OMRON

Programmable Terminal

NS-B-series

Hardware User's Manual

NB15W-TW01B-V1-S
NB10W-TW01B-V1-S
NB7W-TW01B-V1-S
NB5Q-TW01B-V1-S



V129-E1-01

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Introduction

Thank you for purchasing an NS-B-series Programmable Terminal.

This manual contains information that is necessary to use the NS-B-series Programmable Terminal. Please read this manual and make sure you understand the functionality and performance of the NS-B-series Programmable Terminal 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.

- NS-B-series Programmable Terminal
  NB15W-TW01B-V1-S, NB10W-TW01B-V1-S, NB7W-TW01B-V1-S, and NB5Q-TW01B-V1-S

Relevant Manuals

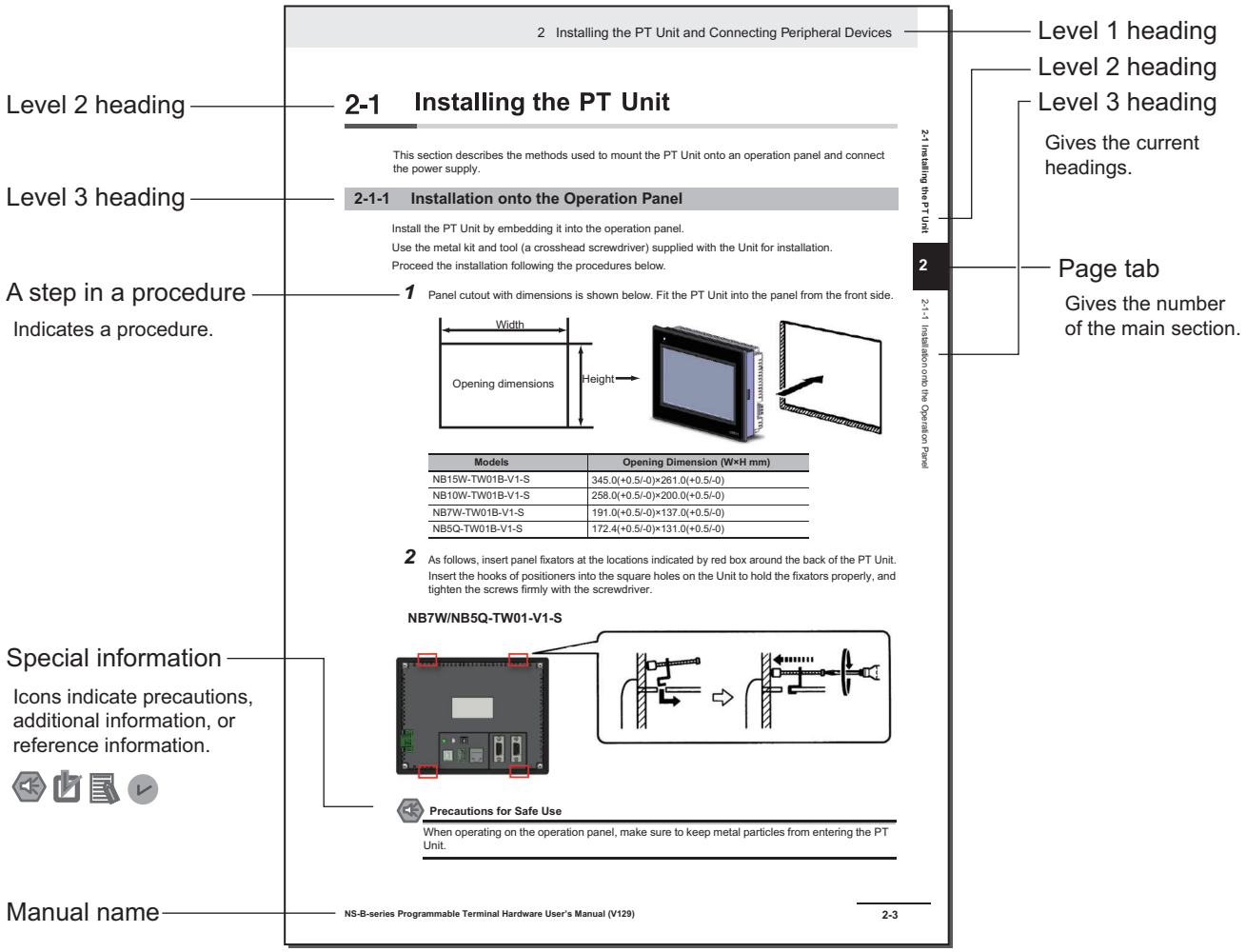
The basic information required to use an NS-B-series PT is provided in the following manuals.

- *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)*

Manual Structure

Page Structure

The following page structure is used in this manual.



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

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 Part Names and Functions

2 Installing the PT Unit and Connecting Peripheral Devices

3 System Menu Operations

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Warranty, Limitations of Liability

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Change in Specifications

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

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It shall be the users sole responsibility to determine and use adequate measures and checkpoints to satisfy the users particular requirements for (i) antivirus protection, (ii) data input and output, (iii) maintaining a means for reconstruction of lost data, (iv) preventing Omron Products and/or software installed thereon from being infected with computer viruses and (v) protecting Omron Products from unauthorized access.

Safety Precautions

Notation Used for Safety Information

The following notation is used in this manual to provide precautions required to ensure safe usage of the product. The safety precautions that are provided are extremely important to safety. Always read and heed the information provided in all safety precautions.

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

Precautions for Safe Use
Indicates precautions on what to do and what not to do to ensure using the product safely.

Precautions for Correct Use
Indicates precautions on what to do and what not to do to ensure proper operation and performance.

Note Indicates suggestive information and precautions on operation of the product.

Symbols

	The circle and slash symbol indicates operations that you must not do. The specific operation is shown in the circle and explained in text. This example indicates prohibiting disassembly.
	The triangle symbol indicates precautions (including warnings). The specific operation is shown in the triangle and explained in text. This example indicates a general precaution.
	The filled circle symbol indicates operations that you must do. The specific operation is shown in the circle and explained in text. This example shows a general precaution for something that you must do.

