Tab Page

This tab page sets the language to use by default.

Setting	Description
Default Character Set	Sets the default language when parts are pasted from a parts library.
	It can be chosen from Japanese, English, Simplified Chinese, Traditional Chinese, Korean, Turkish, Russian, or Vietnamese.
	For example, even if the menu and dialog boxes are displayed in Japanese, you can set the characters on the parts to be displayed in English or European English.
Menu and Dialog Language	Sets the language displayed in the menus and dialog boxes.
	It can be chosen from Japanese, English, Korean, Simplified Chinese, or Traditional Chinese.
Multi-Language Exchange	Sets whether to enable or disable the display language switching function. If switching the display language is enabled, Multi Language Exchange String List – Edit Properties can be selected from the PT Menu.
	If switching the display language is enabled, a dialog box to edit character strings for switching display languages will be displayed to let you select the language for each language number.
	You can register the language and corresponding character string for each part in advance and then change all registered parts at the same time using a function switch or a command from the PLC.

🖹 **Additional Information**

To change the display, the NV-Designer must be restarted.

The set language will be enabled when the NV-Designer is restarted. Restart the NV-Designer.

SECTION 4
Overall Flow of NV-Designer Operation

This section describes the overall procedure for using the NV-Designer to set up an NV-series PT for operation.

4-1   Overall Flow of Operation

Refer to the following steps when using the NV-Designer for the first time.

1 | Start the NV-Designer. *1

↓

2 | Select the Start Menu. *1

↓

3 | Select the PT model and PLC model. *1

↓

4 | Set system memory. *1

↓

5 | Set the NV-Configuration as required (language settings, etc). *2

↓

6 | Opening a Base Screen

↓

7 | Place a character string above the screen.

↓

8 | Drag and drop parts from a parts library such as the Standard Parts Library.

↓

9 | Save the final project.

↓

10 | Transfer the final project to the PT.

*1 For details, refer to *SECTION 5 Creating and Saving Projects (Including Screen Data)*.

*2 For details, refer to *SECTION 3 NV-Designer Outline and Configuration*.

4-2 Creating a Simple Screen

This section describes how to create a simple screen and operate it.

Screen to be created:
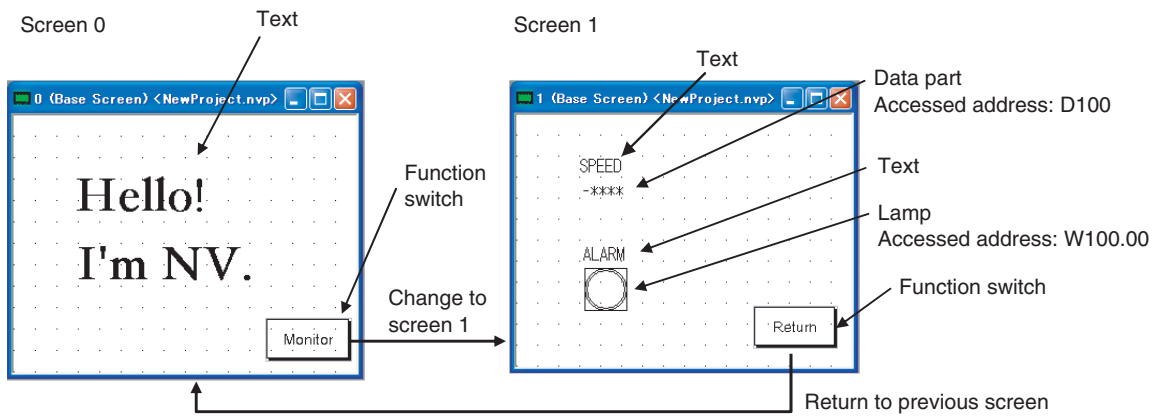
4-2-1 Starting the NV-Designer

When the NV-Designer is started, select the PT model and the PLC it connects to.

1,2,3...   1.   Select Program – OMRON – CX-One – NV-Designer to start the NV-Designer.

Note   When Windows 8 is running, the NV-Designer startups from the startup screen.

2.   Select Create New Project from the Start Menu and click the OK Button.
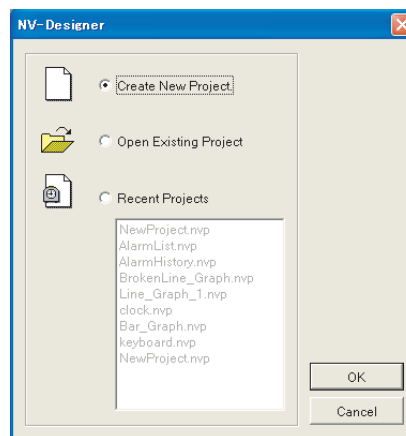
4-2-2 Using the New Project Wizard

When Create New Project is selected from the Start Menu, the New Project Wizard will be displayed. Use the following procedure to set up the project.

1,2,3... 1. Set the PT model as shown below in the status for creating the project and then click the Next Button.
NV Model: NV3Q
NV Model: Monochrome
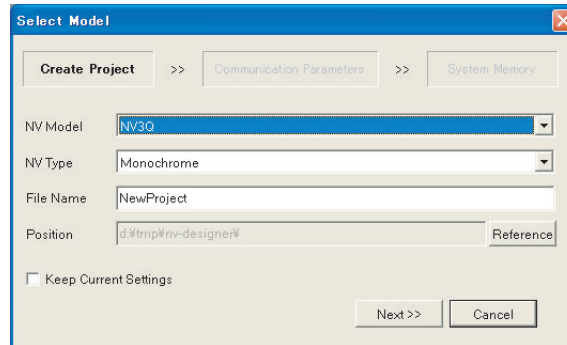
2. Set the PLC model as shown below for the communications parameters and then click the Next Button.
PLC model: OMRON SYSMAC-CS/CJ/CP Series
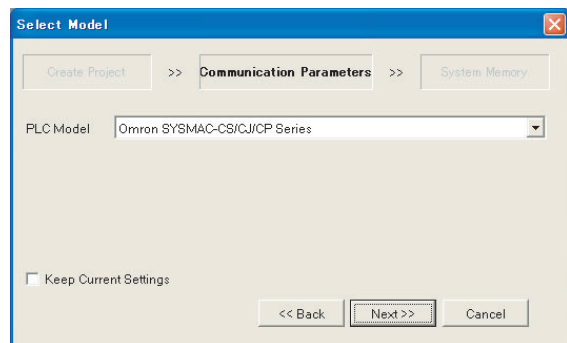
3. Set the system memory and then click the OK Button. Set the system memory by specifying the area for controlling the PT system in the PLC internal memory. The system memory is used to switch between base screens, so make sure that you set it. In this example, it is left set to the default values.
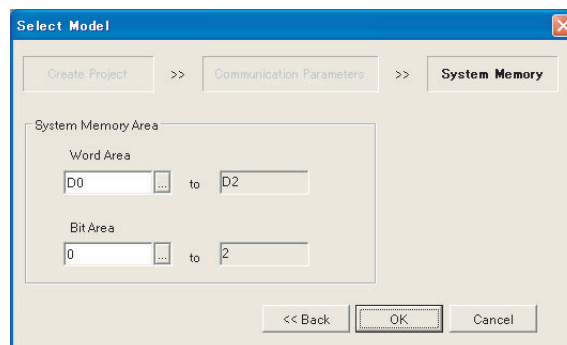
Note The default words for the Bit Area are CIO 0 to CIO 2. If CIO 0 to CIO 2 are allocated to real I/O, be sure to change the settings (e.g., to words in the Work Area).

Example: With a CP-series PLC, CIO 0 to CIO 2 are allocated to built-in inputs, so the words allocated to the Bit Area must always be changed from the defaults.

4-2-3 NV-Designer Configuration (Optional)

The NV-Designer Configuration can be used to change the display settings for the NV-Designer.

1,2,3... 1. Select NV-Designer Configuration from the Tool Menu.

2. Change the parameters in the following window.

(Example: A grid can be displayed on the base screens by specifying it in here.)
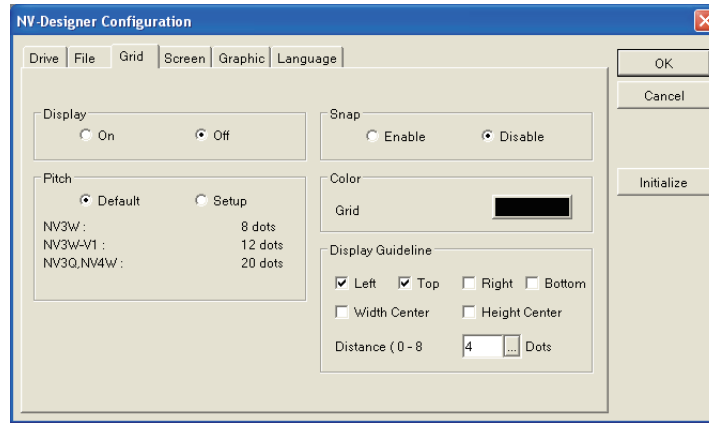
4-2-4 Creating Base Screens

Use the following procedure to create the sample screen.

Opening Screen 0

1,2,3... 1. Double-click "0" in the Screen Manager at the upper left of the window. The base screen with screen number 0 will open.
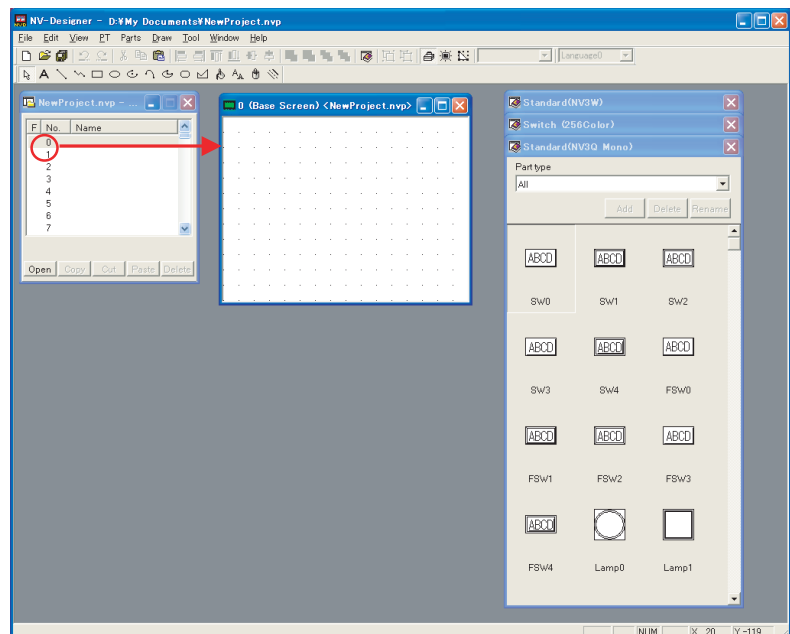
<u>**Setting Character Strings**</u>

1,2,3...   1.   Click the [A] Button on the graphic bar and click on the base screen where you want to type in a character string.

2.   Enter a character string on screen 0. Enter "Hello! I'm NV."

3.   Select the character string that you just entered and select Character Attribute from the Graphic Menu. Set the character color and size.
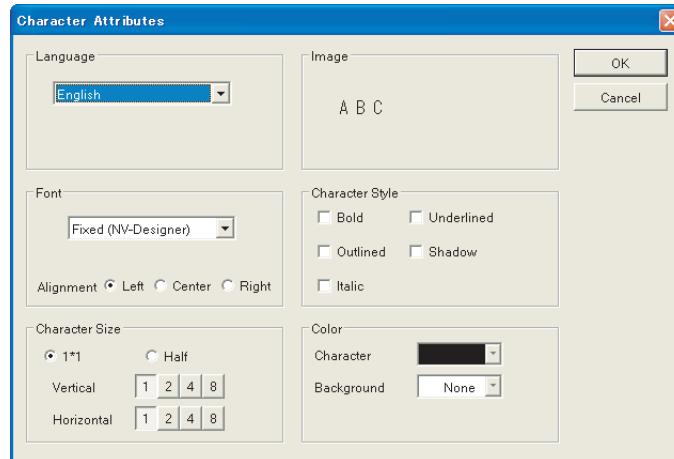
<u>**Setting Function Switches**</u>

Use the following procedure to create a function switch (labeled "Monitor") on screen 0 to switch the screen display.

1,2,3...   1.   Select the function switch parts library.

2.   Drag the part called FSW0 and drop it on the base screen.
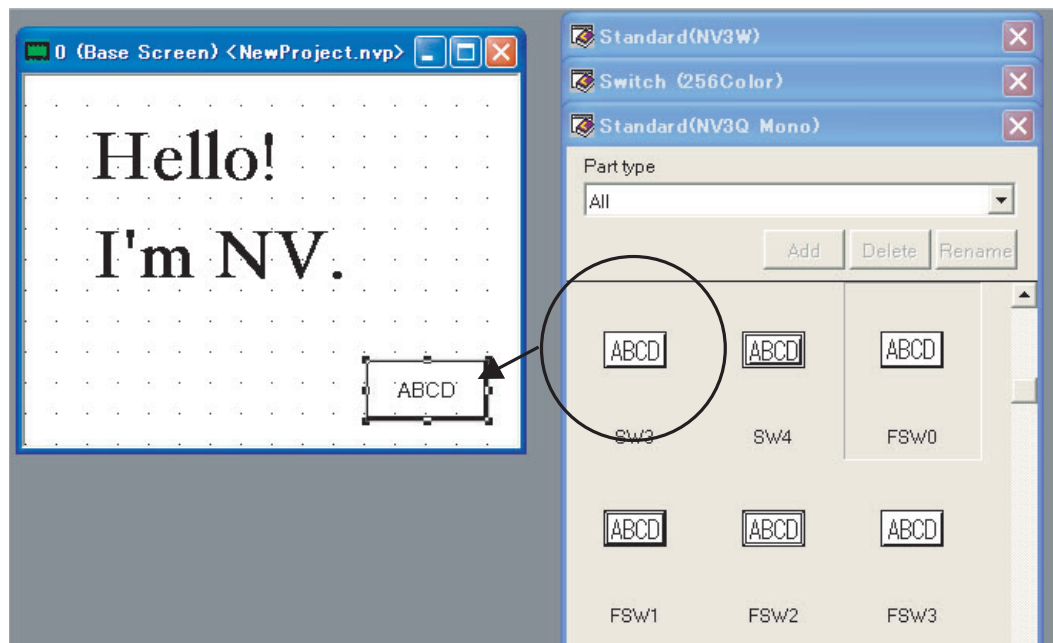
3.   Double-click the function switch that was pasted.

4. On the Basic Setup Tab Page, leave the operation mode set to Change Screen and the screen set to 1.
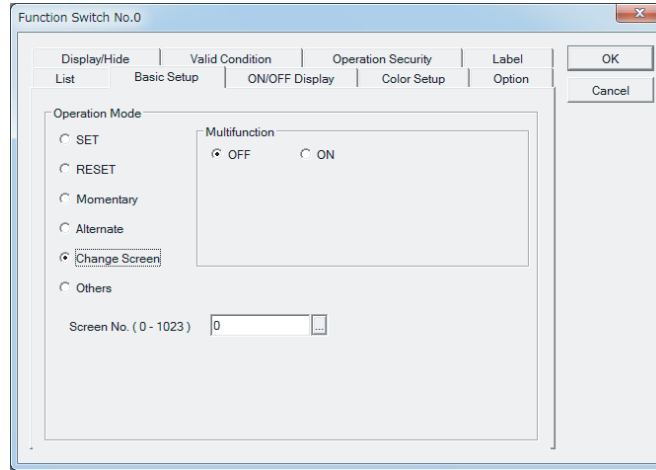
5. On the Label Tab Page, set the text to display on the switch as shown below.
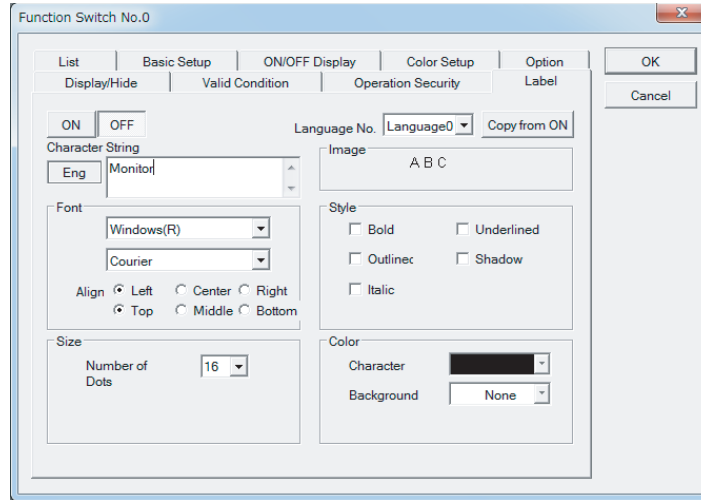
ON Switch Display Settings

Text: Enter "Monitor".
Font: Windows (Courier)
Color: Black

OFF Switch Display Settings

Click the OFF Button to change the setting display. Click the *Copy from ON* Button. (The ON settings will be copied.)

45

6. Change the status between OFF and ON at the top right of the tool bar and check the displays.
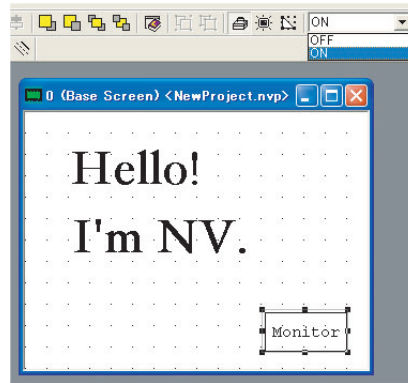
Opening Screen 1

1,2,3... 1. Double-click "1" in the Screen Manager at the upper right of the window. The base screen with screen number 1 will open.

Setting Character Strings

1,2,3... 1. Click the [A] Button on the graphic bar and enter the following character string on screen 1.

Speed, Alarm

Setting Data

Use the following procedure to create a data part that will display the contents of a word address in the PLC on screen 1.

1,2,3... 1. Select Data from the Standard Parts Library.
2. Drag the part called Data and drop it on the base screen.
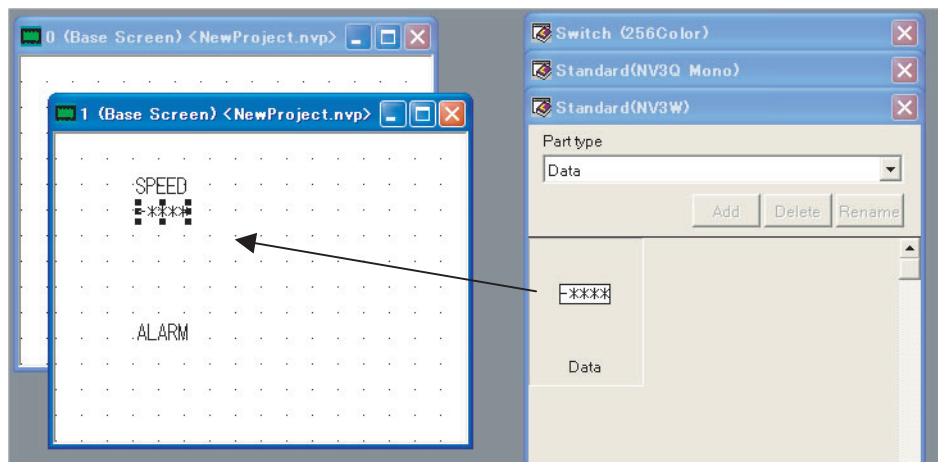
3. Double-click the part that was pasted and specify "D100" on the Basic Set-up Tab Page as the communications address in the PLC.
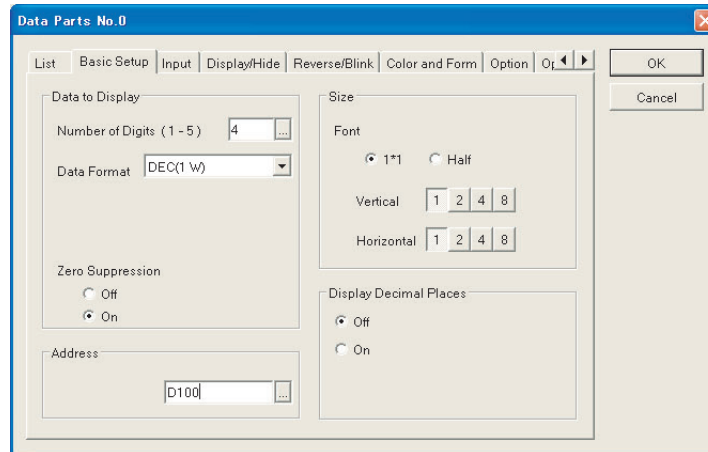
Setting Lamps

Use the following procedure to create a lamp that will display the status of a bit in the PLC on screen 1.

1,2,3...   1. Select the lamp parts library.

2. Drag the part called Lamp0 and drop it on the base screen.
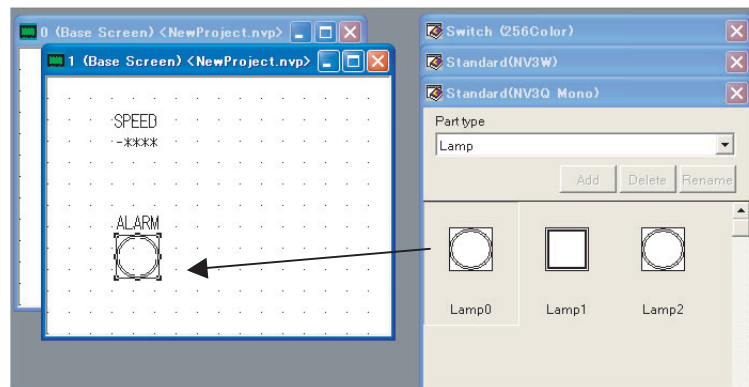
3. Double-click the part that was pasted and specify "W100.00" on the Basic Setup Tab Page as the communications address in the PLC.

Setting Function Switches

Use the following procedure to create a function switch (labeled "Return") to switch the screen to the previously displayed screen (screen 0).

1,2,3...   1. Select the function switch parts library.

2. Drag the part called FSW0 and drop it on the base screen.

3. Double-click the function switch that was pasted.

4. On the Basic Setup Tab Page, select Others for the operating mode and select *Back to Previous Screen*.
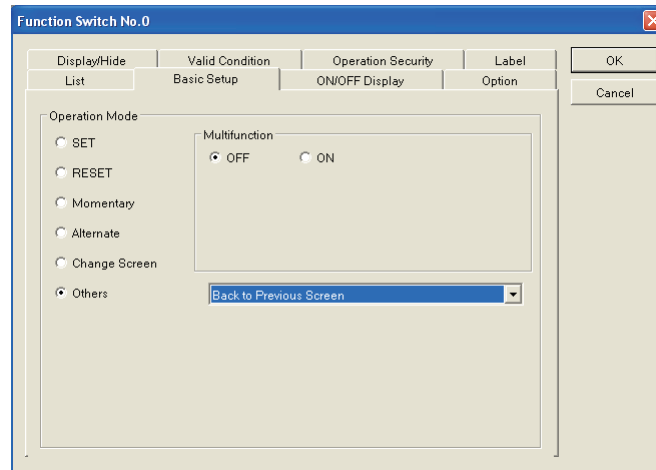
5. On the Label Tab Page, set the text to display on the switch as shown below.

   ON Switch Display Settings

   Character string: Enter "Return".

   OFF Switch Display Settings

   Character string: Set to Copy when ON
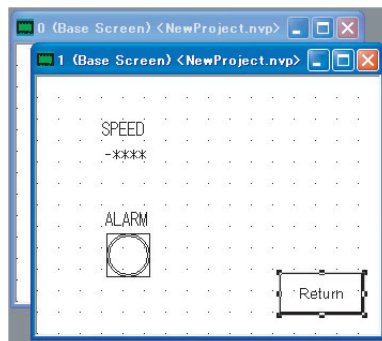
4-2-5 Saving the Screens and Settings (Project)

Save the final project.

1,2,3... 1. Select Save As from the File Menu.

2. Specify the save location and click the Save Button.

Important

The created screens and settings (project) can be printed by selecting Print from the File Menu.

4-2-6   Transferring the Final Project to the PT

1,2,3...   1.   Connect the PT and NV-Designer as shown in the following diagrams.

• Example for the NV
Connect the tool port on the back of the NV to the computer.

NV-Designer
Screen Design Software

NV

Programming Device
Connecting Cable

(RS-232C cable with a round
DIN pin connector for the NV)
NV-TOL-3M

24-V
power supply
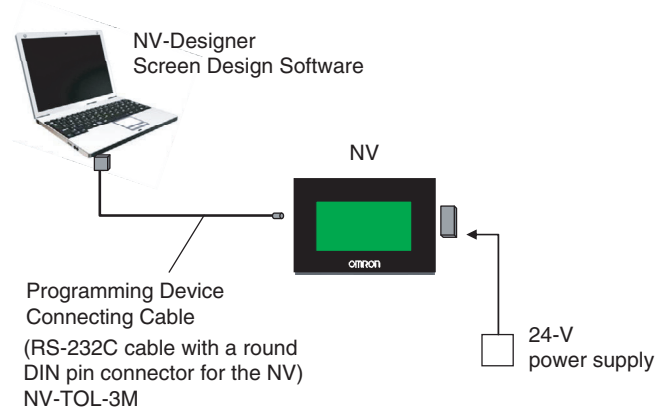
• Example for the NV3W-V1/NV4W/NV3Q
Connect the USB port on the back of the NV to the computer.

NV-Designer
Screen Design Software

NV

Commercially available
USB cable
    NV3W-V1/NV4W: Mini B type
    NV3Q: B type

24-V
power supply
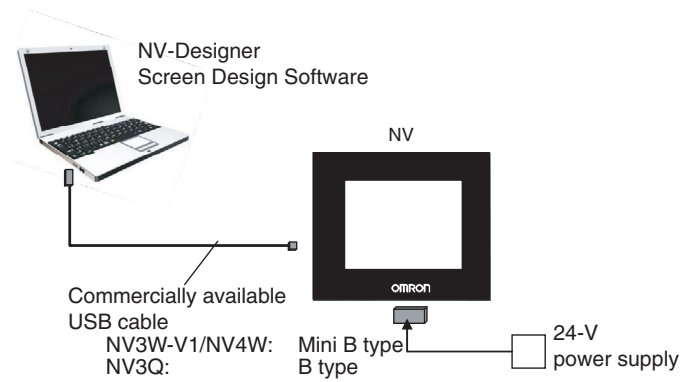
2.   Select Transfer - Transfer from the PT Menu. The Data Transfer Dialog Box
will be displayed.

3.   Set the method of communications with the PT.

NV3W: RS232C

NV3W-V1/NV4W/NV3Q: USB
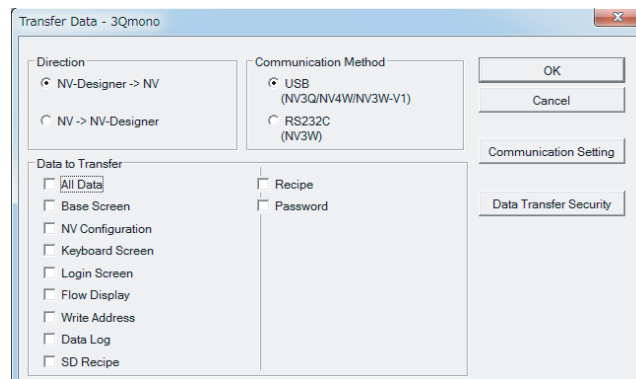
4.   Specify the data to transfer to the PT. Select All Data.
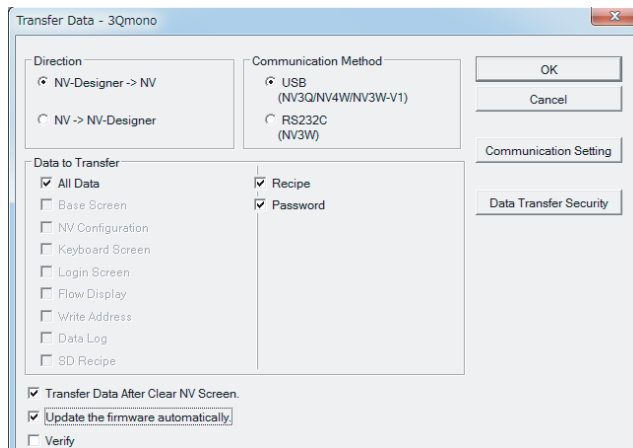
5.   Click the OK Button. The project will be transferred to the PT.

4-2-7   Setting the PT System Menu

Example: Set the clock in the NV3Q.

1,2,3...   1.   Press the upper left corner for 2 seconds, upper right corner, and then the lower right corner in order.

2.   Touch the Setting Menu Button.

3.   Touch the Clock Button.

4.   Set the time.

Press the upper left corner for 2 seconds, upper right corner, and then the lower right corner in order.

Touch the Setting Button.

Touch the Clock Button and set the time.
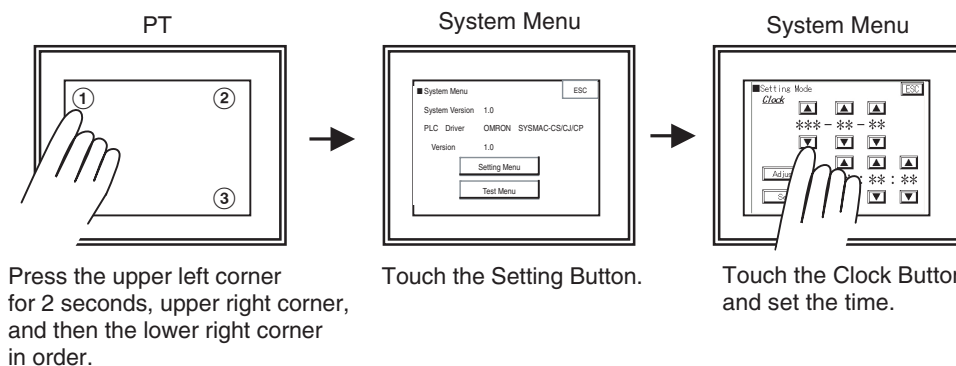
Refer to the *NV-Series PT Setup Manual* (Cat. No. V103) for details on the System Menu.

4-2-8 Setting Up PLC Communications

The communications settings must be changed in the PLC so that it can communicate with the PT. In this section, an NV3Q PT and a CP-series PLC are used as an example.

CX-Programmer

Set and transfer the PLC Setup.

PLC

Commercially available
USB cable
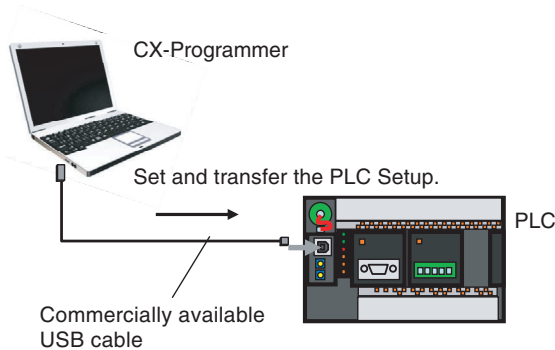
1,2,3...   1.   Start the CX-Programmer.

2.   Make the following settings on the Serial Port 1 Tab Page for the CP1E and the Serial Port Tab Page for other PLCs in the PLC Setup.
Communications setting: User settings
Baud rate: 9,600 bps
Parameters: 7, 1, E
Host link No.:   0
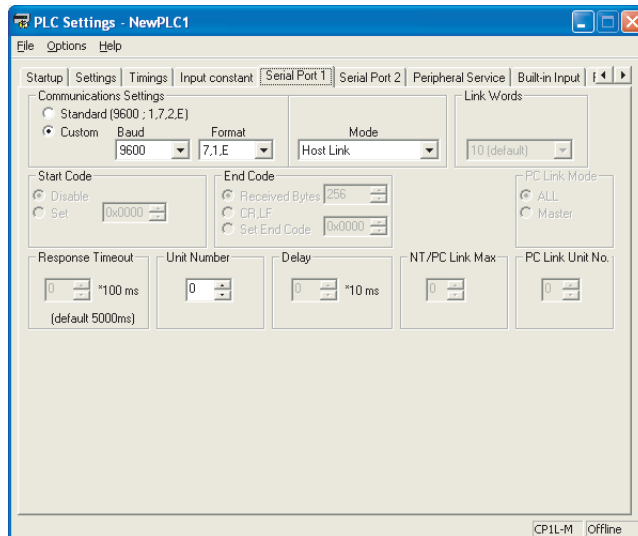
3.   Transfer the PLC Setup from the CX-Programmer to the PLC.

4-2-9 Connecting the PT and PLC

You can connect the PLC to the NV3Q using a RS-232C cable.
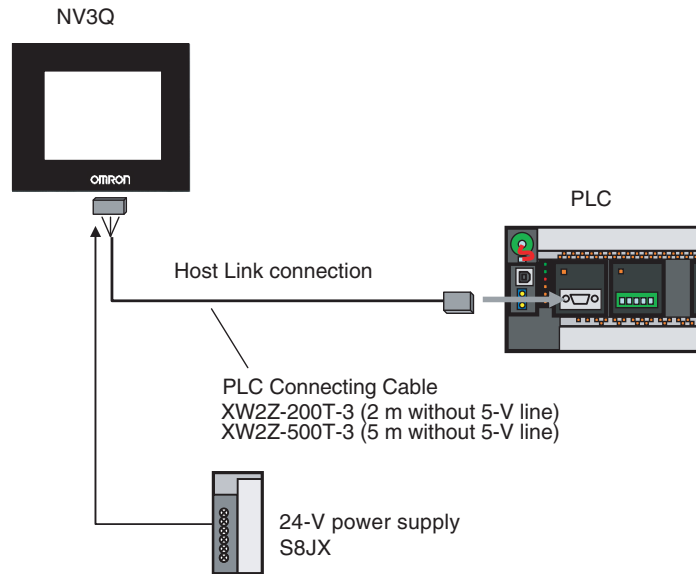
4-2-10 Starting PLC Communications

1,2,3... 1. Turn ON the PLC.

2. Screen 0 will be displayed. Touch the Monitor Switch.
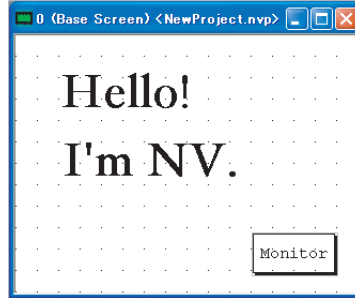
3. The screen will change to screen 1 and the following information will be monitored.

The contents of D100 will be displayed.

The lamp color changes when CIO 100.00 turns ON.
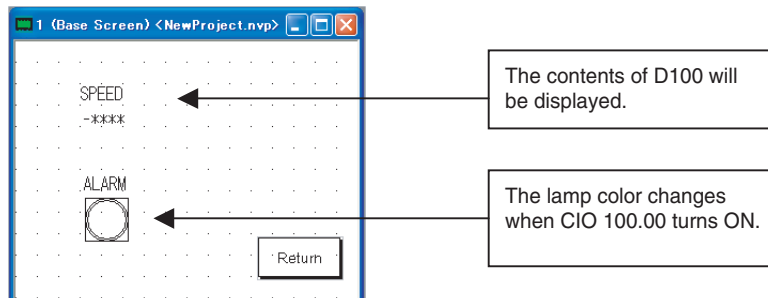
4. Touch the Back Switch to return to the previous screen (screen 0).

SECTION 5
Creating and Saving Projects (Including Screen Data)

This section describes how to create, save, and manipulate projects for NV-series PTs, including operations that can be performed between projects.

5-1 Starting the NV-Designer and Creating New Projects

This section describes how to start the NV-Designer and create projects.

5-1-1 Starting the NV-Designer and Using the New Project Wizard

1,2,3...   1. Select Program – OMRON – NV-Designer – NV-Designer from the Windows Start Menu to start the NV-Designer. (The menu commands may be different if a different Program Folder was specified during installation.)

2. When the NV-Designer is started, the NV-Designer Dialog Box will be displayed.
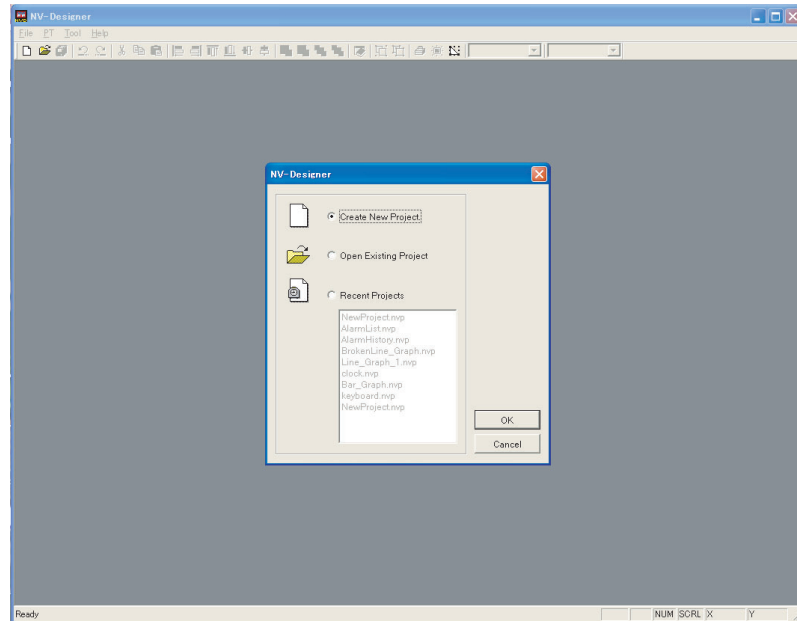
3. Select an option in the NV-Designer Dialog Box and click the OK Button.
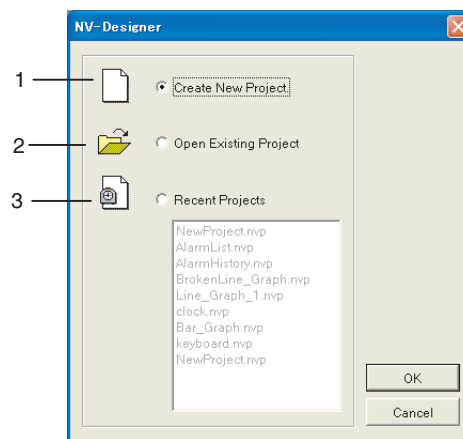
	Item	Description
1	Create New Project	Select this option to create a new project.
2	Open Existing Project	Select this option to read and edit a project that is saved to the disk. A dialog box for opening the project will be displayed for you to select the project that you want to edit.
3	Recent Projects	Select this option to open a project that has been used recently.

4. Select Create New Project from the Start Menu. The following Select Model Dialog Box will be displayed.

   The following setting status will be displayed at the top of the Wizard Dialog Box.

   Create Project >> Communication Parameters >> System Memory

5. Set the status for creating the project and then click the Next Button

	Item	Description
1	NV Model	Select the model of the NV-series PT from the drop-down list. NV3W (default), NV3W-V1, NV4W, or NV3Q
2	NV Type *1	Select the model of NV-series PT from the drop-down list. NV3W: Monochrome (default) or vertical and monochrome NV3W-V1: Monochrome (default) or vertical and monochrome NV4W: 2 shades of gray (default), 8 shades of gray, vertical with 2 shades of gray, or vertical with 8 shades of gray NV3Q: Monochrome (default) or color
3	File Name	Enter the name of the file in which to save the project. The default file name is NewProject.
4	Position	Use the Reference Button to specify the location where the project is to be saved. The default location is c:\documents and settings\user\my documents\.
5	Keep Current Settings	Select this check box to use the above settings the next time you create a file.

*1 To change the model setting, select Convert - NV Model Convert from the Tool Menu of the NV-Designer.

6. Set the status for the communications settings and then click the Next But-
   ton. (Click the Cancel Button to display the Startup Window without a
   project.)
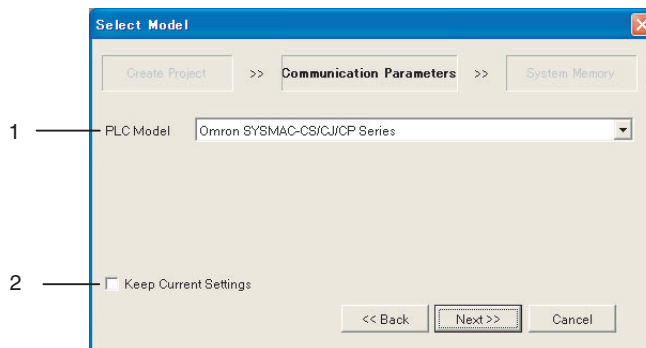
	Item	Description
1	PLC Model*1	Select the PLC model to connect from the drop-down list. The default is the OMRON SYSMAC CS/CJ/CP* Series.
2	Save Current Settings	Select this check box to use the above settings the next time you create a file.

*1 To change the model setting, select Convert – PLC Model Convert from
   the Tool Menu of the NV-Designer.

7. Set the status for system memory and then click the Next Button (Click the
   Cancel Button to display the Startup Window without a project.)
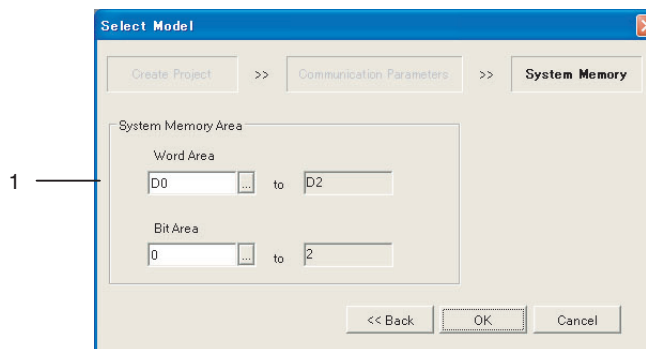
	Item		Description
1	System Memory Area		Sets the words used as system memory for basic communications with the PLC. Refer to *6-2-3 System Memory* for details.
		Word Area	Sets the memory area and first address of the area of memory used for communications between the PT and PLC in word units, such as for the screen number. The default is D0 to D2.
		Bit Area	Sets the memory area and first address of the area of memory used for communications between the PT and PLC in bit units, such as for the screen saver. The default is 0 to 2.

Note   The default words for the Bit Area are CIO 0 to CIO 2. If CIO 0 to CIO 2 are
allocated to real I/O, be sure to change the settings (e.g., to words in the Work

Area).

Example: With a CP-series PLC, CIO 0 to CIO 2 are allocated to built-in inputs, so the words allocated to the Bit Area must always be changed from the defaults.

8. When the NV-Designer is started, a project is created at the same time. The following Main Window will be displayed.
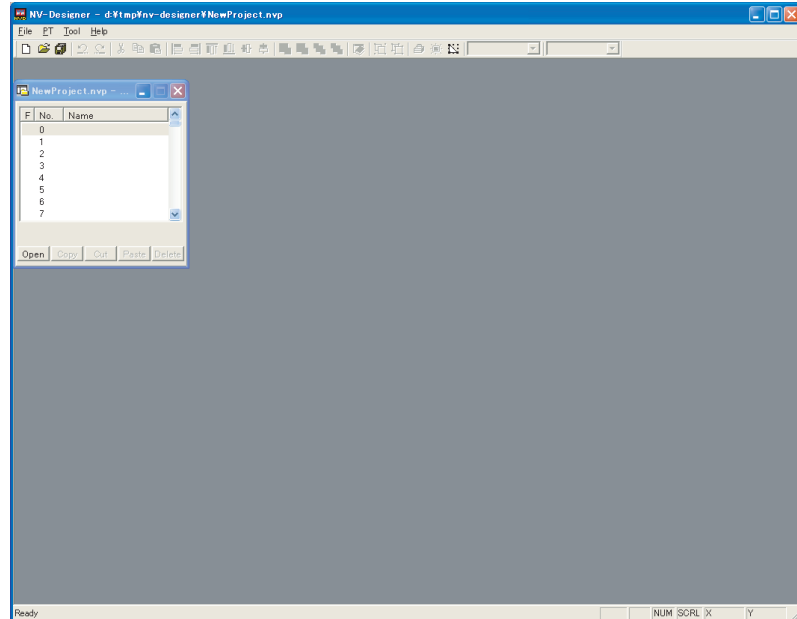
9. Double-click "0" in the Screen Manager. Base screen 0 and the Parts Library will open as shown in the following graphic.
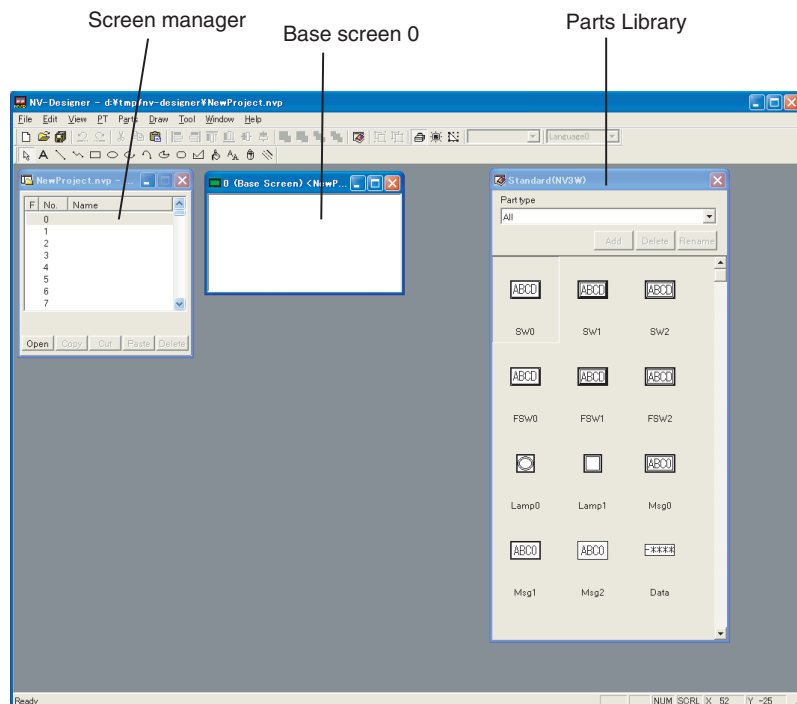
Additional Information

Multiple projects can be created and opened simultaneously using the NV-Designer. It is also possible to copy and move screens between projects, as well as to copy and move parts on a screen.

5-2 Checking or Converting the Model

5-2-1 NV Model Convert

Select Convert - NV Model Convert from the Tool Menu of the NV-Designer.
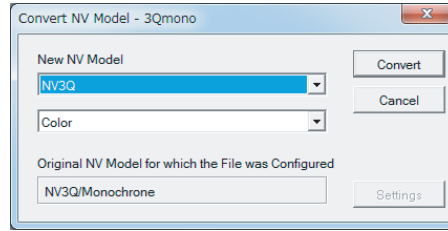
NV Model Conversion Table

After conversion		NV3W		NV3W-V1		NV4W				NV3Q			
		Monochrome	Vertical monochrome	Monochrome	Vertical monochrome	2 shades of gray	Vertical with 2 shades of gray	8 shades of gray	Vertical with 8 shades of gray	Monochrome	Vertical monochrome	Color	Vertical color
Before conversion													
NV3W	Monochrome	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.	Supported.	Supported.	Supported.
	Vertical monochrome	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.	Supported.	Supported.	Supported.	Supported.
NV3W-V1	Monochrome	Not supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.	Supported.	Supported.	Supported.
	Vertical monochrome	Not supported.	Not supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Supported.	Supported.	Supported.	Supported.
NV4W	2 shades of gray	Not supported.	Not supported.	Not supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.	Not supported.
	Vertical with 2 shades of gray	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.	Supported.
	8 shades of gray	Not supported.	Not supported.	Not supported.	Not supported.	Supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.	Not supported.
	Vertical with 8 shades of gray	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Supported.	Not supported.	---	Not supported.	Supported.	Not supported.	Supported.
NV3Q	Monochrome	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	---	Not supported.	Supported.	Not supported.
	Vertical monochrome	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	---	Not supported.	Supported.
	Color	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Supported.	Not supported.	---	Not supported.
	Vertical color	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Not supported.	Supported.	Not supported.	---

Note Models can be converted only if the number of dots of the model after the conversion is the same or larger than the model before conversion. If the NV4W is changed from 8 shades of gray to 2 shades of gray or the NV3Q is changed from color to monochrome, the NV-Designer will automatically reduce the number of shades or colors.

