

CX-Designer Version 4.□

Operation Manual

CXONE-AL□□C-V4

CXONE-AL□□D-V4



NOTE

- All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of OMRON.
- No patent liability is assumed with respect to the use of the information contained herein. Moreover, because OMRON is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice.
- Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

Trademarks

- Sysmac and SYSMAC are trademarks or registered trademarks of OMRON Corporation in Japan and other countries for OMRON factory automation products.
- Microsoft, Windows, Microsoft Edge, and Excel are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
- ODVA, CIP, CompoNet, DeviceNet, and EtherNet/IP are trademarks of ODVA.
- The SD and SDHC logos are trademarks of SD-3C, LLC.  

Other company names and product names in this document are the trademarks or registered trademarks of their respective companies.

Copyrights

Microsoft product screen shots used with permission from Microsoft.

Introduction

Thank you for purchasing a CX-Designer.

This manual contains information that is necessary to use the CX-Designer. Please read this manual and make sure you understand the functionality and performance of the CX-Designer before you attempt to use it in a control system.

Keep this manual in a safe place where it will be available for reference during operation.

Based on the assumption that many users will use the NS-B-series PT as a replacement for their NS-series PT, the products other than PT that may have already been discontinued are described in this manual. If you are considering purchasing these products, check that the relevant product has not been discontinued.

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.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and maintaining FA systems.
- Personnel in charge of managing FA systems and facilities.

Applicable Products

This manual covers the following products.

- CX-Designer

Relevant Manuals

The basic information required to use a CX-Designer is provided in the following manuals.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*
- *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)*
- *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)*
- *NS-B-series Programmable Terminal Macro Reference Manual (Cat. No. V132)*
- *CX-Designer Version 4.□ Operation Manual (Cat. No. V133)*

Confirming Functional/Fixed Object Setting Procedures when Using the CX-Designer

- *CX-Designer Help*

The online help feature explains CX-Designer operating methods and settings (including detailed settings for functional and fixed objects).

It also explains how to transfer screen data to the NS-B-series PT.

Checking PLC Functions and Operation

- *Operation Manuals for the PLC Being Used*

For information on PLC operation and functions, refer to the operation manuals for the CPU Unit, Special I/O Units, CPU Bus Units, Communications Units, or other Units that you are using.

Manual Structure

Page Structure

The following page structure is used in this manual.

Level 2 heading

Level 3 heading

A step in a procedure

Special information

Manual name

2 Installing the PT Unit and Connecting Peripheral Devices

2-1 Installing the PT Unit

This section describes the methods used to mount the PT Unit onto an operation panel and connect the power supply.

2-1-1 Installation onto the Operation Panel

Install the PT Unit by embedding it into the operation panel.
Use the metal kit and tool (a crosshead screwdriver) supplied with the Unit for installation.
Proceed the installation following the procedures below.

1

Panel cutout with dimensions is shown below. Fit the PT Unit into the panel from the front side.

Width

Height

Opening dimensions

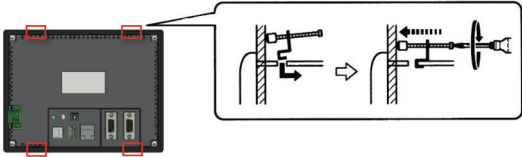


Models	Opening Dimension (W×H mm)
NB15W-TW01B-V1-S	345.0(+0.5/-0)×261.0(+0.5/-0)
NB10W-TW01B-V1-S	258.0(+0.5/-0)×200.0(+0.5/-0)
NB7W-TW01B-V1-S	191.0(+0.5/-0)×137.0(+0.5/-0)
NB5Q-TW01B-V1-S	172.4(+0.5/-0)×131.0(+0.5/-0)

2

As follows, insert panel fixators at the locations indicated by red box around the back of the PT Unit.
Insert the hooks of positioners into the square holes on the Unit to hold the fixators properly, and tighten the screws firmly with the screwdriver.

NB7W/NB5Q-TW01-V1-S



Precautions for Safe Use

When operating on the operation panel, make sure to keep metal particles from entering the PT Unit.

Level 1 heading

Level 2 heading

Level 3 heading

Page tab

Gives the current headings.

Gives the number of the main section.

2-1 Installing the PT Unit

2

This illustration is provided only as a sample. It may not literally appear in this manual.

CX-Designer Version 4.□ Operation Manual (V133)

3

Special Information

Special information in this manual is classified as follows:



Precautions for Safe Use

Precautions on what to do and what not to do to ensure safe usage of the product.



Precautions for Correct Use

Precautions on what to do and what not to do to ensure proper operation and performance.



Additional Information

Additional information to read as required.

This information is provided to increase understanding or make operation easier.



Version Information

Information on differences in specifications and functionality for different versions of the CX-Designer is given.

Precaution on Terminology

In this manual, “download” refers to transferring data from the CX-Designer to the PT Unit and “upload” refers to transferring data from the PT Unit to the CX-Designer.

Sections in this Manual

1	Overview	1
2	Setting Up the CX-Designer	2
3	Basic Operations of the CX-Designer	3
4	Useful Functions	4
A	Appendices	A
I	Index	I

CONTENTS

Introduction	1
Intended Audience	1
Applicable Products	1
Relevant Manuals	2
Manual Structure	3
Page Structure	3
Special Information	4
Precaution on Terminology	4
Sections in this Manual	5
Terms and Conditions Agreement	9
Safety Precautions	10
Precautions for Safe Use	11
Precautions for Correct Use	12
Regulations and Standards	13
Related Manuals	14
Terminology	15
Revision History	16

Section 1 Overview

1-1 Features of the CX-Designer	1-2
1-1-1 Features	1-2
1-2 Basic Operation Procedures	1-5

Section 2 Setting Up the CX-Designer

2-1 Preparations for Installation	2-2
2-1-1 System Requirements	2-2
2-2 Installing USB Drivers	2-3

Section 3 Basic Operations of the CX-Designer

3-1 Starting and Exiting CX-Designer	3-2
3-1-1 Startup Method	3-2
3-1-2 Exiting CX-Designer	3-3
3-2 Menu Commands	3-4
3-3 User Interface	3-12
3-3-1 Names of Basic Screen Components	3-12
3-3-2 CX-Designer Functions and Screens	3-21

Section 4 Useful Functions

4-1	Creating Screens Using Symbols	4-3
4-1-1	Changing Allocated Addresses	4-4
4-1-2	Reusing Existing Projects in Another System.....	4-5
4-1-3	Copying and Pasting Symbols/Variables between Support Software.....	4-5
4-1-4	Using I/O Allocation Table in Symbol Table	4-7
4-1-5	Creating Screens Using Symbol Names and Then Setting Addresses	4-7
4-2	Using Screens from Other Projects	4-9
4-3	Classifying Screens by Application.....	4-12
4-3-1	Creating Categories.....	4-13
4-3-2	Moving Screens between Categories	4-13
4-3-3	Creating New Screens.....	4-14
4-4	Checking and Changing Functional Object Properties without Opening Property Setting Dialog Boxes	4-15
4-4-1	Globally Replacing Settings for More Than One Object	4-16
4-5	Listing and Editing Functional Object Properties	4-17
4-5-1	Setting Consecutive Addresses.....	4-17
4-5-2	Copying the Same Setting to More Than One Cell.....	4-18
4-6	Editing Overlapping Objects	4-19
4-6-1	Method for Selecting Specified Objects.....	4-19
4-6-2	Displaying Only Specified Objects on a Screen	4-20
4-7	Creating Multi-language Labels	4-21
4-8	Checking Address Usage Status	4-23
4-9	Searching for Embedded Macros	4-25
4-10	Transferring Only Edited Data to PT Unit.....	4-26
4-11	Creating Documents	4-27
4-12	How to Use Help	4-28
4-13	Integrated Simulation for the Entire System.....	4-30
4-13-1	Debugging Screens and the User Program with a Virtual PLC	4-30
4-13-2	Debugging Screens and the User Program with the Actual PLC.....	4-33
4-14	Setting Security for Data Transfers with the PT Unit	4-36
4-15	Setting Symbol Names and I/O Comments for Use as Labels	4-38
4-16	Executing Multiple Functions with a Single Operation.....	4-40
4-17	Replacing a Lamp with a Button	4-42
4-18	Creating Polygonal Lamps	4-44
4-19	Registering Contents	4-47
4-20	Using Machine Navigator.....	4-49
4-21	Enlarging Objects Proportional to Screen Size during Data Conversion	4-55
4-22	Batch-setting Label Formats	4-57
4-23	Displaying the Compatibility Frame	4-60

Appendices

A-1	Shortcut Keys	A-2
A-2	Exchanging Data between NS-B-series Products	A-4
A-3	Guide to Version Upgrade	A-5

Index

Terms and Conditions Agreement

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 NOT BE RESPONSIBLE AND/OR LIABLE FOR ANY LOSS, DAMAGE, OR EXPENSES DIRECTLY OR INDIRECTLY RESULTING FROM THE INFECTION OF OMRON PRODUCTS, ANY SOFTWARE INSTALLED THEREON OR ANY COMPUTER EQUIPMENT, COMPUTER PROGRAMS, NETWORKS, DATABASES OR OTHER PROPRIETARY MATERIAL CONNECTED THERETO BY DISTRIBUTED DENIAL OF SERVICE ATTACK, COMPUTER VIRUSES, OTHER TECHNOLOGICALLY HARMFUL MATERIAL AND/OR UNAUTHORIZED ACCESS.
- 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.

Safety Precautions

Refer to the following manuals for safety precautions.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*

Precautions for Safe Use

Refer to the following manuals for precautions for safe use.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*

Precautions for Correct Use

Refer to the following manuals for precautions for correct use.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*

Regulations and Standards

Refer to the following manuals for regulations and standards.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*

Related Manuals

The followings are the manuals related to this manual. Use these manuals for reference.

Manual name	Cat. No.	Models	Applications	Description
NS-B-series Programmable Terminal Hardware User's Manual	V129	NB□□□-TW01B-V1-S	Learning the specifications and settings required to install an NS-B-series PT and connect peripheral devices.	Information is provided on NS-B-series Programmable Terminal specifications, part names, installation procedures, and procedures to connect an PT Unit to peripheral devices. Information is also provided on maintenance after operation and troubleshooting.
NS-B-series Programmable Terminal Software User's Manual	V130	NB□□□-TW01B-V1-S	Learning about NS-B-series PT pages and object functions.	Describes the pages and object functions of the NS-B-series Programmable Terminals.
NS-B-series Programmable Terminal Host Connection User's Manual	V131	NB□□□-TW01B-V1-S	Learning the specifications required to connect devices to an NS-B-series PT.	Information is provided on connection procedures and setting procedures to connect an NS-B-series PT to a Controller or other device.
NS-B-series Programmable Terminal Macro Reference Manual	V132	NB□□□-TW01B-V1-S	When you wish to know the language specifications of the macros used with the NS-B-series PT.	Describes the language specifications and functions of the macros used with the NS-B-series PT.
CX-Designer Version 4.□ Operation Manual	V133	CXONE-AL□□C-V4 CXONE-AL□□D-V4	When you wish to know how to create screens in CX-Designer and how to download to the PT Unit.	Describes how to create screens in CX-Designer and the procedure to download to the PT Unit.

Refer to the following manual for other related manuals.

- *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)*

Terminology

Term	Description
PT Unit	In this manual, indicates an NS-B-series Programmable Terminal.
PLC	Indicates Programmable Controllers in the OMRON SYSMAC CS/CJ, C, or CVM1/CV Series of Programmable Controllers.
CS Series	Indicates Programmable Controllers in the OMRON SYSMAC CS Series of Programmable Controllers: CS1G, CS1H, CS1G-H, or CS1H-H
C Series	Indicates Programmable Controllers in the OMRON SYSMAC C Series of Programmable Controllers: C200HS, C200HX/HG/HE-E/-ZE, CQM1, CQM1H, CPM1A, CPM2A, CPM2C
CVM1/CV Series	Indicates Programmable Controllers in the OMRON SYSMAC CV/CVM1 Series of Programmable Controllers: CV500, CV1000, CV2000, CVM1
CJ Series	Indicates Programmable Controllers in the OMRON SYSMAC CJ Series of Programmable Controllers: CJ1G, CJ1G-H, CJ1H-H, CJ1M, CP1H, CP1L, CP1E, CP2E, CJ2H, CJ2M References to "CJ1H-H" in this manual indicate the CJ1H-CPU□□H-R and CJ1H-CPU□□H. References to "CJ1H-H-R" indicate the CJ1H-CPU□□H-R. "CJ2" is used when referring specifically to only the CJ2 CPU Units.
NJ Series	Indicates a Controller in the OMRON NJ Series of Controllers: (Only models that can be connected to NS-B-series PTs are given.): NJ101, NJ301, NJ501
NX Series	Indicates Controllers in the OMRON NX Series of Controllers: (Only models that can be connected to NS-B-series PTs are given.): NX701, NX102, or NX1P2
Serial Communications Unit	Indicates a Serial Communications Unit for an OMRON CS/CJ-series PLC.
Serial Communications Board	Indicates a Serial Communications Board for an OMRON CS-series or CQM1H PLC.
Communications Board	Indicates a Communications Board for an OMRON C200HX/HG/HE-E/-ZE PLC.
CPU Unit	Indicates a CPU Unit in the OMRON SYSMAC CS/CJ, C, or CVM1/CV Series of Programmable Controllers.
CX-Designer	Indicates the OMRON CX-Designer.
Host	Indicates the PLC, FA computer, or personal computer functioning as the control device and interfaced with the NS-B-series PT.
Removable media	Indicates a USB memory.
Project	Indicates a collection of files containing screen data, settings, and other information for the NS-B-series that are created in CX-Designer.

Revision History

A manual revision code appears as a suffix to the catalog number on the front and back covers of the manual.

Cat. No.	V133-E1-01
-----------------	-------------------

↑
Revision code

Revision code	Date	Revised content
01	October 2026	Original production

Overview

This section describes the features of the CX-Designer and the startup procedures for NS-B-series PTs for first-time users.

1-1	Features of the CX-Designer	1-2
1-1-1	Features	1-2
1-2	Basic Operation Procedures	1-5

1-1 Features of the CX-Designer

The CX-Designer is software that can be run on Windows to create screen data for NS-B-series Programmable Terminals. The CX-Designer has a variety of functions to enable efficient screen creation and debugging. It also enables the import of screen data for NS-series.

Edit Screens

Screen data displayed on the PTs can be created for a group of objects.

Project Workspace

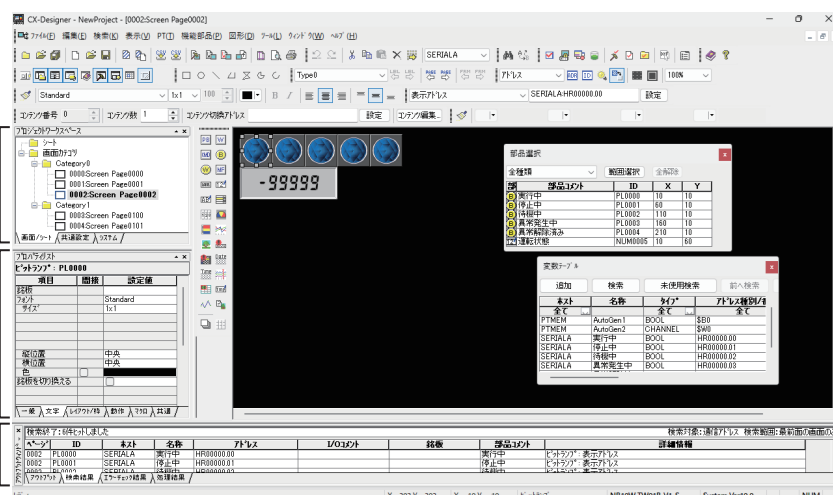
The entire project structure can be displayed in a directory tree.

Property List

Functional object property settings can be changed and checked without having to open a properties dialog box.

Output Window

Displays data such as search results and error details.



1-1-1 Features

Screens Can Be Created Using Symbols

Symbols can be used with the CX-Designer. Symbols are addresses to which names have been assigned. In addition to the existing method of directly inputting addresses to be browsed by functional objects, the addresses can also be set by using symbols (names). When the address allocated for a symbol is changed, the address is changed for all objects that access that symbol. This makes it easy to change address allocations and reuse screens. Symbols/variables can also be shared between the CX-Designer and CX-Programmer/Sysmac Studio by copying the symbols/variables from CX-Programmer symbol tables or Sysmac Studio variable tables to the CX-Designer.

Refer to 4-1 *Creating Screens Using Symbols* on page 4-3 for details.

Project Management Using Project Workspace

Screens, alarms, and other common settings can be displayed in a directory tree in the CX-Designer project workspace. Projects are easy to manage because the entire project structure can be checked at a glance.

Screens and settings can be copied between multiple CX-Designer project workspaces. Screens can also be copied within the same project workspace. Refer to 4-2 *Using Screens from Other Projects* on page 4-9 for details.

Easy Reuse of Screens

Screens and settings can be copied between multiple CX-Designer project workspaces. Screens can also be copied within the same project workspace. The common settings accessed by screens are also copied automatically.

If symbols are used, it also becomes easy to change addresses after screens have been copied. Refer to *4-2 Using Screens from Other Projects* on page 4-9 for details.

Screen Classification by Application for Easy Management

Screens can be classified into any category, e.g., by application, and displayed in a directory tree. When screens are created, consecutive screen numbers are automatically applied to screens in the same category. These numbers can also be changed. This makes screen management even easier.

Refer to *4-3 Classifying Screens by Application* on page 4-12 for details.

Functional Object Property Settings Using Property Lists

Functional object settings can be changed and checked without having to open a dialog box.

When more than one object is selected, common settings for those objects can be changed in one operation from the property list.

Refer to *4-4 Checking and Changing Functional Object Properties without Opening Property Setting Dialog Boxes* on page 4-15 for details.

Edit Properties from Lists

Properties of objects on the screen can be displayed in table format and the settings changed.

Settings for more than one object can be changed at the same time and consecutive addresses can be automatically set.

Refer to *4-5 Listing and Editing Functional Object Properties* on page 4-17 for details.

Select and Display Specified Objects

Objects on the screen can be listed and specified objects selected. The screen display can also be limited to specified objects.

This makes it easy to check and change the property settings for overlapping objects.

Refer to *4-6 Editing Overlapping Objects* on page 4-19 for details.

Find Macros

Embedded macros can be listed.

This improves debugging efficiency by no longer requiring individual object property settings to be opened to find objects that use macros.

Refer to *4-9 Searching for Embedded Macros* on page 4-25 for details.

Automatic Transfer of Edited Data Only

Once screens have been transferred to the PT Unit, quick transfers of only the changed data can be made automatically. Screens are edited and data transferred many times during debugging, so the quick transfer function greatly reduces transfer time and increases efficiency.

Refer to *4-10 Transferring Only Edited Data to PT Unit* on page 4-26 for details.

Easy Document Creation

Common settings and property settings for objects in screens can be output in rich text format (.rtf). The output settings are displayed in a list for easier viewing.

Screen images can also be output to bmp and jpg files.

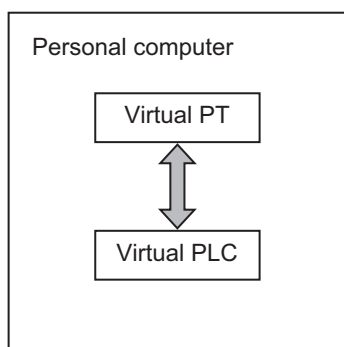
Refer to *4-11 Creating Documents* on page 4-27 for details.

Integrated Simulation for Entire PT Unit-PLC System

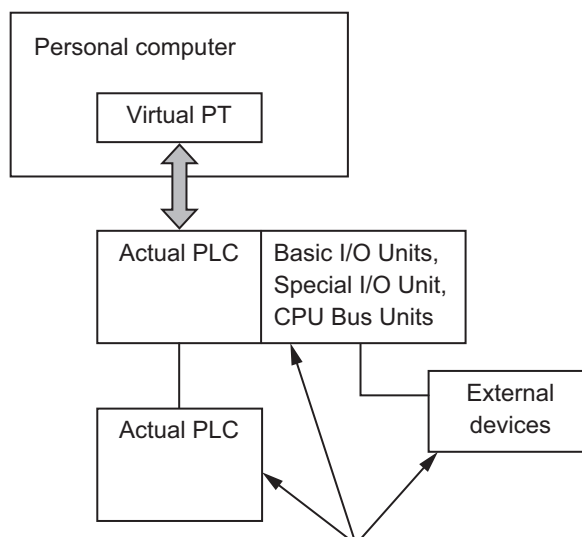
The test function of the CX-Designer can be connected to the CX-Simulator (a virtual PLC) or the simulation function of the Sysmac Studio. When the test function is combined with the simulation function of the Sysmac Studio, the user program for an NJ/NX-series Controller can be debugged. When the CX-Simulator is started, the PLC user program created using the CX-Programmer can be debugged on a personal computer together with screen data.

In addition, the test function can be connected directly to an actual PLC. This enables debugging (including monitoring and settings) using actual I/O, Special I/O Units, and CPU Bus Units connected to the PLCs, as well as data from external devices and PLC data on the network.

(A) Integrated operations with screens and user programs can be tested on a personal computer



(B) Screen operations can be tested while connected to the actual PLC System (including external devices).



Settings and monitoring are enabled for CPU Bus Units, Special I/O Units, external devices, and PLCs on the network.

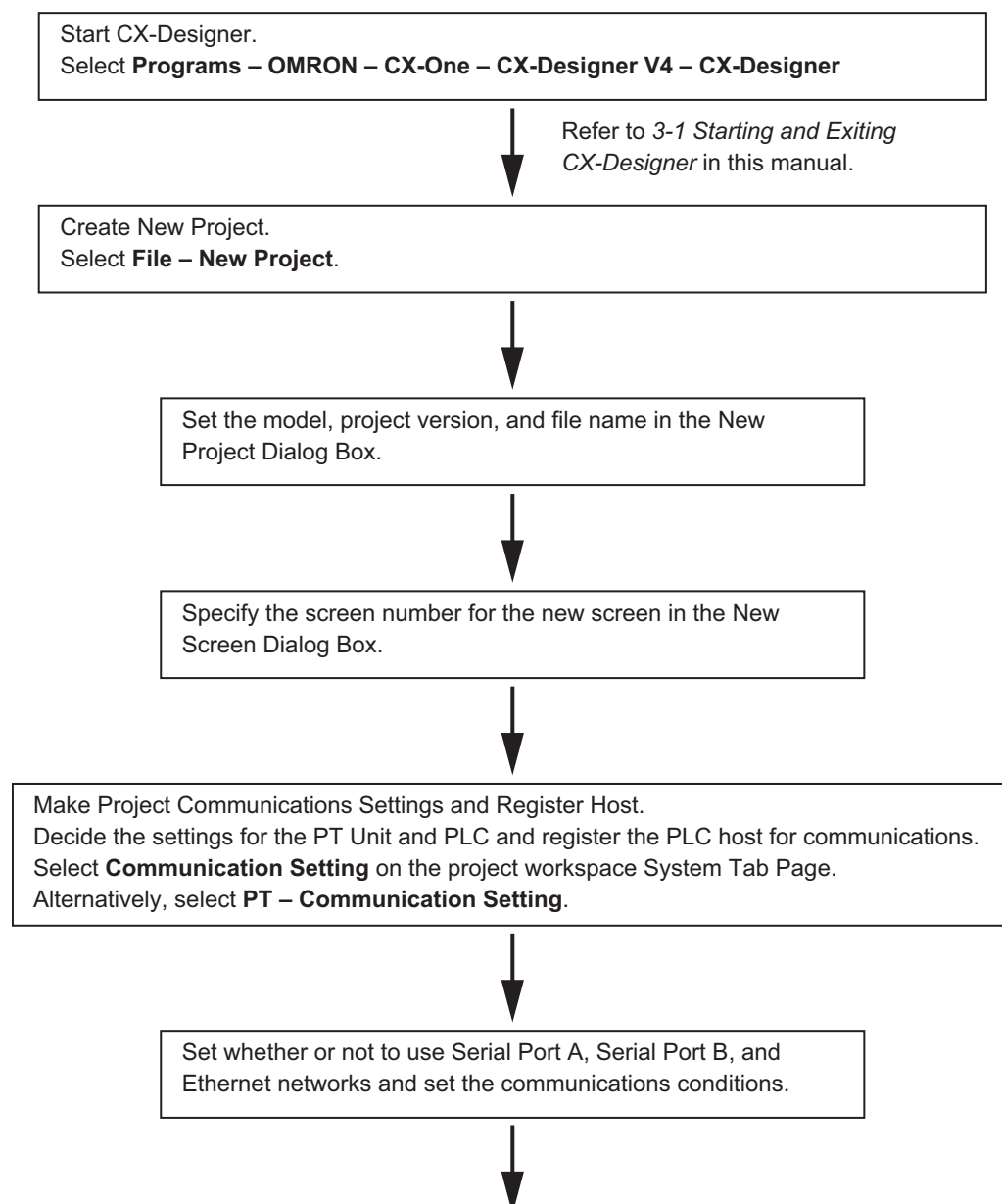
Prevent Unauthorized Uploading of Data from the PT Unit

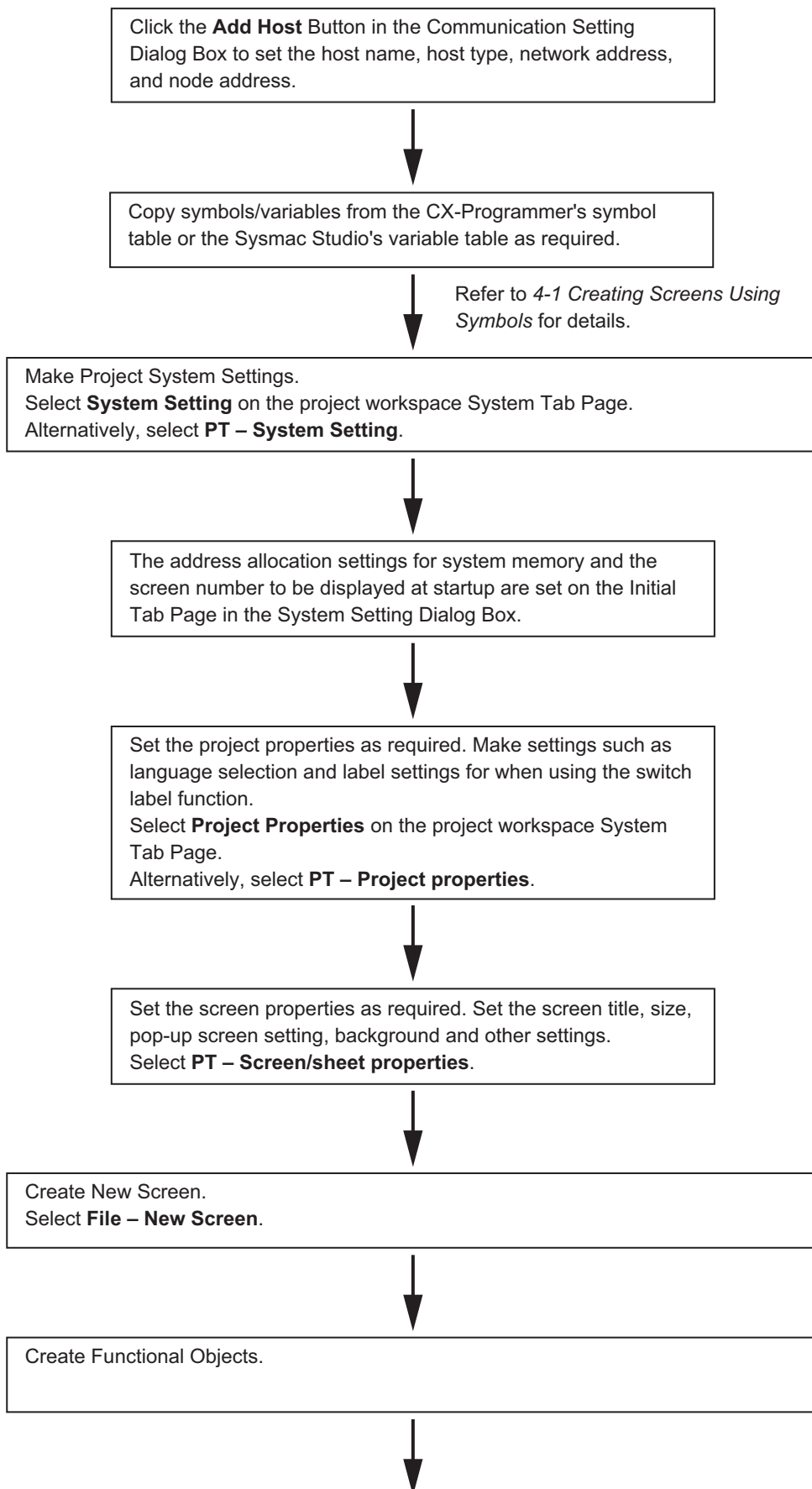
To prevent data theft from the PT Unit, a password can be required to upload project data. Data cannot be uploaded from the PT Unit unless the correct password is input. A password can also be required for downloading data to prevent data from being accidentally overwritten.