Warnings

⚠ WARNING

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

Security Measures

Anti-virus protection

Install the latest commercial-quality antivirus software on the computer connected to the control system and maintain to keep the software up-to-date.



Security measures to prevent unauthorized access

Take the following measures to prevent unauthorized access to our products.

- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to shut down unused communications ports and limit communications hosts and isolate control systems and equipment from the IT network.
- Use a virtual private network (VPN) for remote access to control systems and equipment.
- Adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong passwords and change them frequently.
- Scan virus to ensure safety of USB drives or other external storages before connecting them to control systems and equipment.



Data input and output protection

Validate backups and ranges to cope with unintentional modification of input/output data to control systems and equipment.

- Checking the scope of data
- Checking validity of backups and preparing data for restore in case of falsification and abnormalities
- Safety design, such as emergency shutdown and fail-soft operation in case of data tampering and abnormalities



Data recovery

Backup data and keep the data up-to-date periodically to prepare for data loss.



When using an intranet environment through a global address, connecting to an unauthorized terminal such as a SCADA, HMI or to an unauthorized server may result in network security issues such as spoofing and tampering.

You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.



When constructing an intranet, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment.

Take adequate measures, such as restricting physical access to network devices, by means such as locking the installation area.



When using a device equipped with the SD Removable Media function, there is a security risk that a third party may acquire, alter, or replace the files and data in the removable media by removing the removable media or unmounting the removable media.



Please take sufficient measures, such as restricting physical access to the Controller or taking appropriate management measures for removable media, by means of locking the installation area, entrance management, etc., by yourself.

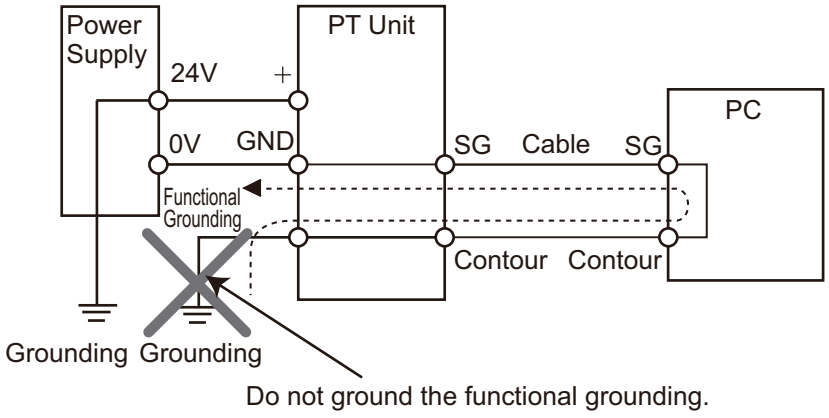
Precaution

⚠ Caution

Wiring

In the case of the NS-B-series, when grounding the positive terminal of power supply of 24 V to the PT Unit, do not ground functional grounding terminal at PT Unit side. Some functions of a PC connected to the PT Unit may cause a short circuit and the PT Unit may cause damage.

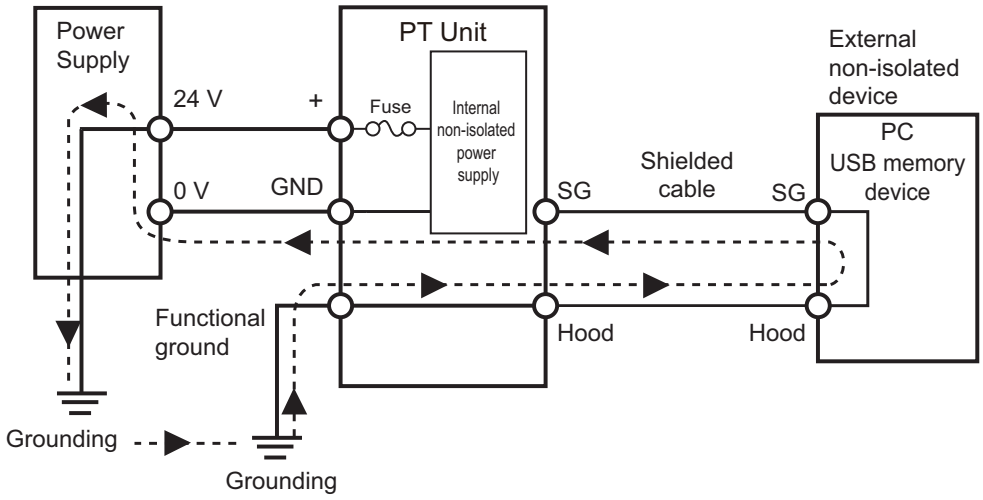
- Caution:
  Depending on the types of PC, SG terminals of RS-232C port or USB port and contour of connector can be connected. As the contour of tool port of the PT Unit and the functional grounding terminal are not insulated, they are connected. Therefore, connecting the PC allows GND terminal and functional grounding terminal of the PT Unit to be connected. If the power supply of 24V to the PT Unit is grounded positively, grounding the functional grounding terminal allows a short circuit as shown in the diagram below and may result in damage.