5-2-2   PLC Model Convert

Select Convert – PLC Model Convert from the Tool Menu of the NV-Designer.
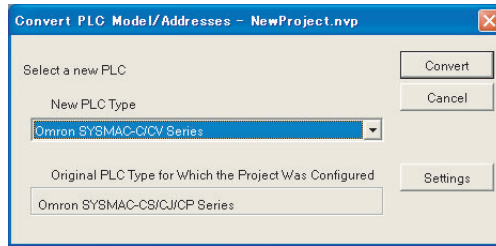
5-2-3   Checking the Model

Check the NV-series PT model and PLC model of the screen being created. Select NV Configuration from the PT Menu of the NV-Designer. Check the models on the Basic Setup Tab Page.

NV Configuration Dialog Box
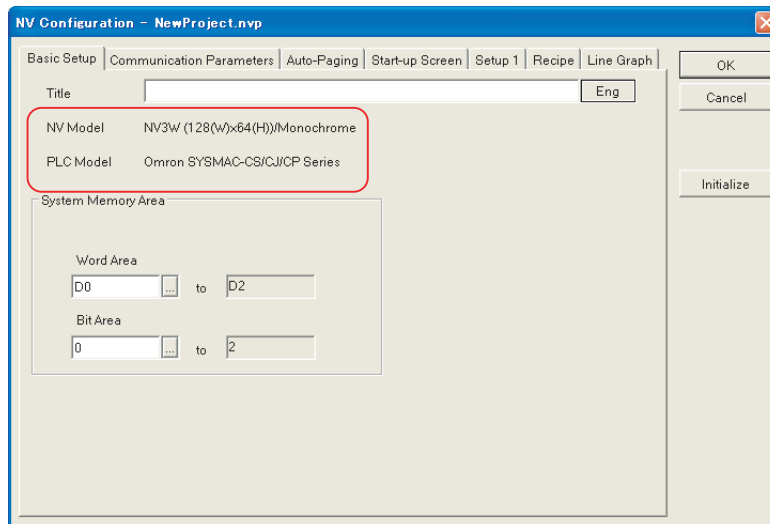
5-3 Creating Base Screens

Click "0" in the Screen Manager. Base screen 0 and the Parts Library will be displayed.

Screen Manager

Double-click "0."

Base screen 0

Parts Library

Screen number   Project name
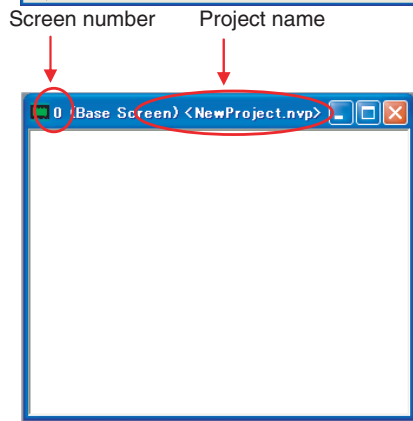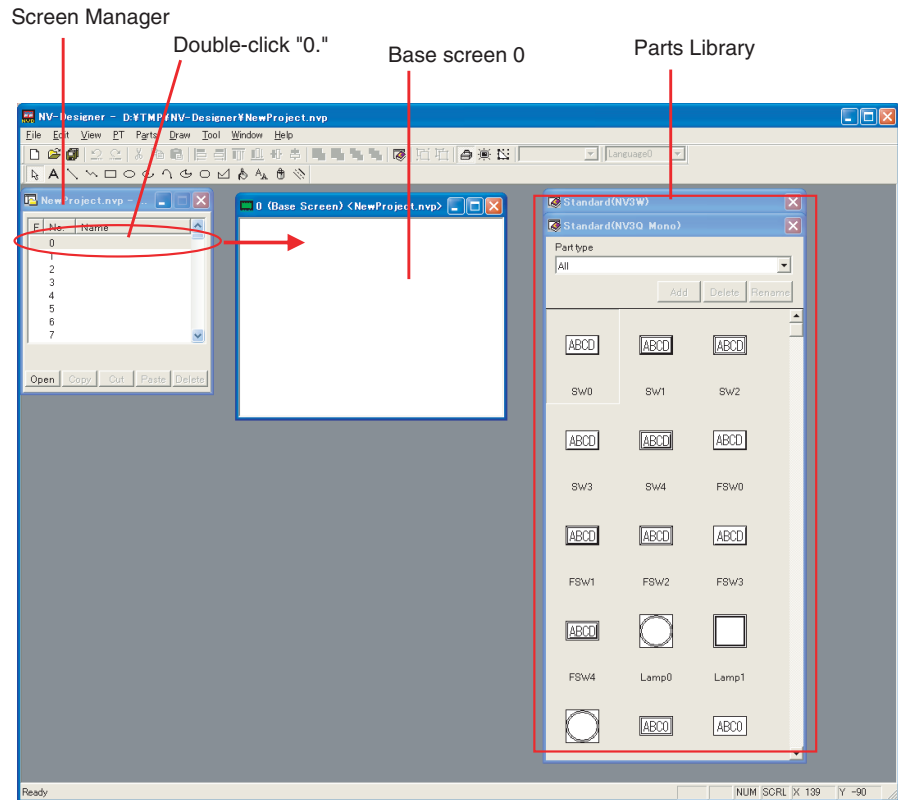
📝 **Additional Information**

Select Zoom from the View Menu to zoom in and out of the base screen.

5-4   Positioning Character Strings, Graphics, and Parts

You can position character strings, graphics, and parts on the opened base screen. Refer to the following methods for positioning.

Refer to *7-1-2 Entering Character Strings and Graphics* for details on how to position character strings and graphics.

Refer to *7-2-1 Positioning Parts* for details.
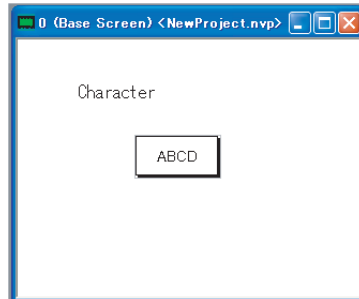
Note   Bit map data that is on the clipboard can be pasted on a screen.

5-5 Copying and Moving Parts and Screens

5-5-1 Copying and Moving Parts between Screens

With the NV-Designer, you can copy or move parts and graphics on base screens between different projects or within the same project.

Copying Parts between Screens

Right-click the part to be copied and select Copy. Then right-click where you want the copy to be made and select Paste.
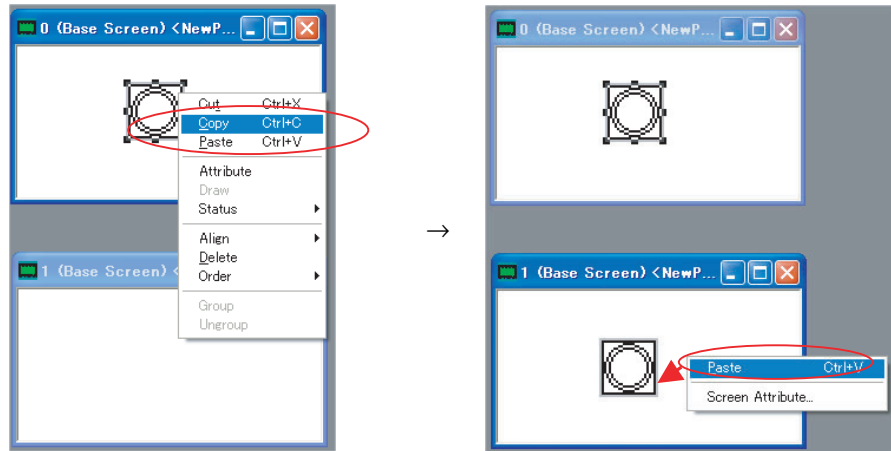
Note If you copy parts between screens for different models of PT, the parts will automatically be converted to allow for differences in parts colors and functionality between the PTs.

Moving Parts between Screens

Right-click the part to be moved and select Cut. Then right-click where you want to move the part and select Paste.
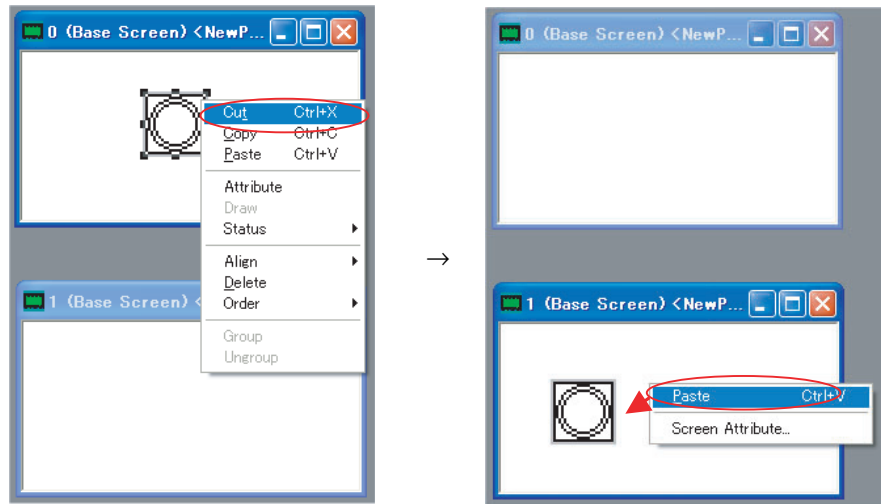
Note If you move parts between screens for different models of PT, the parts will automatically be converted to allow for differences in parts colors and functionality between the PTs.

5-5-2 Copying and Moving Screens between Projects

With the NV-Designer, you can copy or move base screens between different projects.

Copying Screens between Projects

Right-click the screen to copy in the Screen Manager and select Copy (or select the screen and click the Copy Button). Then right-click the screen where you want the copy to be made in the Screen Manager for a different product and select Paste (or select the screen and click the Paste Button).

After pasting the screen, you can double-click it to display the copy.
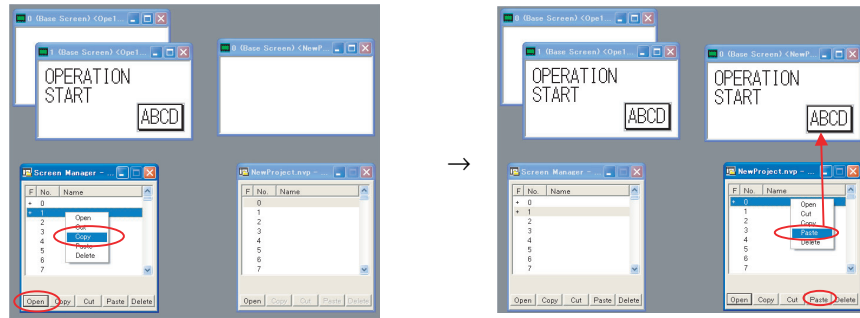
Moving Screens between Projects

Right-click the screen to move in the Screen Manager and select Cut (or select the screen and click the Copy Button). Then right-click the screen where you want the copy to be made in the Screen Manager for a different product and select Paste (or select the screen and click the Paste Button).

After moving the screen, you can double-click the screen to display it.
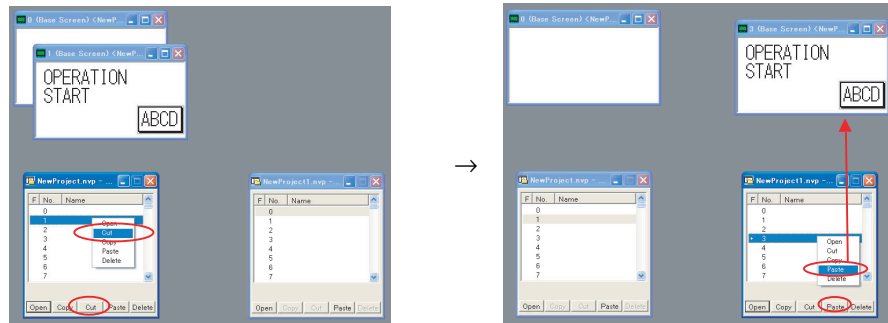
Note You cannot copy screens between different models of PT.

5-6   Saving the Project

5-6-1   Save

Select Save from the File Menu.

5-6-2   Save As

1,2,3...   1. Select Save As from the File Menu. The following message will be displayed.
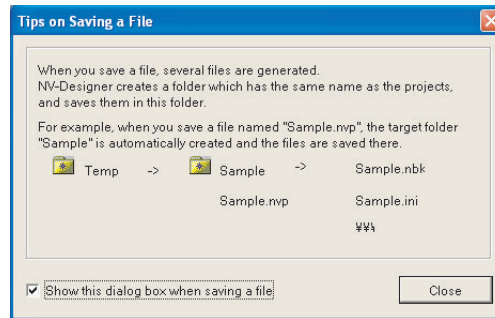
To stop displaying this message, clear the *Display this dialog box when saving* Check Box.

2. Click the Close Button.

3. Specify the save location in the Save As Dialog Box and Click the Save Button.
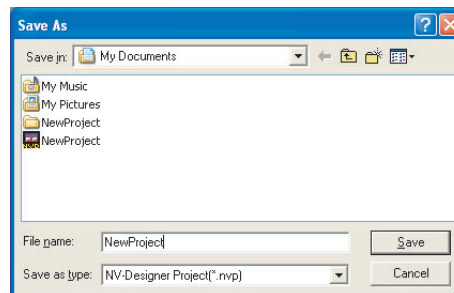
5-7   Project and Execution Files

5-7-1   Projects

Projects include screen data and settings. With the NV-Designer, PT screen data and the model settings are managed together as a project.

When the created project is saved, the project file (.nvp: the file that is related to the NV-Designer and started to access the project) that is named at that time and a project folder will be newly created under the specified folder when the project is saved. Files with project settings will be created in the Project Folder.

When "sample" is specified as the file name.

📁 Folder specified for saving
   —— Project structure data ——————————— sample.nvp: Project profile (.nbk)

                                          sample.nbk :   Project backup file (.nvk) (for system)

                                          sample.INI :   Initialization file (.INI)

                                          sample.WDF: PLC driver file (.WDF)

                                          GNRL0000-.BSD: Base screen data (one file for each screen)

     —— 📁 Folder specified for —— Setting data   sample.HSY: NV-Configuration file (.HSY)
               saving with the same
               name as the file   sample.R00:   Recipe file (.R00)
               Example: sample   sample.ALK: Flow text file (.ALK)

                                          sample.SPW: Passwords (.SPW)

- Screen data is saved in base screen data files (.BSD). A separate file is used for each screen.
- Setting files are created when the settings are saved.

5-7-2   Execution Files of the PT Model after Transfer

When projects are transferred to the PT or SD memory card from the NV-Designer, they are converted to the following PT execution files.

- Save folder and execution file name after transfer.

Save folder:

Base screens:	base***.gsd	***: 000 to fff is the screen number.
Keyboard screens	keyb***.gsd	***: 000 to fff is the keyboard number.
Login screens:	login***.gsd	***: 000 to fff is the login screen number.
PLC driver:	plc_drv.gsd	
NV Configuration:	nvconfig***.gsd	
Recipes:	recip***.gsd	***: 000 to fff is the recipe number.
Write Address:	devw.gsd	
Flow text:	flow.gsd	
Passwords:	pswd.gsd	
Firmware:	firmware.gsd	

SECTION 6
NV Configuration

This section describes the parameters in the NV Configuration in detail.

6-1   NV Configuration

The initial conditions must be set in NV Configuration before using the PT.

6-1-1   Setting Parameters

There are the following two methods for setting parameters in the NV Configuration.

1,2,3...   1. Setting from the NV-Designer
First, set the NV Configuration parameters in the NV-Designer, and then connect the NV-Designer to the PT and transfer the NV Configuration to the PT.
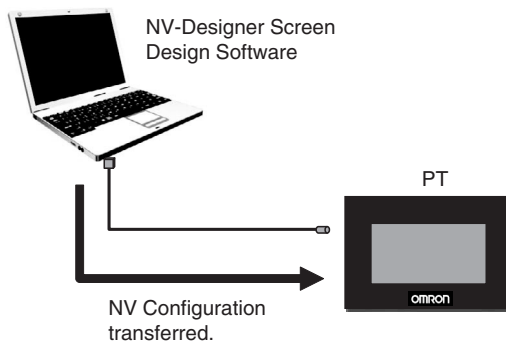
2. Setting from the System Menu on the PT
After transferring the NV Configuration, parts of it can be modified from the PT System Menu using the following procedure. Touch the front panel on the upper left corner, upper right corner, and lower right corner in that order to display the System Menu.
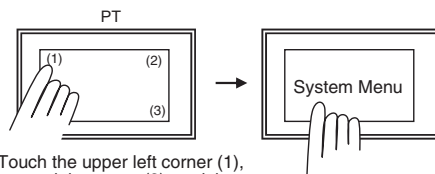
The following parameters can be set from the PT System Menu only: PT clock, LCD contrast, backlight, touch switches, and memory initialization.

6-1-2   NV Configuration Parameters

Tab page	Item		PT				Setting Method	
			NV3W	NV3W-V1	NV4W	NV3Q	NV-Designer	System Menu on the PT
Basic Setup	Title		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	PLC Model		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	Displaying the NV model		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	System Memory Area		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
Communication Parameters			Supported.	Supported.	Supported.	Supported.	Supported.	Supported.
PLC Multiple Connection[1]			Not supported.	Supported.	Supported	Supported	Supported	Not supported.
Auto-Paging			Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
Startup Screen			Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
Setup 1	Clock	PLC Clock	Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
		NV Clock	Not supported.	Not supported.	Supported.	Supported.	Supported.	NV3W (-V1): Not supported. NV4W: Supported. NV3Q: Supported.
		Summer Time	Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
		Transfer Outside	Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
	Automatic Backlight Off		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	Key Press Sound		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	Battery Error Display		Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
	File Compression		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	System Menu Language		Supported.	Supported.	Supported.	Supported.	Supported.	NV3W: Not supported. NV3W-V1: Supported. NV4W: Supported. NV3Q: Supported.
	Setup of Multi-Language Exchange		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
	Backlight Brightness Setting		Supported. (Adjust and transfer)	Supported. (Adjust and transfer)	Supported. (Adjust and transfer)	Supported. (Adjust and transfer)	Supported.	Supported.
	Contrast Adjustment				Not supported.	Not supported.	Supported.	Supported.

Tab page	Item	PT				Setting Method	
		NV3W	**NV3W-V1**	**NV4W**	**NV3Q**	**NV-Designer**	**System Menu on the PT**
Setup 2	SD Memory Card Menu	Not supported.	Not supported.	Supported.	Supported.	Supported.	NV3W(-V1): Not supported. NV4W: Supported. NV3Q: Supported.
Hold Memory	Hold PLC Memory Value	Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
	Holding Internal Memory Value	Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
Recipe		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
SD Recipe		Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
Alarm History		Not supported.	Not supported.	Supported.	Supported.	Supported.	Not supported.
Line Graphs		Supported.	Supported.	Supported.	Supported.	Supported.	Not supported.
Operation Security		Not supported.	Supported.	Supported.	Supported.	Supported.	NV3W: Not supported. NV3W-V1: Supported. NV4W: Supported. NV3Q: Supported.
Index registration		Not supported.	Supported.	Supported.	Supported.	Supported.	Not supported.

*1 PLC multiple connection is supported when communications are performed using Modbus.

6-1-3   Default Setting

The default settings for the NV Configuration are given below.

Tab page	Item	Setting
Basic Setup	PLC Model	OMRON SYSMAC-CS/CJ/CP Series Host Link
	System Memory Area: Word Area	D0 to D2
	System Memory Area: Bit Area	0 to 2
Communication Parameters	COM Port: Baud Rate	9,600 bps
	Disabling Data Transmission	No
	COM Port: Data Length	7
	COM Port: Stop Bits	1
	COM Port: Parity Bit	Even
	Communication Error Handling: Retry	5 times
	Communication Error Handling: Wait time	3 seconds
	Transmission Delay	0 ms
PLC Multiple Connection	PLC Multiple Connection	No
Auto-paging	Auto-paging	Off
Start-up Screen	Start-up Screen No.	0
	Delay	0
Setup 1	Clock	NV clock
	Clock: Summer Time[*1*2]	Inactive
	Clock: Transfer Outside[*1*2]	Off
	Automatic Backlight OFF	Off
	Key Press Sound	Enabled
	Battery Error Display[*1*2]	Off
	File Compression	On
	System Menu Language	Dependent on NV-Designer language setting
	Setup of Multi-Language Exchange: Refer to PLC	Off
	Backlight Brightness Setting	Off
	Contrast Adjustment	Off
Setup 2[(*1)]	Counting-Down Timer	No
	Free Space on the SD card: Notify when SD card has little space [(*2)]	Off
	SD Memory Card Menu: Automatic Display [(*2)]	Off
	Function when writing to SD Card: Screen display when writing [(*2)]	Yes
	Function when writing to SD Card: Output during write [(*2)]	No
	Function when writing to SD Card: Stop Writing Control [(*2)]	No
	Function when writing to SD Card: Output when error occurs [(*2)]	No
Hold Memory[(*1*2)]	Holding PLC Memory	Off
	Hold NV Internal Memory Value: Data memory	Off
	Hold NV Internal Memory Value: Internal Relay	Off
Recipe	Use Recipe	Off
	SD Recipe	Off
Alarm History [(*1*2)]	Record	Not supported.
Line Graphs	Record	Not supported.
Operation Security	Operation Security Function Available[*1]	Off
Index registration [(*1)]	Record	Not supported.

*1 These functions are not supported by the NV3W.
*2 These functions are not supported by the NV3W-V1.

6-2   Setting the NV Configuration from the NV-Designer

This section describes the procedure for setting the NV Configuration from the NV-Designer. Refer to the Setup Manual for information on how to set the NV Configuration from the System Menu.

6-2-1   Setting Method

1,2,3...   1. Select PT – NV Configuration from the NV-Designer Menu to open the NV Configuration Dialog Box. If multiple project files are already open, the Select File Dialog Box will be displayed. Select a project file to set up.

2. Set the required items. (Refer to *6-2-2 Basic Settings Tab Page* and following sections for details.)

3. Save the file and transfer it to the PT. (Refer to *9-1 Transferring Screens from the NV-Designer* for details.)

Note   The settings will be reflected in the PT once the setting file has been transferred from the NV-Designer.

NV Configuration Dialog Box
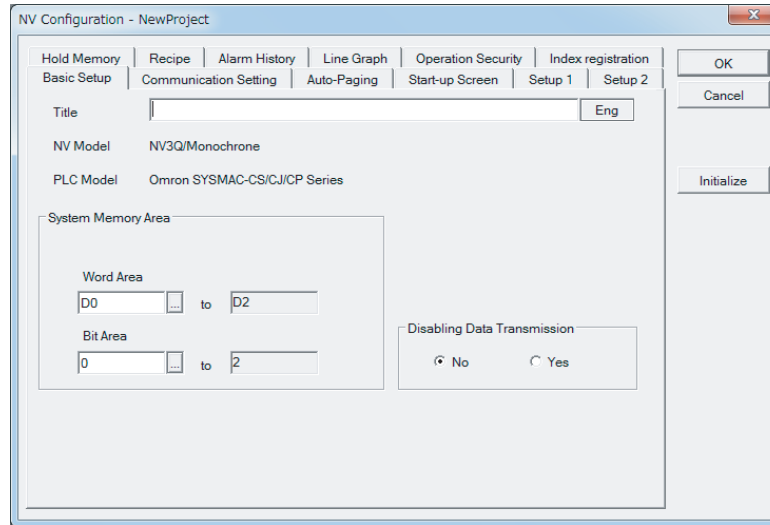
Tab page	Description	Reference
Basic Setup	Sets the PT model and system memory. Set the first words in the Word Area and Bit Area in the PLC.	*6-2-2 Basic Settings Tab Page*
Communication Parameters	Sets the serial communications settings between the PT and PLC.	*6-2-4 Communication Parameters Tab Page*
PLC Multiple Connection (NV4W/NV3Q only)	Sets parameters when multiple PLCs or OMRON EJ1 Temperature Controllers are connected using Modbus.	*6-2-5 PLC Multiple Connection Tab*
Auto-Paging	Enables auto-paging, which automatically switches the screen displayed on the PT after a certain period of time.	*6-2-6 Auto-Paging Tab Page*
Start-up Screen	Sets the number of the screen displayed on the PT when the power supply is turned ON and its display time.	*6-2-7 Start-up Screen Tab Page*
Setup 1	Sets the clock reference, automatic backlight OFF function, key press sound, battery error display, file compression, display language switching, backlight brightness, and contrast. (NV3W (-V1) only)	*6-2-8 Setup 1 Tab Page*
Setup 2 (NV3W-V1/NV4W/NV3Q only)	Enables/disables displaying the counting-down timer and SD Memory Card Menu.	*6-2-9 Setup 2 Tab Page (NV3W-V1/NV4W/NV3Q Only)*
Hold Memory (NV4W/NV3Q only)	Sets the words to be held for PLC and PT internal memory.	*6-2-10 Hold Memory Tab Page (NV4W/NV3Q Only)*
Recipe	Sets whether to use the recipe function, and also the control address for the recipe function.	*8-5 Recipes*
Alarm History (NV4W/NV3Q only)	Sets sampling for groups 0 and 1, as well as the control address for the alarm history.	*7-11 Alarm Lists (NV3W-V1/NV4W/NV3Q)*
Line Graph	Sets sampling for groups 0 to 4 for line graphs.	*7-10 Line Graphs*
Password (NV3W-V1/NV4W/NV3Q only)	Sets security using passwords.	*8-6 Security Functions*
Index registration (NV3W-V1/NV4W/NV3Q only)	Performs the settings related to the addresses to be used as the indexes.	*7-3-5 Index Modifiers*

Initialize Button   The following message will be displayed when the Initialize Button is clicked in the NV Configuration Dialog Box.
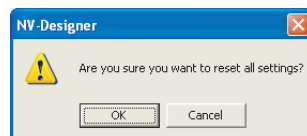
Click the OK Button to reset all parameters to default values.

6-2-2   Basic Settings Tab Page

This tab page is used to set the system memory for basic communications with the PLC. Always set the system memory when you create a new project.
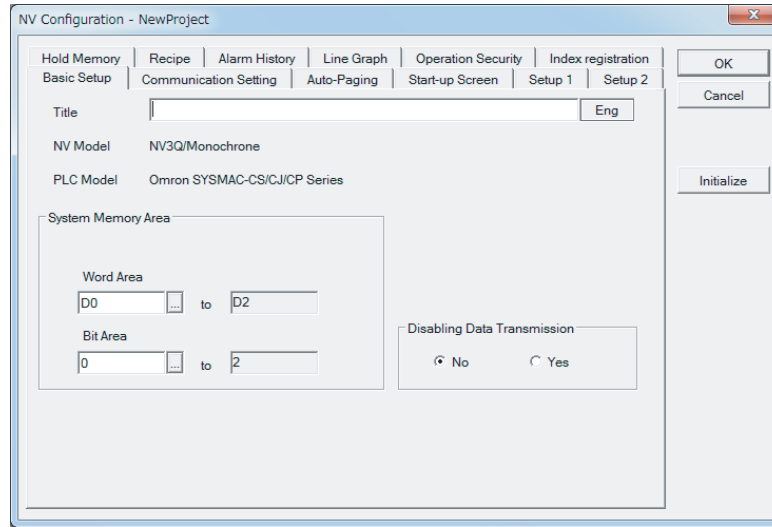
Item	Description
Title	Input the title of the configuration file (internal file). Titles are convenient when there are several configurations for different PTs.
NV Model	Sets the model of PT to be displayed when the NV-Designer is started. **Note** If you change the PT model, select Convert - NV Model Convert from the Tool Menu.
PLC Model	Sets the model of PLC to be displayed when the NV-Designer is started. **Note** If you change the PLC model, select Convert – PLC Model Convert from the Tool Menu.
System Memory	Sets system memory. Set the first words in the Word Area and Bit Area.
Initialize	Click this button to reset all parameters to their default settings.

Setting System Memory

System Memory

Sets the areas used in the system memory.

Refer to *6-2-3 System Memory* for information on the system memory.

Word Area

Sets the memory area and first address of the area of memory used for communications between the PT and PLC in word units, such as for the screen number.

Bit Area

Sets the memory area and first address of the area of memory used for communications between the PT and PLC in bit units, such as for the screen saver. Click the button by the Word Area or Bit Area in the System Memory Area to display the Address Setting Dialog Box. Set the PLC memory area and address in this dialog box.
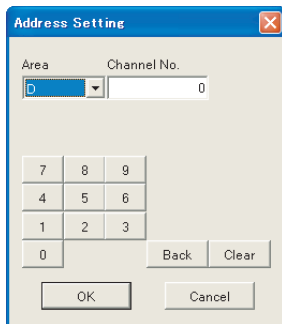
Word Area   Bit Area
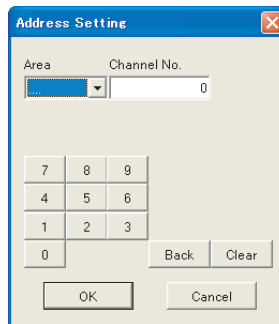
	Item	Description
1	Area	Click the Area Box and select an area from the pull down menu.
2	Channel No. (i.e., word address)	Enter the address directly or by using the keypad. Corrections can be made by clicking the Back or Clear Button.
3	Bit Number (When setting Bit Area)	

Precaution for Correct Operation

Do not allocate words that are used for real I/O to the Bit Area in system memory. The output status for allocated bits may turn ON or OFF, or the operation of the PT may change when an input turns ON or OFF.

Note   (1) Word Area

Sets the memory area and first address of the area of memory used to read/write data in word units, such as for the screen number.

(2) Bit Area

Sets the memory area and first address of the area of memory used to read/write data in bits, such as for the automatic backlight OFF function. Refer to *6-2-3 System Memory*.

6-2-3   System Memory

System Memory   The PT is constantly communicates with the internal memory of the PLC. The PLC internal memory is divided into the following two areas.

■ System Memory

The system memory is used to control the system, such as for specifying the screen number or backlight status. The specified words in the PLC memory are allocated for communications, which are performed constantly.

■ Communications Addresses for Parts

The addresses used by parts can be specified freely. Communications are performed only for the addresses used by the parts displayed on the screen.
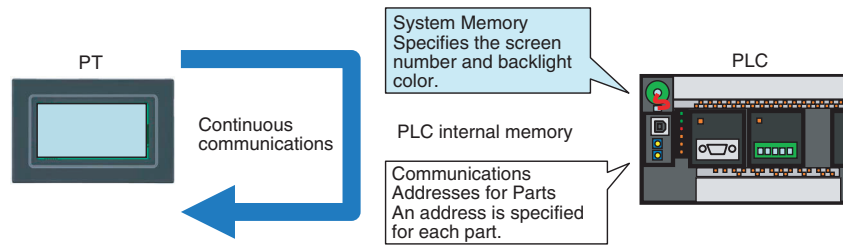
Operations Using the System Memory

The following parameters can be specified and monitored from the system memory.

- Specify: Displayed screen number, backlight color, backlight ON/flashing.
- Monitor: Displayed screen number, data being input, battery backup error, low battery.
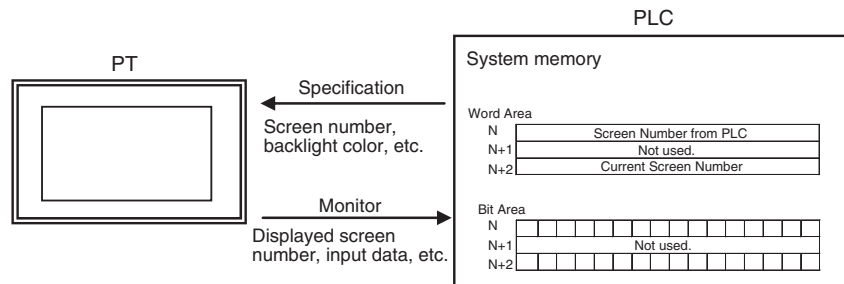
Contents of System Memory

Three words are allocated for the Word Area and three words are allocated for the Bit Area.
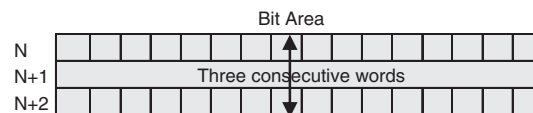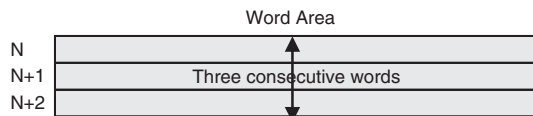
The following words are set as the system memory by default.

Word Area: D0 to D2
Bit Area: 0 to 2

The first address can be changed in the NV Configuration from the NV-Designer.

NV3W System Memory Map

Word Area

Word \ Bits	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0	Screen Number from PLC (PLC tells the NV to using this number.)															
N + 1	Do not use.															
N + 2	Current Screen Number (PLC reads this number from the NV.)															

Word Area Description

Screen Number from PLC	This word contains the number in hexadecimal of the screen specified by the PLC for the NV to display.
Current Screen Number	This word contains the number in hexadecimal of the screen currently displayed by the NV.

Bit Area

Word \ Bits	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0		Buzzer	Screen Display Bit	Backlight Control Enable Bit	Backlight ON/Flash Bit	Backlight color		Key Press Sound Disable Bit								
N + 1	Do not use.															
N + 2																Data Entry Flag

Bit Area Description

Buzzer	Turn ON this bit to turn ON the buzzer.
Screen Display Bit	Turn ON this bit to make the PT display the screen specified by the PLC. (This bit is effective only when it changes from OFF to ON.)
Backlight Control Enable Bit	Turn ON this bit to enable controlling the backlight (flashing and color).
Backlight ON/Flash Bit	OFF: Lit (normal), ON: Flashing
Backlight color	00: Not lit, 01: Green (white), 10: Red, 11: Orange (pink)
Key Press Sound Disable Bit	When turned ON, disables the key press sound so that there is no sound when the PT touch panel is touched even if the key press sound is enabled in the NV Configuration from the NV-Designer.
Data Entry Flag	This bit will be ON while data is being entered and will turn OFF when data entry has been completed. (This bit is effective only when a keyboard is being used.)

NV3W-V1 System Memory Map   <u>Word Area</u>

Bits Word	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0	Screen Number from PLC (PLC tells the NV to using this number.)															
N + 1	Do not use.															
N + 2	Current Screen Number (PLC reads this number from the NV.)															

Word Area Description

Screen Number from PLC	This word contains the screen number specified by the PLC for the NV to display in hexadecimal.
Current Screen Number	This word contains the number in hexadecimal of the screen currently displayed on the NV.

<u>Bit Area</u>

Bits Word	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0		Buzzer	Screen Display Bit	Backlight Control Enable Bit	Backlight ON/Flash Bit	Backlight color		Key Press Sound Disable Bit	Display Reversal Bit (*1)		Backlight Brightness					
N + 1	Do not use.															
N + 2												Password Change Screen Flag	Login Screen Flag			Data Entry Flag

Bit Area Description

Buzzer	Turn ON this bit to turn ON the buzzer.
Screen Display Bit	Turn ON this bit to make the PT display the screen specified by the PLC. (This bit is effective only when it changes from OFF to ON.)
Backlight Control Enable Bit	Turn ON this bit to enable controlling the backlight (flashing and color).
Backlight ON/Flash Bit	OFF: Lit (normal), ON: Flashing
Backlight color	NV4W: 00: Not lit, 01: Green (white), 10: Red, 11: Orange (pink) NV3Q Monochrome: 00: Not lit, 01: White, 10: Red, 11: Pink NV3Q Color: 00: Not lit, 01: Lit, 10: Lit, 11: Lit

Key Press Sound Disable Bit	When turned ON, disables the key press sound so that there is no sound when the PT touch panel is touched even if the key press sound is enabled in the NV Configuration from the NV-Designer.
Display Reversal Bit	Turn ON this bit to make the entire black/white display in reverse.
Backlight Brightness	Adjusts the backlight brightness. 0000: Not adjusted 0001 - 1111: The greater the value is the brighter the backlight becomes.
Data Entry Flag	This bit will be ON while data is being entered and will turn OFF when data entry has been completed. (This bit is effective only when a keyboard is being used.)
Login Screen Flag	This bit will be ON while the login screen is being displayed and will turn OFF when it has closed.
Password Change Screen Flag	This bit will be ON while the password change screen or password management screen is being displayed and will turn OFF when the screen has closed.

NV4W/NV3Q System Memory Map

Word Area

Word \ Bits	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0	Screen Number from PLC (PLC tells the NV to using this number.)															
N + 1	Do not use.															
N + 2	Current Screen Number (PLC reads this number from the NV.)															

Word Area Description

Screen Number from PLC	This word contains the screen number specified by the PLC for the NV to display in hexadecimal.
Current Screen Number	This word contains the number in hexadecimal of the screen currently displayed on the NV.

Bit Area

Word \ Bits	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N + 0		Buzzer	Screen Display Bit	Backlight Control Enable Bit	Backlight ON/Flash Bit	Backlight color		Key Press Sound Disable Bit	Display Reversal Bit (*1)		Backlight Brightness					
N + 1	Do not use.															
N + 2											SD Memory Card Insertion Bit	Password Change Screen Flag	Login Screen Flag	Battery Low Flag	Battery Backup Error Flag	Data Entry Flag

*1 NV4W-☐☐☐/NV3Q-MR☐1 only

Bit Area Description

Buzzer	Turn ON this bit to turn ON the buzzer.
Screen Display Bit	Turn ON this bit to make the PT display the screen specified by the PLC. (This bit is effective only when it changes from OFF to ON.)
Backlight Control Enable Bit	Turn ON this bit to enable controlling the backlight (flashing and color).
Backlight ON/Flash Bit	OFF: Lit (normal), ON: Flashing
Backlight color	NV4W: 00: Not lit, 01: Green (white), 10: Red, 11: Orange (pink) NV3Q Monochrome: 00: Not lit, 01: White, 10: Red, 11: Pink NV3Q Color: 00: Not lit, 01: Lit, 10: Lit, 11: Lit

Key Press Sound Disable Bit	When turned ON, disables the key press sound so that there is no sound when the PT touch panel is touched even if the key press sound is enabled in the NV Configuration from the NV-Designer.
Display Reversal Bit	Turn ON this bit to make the entire black/white display in reverse.
Backlight Brightness	Adjusts the backlight brightness. 0000: Not adjusted 0001 - 1111: The greater the value is the brighter the backlight becomes.
Data Entry Flag	This bit will be ON while data is being entered and will turn OFF when data entry has been completed. (This bit is effective only when a keyboard is being used.)
Login Screen Flag	This bit will be ON while the login screen is being displayed and will turn OFF when it has closed.
SD Memory Card Insertion Bit	Off: Not inserted On: Inserted
Password Change Screen Flag	This bit will be ON while the password change screen or password management screen is being displayed and will turn OFF when the screen has closed.
Battery Backup Error Flag	This bit will be ON if clock data or PLC memory holding data held in the SRAM (built-in RAM) are not backed up properly. (This bit will also be ON if SRAM is not backed up by the battery. " 🔋 " is displayed at the lower right of the window.[1])
Battery Low Flag	This bit will turn ON when the battery charge becomes low. Replace the battery within a week after this bit turns ON. (" 🔋 " is displayed at the lower right of the screen.[1])

*1 If displaying battery errors is not enabled, it will not be displayed.

*2 The Battery Backup Error Flag and Battery Low Flag will function even if the display for a discharged battery is disabled.

6-2-4   Communication Parameters Tab Page

Sets the serial communications settings between the PT and PLC.

Note   Communications parameters can be set from the Port Screen in the Setting Mode of the PT System Menu.

■ **NV3W**
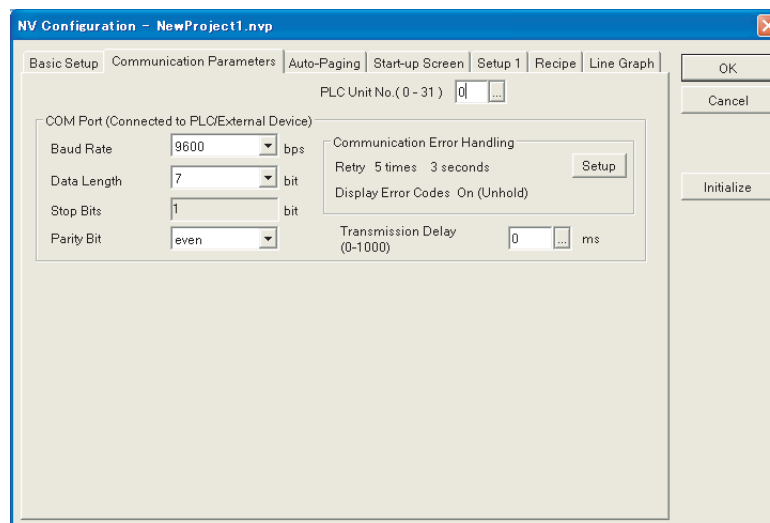
■ **NV3W-V1**
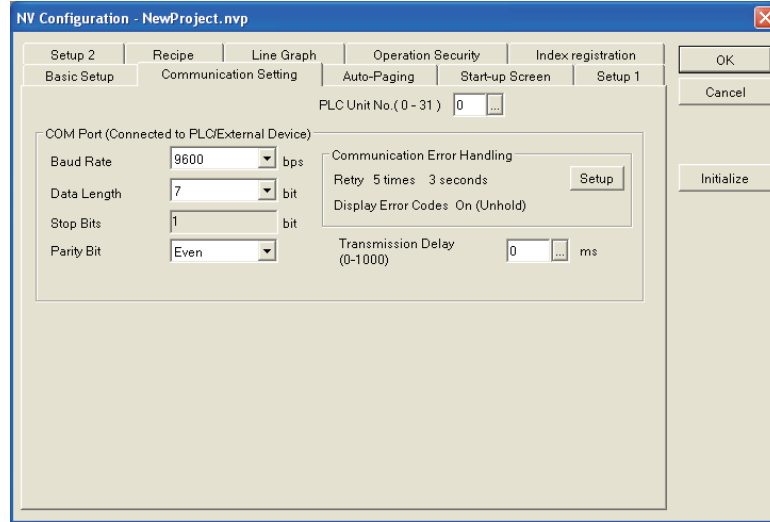
■ **NV4W/NV3Q**

Item	Description
PLC Unit No. (0 - 31)	Specifies the Host Link unit number of the connected PLC from 0 to 31. This setting is required only the Host Link unit number of the PLC is not 0.
	If communications are performed using Modbus, set the PLC unit number to between 1 and 247.
COM Port (Connected to PLC or External Device)	Sets the baud rate and transmission format for communications with the connected PLC.
	• Baud Rate Select from 9,600, 19,200, 38,400, 57,600, or 115,200 bps.
	• Data Length Select 7 bits or 8 bits.
	• Stop bits Always 1 bit.
	• Parity Select none, odd, or even.

Item	Description
Communication Error Handling	Click the Setup Button and open the Communications Error Handling Dialog Box to set the following parameters. • Number of retries Set the number of retries for communications errors to between 0 and 255. • Waiting time Set the number of retries for communications errors to between 0 and 64 seconds. • Display Error Codes Select Off, On (hold), or On (Unhold).
Transmission Delay	The time between receiving data from the PLC and when data is sent from the PT can be adjusted. A delay time longer than the set value can be obtained by setting the transmission delay parameter. Set this parameter when data transmission from the PT is too fast for the PLC to receive it properly. The setting range is between 0 to 1,000 ms.

Note   When connecting to an OMRON EJ1 Temperature Controller using Modbus-RTU, set a transmission delay of at least 5 ms in the communications parameters in the NV Configuration of the PT. Communications may not be performed correctly if a transmission delay of 4 ms or less is set. Use a value of the least 5 ms (default) for the port B send wait time in the EJ1. Communications may not be performed correctly if a send wait time of 4 ms or less is set.

6-2-5   PLC Multiple Connection Tab

This tab page is used to set parameters when connecting multiple PLCs or OMRON EJ1 Temperature Controllers using Modbus. The following dialog box will be displayed when the PLC Multiple Connection Tab is clicked in the NV Configuration Dialog Box.
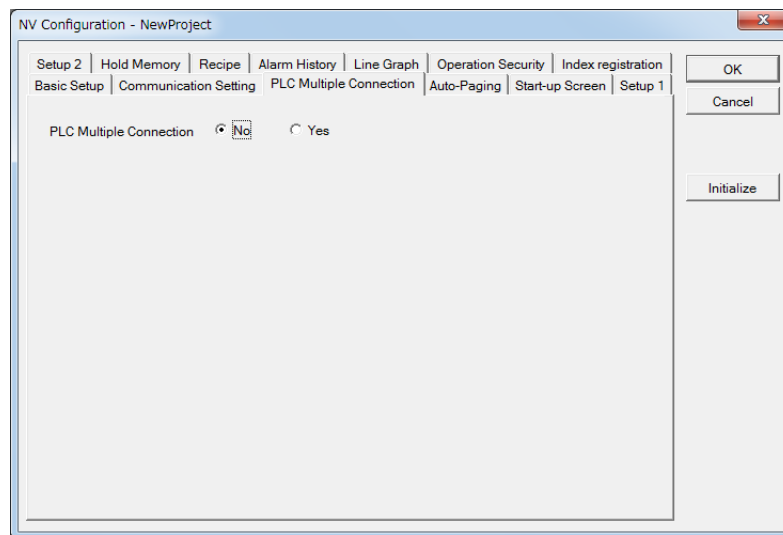
Item	Description
PLC Multiple Connection	• No PLC multiple connection is not used. • Yes PLC multiple connection is used. If the Yes Option is selected, the PT will recognize the unit number set in the PLC.

The following dialog box is displayed if the Yes Option is selected for PLC multiple connection.
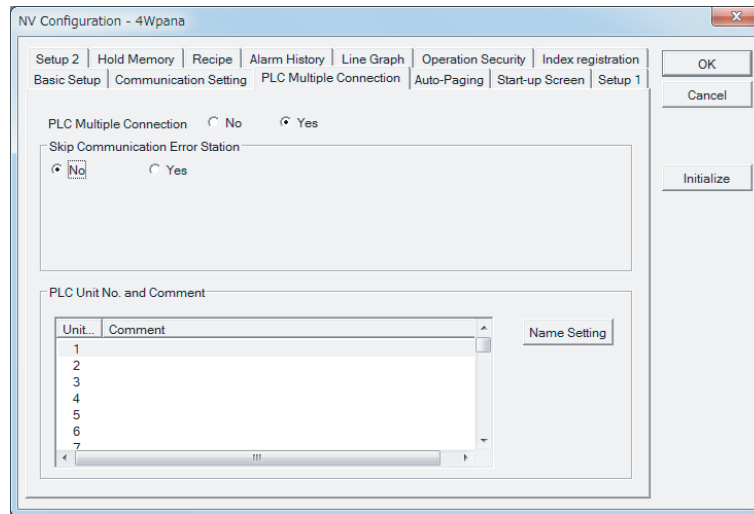
Skip Communication Error Station

Item	Description
Skip Communication Error Station	• No Resending process is repeated to the PLC that has caused communication error. • Yes The PLC that has caused communication error is ignored but the other PLC is communicated.