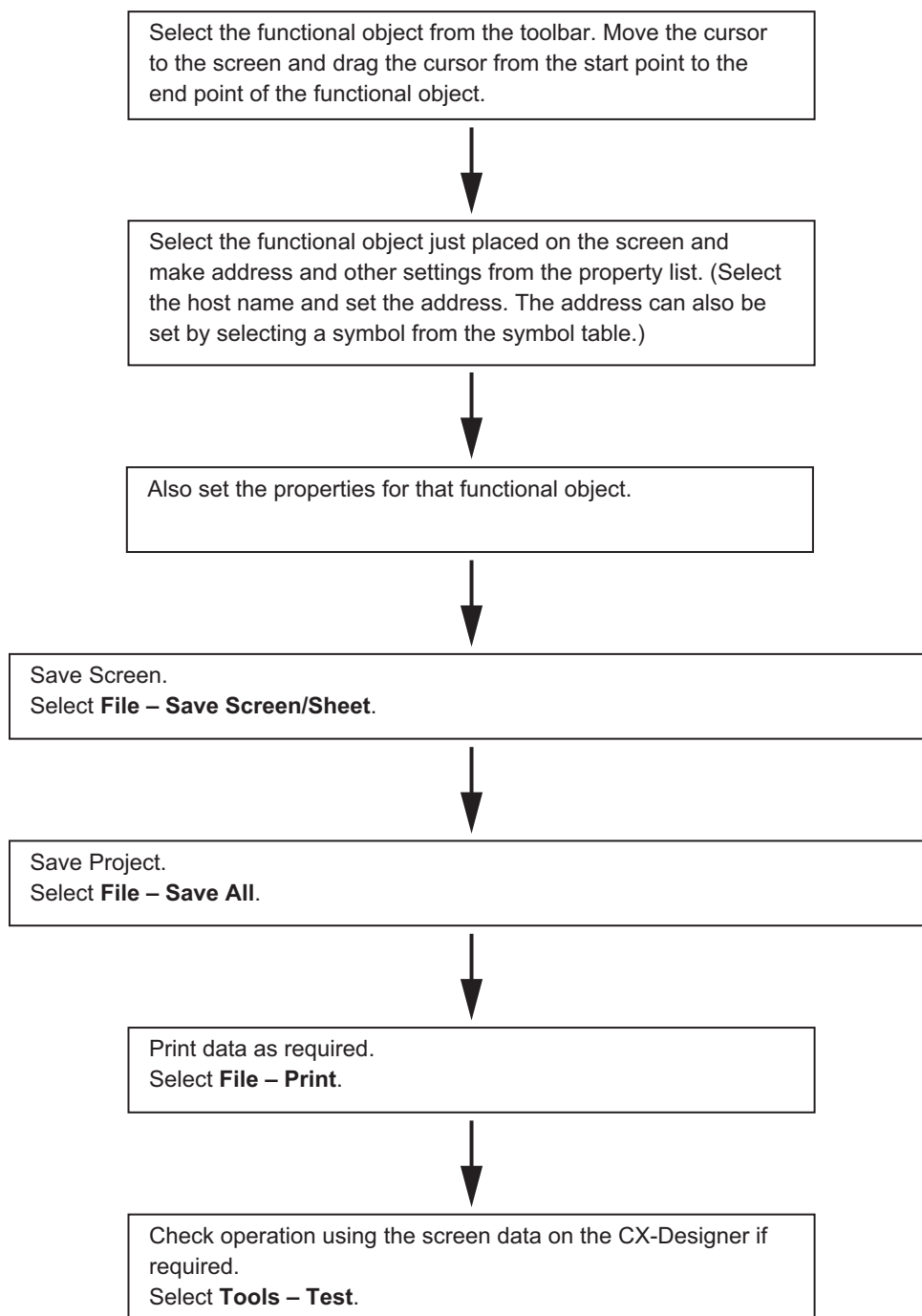
1-2 Basic Operation Procedures

This section describes the basic procedures for creating screens using CX-Designer, transferring data to the PT Unit, and displaying screens. Refer to the CX-Designer online help and the *NS-B-series Programmable Terminal Hardware User's Manual (Cat. No. V129)* and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

Creating Projects and Screens on the CX-Designer







● Debugging Newly Created Screen Data while Integrated with a Virtual or Actual PLC

When using integration simulation with an actual PLC:
Connect the personal computer to the actual PLC.



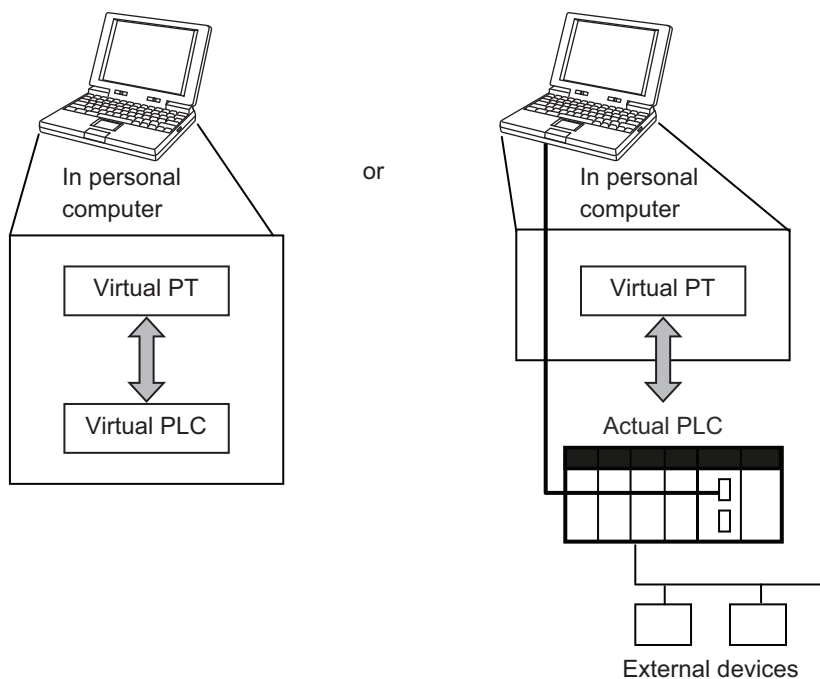
Start the Test Tool.
Select **Tool – Test**.



Connect to the virtual PLC (CX-Simulator) or to the actual PLC.
Select **Connect to CX-Simulator** or **Connect to PLC**, and then click the **Start** Button.



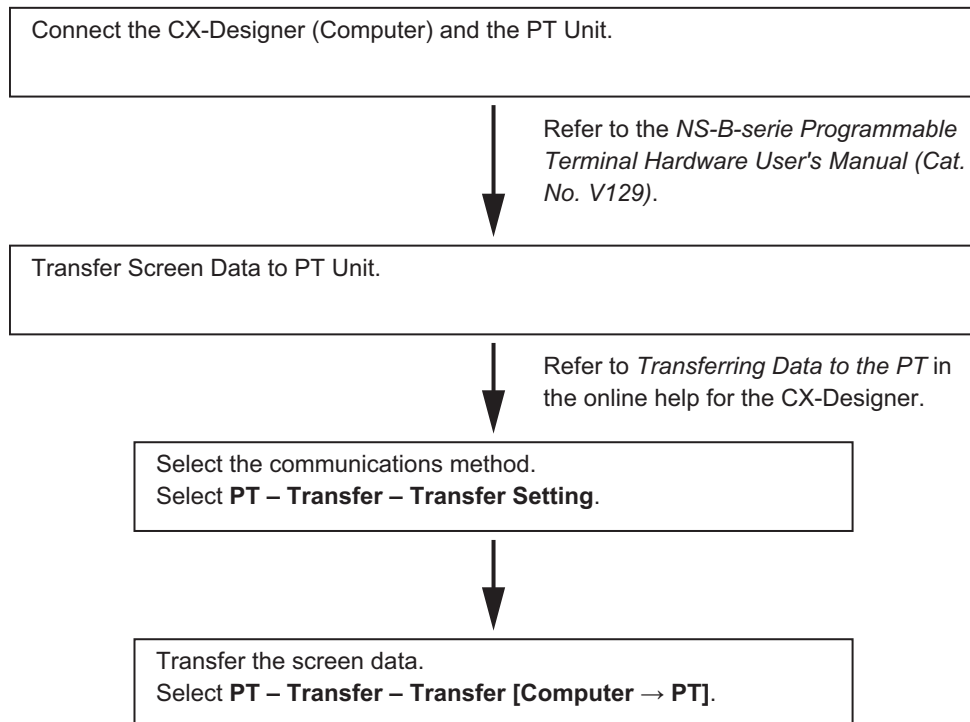
Run the user program and execute the integrated simulation with the PLC.
Run the virtual PLC (CX-Simulator) or the actual PLC user program to debug the PT Unit and the entire PLC System.



Additional Information

Integrated simulation with the simulation function of the Sysmac Studio must be started from the Sysmac Studio. For details, refer to the *Sysmac Studio Version 1 Operation Manual (Cat. No. W504)*.

Transferring Projects and Screens to the PT Unit



Communications between the PT Unit and PLC

Connect the PT Unit and PLC.
Use a Serial, or Ethernet network to connect the PT Unit and PLC.



Confirm Communications Settings.
Match the PT communications settings to the PLC system settings on the PLC. Use either of the methods outlined below.

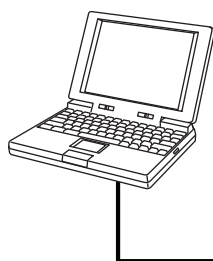


- (A) Check the PT communications settings under the PT System Menu. If required, change the settings on the PT Unit or change the PLC system settings on the PLC.
- Select **System Menu – Comm.** Tab Page and check the settings. (The default baud rate under the CX-Designer communications settings is High-Speed and the default NT link unit number is 0.)
 - Match these settings to the serial communications mode settings under the PLC system settings. Check that the RS-232C port serial communications mode is set to NT Link and that the maximum unit number for NT Link mode is higher than the number of units used. (The default baud rate in the PLC system settings is Standard and the default maximum unit number for NT Link mode is 0.)
If the unit number for NT Link mode is set to 0, set the maximum NT Link unit number to 1 or higher in the PLC Setup.

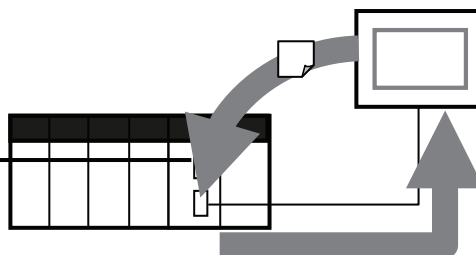
- (B) Use the automatic NT Link connection setting function in CX-Integrator.
- Start CX-Integrator and click the right mouse button on the CPU Unit in the Online Connection Information Window. Select **NT Link Tool – NT Link Automatic Connection**.

The NT Link automatic connection function automatically detects the communications settings on the PT Unit connected to the PLC by a serial network and automatically changes the serial port settings under the PLC system settings on the PLC.

CX-Integrator



Automatically changes the serial port settings on the PLC to match the serial port settings on the NS-B-series.



- Serial connection
(Toolbus or Host Link)
- Network connection

Automatic serial connection using NT Link (using RS-232C port)



Start Operation.

(If the System Menu is displayed on the PT Unit, press the **Exit** Button.)

Refer to the *NS-B-series Programmable Terminal Hardware User's Manual* (Cat. No. V129).

2

Setting Up the CX-Designer

The CX-Designer must be installed on the computer before it can be used for the first time.

The CX-Designer is application software that runs on a Windows operating system.

2-1	Preparations for Installation	2-2
2-1-1	System Requirements	2-2
2-2	Installing USB Drivers	2-3

2-1 Preparations for Installation

CX-Designer is included in CX-One and Sysmac Studio. For the installing method, refer to the manual for each software.

2-1-1 System Requirements

The system requirements for the CX-Designer conform to that of CX-One and Sysmac Studio.



Additional Information

- USB port is required to connect to the NS-B-series PT.
 - If the project using TrueType font between the Windows with different OS versions is edited, it may cause a change with the font or character size. Furthermore, set System –Display– Scale to 100% in Windows.
 - Two-bytes characters used in file names and folder names on the Removable Media will not be displayed normally.
-

2-2 Installing USB Drivers

With the NS-B-series, use the USB driver for the NS-series. When CX-One or Sysmac Studio is installed, the USB driver for the NS-series will be installed automatically.

After installation, data can be transferred between the personal computer and NS-B-series PT via USB.

3

Basic Operations of the CX-Designer

3

This section describes basic functions and operation methods, such as starting and exiting CX-Designer and the user interface.

3-1	Starting and Exiting CX-Designer	3-2
3-1-1	Startup Method	3-2
3-1-2	Exiting CX-Designer	3-3
3-2	Menu Commands	3-4
3-3	User Interface	3-12
3-3-1	Names of Basic Screen Components	3-12
3-3-2	CX-Designer Functions and Screens	3-21

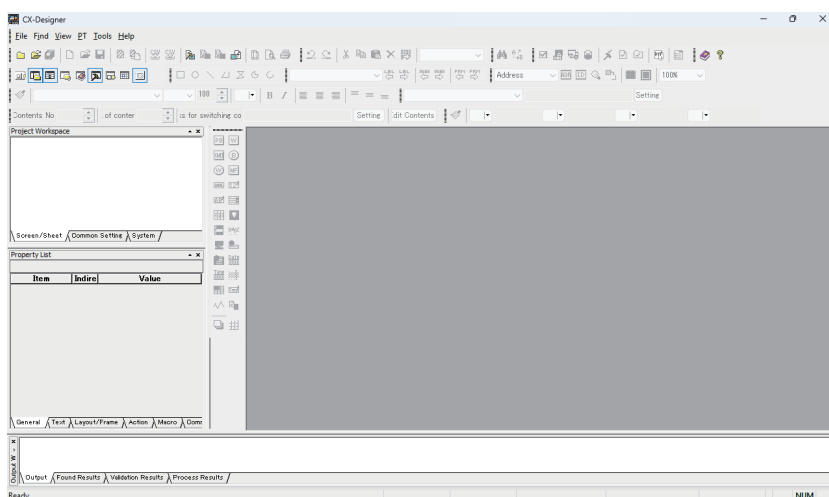
3-1 Starting and Exiting CX-Designer

This section describes how to start and exit the CX-Designer.

3-1-1 Startup Method

To start the CX-Designer, click the Windows **Start** Button, and then select **Start Menu – All – OMRON – CX-One** or **Sysmac Studio – CX-Designer – CX-Designer V4**.

When the CX-Designer startup is completed, the Main Window will be displayed, as follows:



Additional Information

- More than one copy of the CX-Designer application can be run at the same time.
- To start CX-Designer, log in as the administrator.

3-1-2 Exiting CX-Designer

Use one of the following operations to exit the CX-Designer.

- Select **Exit** from the File Menu.
- Click the **Close** Button  at the top right of the Main Window.
- Double-click the CX-Designer icon at the top left of the Main Window.
- Click the CX-Designer icon at the top left of the Main Window and select **Close** from the Control Menu Box.
- Press the Alt + F4 Keys.

If the project data that is open has not been saved, a confirmation message will be displayed.

When the CX-Designer is exited, the system will return to the Windows display.

3-2 Menu Commands

The commands that appear on the pull-down menus of the CX-Designer and their functions are described in the following tables.

File Menu

Command	Function	Shortcut keys
New Project	Creates a new project.	---
Open Project	Opens an existing project.	---
Close Project	Closes the project currently open without exiting the CX-Designer.	---
Save Project As	Saves the current project under a specified name.	---
Save All	Saves (overwrites) all of the data for the current project.	Ctrl+S
New Screen	Creates a new screen under the current project.	Ctrl+N
Open Screen	Opens the project workspace.	Ctrl+O
Save Screen/Sheet	Saves the current screen or sheet.	Ctrl+Shift+S
New Sheet	Creates a new sheet under the current project.	Ctrl+Shift+N
Apply Sheet	Sets a screen with overlapping sheets.	Ctrl+J
Import CSV File	Imports project or screen data saved in CSV format to the current project or screen.	---
Export CSV File	Exports the current project or screen data to a file in CSV format.	---
Page Setup	Makes the printer settings.	---
Preview	Shows a preview of the printed image.	---
Print	Outputs current project or screen information to a printer or to a file. Select Print to display a preview.	Ctrl+P
Data Transfer Security		
New Data Transfer Security Setting	Sets a password to be input when transferring data.	---
Change Data Transfer Security Setting	Changes data transfer security setting.	---
Cancel Data Transfer Security Setting	Deletes data transfer security setting.	---
Recent Projects	Displays a list of currently edited projects. (Up to ten projects are displayed.)	---
Exit	Ends the CX-Designer.	---

Edit Menu

Command	Function	Shortcut keys
Undo	Discards changes and restores the previous status.	Ctrl+Z
Redo	Restores the changes discarded with Undo .	Ctrl+Y
Cut	Deletes the selected objects and places them in the internal buffer.	Ctrl+X, Shift+DEL
Copy	Copies the selected objects and places them in the internal buffer.	Ctrl+C
Paste	Pastes objects that have been cut or copied.	Ctrl+V, Shift+Ins
Paste (Style Only)	Pastes objects that have been cut or copied using the default address settings.	---
Delete	Deletes the selected objects.	DEL
Group		
Group	Groups more than one functional or fixed object to create a single object.	Ctrl+G
Ungroup	Ungroups grouped objects.	Ctrl+U
Order		
Front	Brings the currently selected object to the front.	---
Back	Sends the currently selected object to the back.	---
Bring Forward	Brings the currently selected object forward.	---
Send Backward	Sends the currently selected object back.	---
Align/Distribute		
Align Left	Aligns the currently selected objects to the left.	---
Center in a Column	Aligns the vertical centers of the currently selected objects.	---
Align Right	Aligns the currently selected objects to the right.	---
Align Top	Aligns the currently selected objects to the top.	---
Center in a Row	Aligns the horizontal centers of the currently selected objects.	---
Align Bottom	Aligns the currently selected objects to the bottom.	---
Distribute Horizontally	Distributes the currently selected objects equidistant (between mid-points) horizontally.	---
Distribute Vertically	Distributes the currently selected objects equidistant (between mid-points) vertically.	---
Make Same Size		
Smallest Width	Aligns the currently selected objects to the smallest width.	---
Largest Width	Aligns the currently selected objects to the largest width.	---
Smallest Height	Aligns the currently selected objects to the smallest height.	---
Largest Height	Aligns the currently selected objects to the largest height.	---
Table Column Width	Aligns table columns to equal widths.	---
Table Row Height	Aligns table rows to equal heights.	---

Command	Function	Shortcut keys
Nudge		
Up	Moves the selected object one dot or one grid unit up.	↑
Down	Moves the selected object one dot or one grid unit down.	↓
Left	Moves the selected object one dot or one grid unit to the left.	←
Right	Moves the selected object one dot or one grid unit to the right.	→
Rotate/Flip		
Rotate Right 90 Degrees	Rotates the currently selected object 90 degrees to the right.	---
Rotate Left 90 Degrees	Rotates the currently selected object 90 degrees to the left.	---
Rotate Right 90 Degrees Around Center of Screen/Frame	Rotates the currently selected object 90 degrees to the right around the center of the screen or frame.	---
Rotate Left 90 Degrees Around Center of Screen/Frame	Rotates the currently selected object 90 degrees to the left around the center of the screen or frame.	---
Flip Horizontal	Flips the currently selected object horizontally.	---
Flip Vertical	Flips the currently selected object vertically.	---
Flip Horizontal Around Center of Screen/Frame	Flips the currently selected object horizontally around the center of the screen or frame.	---
Flip Vertical Around Center of Screen/Frame	Flips the currently selected object vertically around the center of the screen or frame.	---
Edit Node	Changes the positions of the vertices to change the shape of a fixed object node.	---
Select All		
All Objects	Selects all objects on the screen.	Ctrl+A
Same Type Objects	Selects all objects of the same type as the currently selected object.	Ctrl+D
Repeat	Makes multiple copies of the selected objects.	Ctrl+W
Edit Properties	Displays a list of functional objects on screen to enable changing property settings.	Ctrl+L

Find Menu

Command	Function	Shortcut keys
Find	Searches for address or character string keywords.	Ctrl+F
Replace	Replaces the specified addresses.	Ctrl+H
Address Cross Reference	Finds locations where an address is used and lists the results.	Ctrl+R
Macro Cross Reference	Lists macro locations.	---
Replace Host	Replaces the host for all addresses in the project.	---

View Menu

Command	Function	Shortcut keys
Toolbar	Displays and hides the toolbar.	---
Window		
Project Workspace	Displays and hides the project workspace.	Alt+1
Symbol Table	Displays and hides the symbol table.	Alt+2
Property List	Displays and hides the property list.	Alt+3
Library	Displays and hides the Library Window.	Alt+4
Select Object	Displays and hides the object selection.	Alt+5
Address in Use List	Displays and hides the List Up Addresses Used Window.	Alt+6
Output Window	Displays and hides the Output Window.	Alt+7
Palette	Displays and hides the Palette Window.	Alt+8
Status Bar	Displays and hides the Status Bar.	---
Previous Label	Displays the previous label.	Ctrl+PgUp
Next Label	Displays the next label.	Ctrl+PgDn
Previous Screen	Displays the previous screen.	Shift+PgUp
Next Screen	Displays the next screen.	Shift+PgDn
Previous Frame Page	Displays the previous frame page.	PgUp
Next Frame Page	Displays the next frame page.	PgDn
Show Address		
Show Symbol Name	Switches to functional object display showing symbol names.	---
Show Address	Switches to functional object display showing addresses.	---
Show I/O Comment	Switches to functional object display showing I/O comments.	---
Hide	Switches to functional object display hiding addresses.	---
Show ID	Displays and hides ID numbers for objects.	---
Simulate ON/OFF	Switches ON and OFF display for functional objects.	---
Show Sheet Object	Displays and hides objects registered in sheets.	---
Grid	Sets the grid.	---
Compatibility Frame	Displays a frame to indicate an area that can be created with the same aspect ratio across all models.	---
Zoom	Zooms the display in and out.	---
Refresh	Redraws the screen.	F9

PT Menu

Command	Function	Shortcut keys
Transfer		
Quick transfer (Computer → PT)	Compares project data with data in the PT Unit and transfers only refreshed data to the PT Unit.	Ctrl+Q
Transfer (Computer → PT)	Transfers all project data to the PT Unit.	Ctrl+B
Transfer (PT → Computer)	Uploads the project data stored in the PT Unit to the computer.	Ctrl+Shift+B
Transfer Setting	Sets the communications path to be used in the transfer.	Ctrl+Alt+B
Transfer Program	Starts the tool for transferring project data created on the CX-Designer to the PT Unit or receive project data from the PT Unit to the CX-Designer.	Ctrl+I
System Setting	Sets the PT Unit's operating parameters. (This is the same as double-clicking System Setting on the project workspace System Tab Page.)	---
Project Properties	Sets the project properties. (This is the same as double-clicking Project Properties on the project workspace System Tab Page.)	---
Communication Setting	Registers hosts and sets communications conditions. (This is the same as double-clicking Communication Setting on the project workspace System Tab Page.)	---
Alarm/Event Setting	Registers and corrects alarms and events. (This is the same as double-clicking Alarm/Event Setting on the project workspace Common Setting Tab Page.)	---
Data Log Setting	Registers and corrects the data log function. (This is the same as double-clicking Data Log Setting on the project workspace Common Setting Tab Page.)	---
Broken-line Graph Group Setting	Registers and corrects broken-line graph groups. (This is the same as double-clicking Broken-line Graph Group Setting on the project workspace Common Setting Tab Page.)	---
Data Block Setting	Registers and corrects data blocks. (This is the same as double-clicking Data Block Setting on the project workspace Common Setting Tab Page.)	---
String Table Setting	Used to register or correct character strings in character tables. (This is the same as double-clicking String Table Setting on the project workspace Common Setting Tab Page.)	---
Device Data Transfer Setting	Used to register and correct entries and groups in device data transfer settings. (This is the same as double-clicking Device Data Transfer Setting on the project workspace Common Setting Tab Page.)	---
Password	Sets the password. (This is the same as double-clicking Password on the project workspace Common Setting Tab Page.)	---
Unit/Scale	Sets the units and scales used by numeral objects. (This is the same as double-clicking Unit/Scale on the project workspace Common Setting Tab Page.)	---
Dialog Setting	Sets the dialog displayed when functional objects are pressed.	---
Flicker	Sets flicker settings for each screen or sheet.	---

Command	Function	Shortcut keys
Color Transparent	Sets transparent colors for bitmap files set in the project.	---
Operation Log Setting List Display	Displays the operation log settings in a list format.	---
Screen/Sheet Properties	Sets the screen properties.	---
Change Input Order	Sets the order for shifting the focus for numeral and text input objects on the screen.	---
Edit Contents	Sets switching the contents of individual screens and sheets.	---
Object Properties	Sets the properties for the currently selected functional object.	Enter
Edit Label	Enables direct editing of functional object labels on the screen without opening a property dialog box.	Space

Functional Objects Menu

Command	Function	Shortcut keys
ON/OFF Button	Starts creation of an ON/OFF button.	---
Word Button	Starts creation of a word button.	---
Command Button	Starts creation of a command button.	---
Bit Lamp	Starts creation of a bit lamp.	---
Word Lamp	Starts creation of a word lamp.	---
Multifunction	Starts creation of a Multifunction Object.	---
Label	Starts creation of text.	---
Numeral Display & Input	Starts creation of a Numeral Display & Input Object.	---
String Display & Input	Starts creation of a String Display & Input Object.	---
List Selection	Starts creation of a List Selection object.	---
Thumbwheel Switch	Starts creation of a thumbwheel switch.	---
Analog Meter	Starts creation of an analog meter.	---
Level Meter	Starts creation of a level meter.	---
Broken-line Graph	Starts creation of a broken-line graph.	---
Bitmap	Starts creation of a bit map.	---
Alarm/event Display	Starts creation of an alarm/event display object.	---
Alarm/Event Summary & History	Starts creation of an alarm/event summary & history object.	---