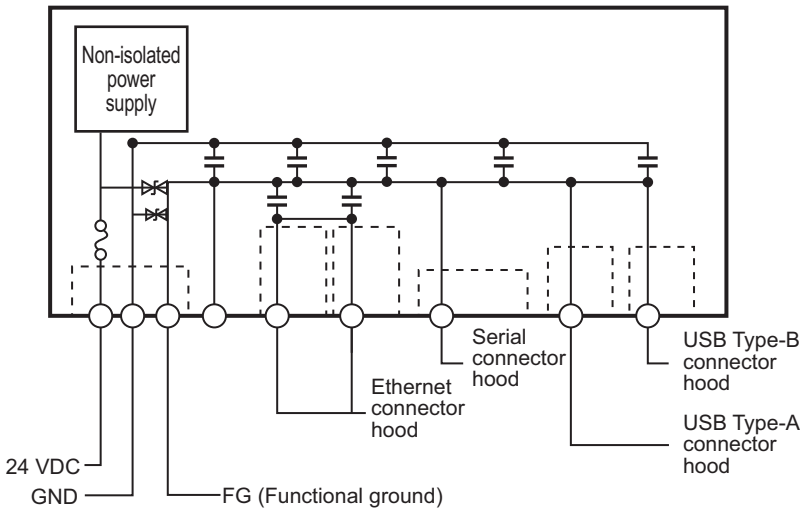
If the + terminal of the 24 V power supply is connected, a short circuit will occur as shown in the diagram below, which may result in device failure. Connect the - terminal or take measures such as adding an isolation transformer.

Furthermore, when using a power supply without a built-in protection circuit, be sure to supply power through a protective element such as a fuse.

24 V Grounding Power Supply



PT Unit Grounding diagram



Test Function

The Test Function is performed on PC, and it has different behaviors with actual running system. A problem may occur due to communication timing, cable differences and unexpected PC circumstances (such as freeze). When the Test Function is performed, please consider possible unexpected circumstances on the actual running system and confirm that any dangerous event will not occur beforehand.

Precautions for Safe Use

- When unpacking the PT Units and the peripheral devices, check carefully for any external scratches or other damages. Also, shake the Units gently and check for any abnormal sound.
- The PT Unit must be installed in a control panel.
- The mounting panel must be between 1.6 and 4.8 mm thick. Tighten the Mounting Brackets evenly to a torque of between 0.5 and 0.6 N·m to maintain water and dust resistance. If the tightening torque exceeds the specified value, or the tightening is not even, deformation of the front panel may occur. What is more, make sure the panel is not dirty or warped and that it is strong enough to hold the Units.
- Do not let metal particles enter the Units when preparing the panel.
- Do not connect an AC power supply to the DC power terminals.
- Use a DC power with a slight voltage fluctuation and reinforced or double insulation, and that will provide a stable output even if the input is momentarily interrupted for 10 ms.
  Rated Power Supply Voltage: DC 24 V (Allowable range DC 20.4 ~ 27.6 V)
- Do not perform a dielectric voltage test.
- Connect the cable to the terminal block before connecting the power supply to the PT Unit. Make the connection by using terminal screws crimping on a twisted-pair cable with a crimping range of 12~26 AWG, and only 6.5 mm of insulation peel of the cable needs to be peeled off. Tighten the terminal screws at a torque of between 0.3 and 0.5 N·m. Make sure the screws are properly tightened.
- To prevent malfunctions caused by noise, ground the Unit correctly.
- Do not touch the packaging part of the circuit board with your bare hands. Discharge any static electricity from your body before handling the board.
- When using the No. 6 pin of the serial communication port A connector for a voltage of DC+5V, make sure the supply equipment's current capacity is below 250mA before using it. The DC+5V voltage output of the PT Unit is +5V±5%, and the maximum current is 250mA.
- Do not use the USB memory in the environment subject to strong vibration.
- When connecting the equipment with the USB Type-A connector, make sure the supply equipment's current capacity is below 150mA before using it.
  The DC+5V voltage output of the USB Type-A is +5V±5%, and the maximum current is 150mA.
- Turn OFF the power supply before connecting or disconnecting cables.
- Always keep the connector screws firmly tightened after the communication cable is connected.
- Do not pull on the cables or bend the cables beyond their natural limit.
  Do not place heavy objects on top of the cables or other wiring lines. Doing so may break the cables.
- The maximum tensile load for connectors is 30 N. Do not apply loads greater than this.
- Confirm the safety of the system before turning ON or OFF the power supply, or pressing the reset button.
- The whole system may stop depending on how the power supply is turned ON or OFF. Turn ON/OFF the power supply according to the specified procedure.
- Once the DIP switch settings are changed, reset by pressing the reset button, or restart the power supply.
- To ensure the system's safety, make sure to incorporate a program that can confirm the normal functionality of the PT Unit before running the system.
- Start actual system application only after sufficiently checking project, macros and the operation of the program at the host side.
- Do not press the touch panel with a force greater than 30 N.
- Do not use hard or pointed objects to operate or scrub the screen, otherwise, the surface of the screen may be damaged.
- Confirm the safety of the system before pressing the touch panel.
- Signals from the touch switches may not be input if the touch switches are pressed consecutively at high speed. Confirm that the PT Unit has detected the input of a touch switch before pressing any other touch switch.

- Do not accidentally press the touch panel when the backlight is not lit or when the display does not appear.
- Make sure of the safety of the system before pressing the touch panel.
- To use numeric input functions safely, always make maximum and minimum limit settings.
- Before initializing project, confirm that existing data is backed up at the CX-Designer.
- When changing the password with the System Menu, do not reset or turn OFF the power supply until writing is finished. Failure to save the password may cause the screen to fail to function.
- Do not connect a USB connector to any device that is not applicable.
- Do not perform the following operations during the communication of the USB memory:
  - Turning off the power supply of the PT Unit.
  - Pressing the Reset button on the PT Unit.
  - Pull out the USB memory.
- Before connecting a USB connector to a device, make sure that the device is free of damage.
- Commercially available and the recommended USB HUBs are different from the general specifications of the PT Unit. The unit may not function well in an environment subject to noise, static electricity. Therefore, when using a USB HUB, employ sufficient noise and static electricity insulation measures, or install it at a site free of noise or static electricity.
- While uploading or downloading project or system programs, do not perform the following operations that may corrupt the project or the system program:
  - Turning OFF the power supply of the PT Unit.
  - Pressing the PT Unit's reset switch.
- Dispose of the Units according to local ordinances as they apply.