If the Yes Option is selected, the following dialog box is displayed.
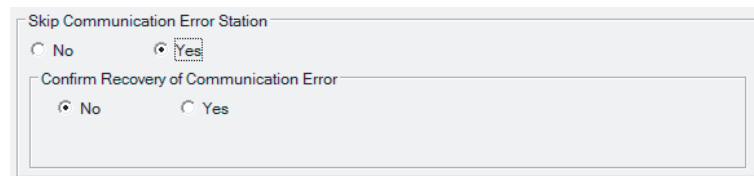
Item	Description
Confirm Recovery of Communication Error	• No Recovery of station from communication error is not confirmed. • Yes Recovery of station from communication error is confirmed. When it can communicate, recovery processing is implemented.

Selecting the Yes Option displays the Setup button which, when pressed, displays the following dialog.
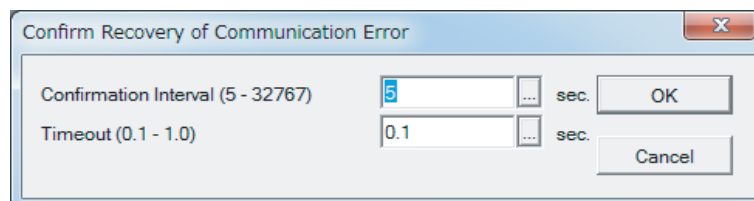
	Item	Description
1	Confirmation Interval	Specify in units of second the interval with which to check recovery from error. You can specify it within the range from 5 to 32767 seconds.
2	Timeout	Specify the period within which if a response is confirmed from an erroneous PLC, the PLC recovers from the communication error state. You can set it within a range from 0.1 to 1.0 second.

Note
(1) During the timeout, the PT cannot be operated.

(2) Frequent checks of error recovery and/or long timeouts compromise system availability.

PLC Unit Number and Comment
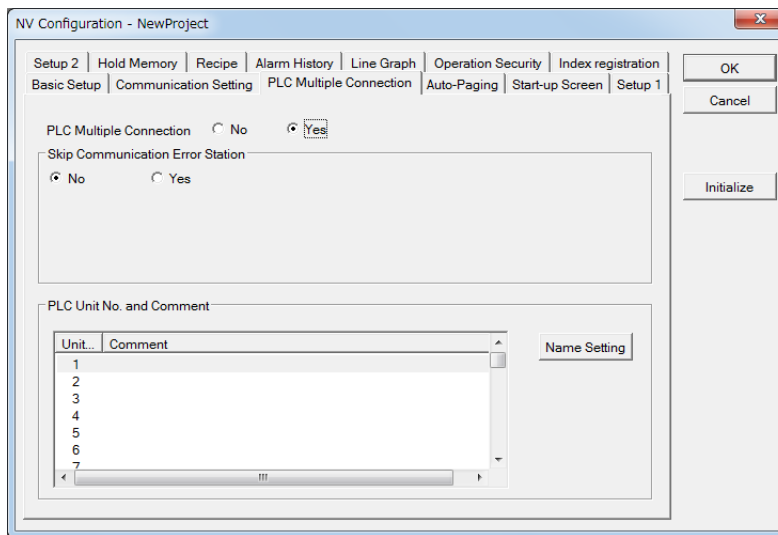
A comment can be registered for each unit number.

Click a unit number to select it, and then click the Comment Button. The following dialog box will be displayed.
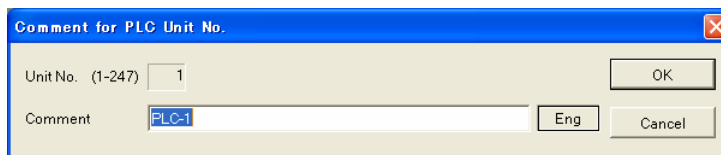
	Item	Description
1	Unit Number	Displays the selected unit number. The unit number cannot be changed.
2	Comment	Input a comment for the unit number (64 characters).

Click the OK Button to register the comment. The registered comment will be displayed when you return to the original dialog box.

Note Inputting comments (optional) for PLC unit numbers makes it easier to identify the PLCs when setting addresses, e.g., for parts.

6-2-6   Auto-Paging Tab Page

Open the Auto-Paging Tab Page from the NV Configuration Dialog Box. The auto-paging function is used to automatically switch to a specified screen after a specified period of time has passed.

Item	Description
Auto-Paging	• Off Screens will not be switched automatically. • On Screens will be automatically switched according to the settings. The Setup Button will be enabled if the error code display is enabled. Click the Setup Button and set the screen number to display, the display time, and jump destination.

Setting Up Auto-Paging   Select the On Option for Auto-Paging and click the Setup Button. The Auto-Paging Dialog Box will be displayed. Set the screen number, time, and jump destination, then click the Save Button.
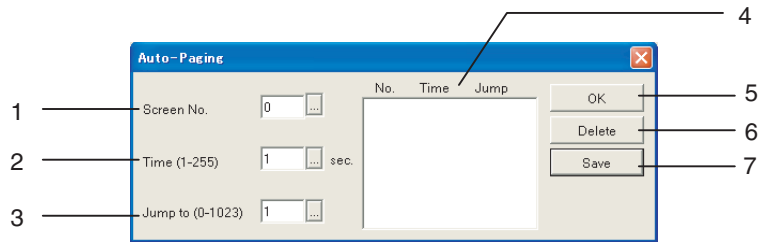
	Item	Description
1	Screen No.	Enter the number of the screen to switch to automatically within the range given in parentheses.
2	Time	Sets the time the switched screen is displayed. It can be set to between 1 and 255 seconds.
3	Jump to	Sets the screen number to switch to.
4	Settings Display Area	Sets up auto-paging.
5	OK Button	Closes the Auto-Paging Dialog Box and returns to the Auto-Paging Tab Page.
6	Delete Button	Deletes the screens saved in auto-paging.
7	Save Button	Saves the settings.

6-2-7   Start-up Screen Tab Page

Open the Start-up Screen Tab Page from NV Configuration. Set the number of the screen to display and the time until it is displayed after turning ON the power supply. This function is useful when the time required for the PLC to turn ON is longer than the time required for the PT. There will be no communications between the PLC and PT during the startup delay, so even if the PLC takes longer to start a timeout error will not be displayed on the PT screen.
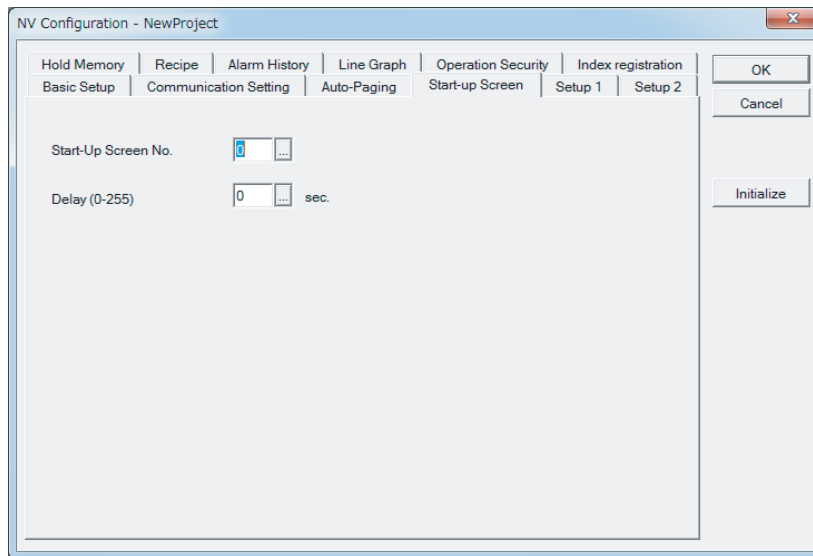
Item	Description
Start-Up Screen No.	Enter the number of the screen to display when the power supply is turned ON within the range given in parentheses. Click the button next to the box and set the startup screen from the dialog box that appears.
Delay	Set the display time of the startup screen to between 0 and 255 seconds. Click the button next to the box and set the time to display the screen from the dialog box that appears.

When the startup screen display time has elapsed, the screen number stored in the first address of the Word Area in system memory that is set in the Basic Setup of the NV Configuration will be displayed.

Note   There will be no communications between the PLC and PT during the startup screen delay time. Functional parts on the startup screen will not be displayed during the startup screen delay time.

6-2-8   Setup 1 Tab Page

Open the Setup 1 Tab Page from the NV Configuration Dialog Box to set the clock, backlight, etc.

■ **NV3W (-V1)**
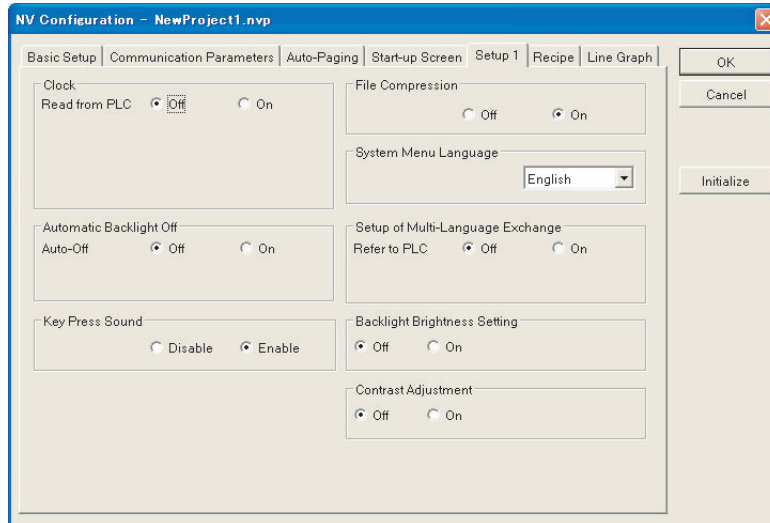
■ **NV3Q**

■ **NV4W**

Item		Description
Clock	Clock	Sets the reference for the clock displayed on the PT. For the NV4W/NV3Q, set either the NV clock or the PLC clock. For the NV3W (-V1), specify if PLC data is to be accessed for the clock displays.
	Transfer Outside (NV4W/NV3Q only)	Sets whether to transfer displayed clock data to an external device, such as the PLC. If you specify accessing PLC data, a setting item will be displayed to enter the communications address. Set the address in the PLC from which clock data will be output. Refer to *Setting the Clock Function* on page 92 for details.
Automatic Backlight Off[*1]		Sets whether to automatically turn OFF the backlight. • Off 　The backlight is not automatically turned OFF. • On 　The backlight is automatically turned OFF. If the On Option is selected, a box to specify the amount of time taken until the backlight is automatically turned OFF will be displayed. Set time to between 1 and 30 minutes.
Key Press Sound		Sets the sound that is made when the screen is touched. • Disable 　The operation sound is disabled. • Enable 　The operation sound is enabled.
Battery Error Display[*2] (NV4W/NV3Q only)		Sets whether to display the battery low mark ( ). • Off 　The battery low mark is not displayed. • On 　The battery low mark is displayed when the battery charge is low and when it is out of charge.
File Compression[*3]		Sets whether to compress the data transferred to the PT. • Off 　Screen data is not compressed. • On 　Screen data is compressed.
System Menu Language		Sets the language for the System Menu. Select one of the following from the pull down menu. • English (default) • Japanese

Item	Description

Startup of Multi-Language Exchange[*4]	Sets whether to specify the language number from the PLC when using the multi-language exchange function.
	• Off
	  Language numbers are not specified from the PLC.
	• On
	  Language numbers are specified from the PLC. If you specify accessing PLC data, a setting will be displayed to enter the communications address (2 words). Set the address in the PLC from which the language number will be set. The following two words are used for the communications addresses.
	
	First word: Language number specified by the PLC (sent from PLC to PT)
	
	First word +1: Number of language currently displayed on PT (sent from PT to PLC)
	
	For details, refer to *8-7 Switching the Display Language* and to information on switching the display language in the NV-Designer online help.

Backlight Brightness Setting	Sets the brightness of the backlight.
	• Off
	  The brightness of the backlight is not set.
	• On
	  The brightness of the backlight is set. If setting the brightness is enables, a setting item will be displayed to enter the value. Set the value to within the range given in parentheses.

Contrast Adjustment (NV3W (-V1)/NV4W only)	Sets contrast adjustment.
	• Off
	  The contrast is not set.
	• On
	  The contrast can be adjusted. If setting the brightness is enabled, a setting item will be displayed to enter the value. Set the value to within the range given in parentheses.

*1 After the backlight has been automatically turned OFF, touching the screen will turn it back ON. Even if there is a touch switch on the screen where you touch it, it will not be activated.

*2 The Battery Backup Error Flag and Battery Low Flag of the system memory will function even if the display for a battery error is disabled.

*3 The number of saved screens can be increased by compressing them but the screen switching speed will be slower. Check the speed by actually testing operation.

*4 To use the multi-language exchange function, the following settings are required: Multi-language exchange setting on the Language Tab Page of the NV Configuration and the language settings in the computer's operating system. Refer to *8-7 Switching the Display Language* for details.

Setting the Clock Function

NV3W (-V1)

Specify if PLC data is to be accessed for the clock displays. If accessing PLC data is enabled, a setting item will appear to set the first communications address. Set the memory area and address in the PLC.
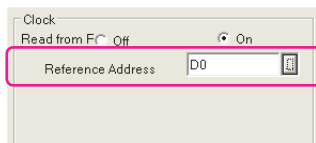
If accessing PLC data is enabled, this setting will be displayed.
Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

NV4W/NV3Q

Select either the NV Clock or PLC Clock for the Clock. If the NV clock is selected, you will be able to activate or inactivate summer time.
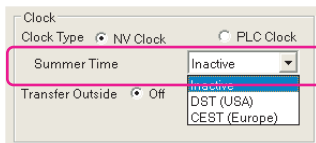
If the NV clock is selected, this setting will be displayed.
Select inactivate, DST (USA), or CEST (EU) from the pull down menu.

The summer time settings are outlined in the following table.

Setting	Description
Inactive	Summer time is not used.
DST (USA)	The USA summer time system is used. (Period: From 2:00 AM on the 2nd Sunday in March until 2:00 AM on the 1st Sunday in November)
CEST (EU)	The EU summer time system is used. (Period: From 1:00 AM on the last Sunday in March until 1:00 AM on the last Sunday in October)

If using the PLC Clock is selected, a setting item will appear to set the first communications address. Set the PLC memory area and address.
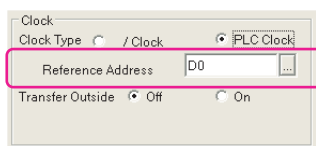
If using the PLC Clock is enabled, this setting will be displayed.
Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

The words that can be set in the PLC to access clock data are given below. CS/CJ/CP-series PLCs: Specify A351 as the first communications address.

Word	Upper byte (bits 08 to 15)	Lower byte (bits 00 to 07)
A351	Minutes (00 to 59 BCD)	Seconds (00 to 59 BCD)
A352	Date (01 to 31 BCD)	Hour (00 to 23 BCD)
A353	Month (01 to 12 BCD)	Year (00 to 99 BCD)
A354	---	Day of week (00 to 06 BCD)
		00: Sunday, 01: Monday, 02: Tuesday, 03: Wednesday, 04: Thursday, 05: Friday, 06: Saturday

C-series (C200HX/HG/HE(-Z), CQM1H, CPM2A/CPM2C, CPM1/CPM1A): Specify AR18 as the first communications address.

Word	Upper byte (bits 08 to 15)	Lower byte (bits 00 to 07)
AR18	Hour (00 to 23 BCD)	Minutes (00 to 59 BCD)
AR19	Minutes (00 to 59 BCD)	Seconds (00 to 59 BCD)
AR20	Date (01 to 31 BCD)	Hour (00 to 23 BCD)
AR21	Year (00 to 99 BCD)	Month (01 to 12 BCD)
AR22	---	Day of week (00 to 06 BCD)
		00: Sunday, 01: Monday, 02: Tuesday, 03: Wednesday, 04: Thursday, 05: Friday, 06: Saturday

CVM1/CV-series PLCs: Specify CIO 2561 (equivalent to G001) as the first communications address.

Word	Upper byte (bits 08 to 15)	Lower byte (bits 00 to 07)
CIO 2561 (Equivalent to G001.)	Minutes (00 to 59 BCD)	Seconds (00 to 59 BCD)
CIO 2562 (Equivalent to G002.)	Date (01 to 31 BCD)	Hour (00 to 23 BCD)
CIO 2563 (Equivalent to G003.)	Month (01 to 12 BCD)	Year (00 to 99 BCD)
CIO 2564 (Equivalent to G004.)	---	Day of week (00 to 06 BCD)
		00: Sunday, 01: Monday, 02: Tuesday, 03: Wednesday, 04: Thursday, 05: Friday, 06: Saturday

Note   If using the PLC clock is selected, the PT will calculate clock data based on the specified addresses in the PLC. If addresses that do not contain clock data are specified, the PT will still use the contents of those addresses as clock data. Be sure to check the correct clock data addresses in your PLC manual and specify the correct addresses.

Settings to Transfer Clock Data to an External Device (NV4W/NV3Q Only)

If the On Option is selected for Transfer Outside, a setting will appear to set the first output address. Set the PLC memory area and address for transferring clock data.
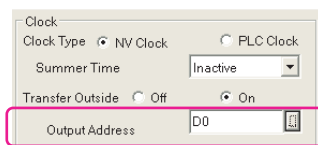
If the On Option is selected for Transfer Outside, this setting will be displayed. Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

Note   If the On Option is selected for Transfer Outside, clock data will be transferred to D0 as a default. The address can be reset according to the PLC that is connected. Error ER1103 will occur if an address that does not exist in the PLC is set.

System Menu Language   The language for the System Menu can be selected from the following:

Japanese or English

🖹 **Additional Information**

With the NV3W-V1/NV4W/NV3Q, the System Menu language can be selected directly from the System Menu.

6-2-9   Setup 2 Tab Page (NV3W-V1/NV4W/NV3Q Only)

Open the Setup 2 Tab Page from the NV Configuration Dialog Box to perform settings such as the one for SD memory card.

■ **NV3W-V1**
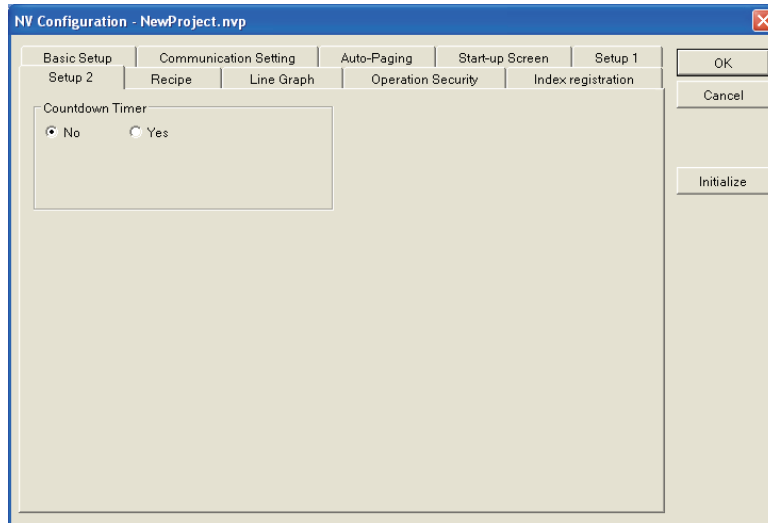
Item		Description
Countdowon Timer		• No Countdown Timer] is disabled. • Yes [Countdown Timer] is enabled.
Free Space on the SD card (NV4W/NV3Q only)	Notify when SD card has little space	• No [Notify when SD card has little space] is disabled. • Yes Notify when SD card has little space] is enabled.
SD Memory Card Menu (NV4W/NV3Q only)	Automatic Display	• Off [SD Memory Card Menu]-[Automatic Display] is disabled. • On [SD Memory Card Menu]-[Automatic Display] is enabled.

Item		Description
Function when writing to SD Card (NV4W/NV3Q only)	Screen display when writing	• No [Screen display when writing] is disabled. • Yes [Screen display when writing] is enabled.
	Output during write	• No [Output during write] is disabled. • Yes [Output during write] is enabled.
	Stop Writing Control	• No [Stop Writing Control] is disabled. • Yes [Stop Writing Control] is enabled.
	Output when error occurs	• No [Output when error occurs] is disabled. • Yes [Output when error occurs] is enabled.

6-2-10 Hold Memory Tab Page (NV4W/NV3Q Only)

Open the Hold Memory Tab Page from the NV Configuration Dialog Box to set the memory to be held.

Item	Description
Hold PLC Memory Value	This function is used to backup PLC memory in the PT. • Off The data in PLC memory is not held. • On The data from PLC memory is held. You can back up up to 24 words from the specified address.
Hold NV Internal Memory Value	This function is used to backup PT memory in the PT. Data Memory and Internal Relay (i.e., CIO Area) are set separately. • Off The data in PT internal memory is not held. • On The data in PT internal memory is held. You can back up from the specified address to the last address.

Setting the Hold PLC Memory Value Function

The hold PLC memory value function is used to back up the specified PLC memory data in the SRAM of the PT. The PT can back up memory contents that is lost from the PLC when there is a power interruption. PLC memory data held by the PT is automatically written to the PLC memory when power is turned ON again.

If the On Option is selected for Hold PLC Memory Value, a setting will be displayed to enter the first address and number of words. Set the first address in the PLC and number of words to back up.
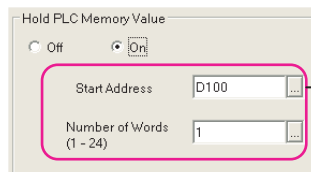
If the On Option is selected for Hold PLC Memory Value, this setting will be displayed. Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

Note An NV-BAT01 Battery (sold separately) is required to back up data.

Setting the Hold NV Internal Memory Function

The hold NV internal memory value function is used to back up the specified data in internal memory in the PT. All values in addresses after the set value will be held.

Data Memory

If the On Option is selected for Data Memory, a setting item will be displayed to enter the GDT start number. Set the first address in internal memory to back up.
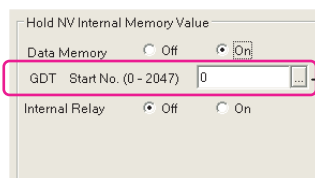
If the On Option is selected for Data Memory, this setting will be displayed. Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

CIO Area

If the On Option is selected for Internal Relay, a setting item will be displayed to enter the WGR start number. Set the first address in internal memory to back up.
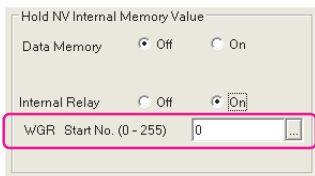
If the On Option is selected for Internal Relay, this setting will be displayed. Either enter the setting directly or click the button on the right of the box and enter the setting from the dialog box that will appear.

The PT internal memory is allocated as follows:

Memory type		Address range	Size
Words	Data Memory	GDT 0 to GDT 2047	2,048 words
	CIO Area	WGR 0 to WGR 255	256 words
Bits	CIO Area	GR 0 to GR 255F	4,096 bits

Precaution for Correct Operation

An NV-BAT01 Battery (sold separately) is required to back up data.

Note "WGR" is used to specify GR data in word units. For example, "WGR1" specifies the 16 bits from GR10 to GR1F.

6-2-11 Other Settings

For information on recipes and passwords, refer to *SECTION 8 Using PT Functions* or to NV-Designer online help. For information on the alarm history (NV4W/NV3Q only), line graphs and index registration, refer to *SECTION 7 Descriptions of Parts* or to NV-Designer online help.

This section describes how to create screens using the various parts provided by the NV-Designer.

7-1   Character Strings and Graphics (Fixed Parts)

7-1-1   Character Strings and Graphics (Fixed Parts)

With the NV Series, the following character strings and graphics (fixed parts) can be displayed on the screen.

Fixed part	Icon	Description
Text	A	Creates a character string.
Line	\	Creates a straight line.
Continuous line	⌄	Creates continuous lines.
Rectangle	▭	Creates a rectangle.
Pie/Oval	◯	Creates a circle or oval.
Arc	↻	Creates a circular or oval arc.
Spline	⌒	Creates a curved line.
Sector	◔	Creates a circular or oval sector.
Rounded Rectangle	▢	Creates a square with rounded corners.
Polygon	⊿	Creates a polygon.
Fill In	🖐	Fills areas enclosed by lines and graphics with a color.
Bit Map	---	Pastes bit map data from the clipboard to the screen.
Character Type	A_A	Sets the language, font, character size, attributes (e.g., bold), and colors (character and background colors).
Color	🖱	Sets the colors and patterns for graphics.
Line Type	⫽	Sets the line thickness and type.

Refer to NV-Designer Help for details on each graphic.

7-1-2   Entering Character Strings and Graphics

**Entering Character
Strings**

1,2,3...   1.   Click the Character String Button (A) on the graphic bar shown below.
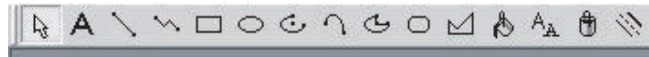
The mouse pointer changes to "|" to indicate that you can input a character string anywhere on the base screen.

2.   Click the position on the base screen where you want to input a character string.

3.   Example:

Creates a character string.
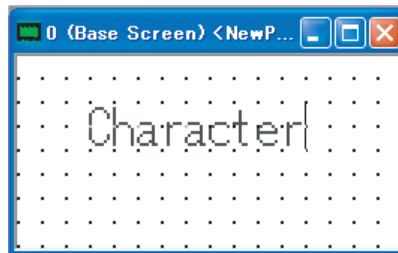
4.   To exit from the input state, click the Select Button ( ) on the graphic bar.

5.   Select the character string.
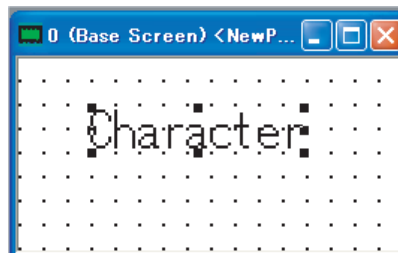
6.   Adjust the position.

7.   To change the font, size, color, or other attributes, click the Character Type Button (A_A) on the graphic bar.

The Character Attributes Dialog Box will be displayed.
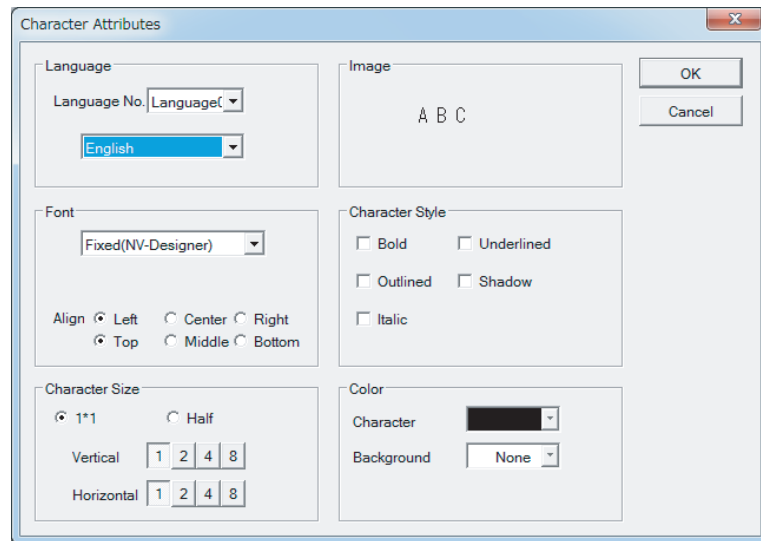
8. Set the font, character size, and other attributes, and then click the OK Button.

Drawing Graphics
Draw the required graphics.

For example, draw a rectangle with rounded corners.

Click the Rectangle Button (▭) on the graphic bar, and then draw the rectangle.

Click the Color Button (🖊) on the graphic bar.

For a rectangle with rounded corners, change the line color and pattern of the corners.

Pasting Bitmap Data

1,2,3...　1. Copy bitmap data to the clipboard in advance.

2. Right-click at the position where you want to insert the base screen.

3. Select Paste (Ctrl+V).

Note　(1) It is not possible to paste data that is larger than the screen.

(2) For color data and grayscale data, the number of colors or the number of shades of gray will be automatically reduced according to the capabilities of the PT model.

7-1-3   Setting a Layout According to the Text Size

Font Types That Can Be Input

Example for the NV3W

Font	Characteristics
Fixed	The font can be half size* or normal size, and can be magnified by 1×, 2×, or 4×. Half-size characters = 8 × 8 dots (H × V) Normal characters = 16 × 8 dots (H × V)
True Type	Character sizes are specified as the number of dots. 10 to 64 dots Fonts installed with the NV-Designer are used for display.
Windows	Character sizes are specified as the number of dots. 10 to 64 dots Any of the Windows fonts installed in your computer can be used for display.

Example for the NV3W

Font	Characteristics
Fixed	The font can be half size*1 or normal size, and can be magnified by 1×, 2×, or 4×. Half-size characters = 8 × 8 dots (H × V) Normal characters = 16 × 8 dots (H × V)
True Type	Character sizes are specified as the number of dots. 10 to 96 dots Fonts installed with the NV-Designer are used for display.
Windows	Character sizes are specified as the number of dots. 10 to 96 dots Any of the Windows fonts installed in your computer can be used for display.

Example for the NV4W/NV3Q

Font	Characteristics
Fixed	The font can be half size[1] or normal size, and can be magnified by 1×, 2×, or 4×. Half-size characters = 8 × 8 dots (H × V) Normal characters = 16 × 8 dots (H × V)
True Type	Character sizes are specified as the number of dots. 10 to 240 dots Fonts installed with the NV-Designer are used for display.
Windows	Character sizes are specified as the number of dots. 10 to 240 dots Any of the Windows fonts installed in your computer can be used for display.

*1 Some symbols cannot be used with half-size characters.

Precaution for Correct Operation

Font drawing and character styles are handled using functionality provided by Windows. The appearance of text depends on the version and type of Windows being used and the fonts that are installed.

Size of Character Strings and Parts

Parts that do not contain a character string can be set to any size. When parts contain characters (e.g. switches), the part size will be limited by the minimum character size (minimum character size = 8 x 8 dots).

When designing the screen layout, consider the size of the characters being used and the screen layout design according the number of dots constituting the screen of PT model being used.

7-2   Parts

7-2-1   Positioning Parts

Drag parts from the parts library of the Standard Dialog Box and drop them on the base screen.
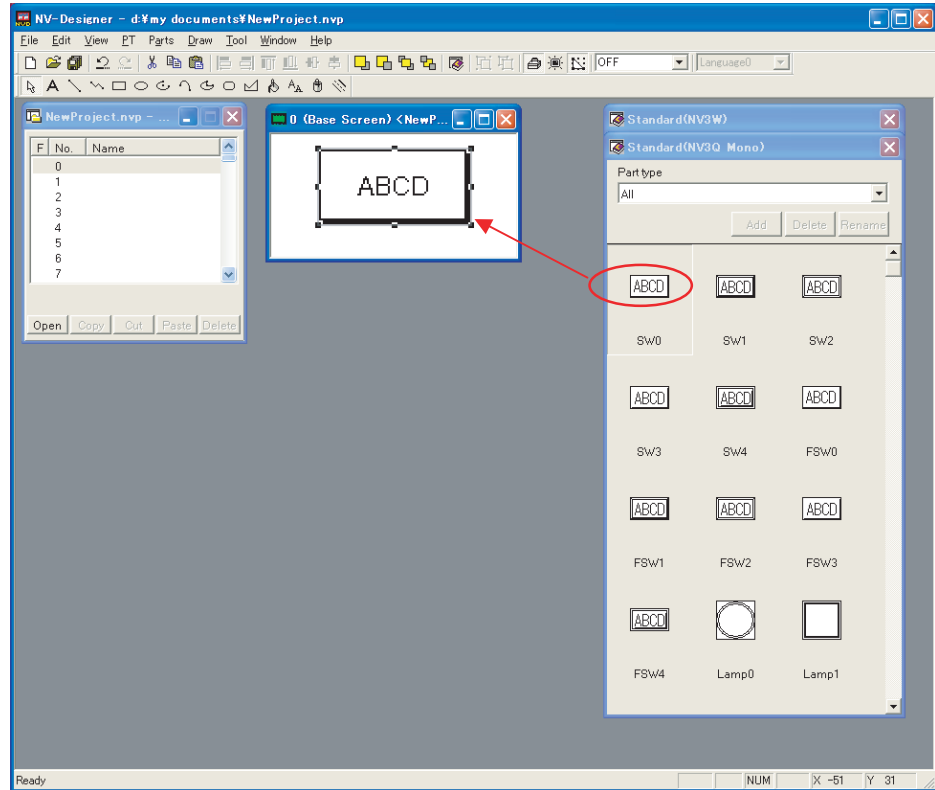
Double-click a part on the screen, and then set the attributes of the part.

📝 **Additional Information**

You can display the attribute information (e.g., address) of parts on the screen. Select Parts Attribute from the View Menu.
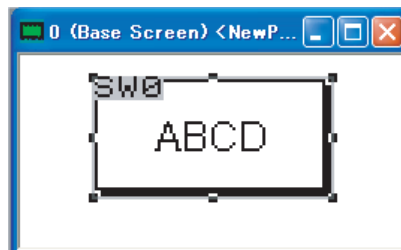
Example:

You can display the parts numbers of parts placed on the screen. Select Parts No. from the View Menu.

Example:
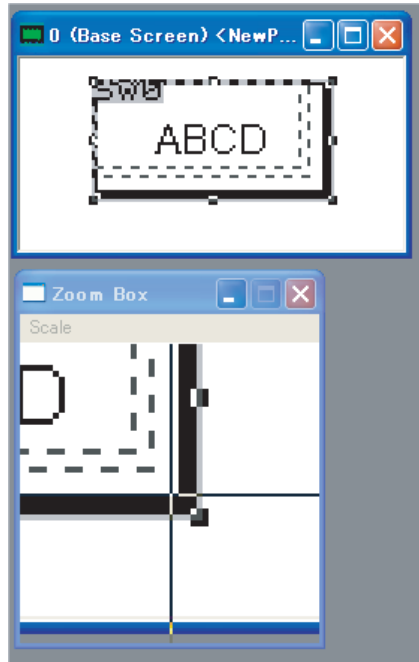
When you want to draw a very fine part or fine-tune the position of a part, select Zoom Box from the View Menu.

Precaution for Correct Operation

1. The zoom box will not be displayed properly on Windows Vista or Windows 7 computers on which Aero is enabled. If you use the zoom box, disable Aero.
2. The following limitations apply to positioning parts on a base screen.
   - A part cannot be placed on top of another part.
   - Character strings and graphics cannot be placed on top of parts.
     (If a part overlaps a character string or graphic, the character string or graphic will be placed in the background behind the part.)

7-2-2   Parts Libraries

A parts library contains parts, such as switches, lamps, data displays, and keyboards, that you can use to create screens. They can be easily positioned on base screens by dragging and dropping them.

When you open a Base Screen of an arbitrary project on the NV-Designer, all parts in the Standard Parts Library for the set model will be displayed in front.

Standard Parts Library

Parts Group Selection Button
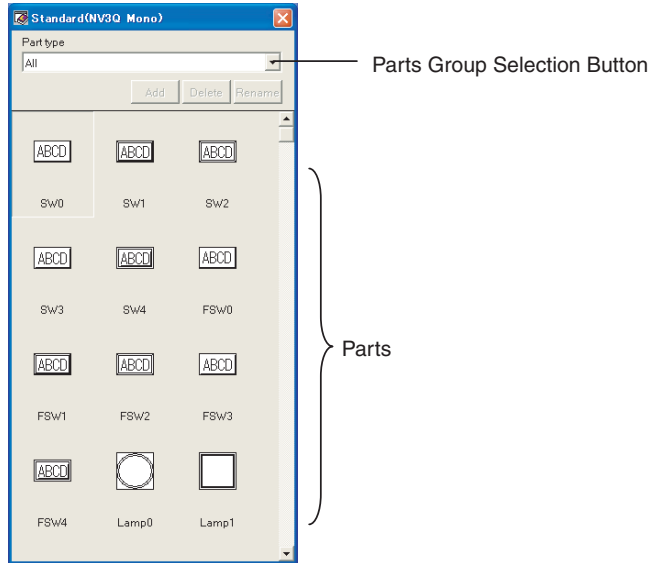
Parts

Parts Group Selection Button

Buttons are displayed by type.

Select a lamp.
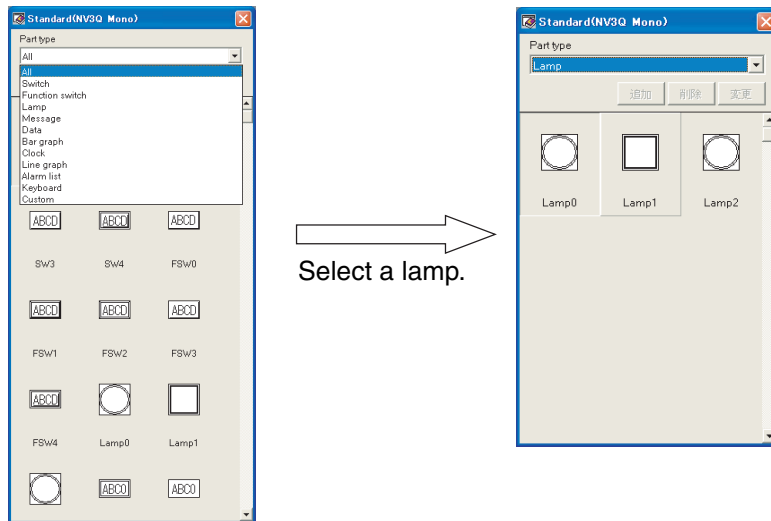
📖 **See Also**

Refer to *7-2-4 Available Parts Libraries*.

All of the parts registered in the parts libraries can be viewed as PDF data.

7-2-3   Opening Parts Library

> 📑 **Additional Information**
>
> The standard parts library will open when a base screen is opened.

Opening the Parts Library from the Menu Bar

1,2,3...   1.   Select Open Parts Library from the Parts Menu.

2.   The Select Parts Library Dialog Box will be displayed.
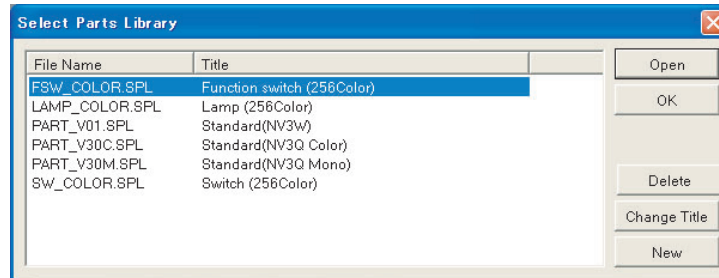
Select the parts library to use and click the Open Button.

Here, select the *Function switch (256 Color)* Parts Library.

3.   Here, the *Function Switch (256 Color)* parts library is displayed.

By repeating steps 1 to 3, multiple parts libraries can be opened and used simultaneously.

Click the title bar of the parts library to display the parts library currently being in the front.

7-2-4   Available Parts Libraries

There are basically two types of parts libraries.

Parts

Type	Description	Library name	Standard parts library	File name	NV-series PT
Standard parts library	These are the standard parts libraries, provided for each model.	Standard Parts Libraries	Standard (NV3W)	PART_V01.SPL	For the NV3W
			Standard (NV3W-V1)	PART_V11.SPL	For the NV3W-V1
			Standard (NV4W)	PART_V12.SPL	For the NV4W
			Standard (NV3Q Mono)	PART_V30M.SPL	NV3Q monochrome
			Standard (NV3Q Color)	PART_V30C.SPL	NV3Q color
256-color parts libraries	These libraries contain parts that can be displayed in 256 colors. There are three types of parts: Bit Switches, Function Switches, and Lamps.	256-color lamp library	Lamp (256Color)	LAMP_COLOR.SPL	NV3Q color
		256-color switch library	Switch (256Color)	SW_COLOR.SPL	
		256-color function switch library	Function switch (256Color)	FSW_COLOR.SPL	
4,096-color parts libraries	These libraries contain parts that can be displayed in 4,096 colors. These libraries enable more visual expressions than the 256-color libraries.	4,096-color lamp library	Lamp (4,096Color)	LAMP_COLOR4096.SPL	NV3Q color
		4,096-color switch library	Switch (4,096Color)	SW_COLOR4096.SPL	
		4,096-color function switch library	Function switch (4,096Color)	FSW_COLOR4096.SPL	
		4,096-color icon switch library	ICON Switch (4,096Color)	SW_ICON4096.SPL	
		4,096-color metallic switch library	METALLIC Switch (4,096Color)	SW_METALLIC4096.SPL	
		4,096-color pastel switch library	PASTEL Switch (4,096Color)	SW_PASTEL4096.SPL	
		4,096-color real switch library	REAL Switch (4,096Color)	SW_REAL4096.SPL	

Standard Library for an NV3W PT **Standard Library for an NV3W-V1 PT**
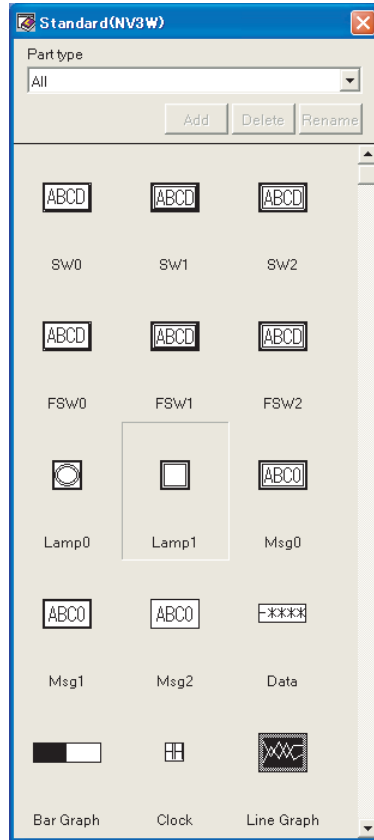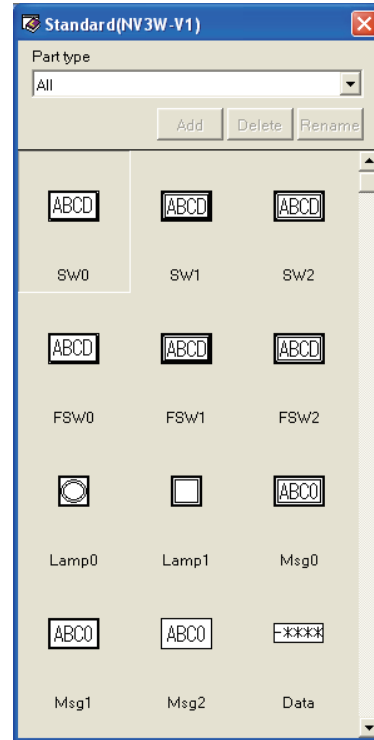
Standard Library for an NV4W PT **Standard Library for an NV3Q Color PT**
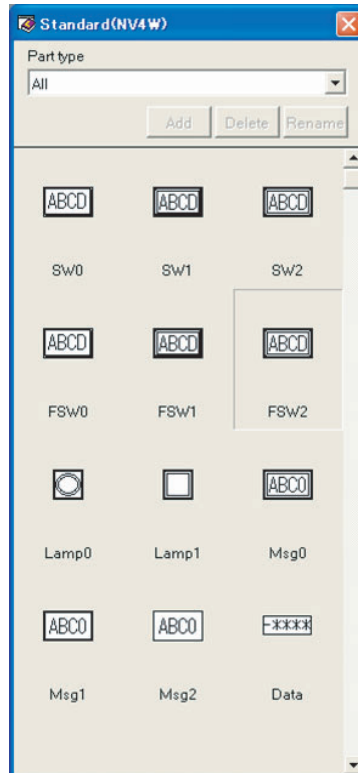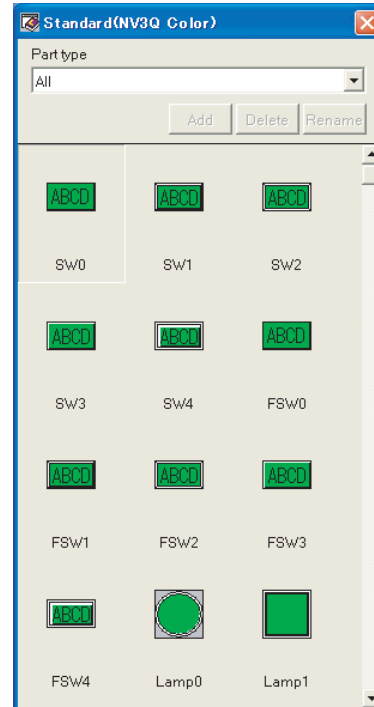
Standard Library for an NV3Q Monochrome PT

256-color Lamp Library
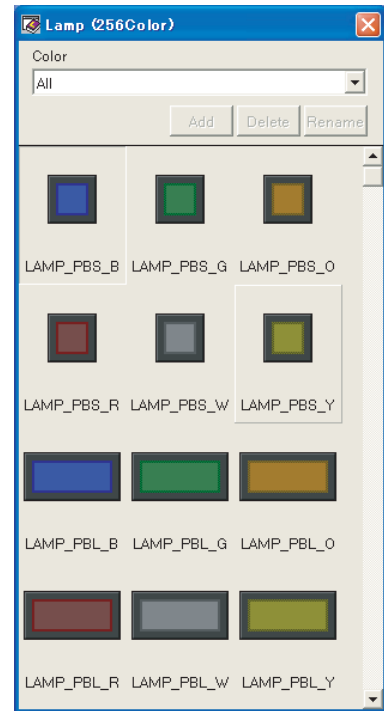
256-color Switch Library

256-color Function Switch Library

4,096-color Lamp Library

4,096-color Switch Library

4,096-color Function Switch Library

4096-color ICON Switch Library
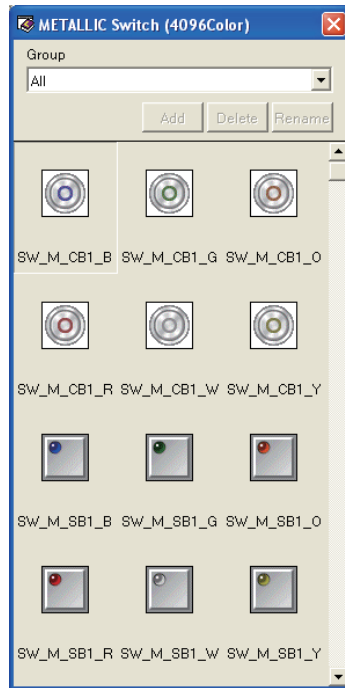
4096-color METALLIC Switch Library   **4096-color PASTEL Switch Library**
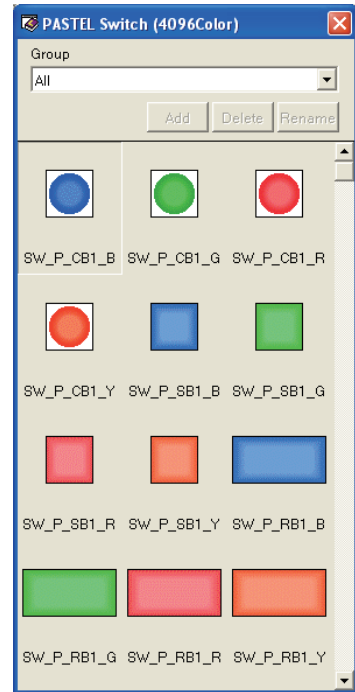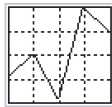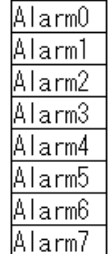
4096-color REAL Switch Library

7-2-5 Parts in the Standard Parts Libraries

**Parts in the Standard
Parts Libraries**

Standard library part name	Part name	Abbreviation	Example	Description	Applicable NV-series PTs			
					NV3W	NV3W-V1	NV4W	NV3Q
Switch	Bit switches	SW	ABCD	Bit switches are turned ON and OFF in the same way as the corresponding bit in the PLC.	Supported.	Supported.	Supported.	Supported.
Function switch	Function switches	FSW	ABCD	A part having a function and which, when touched, switches the screen, performs calculations, etc.	Supported.	Supported.	Supported.	Supported.
Lamp	Lamps	Lamp	●	The display color of the lamp changes when the corresponding bit in the PLC turns ON and OFF.	Supported.	Supported.	Supported.	Supported.
Message	Message parts	Msg	ABC0	Message parts change the message that is displayed according to changes in the contents of the corresponding address in the PLC. You can switch between up to 16 different messages.	Supported.	Supported.	Supported.	Supported.
Data	Data parts	Data	-✳✳✳✳	Data parts display the contents of the corresponding address in the PLC directly on the screen.	Supported.	Supported.	Supported.	Supported.
Level meter	Level meters	Level Meter	▮▯	Level meters display changes in the contents of the corresponding address in the PLC.	Supported.	Supported.	Supported.	Supported.
Clock	Clock	Clock	HH	A part that displays the date and time based on a referenced clock (PT clock or PLC clock). A single clock part displays any one of the year, month, day, hour, minutes, seconds, or day of the week.	Supported.	Supported.	Supported.	Supported.
Line graph	Line graphs	Line Graph		Line graphs display changes in the contents of the corresponding address in the PLC.	Supported.	Supported.	Supported.	Supported.
Alarm list	Alarm list	Alarm list	Alarm0 Alarm1 Alarm2 Alarm3 Alarm4 Alarm5 Alarm6 Alarm7	A list of errors that have occurred can be displayed.	Not supported.	Supported.	Supported.	Supported.
		Alarm History	MM/dd 24:00:00 Trig Alarm0 ... Up Down Ack		Not supported.	Not supported.	Supported.	Supported.