Command	Function	Shortcut keys
Date	Starts creation of a date object.	---
Time	Starts creation of a time object.	---
Data Log Graph	Starts creation of a data log graph.	---
Data Block Table	Starts creation of a data block table.	---
Temporary Input	Starts creation of a temporary input.	---
Consecutive Line Drawing	Starts creation of a continuous line.	---
Contents Display	Starts creation of a contents display.	---
Frame	Starts creation of a frame region.	---
Table	Starts creation of a table on a table creation screen.	---

Fixed Objects Menu

Command	Function	Shortcut keys
Rectangle	Starts creation of a rectangle.	---
Circle • Oval	Starts creation of a circle or oval.	---
Straight Line	Starts creation of a straight line.	---
Polyline	Starts creation of a continuous straight line.	---
Polygon	Starts creation of a polygon.	---
Sector	Starts creation of a pie-shaped sector.	---
Arc	Starts creation of an arc.	---

Tools Menu

Command	Function	Shortcut keys
Test	Performs an operating test on the computer. The test can be performed while connected to either the CX-Simulator (virtual PLC) or an actual PLC.	Ctrl+T
PLC Error Simulator	Starts the PLC error simulator. For details on the PLC error simulator, refer to the <i>CX-Programmer Operation Manual (Cat. No. W446)</i> . This command cannot be used if the host is an NJ/NX-series Controller.	---
Resource Report	Displays a report on the resources that have been used.	---
Validation		
Validation (Project)	Checks all screen data in the project according to validation settings to see if any mistakes have been made.	Ctrl+E
Validation (Current Screen)	Checks screen data displayed at the front according to validation settings to see if any mistakes have been made.	Ctrl+Shift+E
Validation Setting	Sets the project data check items.	Ctrl+Alt+E
DXF Explorer	Starts the tool for accessing DXF files using the CX-Designer.	---

Command	Function	Shortcut keys
Library	Displays the Library Window to enable pasting objects registered in the library on the screen. Also enables registering objects on the screen in the library.	Alt+4
Conversion		
Model	Changes the model of the NS-B-series PT for the project currently being edited.	---
Import	Imports a project of CX-Designer V3.□ or earlier.	---
Export	Exports a project for CX-Designer V3.□.	---
Reset Defined Default		
Functional Object	Resets functional object specified values to default values.	---
Fixed Objects	Resets fixed object specified values to default values.	---
Option	Sets optional functions for editing screens.	---

Window Menu

Command	Function	Shortcut keys
Next Window	Moves to the next window of the windows displayed under View – Window .	Alt+0
Previous Window	Moves to the previous window of the windows displayed under View – Window .	Alt+Shift+0
Close All	Closes all open screen editing windows.	---
Cascade	Cascades the screen editing windows.	---
Tile	Tiles the screen editing windows.	---
Arrange Icons	Arranges the minimized window icons.	---
Window List	Lists all open screen editing windows. The front screen will have a check mark by it.	---

Help Menu

Command	Function	Shortcut keys
Contents	Displays the contents for the online help.	---
Search Topic	Displays a search dialog box for help topics.	---
Online Registration	Registers the user online.	---
About CX-Designer	Displays information on the product.	---

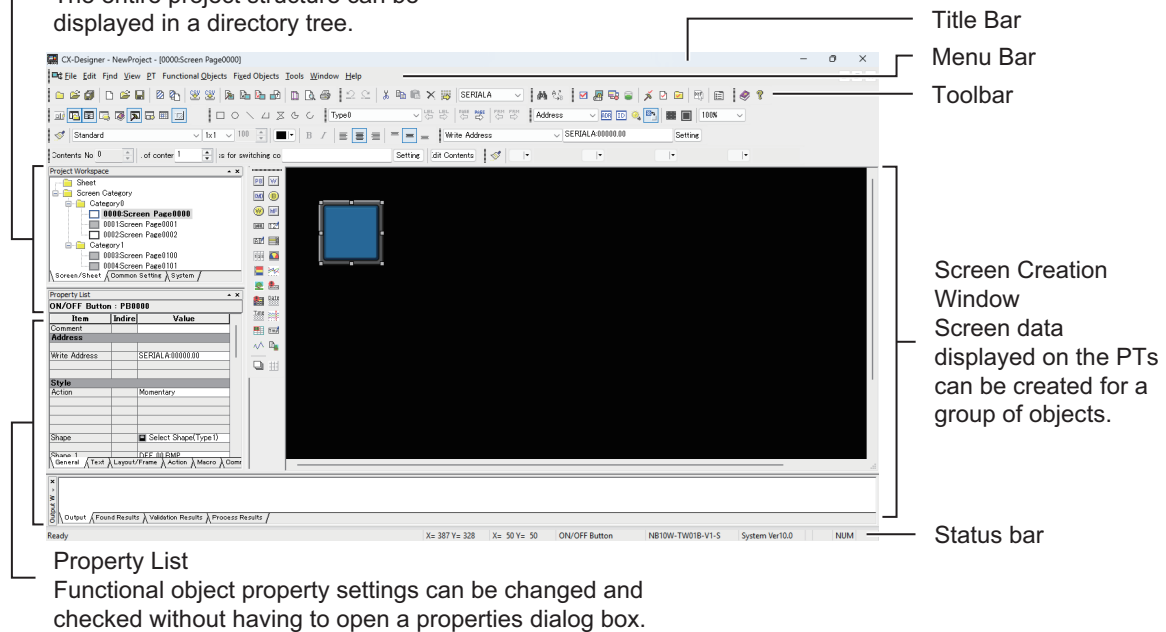
3-3 User Interface

3-3-1 Names of Basic Screen Components

The configuration and names and functions of the components in the CX-Designer operation screen are described here.

Project Workspace

The entire project structure can be displayed in a directory tree.



Title Bar

The title bar displays the application name, project name, and screen number.

Menu Bar

The menu bar provides groups of related functions.

Each group name is displayed in the menu bar and the functions are displayed on pull-down menus under each group name.

Project Workspace

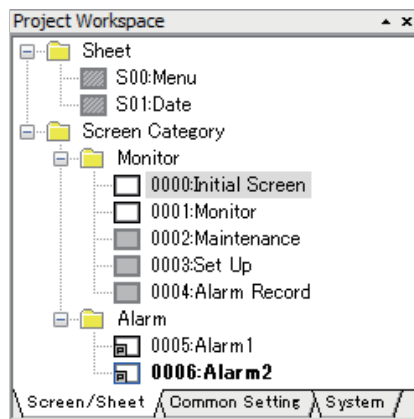
The project screen data and settings are displayed in a tree hierarchy in the project workspace.

Screens and sheets can be created, copied, and deleted in the project workspace.

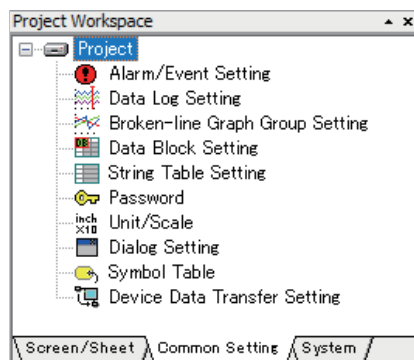
Screens from different projects can be copied between workspaces if more than one copy of CX-Designer is running at the same time.

The project workspace can be displayed and hidden by selecting **View – Window – Project workspace**.

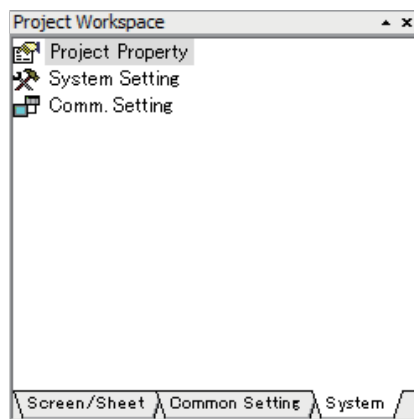
A list of the created screens and sheets will be displayed on the Screen/Sheet Tab Page.



The Common Setting Tab Page displays the common settings browsed by all functional objects.



The System Tab Page displays the project and communications settings.



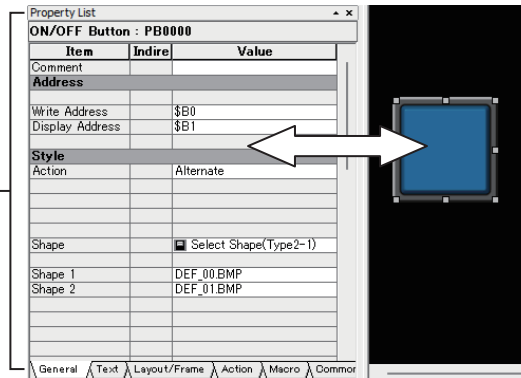
Property List

Property Lists display the property settings for the functional object selected on the screen. Settings can be checked and changed without opening a Property Setting Dialog Box.

Changes to properties made on the Property List are immediately reflected on the screen, which enables changes to be checked during screen creation.

Property Lists can be displayed and hidden by selecting **View – Window – Property List**.

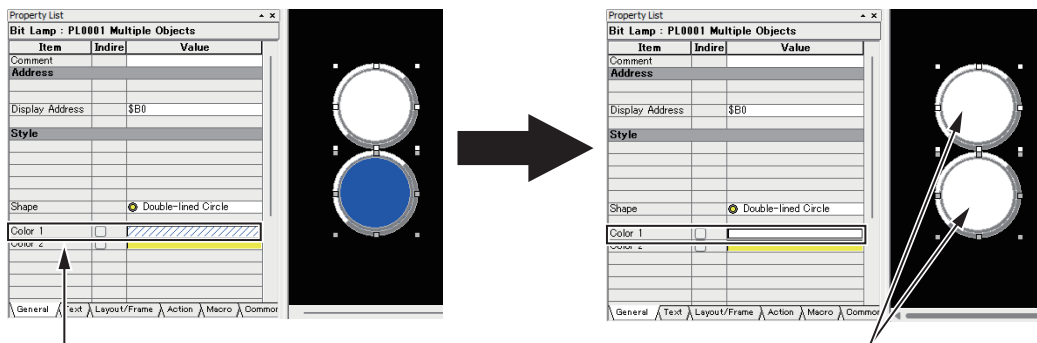
Enables display and settings of properties of the selected object without opening a property dialog box.



● Global Replace

More than one object can be selected and the common settings for those objects can be changed in one operation.

The following example shows a global change of the object color.



The two objects on the screen for which the color is to be changed are selected and Color 1 is changed.

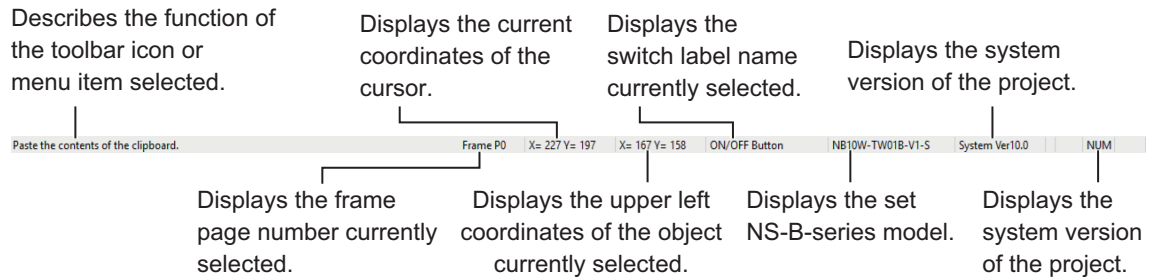
The color for the two selected objects is changed in the one operation.

Screen Creation Window

Screens displayed on the PTs can be created using functional and fixed objects.

Status bar

The Status Bar can be displayed and hidden by selecting **View – Status Bar**.

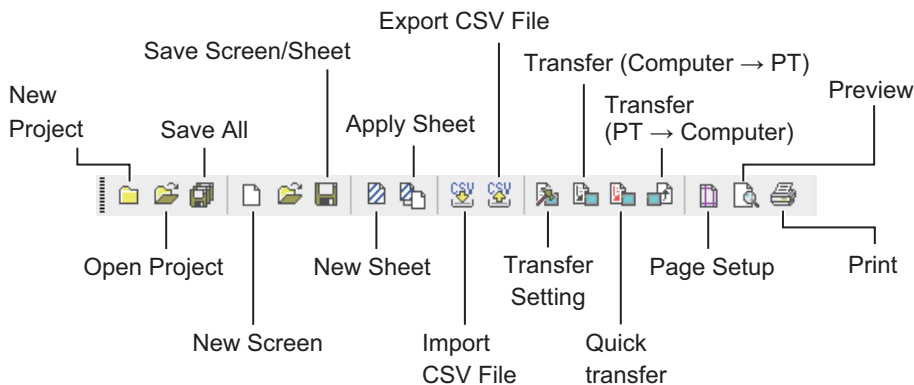


Toolbar

Each toolbar can be displayed and hidden according to the settings in the Customize Dialog Box displayed under **View – Toolbar**.

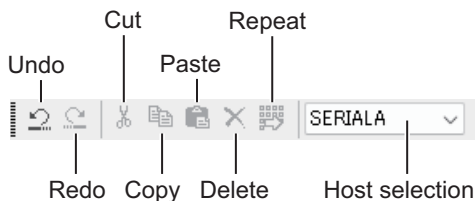
● File Toolbar

Displays functions relating to file operation, such as creating or saving projects and screens and transferring project data, as icons.



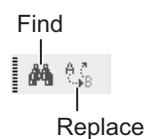
● Edit Toolbar

Displays functions relating to editing objects, such as copy, cut, and paste as icons.



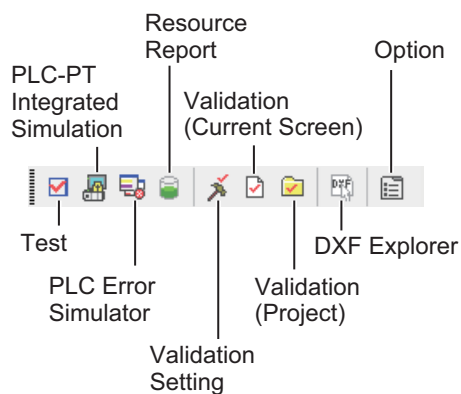
● Find Toolbar

Displays functions relating to searching and replacing as icons.



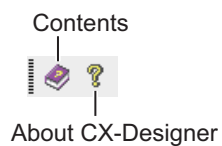
● Tool Toolbar

Displays frequently used functions from the Tools Menu as icons.



● Help Toolbar

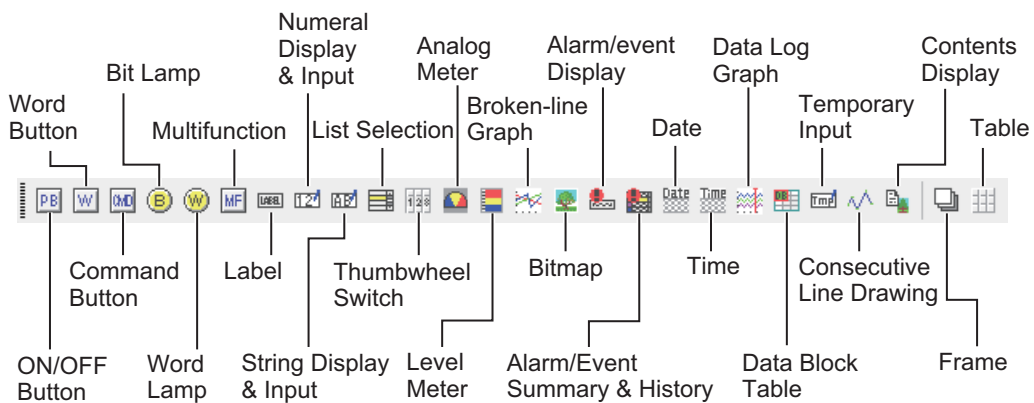
Displays help and version information functions as icons.



● Functional Object Toolbar

Displays screen creation functions for functional objects as icons.

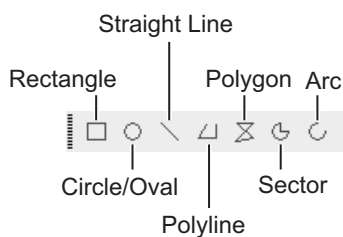
Select the icon button of the functional object to be used to start screen creation.



● Fixed Object Toolbar

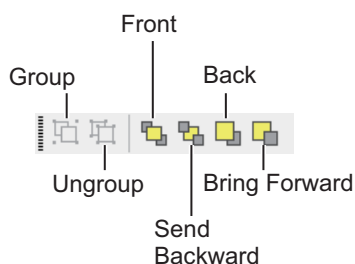
Displays fixed object drawing functions as icons.

Select the icon button of the fixed object to be used to start drawing screens.



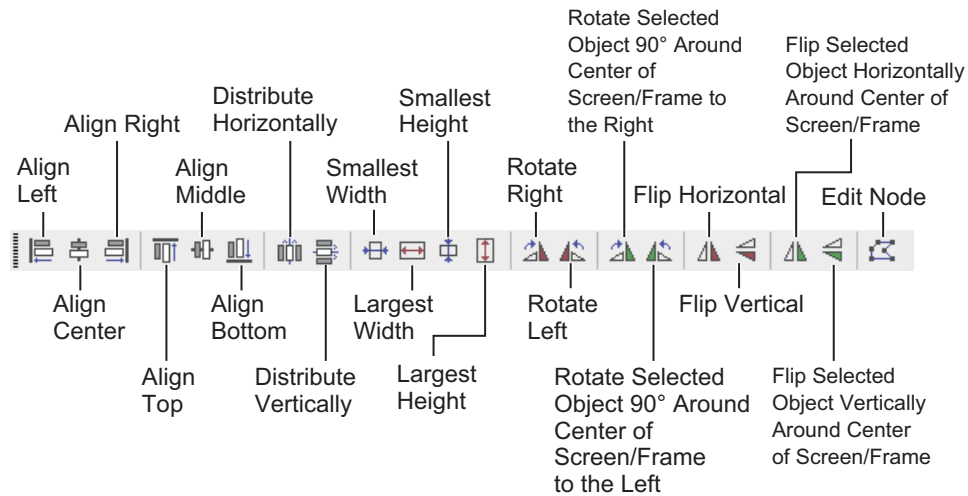
● Grouping Order Toolbar

Displays object grouping and change distribution order functions as icons.



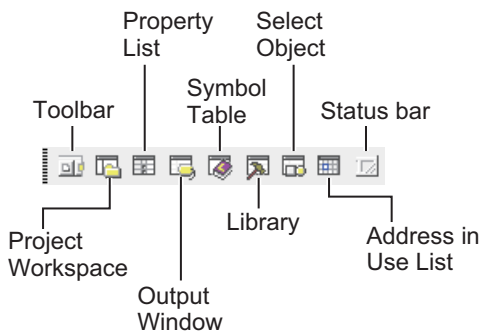
● Edit Objects Toolbar

Displays functions relating to changing object layout and object alignment as icons.



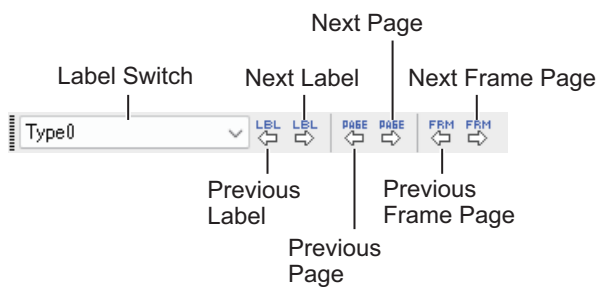
● Window Display Toolbar

Displays functions for displaying windows as icons.



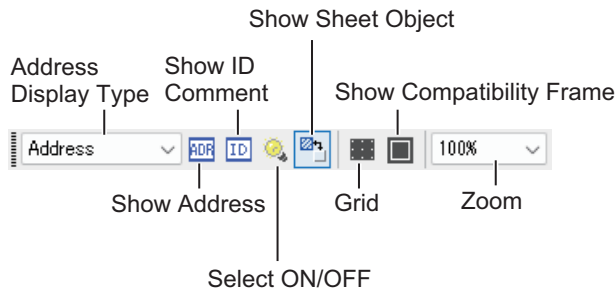
● Switch Toolbar

Displays functions for switching labels, screens, and frame pages as icons.



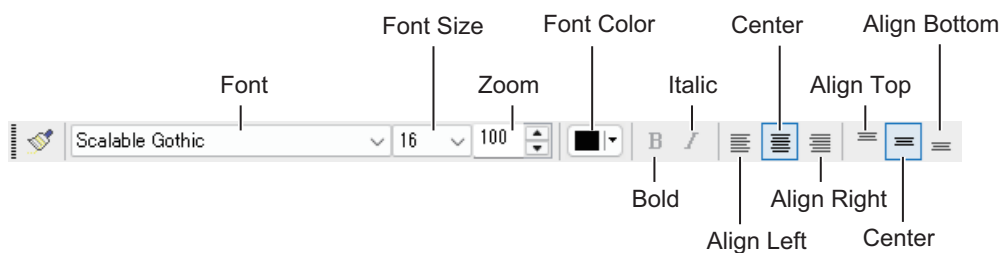
● View Toolbar

Displays functions for switching the Screen Creation Window display as icons.



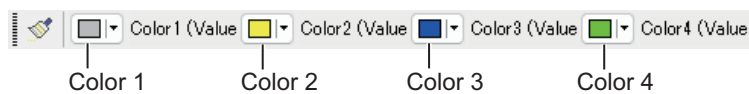
● Font Toolbar

Displays the functions for setting text font properties in functional objects as icons.



● Color Toolbar

Displays the color settings for functional objects and fixed objects as icons.



● Address Toolbar

Displays the setting functions for the addresses of the functional objects in a toolbar. Select the functional object for which the address is to be set and set the address.

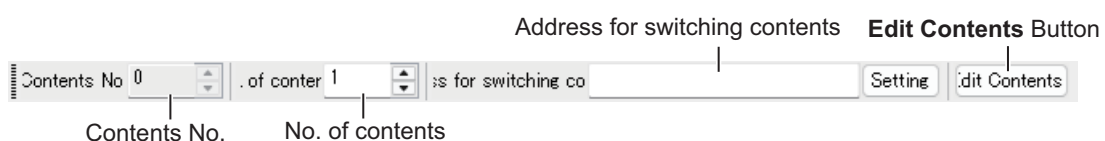


● Edit Contents Toolbar

Sets the basic contents change settings required for using the Machine Navigator.

By changing the contents number, the display can be changed to the contents set for that contents number.

Click the **Edit Contents** Button to display the Edit Contents Dialog Box. Detailed settings can then be made for changing contents.

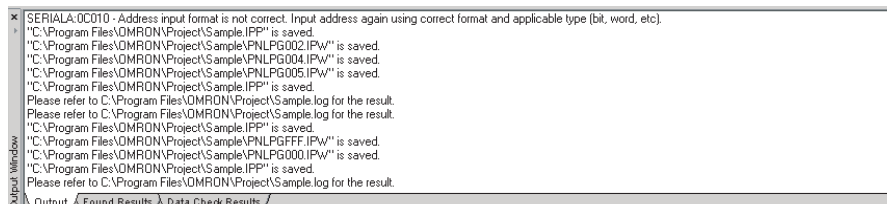


Output Window

The Output Window displays various data such as CX-Designer search, data check, and other processing results and error details.

The Output Window can be displayed and hidden by selecting **View – Window – Output Window**.

The Output Tab Page displays the CX-Designer operating status and error information.



The Found Results Tab Page displays the search and replace results.

Click an item to display and select the corresponding object.

Search Result: 7 entries found Find From: Communications AddressRange:Whole Project

Page	ID	Host	Name	Address	I/O Comment	Label	Object Comment	Detailed Information
0000	PL0002	SERIALA	Waiting	HR00100.02	Waiting		Waiting	Bit Lamp : Display Address
0000	PL0001	SERIALA	Stop	HR00100.01	Stop		Stop	Bit Lamp : Display Address
0000	PL0000	SERIALA	Running	HR00100.00	Running		Running	Bit Lamp : Display Address
0000	PL0004	SERIALA	Error	HR00100.03	Error		Error	Bit Lamp : Display Address
S00	PL0000	SERIALA	AutoGen4	HR00100.10				Bit Lamp : Display Address
0000	NUM0006	SERIALA	Status	HR00100	Status		Status	Numeral Display & Input : Address
0100	NUM0006	SERIALA	Status	HR00100	Status		Status	Numeral Display & Input : Address

Output Found Results Data Check Results

The Data Check Results Tab Page displays the data check results.

Click an item to display and select the corresponding object.

Check completed: 9 incorrect data is found. Check range: Whole Project

Page	ID	Type	Cause
0000	PL0001	Warning	Functional objects are overlapped.
0000	BMP0007	Error	The specified file does not exist.
0000	PB0008	Warning	Communication setting is not complete.
0000		Warning	No screen switch object exists.
0001	PB0000	Error	Functional object does not contain touch points.
0100	NUM0007	Warning	Object is not placed inside the screen.
0100		Warning	No screen switch object exists.

Output Found Results Data Check Results

3-3-2 CX-Designer Functions and Screens

Symbol Table

A symbol table lists the symbols registered to the project.

The CX-Designer can specify symbols as the data to be accessed by functional objects, in addition to directly specifying PLC or other host addresses or internal memory.

“Symbol” is a name to which an address is allocated. This symbol can be used instead of the address in the CX-Designer. This allows addresses to be changed simply by changing the address set for the symbol, instead of opening each screen and changing the property settings for the functional objects on that screen. In addition, comments can be specified for symbols in the CX-Designer.

The Symbol Table Window can be displayed and hidden by selecting **View – Window – Symbol Table** from the menu bar.

Click **Name** to change the display order between descending and ascending (the sort function).

Host	Name	Type	Address	Type/Number	I/O Comment	Tag
All	All	All	All	All		All
PTMEM	AutoGen1	BOOL	\$B0			None
PTMEM	AutoGen2	CHANNEL	\$W0			None
SERIALA	AmberLight	BOOL	00010.01		Prepare to go/stop	None
SERIALA	AmberLightTim	CHANNEL	00002		Timer for the amber light period	None
SERIALA	AmberOnlyTim	CHANNEL	00004		Timer for the amber only period	None
SERIALA	AmberOnlyTim	BOOL	TU00004			None
SERIALA	AmberLightTim	BOOL	TU00002			None
SERIALA	GreenLight	BOOL	00010.02		Go	None
SERIALA	GreenLightTim	CHANNEL	00003		Timer for the green light period	None
SERIALA	GreenTimerDo	BOOL	TU00003			None
SERIALA	RedLight	BOOL	00010.00		Stop	None
SERIALA	RedLightTimer	CHANNEL	00001		Timer for the red light period	None
SERIALA	RedTimerDone	BOOL	TU00001			None
SERIALA	TimeInterval	CHANNEL	00048		Speed at which the sequence works	None

Click to display a pull-down list and display only the desired type (the filter function).