- Do not dispose the product into a fire. Doing so may cause the damage with electronic components.
- Do not use benzene, paint thinner, or other volatile solvents, and do not use chemically treated cloths.
- Do not dispose the PT Units together with general waste at waste yards. When disposing them, follow the related local ordinances or rules.
- The backlight lamp inside the PT Unit cannot be replaced.
- Deterioration over time can cause the touch points to move. Calibrate the touch panel periodically.
- Water resistance will be lost if the front sheet is torn or is peeling off. Do not use the Unit, if the front sheet is torn or is peeling off.
- The rubber packing will deteriorate, shrink, or harden depending on the operating environment. Inspect the rubber packing periodically.
- The communication cables of the Serial ports A and B connectors are not interchangeable. Confirm the pins of the ports before carrying out communications.
- Periodically check the installation conditions in applications where the PT Unit is subject to contact with oil or water.
- Displaying a pattern for a long time, 24 hours as an indication, may cause an afterimage on the display.
  Enable [Screen Saver] or switch displaying screens to prevent the afterimage.

Precautions for Correct Use

- Do not install the unit in any of the following locations:
  Locations subject to severe changes in temperature
  Locations subject to temperatures or humidity outside the range specified in the specifications
  Locations subject to condensation as the result of high humidity
  Locations subject to corrosive or flammable gases
  Locations subject to strong shock or vibration
  Locations outdoors subject to direct wind and rain
  Locations subject to strong ultraviolet light
  Locations subject to dust
  Locations subject to direct sunlight
  Locations subject to splashing oil or chemicals

- Take appropriate and sufficient countermeasures when installing systems in the following locations:
  Locations subject to static electricity or other forms of noise
  Locations subject to strong electric field or magnetic field
  Locations close to power supply lines
  Locations subject to possible exposure to radioactivity

- Precautions for software:
  To guarantee correct use of software products, the following operations are prohibited while software is running.
  - Updating while software is running
  - Repairing while software is running
  - Uninstalling while software is running

Conformance to EC Directives

NS-B-series Programmable Terminals are EMC compliant.

Concepts

OMRON products are electronic devices that are incorporated in machines and manufacturing installations. OMRON PTs conform to the related EMC Directives (see note) so that the devices and machines into which they are built can more easily conform to EMC Directives. The actual products have been through inspections and are completely in accordance with EMC directives. However, when they are built into customers' systems, whether the systems also comply with these Directives is up to the customers for further inspection.

EMC-related performance of OMRON PTs will vary depending on the configuration, wiring, and other conditions of the OMRON equipment or control panel. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

Note The applicable EMC (Electromagnetic Compatibility) standards are as follows:
EMS (Electromagnetic sensitivity): EN61131-2: 2007
EMI (Electromagnetic Interference): EN61131-2: 2007

Conformance to EC Directives

NS-B-series Programmable Terminals are EC compliant. Heed the following precautions in order to ensure that the customer's overall machine and device conform to EC Directives.

1 The PT Unit must be installed in a control panel.

2 You must use reinforced insulation or double insulation for the DC power supply and the DC power supply must have minimal voltage fluctuations and provide a stable output even if the power supply input is interrupted for 10 ms.

3 The PTs conform to the standard EN 61131-2, but radiated emission characteristics (10m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment complies with EC Directives.

4 This is a Class A product (Product for industry purpose). It may cause radio interference in residential areas, in which case the user may be required to take adequate measures to reduce interference.

Conformance to KC Standards

Observe the following precaution if you use NS-B-series Programmable Terminals in Korea.

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

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

Related Manuals

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

Manual name	Cat. No.	Model	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.
CP Series CP1L CPU Unit Operation Manual	W462	CP1L-L□□□□-□ CP1L-M□□□□-□	Learning the basic specifications of the CP1L CPU Unit, including introductory information, designing, installation, and maintenance.	Provide the following information on the CP Series: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • I/O memory allocation • Troubleshooting Use this manual together with the CP1H Programmable Controllers Programming Manual (W451).

Manual name	Cat. No.	Model	Applications	Description
CP Series CP1H and CP1L CPU Unit Programming Manual	W451	CP1H-□□□□-□ CP1L-□□□□-□	Learning about the functions of the CP Series CP1H CPU Units.	Provides the following information on the CP Series: • Programming (instructions and methods) • Tasks • File memory • Functions Use this manual together with the CP Series CP1H CPU Units Operation Manual (W450) and CP Series CP1L CPU Units Operation Manual (W462).
CP Series CP1H CPU Unit Operation Manual	W450	CP1H-□□□□-□	Learning the basic specifications of the CP1H CPU Unit, including introductory information, designing, installation, and maintenance.	Provide the following information on the CP Series: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • I/O memory allocation • Troubleshooting Use this manual together with the CP1H Programmable Controllers Programming Manual (W451).
SYSMAC CP Series CP1E CPU Unit Hardware USER'S Manual	W479	CP1E-E□□(S)D□-□ CP1E-N(A)□□D□-□ CP1E-N□□S□D□-□	Learning the basic specifications of the CP Series CP1E CPU Unit, including introductory information, designing, installation, and maintenance.	Describes the following information for CP1E PLCs. • Overview and features • Basic system configuration • Part names and functions • Installation and settings • Troubleshooting Use this manual together with the CP1E CPU Unit Software User's Manual (W480) and Instructions Reference Manual (W483).
SYSMAC CP Series CP1E CPU Unit Software USER'S Manual	W480	CP1E-E□□(S)D□-□ CP1E-N(A)□□D□-□ CP1E-N□□S□D□-□	To learn the software specifications of the CP Series CP1E CPU Unit.	Describes the following information for CP1E PLCs. • CPU Unit operation • Internal memory • Programming • Settings • CPU Unit built-in functions • Interrupts • High-speed counter inputs • Pulse outputs • Serial communications • Analog I/O function • Other functions Use this manual together with the CP1E CPU Unit Hardware User's Manual (W479) and Instructions Reference Manual (W483).