Standard library part name	Part name	Abbrevia-tion	Example	Description	Applicable NV-series PTs			
					NV3W	NV3W-V1	NV4W	NV3Q
Keyboard	Key-board		Parts that change the value of the PLC memory address being displayed by the Data Part.		Sup-ported.	Sup-ported.	Sup-ported.	Sup-ported.
		DEC1		Used to enter decimal val-ues.				
		DEC2		Used to enter decimal val-ues (horizontal).				
		DEC Sign1		Used to enter signed deci-mal fractions.				
		DEC Sign2		Used to enter signed deci-mal fractions (horizontal).				
		HEX		Used to enter hexadecimal values.				
		ASCII		Used to input ASCII data.				
Custom	Custom switches	SW (Cus-tom)		Bit switches are turned ON and OFF in the same way as the corresponding bit in the PLC. The part can be edited.	Sup-ported.	Sup-ported.	Sup-ported.	Sup-ported.
	Custom lamps	Lamp (Custom)		The display color of the lamp changes when the corresponding bit in the PLC turns ON and OFF. This part can be edited.				
	Custom mes-sage parts	Msg (Cus-tom)		A part that switches the dis-played character string according to the value of a word address, or when the referenced PLC bit address turns ON and OFF. The part can be edited.				

ON and OFF Status for Standard Library Parts

The main NV-series parts (switches, function switches, and lamps) will be as shown below when they are ON and OFF.

■ **NV3W (-V1)/NV4W**

Switches

	SW0	SW1	SW2
ON	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD

Function Switches

	FSW0	FSW1	FSW2
ON	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD

Lamps

	Lamp0	Lamp1
ON	●	■
OFF	◎	□
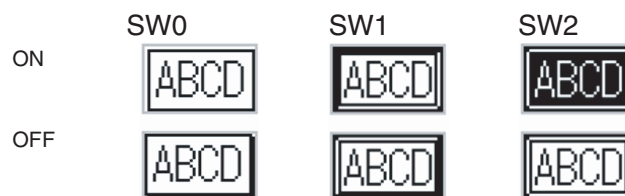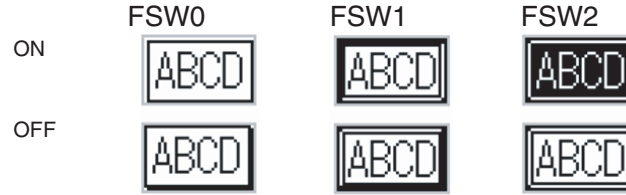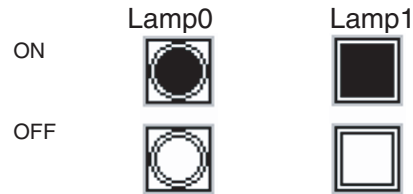
Note   The ON color and OFF color for switches and lamps cannot be set for the NV3W (-V1), and for the NV4W when it is set for 2 shades of gray.

■ **NV3Q-MR□1**

Switches

	SW0	SW1	SW2	SW3	SW4
ON	ABCD	ABCD	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD	ABCD	ABCD

Function Switches

	FSW0	FSW1	FSW2	FSW3	FSW4
ON	ABCD	ABCD	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD	ABCD	ABCD

Lamps

	Lamp0	Lamp1	Lamp2
ON	●	■	○
OFF	○	□	○

■ **NV3Q-SW□1**

Switches

	SW0	SW1	SW2	SW3	SW4
ON	ABCD	ABCD	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD	ABCD	ABCD

Function Switches

	FSW0	FSW1	FSW2	FSW3	FSW4
ON	ABCD	ABCD	ABCD	ABCD	ABCD
OFF	ABCD	ABCD	ABCD	ABCD	ABCD

Lamps

	Lamp0	Lamp1	Lamp2	Lamp3	Lamp4	Lamp5	L amp6
ON							
OFF							
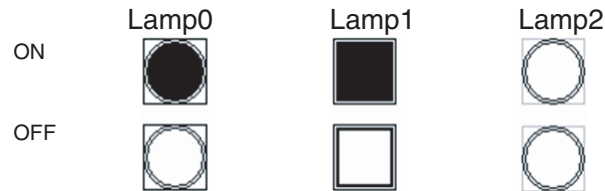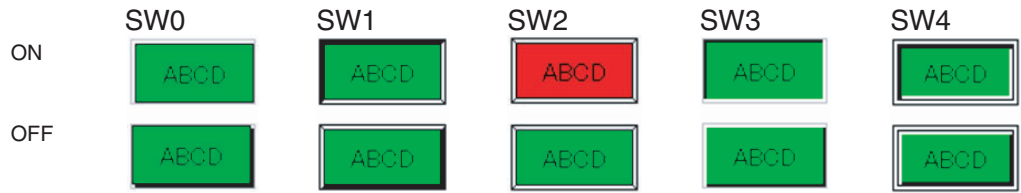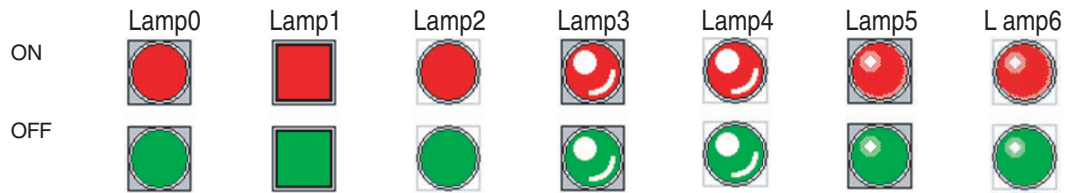
7-2-6 Editing Parts Libraries

A parts from a library can be edited after being placed on a base screen.

> **Additional Information**
>
> When an edited part is to be left as a library, we recommend creating a new parts library and registering the part in that library.

1,2,3... 1. Position the part.
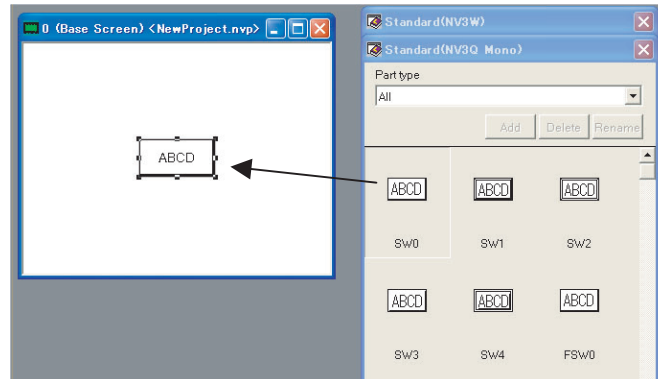
Drag and drop a part from the parts library.

2. Open the Edit Parts Screen.
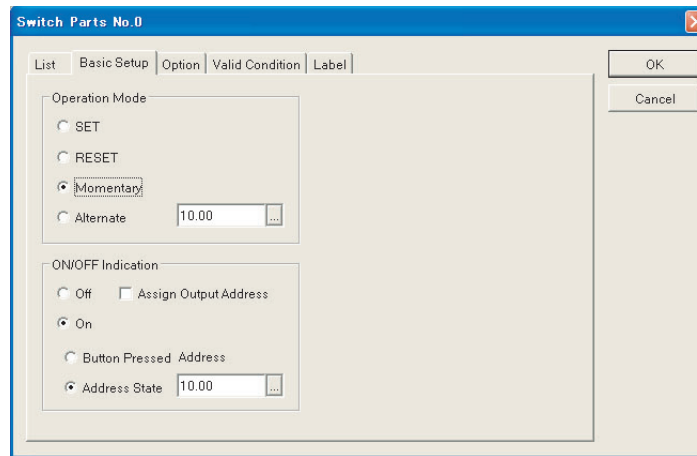
Either double-click the part, or right-click the part and select Attributes.

Change the parts attributes. The actual content to be edited depends on the part that is selected.

7-2-7   Changing the Size of a Part

The following methods can be used.

When you select a part, a selection border is displayed.
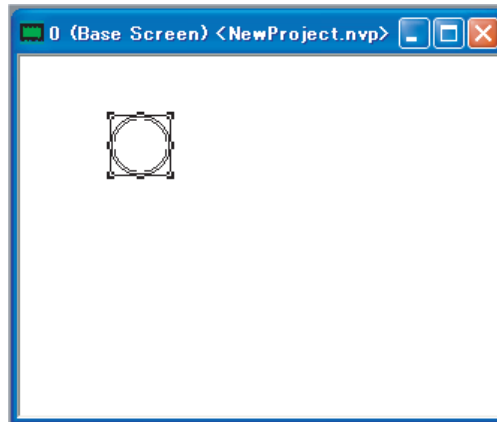
Use the mouse to drag the part handles to the desired size.
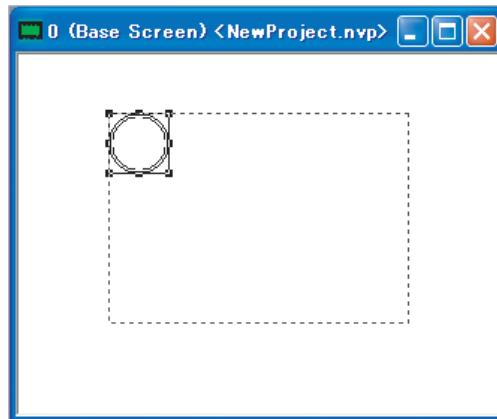
To adjust the size of a part without affecting its aspect ratio, hold down the Shift Key while dragging the part to the desired size.

For a part containing text, however, the smallest possible size is limited by the size of the text.

 The part cannot be made any smaller.
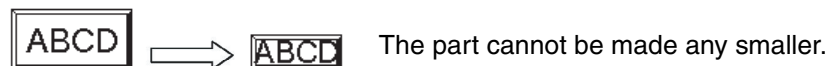
If the size of the character string is made larger than the standard size, the part is automatically enlarged.

 Character size: 16 dots   Character size: 48 dots

7-2-8 User-created Parts Libraries

Users can create both their own parts and also their own parts libraries.
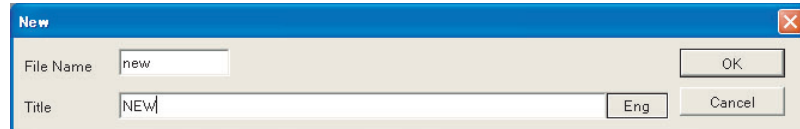
Registering a newly created part (or a part for which the settings have been changed) makes it easy to reuse that part.

The following procedure can be used to register a user-created part and create a parts library.

1,2,3... 1. Input the file name and title of the parts library and click the OK Button.

Select Open Parts Library – Create New from the Parts Menu, and enter a file name and title for the parts library.
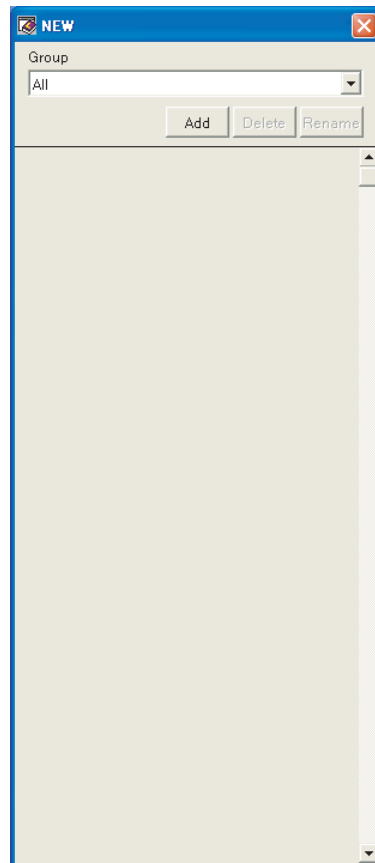
File name: new

Title: NEW

2. The new parts library will be displayed.

Settings Groups

This setting is used when groups are to be created within the parts library.

3. Click the Add Button for the library.

4. Enter a name for the group, and click the OK Button.
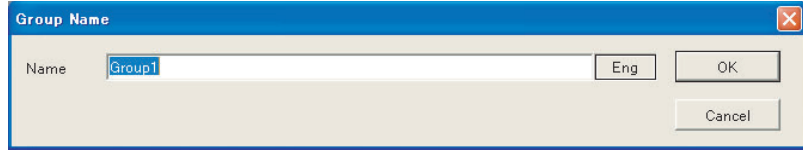
5. The Group Screen will be displayed.
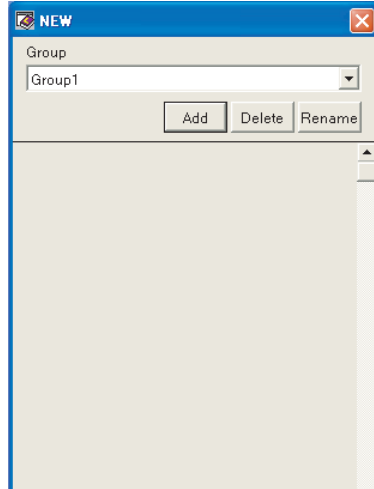
Create the part to register.

6. A user can create a part for the library using a base screen.
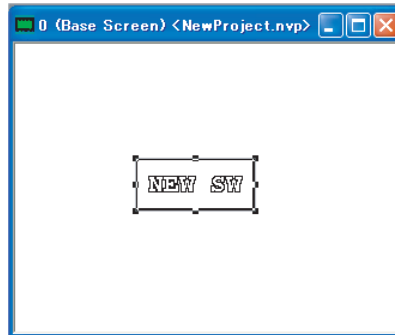
7. Register the part.
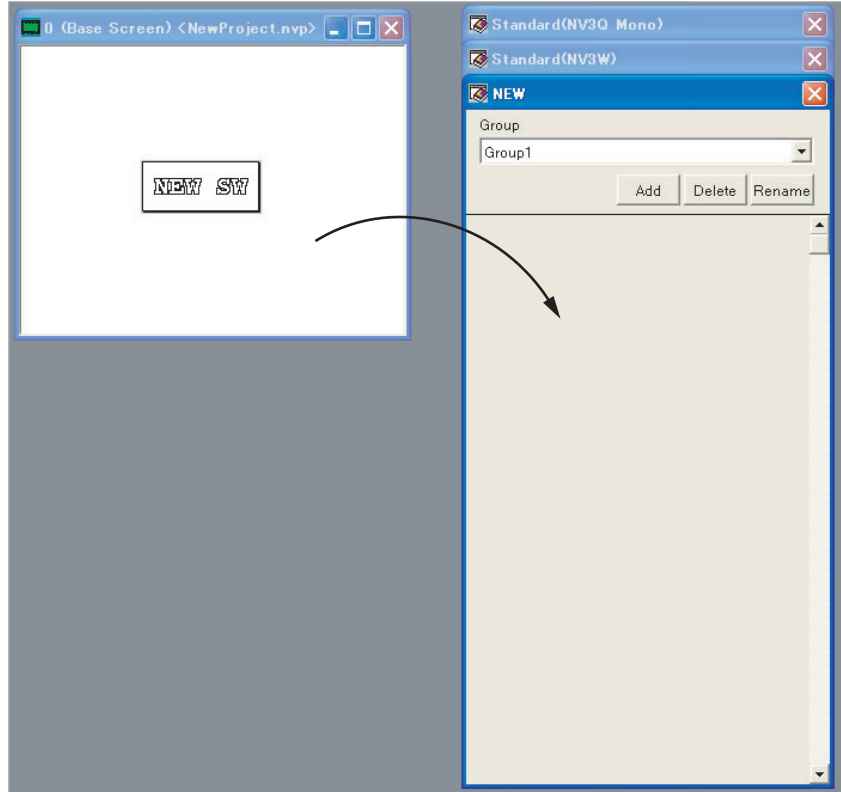
Drag and drop the part that you created on the base screen.

Note It is not possible to move parts between groups. Display groups before you attempt to registered parts.

8. Enter a name for the part to be registered.
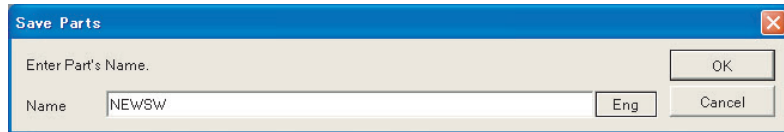
Enter a name for the part, and then click the OK Button.

Part name: NEWSW
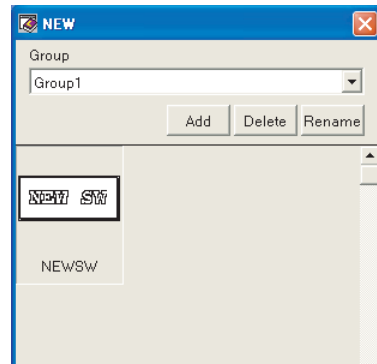
The new, user-created part will be added.

7-3 Specifying Addresses

7-3-1 Specifying Addresses

1,2,3...   1. On the Basic Settings Tab Page of the functional part, click the following Address Setting Button.

Address Setting Button
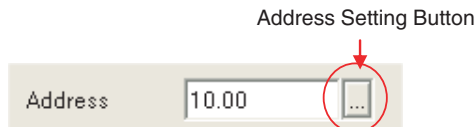
2. The following Address Setting Dialog Box will be displayed.

    Select the area, enter an address, and click the OK Button.

• Specifying Bit Addresses

• Specifying Word Addresses

Select the memory area from the pull-down list.
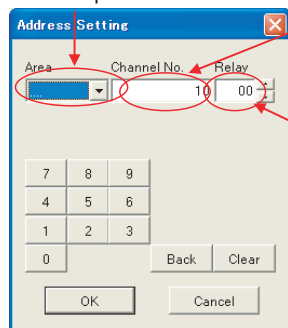
Enter the word address ("Channel No.").

Enter the bit number.

Select the memory area from the pull-down list.
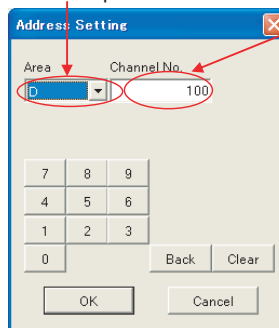
Enter the word address ("Channel No.").

A PLC address or PT internal address can be specified.

Note   Using PLC Multiple Connection with a Model Selection of Modbus (RTU Mode | Temperature Controller) or Modbus (RTU Mode):

Unit numbers for the applicable PLC or Temperature Controller can be selected for each part from a pull-down list if PLC multiple connection is enabled in the NV Configuration.
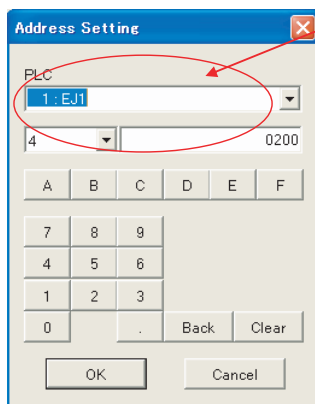
Select the unit number for the applicable PLC or Temperature Controller.

Note   The displayed characters (default: PLC-1) are the comment for the PLC multiple connection in the NV Configuration. The characters can be changed as desired (e.g., Temperature Controller).

7-3-2   OMRON PLC Addresses

The OMRON C, CV/CVM1, CS/CJ, and CP-series addresses that can be set by functional parts are listed in the following tables. Not all addresses are supported by all PLCs. Refer to your PLC manuals and specify only addresses that are supported.

C-series and CV/CVM1-series PLCs

Area		Area specification in pull-down list	Word
Bit addresses	I/O bits	---	000000 to 614315
	Work bits		
	LR Area	LR	LR 00000 to LR 19915
	Auxiliary Area	AR	AR 00000 to AR95915
	HR Area	HR	HR 00000 to HR51115
	Timer Completion Flags	CNT	TIM 00000 to TIM 4095
	Counter Completion Flags	DM	CNT 0000 to CNT 4095
Word addresses	I/O bits	---	0000 to 6143
	Work bits		
	LR Area	LR	LR 000 to LR 199
	Auxiliary Area	AR	AR 000 to AR 959
	HR Area	HR	HR 000 to HR 511
	Timer present values	TIM	TIM 0000 to TIM 4095
	Counter present values	CNT	CNT 0000 to CNT 4095
	Data Memory	DM	DM 0000 to DM 9999

CS/CJ-series and CP-series PLCs

Area		Area specification in pull-down list	Word	Remarks
Bit addresses	I/O bits Work bits	---	0000.00 to 9999.15	*1
	LR Area	L	L 0000.00 to L 9999.15	*1
	SR Area	A	A 0000.00 to A 9999.15	*1
	HR Area	H	H 0000.00 to H 9999.15	*1
	Timer Completion Flags	T	T 0000 to T 4095	*1
	Counter Completion Flags	C	C 0000 to C 4095	*1
	Data Memory	D	D 00000.00 to D 32767.15	*1
	Work Area	W	W 0000.00 to W 9999.15	*1
	EM Area current bank	EM	EM 00000.00 to EM 32767.15	*1
	EM Area specified bank	E	E 0_00000.00 to E 18_32767.15	*2
	Task Flag	TK	TK 00 to TK 31	*1

Area		Area specification in pull-down list	Word	Remarks
Word addresses	I/O bits	---	0000 to 9999	
	Work bits			
	LR Area	L	L 0000 to L 9999	
	SR Area	A	A 0000 to A 9999	
	HR Area	H	H 0000 to H 9999	
	Timer present values	T	T 0000 to T 4095	
	Counter present values	C	C 0000 to C 4095	
	Data Memory	D	D 00000 to D 32767	
	Work Area	W	W 0000 to W 9999	
	EM Area current bank	EM	EM 00000 to EM 32767	
	EM Area specified bank	E	E 0_00000 to E 18_32767	*3
Double-word addresses	Index registers	IR	IR 00 to IR 15	

*1 Enter addresses like this on the NV-Designer:
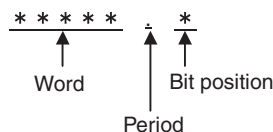
*2 Enter addresses like this on the NV-Designer:
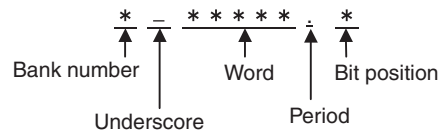
*3 Enter addresses like this on the NV-Designer:
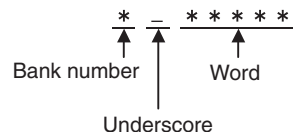
*4 The address that can be used depends on the model.

7-3-3 PT Internal Addresses

The following internal addresses in the PT can be accessed by functional parts.

Area		Word
Bit addresses	CIO Area	GR 0 to GR 255F
Word addresses	CIO Area	WGR 0 to WGR 255
	Data Memory	GDT 0 to GDT 2047

Note "WGR" is used to specify GR data in word units. For example, "WGR1" specifies the 16 bits from GR10 to GR1F.

7-3-4 Address Input with Modbus (RTU Mode | Temperature Controller) Connection

Select 4 for the area.

For the channel number, input in hexadecimal the Modbus address that is set in the parameters of the OMRON EJ1 Temperature Controller.
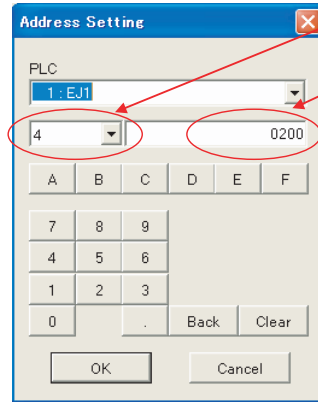
Select 4 for the area.

For the channel number, input in hexadecimal the Modbus address from the parameters of the EJ1.

Address Setting Example

Reading the Present Value of Channel 1

1,2,3...
1. Display the Address Setting Dialog Box and select the unit number of the EJ1 from the PLC pull-down list.
2. Select 4 for the area.
3. Input 0200 for the channel number.
4. Click the OK Button.

For details on EJ1 addresses, refer to the parameter list and status list in the appendices of the *EJ1 Modular Temperature Controller User's Manual* (Cat. No. H142).

Note (1) When Modbus (RTU Mode) is selected, select any of the following address input methods for the area.

1: Reading coil state

2: Reading input bit state

3: Reading holding register contents

4: Reading input register contents

5: Writing single coil state

F: Writing coil state

10: Writing holding register contents

(2) When a Modbus Slave (RTU Mode) is selected, set GR (bit) or WGR/GDT (word) as the address input method for the area.

(3) For information on connection using Modbus, refer to the *NV-series Host Connection Manual* (Cat. No. V105).

7-3-5 Index Modifiers

For the data parts, the address in which to store the data during execution can be changed using an index modifier. When it is utilized, the data are to be stored in an address specified by adding to the part-assigned address the value stored in the address designated by the index modifier.

1. Select the Index Registration Tab Page in the NV Configuration Dialog Box.
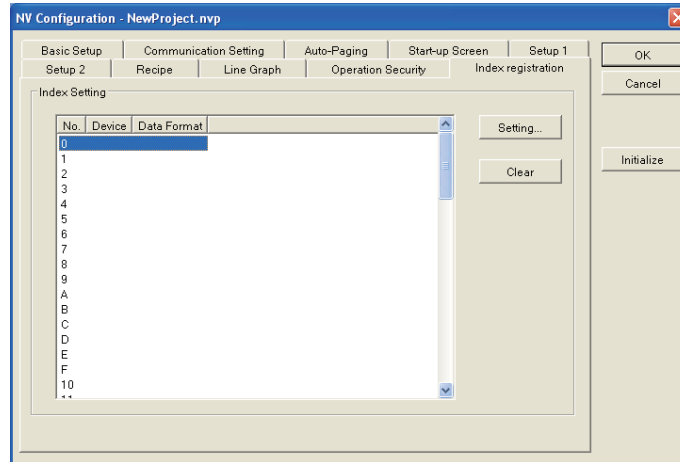
2. Click the Settings button to open the dialog, and specify the address to be used as an index.
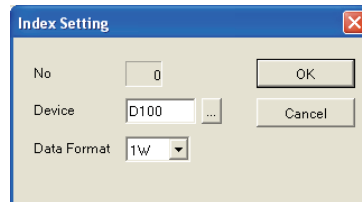
3. After creating a data part, double-click the part to open the property dialog.
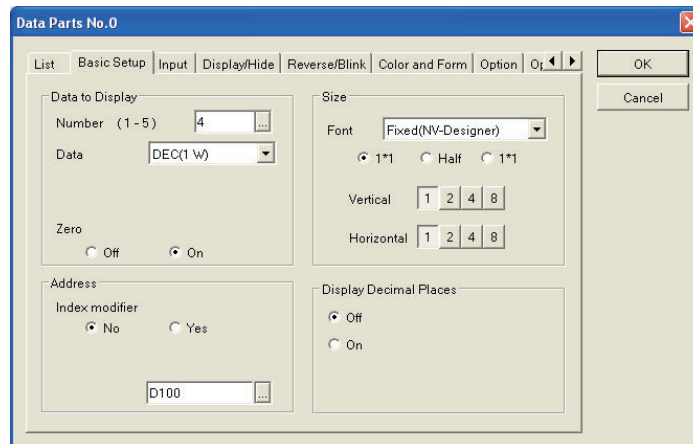
4. In Communication Address on the Basic Setup Tab Page, select ON of In-
    dex Modifier.
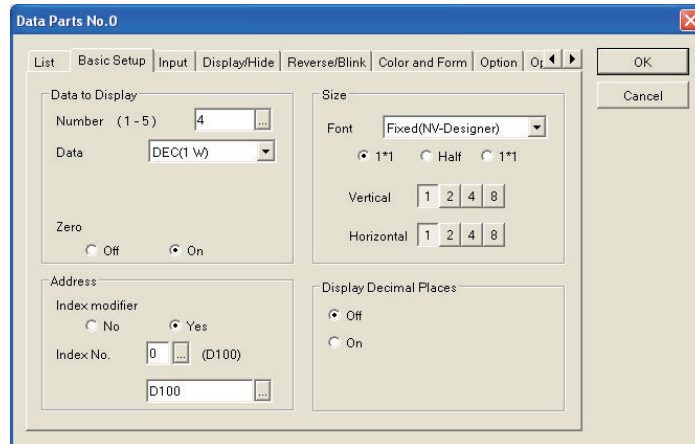
5. In the Index field below, set the index number that has been specified in
    the NV Configuration Dialog Box.

Example

The address specified for the index: D0

The communication address for the part: D100

When 10 is stored in D0, the data part will store the data in D110.

7-4   Bit Switches ("Switch")

7-4-1   Bit Switches

Bit switches can be used to turn ON and OFF specified bits in the PLC.

Set the bit address when setting the operating mode of the switch.

7-4-2   Default Settings of Bit Switches

Basic Setup	Operation Mode	Momentary	10.00
	ON/OFF Indication	On	10.00
Color Setup	The color depends on the switch part.		
Option	Key Press Sound	On	
Display/Hide	Display		
Valid Condition	Always Operational		
Operation Security	Display Restriction	Off	
	Operation Restriction	Off	
Label	When OFF	Character String	
		Font	Fixed (NV-Designer)
		Align	Left, Top
		Size	1[*1], x1 vertically and x1 horizontally.
		Language No.	Language 0
		Style	(None)
		Color: Character	Black
		Color: Background	None
	When ON	Character String	A B C D
		Font	Fixed (NV-Designer)
		Align	Left, Top
		Size	1[*1], x1 vertically and x1 horizontally.
		Language No.	Language 0
		Style	(None)
		Color: Character	Black
		Color: Background	None

7-4-3   Operation Modes of Bit Switches

Set	The specified bit in the PLC is turned ON.
Reset	The specified bit in the PLC is turned OFF.
Momentary	The bit is ON as long as the switch is held down.
Alternate	Pressing the switch once turns the bit ON or OFF.

7-4-4   Bit Switch Settings

📖 **See Also**

Setting methods are described while creating a screen.

Refer to *4-2-4 Creating Base Screens*.

7-5   Function Switches

7-5-1   Function Switches

Function switches are used to switch between screens, perform addition or subtraction, switch the displayed language, etc.

7-5-2   Default Settings of Function Switches

Basic Setup	Operation Mode	Change Screen	Screen 0
		Multi Function	OFF
ON/OFF Display	ON/OFF Indication	On	Address State, Address: 10.00
Color Setup	(Depends on the function switch)		
Option	Key Press Sound	On	
Display/Hide	Display		
Valid Condition	Always Operational		
Operation Security	Display Restriction	Off	
	Operation Restriction	Off	
Label	When OFF	Character String	ABCD
		Font	Fixed (NV-Designer)
		Align	Left, Top
		Size	1^{*1}, x1 vertically and x1 horizontally.
		Language No.	Language 0
		Style	(None)
		Color: Character	Black
		Color: Background	None
	When ON	Character String	ABDC
		Font	Fixed (NV-Designer)
		Align	Left, Top
		Size	1^{*1}, x1 vertically and x1 horizontally.
		Language No.	Language 0
		Style	(None)
		Color: Character	Black
		Color: Background	None

7-5-3   Operation Modes of Function Switches

Set	The specified bit in the PLC is turned ON.
Reset	The specified bit in the PLC is turned OFF.
Momentary	The bit is ON as long as the switch is held down.
Alternate	Pressing the switch once turns the bit ON or OFF.
Change Screen	The display changes to the specified screen.
Value Set	A 1-word or 2-word value is written to the specified word or words in the PLC.
Add	A 1-word or 2-word value is added to the contents of the specified address in the PLC and the result is written to the specified address in the PLC.
Subtract	A 1-word or 2-word value is subtracted from the contents of the specified address in the PLC and the result is written to the specified address in the PLC.
Display System Menu	Select the screen to be called, such as Clock Set, Contrast, or NV Configuration Main.
Thumbwheel Switch	A function switch can be used as a thumbwheel switch. Touching the switch causes the contents of the specified address in the PLC to be incremented or decremented by 1.
Back to Previous Screen	Returns the previous screen Note: Not recommended when the Operation Security Function is being used.
Change Language No.[1]	The display changes to the specified language.
Change Language No. (INC/DEC)[1]	Switches between multiple specified languages each time the switch is pressed.
To Operate Alarm Parts	NV3W-V1/ NV4W/NV3Q only	This mode is used to manipulate alarm list parts.
For Operation Security Function		Used as a switch for the operation security function. Select the desired function from Login, Logout, Password Change Normal, and Password Management (Manager Only).
Multifunction		Executes multiple operations using one switch.

> *1 *Change Language No.* and *Change Language No. (INC/DEC)* are displayed only if *Multi-Language Exchange* is set to ON under **Tool** − **NV-Designer Configuration** − **Language**.

> **Note**   Function switches include Multifunction Objects, which can perform multiple operations using one switch. For details, refer to *7-13 Multifunction Objects*.

7-5-4   Function Switches Settings

📖 **See Also**

> Setting methods are described while creating a screen. Refer to *4-2-4 Creating Base Screens*.
> For details on how to switch between screens, refer to *2-2 Displaying Screens*.

7-6 Lamps

7-6-1 Lamps

The display color of a lamp changes when the specified bit in the PLC turns ON and OFF.

7-6-2 Default Settings of Lamps

Basic Setup	ON/OFF Bit	Address 10.00	
Color Setup	ON color	The color depends on the lamp part.	
	OFF color		
	Background		
Operation Security	Display Restriction	Off	
Label	When OFF	Character String	Not supported.
		Font	True Type (NV-Designer)
		Align	Left, Top
		Size: Number of dots	16
		Language No.	Language 0
		Style	(None)
		Color: Character	Black
		Color: Background	None
	When ON	Character String	
		Font	True Type (NV-Designer)
		Align	Left, Top
		Size: Number of dots	16
		Language No.	Language 0
		Style	(None)
		Color: Character	Depends on the lamp.
		Color: Background	None

7-6-3 Lamp Settings

📖 **See Also**

Setting methods are described while creating a screen.
Refer to *4-2-4 Creating Base Screens*.

7-7 Data Parts and Keyboard Parts

7-7-1 Data Parts and Keyboard Parts

Data Parts

- Data parts display the contents of addresses in the PLC PT screen.

Keyboard Parts

- A keyboard part is used to enter numerical values to be displayed by a data part.
- There are two ways to use keyboard parts.
    a. Display on PT screen: Displayed together with the data part on the PT screen.
    b. Keyboard Editing Screen: Touching a data part on a PT screen causes the Edit Keyboard Screen to appear. Touching the ENT Key causes the original screen to return.

7-7-2 Default Settings of Keyboard Parts

	Keyboard Setup	(Depends on the type of the part)	
Basic Setup	Number of keys	Vertical	4
		Horizontal	3
	Change the Keyboard	Off	
	Key Size	Height	40
		Width	40
Operation	On/Off Keyboard	Display Only on Entry of Data	
	Reversed When Pressed	On	
	Touch Sound	Enable	
Color and Form	Image	1	
	Color Setup	Character	Black
		Key	White
		Tiling	Off
Operation Security	Display Restriction	Off	

Note With a decimal keyboard, a decimal point can be entered for some parts but not for others.

7-7-3   Default Settings of Data Parts

Basic Setup	Data to Display	Number	4
	Data	DEC (1W)	
	Zero Suppression	On	
	Address	D100	
		Index modifier	No
	Size	Font	Fixed (NV-Designer), Normal
		Vertical	1
		Horizontal	1
	Display Decimal Places	Off	
Input	Off		
Display/Hide	Display		
Reverse/Blink	Normal	Off	
	When Condition is True	Off	
Color and Form	Color	Character	Black
		Background	White
	Display Frame	Off	
Option	Scaling	Off	
Operation Security	Display Restriction	Off	
	Operation Restriction	Off	

7-7-4   Settings for Creating an Edit Keyboard Screen

Creating a Sample Screen

Screen 0 — Touch the data part.

Keyboard screens — Screen 0 — Enter a value.

Screen 0 — The value will be displayed in the data part
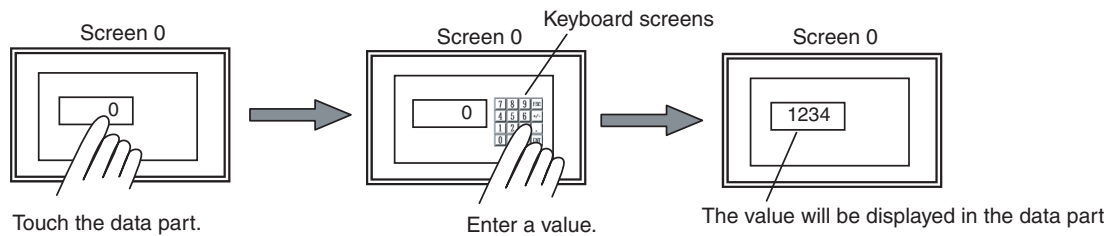
1,2,3...   1. Open base screen 0 and position a data part. (Select *Parts No.* from the View Menu to display part numbers in advance.)
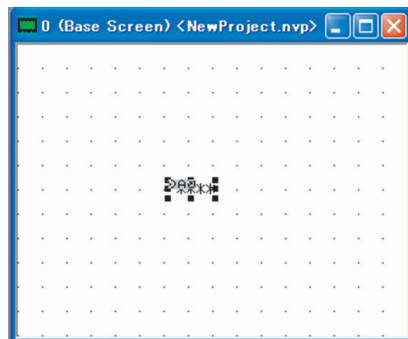
Click "0" in the Screen Manager, and then drag the data part from the standard parts library and drop it on the base screen.

134

2. Double-click the data part and change the basic setup.
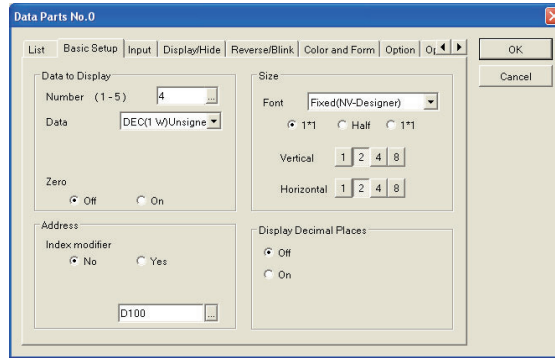
Double-click part number "DA0" then make the basic settings as shown below.

Basic Setup

Data:	[DEC (1W) Unsigned)]
Zero Suppression:	Off
Address:	D130
Font:	Vertical: 2 Horizontal: 2
Index modifier:	No

3. Sets the color and form.
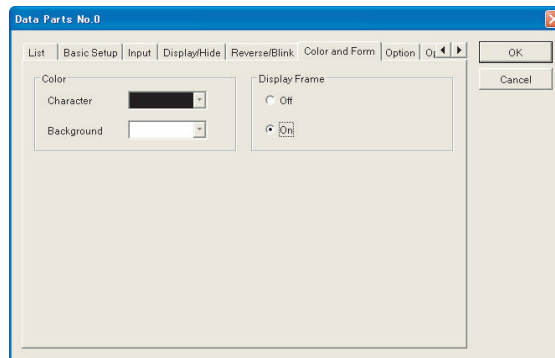
Click the *Color and Form* Tab, make the settings shown below, then click the OK Button.

(Make the input settings later.)

Display Frame: On

Do not change the settings on the Reverse/Blink Tab Page.

4. Select the Keyboard Screen.
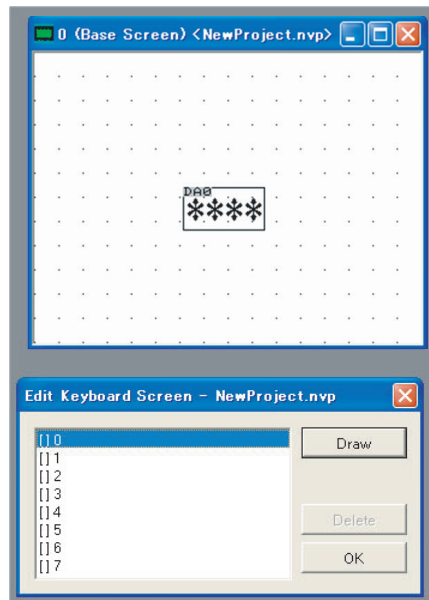
Select File - Keyboard Screen from the menu bar.

The Edit Keyboard Screen Dialog Box will be displayed.

Click *[ ] 0*, and then click the Edit Screen Button.

5. Arrange keyboards and data parts on the keyboard screen.
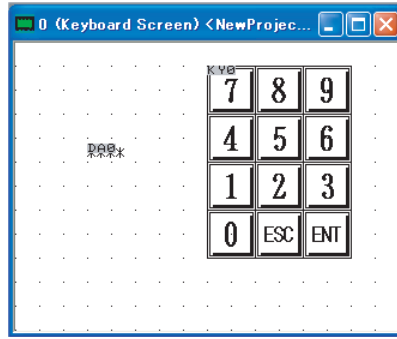
Drag the DEC Sign 1 Keyboard Part and the data part from the standard parts library and drop them on the keyboard screen.

(Do not change the settings of KY0 and DA0 on keyboard screen 0.)

You do not need to set the data format for the data part on the keyboard screen.

The data format of the data that is automatically loaded will be set automatically.

Set the number of data digits to the same or higher than the number of data digits in the data being loaded.

6. Double-click the data part and change the input attributes.
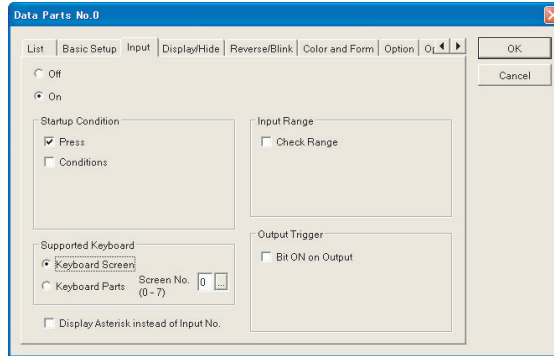
Double-click DA0 on the base screen, then click the Input Tab.

Make the following settings, and then click the OK Button.

Select the *On* Option.

7. Enter text and frames into the data and keyboard parts.
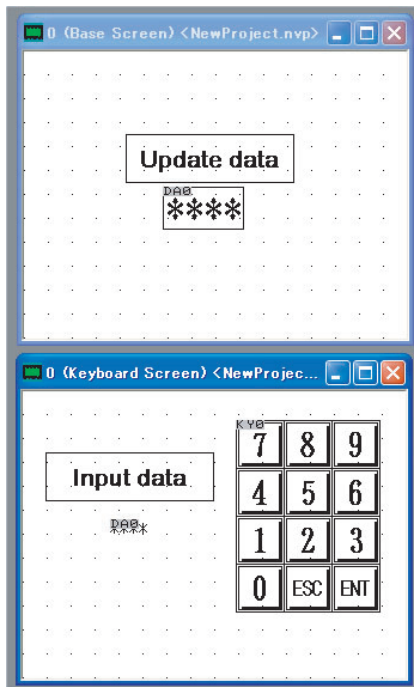
After making the above settings, enter "Update data" on DA0 on the base screen.

Next to KY0 on keyboard screen 0, enter the text "Input data" and then place a frame around the text.

8. Transfer the screen to the PT.

9. Check the display on the PT.
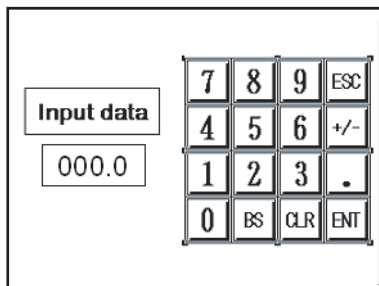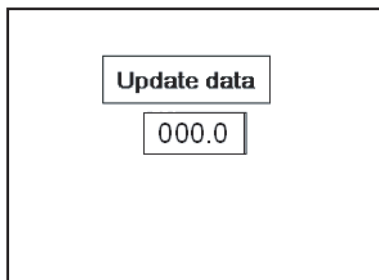
When data has been transferred, the parts created on the NV-Designer will be displayed on the PT screen.

Touch the data part on the panel to switch to the *Input data* screen.

Enter a value, then touch the ENT Key to return to the *Update data* screen.

7-8 Level Meters

7-8-1 Default Settings of Level Meters

Basic Setup	Address	Address	D100
	Data Format	DEC 1W unsigned	
	Graph Type	Direction	Right
	Max./Min.	Max.	Fixed (1 to 65,535)
		Min.	Fixed (0 to 65,534)
Reverse/Blink	Normal	Off	
	When Condition is True	Off	
Color and Form	Image	Black/White	
	Display Frame	On	
	Graph Design	Bar Color	Black
		Background Color	White
		Tiling Pattern	White
		Pattern Color	White
Display Numeric	Off		
Operation Security	Display Restriction	Off	

7-8-2 Displaying the Contents of a Word from the PLC Unit a Level Meter

Creating a Sample Screen
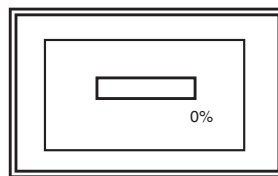
The contents of the specified address is changed by the PLC program.
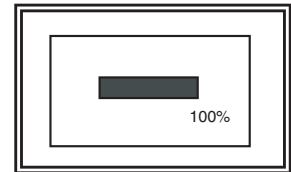
The change in contents is converted and displayed as a percentage

1,2,3... 1. Open base screen 0 and position a level meters.
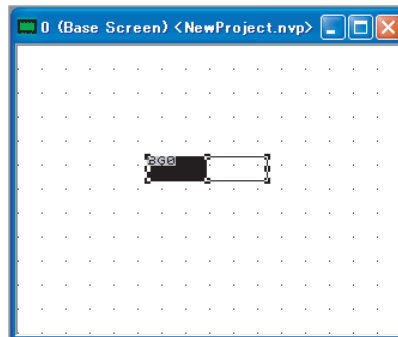
Click "0" in the Screen Manager, and then drag a level meters from the standard parts library and drop it on the base screen.