Additional Information

- Symbols can be added or deleted and functions that use a symbol can be searched for in the symbol table.
- Symbols (communications addresses) to be set can be copied from the symbol table to the Property List using the drag-and-drop function.
- Symbols can also be copied from the CX-Programmer's symbol table or variables can be copied from the Sysmac Studio's variable table and then pasted to the CX-Designer's symbol table. This enables the same symbols/variables to be used by both the CX-Designer and the CX-Programmer or Sysmac Studio.

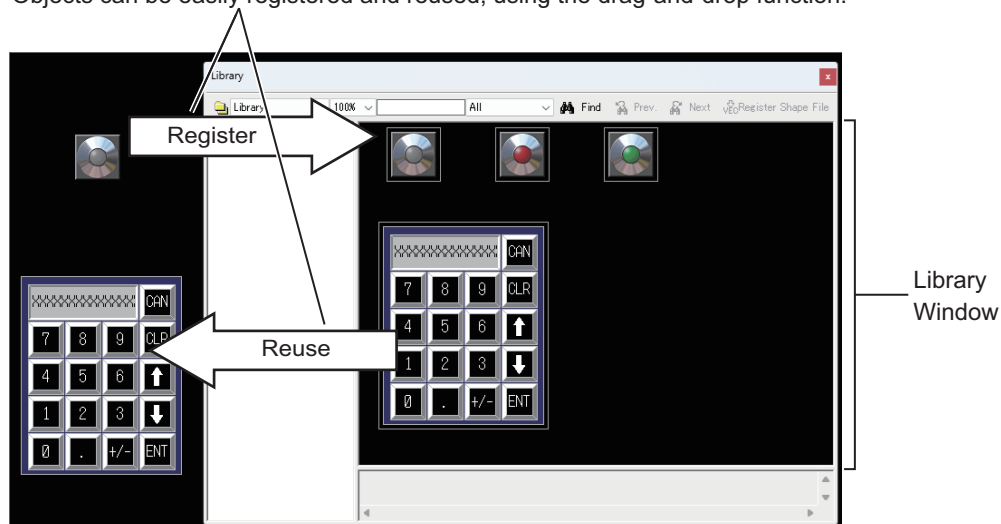
Library Window

A library object is a group of registered functional and fixed objects together with their property settings registered as one unit of data.

Objects can be registered as a library object and easily reused in multiple locations or screens from the Library Window.

The Library Window can be displayed and hidden by selecting **View – Window – Library**.

Objects can be easily registered and reused, using the drag-and-drop function.



Additional Information

Smart Active Parts are not included in CX-Designer Version 4.0. To use Smart Active Parts, use the following procedure to change the library reference. For information on Smart Active Parts, refer to the manual included with CX-Designer Version 3.□.

- (1) Open the Library Window.
- (2) Click .
- (3) Select the following folder and click OK.
 <CX-Designer Version 3.□ installation folder>\library
- (4) From Smart Active Parts under the displayed tree, find the library object you want to use, and drag and drop it in the Screen Creation Window.

Object List Window

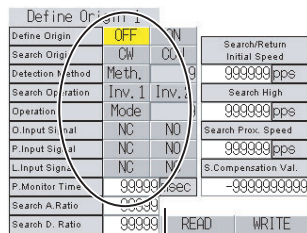
The Object List Window lists the functional objects located in Screen Creation Window.

Any object can be selected and the display on the Screen Creation Window can be restricted to a specified type of functional object from the Select Object Window.

Selecting and displaying objects by type enables easy editing of objects hidden under other objects. Normal screen editing is also possible in this mode.

The Select Object Window can be displayed and hidden by selecting **View – Window – Object List**.

Screen Creation Window



Select Object

All types Range Selection Release All

O	Object Comment	ID	X	Y
PS		PB0000	50	50
PS		PB0001	100	50
PS		PB0002	150	50
PS		PB0003	200	50
PS		PB0005	250	50
W	Input Permission	PBW0004	50	100
W	Input Permission	PBW0006	100	100
W	Input Permission	PBW0007	150	100
W	Input Permission	PBW0008	200	100
W	Input Permission	PBW0009	250	100
W	Input Permission	PBW0010	300	100
W	Input Permission	PBW0011	350	100
W	Input Permission	PBW0012	400	100
W	Input Permission	PBW0013	450	100
W	Input Permission	PBW0015	500	100
L	No Input Allowed	LBL0014	50	150
L	No Input Allowed	LBL0016	100	150
L	No Input Allowed	LBL0017	150	150

Select Object Screen
Lists objects on the screen.



Label objects that were
hidden underneath

Select Object

Label Range Selection Release All

O	Object Comment	ID	X	Y
L	No Input Allowed	LBL0014	50	150
L	No Input Allowed	LBL0016	100	150
L	No Input Allowed	LBL0017	150	150
L	No Input Allowed	LBL0018	200	150
L	No Input Allowed	LBL0019	250	150
L	No Input Allowed	LBL0020	300	150
L	No Input Allowed	LBL0021	350	150
L	No Input Allowed	LBL0022	400	150
L	No Input Allowed	LBL0023	450	150
L	No Input Allowed	LBL0024	500	150

Select only **Label** to display
labels that were hidden under
other objects. Labels can also
be edited in this mode.

Address in Use List

Displays a list of the number of times each address is used in functional objects.

A list of the functional objects using the addresses is also displayed in the Output Window and specified functional objects can be selected on the screen.

The Address in Use Window can be displayed and hidden by selecting **View – Window – Address in Use List**.

Displays the addresses.

List Up Addresses Used

Start Address: SERIALA:00000.00

No. of Display Lines: 15

Whole Project

Set...

Go

Save...

Detail...

Find Reference Object

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14	+15
SERIALA:00000.00	8	8	2	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00001.00	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00002.00	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SERIALA:00003.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00004.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00005.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00006.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00007.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00008.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00009.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00010.00	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00011.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
SERIALA:00012.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
SERIALA:00013.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00014.00	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Sets the start address for the search range.

Sets the search range.

Displays the number of times each address is used. (Unused addresses are displayed in gray.)

4

Useful Functions

This section describes useful CX-Designer functions for creating project data and debugging and how to use these functions.

4

4-1	Creating Screens Using Symbols	4-3
4-1-1	Changing Allocated Addresses	4-4
4-1-2	Reusing Existing Projects in Another System	4-5
4-1-3	Copying and Pasting Symbols/Variables between Support Software	4-5
4-1-4	Using I/O Allocation Table in Symbol Table	4-7
4-1-5	Creating Screens Using Symbol Names and Then Setting Addresses	4-7
4-2	Using Screens from Other Projects	4-9
4-3	Classifying Screens by Application	4-12
4-3-1	Creating Categories	4-13
4-3-2	Moving Screens between Categories	4-13
4-3-3	Creating New Screens	4-14
4-4	Checking and Changing Functional Object Properties without Opening Property Setting Dialog Boxes	4-15
4-4-1	Globally Replacing Settings for More Than One Object	4-16
4-5	Listing and Editing Functional Object Properties	4-17
4-5-1	Setting Consecutive Addresses	4-17
4-5-2	Copying the Same Setting to More Than One Cell	4-18
4-6	Editing Overlapping Objects	4-19
4-6-1	Method for Selecting Specified Objects	4-19
4-6-2	Displaying Only Specified Objects on a Screen	4-20
4-7	Creating Multi-language Labels	4-21
4-8	Checking Address Usage Status	4-23
4-9	Searching for Embedded Macros	4-25
4-10	Transferring Only Edited Data to PT Unit	4-26
4-11	Creating Documents	4-27
4-12	How to Use Help	4-28
4-13	Integrated Simulation for the Entire System	4-30
4-13-1	Debugging Screens and the User Program with a Virtual PLC	4-30
4-13-2	Debugging Screens and the User Program with the Actual PLC	4-33

4-14 Setting Security for Data Transfers with the PT Unit	4-36
4-15 Setting Symbol Names and I/O Comments for Use as Labels	4-38
4-16 Executing Multiple Functions with a Single Operation	4-40
4-17 Replacing a Lamp with a Button	4-42
4-18 Creating Polygonal Lamps	4-44
4-19 Registering Contents	4-47
4-20 Using Machine Navigator	4-49
4-21 Enlarging Objects Proportional to Screen Size during Data Conversion ...	4-55
4-22 Batch-setting Label Formats	4-57
4-23 Displaying the Compatibility Frame	4-60

4-1 Creating Screens Using Symbols

The CX-Designer can enter addresses as symbols when setting functional object addresses. (Addresses can also be directly input. Symbols are automatically allocated in these cases.)

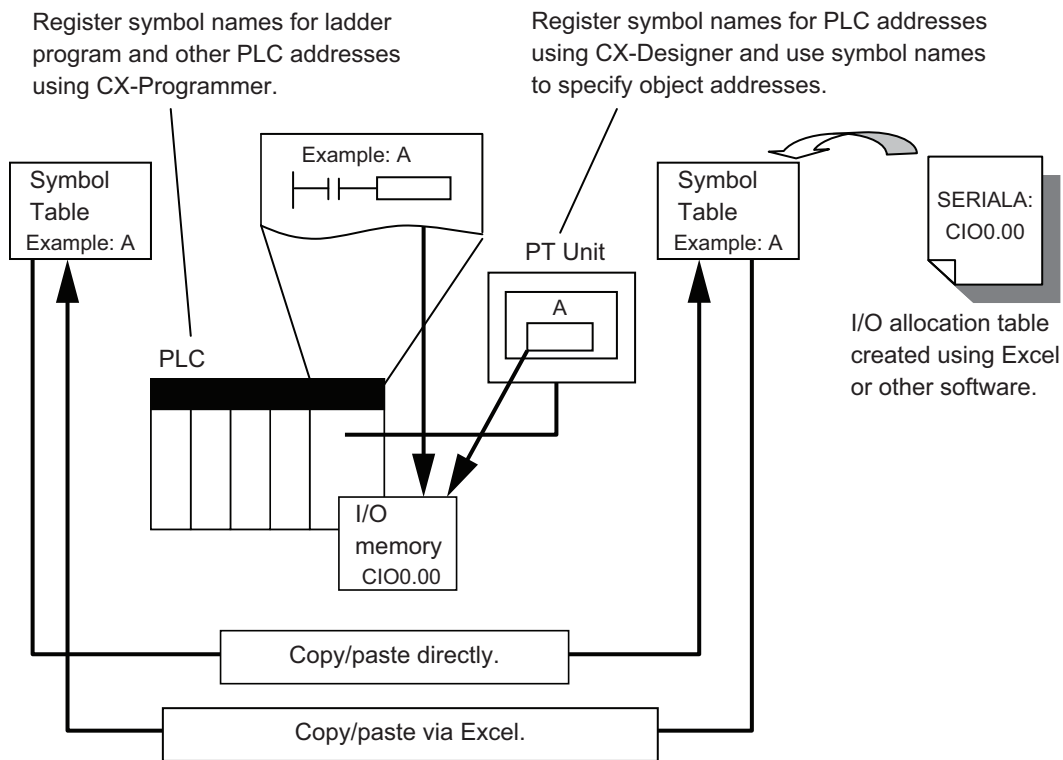
This means that all addresses used in a project can be managed from the symbol table.

The following operations can be performed easily using the symbol table.

- Changing allocated addresses when the address allocation changes suddenly.
- Reusing existing projects in another system.

Symbols/variables can also be copied and pasted between the CX-Programmer's and CX-Designer's symbol tables and between the Sysmac Studio's variable table and the CX-Designer's symbol table.

Also, any I/O allocation table created using Excel or other software can be used as is in symbol tables.



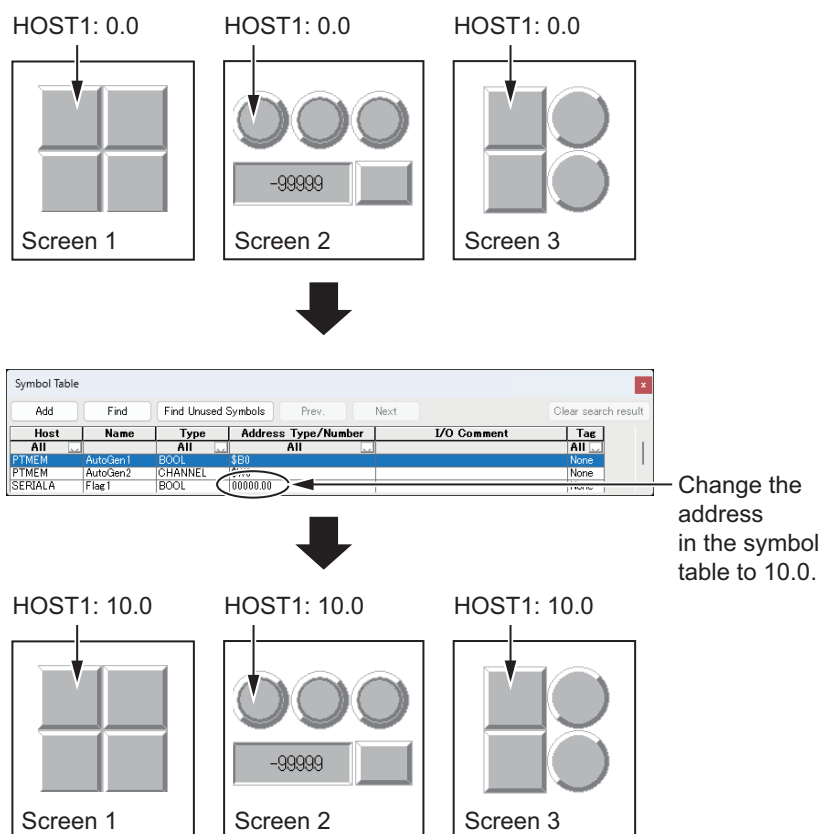
4-1-1 Changing Allocated Addresses

If an address allocated for a symbol is changed on a symbol table, the change is automatically reflected in all screens.

This allows allocated addresses to be changed simply by changing the symbol table, instead of opening each screen and changing the property settings for the functional objects on that screen.

There is flexibility with symbol changes to meet any requirement. The replace function can be used to globally replace the host and addresses. Symbols can also be changed individually.

- 1** Select **Symbol Table** on the project workspace Common Setting Tab Page.
The symbol table will be displayed.
- 2** Double-click the symbol for which the allocated address is to be changed in the symbol table.
- 3** Change the allocated address in the displayed Address Settings Dialog Box.
- 4** When the changes have been completed, they will be reflected in all functional objects that use that symbol.



4-1-2 Reusing Existing Projects in Another System

When using existing projects in another system, the addresses allocated for objects can be easily changed simply by changing the addresses in the symbol table.

- 1 Change the allocated address for each symbol in the symbol table.
- 2 To replace addresses in the symbol table, right-click the mouse and select **Replace** from the pop-up menu that is displayed.

4-1-3 Copying and Pasting Symbols/Variables between Support Software

Both the CX-Designer and CX-Programmer have symbol tables and can share their symbol data. The Sysmac Studio has variable tables, and the variable data can be shared with the symbol data of the CX-Designer. (Symbol data and variable data are essentially the same.)

This means that variables/symbols can be copied between the different types of Support Software.

Name	Data Type	Address / Value	Rack Location	Usage	Comment
* P_First_Cycle	BOOL	A200.11		Work	First Cycle Flag
* P_Step	BOOL	A200.12		Work	Step Flag
* P_First_Cycle_Task	BOOL	A200.15		Work	First Task Execution Flag
* P_Max_Cycle_Time	UDINT	A262		Work	Maximum Cycle Time
* P_Cycle_Time_Value	UDINT	A264		Work	Present Scan Time
* P_Cycle_Time_Error	BOOL	A401.08		Work	Cycle Time Error Flag
* P_Low_Battery	BOOL	A402.04		Work	Low Battery Flag
* P_IO_Verify_Error	BOOL	A402.09		Work	I/O Verification Error Flag
* P_Output_Off_Bit	BOOL	A500.15		Work	Output OFF Bit



CX-Programmer symbols are copied and pasted to the CX-Designer symbol table.

Symbol Table						
Add Find Find Unused Symbols Prev. Next Clear search result						
Host	Name	Type	Address Type/Number		I/O Comment	Tag
All	All	All	All			All
PTIME	AutoGen1	BOOL	\$B0			None
SERIALA	P Cycle Time	BOOL	AR00401.08		Cycle Time Error	None
SERIALA	P Cycle Time	UDINT	AR00264		Cycle Time Value	None
SERIALA	P First Cycle	BOOL	AR00200.11		First Cycle	None
SERIALA	P First Cycle Task	BOOL	AR00200.15		First Cycle Task	None
SERIALA	P IO Verify Err	BOOL	AR00402.09		IO Verify Error	None
SERIALA	P Low Battery	BOOL	AR00402.04		Low Battery	None
SERIALA	P Max Cycle Time	UDINT	AR00262		Max Cycle Time	None
SERIALA	P Output Off Bit	BOOL	AR00500.15		Output Off Bit	None
SERIALA	P Step	BOOL	AR00200.12		Step	None



The same symbol as the CX-Programmer symbol is added.

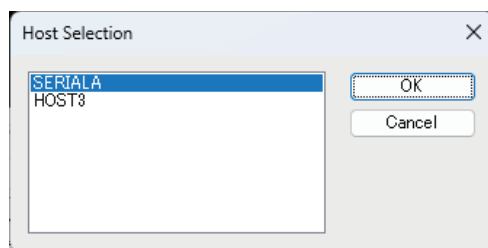


Additional Information

- To use tags (network symbols), the same tags must be registered in both the PT Unit and the host. If network variables (tags) are added or changed in either the CX-Designer or in the CX-Programmer or Sysmac Studio, copy them to the other Support Software. Tags are supported by CX-Programmer version 8.0 or higher and Sysmac Studio version 1.0 or higher.
- When using a data structure in the CX-Designer, the members of the structure are registered individually and treated as separate symbols. If there are array members in the data structure, they can be used as arrays in the CX-Designer. If the data structure is registered as array, however, the elements must be registered individually and treated as separate symbols.
- When using the Sysmac Studio and CX-Designer, you can copy and paste variables from the Sysmac Studio to the CX-Designer, but not from the CX-Designer to the Sysmac Studio.
- To copy structure variables between the CX-Designer and CX-Programmer/Sysmac Studio, CX-Programmer version 9.2 or higher and Sysmac Studio version 1.0 or higher is required. Structure variables can be copied and pasted from the CX-Programmer or Sysmac Studio to the CX-Designer, but not from the CX-Designer to the CX-Programmer or Sysmac Studio.

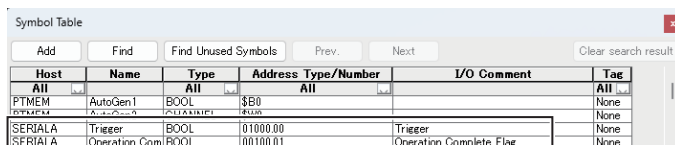
● Copying Variables from the CX-Programmer or Sysmac Studio to the CX-Designer

- 1** Start the CX-Programmer or Sysmac Studio and open the project that contains the variables to share.
- 2** Select the symbol from the CX-Programmer symbol table.
For the Sysmac Studio, select **Tool – Export Global Variables – CX-Designer** to copy the variables.
- 3** Open the CX-Designer symbol table and paste the symbol.
- 4** If a host address is set for the symbol, select the applicable host for the destination.



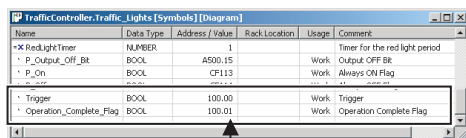
● Copying CX-Designer Symbols to the CX-Programmer

- 1 Select the symbol from the CX-Designer symbol table and copy it to the CX-Programmer.



Host	Name	Type	Address	Type/Number	I/O Comment	Tag
All	All	All	All	All	All	All
PTMEM	AutoGen1	BOOL	\$B0			None
PTMEM	AutoGen2	BOOL	\$B0			None
SERIALA	Trigger	BOOL	01000.00		Trigger	None
SERIALA	Operation Com	BOOL	00100.01		Operation Complete Flag	None

- 2 Open the CX-Programmer symbol table and paste the symbol.



Name	Data Type	Address / Value	Back Location	Usage	Comment
*K RedLightTimer	NUMBER	1			Timer for the red light period
*P_Output_Off_Bit	BOOL	A500.15		Work	Output OFF Bit
*P_On	BOOL	CP113		Work	Always ON Flag
*Trigger	BOOL	100.00		Work	Trigger
*Operation_Complete_Flag	BOOL	100.01		Work	Operation Complete Flag

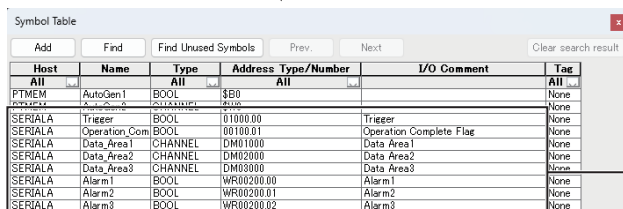
The same symbol as the CX-Designer symbol is added.

4-1-4 Using I/O Allocation Table in Symbol Table

The user can create the required I/O allocation table when creating projects. If the I/O allocation table is created in the same format as the symbol table, the I/O allocation table data can be copied as is to the symbol table. This enables symbols to be created easily from the I/O allocation table.

Host	Name	Type	Address	Comment
SERIALA	Trigger	BOOL	100.00	Trigger
SERIALA	Operation_Complete_Flag	BOOL	100.01	Operation Complete Flag
SERIALA	Data_Area1	CHANNEL	DM1000	Data_Area1
SERIALA	Data_Area2	CHANNEL	DM2000	Data_Area2
SERIALA	Data_Area3	CHANNEL	DM3000	Data_Area3
SERIALA	Alarm1	BOOL	WR200.0	Alarm1
SERIALA	Alarm2	BOOL	WR200.1	Alarm2
SERIALA	Alarm3	BOOL	WR200.2	Alarm3

Copy the I/O allocation table created using Excel and past to the CX-Designer symbol table.



Host	Name	Type	Address	Type/Number	I/O Comment	Tag
All	All	All	All	All	All	All
PTMEM	AutoGen1	BOOL	\$B0			None
PTMEM	AutoGen2	BOOL	\$B0			None
SERIALA	Trigger	BOOL	01000.00		Trigger	None
SERIALA	Operation Com	BOOL	00100.01		Operation Complete Flag	None
SERIALA	Data_Area1	CHANNEL	DM01000		Data_Area1	None
SERIALA	Data_Area2	CHANNEL	DM02000		Data_Area2	None
SERIALA	Data_Area3	CHANNEL	DM03000		Data_Area3	None
SERIALA	Alarm1	BOOL	WR00200.00		Alarm1	None
SERIALA	Alarm2	BOOL	WR00200.01		Alarm2	None
SERIALA	Alarm3	BOOL	WR00200.02		Alarm3	None

The I/O allocations in the table are registered as symbols.

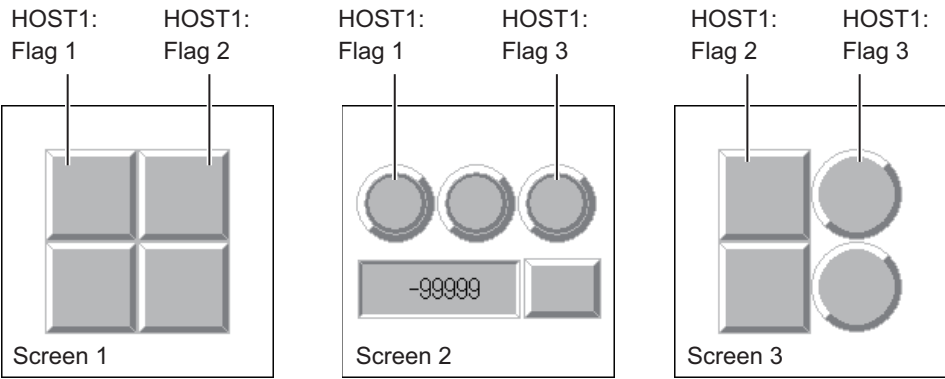
- 1 Create an I/O allocation table using Excel.
Use the following order in the I/O allocation table: Host, symbol name, type, address, and I/O comment
- 2 Copy the I/O allocation table.
- 3 Open the CX-Designer symbol table and paste the symbols.

4-1-5 Creating Screens Using Symbol Names and Then Setting Addresses

Screens can be created using only symbol names even if addresses are not set. When the addresses are later determined, they can be input collectively in the symbol table.

In addition, if an address allocated as a symbol in the symbol table is changed, that change is reflected in all functional objects where that symbol is set.

- 1** Input the symbol names for the communications address setting locations for the functional object.

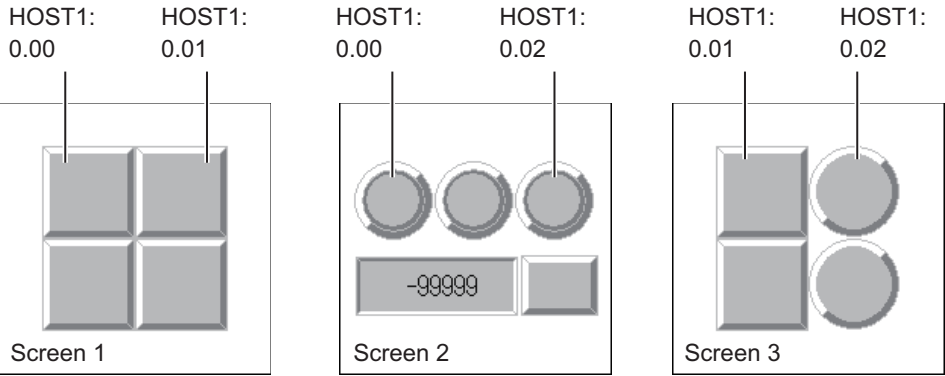


- 2** Set or change the addresses for the symbols input from the symbol table in step 1.

Host	Name	Type	Address Type/Number	I/O Comment	Tag
All		All	All		All
PTMEM	AutoGen1	BOOL	\$B0		None
PTMEM	AutoGen2	CHANNEL	\$C00		None
HOST1	Flag1	BOOL	00000.00		None
HOST1	Flag2	BOOL	00000.01		None
HOST1	Flag3	BOOL	00000.02		None

Afterwards set the addresses in the symbol table.

- 3** After the addresses have been set, they will be reflected in all the functional objects that reference the symbols.