Manual name	Cat. No.	Model	Applications	Description
CP Series CP1E/CP2E CPU Unit Instructions Reference Manual	W483	CP2E-□□□□-□	To learn programming instructions in detail.	Describes each programming instruction indetail. When programming, use this manual together with the CP2E CPU Unit Software User's Manual (Cat. No. W614).
CP Series CP1L-EL/EM CPU Unit Operation Manual	W516	CP1L-E□□□□-□	Learning the basic specifications of theCP1L-EL/EM CPU Unit, including introductory information, designing, installation, and maintenance.	Provides the following information on the CP Series: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • I/O memory allocation • Troubleshooting Use this manual together with the CP1L Programmable Controllers Programming Manual (W451).
CP Series CP2E CPU Unit Hardware User's Manual	W613	CP2E-□□□□□-□	To learn the hardware specifications of the CP Series CP2E CPU Unit.	Describes the following information for CP2E PLCs. • Overview and features • Basic system configuration • Part names and functions • Installation and settings • Troubleshooting Use this manual together with the CP2E CPU Unit Software User's Manual (Cat. No.W614) and Instructions Reference Manual(Cat. No.W483).
CP Series CP2E CPU Unit Software User’s Manual	W614	CP2E-□□□□□-□	To learn the software specifications of the CP Series CP2E CPU Unit.	Describes the following information for CP2E PLCs. • CPU Unit operation • Internal memory • Programming • Settings • CPU Unit built-in functions • Interrupts • High-speed counter inputs • Pulse outputs • Serial communications • Ethernet • Other functions Use this manual together with the CP2E CPU Unit Hardware User's Manual (Cat. No. W613) and Instructions Reference Manual (Cat. No.W483).

Manual name	Cat. No.	Model	Applications	Description
SYSMAC C200HX/HG/HE(-E/-ZE) Installation Guide	W302	C200HE-CPU□□-□□ C200HG-CPU□□-□□ C200HX-CPU□□-□□	Learning the basic specifications of the C200HX/HG/HE(-E/-ZE) CPU Unit, including introductory information, installation, and maintenance.	Provide the following information on the C200HX/HG/HE CPU Unit: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • Troubleshooting Use this manual together with the SYSMAC C200HX/HG/HE Operation Manual (W303).
SYSMAC C200HX/HG/HE Operation Manual	W303	C200HE-CPU□□ C200HG-CPU□□ C200HX-CPU□□	Learning the basic specifications of the C200HX/HG/HE CPU Unit, including introductory information, designing, and maintenance.	The following information is provided on a CS-series PLC. • Introduction and features • System configuration design • I/O memory allocation • Troubleshooting Use this manual together with the SYSMAC C200HX/HG/HE(-E/-ZE) Installation Guide (Cat. No. W302).
SYSMAC C200HX/HG/HE(-ZE) Operation Manual	W322	C200HE-CPU□□-□□ C200HG-CPU□□-□□ C200HX-CPU□□-□□	Learning the basic specifications of the C200HX/HG/HE(-ZE) CPU Unit, including introductory information, designing, and maintenance.	The following information is provided on a CS-series PLC. • Introduction and features • System configuration design • I/O memory allocation • Troubleshooting Use this manual together with the SYSMAC C200HX/HG/HE(-E/-ZE) Installation Guide (Cat. No. W302).
SYSMAC CPM1A Operation Manual	W317	CPM1A-□□□□□□-□ CPM1A-□□□□□□-□-V1	Learning the basic specifications of the CPM1A CPU Unit, including introductory information, installation, and maintenance.	Provide the following information on the CPM1A Unit: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • Troubleshooting Use this manual together with the SYSMAC CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programming Manual (W353).
SYSMAC CPM2A Operation Manual	W352	CPM2A-□□□□□□-□	Learning the basic specifications of the CPM2A CPU Unit, including introductory information, installation, and maintenance.	Provide the following information on the CPM2A Unit: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • Troubleshooting Use this manual together with the SYSMAC CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programming Manual (W353).

Manual name	Cat. No.	Model	Applications	Description
SYSMAC CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programming Manual	W353	CPM1-□□□□□-□ CPM1A-□□□□□□-□ CPM1A-□□□□□□-□-V1 CPM2A-□□□□□□-□ CPM2C-□□□□□□□-□ SRM1-C0□ SRM1-C0□-V1 SRM1-C0□-V2	Learning the basic specifications of the CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) CPU Unit, including introductory information, designing, and maintenance.	The following information is provided on a CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) CPU Unit. • Introduction and features • System configuration design • I/O memory allocation • Troubleshooting Use this manual together with the SYSMAC CPM1A Operation Manual (Cat. No. W317), SYSMAC CPM2A Operation Manual (Cat. No. W352) and SYSMAC CPM2C Operation Manual (Cat. No. W356).
SYSMAC CPM2C Operation Manual	W356	CPM2C-□□□□□□□-□	Learning the basic specifications of the CPM2C CPU Unit, including introductory information, installation, and maintenance.	Provide the following information on the CPM2C Unit: • Overview, features, design, installation, maintenance, and other basic specifications • System configuration • Mounting and wiring • Troubleshooting Use this manual together with the SYSMAC CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programming Manual (W353).
CS Series Programmable Controllers Operation Manual	W339	CS1G-CPU□□H CS1H-CPU□□H	Learning the basic specifications of the CS-series PLCs, including introductory information, designing, installation, and maintenance.	The following information is provided on a CS-series PLC. • Introduction and features • System configuration design • Installation and wiring • I/O memory allocation • Troubleshooting Use this manual together with the Programming Manual (Cat. No. W394).
CS/CJ Series Serial Communications Boards/Units Operation Manual	W336	CS1W-SCB□1-V1 CS1W-SCU□1-V1 CJ1W-SCU□1-V1 CJ1W-SCU□2	To learn the specifications of the hardware and serial communication mode of a serial communication board/unit.	Describes the use of Serial Communications Unit and Boards to perform serial communications with external devices, including the use of standard system protocols for OMRON products. Note: Refer to the CS/CJ Series Communications Commands Reference Manual (W342) for details on sending commands in host link mode from a Serial Communications Board or Unit's port.