2.   Double-click the level meters. Set the basic setup.
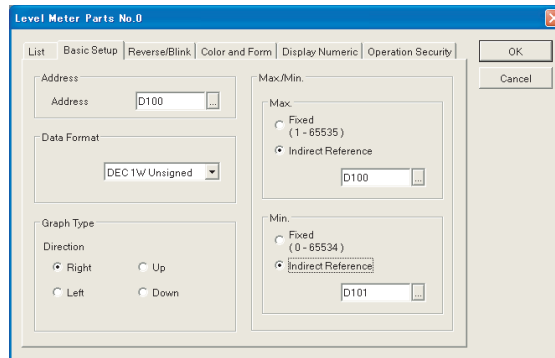
Set the maximum and minimum values.

Leave the default settings (Max.: 100; Min.: 0) as is.

3.   Change the set values.
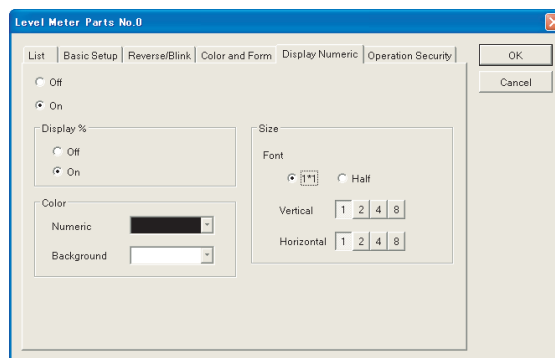
Click the Display Numeric Tab.

Select the *On* Option.

Display %:   On

Font: Fixed (NV-Designer), Vertical: 1, Horizontal: 1

Note The displayed value is the percentage of the difference between the maximum value and minimum value.

Select the *On* Option for the *Display* % attribute to display the percentage followed by the percentage sign.

4.   Make the settings on the Display Numeric Tab Page.
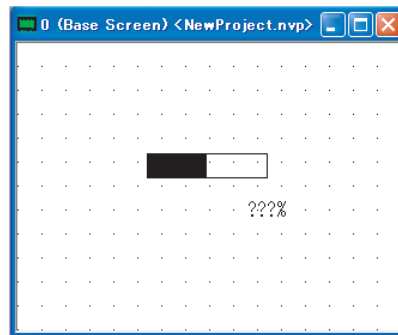
Click the OK Button to display the value as a percentage enclosed in a frame, and then click a point under the graph as shown on the left.

5.   After the settings have been made, transfer the screen data to the PT.

139

6. Check the display on the PT.

When the transfer has been completed, the level meters created on the NV-Designer will be displayed on the PT.

7. Check the operation of the level meter.

Movement of the Bar

The bar should move between 0% and 100% when the contents of D100 is changed.

7-9 Clocks

7-9-1 Default Settings for Clocks

Basic Setup	Clock	Hour (24 hours)	
	Zero suppression	On	
	Size	Font	Fixed (NV-Designer), 1*1
		Vertical	1
		Horizontal	1
Reverse/Blink	Normal	Off	
	When Condition is True	Off	
Color and Form	Color	Character	Black
		Background	White
	Display Frame	Off	
Operation Security	Display Restriction	Off	

7-9-2 Displaying Clocks

Creating a Sample Screen

You can use the following procedure to set the year, month, day, hour, minutes, and seconds.

1,2,3... 1. Open base screen 0 and position a clock part.
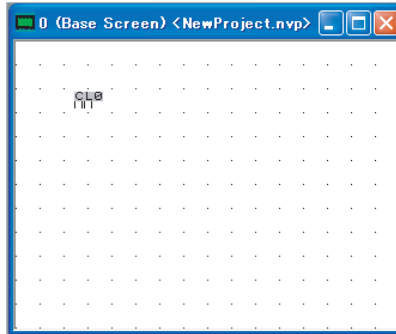
Click "0" in the Screen Manager, and then drag the clock part from the standard parts library and drop it on the base screen.

2. Copy and paste the part.
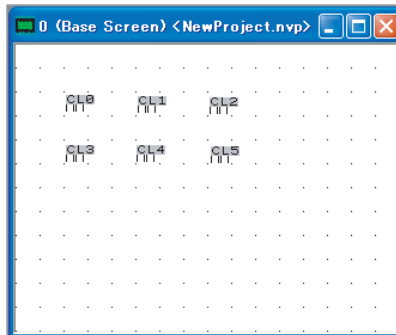
Use the repeat copy function to arrange the parts as shown on the left.

Copying can be done by either right-clicking and selecting Copy, or by using Ctrl + C.

3. Double-click CL0 of the clock part at the upper left and change the settings.
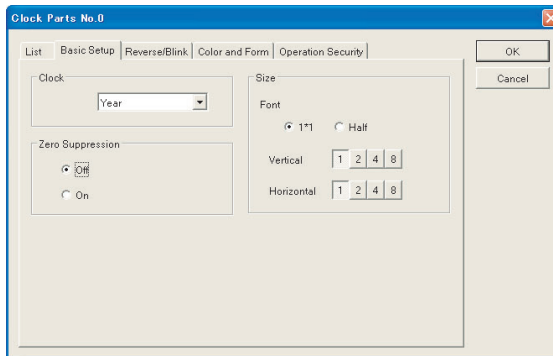
Double-click "CLO" at the upper left and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Year

Zero suppression: Off

4. Double-click the data part in the center and change the settings.
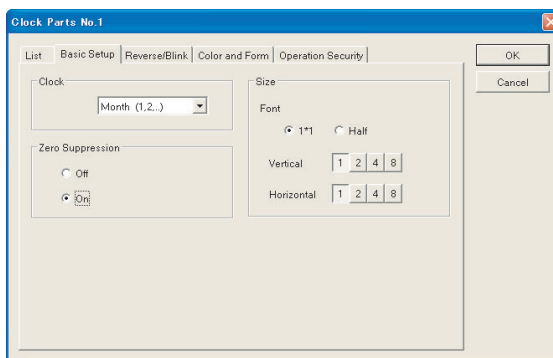
Double-click "CL1" at the upper center and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Month (1, 2, ...)

Note The month can be selected from a table.

5. Double-click the clock part at the upper right and change the settings.
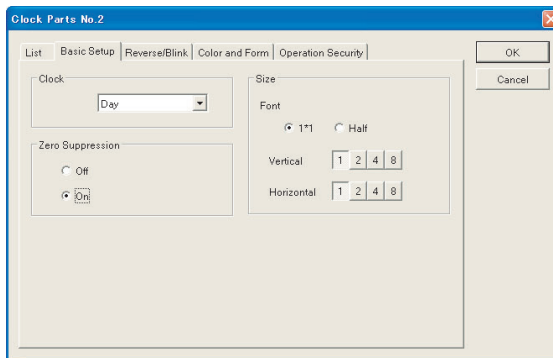
Double-click "CL2" at the upper right and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Day

6. Double-click the data part at the lower left and change the settings.
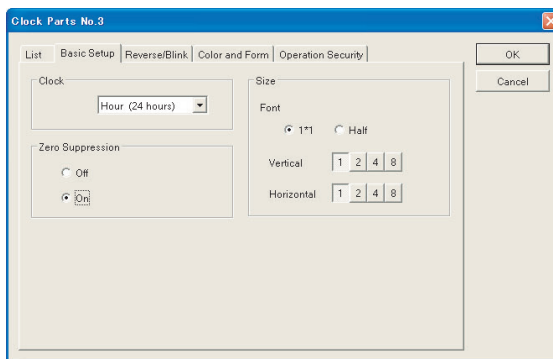
Double-click "CL3" at the upper right and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Hour (in 24-hr format)

7. Double-click the data part in the lower center and change the settings.
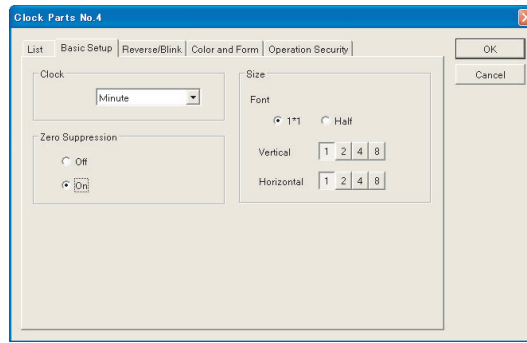
Double-click "CL4" at the upper right and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Minutes

8. Double-click the data part at the lower right and change the settings.
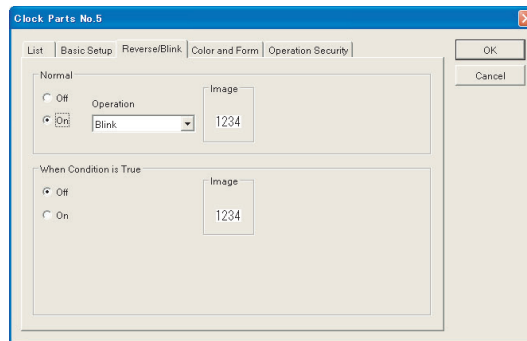
Double-click "CL5" at the upper left and change the settings as shown below.

Click the OK Button when you are finished.

Basic Setup

Clock: Seconds

Reverse/Blink: Normal,
                 Blink

9. Enter character strings and frames on the base screen.
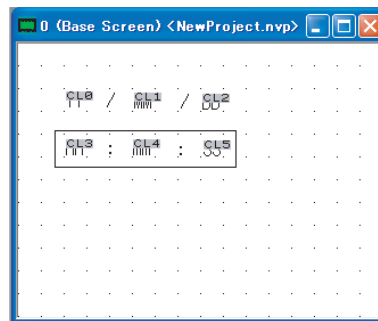
After all settings have been made, enclose the date and time in a rectangle as shown on the left, and then enter the year, month, day, hour, minutes, and seconds.

10. Transfer the screen to the PT.

11. Check the display on the PT.

When the transfer has been completed, the clock parts created on the NV-Designer will be displayed on the PT.

Precaution for Correct Operation

When using a clock part, you can select either the PT clock or PLC clock in the NV Configuration.

• **Clock in the PT**

Settings can be made with the NV4W/NV3Q, provided a Battery is installed.

• **PLC Clock**

Always set the PLC clock when a Battery is not being used.

• Refer to *6-2-8 Setup 1 Tab Page* for details on clock settings.

143

7-10 Line Graphs

7-10-1 Default Settings for Line Graphs

Basic Setup	Function	Data Log	
	Reference	Graph No.	0
		Number of Lines	1
	Graph Type	Pen Move	
		Number of Scrolls	1
	Direction	Right	
	Stop Updating	Off	
	Display Points	Display	NV3W (-V1)/NV4W: 32
			NV3Q: 80
Display	Display Data	Plot Interval (Dot)	1
	Background Color	White	
	Display Frame	Whole	
		Color	Black
	Scale	Horizontal Line	On
		Number of Divisions	4
		Color	Black
		Vertical Line	On
		Number of Divisions	NV3W (-V1)/NV4W: 4
			NV3Q: 10
		Color	Black
Operation Security	Display Restriction	Off	
Element Setup	Line Settings	Comment	
		Data Format	DEC 1W Unsigned
		Max./Min.	Max.: Fixed
			Min.: Fixed
	Reverse/Blink	Normal	Off
		When Condition is True	Off
	Color and Form	Line Type/Color/Mark	Type: Thin
			Color: Black
			Mark: None
Display Fixed Line	Comment		
	Display Position	Data Format	DEC 1W Unsigned
		Max.	100
		Min.	0
		Value (Position)	50
	Line Type/Color	Type	Solid thin
		Color	Black

7-10-2 Overview of Line Graphs

Line Graph Characteristics

Line graphs have the following characteristics.

- A single line graph part can display up to eight lines.
- For line graphs, either of two drawing modes can be selected: Data Log or Broken-line Graph.
- Sampled values are saved in the history memory in the PT.
- The line graph data saved in the PT can be saved in CSV format using the NV Memory Editor.

Refer to *Appendix A NV Memory Editor* for information on the NV Memory Editor.

- Data can be sampled in up to five groups.
- Sampling can be started and stopped for each line graph sampling group.

Drawing Mode

■ <u>Data Log</u>

In this mode, data is read from the PLC into the internal memory of the PT at specified intervals in one- or two-word units.

■ **Description of Operation**

The PT reads data from the PLC at the specified interval, and then saves it into internal memory. The values saved in internal memory in the PT are displayed by the line graph part. The graph is updated at the specified interval.
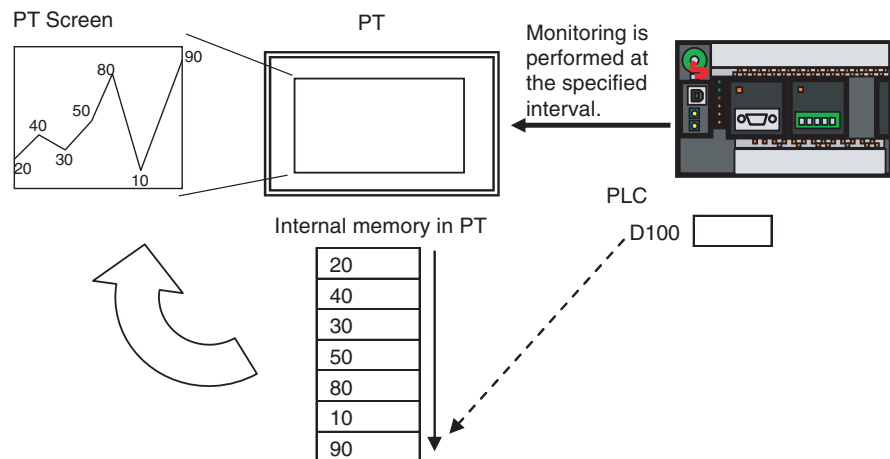
■ **Graph Type**

There are two types of line graphs.

Pen Move: Once the display area is full, the graph is scrolled by a set amount equal to a few minutes of data, after which graph drawing is resumed.

Sheet Move: As monitoring is performed, the graph is drawn in the specified direction.

■<u>Broken-Line Graph</u>

A bit in the PLC is used as a trigger to prompt the NV-Series to batch-read multiple words of data from the PLC.

■ **Description of Operation**

When the specified bit in the PLC turns ON, the PT reads data from the PLC. The data is displayed on the line graph. While the bit is ON, the graph is constantly updated.
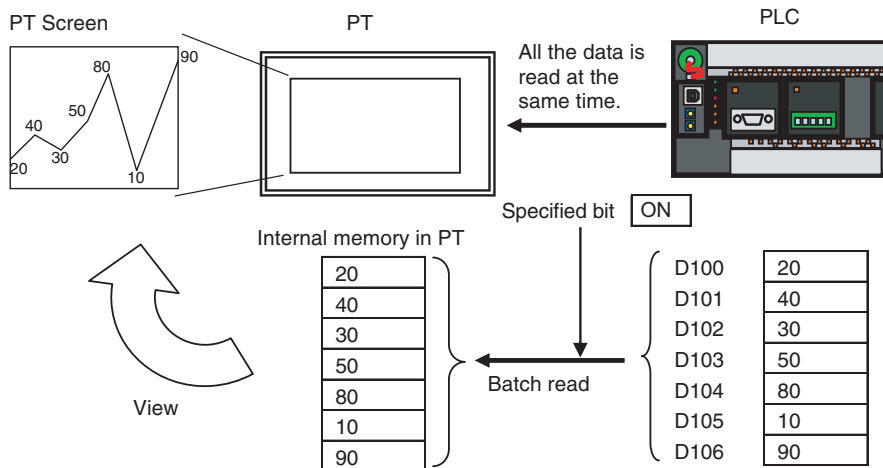
Settings in the NV Configuration

Up to five sampling methods (groups 0 to 4) can be set.

■ Data Log

Sampling is started from the start address and continued for the number of words equal to (number of graph lines) x (number of words specified for data format). For example, for 5 lines and the DEC 2W data format, 5 (lines) x 2 (words) = 10 words, sampled starting from the start address.

■ Data Format

Specify the data type for sampling data.

■ Number of Lines

Specify the number of graph lines to be used for sampling. This is not the setting for the number of graph lines that are to be displayed. Set the number of graph lines to display with the line graph part.

Note (1) For the number of graph lines specified above, set a value that is greater than the number of graph lines that are to be displayed.

(2) Use a line graph part to set the number of graph lines to be displayed on the screen.

■ Sampling Trigger

Specify the timing at which sampling is to be performed. The internal timer is used to sample the data from the PLC at a constant interval. Select specifying an address to perform sampling based on the status of a bit in the PLC.

■ Storage Area

Set the number of values sampled from the PLC to record. Sampled data is written into internal memory in the PT.

Note The setting must be larger than the setting for Display Point in the line graph part.

■ **Line Graph Control (2 Words)**

Bits Word	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
n	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 4 Memory Overflow Flag	Group 3 Memory Overflow Flag	Group 2 Memory Overflow Flag	Group 1 Memory Overflow Flag	Group 0 Memory Overflow Flag	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 4 Monitor Stop Bit	Group 3 Monitor Stop Bit	Group 2 Monitor Stop Bit	Group 1 Monitor Stop Bit	Group 0 Monitor Stop Bit
n+1	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 4 Memory Cleared Flag	Group 3 Memory Cleared Flag	Group 2 Memory Cleared Flag	Group 1 Memory Cleared Flag	Group 0 Memory Cleared Flag	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 4 Memory Clear Bit	Group 3 Memory Clear Bit	Group 2 Memory Clear Bit	Group 1 Memory Clear Bit	Group 0 Memory Clear Bit

Group Monitor Stop Bits: Sampling will be stopped if the bit is turned ON from the PLC.

Group Memory Overflow Flags: The flag will turn ON if the number of sampled alarms exceeds the number of records to store that is set in the NV Configuration. The flag will remain ON until memory is cleared.

Group Memory Clear Bits: The recorded data will be cleared if the bit is turned ON from the PLC. Do not turn OFF a bit until the corresponding Memory Cleared Flag turns ON.

Group Memory Cleared Flags: The PT will turn ON the corresponding flag when the memory in the PT has been cleared. The flag will not turn OFF until the Memory Clear Bit has been turned OFF.
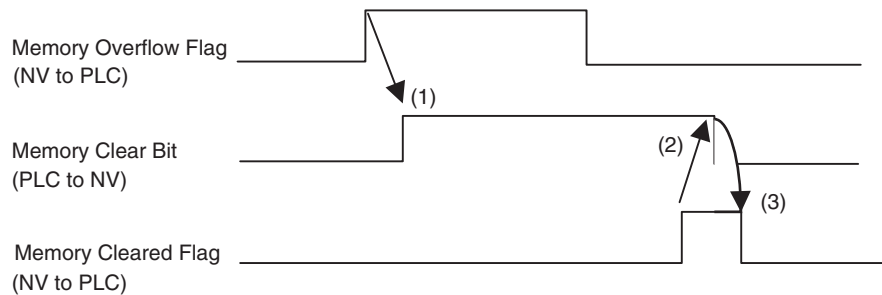
(1) If the Memory Overflow Flag turns ON, the Memory Clear Bit is turned ON to clear memory contents.

    (2) After confirming that the Memory Cleared Flag has turned ON, turn OFF the Memory Clear Bit.

    (3) When the Memory Clear Bit has been turned OFF, the Memory Cleared Flag will turn OFF automatically.

Description of Items Specified in Attribute of Line Graph

■ **Function**

Select Data Log to display a graph created by sampling PLC data (1 or 2 words). Select Broken-line Graph to display a graph of the stored data that is read from the PLC.

■ **Reference**

Sampling is specified for each group number using the method set in the NV Configuration. For the Number of Lines, set the number of lines to be displayed. Up to 8 lines can be displayed.

■ **Graph Type**

Select the method used to plot the graph. Either Pen Move or Sheet Move can be selected. If Pen Move is set, the graph will be drawn simulating the movement of a pen. If Sheet Move is set, the graph will be drawn as if the pen were fixed while the sheet is moved.

■ **Direction**

Set the direction in which either the pen or the sheet is moved, depending on the graph type.

    Note   The display method depends on the graph type and direction settings, so confirm the operation on the PT.

■ **Stop Updating**

The specified bit can be used to stop updating the display. Updating the display will be stopped while the specified bit is ON. Sampling will continue.

■ **Display Points**

Set the number of points that are displayed when plotting the graph. If 100 is set for Display Point, then the number of records that is set in the PT Configuration must be greater than 100.

7-10-3 Displaying Graphs after Sampling PLC data for a Specified Interval

Basic Operation

1,2,3...   1.   Make the data log settings for the line graph in the NC Configuration.
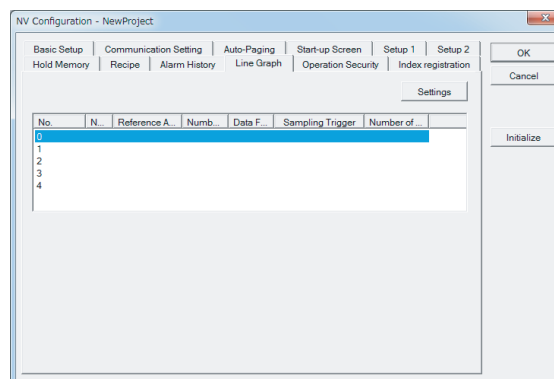
Select NV Configuration from the PT Menu. Click the Line Graph Tab.

2. Select group 0, click the Settings Button, and then set the log data.
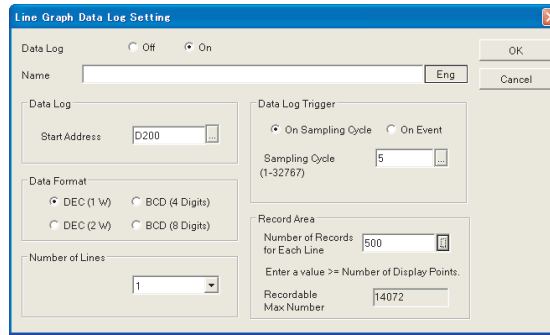
Make the following settings, and then click the OK Button.

Data Log:	On
Start Address:	D200
Data Format:	DEC (1 W)
Number of Lines:	1
Sampling Trigger:	On Sampling Cycle
Sampling Cycle:	5
Record Area	
Number of Records for Each Line:	500

3. Set line graph control on the Line Graph Tab Page.
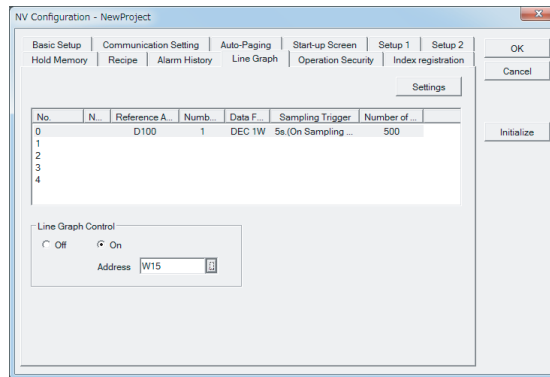
Make the following settings, and then click the OK Button.

Line Graph Control:	On
Address:	W15

4. Open base screen 0 and position a line graph part.
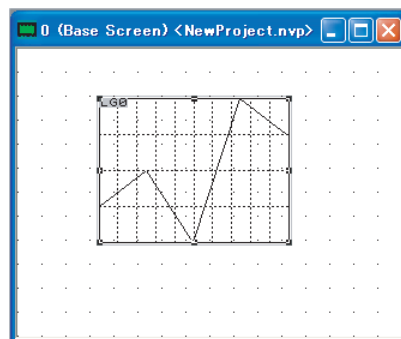
Double-click "0" in the Screen Manager, and then drag the line graph part from the standard parts library and drop it on the base screen.

149

5. Double-click the line graph part and change the basic setup.
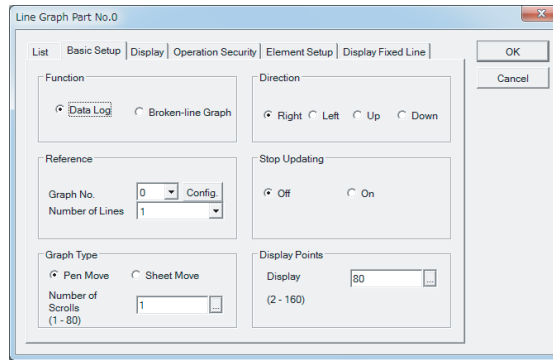
Double-click the parts number LGO on the base screen, and make the following settings.

Function: Data Log

Graph No.:   0

Number of Lines: 1

Graph Type: Pen Move

Number of
Scrolls: 1

Direction: Right

Stop Updating: Off

Display Points: 80

6. Click the Display Tab and set the attributes.
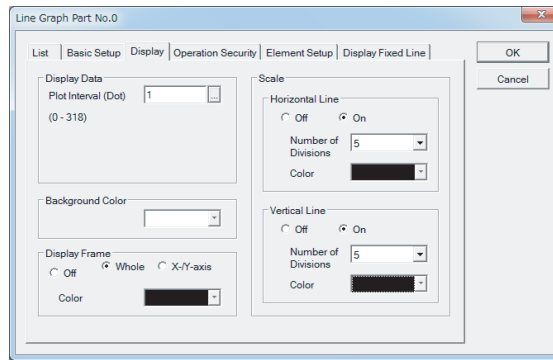
Click the Display Tab and make the following settings.

Display Data Plot
Interval (Dot):   1

Background Color: White

Display Frame: Whole

Scale

Horizontal Line: On

Number of Divisions: 5

Vertical Line: On

Number of Divisions: 5

7. Click the Element Setup Tab and double-click row 0.
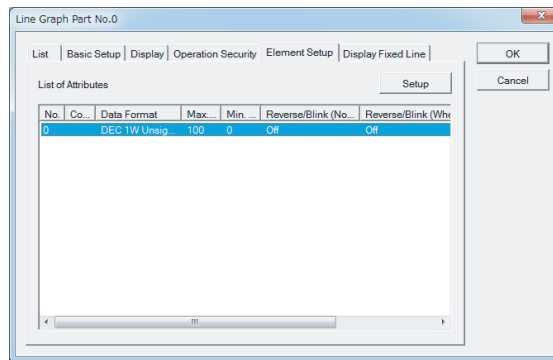
8. Make the line settings for the line graph.
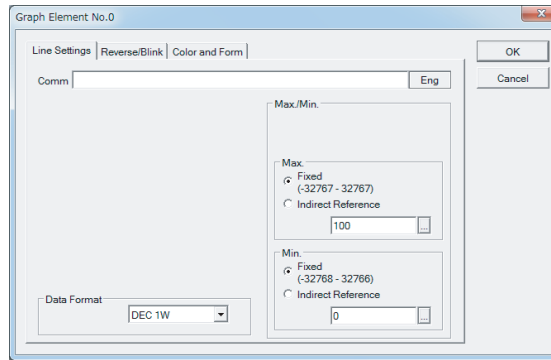
Make the following settings, and then click the OK Button.

Line Settings Tab
Data Format: DEC 1W

Max./Min.

Max.: Fixed, 100

Min.: Fixed, 0

Set the maximum and minimum Y-axis values.

Note Color and Form Tab: As desired.

Do not change the Reverse/Blink settings for this sample.

9. Make the line settings for the line graph.
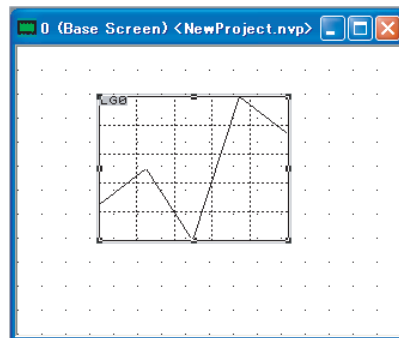
10. Transfer the screen to the PT.

11. Check operation. Place a value between 0 and 100 into D200 and then change the value. Check that the graph is updated every 5 s. Recorded data can be deleted using the data log control address. In this example, turn ON the Group 0 Memory Clear Bit in W16.00 (bit 00 of word 16).

7-10-4 Batch-reading PLC Memory to Display the Graph.

Basic Operation

1,2,3... 1. Open base screen 0 and position a line graph part.
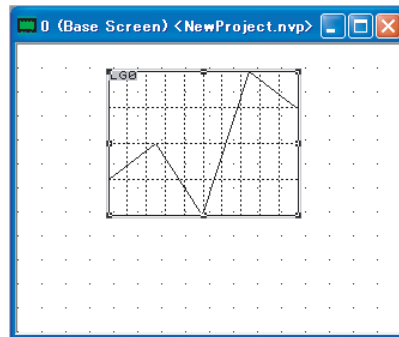
Double-click "0" in the Screen Manager, and then drag the line graph part from the standard parts library and drop it on the base screen.

2. Double-click the line graph part and change the basic setup.
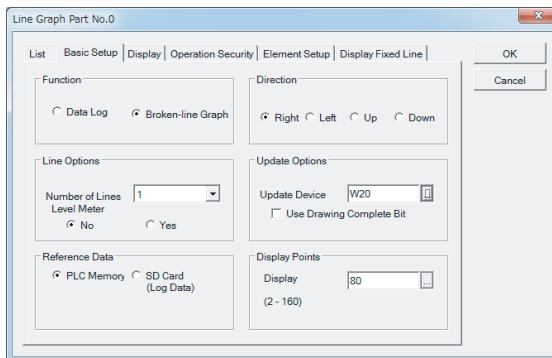
Double-click the parts number LG0 on the base screen, and make the following settings.

Function:	Broken-line Graph
Number of Lines:	1
Level Meter:	No
Reference Data:	PLC Memory
Direction:	Right
Update Device:	W20
Display:	80

 Reference

- When the corresponding bit in the specified word for graph update turns ON, the graph is updated. Graph 0 corresponds to bit 0, graph 1 to bit 1, and so on. While the bit is OFF, the graph is not updated.
- If the Use Drawing Complete Bit checkbox is checked, the bit will be turned ON when the graph display is updated.
- For a broken-line graph, sampling settings are not needed, so there is no need to set the PT Configuration.

3. Make the display settings.
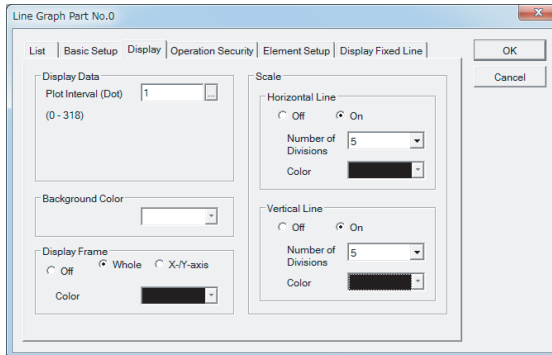
Set the basic setup.

Plot Interval (Dot):	1
Display Frame:	Whole
Scale	
Horizontal Line:	On
Number of Divisions:	5
Vertical Line:	On
Number of Divisions:	5

4. Click the Element Setup Tab and double-click row 0.
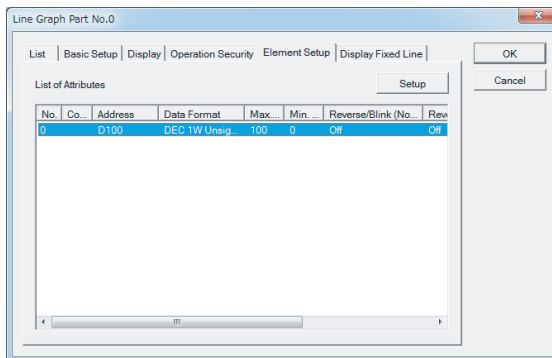
5. Make the line settings for the line graph.
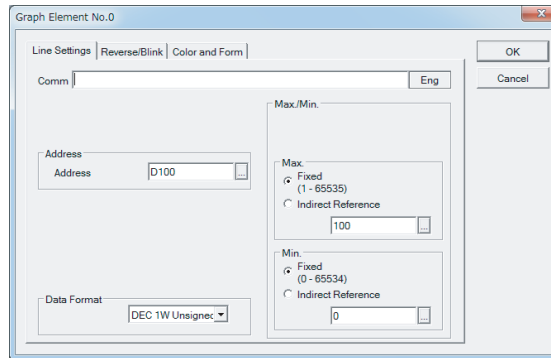
Do not change the Reverse/ Blink and Color and Form settings for this sample.

Address: D100

Note Data is read from the words that start with the specified address for the specified number of display points. When the data format is 1 word, data is read in blocks of one times the number of display points. For 2-word data, reading is done in blocks of two times the number of display points.

6. Check the Base Screen
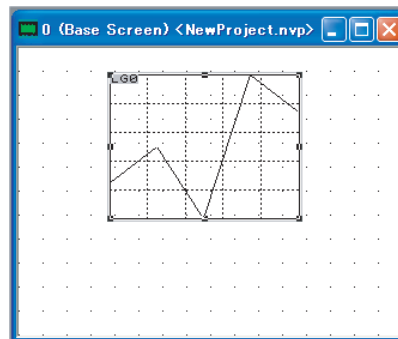
7. Transfer the screen to the PT.

8. Check operation.

Set appropriate values for D100 to D179, and check the operation. To update the graph, turn ON W20.00 (bit 00 of W20).

To stop updating the graph, turn OFF W20.00 (bit 00 of W20).

7-11 Alarm Lists (NV3W-V1/NV4W/NV3Q)

7-11-1 Default Settings of Alarm History (NV4W/NV3Q only)

Basic Setup	Operation Mode	History (Time Order)	
	Reference	Group No.	0
		Alarm Number (i.e., number of alarms)	32
	Display Form	Date	MM/dd
		Time	24:00:00
	Display Event	Triggered	
		Recovered	
		Acknowledged	
	Stop Updating	Off	
Color and Form	Display Area	Number of Lines	NV3Q: 8
			NV4W: 3
	Display Frame	On	
		Type	Outside + Inside Frames
		Color	Black
	Color & String	Language No.	Language 0
		Triggered	Color: Black, String: Trig
		Recovered	Color: Black, String: Rcv
		Acknowledged	Color: Black, String: Ack
		Background	Color: White
Operation Security	Display Restriction	Off	
Guidance	No		
Element Setup	Language No.	Language 0	
		Message	Alarm 0 to 1F

7-11-2 Default Settings for Alarm Lists

Basic Setup	Operation Mode	Active List	
	Monitoring	Start Address	10
		Alarm Number (i.e., number of alarms)	32
		Detection Type	Bit On
Color and Form	Display Area	Number of Lines	NV3W-V1/NV4W: 4
			NV3Q: 8
	Display Frame	On	
		Type	Outside + Inside Frames
		Color	Black
	Color	String	Black
		Background	White
Operation Security	Display Restriction	Off	
Guidance	No		
Element Setup	Language No.	Language 0	
		Message	Alarm 0 to 1F

7-11-3 Overview of Alarm Lists

An alarm list part displays a list of messages corresponding to the status of the PLC memory when display conditions have been met.

Parts   For the list of errors that have occurred, either Alarm History or Alarm List can be selected.

■ Alarm History

There are two modes of history display: Time Order (which displays triggered, acknowledged, and recovered alarms) and Frequency Order (which displays the number of times alarms have occurred).

■ Alarm List

A list of current alarms is displayed.

> 📑 **Additional Information**
>
> The alarm history saved in the PT can be saved to a file in CSV format using the Memory Editor. Refer to *Appendix A NV Memory Editor* for information on the NV Memory Editor.

Description of Operation

1,2,3...   1. The PT constantly monitors the PLC memory.

2. When an alarm occurs, or when the system recovers from a current alarm, the alarm number, time of the occurrence, and time of the recovery are recorded in internal memory of the PT.

3. Alarm data stored in internal memory is displayed by the alarm list part.

4. Alarm check data is written into internal memory of the PT using the alarm list and the function switch. (To record the data, select the alarm to be checked and press the function switch for which the operation mode has been set to Acknowledged.)

> **Note**   Items 1 and 2 are specified in the alarm history settings of the PT Configuration, and item 3 is specified in the attribute settings of the alarm list part. Item 4 is specified in the alarm list operation function of the function switch part.
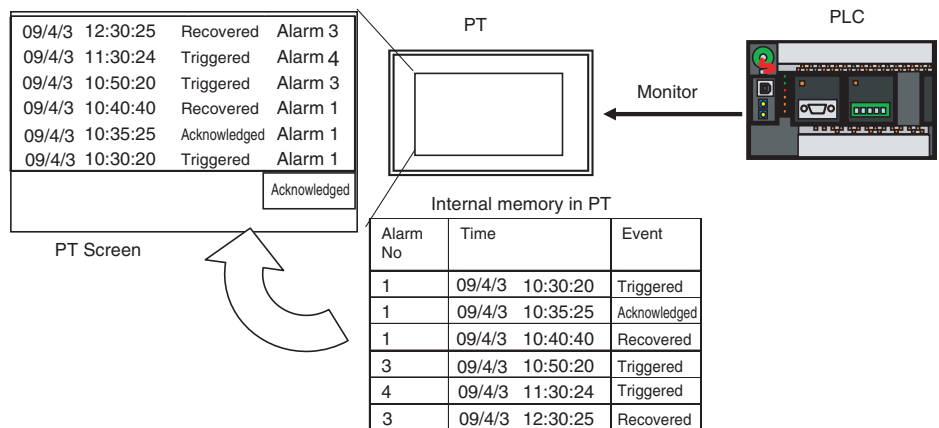
7-11-4   Settings for Constantly Monitoring PLC Memory (History Display) (NV4W/NV3Q only)

Basic Operation

1,2,3...   1.   Make the Alarm History settings in the NV Configuration.
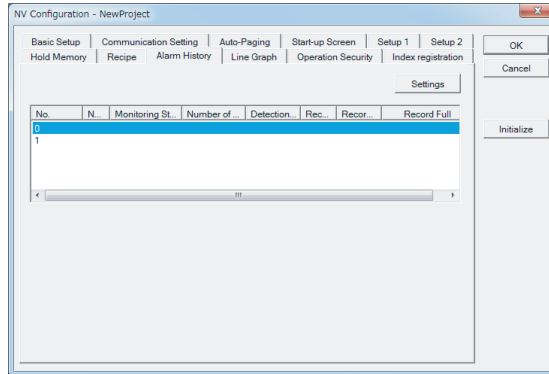
Select NV Configuration from the PT Menu. Select No. 0 on the Alarm History Tab Page and then click the Settings Button.

2.   Make the alarm history settings for group 0.
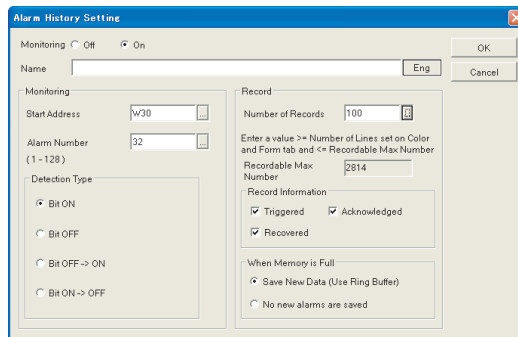
To enable monitoring, make the following settings, and then click the OK Button.

Name:	Enter any string.
Start Address:	W30
Alarm Number (i.e., number of alarms):	32
Detection Type:	Bit ON
Record	
Number of Records:	100
Record Information:	Triggered, Recovered, and Acknowledged
When Memory is Full:	Save New Data (Use Ring Buffer)

Note   (1) Up to 128 alarms can be monitored. One bit is allocated for each alarm. When 128 is set, 8 words (8 x 16 bits = 128) are monitored. For example, when the start address is W30, and the number of alarms has been set to 32, the 32 bits starting at W30 are monitored, i.e., W30 and W31CH.

(2) Set Bit ON for the alarm status when an alarm is to be displayed when the bit turns ON. Set Bit OFF for the alarm status when an alarm is to be displayed when the bit turns OFF.

(3) The number of records is equal to the number of alarms stored in the PT. A value greater than the number of monitored alarms must be set. Even if the power to the PT is turned OFF, alarms that have already been stored are retained by the battery backup. (If the battery is exhausted, the records will be lost.)

(4) When the Triggered/Recovered Bit turns ON or OFF, press an acknowledge switch and select the data to be added to the records.

3. Set the alarm history control.
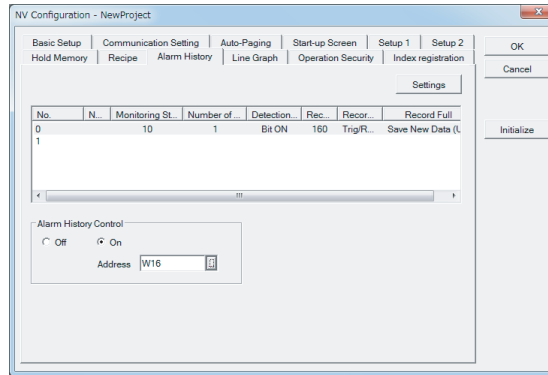
Set the basic setup. After completing the settings, click the OK Button to end setting the PT Configuration.

Alarm History Control: On

Address: W16

Alarm History Control Words (2 Words)

Word \ Bits	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
n	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 1 Memory Overflow Flag	Group 0 Memory Overflow Flag	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 1 Monitor Stop Bit	Group 0 Monitor Stop Bit
n+1	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 1 Memory Cleared Flag	Group 0 Memory Cleared Flag	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Reserved. (Do not use.)	Group 1 Memory Clear Bit	Group 0 Memory Clear Bit

Group Monitor Stop Bits: Monitoring will be stopped if the bit is turned ON from the PLC.

Group Memory Overflow Flags: The flag will turn ON if the number of sampled alarms exceeds the number of records to store that is specified in the NV Configuration. The flag will remain ON until memory is cleared.

Group Memory Clear Bits: The recorded data will be cleared if the bit is turned ON from the PLC. Do not turn OFF a bit until the corresponding Memory Cleared Flag turns ON.

Group Memory Cleared Flags: After PT memory has been cleared, the corresponding bit will be turned ON from the PT. The flag will not turn OFF until the Memory Clear Bit has been turned OFF.
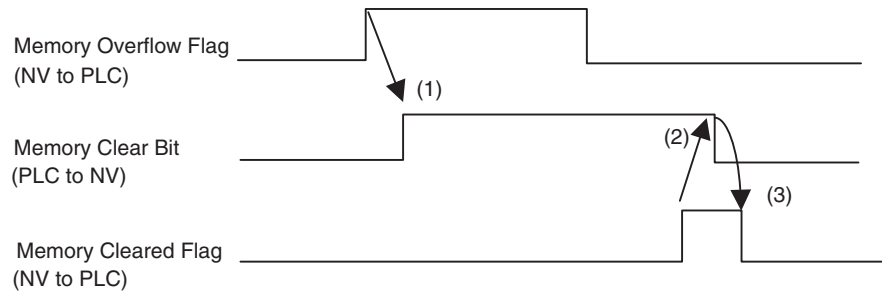
157

(1) If the Memory Overflow Flag turns ON, the Memory Clear Bit is turned ON to clear memory contents.

(2) After confirming that the Memory Cleared Flag has turned ON, turn OFF the Memory Clear Bit.

(3) When the Memory Clear Bit has been turned OFF, the Memory Cleared Flag will turn OFF automatically.

4. Open base screen 0 and position an alarm list part.
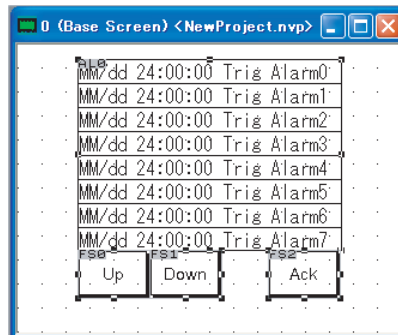
Drag the Alarm History Part from the standard parts library and drop it on the base screen.

5. Double-click the alarm list part and change the basic setup.
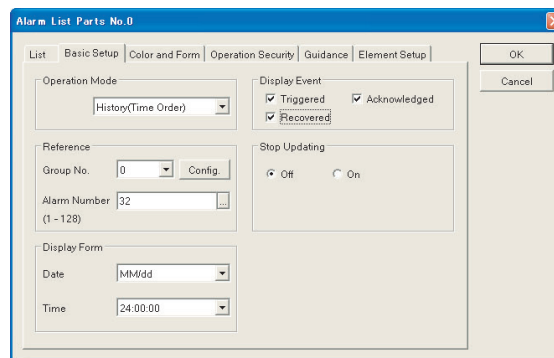
Double-click the parts number AL0 on the base screen, and make the following settings.

Operating Mode:	History (Time Order)
Reference	
Group No.:	0
Alarm Number (i.e., number of alarms):	32
Display Form	
Date :	MM/dd
Time:	24:00:00
Display Event:	Triggered, Recovered, and Acknowledged
Stop Updating:	Off

Note (1) The number set in the NV Configuration is displayed as the Reference Group No.

(2) The referenced number of alarms sets the number of alarm messages that are recorded. Set the Monitoring Alarm Number in the NV Configuration so that it is greater than or equal to the Current Alarm Number.

(3) Stop Updating
The specified bit can be used to stop updating the display. Updating the display will be stopped while the specified bit is ON. Sampling continues.

6. Click the Color and Form Tab and make the settings.
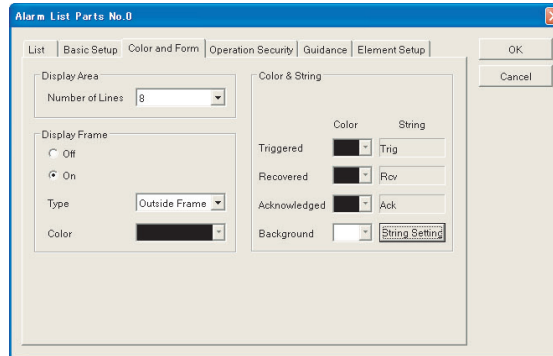
Make the settings as shown below.

Display Area Number of Lines:	8
Display Frame:	On
Type:	Outside + Inside Frames
Color:	Black

Color & String

Triggered, Recovered, and Acknowledged:	Black

Click the String Setting Button and set character strings as shown below.

Triggered:	Fixed (NV-Designer) Trig
Recovered:	Fixed (NV-Designer) Rcv
Acknowledged:	Fixed (NV-Designer) Ack

7. Click the Element Setup Tab.
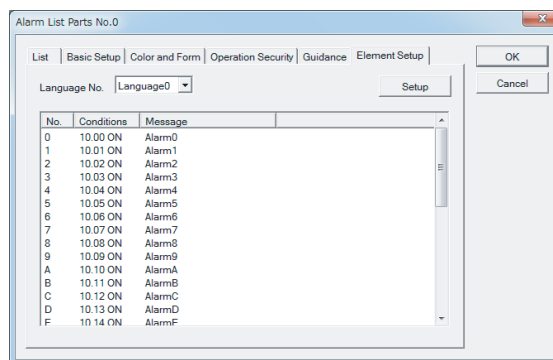
Select the number and click the Setup Button or double-click the message to display the Message Dialog Box.