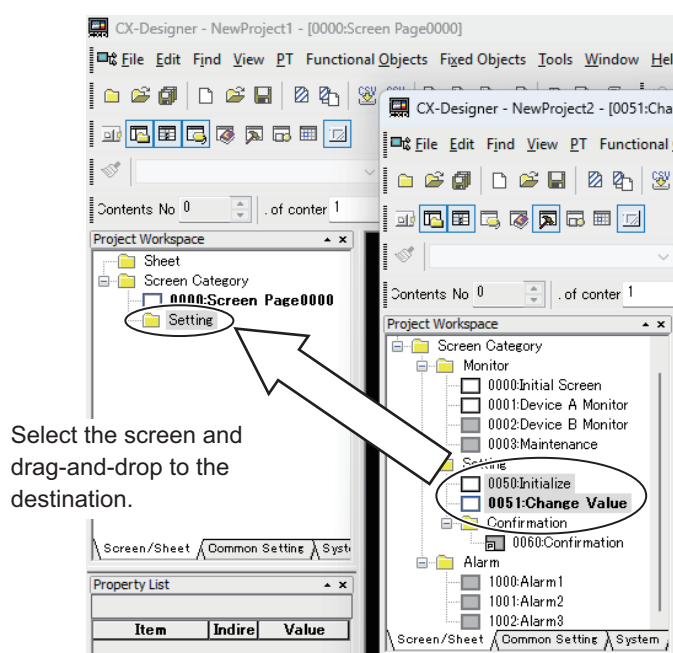


4-2 Using Screens from Other Projects

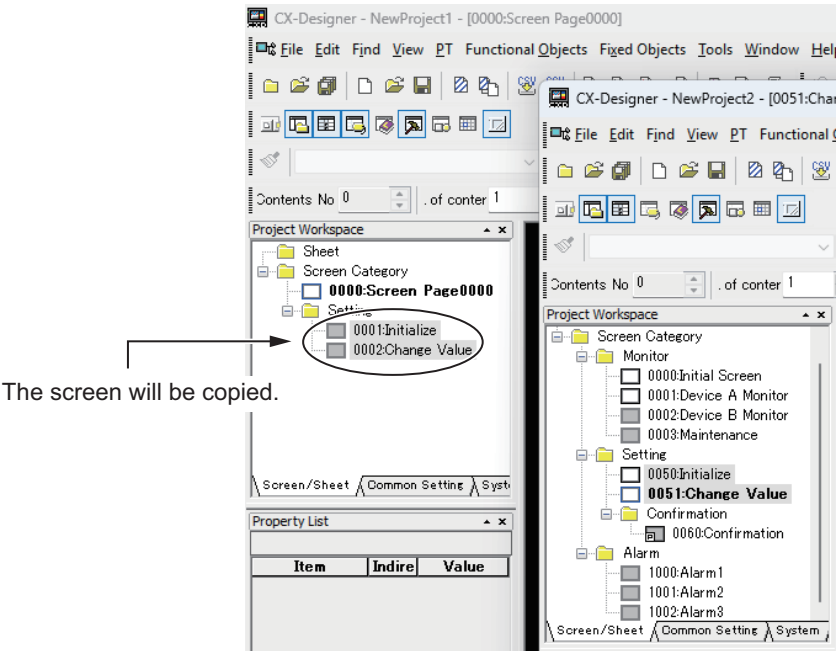
Screens from different projects can be copied between project workspaces if more than one copy of CX-Designer is running at the same time.

If there is an alarm/event display object, data log graph, or other functional object on the copied screen that accesses common settings, the common settings are automatically copied as well. This means that settings do not need to be adjusted to use the same common settings in both the source and destination project.

- 1** Start two copies of CX-Designer and open the source project on one copy and the destination project on the other copy. Open the project workspace Screen/Sheet Tab Page.
- 2** Select the screen to be copied on the source CX-Designer and drag-and-drop the screen to the destination category. The dialog box for setting the destination screen number and host will be opened.



- 3 Specify the destination screen number and the address host in the dialog box. The screen will be copied.



- 4 The addresses used in the source screen will be automatically copied to the symbol table in the destination project. The common settings accessed by screens are also added automatically.
- Copying Screens with Alarm/Event Displays

Source settings

Symbol Table						
Add Find Find Unused Symbols Prev. Next Clear search result						
Host	Name	Type	Address	Type/Number	I/O Comment	Tag
All	All	All	All	All	All	All
PTMEM	AutoGen1	BOOL	\$B0			None
PTMEM	AutoGen2	CHANNEL	\$W0			None
SERIALA	Alarm1	BOOL	WR00200.00			
SERIALA	Alarm2	BOOL	WR00200.01			
SERIALA	Alarm3	BOOL	WR00200.02			

Alarm/Event							
Switch Type0							
No.	Strin	Message	Address	Priority	Display Type	Group	Auto
1	OFF	Alarm1	SERIALA.WR00200.00	1	H	0	OFF
2	OFF	Alarm2	SERIALA.WR00200.01	1	H	0	OFF
3	OFF	Alarm3	SERIALA.WR00200.02	1	H	0	OFF



Destination settings

Symbol Table						
Add Find Find Unused Symbols Prev. Next Clear search result						
Host	Name	Type	Address	Type/Number	I/O Comment	Tag
All	All	All	All	All	All	All
PTMEM	AutoGen1	BOOL	\$B0			None
PTMEM	AutoGen2	CHANNEL	\$W0			None
SERIALA	AlarmA	BOOL	WR00100.00			
SERIALA	AlarmB	BOOL	WR00100.01			
SERIALA	Alarm1	BOOL	WR00200.00			
SERIALA	Alarm2	BOOL	WR00200.01			
SERIALA	Alarm3	BOOL	WR00200.02			

Alarm/Event							
Switch Type0							
No.	Strin	Message	Address	Priority	Display Type	Group	Auto
1	OFF	AlarmA	SERIALA.WR00100.00	1	H	0	OFF
2	OFF	AlarmB	SERIALA.WR00100.01	1	H	0	OFF
3	OFF	Alarm1	SERIALA.WR00200.00	1	H	0	OFF
4	OFF	Alarm2	SERIALA.WR00200.01	1	H	0	OFF
5	OFF	Alarm3	SERIALA.WR00200.02	1	H	0	OFF

Addresses registered as alarm/events in the source project are automatically added to both the symbol table and the Alarm/Event Dialog Box.

- 5** Address allocations can be changed from the symbol table to an address suitable for the destination project.

Refer to *4-1 Creating Screens Using Symbols* on page 4-3.

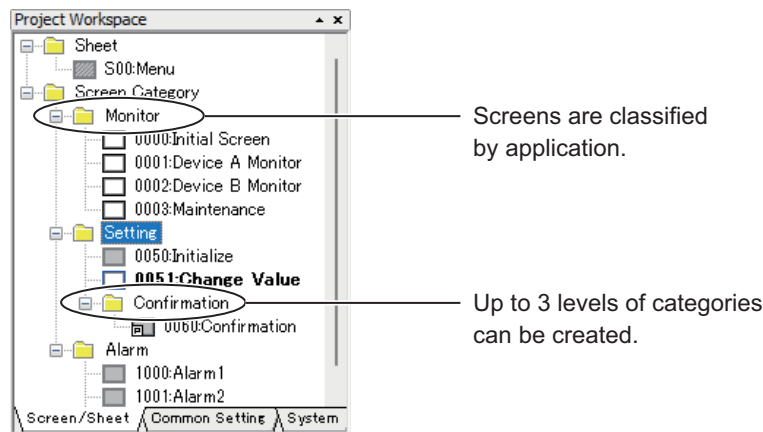


Additional Information

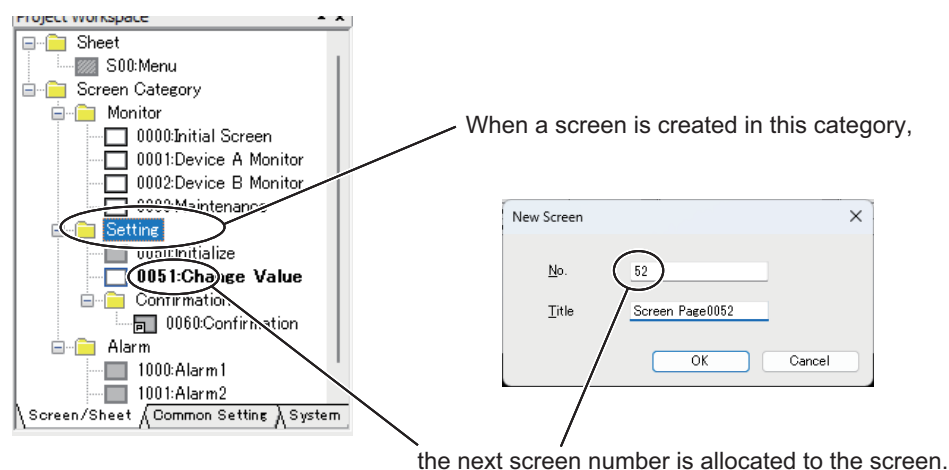
- All screens in a category can be copied by selecting the category and dragging-and-dropping it to another project workspace.
- Sheets can also be copied using the same method.
- Common settings can be copied by selecting them on the project workspace Common Settings Tab Page and dragging-and-dropping them to another CX-Designer's project workspace Common Settings Tab Page.

4-3 Classifying Screens by Application

Screens can be classified by application in the CX-Designer. These classifications are called “screen categories.” To display screens by screen categories, right-click in the Project Workspace and select **Display Screen Category** from the pop-up menu.

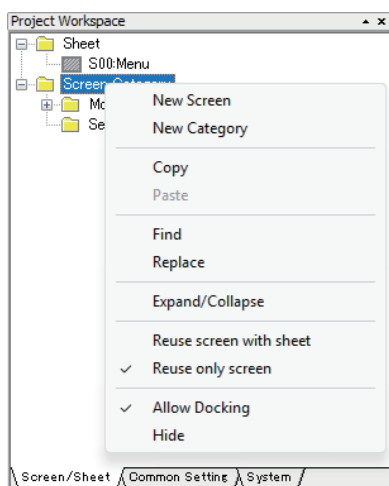


Consecutive screen numbers are automatically allocated in the same category when a new screen is created. The screen numbers can be changed.

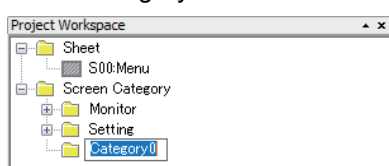


4-3-1 Creating Categories

- 1 Open the project workspace Screen/Sheet Tab Page.
- 2 Select **Screen Category** or an existing category.
- 3 Right-click and select **New Category** from the pop-up menu.



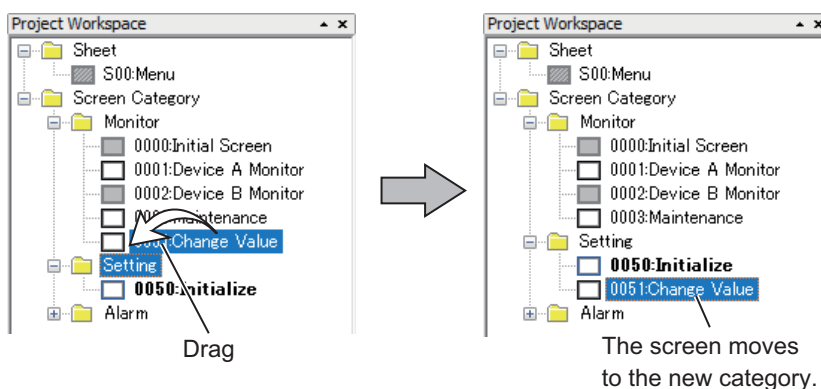
- 4 A new category will be created. Enter the category name.



4-3-2 Moving Screens between Categories

Existing screens can be moved to different categories.

- 1 Select the screen to be moved to a different category from the project workspace Screen/Sheet Tab Page. (More than one screen can be selected.)
- 2 Drag the screen or screens to the destination category.



Additional Information

Categories can also be moved by selecting and dragging them to the desired location. Screens in that category are also moved.

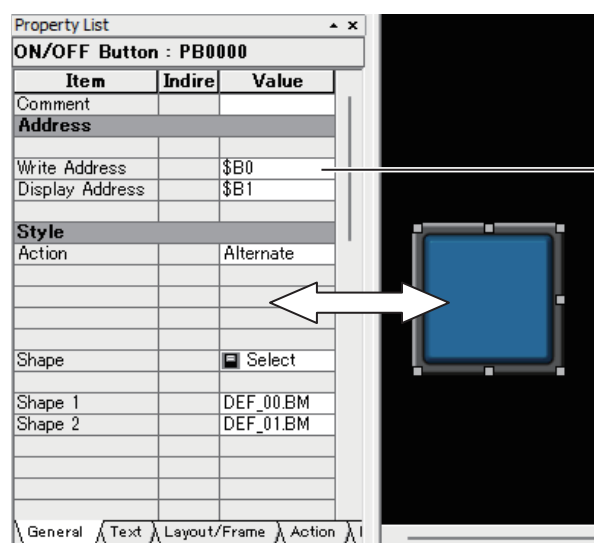
4-3-3 Creating New Screens

Screens can be created in a category.

- 1** Select the category for the new screen on the project workspace Screen/Sheet Tab Page.
- 2** Right-click the screen category and select **New Screen** from the pop-up menu.

4-4 Checking and Changing Functional Object Properties without Opening Property Setting Dialog Boxes

Click a functional object on the screen to display the properties of that object in the Property List. Settings can be checked and changed on the Property List without opening a Property Setting Dialog Box. Settings for more than one object can be changed in the Property List by using the global replace function.



The Property List is used to display and set the properties for the selected object. Changes to properties are immediately reflected on the screen, which enables changes to be checked during screen creation.



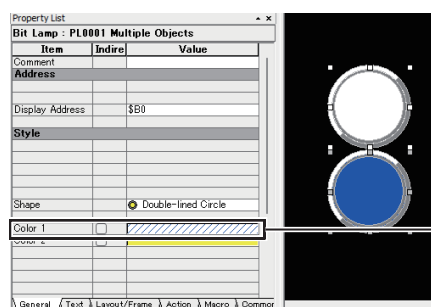
Additional Information

The Property Settings Dialog Box for an object can still be displayed by double-clicking the object.

4-4-1 Globally Replacing Settings for More Than One Object

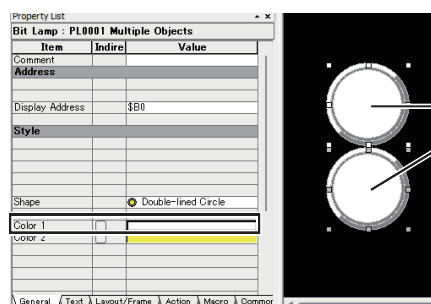
More than one item can be selected and settings common to all items can be changed. The changed settings will be reflected in all selected objects.

- 1 Select all the objects for which settings are to be changed.
- 2 Change the setting items common to all selected objects on the Property List.



The setting common to the selected objects, **Color 1**, will be changed.

- 3 The change will be reflected in all objects.



All selected objects change to the same color.



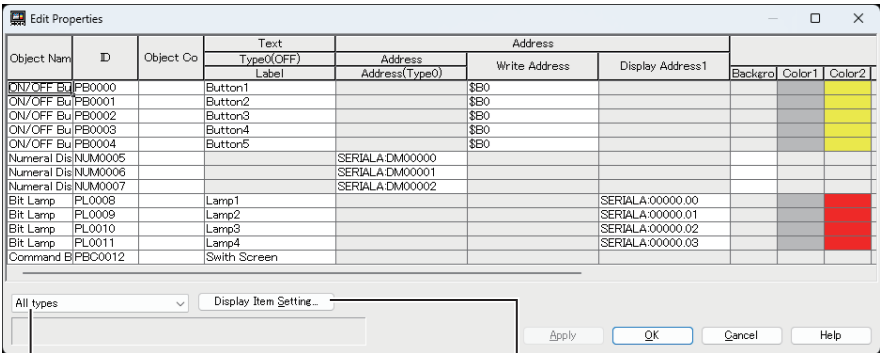
Additional Information

Items not common to all selected objects cannot be changed.

4-5 Listing and Editing Functional Object Properties

Properties of objects on the screen can be displayed in table format and the settings changed. Settings for more than one object can be changed at the same time and consecutive addresses can be automatically set, making editing more efficient.

- 1 Select **Edit – Edit Properties**.
- 2 The functional objects on the screen and their properties will be displayed. Entries made to each item will be reflected as changes in the functional object.



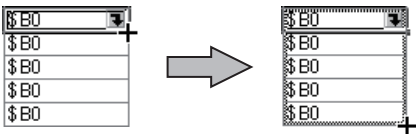
The display can be limited to functional objects selected from the list.

Click the **Display Item Setting** Button to change property settings displayed in the Edit Properties Window.

4-5-1 Setting Consecutive Addresses

Addresses can be changed to make the address consecutive.

- 1 Select the cell for the set address and move the mouse to the bottom-right of the cell. When the cursor changes to a + cursor, drag the cursor down or up.



- 2 The addresses will change to descending order when the cursor is dragged down, and to ascending order when dragged up.

\$B0
\$B1
\$B2
\$B3
\$B4

4-5-2 Copying the Same Setting to More Than One Cell

Each setting can be copied to other cells for items of the same type.

- 1** Select and copy the desired cell.



- 2** Select the destination cell and paste the copied setting.

Copied settings can be pasted to more than one cell, enabling global replacement of settings.



Additional Information

- If an object is selected on the screen, only the properties for the selected functional object are listed.
- The properties of the following functional objects can be set using the list edit function.
 - ON/OFF Buttons
 - Word Buttons
 - Command Buttons
 - Bit Lamps
 - Word Lamps
 - Text
 - Numeral Display & Input
 - String Display & Input
 - Thumbwheel Switches
 - Dates
 - Time
 - Temporary Inputs
 - Consecutive Line Drawing
 - Multifunction

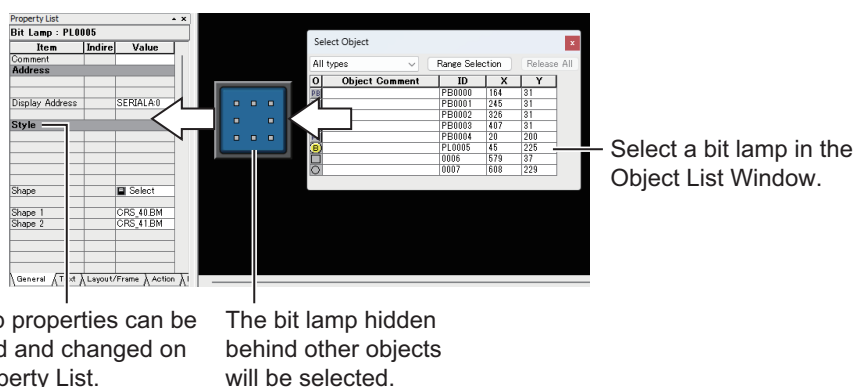
4-6 Editing Overlapping Objects

The CX-Designer has an Object List Function, which lists objects on the screen.

4-6-1 Method for Selecting Specified Objects

Specify objects in the Object List Window to have that object selected.

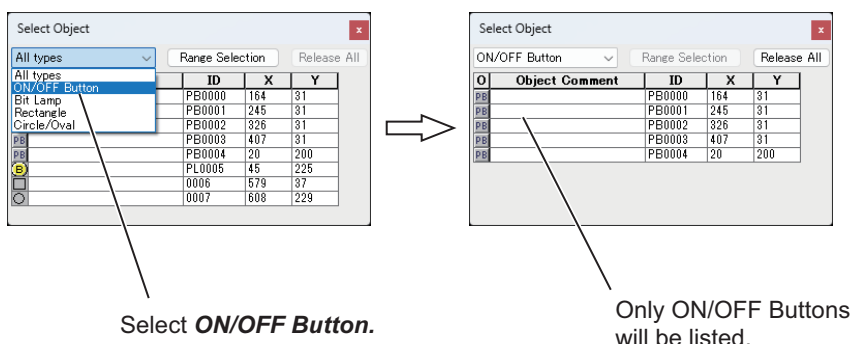
This enables objects hidden under other objects to be selected and for the settings for these objects to be checked and changed on the Property List.



- 1 Select **View – Window – Object List**.
- 2 The Object List Window will be displayed and the objects on the screen listed.
- 3 Objects specified on the Object List Window will be selected on the screen.

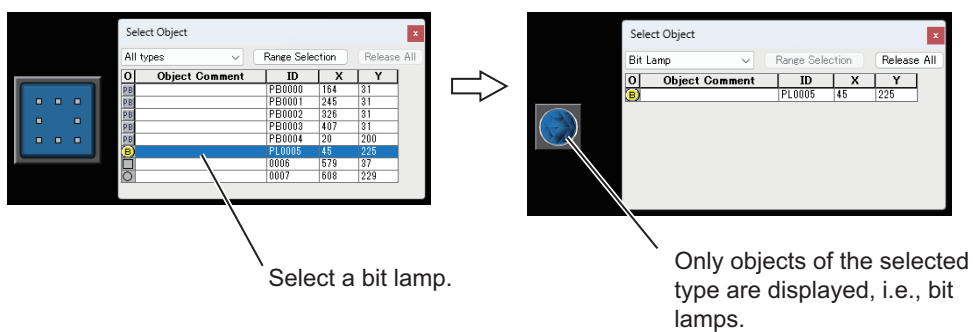
Hold down the **Shift** or **Ctrl** Key to select more than one object.

The list of objects in the Object List Window can be restricted to a specific type of object. Select the type of objects to be listed from the drop down list at the top left of the Object List Window.



4-6-2 Displaying Only Specified Objects on a Screen

The screen display can also be limited to objects selected on the Object List Window. These objects can be edited on screen.



- 1** Select the object in the Object List Window and click the Range Selection Button.
- 2** Click the **Release All** Button to display all objects on the screen.

4-7 Creating Multi-language Labels

CX-Designer multi-language displays use Unicode for the character information displayed in a screen. This enables switching the screen between different languages, such as Japanese, English, and Chinese, for display and setting.

The CX-Designer also has functions to export functional object label strings to CSV files and import label strings from CSV files, called the CSV import/export functions.

These functions can be used to edit and set label strings in multiple languages, such as Japanese, English, and Chinese, making it easy to create multi-language screens. An operating system that supports Unicode is required to use multi-language labels.

Japanese

実行中 停止 待機中 異常発生中

English

Runing Stop Waiting Error

Chinese

运行中 停止 等待中 异常发生

The language display can be switched during PT operation.

- 1 Select **File – Export to CSV File**.
- 2 Follow the directions in the displayed dialog box and export the labels to a CSV file. Select *Unicode* in the *Output Code Area*.
- 3 Edit the CSV file with Excel.

PRJ							
Project/Screen No.	Title	Parts ID	Parts Comment	Property	Type0	Type1	Type2
Screen-0	Screen Page000	PL0003		Caption	異常発生中	Error	异常发生
Screen-0	Screen Page000	PL0002		Caption	待機中	Waiting	等待中
Screen-0	Screen Page000	PL0001		Caption	停止	Stop	停止
Screen-0	Screen Page000	PL0000		Caption	実行中	Runing	运行中

Enter the label strings in Japanese, English, Chinese, etc.

- 4 Select **File – Import CSV File**.
- 5 Follow the directions in the displayed dialog box and import the edited CSV file.
The strings in the CSV file will be reflected in each object.



Additional Information

- Set the number of labels to 2 or more under **Project Property** to set multi-language strings for one object.
 - In order to create screen data with CX-Designer using the multi-language function, it is necessary to perform Windows settings beforehand. Refer to the CX-Designer online help **Reference – Multi-language Display** for details.
-

4-8 Checking Address Usage Status

The Address in Use Window displays a list of the number of times each address is used in functional objects.

A list of the functional objects using the addresses is also displayed in the Output Window and specified functional objects can be selected on the screen.

- 1 Select **View – Window – Address in Use**.
- 2 Set the addresses and search range and click the Go Button to display the number of times the addresses are used.

Displays the addresses.

Start Address: SERIALA:00000.00 Set... Go

No. of Display Lines: 15 Save...

Whole Project Detail Find Reference Object

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14	+15
SERIALA:00000.00	4	8	8	2	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00001.00	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00002.00	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
SERIALA:00003.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00004.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00005.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00006.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00007.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00008.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00009.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00010.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SERIALA:00011.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
SERIALA:00012.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
SERIALA:00013.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIALA:00014.00	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Sets the start address for the search range.

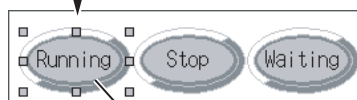
Sets the search range.

Displays the number of times each address is used. (Unused addresses are displayed in gray.)

- 3 Select an address and click the **Find Reference Object** Button to display a list of functional objects using that address in the Output Window. Select a functional object in the Output Window to automatically select that object on the screen.

Search Result: 6 entries found Find From: Communications AddressRange/Whole Project

Page	ID	Host	Name	Address	I/O Comment	Label	Object Com	Detailed Information
0001	NUM0067	SERIALA	Status	00000	Status			Numeral Display & Input : Address
0001	PL0068	SERIALA	Running	00000.00	Running			Bit Lamp : Display Address
0002	PL0000	SERIALA	Running	00000.00	Running			Bit Lamp : Display Address
0002	NUM0001	SERIALA	Status	00000	Status			Numeral Display & Input : Address
0003	NUM0009	SERIALA	Status	00000	Status			Numeral Display & Input : Address
0050	NUM0001	SERIALA	Status	00000	Status			Numeral Display & Input : Address



Objects selected in the Output Window are selected on the screen.



Additional Information

Searches can be made for the addresses used in a project or in a screen and the results displayed in a list. Select **Find – Address Cross Reference**.

4-9 Searching for Embedded Macros

Embedded macros can be found and displayed in the Output Window.

Objects selected in the Output Window are automatically selected, so macro details can be checked on the Property List.

- 1 Select **Find – Macro Cross Reference**.
- 2 Specify the search range in the displayed Search Embedded Macro Dialog Box and execute the search.
- 3 A list of macro locations will be displayed in the Output Window.

Macro details can be checked on the Property List.

Select a functional object in the Output Window to select that object on the screen.

A list of macro locations will be displayed.

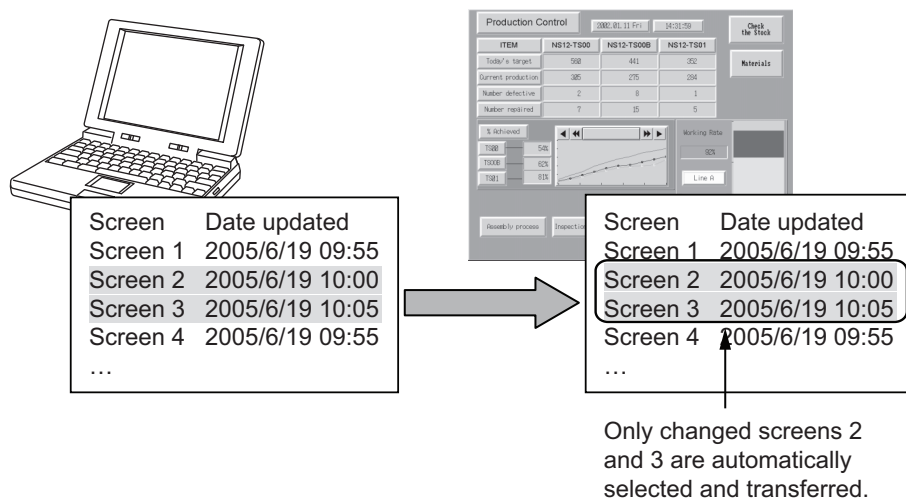
Page	ID	Host	Name	Address	I/O Comment	Label	Object Com	Detailed Information
0001	NUM0072							Numerical Display & Input : Macro : Before inputting
0001								Macro : Execute when lading
0001	PL0071							Bit Lamp : Macro : Execute when a value is change
0002	PB0002							ON/OFF Button : Macro : Touch ON timing
0003	ALS0008							Alarm/Event Summary & History : Macro : When sel
0050	THW0000							Thumbwheel Switch : Macro : Before Writing
0050	PB0004							ON/OFF Button : Macro : Touch ON timing

4-10 Transferring Only Edited Data to PT Unit

The data is edited and transferred to the PT Unit many times when debugging projects.