Manual name	Cat. No.	Model	Applications	Description
CJ Series Programmable Controllers Operation Manual	W393	CJ1H-CPU□□H-R CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1M-CPU□□ CJ1G-CPU□□	Learning the basic specifications of the CJ-series PLCs, including introductory information, designing, installation, and maintenance.	The following information is provided on a CJ-series PLC. • Introduction and features • System configuration design • Installation and wiring • I/O memory allocation • Troubleshooting Use this manual together with the Programming Manual (Cat. No. W394).
CS/CJ/NSJ Series Programmable Controllers Operation Manual	W394	CS1G/H-CPU□□H CS1G/H-CPU□□-V1 CS1D-CPU□□H CS1D-CPU□□S CJ1H-CPU□□H-R CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1M-CPU□□ CJ1G-CPU□□ NSJ□-□□□□(B)-G5D NSJ□-□□□□(B)-M3D	Learning about the functions of the CS/CJ-series and NSJ-series PLCs.	The following information is provided on a CS/CJ-series or NSJ-series PLC. • Programming • Master function • File memory • Other functions Use this manual together with the Operation Manual (CS-series PLCs: W339, CJ-series PLCs: W393).
CS/CJ/NSJ Series Instructions Reference Manual	W340	CS1□-CPU-□□□-□□ CJ1□-CPU-□□□-□□□ CJ2H-CPU-□□□-□□□ NSJ□□-□□□□□-□□□	Learning detailed information on programming instructions.	Instructions are described in detail. When programming, use this manual together with the Operation Manual (CS-series PLCs: W339, CJ-series PLCs: W393) and the Programming Manual (W394).
CS/CJ Series Programming Consoles Operation Manual	W341	CQM1H-PRO01 CQM1-PRO01 C200HPRO27+CS1WKS001	Learning the operating procedures of the Programming Consoles.	The operating procedures of the Programming Consoles are described. When programming, use this manual together with the Operation Manual (CS-series PLCs: W339, CJ-series PLCs: W393), the Programming Manual (W394), and the Instructions Reference Manual (W340).

Manual name	Cat. No.	Model	Applications	Description
CS/CJ/NSJ Series Communications Commands Reference Manual	W342	CS1G/H-CPU□□H CS1G/H-CPU□□-V1 CS1D-CPU□□H CS1D-CPU□□S CS1W-SCU□□-V1 CS1W-SCB□□-V1 CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1M-CPU□□ CJ1G-CPU□□ CJ1W-SCU□□-V1	Learning detailed specifications on the communications instructions addressed to CS/CJ-series CPU Units and NSJ-series PLCs.	1) C-mode commands and 2) FINS commands are described in detail. Refer to this manual for information on communications commands (C-mode commands and FINS commands) addressed to CPU Units. Note: This manual describes communications commands that are addressed to a CPU Unit. The communications path is not relevant. (The communications commands can be sent through the serial communications port of the CPU Unit, the communications port of a Serial Communications Board/Unit, or a communications port on another Communications Unit.)
SYSMAC CJ Series CJ3 CPU Unit Hardware USER'S Manual	W664	CJ3M-CPU□□	Learning the hardware specifications of CJ3 CPU Units.	The following information is provided on a CJ3 CPU Unit. • Introduction and features • Basic system configuration • Part names and functions • Installation and setting procedures • Troubleshooting Use this manual together with the Software User's Manual (Cat. No. W473).
CJ-series CJ2 CPU Unit Hardware User's Manual	W472	CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□	Learning the hardware specifications of CJ2 CPU Units.	The following information is provided on a CJ2 CPU Unit. • Introduction and features • Basic system configuration • Part names and functions • Installation and setting procedures • Troubleshooting Use this manual together with the Software User's Manual (Cat. No. W473).
CJ-series CJ2 CPU Unit Software User's Manual	W473	CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□	Learning the software specifications of CJ2 CPU Units.	The following information is provided on a CJ2 CPU Unit. • CPU Unit operation • Internal memory • Programming • Settings • Functions built into the CPU Unit Use this manual together with the Hardware User's Manual (Cat. No. W472).

Manual name	Cat. No.	Model	Applications	Description
Ethernet Units Operation Manual Construction of Networks	W420	CS1W-ETN21 CJ1W-ETN21	Learning how to use an Ethernet Unit.	Information is provided on the Ethernet Units. Information is provided on the basic setup and FINS communications. Refer to the Communications Commands Reference Manual (Cat. No. W342) for details on FINS commands that can be sent to CS/CJ-series CPU Units when using the FINS communications service.
Ethernet Units Operation Manual Construction of Applications	W421	CS1W-ETN21 CJ1W-ETN21	Learning how to use an Ethernet Unit.	Information is provided on constructing host applications, including functions for sending/receiving mail, socket service, automatic clock adjustment, FTP server functions, and FINS communications.
CS/CJ-series EtherNet/IP™ Units Operation Manual	W465	CJ2H-CPU6□-EIP CJ2M-CPU3□ CS1W-EIP21 CJ1W-EIP21	Learning how to use the built-in EtherNet/IP port of the CJ2 CPU Units.	Information is provided on the built-in EtherNet/IP port and EtherNet/IP Units. Basic settings, tag data links, FINS communications, and other functions are described.
NJ-series CPU Unit Hardware User's Manual	W500	NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	Learning the basic specifications of the NJ-series CPU Units, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NJ-series system is provided along with the following information on the CPU Unit. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection
NJ/NX-series CPU Unit Software User's Manual	W501	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	Learning how to program and set up an NJ/NX-series CPU Unit. Mainly software information is provided.	The following information is provided on a Controller built with an NJ/NX-series CPU Unit. • CPU Unit operation • CPU Unit features • Initial settings • Programming based on IEC 61131-3 language specifications
NJ/NX-series CPU Unit Built-in EtherNet/IP™ Port User's Manual	W506	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	Using the built-in EtherNet/IP port on an NJ/NX-series CPU Unit.	Information on the built-in EtherNet/IP port is provided. Information is provided on the basic setup, tag data links, and other features.