8. Enter the alarm message.
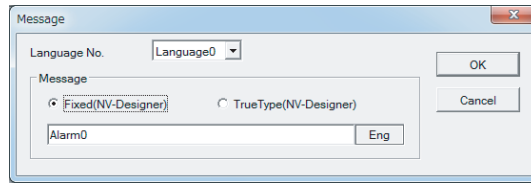
Enter the message to display for the alarm.

Note Bit 0 of the start monitoring address corresponds to message 0.

Click the OK Button after all of the messages have been entered.

9. Set the function switch for acknowledging the alarm history.
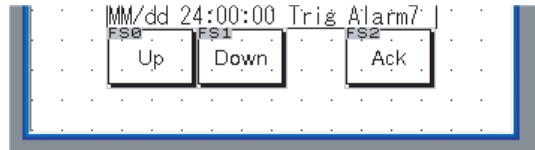
10. Double-click the FS0 function switch and set the operation mode.
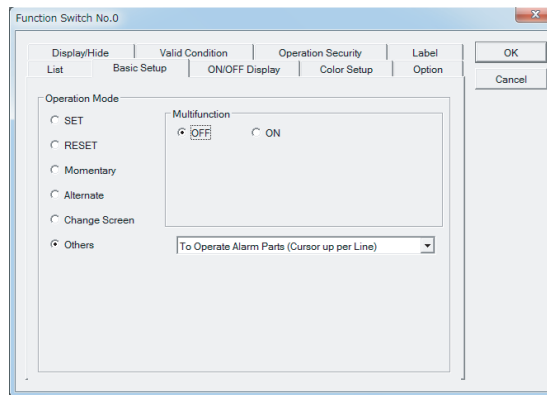
Make the following settings, and then click the OK Button.

Setting to Scroll Up the Alarm Display

Operation Mode:	Others, To Operate Alarm Parts (Cursor up per Line)
Color & String:	Set as required.

11. Double-click the FS1 function switch and set the operation mode.
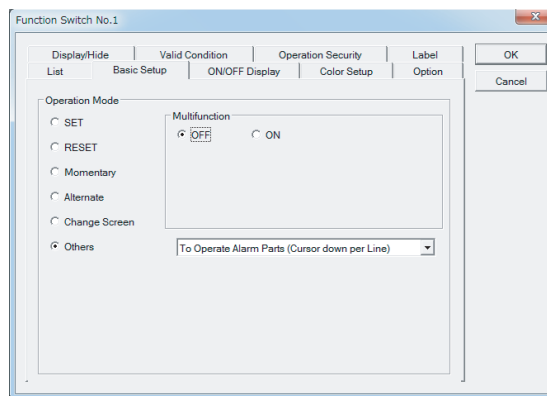
Make the following settings, and then click the OK Button.

Setting to Scroll Down the Alarm Display

Operation Mode:	Others, To Operate Alarm Parts (Cursor down per Line)
Color & String:	Set as required.

160

12. Double-click the FS2 function switch and set the operation mode.
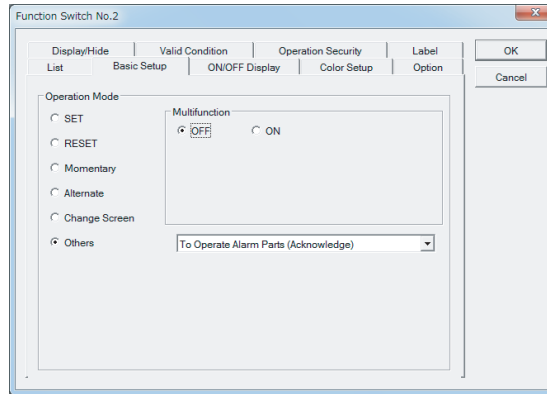
Make the following settings, and then click the OK Button.

Set the bit switch for indicating that a triggered alarm has been acknowledged.

Operation
Mode: Others, To
                Operate Alarm
                Parts (Acknowl-
                edge)

Color &
String: Set as required.

Alarm List Acknowledge data is written to the PT after an alarm is selected and the Acknowledge Button is clicked. This is used when a record of an alarm that is being acknowledged is to be recorded.

13. Transfer the screen to the PT.

14. Check operation. Words W30 and W31 are monitored so that when W30.00 (bit 00 of W30) turns ON, message 0 will display an alarm. Message A will be displayed when W30.10 (bit 10 of W30) turns ON. Message D will be displayed when W30.13 (bit 13 of W30) turns ON. The control address is set to word W16 so that when W16.00 (bit 00 of W16) turns ON, recording is stopped. To delete all of the previously recorded data, turn ON W17.00 (bit 00 of W17).

7-11-5 Triggered Alarm List

Basic Operation

1,2,3...   1. Place an Alarm List part on the base screen.
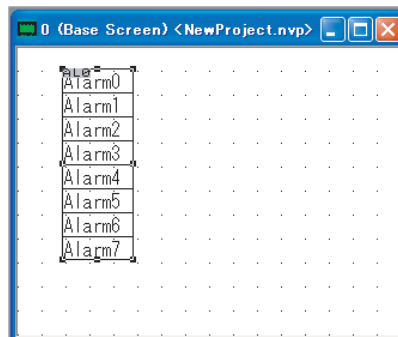
Drag the Alarm List Part from the standard parts library and drop it on the base screen.

161

2. Double-click the alarm list part and select the basic setup.
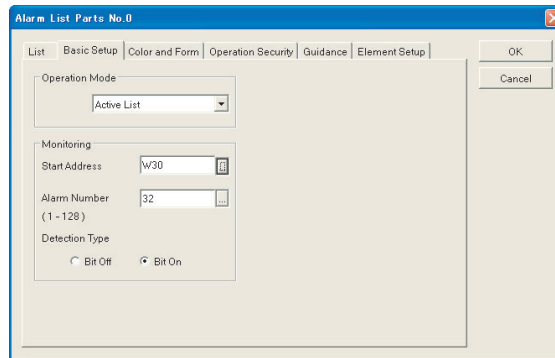
Operating Mode: Active List Monitoring

Start Address: W30

Alarm Number (i.e., number of alarms): 32

Detection Type: Bit On

• One bit is allocated to each alarm. When 32 is set, 2 words can be monitored.

• If an alarm status turns ON, the alarm is displayed when the bit turns ON.

• The NV Configuration is not necessary for an alarm list .

3. Sets the color and form.
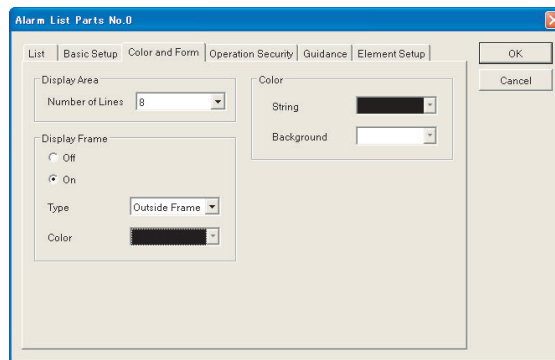
Set the basic setup.

Display Area

Number of Lines: 8

Display Frame: On

   Type: Outside Frame + Inside Frame

   Color: Black

Color

   String: Black

   Background: White

4. For Guidance, select Display Text and then make the necessary settings.
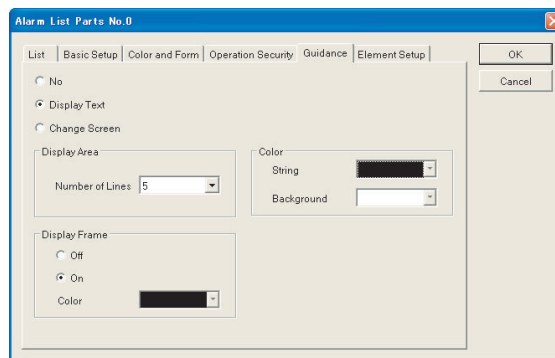
Display Text: Yes

Display Area

Number of Lines: 5

Display Frame: On

Color: Black

Color

   String: Black

   Background: White

• Guidance is used to display a more detailed explanation of a displayed alarm.

• The Number of Lines in the Guidance Area is given by Number of Lines in the Display Area.

5. Make the element settings.
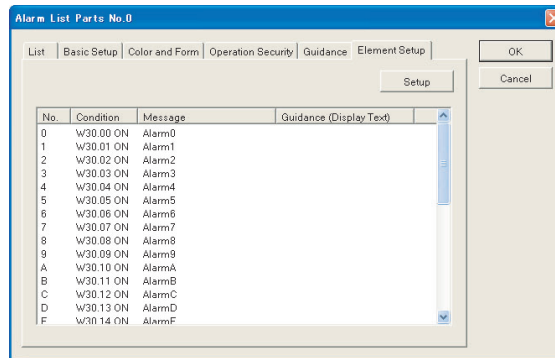
Select the number and click the Setup Button or double-click the message to display the Message Dialog Box.

↓
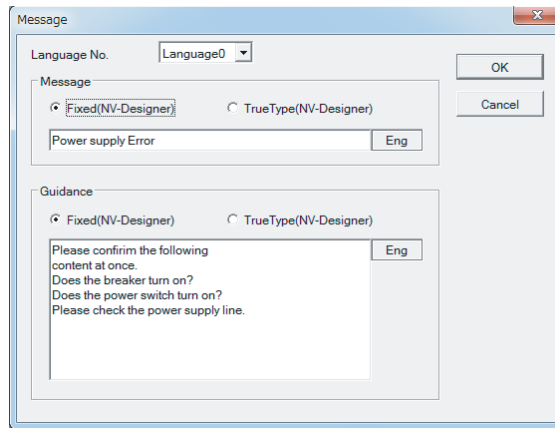
Enter the message to display for the alarm, as well as the guidance for the message. Double-click the message to display the Input Dialog Box. Click the OK Button when you are finished.

• Message Setting Example
  Enter "Power Supply Error."

• Guidance Setting Example
  Check the following factors. Enter "Is the breaker ON? Is the power switch OFF? Check the power supply line."

6. Position the guidance display.
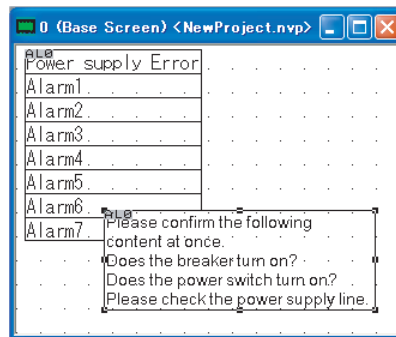
Paste the guidance at the desired position.

7. Then, paste a switch for scrolling.
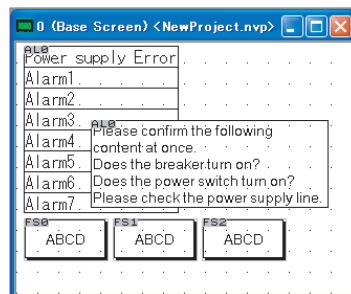
Paste three FSW0 function switches from the Standard Parts Library on the base screen.

8. Double-click the FS0 function switch and set the attributes.
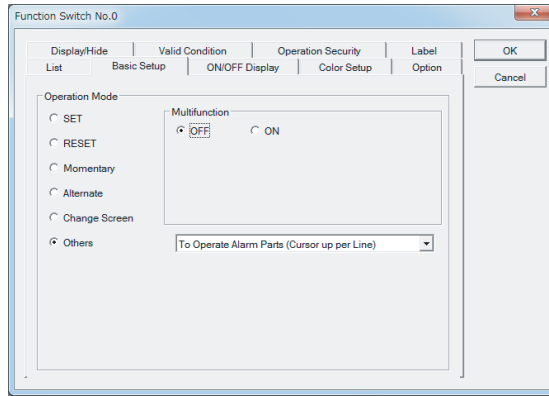
Make the following settings, and then click the OK Button.

Setting to Scroll Up the Alarm Display

Basic Setup

Operation Mode: Others, To Operate Alarm List (Cursor up per line) set as required.

Label

ON String: UP

OFF String: UP

9. Double-click the FS1 function switch and set the operation mode.
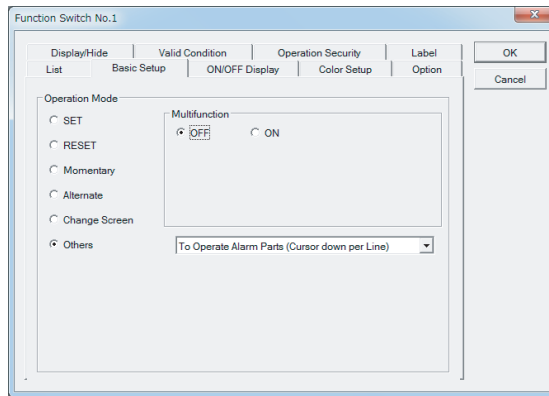
Make the following settings, and then click the OK Button.

Setting to Scroll Down the Alarm Display

Basic Settings

Operation Mode: Others, To Operate Alarm Parts (Cursor down per Line)

Label

ON String: DOWN

OFF String: DOWN

10. Double-click the FS2 function switch and set the operation mode.
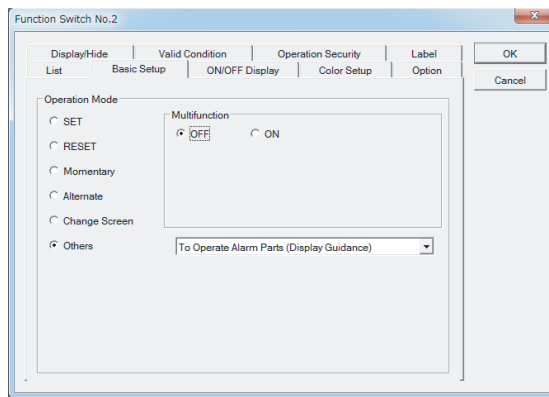
Make the following settings, and then click the OK Button.

When a triggered alarm is selected and this switch is pressed, the guidance for the alarm will be displayed.

Basic Settings

Operation Mode: Others, To Operate Alarm List (Display Guidance)

Label

ON String: GUIDE

OFF String: GUIDE

11. Check the Base Screen. Adjust the size of the function switch.
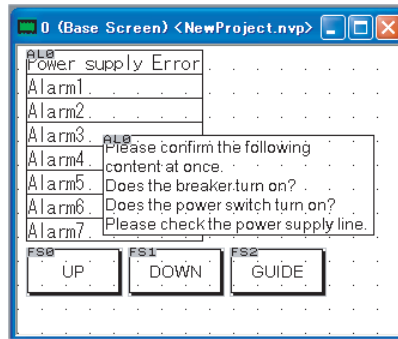
12. Transfer the screen to the PT.

13. Check operation. Message 0 will be displayed when W30.00 (bit 00 of W30) turns ON. To display guidance for a displayed alarm, touch the alarm and press the switch that appears. Touch the guidance to clear it from the screen. Check the operation for other messages.

7-12 Custom Parts

Custom parts allow you to edit part screens to create original parts. There are three types of custom parts: bit switches, lamps, and messages.

7-12-1 Creating a Switch Part

1,2,3...   1. Open base screen 0 and position a custom switch part.
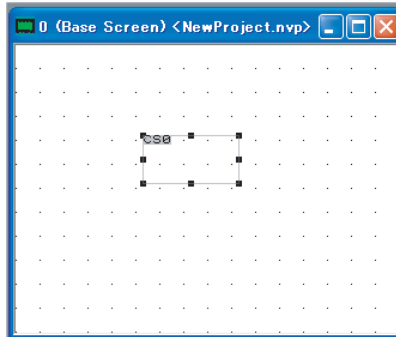
Click "0" in the Screen Manager, and then drag the custom switch part (SW (Custom)) and drop it on the base screen.
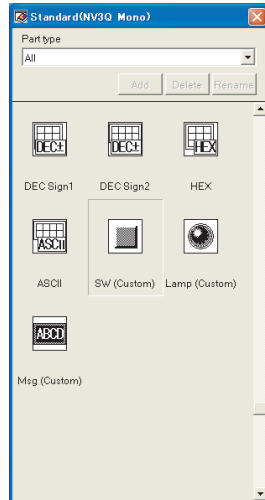
2. Double-click the custom switch part and make the settings.
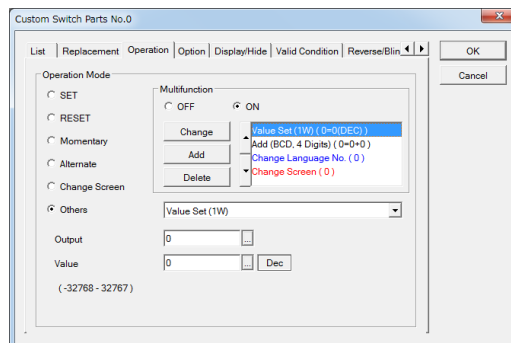
Drag a SW (Custom) part from the Standard Parts Library, double-click the part, and then set the switch attributes.

The settings made with each tab page are as follows.

1. Replacement

If On is set, the display can be switched according to the contents of the PLC memory. There are three setting methods.

166

ON/OFF: The display is switched when a bit turns ON and OFF.

Digit: The display is switched to a hexadecimal (0 to F) display according to one digit (4 bits)

Direct: The display is switched using 1-word units.

2. Operation

Make the desired settings, such as SET or RESET.

3. Option

The switch operation sound and reversing when touched can be set.

Note For Momentary, the display is reversed while the switch is held down.

4. Valid Condition

Status in PLC memory can be used to enable and disable switch operation.

5. Reverse/Blink

The display method can be set.

3. To change the character string or graphic displayed on a custom switch, place the switch in Edit Mode.
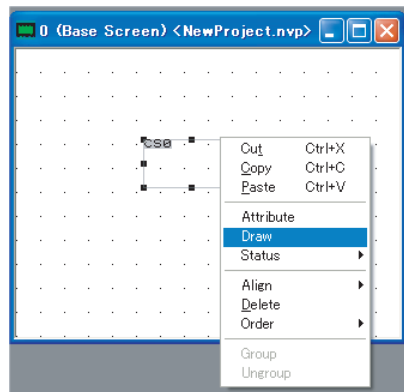
Right-click the switch part and select Edit.

4. Character strings and images can be added to customer switch parts.
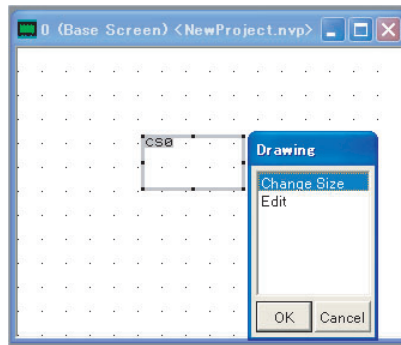
The thickness of the part's frame increases. Using the graphic bar, select a character string or straight line to create the desired content within the frame. Click the OK Button when you are finished.

When replacing data, multiple replacement numbers are displayed in the window, each one of which requires the creation of a display. Click the OK Button when you are finished.

Note Resize the window to change the size of a part.
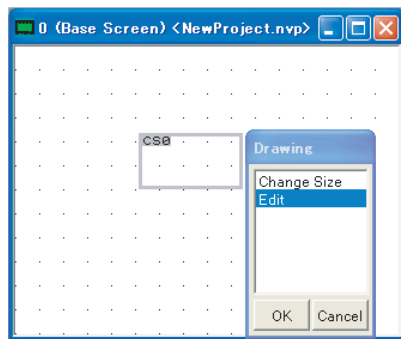
Note Custom switches include Multifunction Objects, which can perform multiple operations using one switch. For details, refer to *7-13 Multifunction Objects*.

7-12-2 Creating Lamps and Message Parts.

Lamp and message parts are created in much the same way as a switch part. For a description of a simple method of creating lamp and message parts, refer to *SECTION 5 Creating and Saving Projects (Including Screen Data)*.

1. Replacement

This is the same as for switch parts.

2. Display/Hide

Lamps and messages can be displayed and hidden based on the status of PLC memory.

3. Reverse/Blink

This is the same as for switch parts.

Additional Information

Because the touch panel is analog, switches do not have to be aligned with a grid, and can be placed anywhere on the screen. The smallest possible switch size is 8 x 8 dots.

7-13 Multifunction Objects

7-13-1 Overview of Multifunction Objects

A Multifunction Object is used to perform multiple operations using one function switch or custom switch. A Multifunction Object can be used to set operations, for example, to turn ON multiple bits at the same time or to switch screens and turn ON a bit at the same time. (Up to 32 operations can be performed.)

Applicable models: NV3W-V1, NV3Q and NV4W
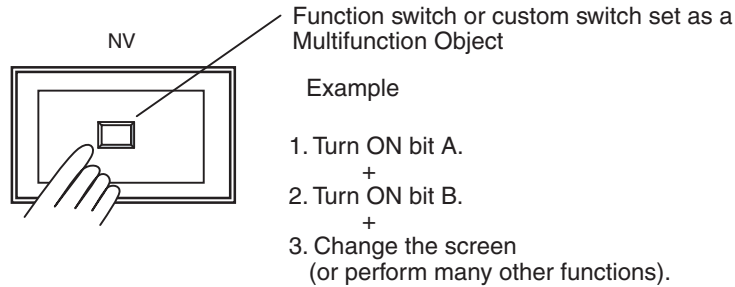
7-13-2 Multifunction Object Setting Procedure

The following dialog box will be displayed when the Basic Setup Tab is clicked for a function switch, or the Operation Tab is clicked for a custom switch.
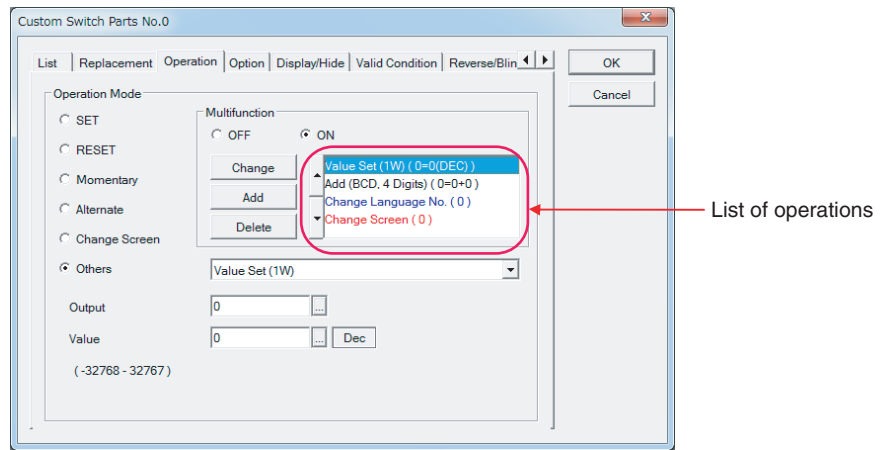
1,2,3...   1. Select the Yes Option in the Multi Function Area.

2. Select the operation to add in the Operation Mode Area, and then click the Add Button. The operation will be added to the list of operations on the right. The display colors will be as follows depending on the operation's position and number of operations that can be registered (i.e., one or multiple).

a. Black: Multiple operations can be registered for this operation mode.

b. Blue: Only one operation can be registered for this operation mode. These operations will be automatically added at a lower location in the execution order than operations displayed in black.

c. Red: Only one operation can be set for this operation mode. These operations will be automatically added to the end of the execution order.

3. To change the execution order, click the up or down arrowheads. Click the Delete Button to delete operations that are not required. To replace an operation selected in the list of operations, make the new setting and then click the Change Button.

Restrictions on Combinations of Operations

Multiple registrations can be made for all operations that can be set using function switches and custom switches. Some operation modes, however, have restrictions on the number of operations that can be registered. Also, operations are performed in order that they are set.

Operation mode	Display color	Execution order	Number of operations that can be registered	Total number of operations that can be registered
Set	a. Black	Executed in the set order.	Operations can be registered up to maximum number of operations.	32
Reset				
Momentary				
Alternate				
Value Set				
Add				
Subtract				
Thumbwheel Switch				
Change Language No.[*1]	b. Blue	Executed after operations displayed in black.	1	
Change Language No. (INC/DEC)[*1]				
Change Screen	c. Red	Executed at the end.	1	
System Menu Display				
Back to Previous Screen				
To Operate Alarm Parts				
For Operation Security Function				

*1 *Change Language No.* and *Change Language No. (INC/DEC)* are displayed only if *Multi-Language Exchange* is set to ON under **Tool** − **NV-Designer Configuration** − **Language**.

This section describes special functions that can be used with NV-series PTs and the NV-Designer.

8-1   Switching Backlight Colors

The initial settings for backlight colors of the PT can be set, and they can then be changed from the PLC.

8-1-1   Default Settings for Backlight Color

1,2,3...   1.   Check the backlight color.
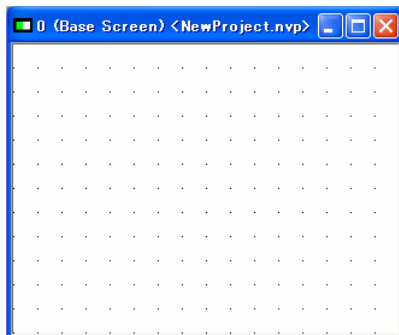
The current color is displayed on the left end of the title bar.

2.   Right-click on the base screen and select Screen Properties from the pop-up menu. Or select Screen Properties from the PT Menu.

3.   Set the backlight color.
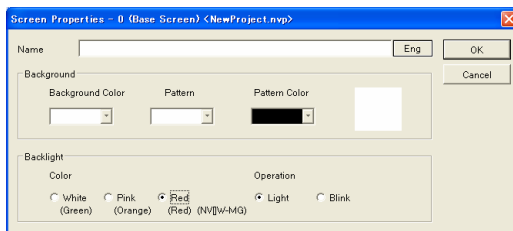
Set the backlight.

Backlight: Red

Operation: Light

Note   The backlight colors depend on the model. Refer to the following table.

4.   Click the OK Button.
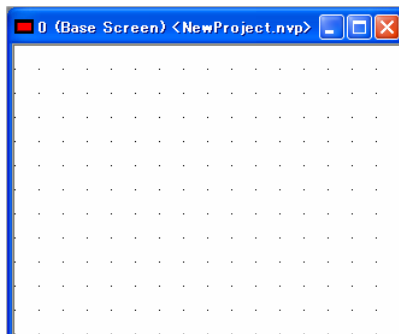
The color at the left end of the title bar will change to red.

Note   With the NV3W-MR□□(□) (-V1), NV4W-MR□□, or NV3Q-MR□□ the back-light will be white when the square on the left of the title bar is green/white and pink when the square is orange/pink.

PT	Backlight color	Color setting			Operation setting	
					Light	**Blink**
NV3W-MG□□(□) (-V1)	3 colors	Green	Orange	Red	Supported.	Supported.
NV3W-MR□□(□) (-V1)	3 colors	White	Pink	Red	Supported.	Supported.
NV4W-MG□□	3 colors	Green	Orange	Red	Supported.	Supported.
NV4W-MR□□	3 colors	White	Pink	Red	Supported.	Supported.
NV3Q-MR□□	3 colors	White	Pink	Red	Supported.	Supported.
NV3Q-SW□□	---	No attribute			No attribute	

8-1-2   Switching Backlight Colors

The backlight color and light/flash status can be specified in the Bit Area of the System Memory. (The first word of System Memory is specified in the NV Configuration).
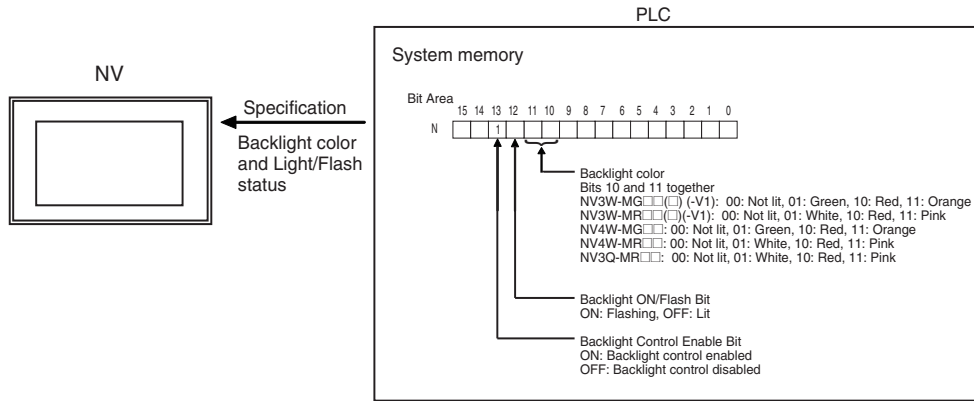
■ Backlight Color Specifications

First word in Bit Area of system memory			Backlight color	
Bit			NV3W-MG□□(□)(-V1) NV4W-MG□□	NV3W-MR□□(□)(-V1) NV4W-MR□□ NV3Q-MR□□
13	11	10		
ON	OFF	OFF	Not lit	Not lit
	OFF	ON	Green	White
	ON	OFF	Red	Red
	ON	ON	Orange	Pink

■ Backlight ON/Flash Specifications

First word in Bit Area of system memory		Backlight ON/flash	
Bit		NV3W-MG□□(□)(-V1) NV4W-MG□□	NV3W-MR□□(□)(-V1) NV4W-MR□□ NV3Q-MR□□
13	12		
ON	OFF	Light	Light
	ON	Flash	Flash

If bit 13 (the Backlight Control Enable Bit) is turned OFF, the backlight will light in the color set in the screen properties.

Application Example That Switches the Backlight Color
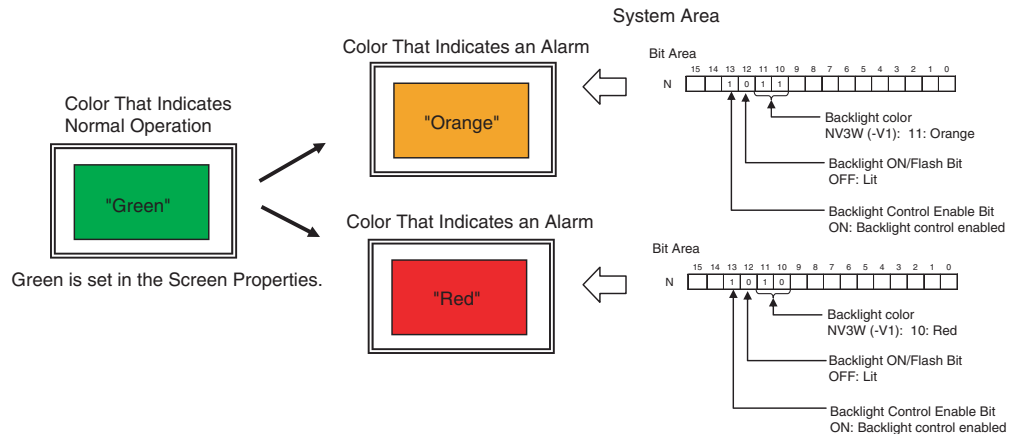
8-2 Repeated Copying

8-2-1 Overview

Multiple copies of the same part can be made using the Repeated Copying Function. Having a template part to copy speeds up work efficiency.

8-2-2 Repeatedly Copying Parts

Select the part that you want to copy and then select Repeat from the Edit Menu. The Repeat Dialog Box will be displayed.
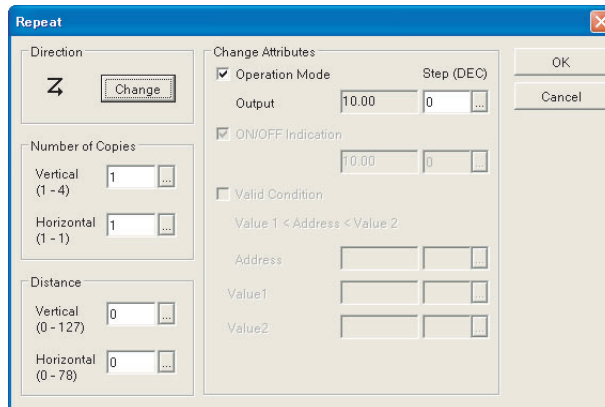
- Direction: Sets the copy direction using the Change Button.
- Number of Copies: Sets the number of copies created in the vertical and horizontal directions.
- Distance: Sets the distance between the parts when copies are made repeatedly.
- Change Attributes: Used to change the attributes from the copy source when it is copied repeatedly. The Operation Mode Output and Communications Address are displayed according to the attributes of the original part.
- Step (DEC): This value is added to the addresses or screen number of adjacent parts in order.

8-2-3 Example of Repeated Copying

To create 15 lamp parts, 3 vertically and 5 horizontally.

1,2,3... 1. Open base screen 0 and drag Lamp 0 onto it.
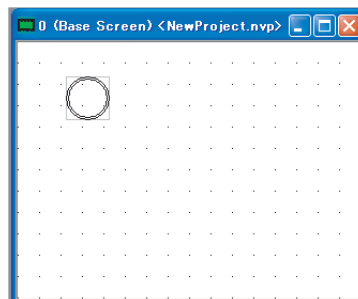
Paste the lamp on the left side of the screen. Make all the settings that will be the same for all copies.

2. Repeatedly copy the part. Click the lamp and select Repeat from the Edit Menu.

3. Set the attributes that will be copied repeatedly.
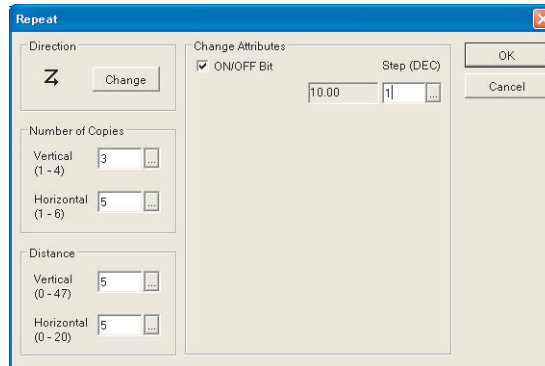
Make the following settings, and then click the OK Button.

Direction: Do not change.

Number of copies

Vertical: 3

Horizontal: 5

Pitch

Vertical: 5

Horizontal: 5

Change Attributes

ON/OFF Bit   Select this check box.

Step: 1

4. 15 lamp parts will be created simultaneously.
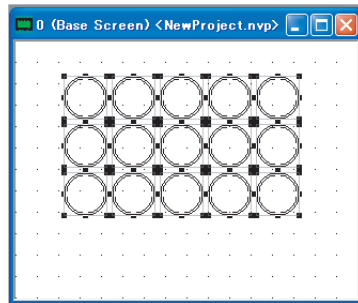
8-3 Flow Display Data

8-3-1 Overview

This function displays flowing characters at the bottom of the screen. Characters can be displayed from any screen that meet the conditions.

8-3-2 Creating Flow Displays

Select Flow Display from the PT Menu. The Flow Display Dialog Box will be displayed.
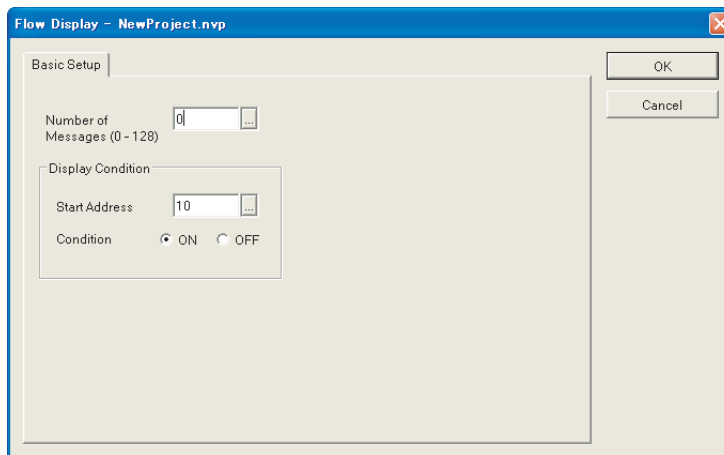
Number of Messages	Enter the number of messages to display. The Message Tab Page will be displayed if any value greater than 1 is entered.
Start Address	Set the start address in the PLC to use to specify whether to display or hide the messages. Starting from this address, a consecutive number of words corresponding to the number of messages will be used to specify displaying or hiding the messages.
Condition	Set the condition of the bit to use to display the message. If a bit in the PLC is in the specified status, the PT will display the corresponding message.

8-3-3 Default Settings for Flow Displays

Basic Setup	Number of Messages	0	
	Display Condition	Start Address	10
		Condition	ON

8-3-4 Example of Creating a Flow Display

Creating a Sample Screen

When the RUN Switch is turned ON, the message "Operating!" will appear in the flow display.

1,2,3... 1. Select Flow Display from the PT Menu.
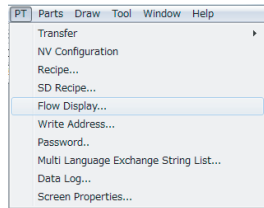
2. Specify the number of messages and condition for displaying messages.
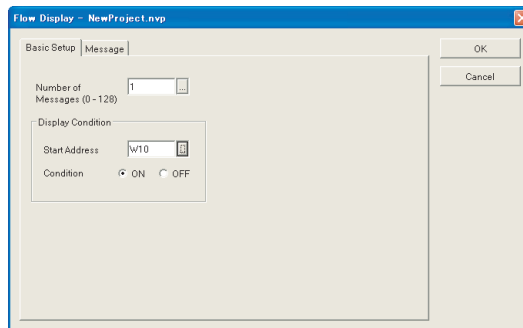
Click the Basic Setup Tab and set the following parameters.

Number of Messages: 1

Display Condition

Start Address: W10

Condition: ON

*1 Up to 128 messages can be registered.

177

3. Click the Message Tab and enter the messages to display.
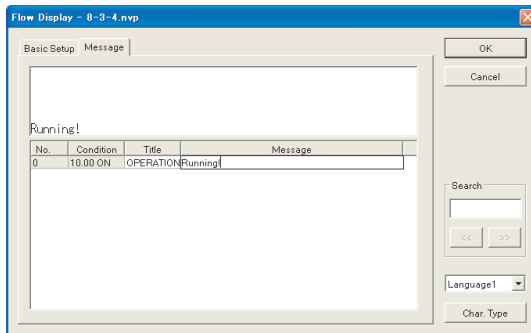
Up to 128 1*1 characters can be used in a message.

Enter for following for message 1:

Title: OPERATION

Message:

Language 0: Operating!

Language 1: Running!

Note The message will be displayed in the top pane when the cursor is on the message.

4. Set the character string.
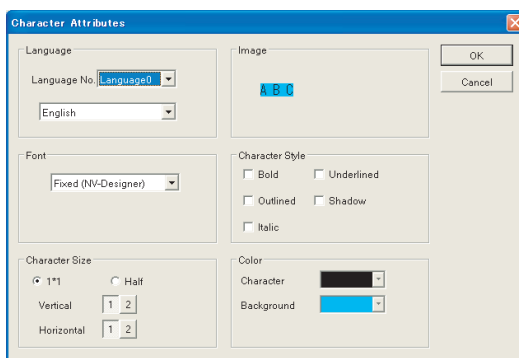
Click the Char. Type Button. Make the characters bold and set the background color.

Character Style: Bold

Color:

Character: Black

Background: Light blue

Note Increase the character size to make the flow display larger.

5. Click the OK Button to return to the Flow Display Dialog Box.

6. Click the OK Button to return to the base screen.

7. Transfer the flow display file to the PT. When the PT is turned ON, the message "Operating!" will appear in the flow display.

Precaution for Correct Operation

The appearance of flow displays are different for each PT model.
The NV3W moves 8 dots a time and the NV3W-V1, NV4W and NV3Q moves 32 dots at a time.

Additional Information

• If multiple display conditions are formed at the same time, the message with the lowest number will be displayed.

• The size of the flow display depends on the size of the characters.

Note The character size can be changed in Character Attributes.

• The following two settings must be changed to delete flow display data that has been transferred to the PT.

1. Set the number of messages on the Basic Setup Tab Page of the flow display to 0.

2. Transfer data: Select the All Data and Transfer Data After Clear NV Screens Options and transfer the data.

8-4 Write Address Data

8-4-1 Overview

This function is used to execute operations to set or reset bits, set values, perform calculations, etc., in the PLC or PT memory when conditions in the PLC or PT are met while the specified screen is displayed. It is useful for resetting the Write Bit for the recipe function or Clear Bit for the data log and alarm history.
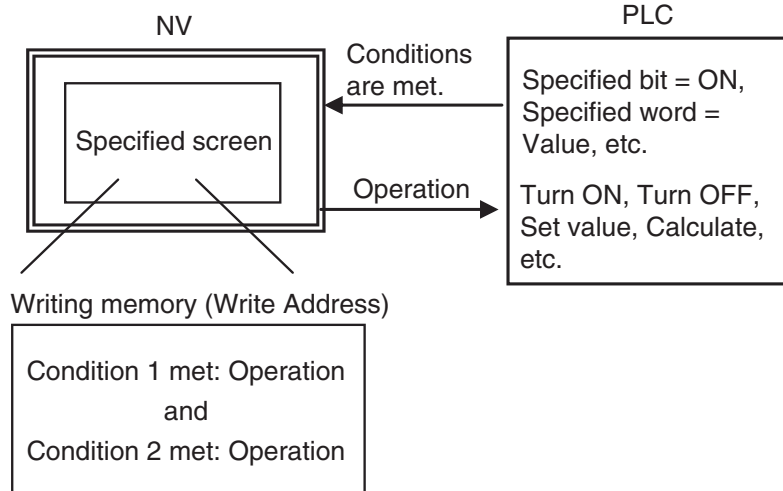
8-4-2 Write Address Setup Procedure

1,2,3...   1. Select Write Address from the PT Menu. The Write Address Dialog Box will be displayed.
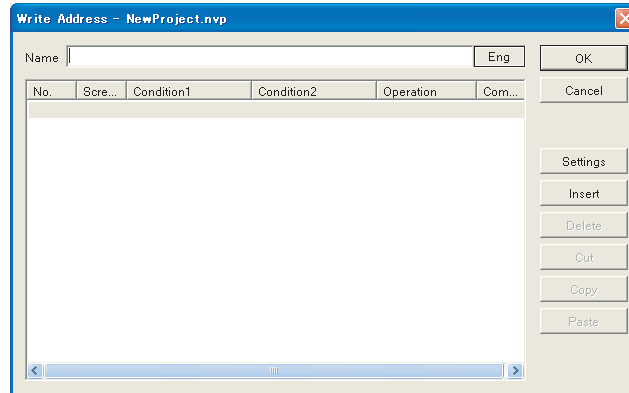
2. Click the Settings Button. The Write Address Dialog Box will be displayed.
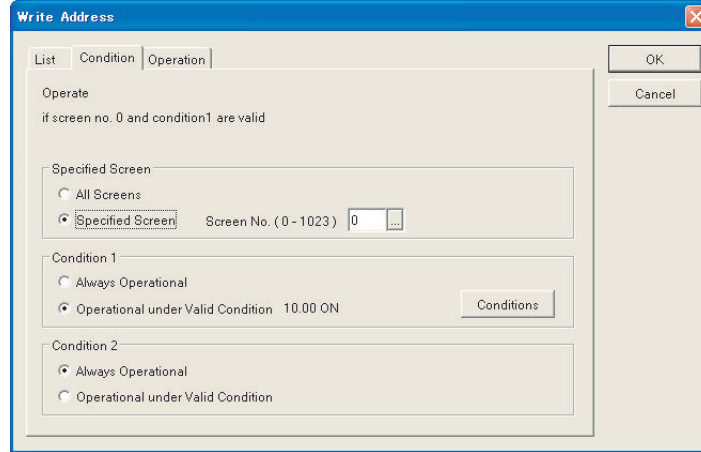
Sets the following items.

Conditions Tab Page

Specified Screen	• All Screens • Specified Screen Screen No.: 0 to 1023 (3FF hex)		
Conditions	• Always Operational		
	• Operational under Valid Condition	Address Type	• Bit • Word (unsigned) • Double Word (unsigned) • Word • Double word
		Relation Code	• When Bit is selected; Address: ON Address: OFF • When the others is selected; Address = Value 1 Address <> Value 1 Address < Value 1 Address > Value 1 Address <= Value 1 Address >= Value 1 Value 1 < Address < Value 2 Value 1 < Address <= Value 2 Value 1 <= Address <= Value 2 Value 1 <=Address < Value 2

		Address		
		Value 1/2	• When Word (Unsigned) is selected; Fixed (0 - 65535) Indirect Reference • When Double Word (Unsigned) is selected; Fixed (0 - 4294967295) Indirect Reference • When Word is selected; Fixed (-32768 - 32767) Indirect Reference • When Double Word is selected; Fixed (-2147483648 - 2147483647) Indirect Reference	

Operation Tab Page

Operation	Operation Mode	Set, Reset, Momentary, Alternate, etc		
		Others	Value set (1W), Value set (2W)	Output: Address, Value
			Add (BCD, 4 Digits)	Output: Add/Sub Source, Value
			Add (BCD, 8 Digits)	
			Add (DEC, Word, Signed, 2's Complement)	
			Add (DEC, 2 Words, Signed, 2's Complement)	
			Subtract (BCD, 4 Digits)	
			Subtract (BCD, 8 Digits)	
			Subtract (DEC, Word, Signed, 2's Complement)	
			Subtract (DEC, 2 Words, Signed, 2's Complement)	
			Multiply (BCD, 4 Digits, 1 Word)	
			Multiply (BCD, 8 Digits, 2 Words)	
			Multiply (DEC, 1 Word)	
			Multiply (DEC, 2 Words)	
			Divide (BCD, 4 Digits, 1 Word)	
			Divide (BCD, 8 Digits, 2 Words)	
			Divide (DEC, 1 Word)	
			Divide (DEC, 2 Words)	
			Thumbwheel Switch	

Condition 2 can also be applied. An AND condition is used.

8-4-3 Write Address Default Settings

Condition	Specified Screen	Valid only for specified screens	0
	Condition 1	Operational under Valid Condition	10.00 ON
	Condition 2	Always Operational	
Operation	Operation mode	Set	10.00

8-4-4 Write Address Setup Example

Creating a Sample Screen

When the Operation Button (CIO 10.00) is turned ON, the frequency (D100) is incremented by 1.
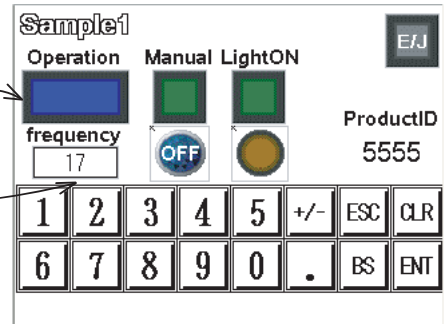
1,2,3...   1.   Select Write Address from the PT Menu.
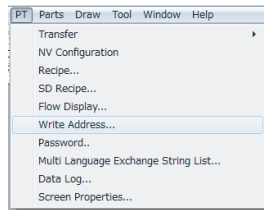
2.   Display the Write Address Dialog Box.
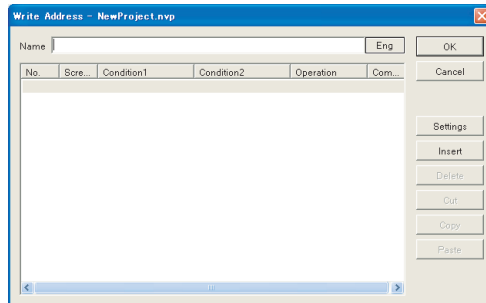
Select the first item in the list and click the Settings Button.