The CX-Designer has a Quick Transfer function. The Quick Transfer function automatically compares project data with the data already transferred to the PT Unit and transfers only changed data.

This means that only the required data is transferred to the PT Unit, which greatly reduces the time and work required for transfers.



- 1** Select **PT – Transfer – Quick Transfer [Computer → PT]**.
- 2** A dialog box to confirm the transfer will be displayed. Press the Yes Button to start transferring the data.



Additional Information

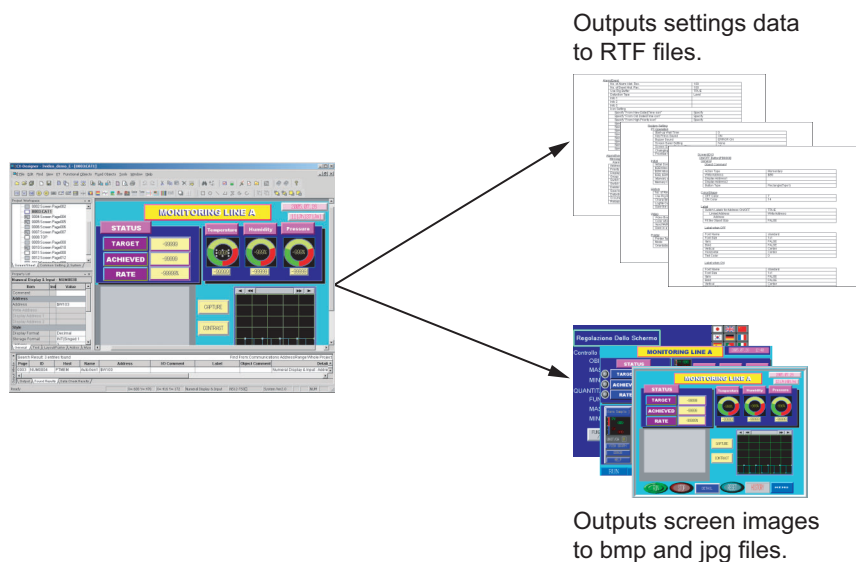
- Transfer routes and other settings need to be made before executing Quick Transfer. Select **PT – Transfer – Transfer Setting** to make the settings.
- Select **PT – Transfer – Transfer [Computer → PT]** to transfer data for the whole project to the PT Unit.

4-11 Creating Documents

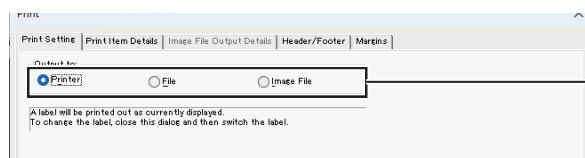
Project and screen settings and functional object property settings can be output to RTF files by using the CX-Designer print function.

Screen images can also be output to bmp and jpg files.

The CX-Designer print function facilitates the production of a variety of documents, e.g., these files can be used as is for specifications, or the data can be processed to create operation manuals, etc.



1 Select **File – Print**.



Select **File** to output settings to an RTF file.
Select **Image File** to output screen images to a bmp or jpg file.

2 When printing is executed, an RTF or bmp/jpg file is created.

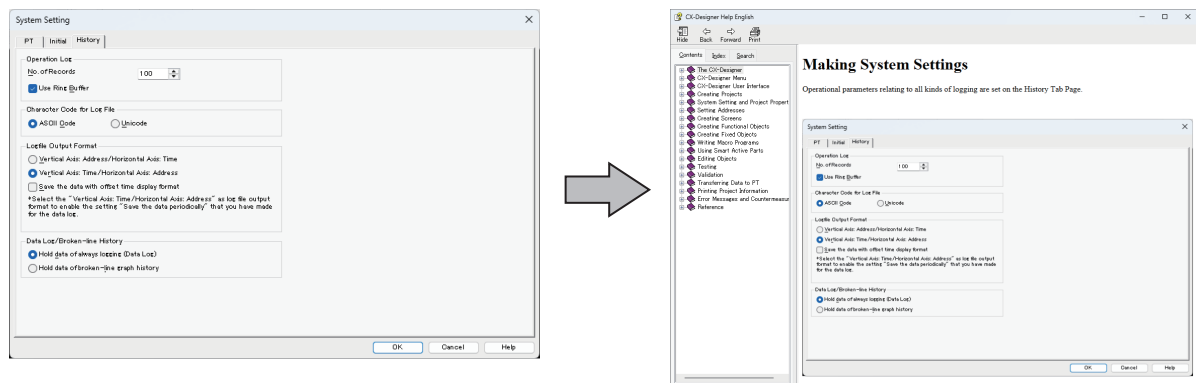


Additional Information

- If **Output to:** is set to **Printer**, the settings will be output to the printer.
- If **Output to:** is set to **File** or **Printer**, header, footer, and margin settings can be made.

4-12 How to Use Help

Press the **F1** Key or click the **Help** Button in dialog boxes to display help information relating to the selected menu or dialog box.

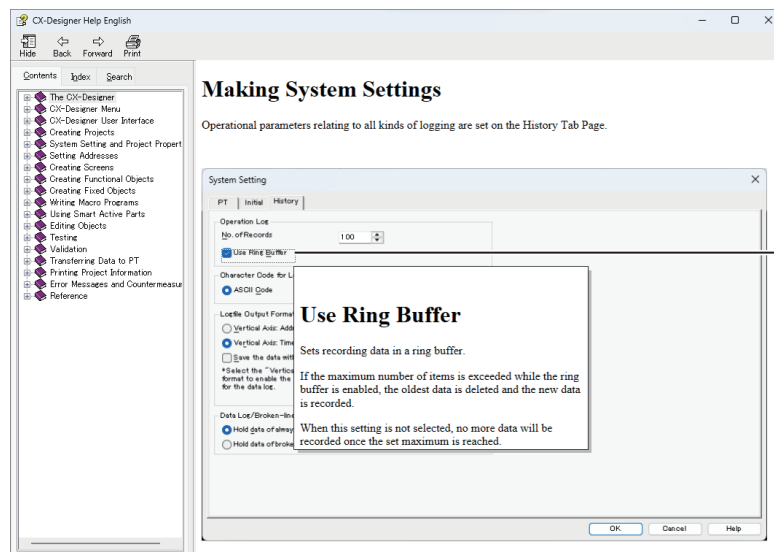


Press the **F1** Key or click the **Help** Button on the History Tab Page of the System Setting Dialog Box.

A description of the History Tab Page of the System Setting Dialog Box will be displayed.

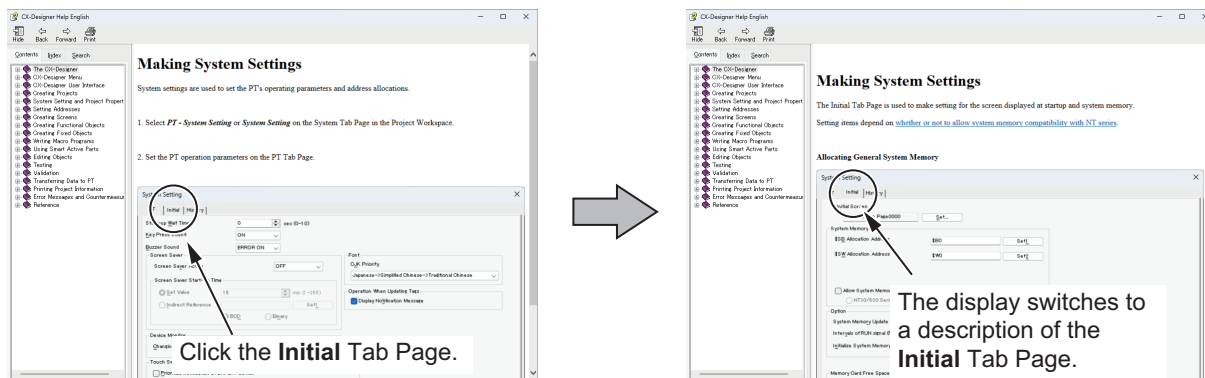
Click on the diagram in Help Mode to display a description or switch to another topic.

If the mouse is moved to locations that can be clicked in Help Mode, the cursor will change shape to



Click an item in the diagram to display a description of that item.

If there is a tab page in the explanatory dialog box, the Help diagram display can be switched by clicking that tab page.



4-13 Integrated Simulation for the Entire System

The CX-Designer can simulate PT Unit's operations on a personal computer, so screens created on the computer can be debugged using the test function.



Additional Information

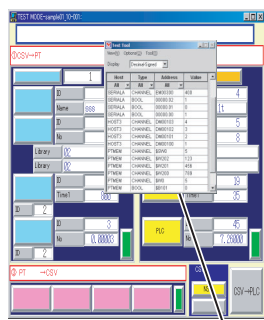
The following applications are closely linked together for integrated simulation. If you update any of these applications, update all of them at the same time.

- CX-Designer
- CX-Programmer
- CX-Simulator
- CX-Server
- Sysmac Studio
- Communication Middleware

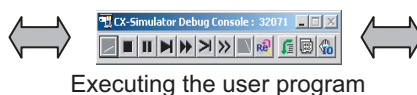
4-13-1 Debugging Screens and the User Program with a Virtual PLC

The CX-Designer can be connected to a virtual PLCs running on the CX-Simulator (i.e., on a user program execution engine). By using the CX-Simulator to run programs created using the CX-Programmer, screen data and user programs can be debugged together on a personal computer.

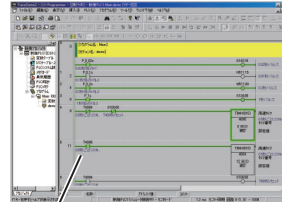
CX-Designer



CX-Simulator



CX-Programmer



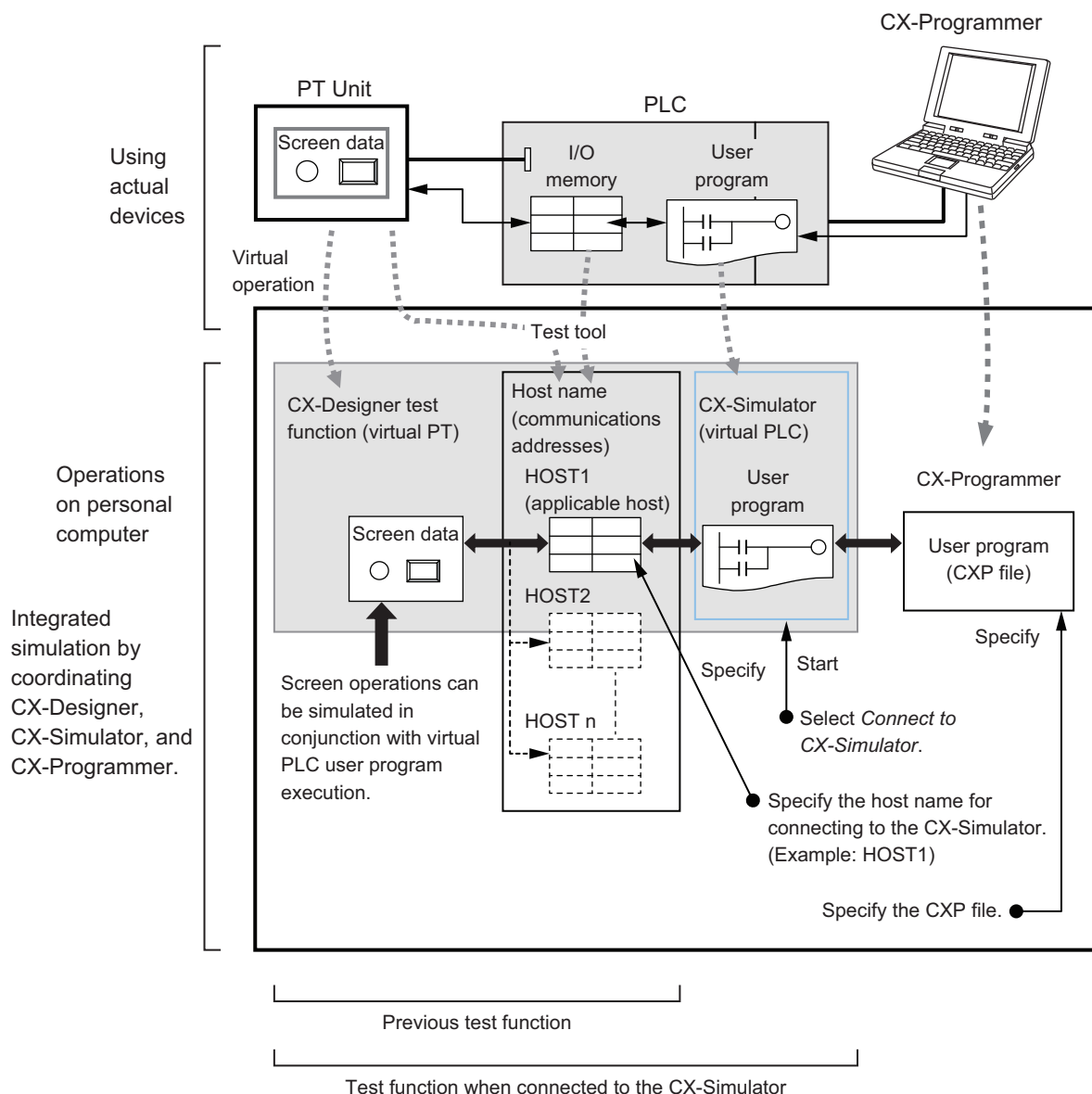
Connecting the CX-Programmer to the CX-Simulator makes it possible to debug programming while checking user program operation.

The results of executing the user program in the CX-Simulator are displayed on the screen. Conversely, changes in values due to screen operations are used as CX-Simulator user program inputs.

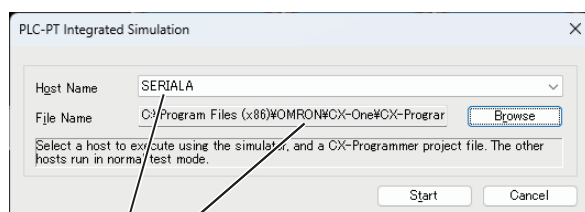


Additional Information

If the host is an NJ/NX-series Controller, integrated simulation must be started from the Sysmac Studio. For details, refer to the *Sysmac Studio Version 1 Operation Manual (Cat. No. W504)*.



- 1 Click the **PLC – PT Integrated Simulation** Button () in the Tool Bar.
- 2 Specify the host name to connect to the CX-Simulator, select the user program (CXP file) to be written, and click the **Start** Button.



Specify the host name to connect to the CX Simulator, and specify the user program (i.e., specify the CXP file).

- 3 The CX-Simulator and the CX-Programmer will start, and the user program will be written to the CX-Simulator.
- 4 The CX-Designer test function will start, and the specified host will be connected to CX-Simulator.

- 5** When the user program is executed or debugged (step, scan execution, etc.), the applicable host communications addresses are changed according to the user program execution results, and this is reflected in the lamps on the screen and in the numeric displays. Conversely, applicable host communications address values are changed according to screen button operations and numeric inputs, and these are used as inputs for user program execution. This enables the simulation of screen operations in conjunction with virtual PLC user program execution.



Additional Information

- If a test is performed from the CX-Designer while the CX-Simulator is already running, a connection will be made to the CX-Simulator.
- Only one host can be connected to the CX-Simulator. If multiple hosts are set in a CX-Designer project, use the test tool to change the communications address values for the hosts that are not connected to the CX-Simulator.

Host	Type	Address	Value
All	All	All	
PTMEM	BOOL	\$B100	0
PTMEM	BOOL	\$B101	0
PTMEM	CHANNEL	\$W0	0
PTMEM	CHANNEL	\$W200	0
PTMEM	CHANNEL	\$W201	0
PTMEM	CHANNEL	\$W202	0
PTMEM	CHANNEL	\$SW0	0
HOST3	CHANNEL	00100	0
HOST3	CHANNEL	00101	0
HOST3	CHANNEL	00102	0
HOST3	CHANNEL	00103	0
SERIALA	BOOL	00000.00	0
SERIALA	BOOL	00000.01	0
SERIALA	BOOL	00000.02	0
SERIALA	CHANNEL	EM00300	0
SERIALA	CHANNEL	EM00301	0
SERIALA	CHANNEL	EM00302	0
SERIALA	CHANNEL	EM00303	0

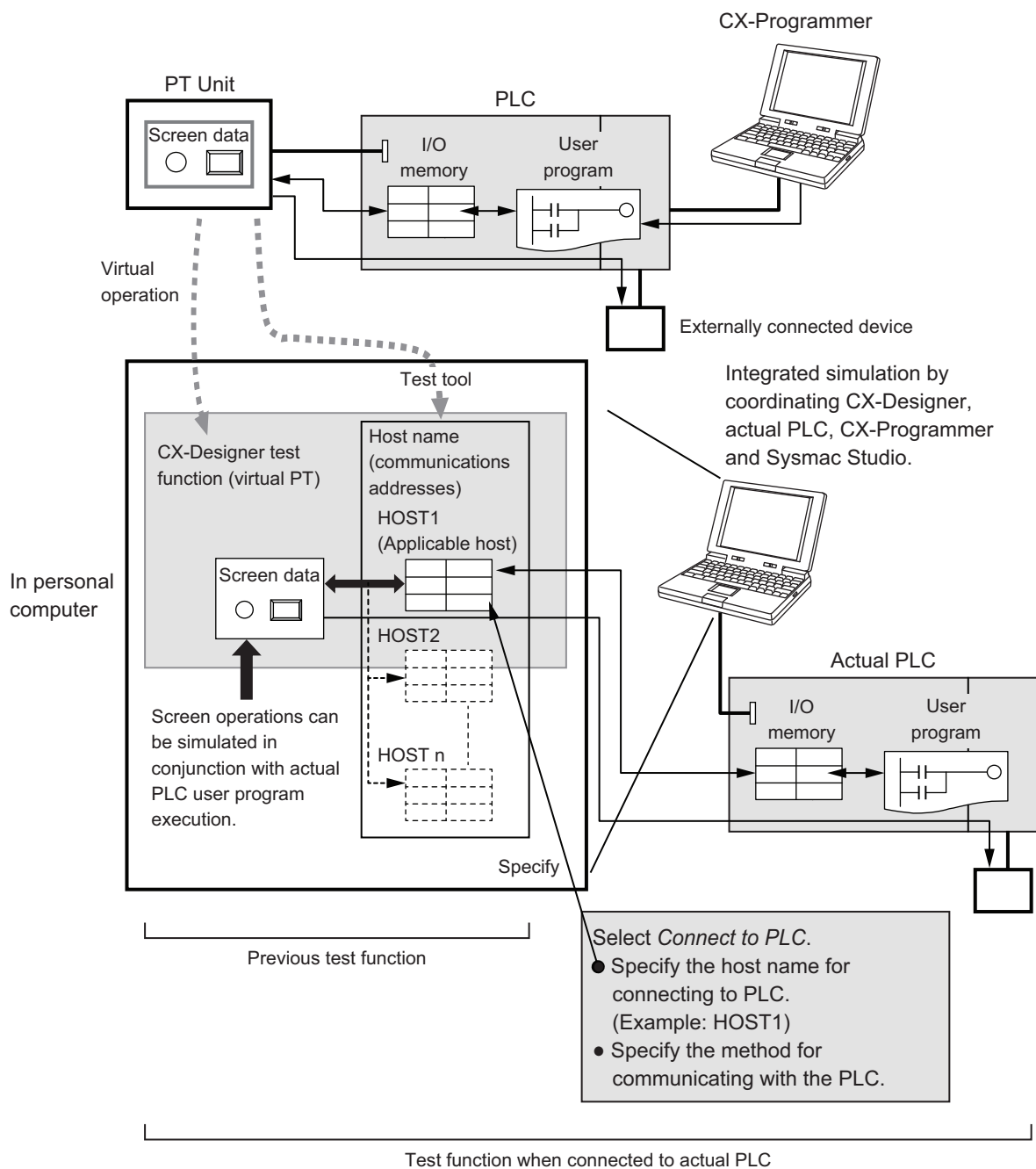
All of the communications address used by the displayed screen are displayed in a list. For example, if host SERIALA is connected to the CX-Simulator, the SERIALA communications addresses are used as values at the CX Simulator. The values for other host communications addresses can be changed using the test tool.

- Address values at the CX-Simulator can be changed using the Switch Box Utility. The Switch Box Utility can be started from the test tool.
- The CX-Designer will be minimized when the test is started.
- If the **Start test from the current screen** Option is selected under **Tools – Test**, the screen currently being edited will be opened when the test is started. If this option is not selected, the test will start with the initial screen specified in the PT's System Settings.
- Integrated simulation can be executed by selecting **Tools – Test** and then selecting **Connect to CX-Simulator** from the Test Dialog Box.
- Equivalent functionality is also provided by integrated simulation with the Sysmac Studio.

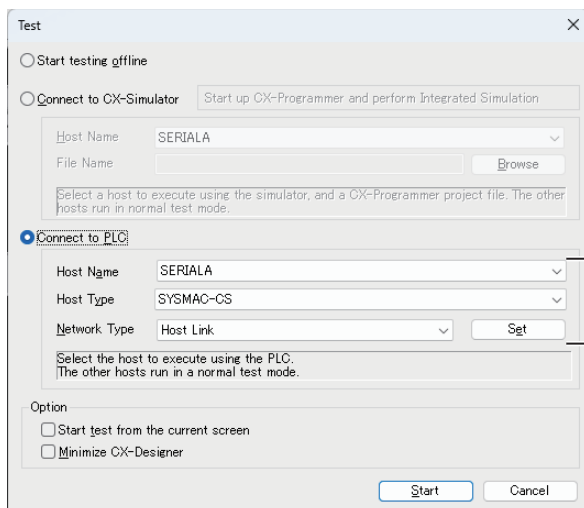
4-13-2 Debugging Screens and the User Program with the Actual PLC

With CX-Designer, simulation can be executed with the personal computer connected to an actual PLC. This enables debugging (including monitoring and settings) using actual I/O Units, Special I/O Units, and CPU Bus Units connected to the PLC, as well as data from external devices and PLC data on the network.

The diagram illustrates the architecture of a PLC system. At the top, a horizontal bar represents the 'Actual PLC'. Below it, a 'Special I/O Units and CPU Bus Units' section is shown. A 'Network' line connects the PLC to a 'Serial' communication interface. This interface then connects to 'External devices' via 'Actual I/O' lines. The diagram shows two types of external devices: one with a single input/output and another with multiple inputs/outputs, each connected to a circular terminal.



- 1 Connect the personal computer to the PLC by either a serial or network connection.
- 2 Select **Tool – Test**.
- 3 Select **Connect to PLC**, specify the host name and host type for connecting to the PLC, specify the communications method, and click the **Start** Button.



Select **Connect to PLC**, specify the host name and host type for connecting to the PLC, and specify the communications method.

- 4 The CX-Designer test function will start and the actual PLC will be connected.
 - 5 When the actual PLC user program is executed, the applicable host communications addresses are changed according to the user program execution results, and this is reflected in the lamps on the screen and in the numeric displays. Conversely, applicable host communications address values are changed according to screen button operations and numeric inputs, and these are used as inputs for execution of the actual PLC user program.
- This enables the simulation of screen operations in conjunction with actual PLC user program execution.



Additional Information

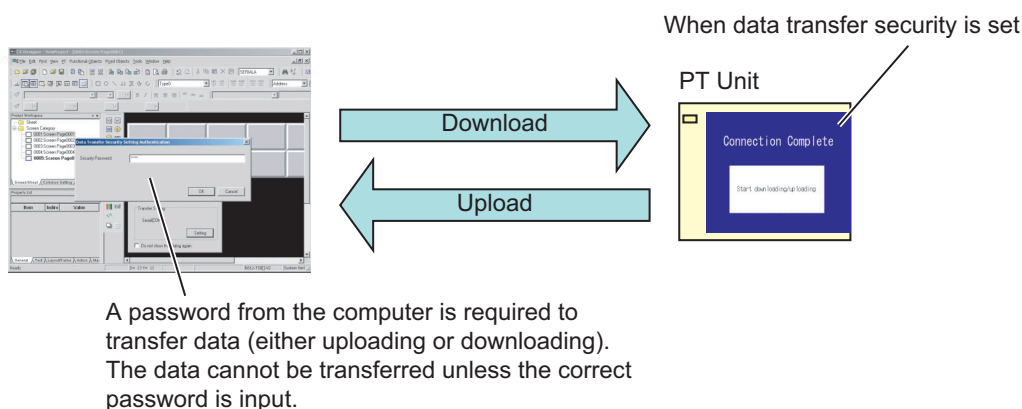
Connecting to the actual PLC is not supported when connected to a C-series PLC.

4-14 Setting Security for Data Transfers with the PT Unit

Transfers between the Computer and PT Unit

When a project for which data transfer security has been set is stored in the PT Unit, a password is required to upload the project data from the PT Unit. Data cannot be uploaded from the PT Unit unless the correct password is input, preventing theft of data from the PT Unit.

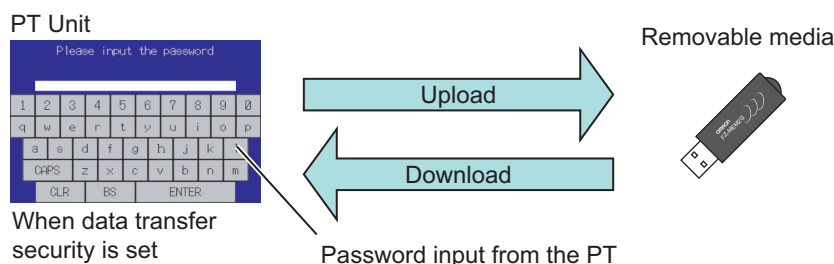
A password is also required in order to download data. This prevents data from being accidentally overwritten.



Transfers between the PT Unit and a Removable Media

When a project for which data transfer security has been set is stored in the PT Unit, a password must be input at the PT Unit to upload the project data from the PT Unit to a Removable Media. Data cannot be uploaded from the PT Unit unless the correct password is input, preventing theft of data to a Removable Media.

A password is also required to download data from a Removable Media. This prevents data from being accidentally overwritten.



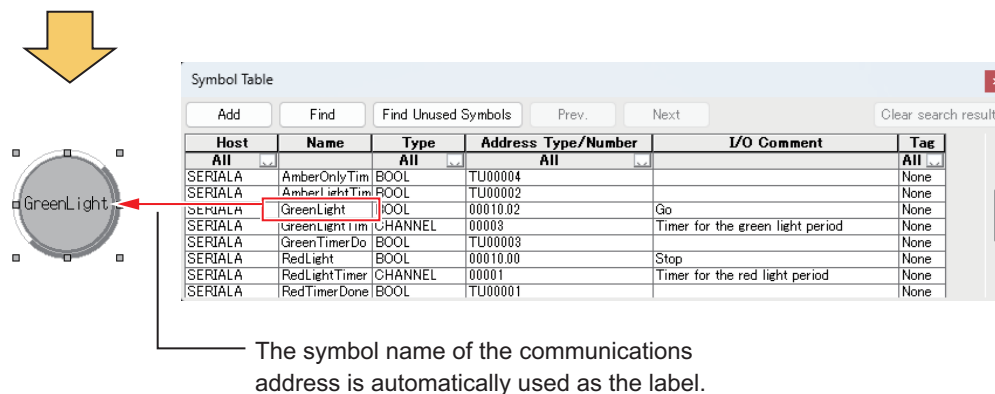
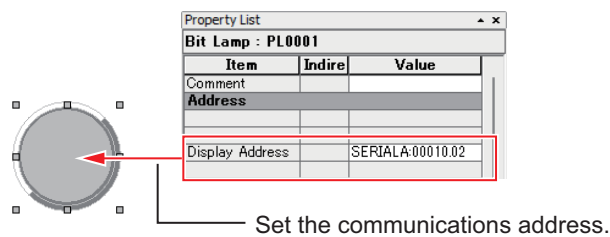
- 1** Select **File – Data Transfer Security – New Data Transfer Security** Setting.
- 2** Set the security password.
- 3** Transfer to the PT Unit the project for which data transfer security has been set.