Manual name	Cat. No.	Model	Applications	Description
NJ/NX-series Troubleshooting Manual	W503	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	Learning about the errors that may be detected in an NJ/NX-series Controller.	Concepts on managing errors that may be detected in an NJ/NX-series Controller and information on individual errors are described.
NX-series NX102 CPU Unit Hardware User's Manual	W593	NX102-□□□□	Learning the basic specifications of the NX102 CPU Units, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NX102 system is provided along with the following information on the CPU Unit. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection
NX-series NX1P2 CPU Unit Hardware User's Manual	W578	NX1P2-□□□□	Learning the basic specifications of the NX1P2 CPU Units, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NX1P2 system is provided along with the following information on the CPU Unit. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection
NX-series NX1P2 CPU Unit Built-in I/O and Option Board User's Manual	W579	NX1P2-□□□□	Learning about the details of functions only for an NX-series NX1P2 CPU Unit and an introduction of functions for an NJ/NX-series CPU Unit.	Of the functions for an NX1P2 CPU Unit, the following information is provided. • Built-in I/O • Serial Communications Option Boards • Analog I/O Option Boards An introduction of following functions for an NJ/NX-series CPU Unit is also provided. • Motion control functions • EtherNet/IP communications functions • EtherCAT communications functions
CX-Programmer Operation Manual	W446	CXONE-AL□□CV4 CXONE-AL□□DV4	Learning about the CX-Programmer except for information on function blocks, ST programming, and SFC programming.	The operating procedures of the CX-Programmer are described.
Sysmac Studio Version 1 Operation Manual	W504	SYSMAC-SE2□□□	Learning about the operating procedures and functions of the Sysmac Studio.	Describes the operating procedures of the Sysmac Studio.

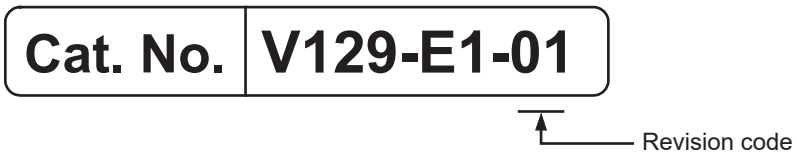
Terminology

The following terminology is used in this manual.

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.



Revision code	Date	Revised content
01	October 2026	Original production

1

Part Names and Functions

This section describes the names and functions of the various parts of an PT Unit.

1-1 Part Names 1-2

1-2 Part Specifications 1-6

1-2-1 Touch Panel 1-6
1-2-2 Serial Port A 1-7
1-2-3 Serial Port B 1-7
1-2-4 USB Type-A 1-8
1-2-5 USB Type-B 1-8
1-2-6 Ethernet Interface 1-8
1-2-7 DIP Switch 1-9
1-2-8 Reset Switch 1-9

1-1 Part Names

The appearance and names of the NS-B-series are as follows.

Precautions for Safe Use

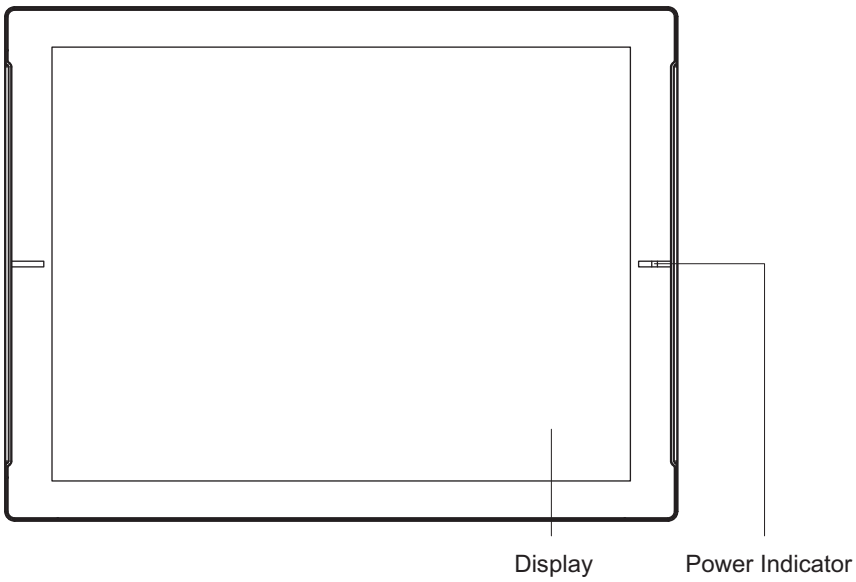
Confirm the safety of the system before turning ON or OFF the power supply, or pressing the reset button.

Additional Information

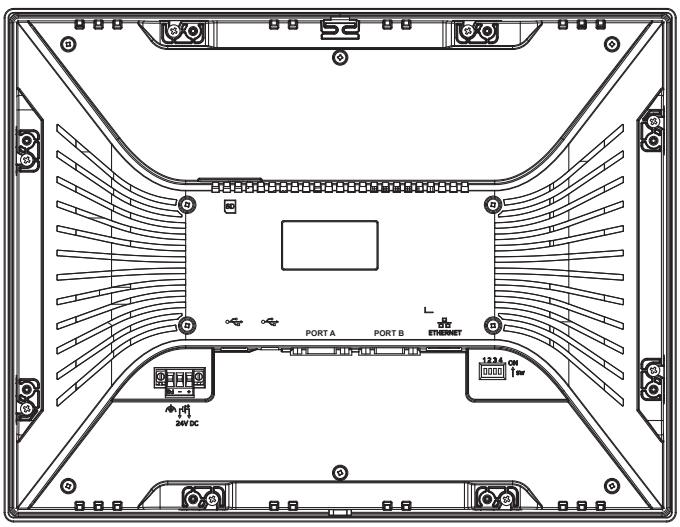
Some PT models display a screen close to the frame of a front sheet. When placing texts or figures at the edges of the screen (top, bottom, left, right), please be aware that there might be slight differences in appearance between on CX-Designer and an actual PT unit.