3. Display the Write Address Dialog Box.
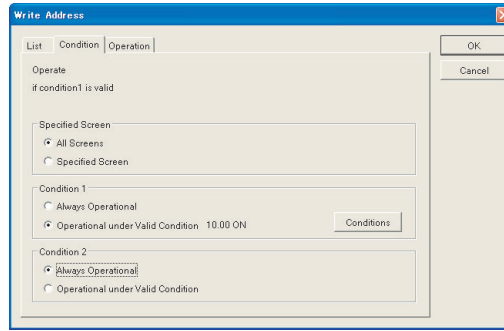
Make the following settings on the Condition Tab Page.

Specified Screen:	All Screens
Condition 1:	Operational under Valid Condition
Condition 2:	Always Operational

If multiple conditions are selected, an AND condition is used.

4. Enable Condition 1 and click the Conditions Button. The Conditions Dialog Box will be displayed.
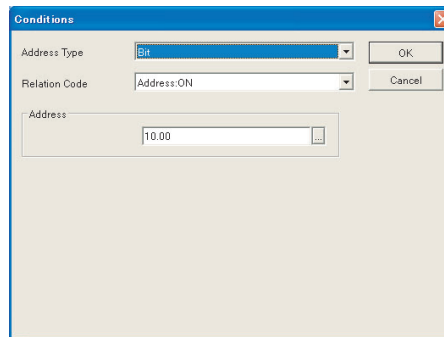
Make the following settings.

Address Type:	Bit
Relation Code:	Address: ON
Address:	10.00

5. Click the Operation Tab and make the following settings.
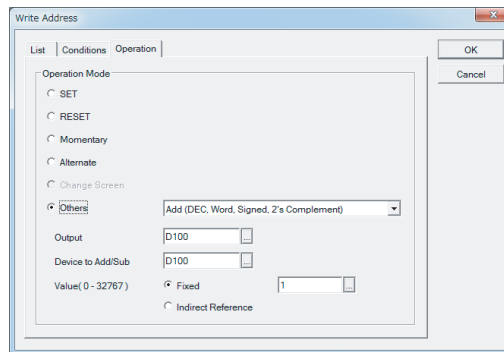
Operation Mode	Others Add (DEC/1W)
Output	D100
Device to Add/Sub:	D100
Value:	Fixed, 1

6. Click the OK Button to return to the Write Address Dialog Box. To write multiple conditions or data, select row No. 0 from the list and click the Settings Button.
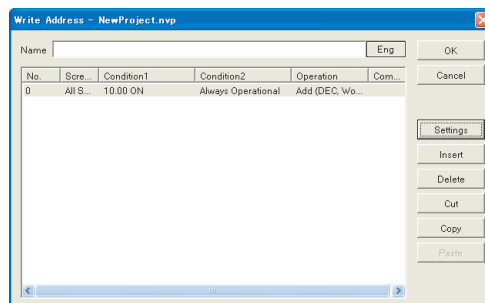
Note Up to 100 settings can be registered.

183

7. Click the OK Button to return to the base screen and transfer the file.

Additional Information

- If All Screens is selected multiple times in the condition settings, the PT will be reading PLC data multiple times, slowing the response. If the screen can be specified, it is recommended to use the Specified Screen Options.

- The Write Address function is perform only once when the specified conditions are met. The operation is performed only once each time when the conditions are met. It is performed again until status changes.

8-5 Recipes

8-5-1 Overview

A model's set values can be written or read to the specified PLC addresses for a command from the PLC or PT.

A model's (block's) set values can be saved in the PT as a table called a recipe file. The recipe file number and block number (model number) can be specified in the control address area of the specified PLC to execute read/write operations. Set values for each model can be read or written simply by changing the block number (or model number).
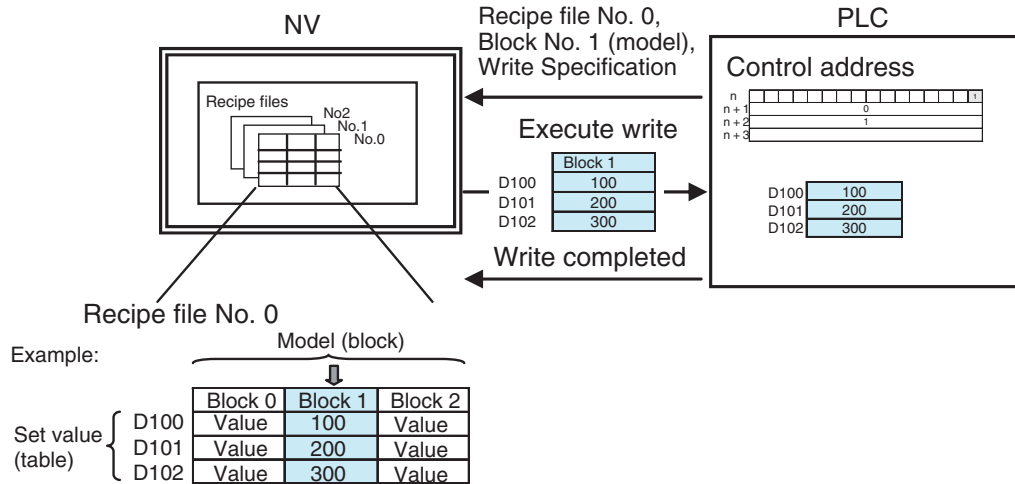
A recipe table is made from maximum of 100 blocks and 100 set values. Recipe files are specified by their numbers. Up to 100 recipe files (No. 0 to 99) can be stored.

Additional Information

- The total quantity of recipes that can be saved in the PT is approximately 3,600 words. However, it may be less depending on the number of files and whether there are comments.
- The amount of memory that can be used as recipes can be checked in the Resource Report under the Tool Menu of the NV-Designer.

Precaution for Correct Operation

- Do not use the SPMA function when the recipe function is operating.
- Data may be corrupted if there is a power interruption while the recipe data is being updated.
- Recipe data can be read from the PLC to the PT or deleted approximately 100,000 times.

8-5-2 Controlling Recipes

The recipe function allocates 4-word control addresses in the PLC memory. Recipes are controlled from these words. Turn ON word n bit 0 (write) or bit 1 (read) after specifying the file number in word n+1 and the block number in word n+2 in the control words to read or write recipes.

Words for Controlling Recipes

Word \ Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
n	Error Flag					Deletion Completed Flag	Read Completed Flag	Write Completed Flag						Delete Recipe Bit	Read (PLC to PT)	Write (PT to PLC)
n+1	File Number (0 to 99 hex)															
n+2	File Number (0 to 99 hex)															
n+3	Error Code															

Contents of Word n

Bit	Item	Description	Type
0	Write Bit (PT to PLC)	Turn ON this bit to write values set in a recipe file from the PT to the PLC. The Write Completed Flag will turn OFF when this bit turns OFF.	Turn ON the operation bit.
1	Read Bit (PLC to PT)	Turn ON this bit to read values set in a recipe file from the PLC to the PT. The Read Completed Flag will turn OFF when this bit turns OFF.	
2	Delete Recipe Bit	Turn ON this bit to delete a specified recipe file. The Deletion Completed Flag will turn OFF when this bit turns OFF.	
8	Write Completed Flag	Operation Completed Flag	It will then turn ON when the recipe file data has been written.
9	Read Completed Flag	This bit will then turn ON when the recipe file data has been read.	
10	Deletion Completed Flag	This bit will then turn ON when the recipe file data has been deleted.	
15	Error Flag	This flag will turn ON if an error occurs during data transfer. If the write, read, or deletion is performed normally, the Error Flag will turn OFF.	

Contents of Words n+1 to n+3

Word	Item	Description
n+1	File number	Specify the number of the recipe file to read or write.
n+2	Block number	Specify the number of blocks to read or write.
n+3	Error Code	An error code will be written here if an error occurs during data transfer. 0: Normal ON: The specified file does not exist. 2: The specified block does not exist. 3: Recipe data cannot be written because memory is full. If the write, read, or deletion is performed normally, the Error Code will be 0000 hex.

Additional Information

- Write, read, and deletion cannot be performed simultaneously. If all bits are ON, write, read, or deletion will be performed in that order.
- If all flags are OFF, either write, read, or deletion can be performed.

8-5-3 Using Recipes

1,2,3...   1. Start the Recipe Menu.
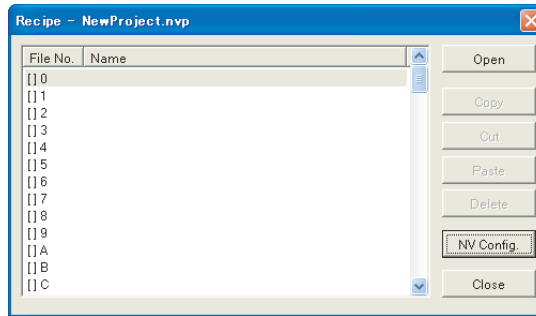
Select Recipe from the PT Menu.

2. Click the NV Config Button to setup the PT Configuration.
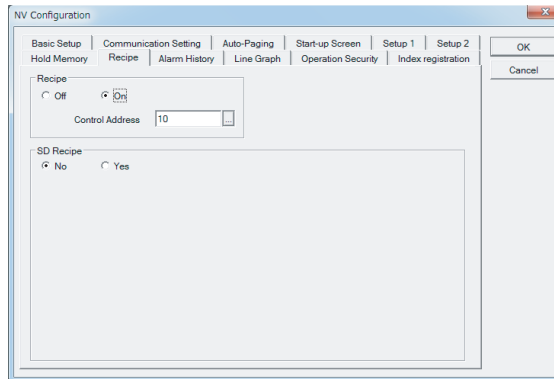
Make the following settings, and then click the OK Button.

Recipe: On

Control Address: W20

SD Recipe: No

Up to 100 (No. 0 to 63) recipe files can be created.

3. Select file 0 from the recipe list and click the Open Button.
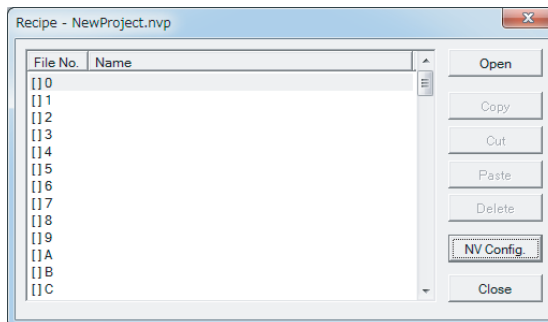
4. Change the Data/Recipe Setting.
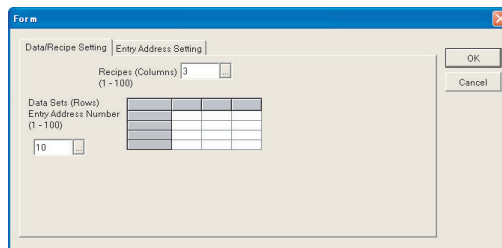
Change the Data/Recipe Setting as follows:

Data Sets (Rows) Entry Address Number: 10

Recipes (Columns): 3

5. Click the Number Continuously Tab and set the attributes.
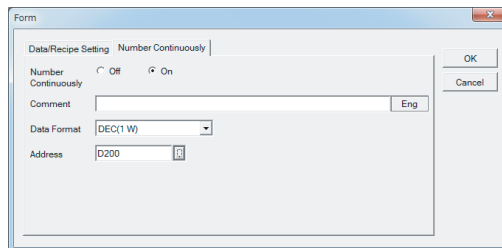
Make the following settings, and then click the OK Button.

Number Continuously: On

Data Format: DEC (1W)

Address: D200

6. Enter the table value in each block.
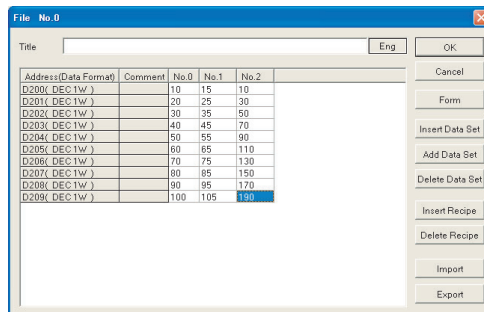
Make the following settings, and then click the OK Button.

	Comment	No. 0	No. 1	No. 2
D200		10	15	10
D201		20	25	30
D202		30	35	50
D203		40	45	70
D204		50	55	90
D205		60	65	110
D206		70	75	130
D207		80	85	150
D208		90	95	170
D209		100	105	190

7. Click the Close Button to return to editing the base screen.
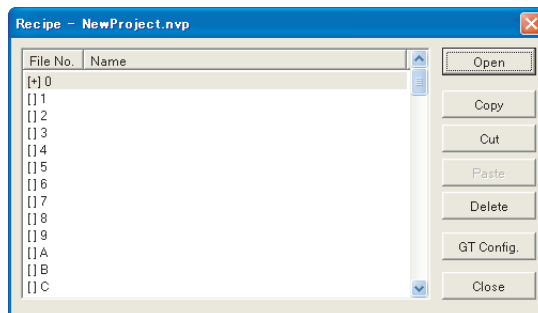
8. Transfer the recipe file to the PT.
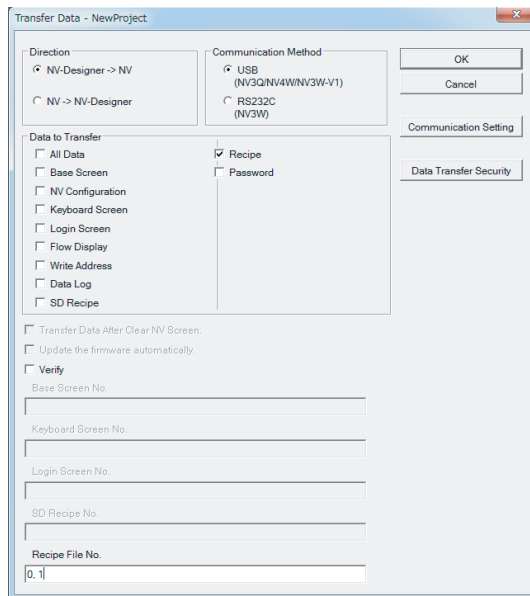
Select PT – Transfer – Transfer from the menu and select the Recipe Check Box.

Note Enter the Recipe File Number if required.

Example Transfer File Settings

Recipe File Number

0, 1

Enter alphanumeric characters and place a comma between file numbers. If nothing is entered, all recipe files will be transferred.

9. Manipulate the control bits.

a. Specify the file number and block number.
    Write 0 in W21 (file number) and 0 in W22 (block number) to specify file 0 and block 0.

b. Turn ON the Write Bit.
    Turn ON W20.00 (Write Bit).

c. Turn OFF W20.00 (Write Bit) when W20.08 (Write Complete Flag) turns ON. Use the write address function or PLC ladder program to manipulate these bits. W20.15 (Error Flag) will is OFF and W23 (Error Code) is set to 0000 hex when operation is completed normally. The values in block 0 set in step 5 is written to D200 to D209.

8-5-4 Operational Flow of Recipe Function

Use the following procedure to use the recipe function.
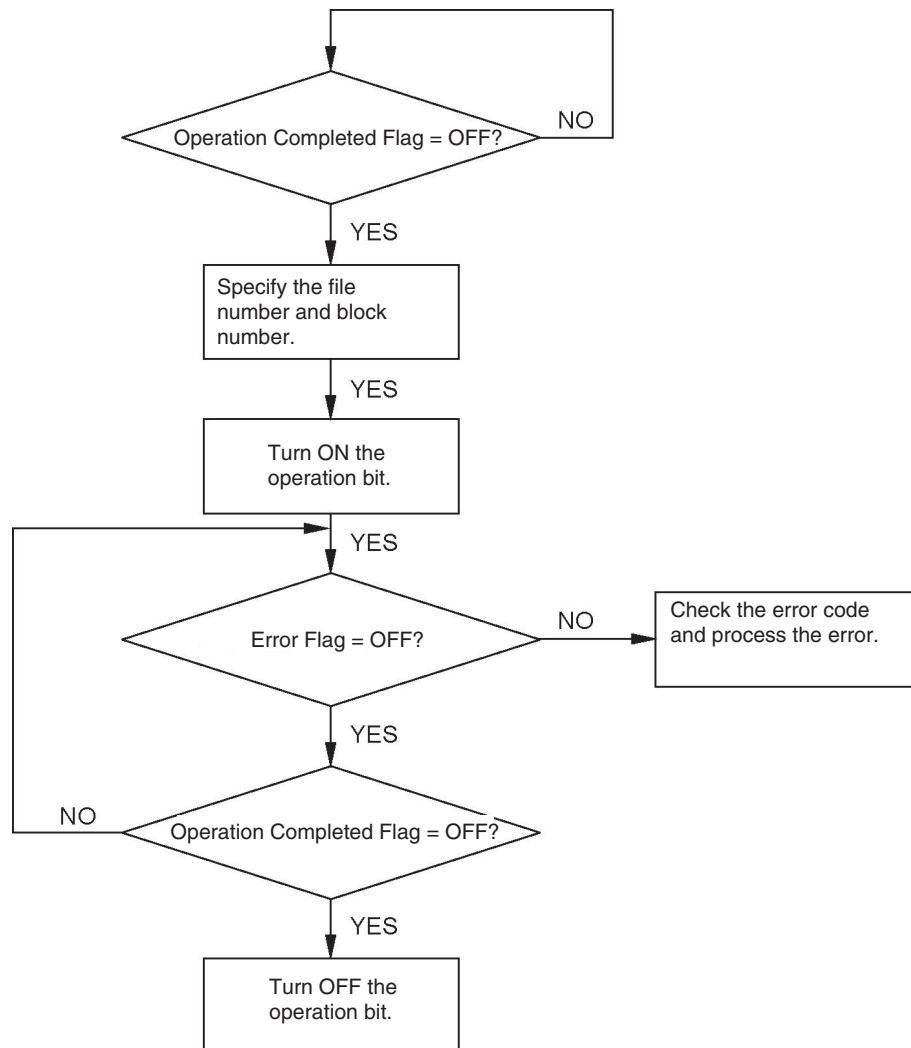
Example of Handshaking Using Write Address Function

The recipes can be used without special programming in the PLC by using the write address function. When the Write Completed Flag (bit 8 of word n) is turned ON by using the write address function, the Write Bit (PT to PLC) (bit 0 of word n) is turned OFF.

Example: Set W20 as the first control word.

When the Write Completed Flag W20.08 (bit 8 of W20) turns ON, the Write Bit (PT to PLC) W20.00 (bit 00 of W20) is turned OFF.

1,2,3... 1. Select Write Address from the PT Menu.
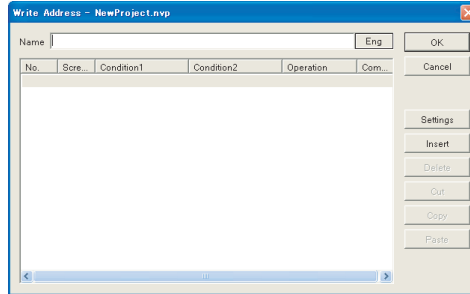
2. Select Settings.

3. Click the Condition Tab and set the conditions.
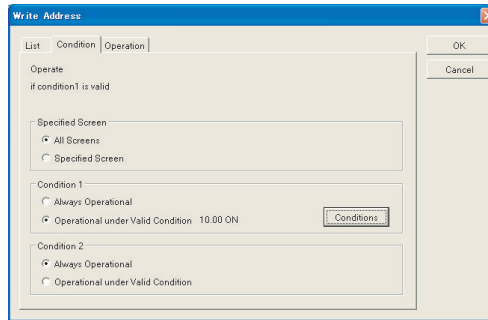
Condition:	Write Completed Flag W20.08 is ON
Specified Screen:	All Screens
Condition 1:	Operational under Valid Condition
Address type:	Bit
Relation code:	Address: ON
Address:	W20.08
Condition 2:	Always Operational

Note Specify the screen number if the screen needs to be specified.

4. Set the operation mode.
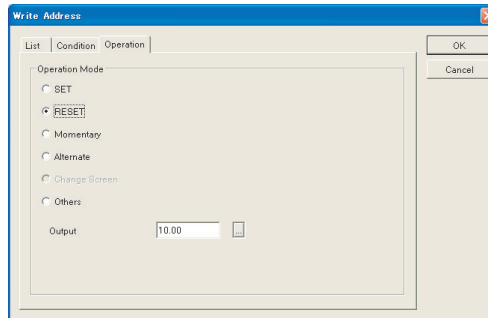
Operation:	Turn OFF the Write Bit (W20.00)
Operation Mode:	RESET W20.00

5. The conditions and the operation mode for the address writing are set and displayed.
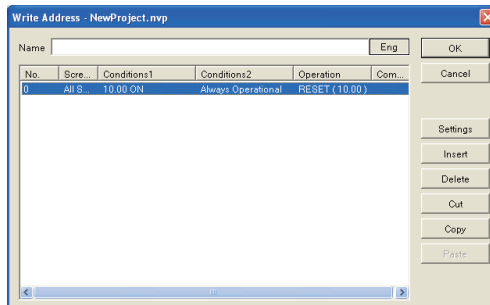
 Precaution for Correct Operation

Up to 100 addresses can be written. The PT constantly reads the conditional addresses registered for the write address function to the PLC. As the number of registered addresses increase, the response of the PT to change or update the display will become slow.

8-5-5   SD Recipe Function (available only with NV4W/NV3Q)

The SD recipe function allows recipe data to be saved in an SD memory card mounted on PT. You can write or read designated recipe data to or from a PLC.
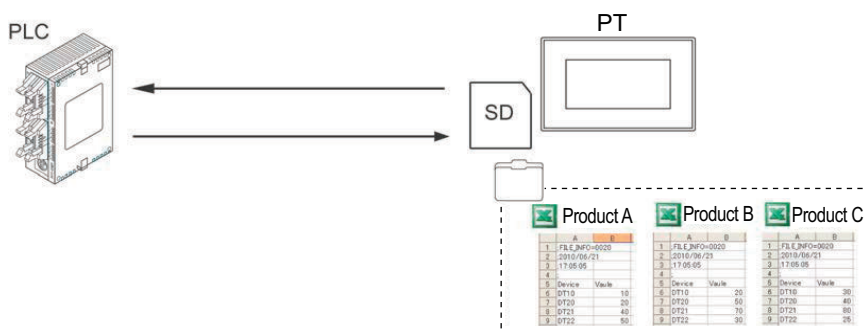
With the SD recipe function, each recipe folder can hold up to 64 recipe files. Each recipe file can contain a data set of up to 4096 tables.

Mechanism inside the SD memory card
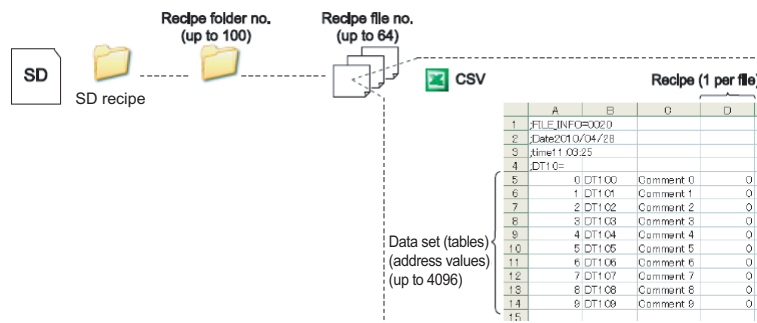
8-5-5-1 SD Recipe Operation

There are two operation modes for the SD recipe function.

Selecting one from the two different methods, you can change recipe data from one to the other.

<u>Specifying a recipe from PLC</u>

Just as the Recipe Function, you can specify a recipe folder No. and a recipe file No. by a control address specified within the PLC (or PT).
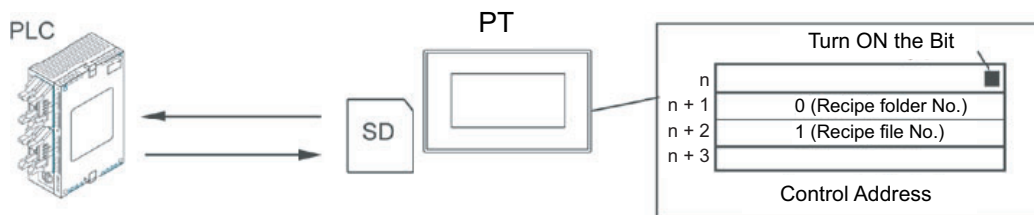
Writing to PLC: Turn ON the Write Bit of control address.

Reading from PLC: Turn ON the Read Bit of control address.

<u>Specifying on the PT panel</u>

Specify a recipe No. by a control address specified within the PLC (or PT). Display the list of the created recipe data on the PT, and touch to select one from the list.
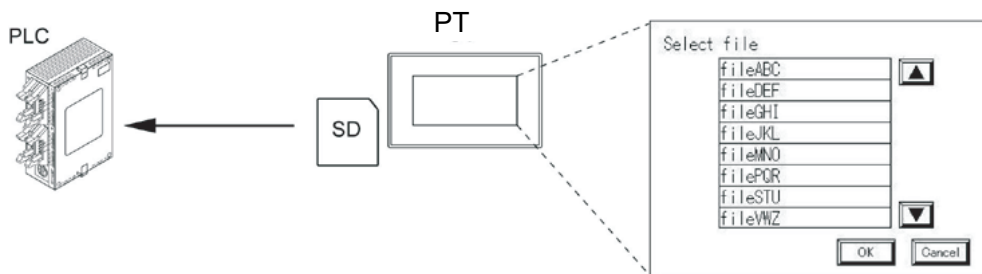
Writing to PLC: Select a file from the list of recipe Nos. displayed on PT.
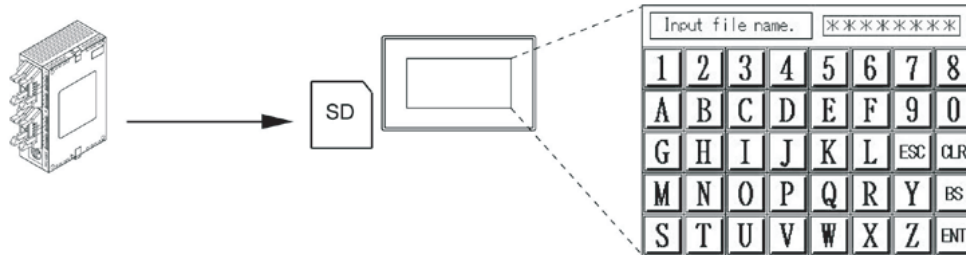
Reading from PLC: Input a file name on PT and add it to the recipe No. folder.

Procedure to operate the screen during touch operation

To write a file to PLC:

Specify the recipe No. in the control address. When the Write Bit is turned ON, the screen to select a recipe file appears on PT.

Select file

| file ABC |
| file DEF |
| file GHI |
| file JKL |
| file MNO |
| file PQR |
| file STU |
| file VWZ |

▲

▼

OK   Cancel
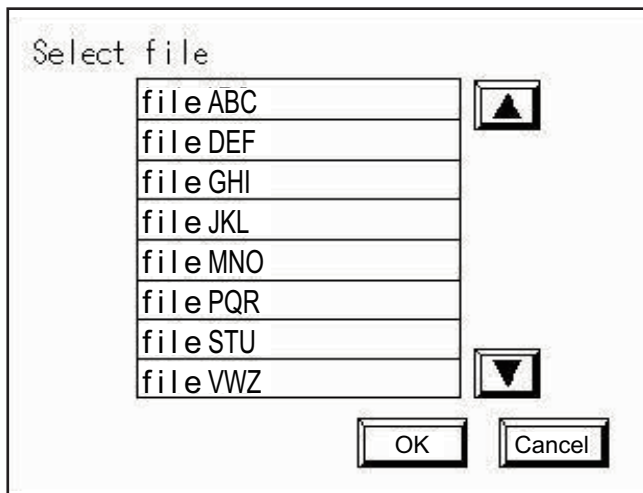
Touch the file name to write to PLC, and touch the OK button.

To read a file from PLC:

Specify the recipe No. in the control address. When the Read Bit is turned ON, the screen to input a file name appears on PT.

Input file name.   ✻✻✻✻✻✻✻✻

1	2	3	4	5	6	7	8
A	B	C	D	E	F	9	0
G	H	I	J	K	L	ESC	CLR
M	N	O	P	Q	R	Y	BS
S	T	U	V	W	X	Z	ENT
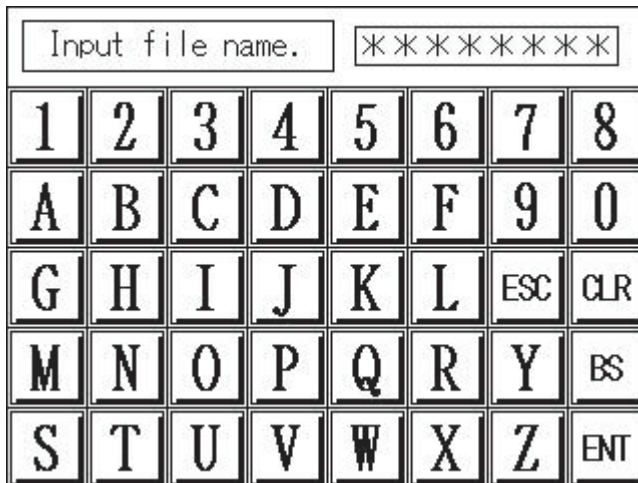
Input a file name that consists of 8 one-byte alphanumeric characters or less, and touch ENT.

A recipe file is created in the folder of the specified recipe No. in the SD memory card.

8-5-5-2   Settings Required for SD Recipe Function

The SD recipe function requires the PT settings performed on NV-Designer, and the csv file settings (editing) performed on PC to save address data in an SD memory card.

PT settings (performed on NV-Designer)

The basic SD recipe settings are to be performed on NV-Designer.

To use the SD recipe function on PT, the settings need to be transferred from NV-Designer to the PT.

Settings on NV-Designer
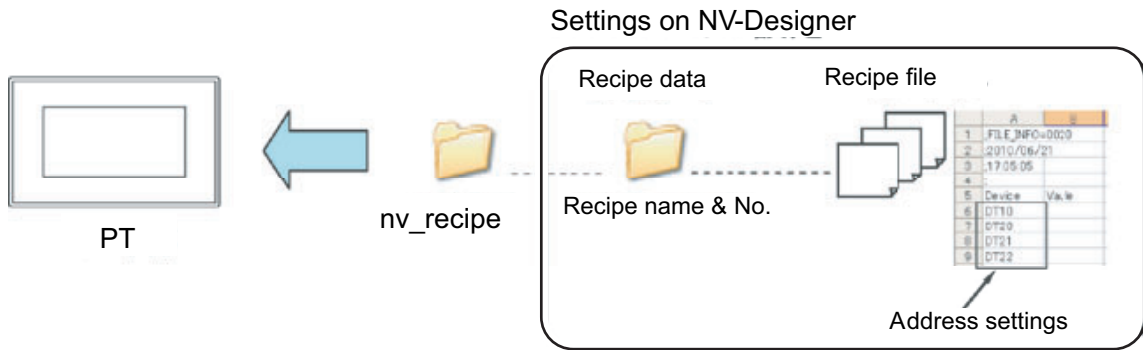
For each recipe No., input a recipe name, select operation method (mode), and perform address settings on NV-Designer.

SD memory card settings (performed on PC)

1,2,3...   1.   Create a folder in which to save a csv file.
Within an SD memory card, create an "nv_recipe" folder, and the folder labeled with the recipe name and No. specified on NV-Designer.
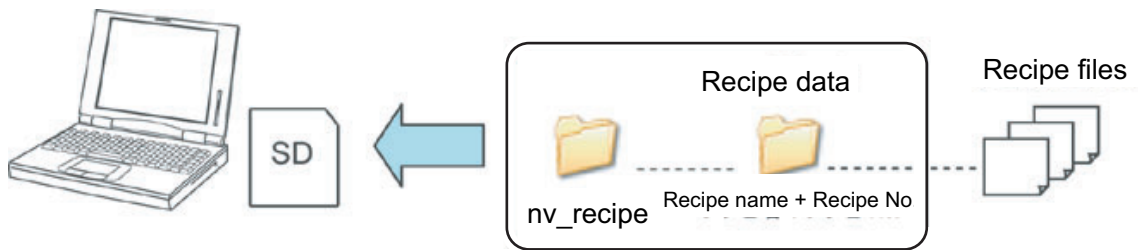
2. Editing the csv file (creating recipe files)
    The address data are to be input in a csv file.
    The address information specified on NV-Designer is to be saved as a csv file in the SD memory card. Open the csv file in the SD memory card, and add the address data only.

On NV-Designer, create as many recipe files (csv files) as you would like to create product types. Input data for one product type (block) in one csv file.

Additional Information

It is possible to create files by reading address data from PLC.

You still need to make settings for SD recipe on NV-Designer, but you do not need to edit the csv file.
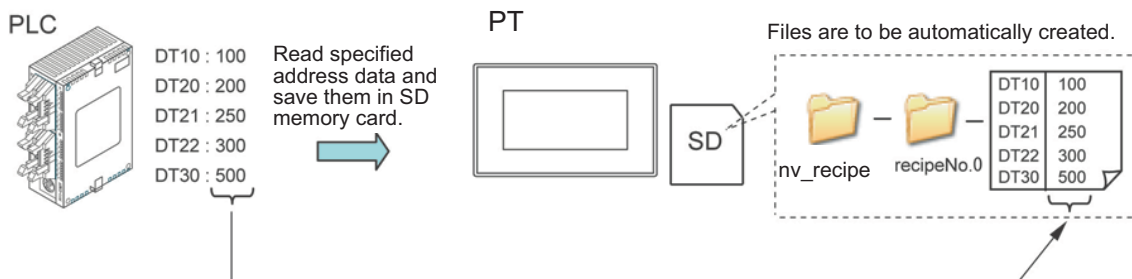
8-5-5-3   Folder Name and Recipe file Name

Two folders are to be created.

- For a recipe folder, label it with the recipe name and the SD recipe No.
- For the nv_recipe folder, the name is fixed as it is.

For a recipe file, labeling differs depending on the operation mode selected during SD recipe setting.

<u>Specifying from PLC</u>

(Specifying recipe file no. by control address)

Recipe folder

Recipe file

nv_recipe

********0000

Within 12 one-byte alphanumeric characters + 4 alphanumeric characters

0000.csv

0001.csv

0002.csv

Recipe file No.
(4 one-byte numeric characters)
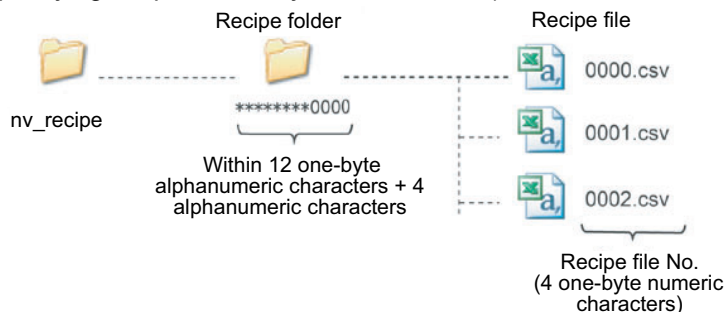
<u>Specifying on the PT panel</u>

(Specifying recipe filename by touch operation)

Recipe folder

Recipe file

nv_recipe

********0000

Within 12 one-byte alphanumeric characters + 4 alphanumeric characters

********.CSV

********.CSV

********.CSV

The specified file names are displayed as a list on PT.

Recipe file No.
(8 one-byte numeric characters)
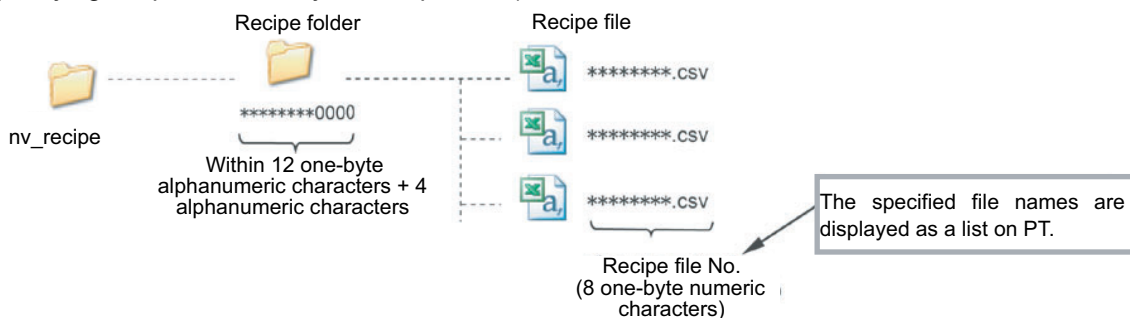
Recipe folder name composition

******** 0000

SD Recipe No.:   4-digit SD recipe No.
                       0000 for No.0, 003A for No.3A

Recipe Name: The name specified on
                       NV-Designer is used.
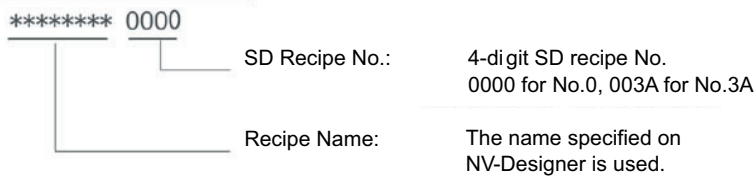
8-5-5-4   SD Recipe Setting Parameters

<u>**Setting parameters
under [SD Recipe] on
the [Recipe] tab**</u>
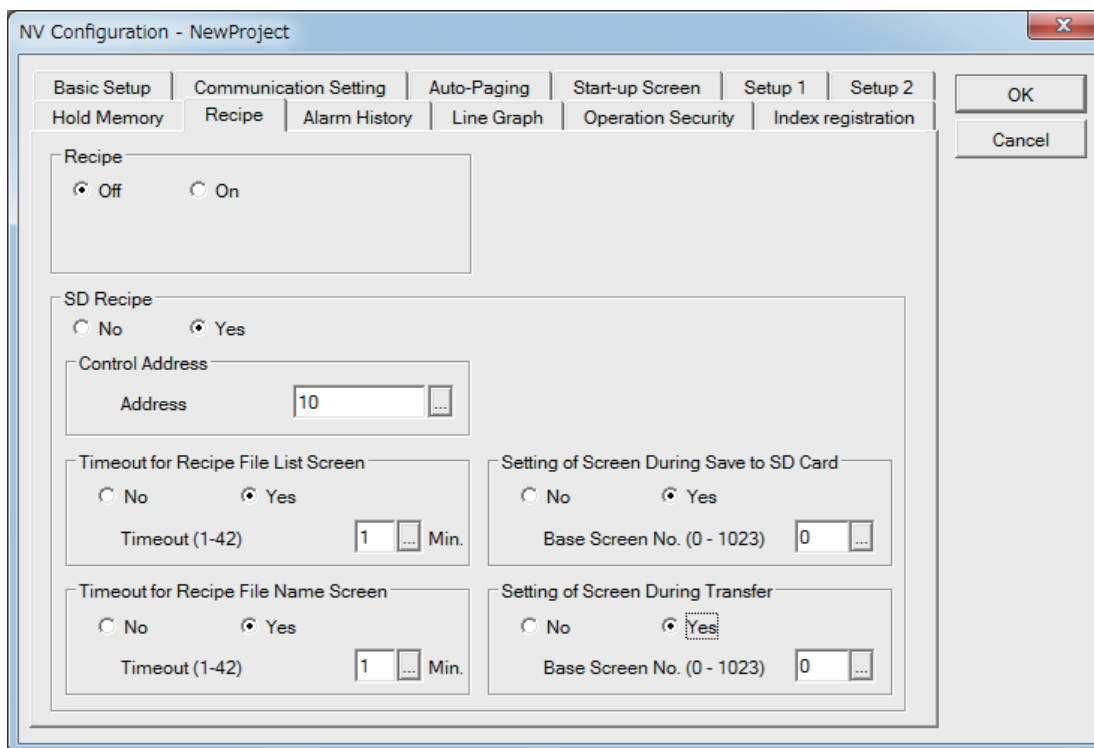
Item	Description
SD Recipe	Specifies whether or not to use the SD recipe function.
Control Address	Specify the first 4 words of the control address when the SD recipe function is used.
Timeout for Recipe File List Screen	Specifies how long the recipe file list screen is displayed. This is only settable when [Specify Recipe File Name by Touch Operation] is selected on the Basic Setup tab of the SD Recipe edit screen.
Timeout for Recipe File Name Screen	Specifies how long the recipe file name screen is displayed. This is only settable when [Specify Recipe File Name by Touch Operation] is selected on the Basic Setup tab of the SD Recipe edit screen.
Setting of Screen During Save to SD Card	Specifies the Base Screen to be displayed while the address data (read from PLC) of the recipe file is being saved in an SD memory card.
Setting of Screen During Transfer	Specifies the Base Screen to be displayed while the address data of the recipe file is being written in PLC.

8-5-5-5 SD Recipe Settings

1,2,3... 1. Select SD Recipe from the PT Menu.
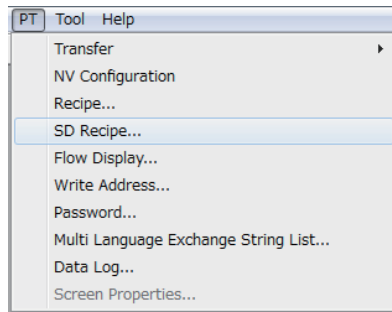
The SD Recipe List dialog box opens.
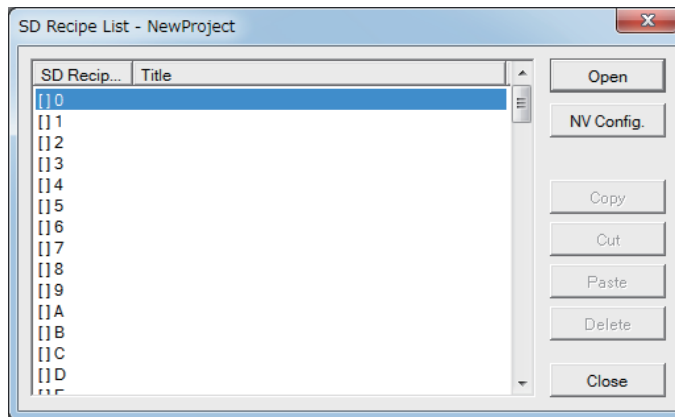
2. Click the NV Config. Button to make settings of NV Configuration. Refer to *8-5-5-4 SD Recipe Setting Parameters*.
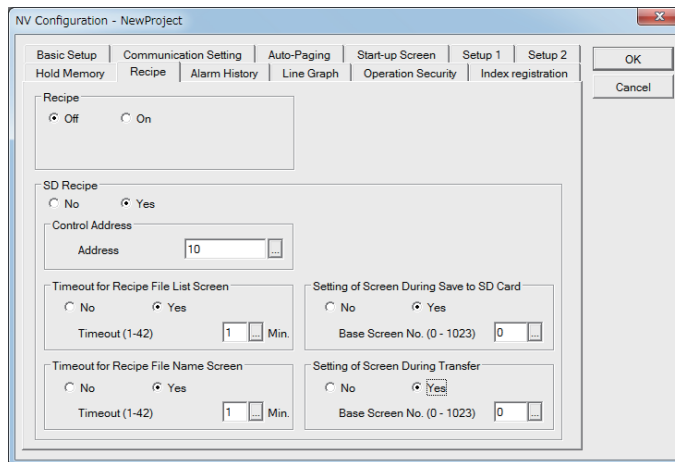
3. After completing NV configuration settings, select an arbitrary recipe No. from the SD recipe list, and click the Open button.

4. The SD recipe edit screen opens.
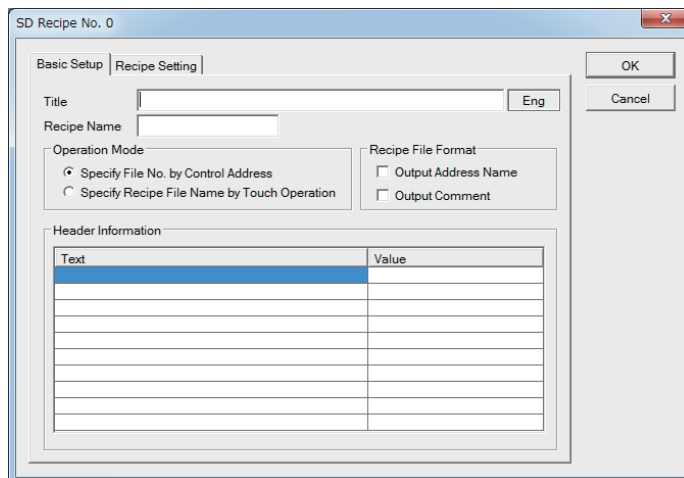
Setting parameters on the Basic Setup tab of the SD recipe edit screen

Item	Description
Recipe Name	Input the recipe name composed of 12 one-byte alphanumeric characters or less. The name is used as the memory folder name of the SD memory card.
Operation Mode	Specify File No. by Control Address: the file No. is managed by control address, the same as the recipe function.
	Specify Recipe File Name by Touch Operation: the recipe file names are listed on PT, and you can choose the recipe file to use.
Recipe File Format	Output Address Name: Outputs address data at the time of creating the recipe (csv) file.
	Output Comment: Output comments at the time of creating the recipe (csv) file.
Header Information	Text: Input as required.
	Value: Set either date, time, or address.
	Double-click a cell to display the header edit dialog box.
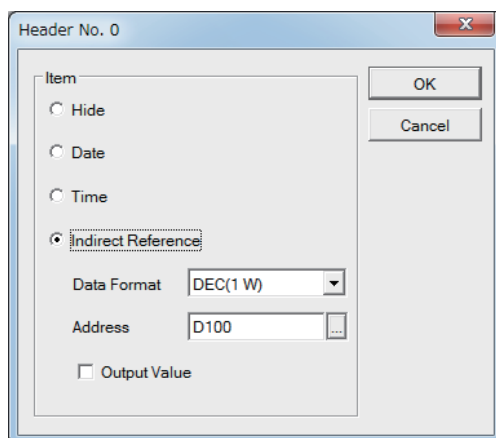
Setting parameters in the header edit dialog box

Item	Description
Hide	Hides the value.
Date	Displays the date.
Time	Displays the time.
Indirect Reference	Data Format: Specify the data format. Address: Specify the address. Output Value: Outputs the address data input on the csv file to each address of PLC when data are being written from SD to PLC. Note, however, that when the data is being read from PLC to SD, the address data on PLC are read to the csv file regardless of this setting.
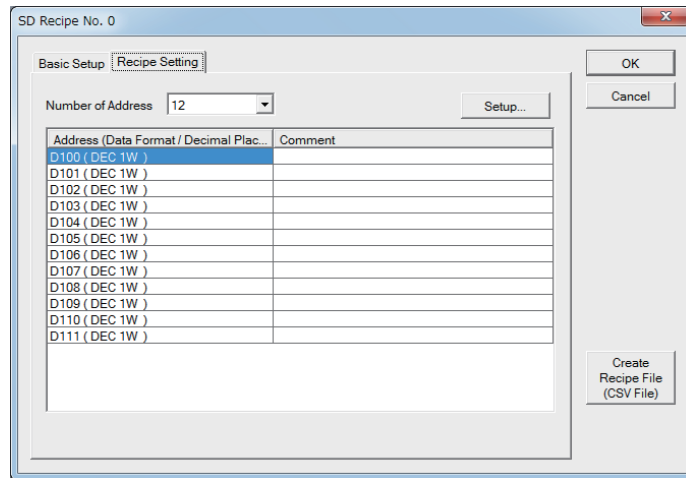
Setting parameters on the Recipe Setting tab of the SD recipe edit screen

Item	Description
Number of Address	Specify the number of addresses within the range from 1 to 4096.
Setup	Displays the address setting dialog box, which can also be displayed by double-clicking the cell for the address you wish to perform setting.
Create Recipe File (csv file)	Creates a recipe file (csv file) from the specified address.
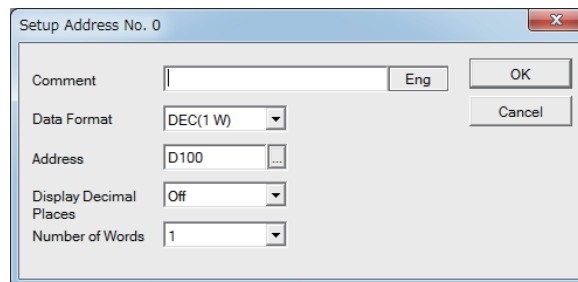
Setting parameters in the Setup Address dialog box

Item	Description
Comment	Input a comment within 64 one-byte characters.
Data Format	Specify the data format.
Address	Specify the address.
Display Decimal Places	Specify the number of decimal places.
Number of Words	Specify the number of words to register the address consecutively from the specified address.