4-15 Setting Symbol Names and I/O Comments for Use as Labels

Symbol names or I/O comments of communications addresses can be automatically used as label text strings for the following functional objects.

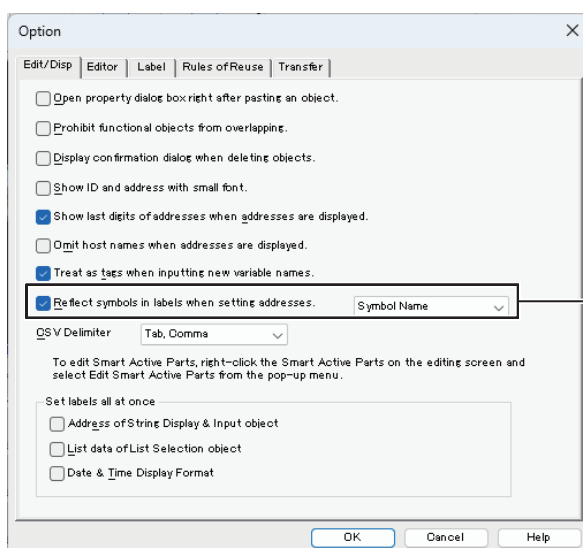
- ON/OFF Buttons (when Write Address is set)
- Word Buttons (when Write Address is set)
- Bit Buttons (when Display Address is set)
- Word Lamps (when Display Address is set)

In the same way, when setting communications addresses in the Alarm/Event Details Dialog Box, symbol names or I/O comments can be set as the alarm messages.



- 1 Select **Options** from the Tools Menu. The Option Dialog Box will be displayed.
- 2 Open the **Edit/Display** Tab Page in the Option Dialog Box.

- 3** Select **Reflect to label when an address is set**, and select either **Symbol Name** or **I/O Comment** for the label text string.



Select the option, and select either **Symbol Name** or **I/O Comment** for the label text string.

- 4** Create the functional object.

- 5** Set the communications address for the functional object in one of the following ways.
- Input the address in the field in the Property Setting Dialog Box for the functional object.
 - Input the address in the field in the Property List.
 - Use the Address Tool Bar.
 - Edit the properties in table format.

The symbol name or I/O comment that has been set will be automatically set as the label text string.

- 6** To set an alarm message, select **Alarm/Event Setting** from the PT Menu. The **Alarm/Event Setting** Dialog Box will be displayed.

- 7** Click the **Add/Edit** Button in the dialog box to open the Alarm/Event Details Tab Page.

- 8** Set the communications address in the Address Field.

The symbol name or I/O comment for the communications address that was set for the message will be used automatically.

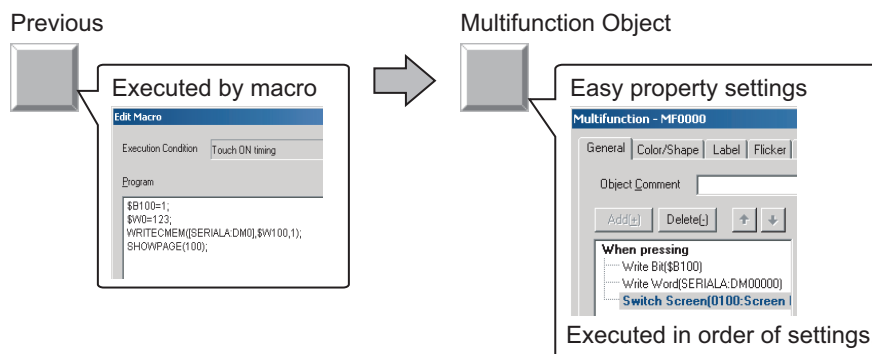


Additional Information

- If there are two or more labels, the symbol name or I/O comment will be set for the text strings for all of the labels.
- Symbol names and I/O comments will not be set automatically in the following cases:
 - When the communications address is replaced by another one.
 - When a symbol name or I/O comment is changed in the symbol table after the label text string has been set.
 - When communications address settings other than those indicated above are set.
 - When the communications address is set by a method other than those indicated in step 5.

4-16 Executing Multiple Functions with a Single Operation

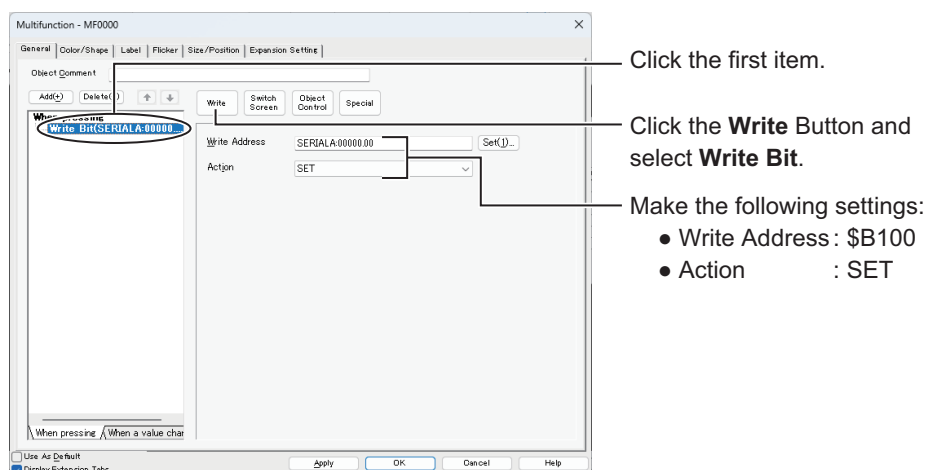
With Multifunction Objects, multiple processes can be set and can then be executed with just the press of a button. Processes that could previously be executed only by using macros can now be easily executed by making settings based on properties.



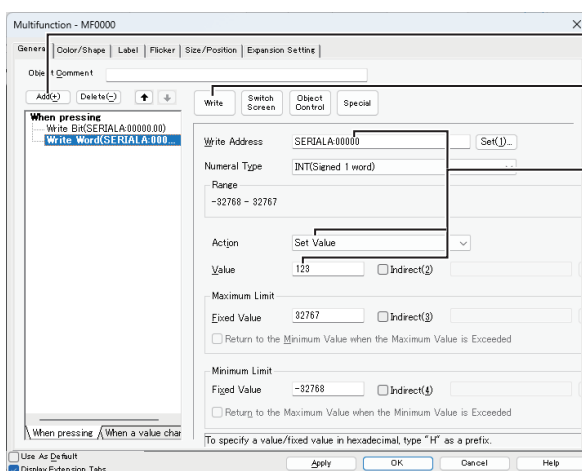
This procedure describes how to use a Multifunction Object to perform the following operations.

- Turn ON \$B100.
- Set SERIALA:DM0 to 123.
- Switch to screen 100.

- 1** Create a Multifunction Object and open the Property Setting Dialog Box.
- 2** In the General Tab Page, open the When pressing Tab Page and select the first item in the action item list.
- 3** Click the **Write** Button and select **Write Bit** from the menu. The properties for the bit setting will be displayed.
- 4** Set **\$B100** for the write address, and **SET** for the action.



- 5 Click the **Add** Button to add the new action item.
- 6 Click the **Write** Button and select **Write Word** from the displayed menu.
- 7 Set *SERIALA: DM0* for the write address, *Value* for the action, and 123 for the set value.



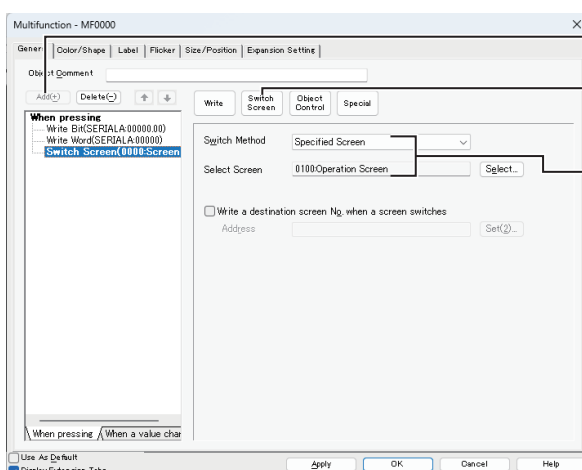
Click the **Add** Button.

Click the **Write** Button and select **Write Word**.

Make the following settings:

- Write Address : SERIAL A:DM0
- Action : Set Value
- Value :123

- 8 Click the **Add** Button to add the new action item.
- 9 Click the **Switch Screen** Button and select *Switch Screen* from the displayed menu.
- 10 Set *Specified Screen* for the switch method, and *0100 Screen* for the screen selection.



Click the **Add** Button.

Click the **Switch Screen** Button and select **Switch Screen**.

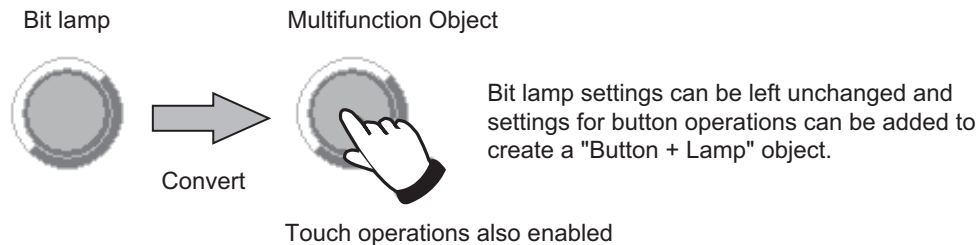
Make the following settings:

- Switch Method : Specified Screen
- Select Screen : 0100 Screen

When the Multifunction Object is pressed on the NS-B-series PT, the functions that have been set will be executed in order.

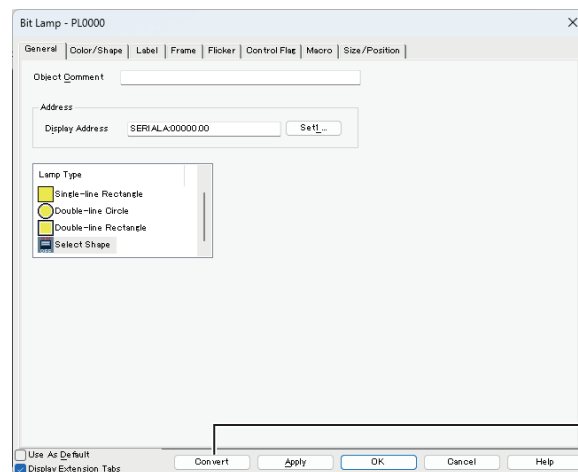
4-17 Replacing a Lamp with a Button

If a bit lamp is converted to a Multifunction Object, the functions of a button and other functions can be added by simply changing property settings without creating new objects.



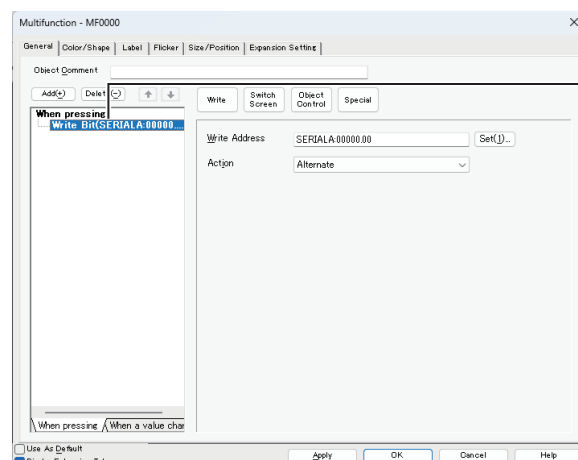
Similarly, converting to a Multifunction Object makes it easy to add new functions to buttons and lamps that have already been created.

- 1 Open the Bit Lamp Property Setting Dialog Box.
- 2 Click the **Convert** Button to convert the bit lamp to a Multifunction Object.



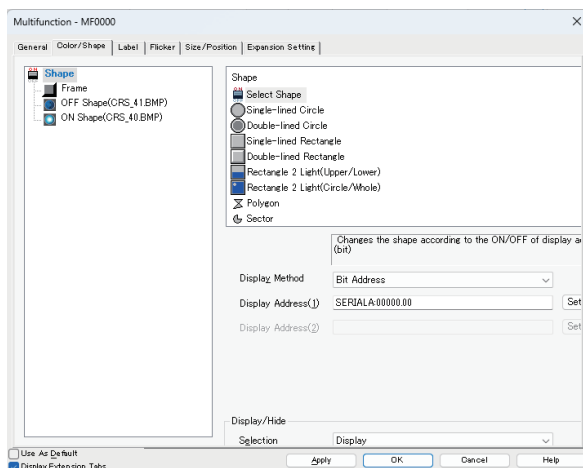
Click the **Convert** Button.

- 3 The property settings for the Multifunction Object will open automatically. In the General Tab Page specify *Perform an action when pressing the object* option to set the function for when the Multifunction Object is pressed.



Set the operation for when the Multifunction Object is pressed.

In the Color/Shape Tab Page, the same settings will be set as for the original bit lamp.



The settings will be the same for the Multifunction Object as for the bit lamp before the conversion.



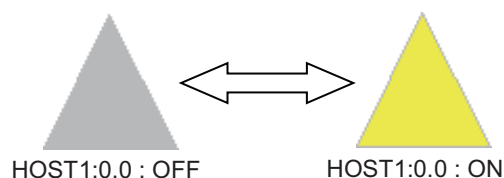
Additional Information

The following functional objects can be converted to Multifunction Objects: ON/OFF buttons, word buttons, command buttons, bit lamps, and word lamps.

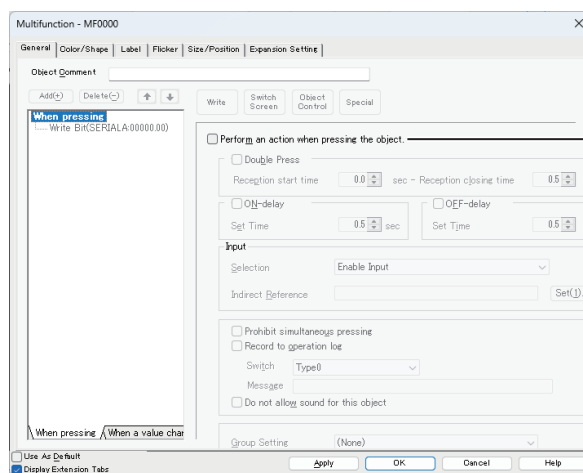
4-18 Creating Polygonal Lamps

Polygonal lamps can be created by using Multifunction Objects.

This example procedure shows how to create a polygonal lamp that is turned ON and OFF by turning ON and OFF HOST1:0.0.

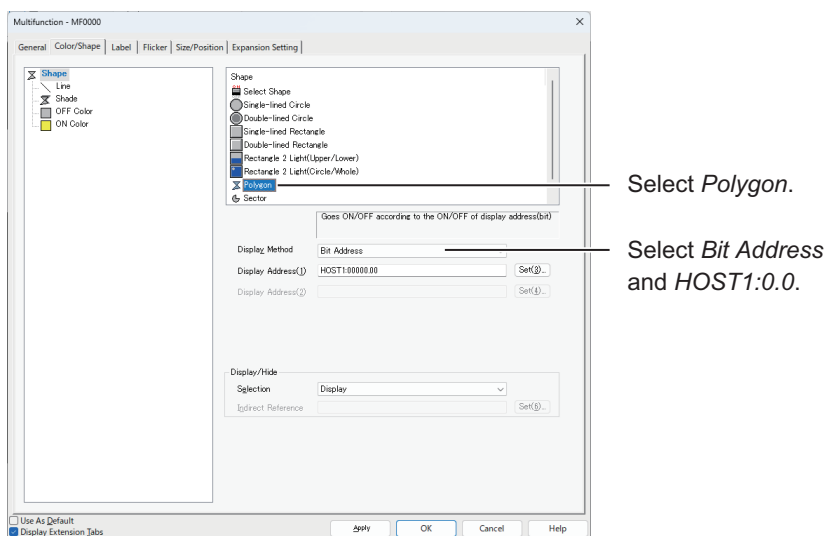


- 1** Create a Multifunction Object and open the Property Setting Dialog Box. The General Tab Page will be displayed.
- 2** Open the When pressing Tab Page in the action item list.
Clear the selection of the *Perform an action when pressing the object* option.

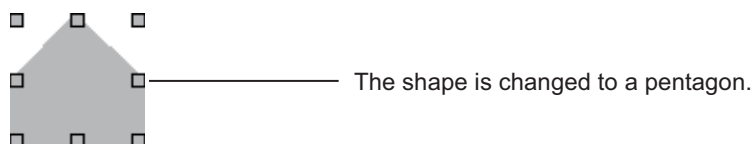


Clear the *Perform an action when pressing the object* option.

- 3** Open the Color/Shape Tab Page and select *Polygon* as the shape. Set *Bit Address* as the display method, and *HOST1:0.0* as Display Address 1.



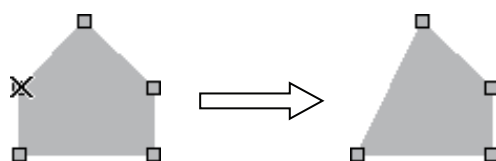
- 4** Click the **OK** Button to close the Property Setting Dialog Box. The shape of the Multifunction Object will change to a polygon. The object will be displayed as a pentagon.



- 5** Change the shape of the Multifunction Object to a triangle by deleting the two unnecessary nodes.



With the Multifunction Object selected, select **Edit Node** from the Edit Menu. Hold down the **Ctrl** Key, move the cursor to the node that is to be deleted, and click the mouse button when the shape of the cursor changes to an X. The node will be deleted.



In the same way, delete the other node to change the shape to a triangle.





Additional Information

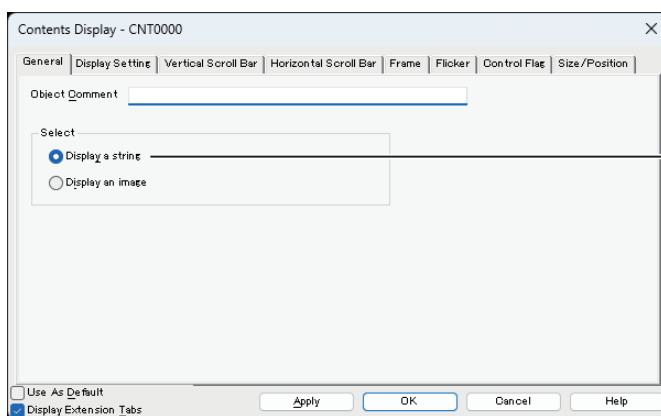
- When using **Edit Node** from the Edit Menu, nodes can be dragged to change their positions. It is also possible to add nodes by clicking on the outline while holding down the **Ctrl** Key.
 - When a Multifunction Object set as a polygon is registered as the default shape, then when subsequent Multifunction Objects are created it will be possible to specify the positions of their nodes just as when creating a polygon.
 - Sector lamps can be created in the same way.
For a sector lamp, just select *Sector* as the shape in the Property Setting Dialog Box for the Multifunction Object.
-

4-19 Registering Contents

Character strings and image files displayed using Machine Navigator are called “contents.” Machine Navigator changes values for specified communications addresses and the displays of contents registered on the screen according to alarms and events that occur.

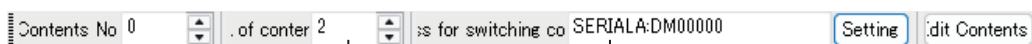
This section describes how to easily register contents.

- 1 Create the required number of contents displays on the screen.
- 2 In the General Tab Page in the contents display Property Setting Dialog Box, specify whether character strings or images are to be displayed.



Specify whether character strings or images are to be displayed.

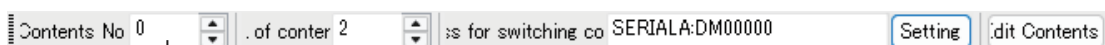
- 3 Set the number of contents in the Edit Contents Toolbar. In the *No. of contents* field, set the total number of character strings and images to be displayed. In the *Address for switching contents*, set the communications address for switching the contents.



Set the communications address to use to switch contents.

Set the total number of contents to be displayed.

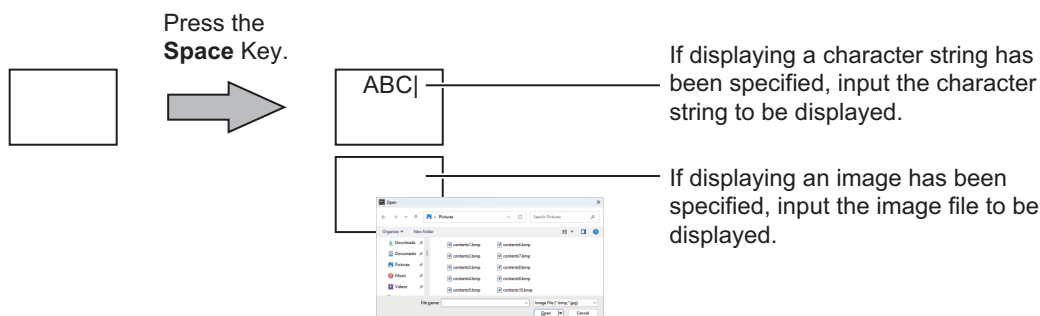
- 4 In the *Contents No.* field in the Edit Contents Toolbar, input the number of the contents to be edited.



Set the number of the contents to be edited.

- 5 Select the contents display and press the **Space Key**.

If it is a character string that is to be displayed, input the character string. If it is an image that is to be displayed, the File Selection Dialog Box will be displayed. Select the image file to be displayed.



- 6** Repeat steps 4 and 5 as required for the number of contents being created.



Additional Information

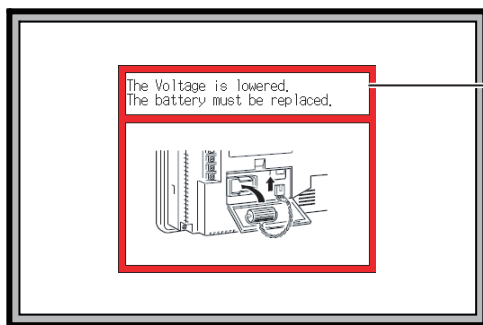
Make detailed settings for the contents in the Edit Contents Dialog Box that is displayed when the **Edit Contents** Button is pressed in the **Edit Contents** Toolbar.

4-20 Using Machine Navigator

The countermeasures for when an alarm occurs can be automatically displayed using the Machine Navigator function.

The Machine Navigator function changes the character-string and image displays registered on the screen when the value of a specified communications address changes or an alarm or event occurs.

PT Unit



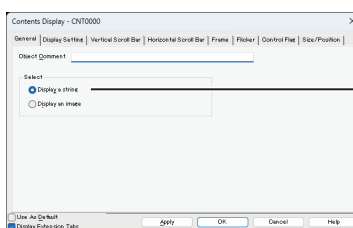
When an alarm occurs, a popup window is automatically displayed to show the countermeasure. It includes both text and graphics.

This section describes how to create the following screen data.

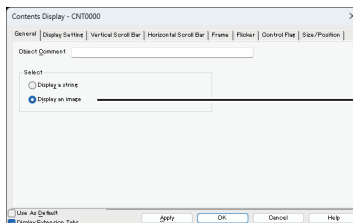
- Registering HOST1:100.00, HOST1:100.01 as an alarm
- Displaying popup window 100 when an alarm occurs
- Displaying the countermeasure for the alarm on popup window 100, and not displaying anything when no alarm occurs

Creating the Popup Window

- 1 Create popup window 100.
- 2 Set up two contents displays in popup window 100: one for text and one for images. In the General Tab Page in the Contents Display Property Setting Dialog Box, set *Display a string* and *Display an image*.

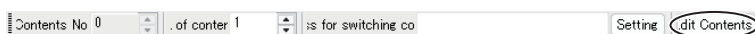


Select the *Display a string* option.

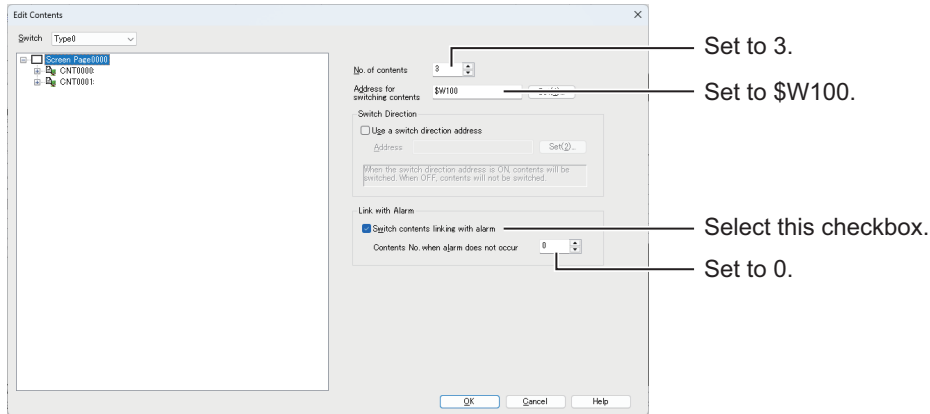


Select the *Display an image* option.

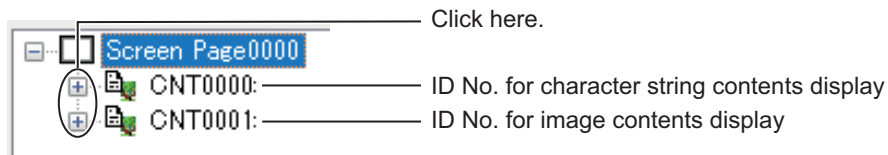
- 3 Click the **Edit Contents** Button in the Edit Contents Toolbar.



- 4** The Edit Contents Dialog Box will be displayed. Make the settings for switching contents. (If the settings shown in the figure on the next page are not displayed, click the dialog box title displayed at the upper left of the dialog box.)
- Set *No. of contents* to 3. (The 3 represents two states in which an alarm occurs and one state in which no alarm occurs.)
 - Select *Switch contents linking with alarm*. (Default: Selected)
 - Set *Contents No. when alarm does not occur* to 0.
 - Set *Address for switching contents* to \$W100.

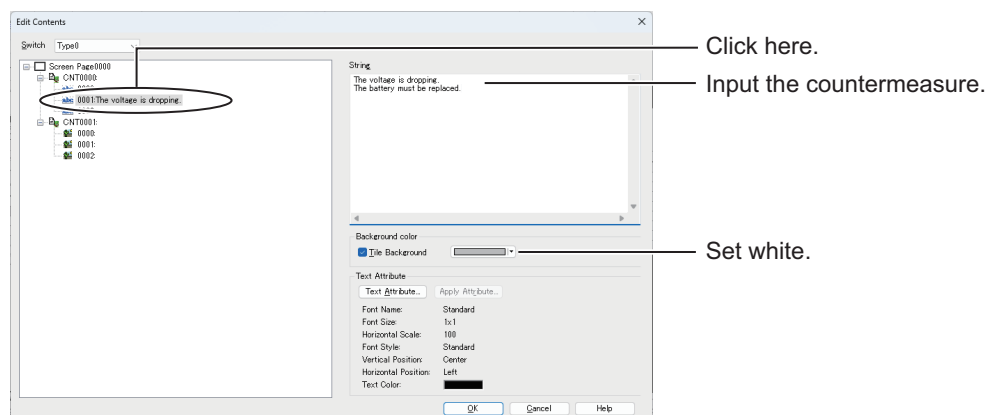


If the contents number is not displayed in the tree on the left of the dialog box, click  after inputting the set values.

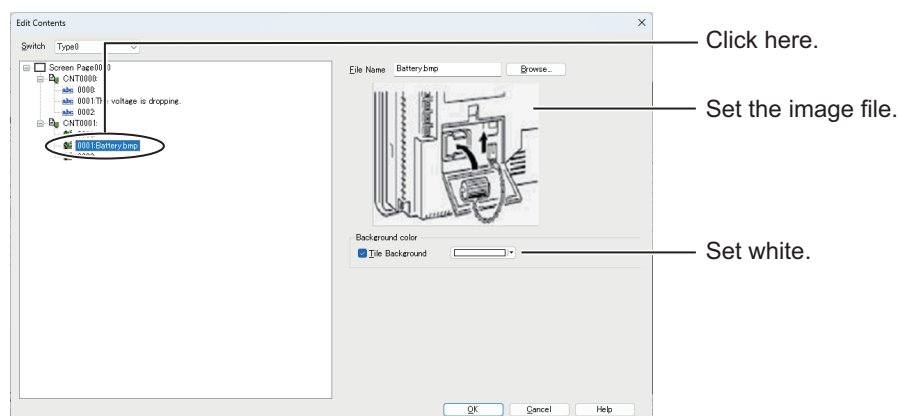


5 Set the contents. (No setting needs to be made for 0 because for *Contents No. when alarm does not occur* is set.)

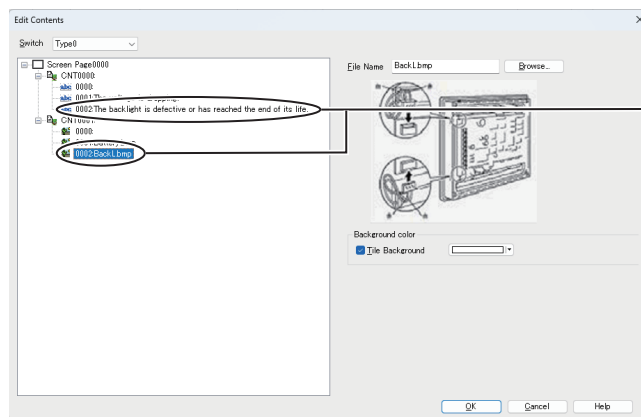
- (1) Click contents No. 1 for CNT0000 to input the character string for the countermeasure.
- (2) Set the background color to white.



- (3) Click contents No. 1 for CNT0001 to set the image file for which the countermeasure is shown.
- (4) Set the background color to white.



- (5) Make the settings in the same way for contents No. 2.

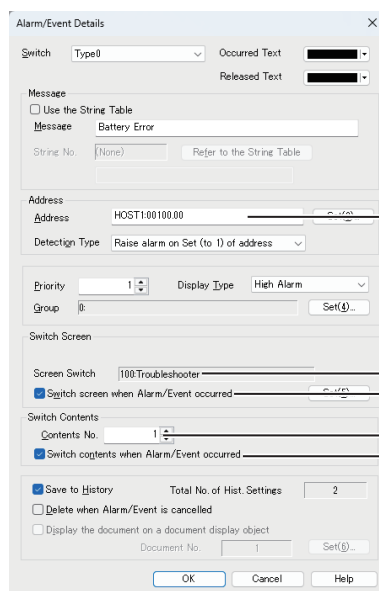


Set the character-string and image displays for contents No. 2.

- (6) Click the **OK** Button to close the Edit Contents Dialog Box.

6 Make the alarm-related settings.

- (1) First select **Alarm/Event Setting** from the PT Menu. The Alarm/Event Setting Dialog Box will be displayed.
- (2) Click the **Add** Button in the dialog box to open the Alarm/Event Details Dialog Box.



Set HOST1:100.00.

Set screen 100.

Select this checkbox.

Select to 1.

Select this checkbox.

- (3) Click the **OK** Button to close the Alarm/Event Details Dialog Box.

- (4) Make the settings related to HOST1:100.01 in the same way, but in this case set *Contents No.* to 2.

The screenshot shows the 'Alarm/Event Details' dialog box with the following settings and annotations:

- Switch:** Type0
- Occurred Text:** (empty)
- Released Text:** (empty)
- Message:**
 - ☐ Use the String Table
 - Message:** Backlight Error
 - String No.:** (None)
 - ☐ Refer to the String Table
- Address:**
 - Address:** HOST100100.01 (Annotation: Set HOST1:100.01.)
 - Detection Type:** Raise alarm on Set (to 1) of address
- Priority:** 1
- Display Type:** High Alarm
- Group:** 0
- Switch Screen:**
 - Screen Switch:** 100.Troubleshooter (Annotation: Set screen 100.)
 - ☒ Switch screen when Alarm/Event occurred (Annotation: Select this checkbox.)
- Switch Contents:**
 - Contents No.:** 2 (Annotation: Set to 2.)
 - ☒ Switch contents when Alarm/Event occurred (Annotation: Select this checkbox.)
- ☒ Save to History (Total No. of Hist. Settings: 2)
- ☐ Delete when Alarm/Event is cancelled
- ☐ Display the document on a document display object (Document No.: 1)
- Buttons:** OK, Cancel, Help

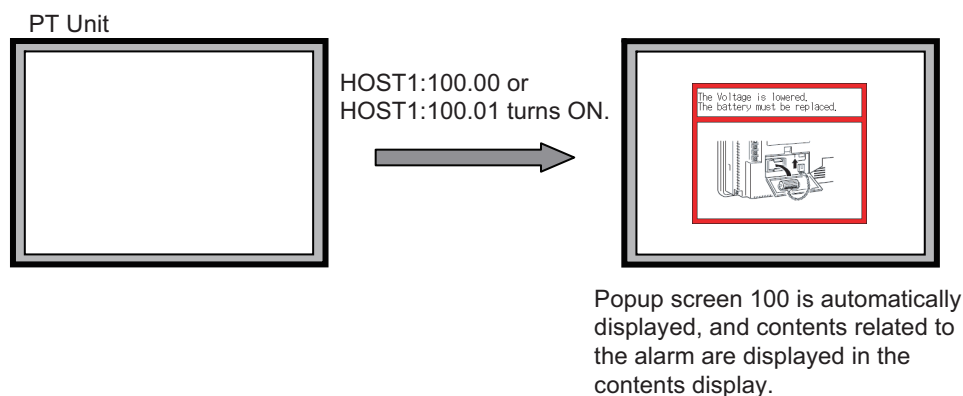
- (5) Click the **OK** Button to close the Alarm/Event Details Dialog Box.

- (6) Click the **OK** Button to close the Alarm/Event Setting Dialog Box.

7 The settings are now complete. Transfer the project data to the NS-B-series PT.

Using the Machine Navigator function, popup screen 100 will be displayed when HOST1:100.00 turns ON at the PT Unit, and the contents of contents No. 1 will be displayed.

Similarly, popup screen 100 will be displayed when HOST1:100.01 turns ON at the PT Unit, and the contents of contents No. 2 will be displayed.



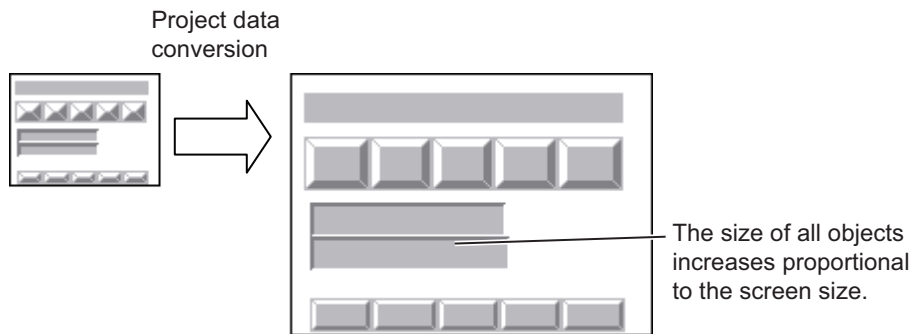


Additional Information

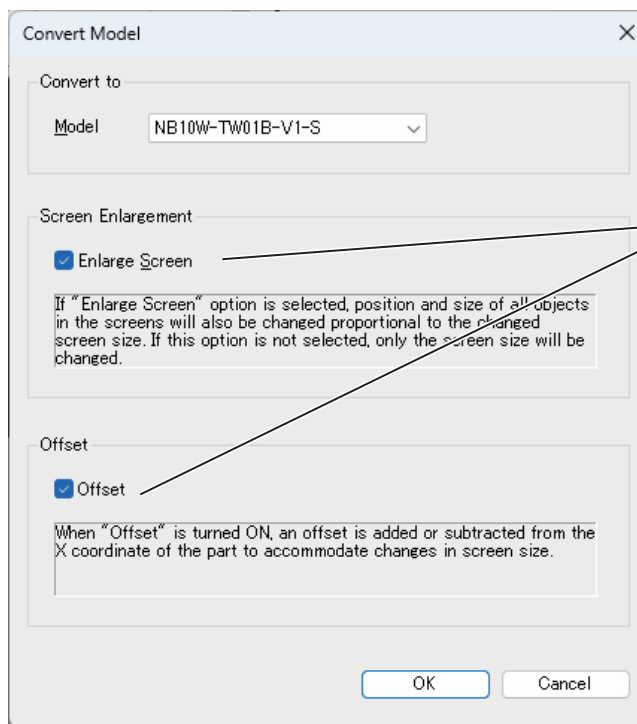
- Character strings and image files can be set by selecting the contents display and pressing the **Space** Key.
In addition, specifying a contents number in the Edit Contents Toolbar will cause the contents for that number to be displayed. This makes it possible to set character strings and image files for individual contents numbers without having to open the Edit Contents Dialog Box.
 - The Edit Contents Dialog Box can also be displayed by selecting **PT – Edit Contents**.
-

4-21 Enlarging Objects Proportional to Screen Size during Data Conversion

Screen objects are now enlarged automatically proportional to the screen size when project data from a low-resolution device is converted to project data for a high-resolution device.



- 1** Select **Convert** from the **Tools Menu**.
- 2** In the Project Data Conversion Dialog Box that is displayed, select the type of conversion and select the check box for *screen enlargement* and *Offset*.



- 3** Click the **OK** Button.
- 4** Enter a name for the converted project data.



Additional Information

- If the check box for screen enlargement is not selected, only the size of the screen will be enlarged and the objects will remain as they were prior to conversion.
 - The size of objects will not decrease when data for a high-resolution device is converted to data for a low-resolution device.
 - When converting project data between models with a different aspect ratio, you can specify an offset. If you select the Offset check box, conversion from a model with a screen size of 4:3 to a model with a wide screen will be performed so that functional objects maintain their aspect ratio and are placed at the center of the screen. Conversion from a model with a wide screen to a model with 4:3 is performed so that functional objects are placed left aligned.
-

4-22 Batch-setting Label Formats

Display formats for date objects, communications addresses for String Display & Input objects, and other format settings that were previously set individually for each label can now be set as a batch for all labels for the same object.

This allows you to set the format for all labels for one object by performing the format setting procedure only once.

Items That Can Be Batch-set

The objects and items that can be batch-set are listed in the following table.

Object	Items that can be batch-set
String Display and Input	Address information (General Tab Page in the String Display and Input object properties)
List Selection	List data (General Tab Page in the List Selection object properties)
Alarm/Event Display	Date display format (General Tab Page in the Alarm/Event Display object properties)
Alarm/Event Summary & History	Date display format (General Tab Page in the Alarm/Event Summary & History object properties)
Date	Display format (General Tab Page in the Date object properties)
Time	Display format (General Tab Page in the Time object properties)
Data Log Graph	Date and time display format (Time Axis Tab Page in the Data Log Graph object properties)

Settings in the Option Dialog Box

The Option Dialog Box will be displayed when **Options** is selected from the Tools Menu. The following check boxes can be selected on the Edit/Disp Tab Page to batch-set the specified items instead of setting them individually.

Set labels all at once

☐ Address of String Display & Input object

☐ List data of List Selection object

☐ Date & Time Display Format

- Address of String Display & Input object
This option enables batch-setting address information instead of setting it for each label.
- List data of List Selection object
This option enables batch-setting list information instead of setting it for each label.
- Date & Time Display Format
This option enables batch-setting the display and time format instead of setting it for each label.



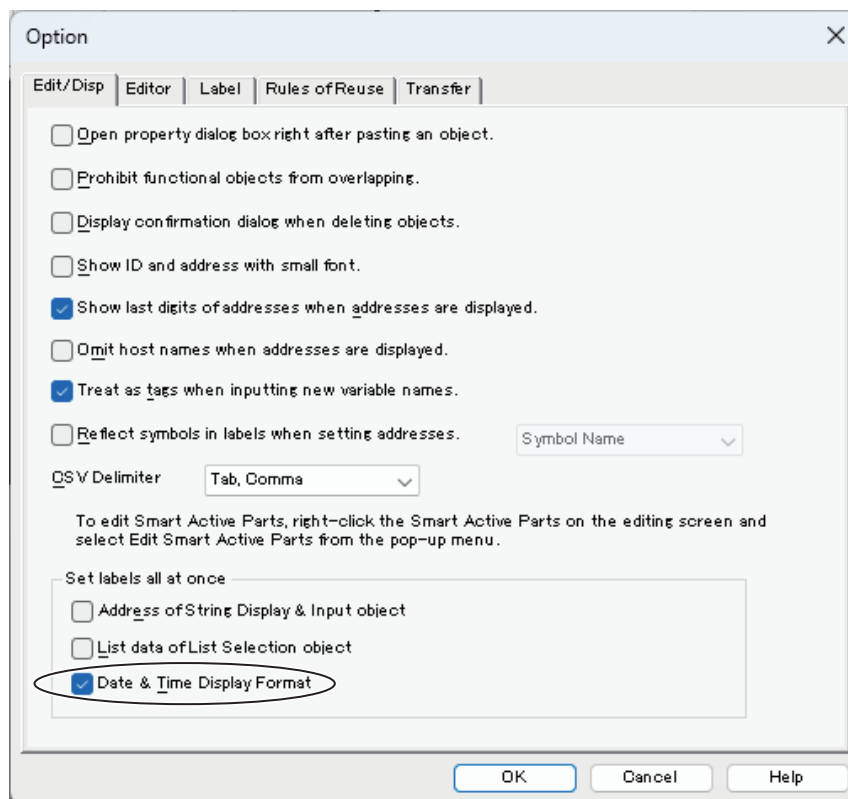
Additional Information

- Batch-setting is implemented by clicking the Apply to All Labels Button on the General Tab Page of the Properties Dialog Box for applicable objects.
- The settings cannot be unified simply by selecting a check box after settings have been made for individual labels. The previous settings will not be changed. To change the previous settings, select the check box and then set the item for which batch-setting is possible.

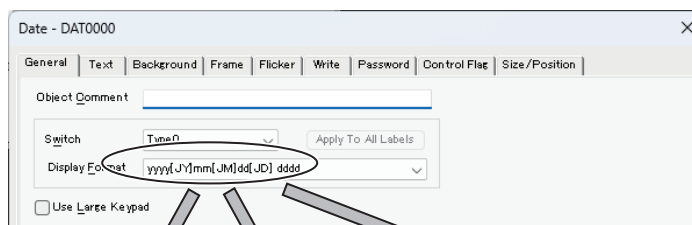
● Setting Example: Batch-setting the Display Format of All Labels for Date Objects.

In this example, there are three labels: Japanese, English, and Chinese

- 1 Select the *Data & Time Display Format* Check Box on the Options Dialog Box.



- 2 Position a date object. The display format will be yyyy/mm/dd/dddd and the same display format will be used for all other labels.

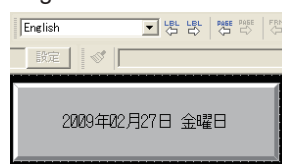
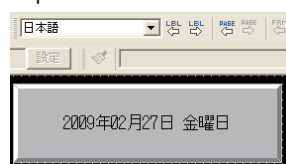


The display format for all other labels will be the same after the object is positioned.

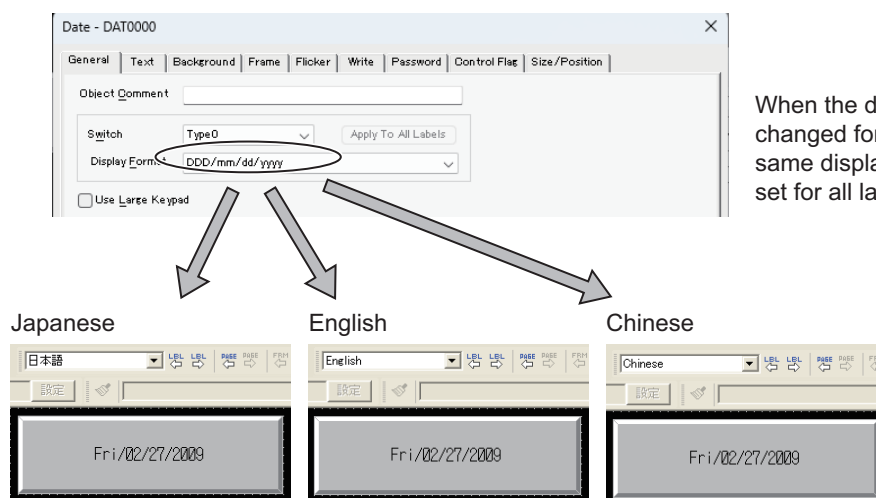
Japanese

English

Chinese



- 3** The display format of the Japanese label is changed to DDD/mm/dd/yyyy. The display format for the other labels will change to the same format.

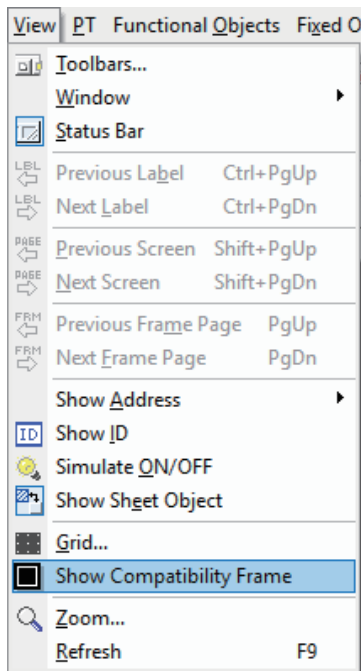


4-23 Displaying the Compatibility Frame

For the NS-B-series, the screen size aspect ratio differs depending on the model. Therefore, if you are using the entire screen on a model with a wide screen, functional objects may protrude from the screen when model conversion is performed.

To prevent this, you can display a frame that matches a model with a screen size of 4:3 during screen creation. There are the following two methods to display the compatibility frame.

- Select Show Compatibility Frame from the View Menu.



- Click compatibility frame of Address on the toolbar.





Appendices

This section describes points to keep in mind as reference when using CX-Designer.
Refer to it as required.

A-1	Shortcut Keys	A-2
A-2	Exchanging Data between NS-B-series Products	A-4
A-3	Guide to Version Upgrade	A-5

A

A-1 Shortcut Keys

The following tables list the shortcut keys that can be used with CX-Designer.

Menu	Function	Shortcut Keys
File	Open Screen	Ctrl+O
	Save All	Ctrl+S
	New Screen	Ctrl+N
	Save Screen/Sheet	Ctrl+Shift+S
	New Sheet	Ctrl+Shift+N
	Apply Sheet	Ctrl+J
	Print	Ctrl+P
Edit	Undo	Ctrl+Z
	Redo	Ctrl+Y
	Cut	Ctrl+X, Shift+DEL
	Copy	Ctrl+C
	Paste	Ctrl+V, Shift+Ins
	Delete	DEL
	Group	Ctrl+G
	Ungroup	Ctrl+U
	Up	↑ (when object is selected)
	Down	↓ (when object is selected)
	Left	← (when object is selected)
	Right	→ (when object is selected)
	One dot shift	Shift+↑, ↓, → or ← (when Snap to Grid is selected)
	All Objects	Ctrl+A
	Same Type Objects	Ctrl+D (when object is selected)
	Repeat	Ctrl+W
	Edit Properties	Ctrl+L
Find	Find	Ctrl+F
	Replace	Ctrl+H
	Address Cross Reference	Ctrl+R
View	Project Workspace	Alt+1
	Symbol Table	Alt+2
	Property List	Alt+3
	Library	Alt+4
	Select Object	Alt+5
	Address in Use List	Alt+6
	Output Window	Alt+7
	Previous Label	Ctrl+PgUp
	Next Label	Ctrl+PgDn
	Previous Screen	Shift+PgUp
	Next Screen	Shift+PgDn
	Previous Frame Page	PgUp (when frame is selected)
	Next Frame Page	PgDn (when frame is selected)
	Refresh	F9

Menu	Function	Shortcut Keys
PT	Quick transfer (Computer → PT)	Ctrl+Q
	Transfer (Computer → PT)	Ctrl+B
	Transfer (PT → Computer)	Ctrl+Shift+B
	Transfer Setting	Ctrl+Alt+B
	Transfer Program	Ctrl+I
	Object Properties	Enter (when functional object is selected)
	Edit Label	Space (when functional object with label setting is selected)
Tool	Test	Ctrl+T
	Validation (Project)	Ctrl+E
	Validation (Current Screen)	Ctrl+Shift+E
	Validation Setting	Ctrl+Alt+E
	Library	Alt+4
Window	Next Window	Alt+0
	Previous Window	Alt+Shift+0

A-2 Exchanging Data between NS-B-series Products

The following tables show the data compatibility between different versions of NS-B-series products.

Hardware and System Programs

The versions of the system program that can be installed in the PT Unit vary with the model. The possible combinations are shown in the following table. Use a system program that can be installed for the hardware used.

Item	NB15W-TW01B-V1-S	NB10W-TW01B-V1-S	NB7W-TW01B-V1-S	NB5Q-TW01B-V1-S
System Program Ver.10.0	Yes	Yes	Yes	Yes

Yes: Can be installed, No: Cannot be installed

System Programs and Screen Data Versions

The versions of project data that can be used on the PT Unit depend on the version of the system program installed in the PT Unit. The “project data version” is the version of the program selected when screen data is created on CX-Designer. The combinations that can be used on the PT Unit are shown in the following table. Project data versions are upwardly compatible.

Item	System program
	Ver.10.0
Project Data Versions Ver.10.0	Yes

Yes: Can be used on the PT Unit, No: Cannot be used on the PT Unit

CX-Designer and Project Data Versions

The versions of screen data that can be read and created depend on the CX-Designer version. Convert the data as required with CX-Designer before reading it.

Item	CX-Designer
	Ver.4.0
Project Data Versions Ver.10.0	Yes

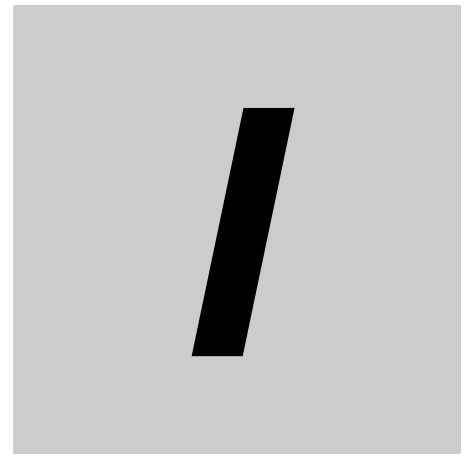
Yes: Can be read, No: Cannot be read

A-3 Guide to Version Upgrade

The changes to the functions of CX-Designer are as follows for each version.

CX-Designer Ver.4.0

Item	Description
Support for NB□□□-TW01B-V1-S	The NB□□□-TW01B-V1-S is now supported.
Support for project version	Project version 10.0 is supported.
End of support for discontinued models	Support for the discontinued NS-series has ended.



Index

Index

A

Address in Use	4-23
Address in Use List	3-24
Address Toolbar	3-19

B

Basic Operation Procedures	1-5
Basic Screen	3-12
bmp and jpg files	4-27

C

Changing Allocated Addresses	4-4
Classifying Screens	4-12
Color Toolbar	3-19
Common Setting Tab Page	3-13
Compatibility Frame	4-60
Copying the Setting	4-18
Creating Categories	4-13
Creating Polygonal Lamps	4-44
Creating Screens Using Symbol Names	4-7
CX-Designer and Project Data Versions	A-4

D

Data Log Graph	3-10
Debugging connected to an actual PLC	4-33
Debugging with a Virtual PLC	4-30

E

Edit Contents Toolbar	3-19
Edit Objects Toolbar	3-18
Edit Toolbar	3-15
Exchanging Data between Products	A-4
Exiting	3-3

F

Features	1-2
File Toolbar	3-15
Find Toolbar	3-16
Fixed Object Toolbar	3-17
Font Toolbar	3-19
Functional Object Toolbar	3-17

G

Global Replace	3-14
Globally Replacing	4-16
Grouping Order Toolbar	3-17

H

Hardware and System Programs	A-4
Help	4-28
Help Toolbar	3-16

I

Integrated Simulation	1-4, 4-30
Integrated simulation procedure	1-8

L

Library Window	3-22
Listing and Editing	4-17

M

Machine Navigator	4-49
Menu Bar	3-12
Multifunction Object	4-40, 4-42

O

Object List	3-23, 4-19
Output Window	3-20, 4-23, 4-25

P

print function	4-27
Project Workspace	3-12
Property List	3-14, 4-15

Q

Quick Transfer	4-26
----------------------	------

R

Registering Contents	4-47
Replacing objects	4-42
Reusing Projects	4-5
RTF files	4-27

S

Screen Creation Window	3-14
Screen/Sheet Tab Page	3-13
Searching Objects	4-25
Setting Data Security	4-36
Setting Symbol Names and I/O Comments for Use as Labels	4-38
Sharing symbol data with CX-Programmer	4-5
Shortcut Keys	A-2

Startup Method	3-2
Status bar	3-15
Switch Toolbar	3-18
Switching Labels	4-21
Symbol Table	3-21, 4-3
System Programs and Screen Data Versions	A-4
System Tab Page	3-13

T

Title Bar	3-12
Tool Toolbar	3-16

U

Using I/O Allocation Table in Symbol Table	4-7
Using Screens from Projects	4-9

V

View Toolbar	3-19
--------------------	------

W

Window Display Toolbar	3-18
------------------------------	------

OMRON Corporation Industrial Automation Company

Kyoto, JAPAN

Contact : www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V.

Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

OMRON ASIA PACIFIC PTE. LTD.

438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-3011

OMRON ELECTRONICS LLC

2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

OMRON (CHINA) CO., LTD.

Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333 Fax: (86) 21-5037-2388

Authorized Distributor:

©OMRON Corporation 2026 All Rights Reserved.
In the interest of product improvement,
specifications are subject to change without notice.

Cat. No. V133-E1-01 1026