5. Transfer the SD recipe file to the PT.
   Select PT - Transfer - Transfer from the menu and select the NV Configuration and SD Recipe check boxes.
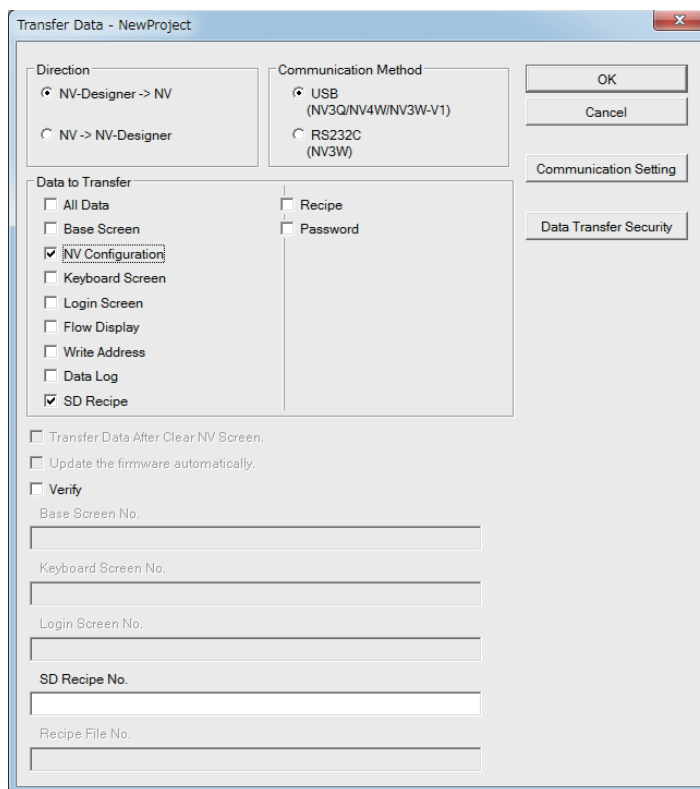
To specify an SD recipe No., enter the No. in the SD Recipe No. field.

Example of SD recipe No.

```
0, 1
```

To specify multiple SD recipe Nos., enter one-byte alphanumeric characters, and place a one-byte comma (",") between the recipe Nos.

```
0-1
```

To specify consecutive SD recipe Nos., enter one-byte alphanumeric characters, and place a one-byte hyphen ("–") between the recipe Nos.

8-6   Security Functions

Two security functions with passwords are provided.

Data Transfer Security

The screen data can be prevented from disclosure and changes by setting a password of up to 8 alphanumeric characters for transferring screen data to the PT and prohibiting read/write operations by users other than the administrator.

Operation Security (NV3W-V1/NV4W/NV3Q)

Levels can be set for parts and users to restrict the contents that can be displayed and the operations that can be performed. The user level is managed by passwords.

> **Additional Information**
> • The password settings can be read by reading the screen data from the NV-Designer.
> • We recommend that you use both the operation security function and data transfer security function to protect security passwords.

8-6-1   Data Transfer Security Function

Setting Passwords

1,2,3...   1. Toolbar Select PT – Transfer – Transfer from the toolbar. The Transfer Data Dialog Box will be displayed.
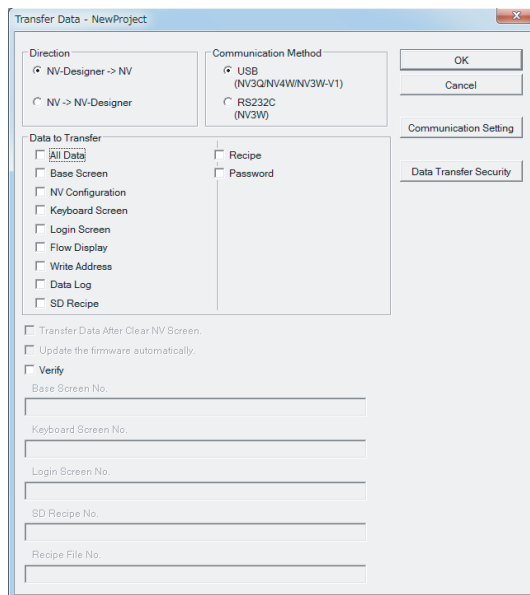
Click the Data Transfer Security Button at the upper right of the dialog box.

2. Set a password.

Setting the Password for the First Time
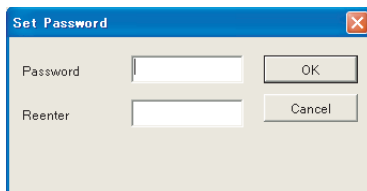
Up to 8 characters can be entered for the password. The password can contain numbers 0 to 9 and letters A to Z. The system does not differentiate between uppercase and lowercase letters.

Password Previously Set
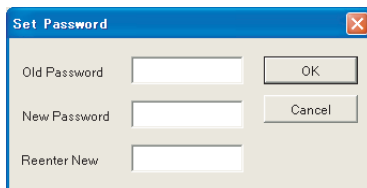
Changing the Password:

Enter the current password in Old Password and then enter the new password in the New Password and Enter New Password Again Boxes.

Deleting the Password:

Enter only the Old Password. Leave the New Password and New Password Again Boxes blank.

Additional Information

Passwords cannot be set unless a computer is connected to a PT that is turned ON.

Precaution for Correct Operation

Do not forget the password. If you forget the password, the unit memory will have to be cleared to delete the password.

8-6-2   Operation Security (NV3W-V1/NV4W/NV3Q)

Security levels can be set for parts and users to restrict the displays and operations that can be performed. If multiple users are using the PT, disclosure or mishandling of information can be prevented by placing individual user restrictions.

Features

- Security levels can be set for all parts.
- Up to 16 security levels can be set and multiple users can be registered in each level. Up to 64 settings can be registered.
- Different parts can be displayed on the same screen using the different levels. Switches can be set so that they are displayed but switch operation is disabled.
- Users can be added or deleted, and passwords can be changed from the PT.

Security Levels

There are 16 levels of security and they are divided into three categories.

Security level	Restrictions
0	No restrictions. There is no password for level 0.

Security level	Restrictions
1 to 14	Restrictions become higher as the level number increases. Example: Parts with level 0 to 10 can be used under a level 10 password but level 11 parts cannot be used.
15	All operations are possible. (Administrator) Passwords can be registered in the PT.

Setting Security

Security levels can be set for parts. They are set on the Operation Security Tab Page of the part attributes. There are also screen creation and parts settings required for using the operation security function.

Screen Properties

Login Screen: The user can enter a password to log on to a level.

Function Switches and Custom Switches

For operation security for login	A jump will be made to the login screen for entering passwords when the switch is pressed.
For operation security: logout	Returns to level 0 from the level where the user is current logged in.
For operation security for changing passwords	This switch can be used to change a password. A jump will be made to the fixed PT screen for changing passwords.
For operation security for managing passwords	This switch can be used to add or delete a password. A jump will be made to the fixed PT screen for managing passwords. (Level 15 only)

Password Change and Management Screen Settings

Security level	Password Change Screen	Manage Password Screen		
		Add	Change	Delete
0	---	---	---	---
1 to 14	Supported.	Not supported.	Not supported.	Not supported.
15	Supported.	Levels 1 to 15: Supported.	Levels 1 to 15: Supported.	Levels 1 to 15: Supported. (See note 2.)

Note
(1) The Password Change and Management Screens cannot be accessed from the menu screen. A switch must be set.

(2) The logged in password cannot be deleted.

Precaution for Correct Operation

It is possible to return to the screen before you log out with the function switch or custom switch. Do not use the return to previous screen operation mode if you want to restrict switching screens using security levels. The settings in the Change Screen Operation Mode are recommended.

8-6-3 Setting Passwords for Operation Security

You can set passwords to enable operation security.

Setting Passwords

1,2,3...
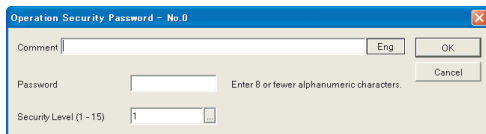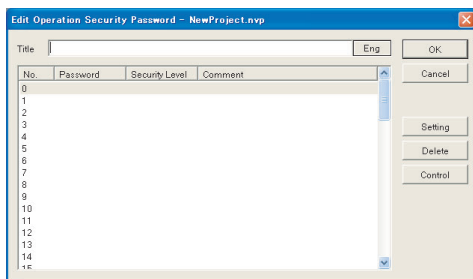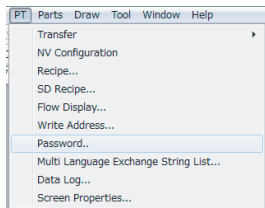
1. Select Password from the PT Menu.

2. The Edit Operation Security Password Dialog Box will be displayed.
   Click the Control Button to set the operation security in the PT Configuration. Refer to *8-6-5 Operation Security Settings in the NV Configuration* for details.

3. Select the number to edit and click the Setting Button. The Operation Security Password Dialog Box will be displayed. Make the following settings.

   Comment
   Enter a comment to identify the password.

   Passwords
   Set a password. (Up to 8 alphanumeric characters can be used.)

   Security Levels (1 to 15)
   The security level can be set. (Levels 1 to 15 can be set.)

Precaution for Correct Operation

- More than two passwords can be set for the same level.
- You cannot set the same password.

Additional Information

The password settings can be read by reading the screen data from the NV-Designer. We recommend you also use password protection to protect the security password settings.

8-6-4   Creating the Login Screen for Operation Security

Create the Login Screen for operation security. The Login Screens are used to enter passwords according to the security levels specified for the operation security function. Position the keyboard part and data part for entering the password.

Login Screen

1,2,3...   1. Select Edit Login Screen from the File Menu.

The Edit Login Screen Dialog Box will be displayed.
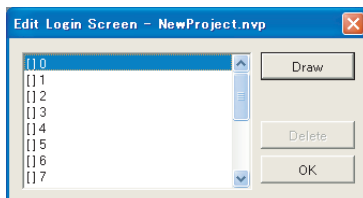
2. Select the login screen number that you want to edit from the list displayed in the Edit Login Screen Dialog Box. Login screens that have already been edited will have a + next to it.

3. The login screen will be displayed when the Draw Button is clicked.
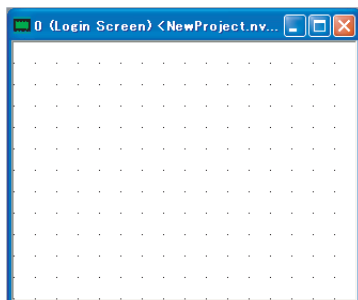
4. Position the data part and keyboard part. You can also position graphics, lamps, message parts, and character strings.
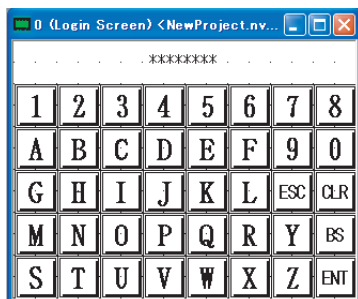
Refer to *7-7 Data Parts and Keyboard Parts*

8-6-5   Operation Security Settings in the NV Configuration

The following tab page will be displayed when the Operation Security Tab is clicked in the NV Configuration Dialog Box.

Password Tab Page

Item	Description
Operation Security Function Available	Enables or disables operation security.
Level Output	Sets whether to output the security level to an address. Specifies the output address if the security level is to be output.
Function when Operation Restricted	Specifies what happens when a part with a higher security level than the current one is touched. • Off: No operation. • Output Warning Beep: The buzzer beeps to warn you. • Display Login Screen: A login screen is displayed. Set the login screen number (0 to 15) to display. **Note** A login screen will need to be created.
Change Screen upon Logout	Sets whether to change the screen when logging out of a security level. To change to the specified screen, set the screen number (0 to 1,023) to display when logging out.
Time-Out	Automatic Logout	Sets whether to automatically log out (level 0) after a period of inactivity. Sets the time of inactivity until the automatic logout (1 to 42 minutes).
	Login Screen Time-Out	Enables or disables automatically returning to the original screen from the Login Screen where the password is entered. If the timeout function is used for the Login Screen, set the time before returning to the original screen to between 1 and 42 minutes.
	Password Change Screen Time-Out	Enables or disables automatically returning to the original screen from the Password Change or Management Screen. If the timeout function is used for the Password Change Screen, set the time before returning to the original screen to between 1 and 42 minutes.

8-6-6 Transferring Passwords

Transfer the password that was created in Edit Password to the PT.

Transferring Passwords

1,2,3...
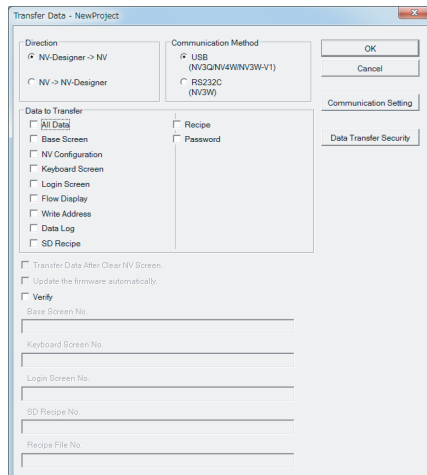
1. Select PT – Transfer - Transfer from the menu bar. The Data Transfer Dialog Box will be displayed.

2. Select the NV-Designer → NV transfer direction as well as Password under Data to Transfer, and then click the OK Button.

Precaution for Correct Operation

The password settings after transfer can be read.

To prevent data leakage, transfer as follows to protect the password.

- Transferring passwords only:
  Password: Select.
- Transferring simultaneously with data:
  Password: Select.
  All Data: Select
- To prevent data disclosure:
  Click the Data Transfer Security Button and enter the password.
  Password: Select.
  All Data: Select (data also for simultaneous transfer)

8-7   Switching the Display Language

8-7-1   Switching the Display Language

You can register the language and corresponding character string for each part in advance and then change all registered parts at the same time using a function switch or a command from the PLC. Set the language and character string for each language number and then specify the language number to switch the language. This can be used to switch the language display. Up to 16 language numbers can be registered (0 to 15).

| Japanese | English | Chinese |
| (Language 0) | (Language 1) | (Language 2) |
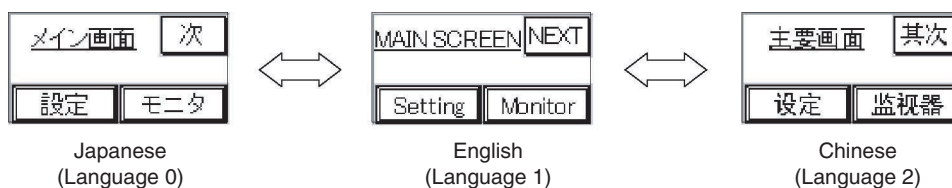
 Precaution for Correct Operation

- It is important to determine which languages to register for each language number before creating screens. Otherwise many languages will be displayed.
- When using the display language switching function, memory is used for the number of language times the number of screens so the number of screens that can be registered will be reduced.

Procedure for Switching the Display Language

Use the following procedure to switch the language.

1 | Enable switching the display

  • Set Multi-language Exchange to ON on the Language
    Tab Page of the NV-Designer Configuration.

↓

2 | Set the language in the OS of the computer.

↓

3 | Select the language for each language number.

  • Select Multi-language Exchange String List from the
    PT Menu in the NV-Designer.

↓

4 | Input the character string for each language number.

  • Use the NV-Designer do one of the following:
    Select Multi-language Exchange String List from the PT Menu,
    Input character strings for parts; or import a text file.*1

*1 If Microsoft Excel is used to edit
    a text file with the *File - Open* or
    Data - Import External Data,
    you may not be able to import
    the text to the NV-Designer cor-
    rectly.

↓

5 | Transfer the project.

↓

6 | Switch the language number by using a function
switch or switching from the PLC.

8-7-2   Enabling Switching the Display Language.

To enable switching the display language, set the NV-Designer Configuration so that the display language can be switched.

1,2,3...   1. Start the NV-Designer.

2. Select NV-Designer Configuration from the Tool Menu.

3. Click the Language Tab.

4. Set Multi-Language Exchange to On.
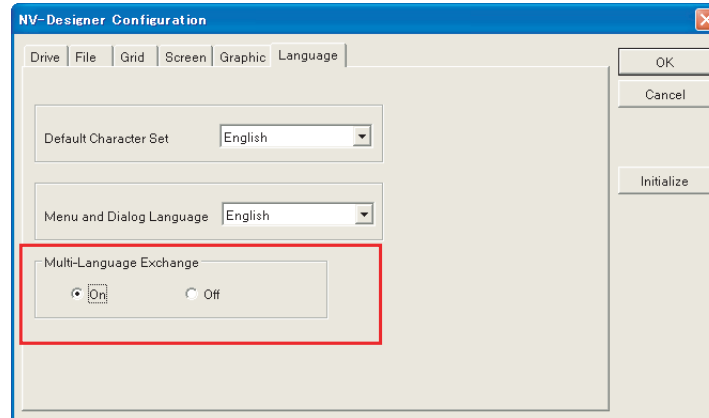
This will enable selecting *Multi Language Exchange String List* from the PT Menu. If switching the display language is enabled, a dialog box to edit character strings for switching display languages will be displayed to let you select the language for each language number.

8-8 Displaying Resource Reports

The PT memory status can be displayed with the NV-Designer.

Displaying the Resource Report

Select Resource Report from the Tool Menu. The Memory Usage Dialog Box will be displayed.
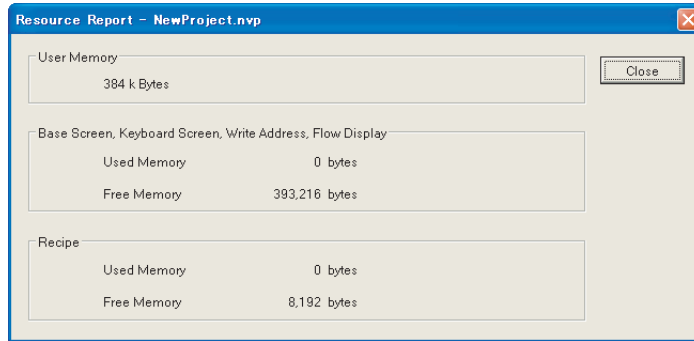
■ **NV3W**

■ **NV3W-V1/NV4W/NV3Q**
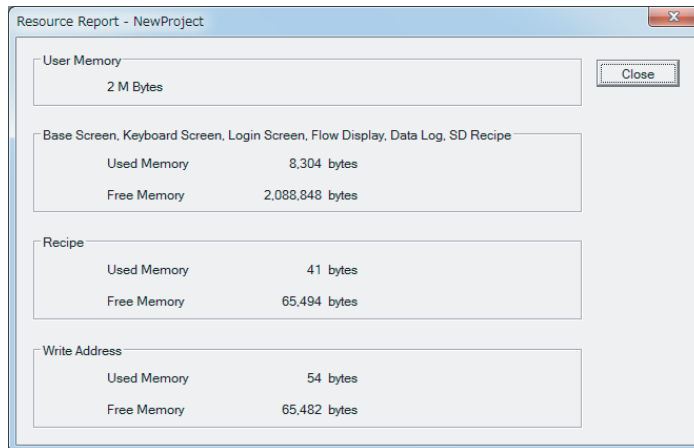
8-9   Base Screen Memory Usage

The amount of memory used by the base screens is displayed here.

Displaying the Base Screen Memory

1,2,3...   1. While an arbitrary Base Screen is opened, select Base Screen Memory Use Status from the Tool Menu. The User Memory Dialog Box will be displayed.
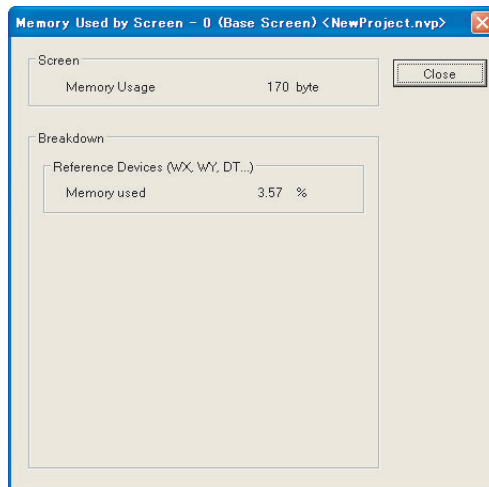
■ **NV3W**

■ **NV3W-V1/NV4W/NV3Q**
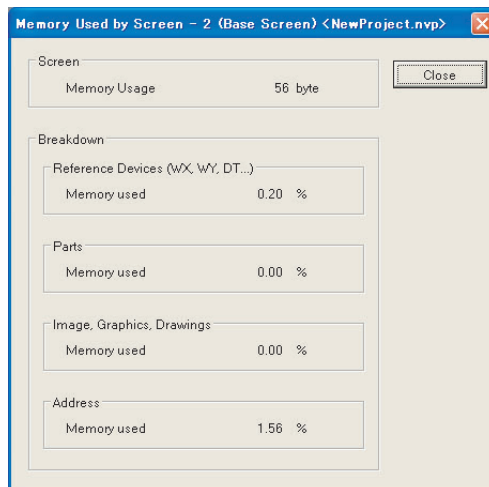
Screen data   The amount of screen data used during editing is displayed.

Breakdown   The percentage of the limit for using parts that has already been used is displayed.

Reference Devices

The percentage of the memory that will be used when the part information is registered in the PT is displayed.

Parts (NV3W-V1/NV4W/NV3Q)

The percentage of the memory that will be used when the parts are attached is displayed.

Image, Graphic, Drawings (NV3W-V1/NV4W/NV3Q)

The percentage of the memory that will be used by the a part image is displayed.

Addresses (NV3W-V1/NV4W/NV3Q)

The percentage of the memory that will be used by communications addresses allocated to parts is displayed.

8-10 Projects Verification

This function allows you to compare the selected NV-Designer project with the one currently open on the NV-Designer, and to display the result of comparison.

Procedure to collate the projects

1,2,3... 1. Select Verify Projects from the File menu.
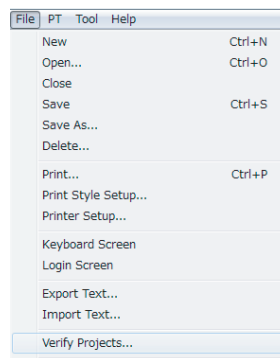
The Open dialog box appears as below.
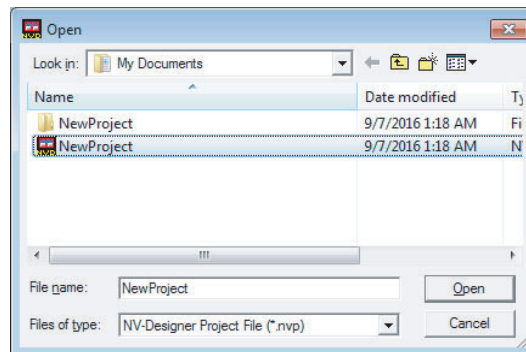
Additional Information

When multiple projects are opened on the NV-Designer, the Select File dialog box opens before the above Open dialog box appears. Select the project targeted for verification.

2. Select an NV-Designer project to compare with.
    Clicking the Open button executes verification.

3. When the verification is completed, the following dialog box appears.
    (The contents of verification are the same as those executed by selecting PT - Transfer - Verify.)
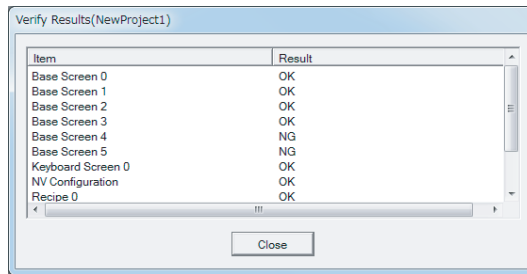
The Item column shows the files.

The Result column shows the result of verification.

OK: The result matches.

NG: The result differs.

4. Clicking the Close button closes the Verify Results dialog box.

SECTION 9
Transferring Screens

This section describes how to transfer screens to and from an NV-series PT using both communications and SD memory cards.

9-1   Transferring Screens from the NV-Designer

Base screen data and NV Configuration data can be transferred from the NV-Designer to the PT. You can transfer the base screens, NV Configurations, keyboard screens, flow display data, write address data, recipe files, and passwords. The data is stored in flash memory in the PT.

■ **NV3W**

NV-Designer
Screen Design
Software

Base screen data, NV
Configuration, and other data
is transferred.

NV

Programming Device Connecting Cable
(RS-232C cable with a round DIN pin
connector for the NV3W)
NV-TOL-3M

Power supply (5 V or 24 V)
Not required for XW2Z-200T-4 (2 m with 5-V line).

■ **NV3W-V1/NV4W/NV3Q**

NV-Designer Screen
Design Software

Base screen data, NV Configuration,
and other data is transferred.

NV

Commercially available USB cable

NV3W-V1/NV4W: Mini B Type
NV3Q: B Type

Power supply (24 V)

📖 **See Also**

Refer to the following section for details on connecting the PT and PLC:
Section 6 Connecting the PLC in the *Setup Manual*.

9-1-1   Setting Communications Conditions

1,2,3...   1. Select Transfer from the PT Menu. The Data Transfer Dialog Box will be displayed. Click the Communication Setting Button at the upper right of the dialog box.
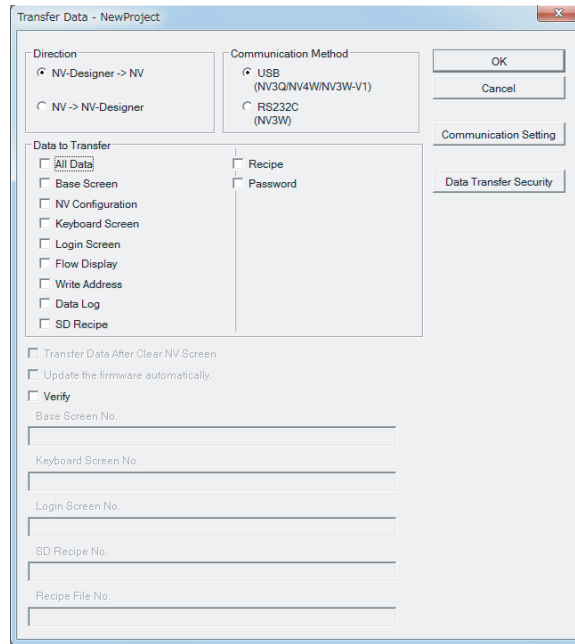
2. The Communications Parameters Dialog Box will be displayed. Set the communications parameters between the NV and PLC.

■ **RS-232C**
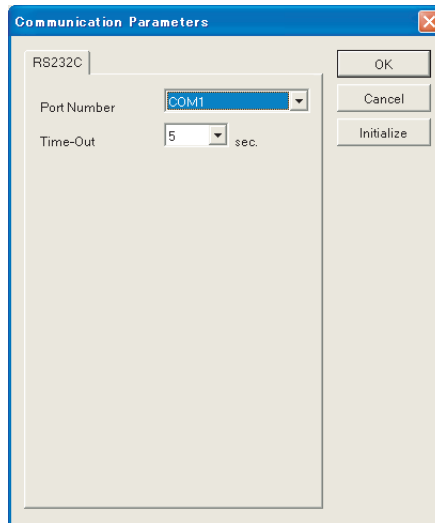
Port Number	Displays the COM ports to which a connection can be made (all of the COM ports detected by Windows).
	The default is the lowest-numbered COM port.
Time-Out	1 to 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, or 60 s
	Default is 5 s.

Note   Set the COM port that will be used on the computer in advance using the Windows Device Manager or other utility. Communications will not be possible if

219

the COM port number does not agree with the COM port to which the PT is connected.

9-1-2   Selecting the Data to Be Transferred
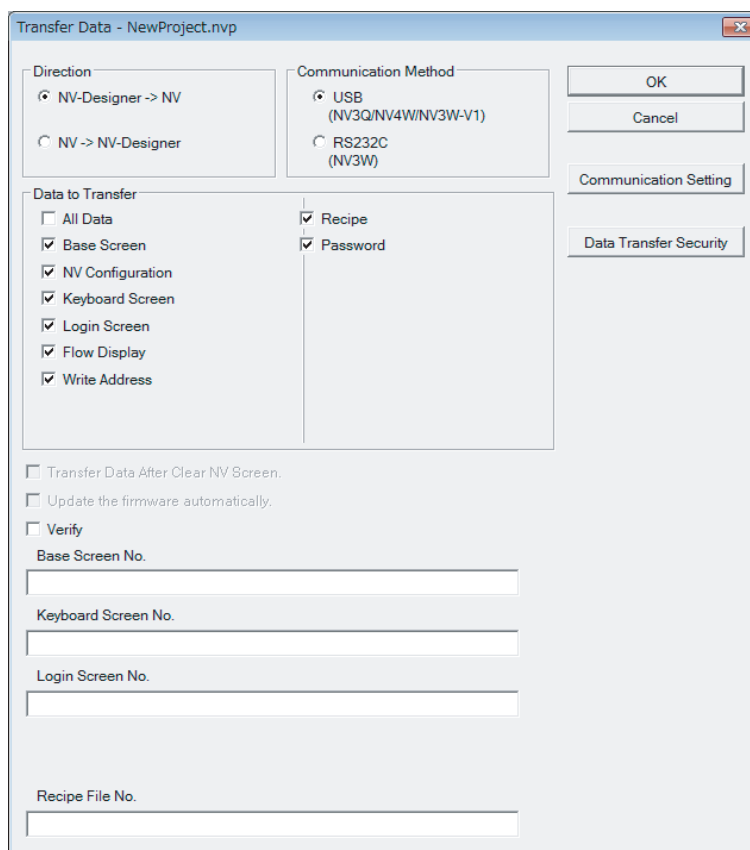
Transfer Data

All Data	Select this check box to transfers all of the data.
Base Screen	Select this check box to transfer base screen data. Enter the screen number of the base screens.
Configuration	Select this check box to transfer the NV Configuration data.
Keyboard screens	Select this check box to transfer the keyboard screen data. Enter the keyboard screen numbers.
Login Screen (NV3W-V1/NV4W/ NV3Q only)	Select this check box to transfer the login screen data. Enter the login screen numbers.
Flow Display	Select this check box to transfer the flow display data.
Write Address	Select this check box to transfer the Write Address data.
Data Log (NV4W/ NV3Q only)	Select this check box to transfer data log.
SD Recipe (NV4W/ NV3Q only)	Select this check box to transfer SD recipe files.
Recipes	Select this check box to transfer recipe files. Enter the Recipe File Number.
Password (NV3W-V1/NV4W/ NV3Q only)	Select this check box to transfer passwords.

Note Enter the screen numbers individually, delimited with commas (1, 3, 5) or as a range (1- 5).

Direction

NV-Designer → PT	The data that was selected for transfer will be written from the NV-Designer to the PT.
PT → NV-Designer	The data that was selected for transfer will be written from the PT to the NV-Designer.

Transfer Data after Clear NV Screen

Select this check box to transfer data to the PT after deleting all previously transferred data. When this check box is not selected, the NV-Designer will delete the screen data, but any transferred data will not be deleted from the PT.

Update the Firmware Automatically

When transfer of all of the data is selected, the new firmware for the PT can be transferred at the same time. When the PT firmware is the same as the file installed on the NV-Designer, automatic update is not performed.

Verify Select this check box to verify the data after the data from the NV-Designer has been written to the PT. Verification involves checking whether the screens transferred to the PT have been transferred correctly after all data has been transferred to the PT.

9-1-3 Executing the Transfer

1,2,3...   1. If there is already screen data in the PT when you click the OK Button to transfer screen data, the following dialog box will be displayed.
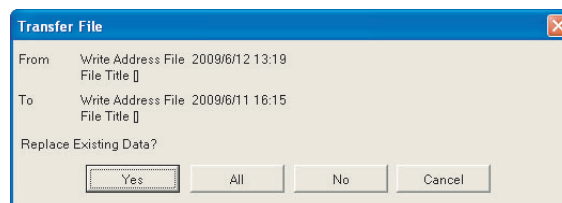
2. Click the Yes or All Button to execute the transfer.

9-1-4 Setting Passwords

Passwords can be set in the PT. You can protect the screen data that you have created by setting a password that will prevent uploading and download-ing screen data unless the correct password is entered.

📖 **See Also**

Refer to *8-6 Security Functions*.

9-2   Transferring and Copying Data Using SD Memory Cards (NV4W/NV3Q)

9-2-1   SD Memory Cards

When connecting to the computer running NV-Designer is not possible, an SD memory card can be used to transfer base screen data or NV Configuration data to a PT. Transferring data in this way is done in the same units as data transfer via communications from the NV-Designer. Each file is handled separately.

Transferring Data between the NV-Designer and PT

• Using SD Memory Cards to Transfer Data to the PT.

NV-Designer Screen Design Software

Base screen data, NV Configuration, and other data is saved as files in SD memory cards.

SD memory card

NV

Read data from the SD memory card.

Take the SD memory card to the installation site or e-mail the file.

omron
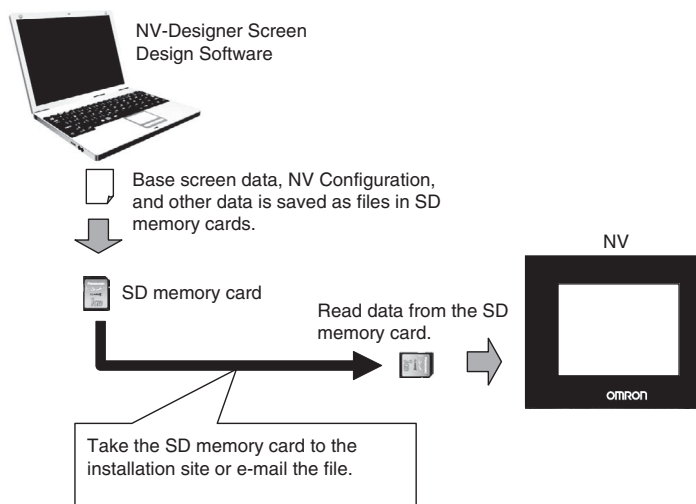
• Base screen data stored in the PT can be transferred to the NV-Designer by using an SD memory card.

Copying Data between PTs

SD memory cards can be used to copy data to other PTs.

NV   NV

SD memory card

omron   omron

Base screen data, the NV Configuration, and other data can be copied between PTs by using an SD memory card.
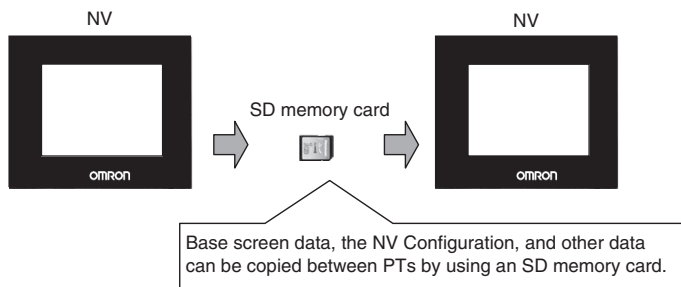
Precaution for Correct Operation

- To save files from NV-Designer to an SD memory card, select Transfer from the PT Menu. When you select Transfer from the PT Menu, NV-Designer format data is converted to NV format data. Simply copying data from NV-Designer to the SD memory card will prevent the data from being used on the NV.
- Do not use the SD memory card to store data that was not created with NV-Designer.
- Up to 16 items of data can be saved to a memory card.
- Copying using an SD memory card cannot be performed between different types and different models of PT, such as between a monochrome NV3Q and a color NV3Q. Copying can be performed only between the same type of NV3Q or NV4W.

9-2-2   Compatible SD Memory Cards

Manufacturer

Panasonic

> **Note**   OMRON has not confirmed the compatibility of memory card from other manufacturers.

Applicable Memory Capacity

32 MB to 2 GB (32 MB, 64 MB, 128 MB, 256 MB, 512 MB, 1 GB, or 2 GB)

Precaution for Correct Operation

SD memory cards with capacities larger than 2G cannot be used.

The applicable memory capacity is 32 MB to 1 GB for system program version 1.0□ of the NV3Q.

File Configuration on SD Memory Card

Specified Folder - nv_data - File Name - PT Data

File Names of PT Data

Data	File name	
Base Screen	base***.gsd	***: Screen number, from 000 to fff.
Keyboard screens	keyb***.gsd	***: Keyboard number, from 000 to fff.
Configuration	nvconfig***.gsd	
Flow Display	flow.gsd	
Write Address	devw.gsd	
Recipes	recip***.gsd	***: Recipe number, from 000 to fff.
PLC driver	plc_drv.gsd	
Login Screen	login***.gsd	***: Login screen number, from 000 to fff.
Password	pswd.gsd	
Firmware:	firmware.gsd	

SD Memory Card Writers

The computer on which NV-Designer is running must be equipped with an SD memory card slot.

9-2-3   Precautions on Using SD Memory Cards

Data stored on an SD memory card may be damaged in the following ways. OMRON is not responsible for the loss of data stored on SD memory cards.

- When the user or a third party mishandles the SD memory card

- When the SD memory card is subjected to static electricity or electrical noise
- When the SD memory card is removed, or the power is turned OFF while the card is being accessed, such as when data is being saved or deleted

Note   (1) OMRON recommends saving important data to other media, and always having a backup.

(2) Do not pull out the SD memory card or turn OFF the power while the SD memory card access indicator is lit on the PT. (This indicator light while data is being read from or written to the card.) Data may be destroyed.

9-2-4   Storing Data on an SD Memory Card

1,2,3...
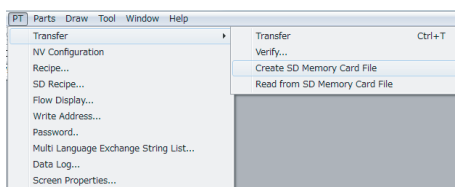
1. Select Transfer - Create SD Memory Card File from the PT Menu of NV-Designer.
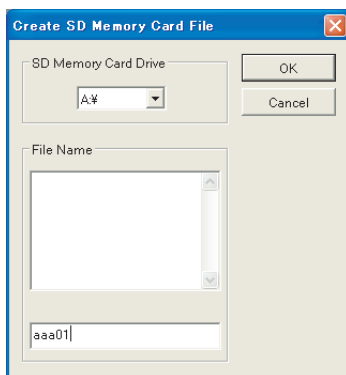
2. Select the SD memory card drive, and then enter a name for the file to be saved.
   To overwrite a file, click the name of the existing file.

3. Click the OK Button to save the data to the SD memory card.

9-2-5   Reading Data from an SD Memory Card

1,2,3...
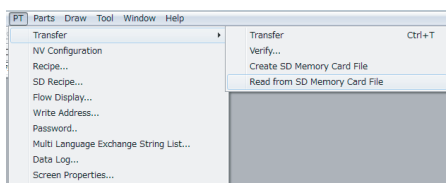
1. Select Transfer - Read from SD Memory Card File from the PT Menu of NV-Designer.
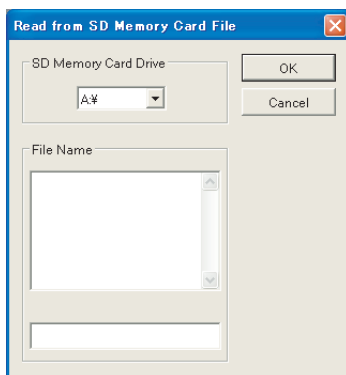
2. Select the SD memory card drive.

3. Select the file to read and click the OK Button. The screen data from the selected file will be displayed by NV-Designer.

9-2-6   Formatting an SD Memory Card

SD memory cards are shipped pre-formatted from the factory, so there is normally no need to format them.

Should formatting ever prove necessary, download the SD Memory Card formatting software from the Panasonic website, and use the software to format the card.

Note   For details on formatting, refer to the documentation provided with the formatting software.

Precaution for Correct Operation

If an SD memory card is formatted with the standard formatting utility provided with a personal computer, its file system will not conform to the SD memory card standard. Always use the formatting software provided by Panasonic.

Appendix A
NV Memory Editor

Overview

The NV Memory Editor can be used to read alarm history data and line graph data. This data can then be saved in CSV-format files. Data can also be read from the internal memory of the PT, edited, and then written back to memory.

Select NV-Designer - Tools - NV Memory Editor from the Windows Start Menu. The following NV Memory Editor Dialog Box will be displayed.
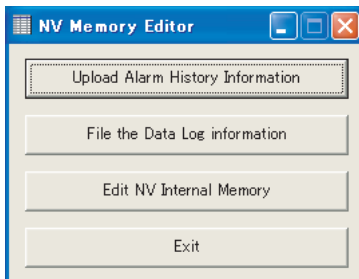
Saving Alarm History Information from the PT in a CSV File

1. Click the Upload Alarm History Information Button. The Alarm History Information Editor Dialog Box will be displayed.
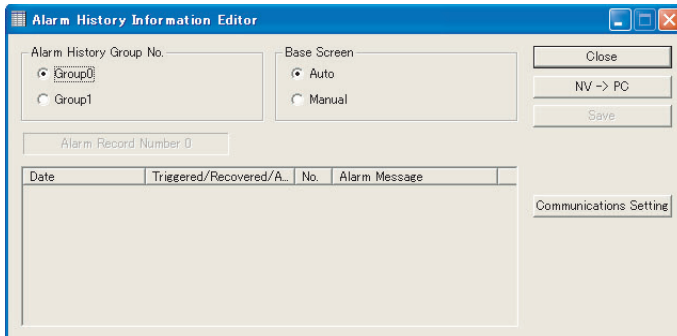
   - Select either Group0 or Group1 for the Alarm History Group No.
   - Select either Auto or Manual for the Base Screen.
2. Click the Communications Settings to set communications settings between the PT and PLC.
3. Click the NV –> PC Button to transfer the alarm history information that is saved in the PT to the computer and display it.
4. Click the Save Button to save the alarm history information that was transferred in a CSV file.

Reading Line Graph (Data Log) Data from the PT and Saving It in CSV-format Files

1. Click the File the Data Log Information Button. The following Data Log Information Editing Dialog Box will be displayed.
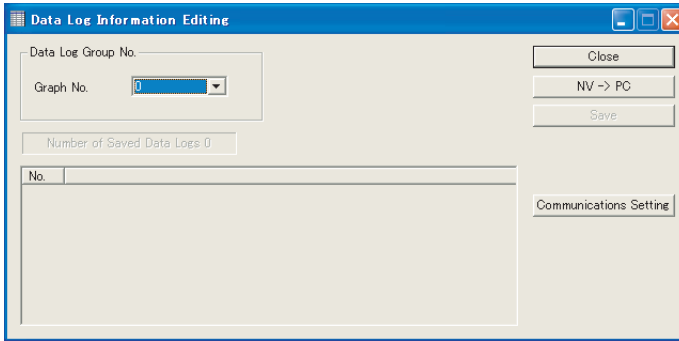
- Specify the Line Graph Sampling Group No.
- Click the Set Conditions Button to display the Set Line Graph Data Conditions Dialog Box. Select either English or Japanese as the language to save the data in.
- Click the Communications Settings Button to set communications settings between the PT and PLC.

2. Click the NV –> PC Button to transfer the alarm history information that is saved in the PT to the computer and display it.

3. Click the Save Button. The previously read data log data will be saved in a CSV-format file.

Editing Internal Memory in the PT

1. Click the Edit NV Internal Memory Button. The following NV Internal Memory Editor Dialog Box will be displayed.
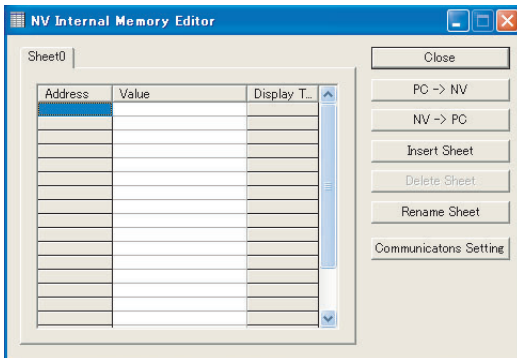
2. Click the NV –> PC Button to transfer the internal memory data that is saved in the PT to the computer.

3. Edit the internal memory of the PT. When any line of the address column is left-clicked, the Register Address Dialog Box will be displayed.
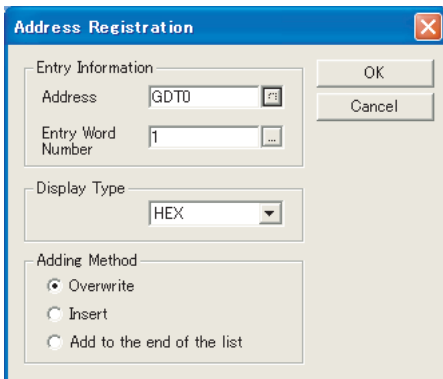
Specify an address in internal memory, then specify the registered number of words, and the display format. Also, select an addition method, and click the OK Button.

4. Enter a value in the value column.
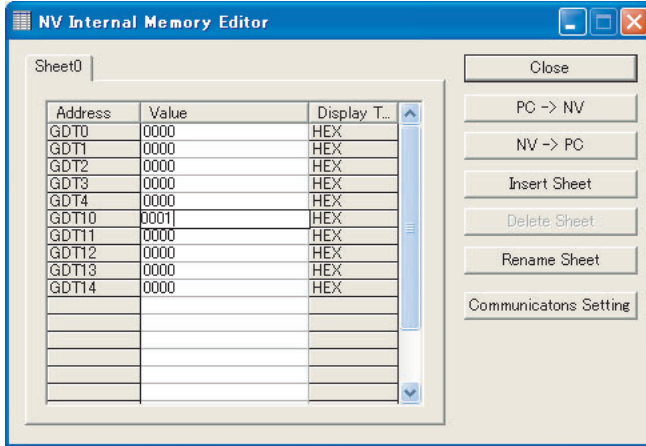
5. Click the PC → NV Button to transfer the edited internal memory data to the PT.

Index

Numerics
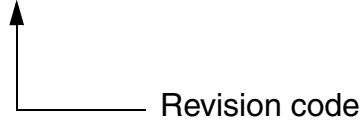
Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

Cat. No. V104-E1-07

Revision code

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
01	June 2009	Original production
02	December 2009	Made revisions accompanying version upgrade and the addition of the NV4W.
03	October 2010	Changed information on supported operating systems.
04	October 2011	Made changes related to a change in the NV3Q-SW LCD.
05	September 2013	Changed information on supported operating systems.
06	May 2015	Made revisions accompanying version upgrade and the addition of the NV3W-V1.
07	January 2017	Changed for corrections.