● NB15W-TW01B-V1-S model

Front view

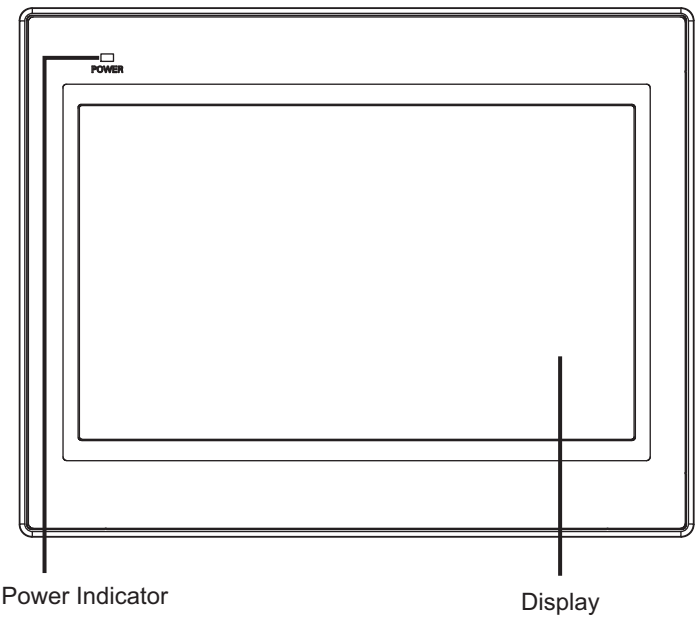


Back view

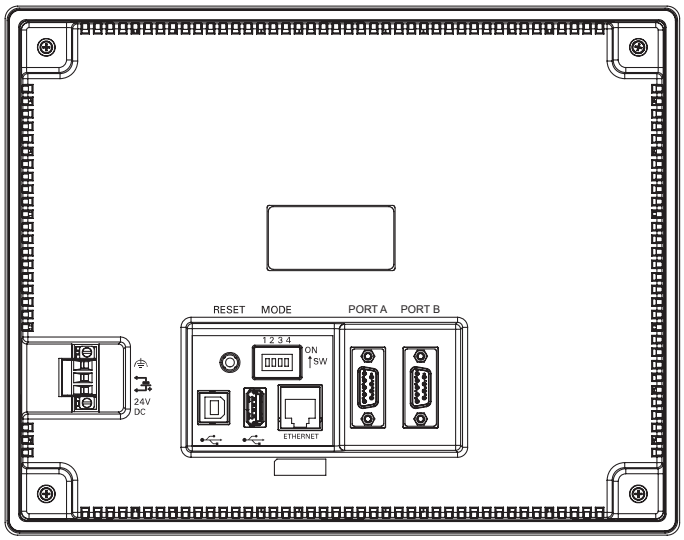


● NB10W-TW01B-V1-S model

Front view

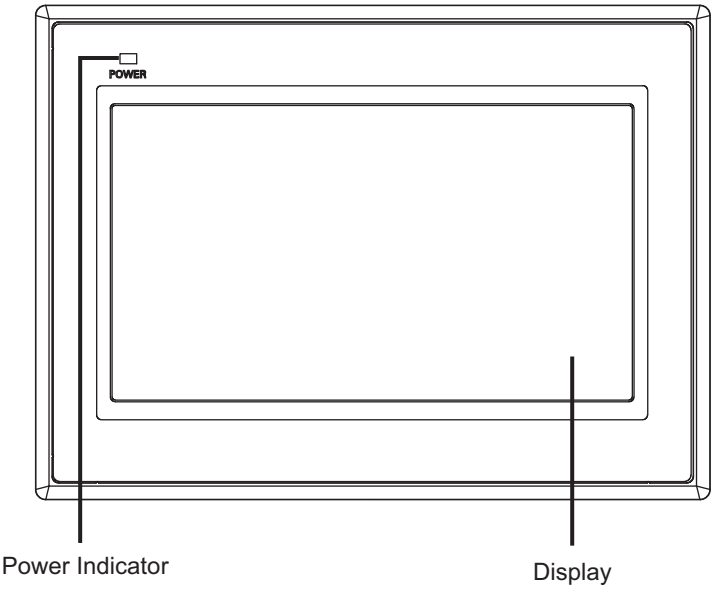


Back view

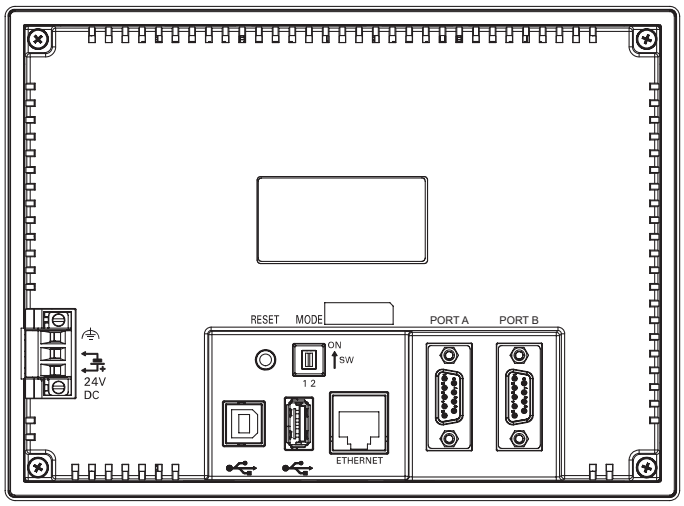


● NB7W-TW01B-V1-S model

Front view

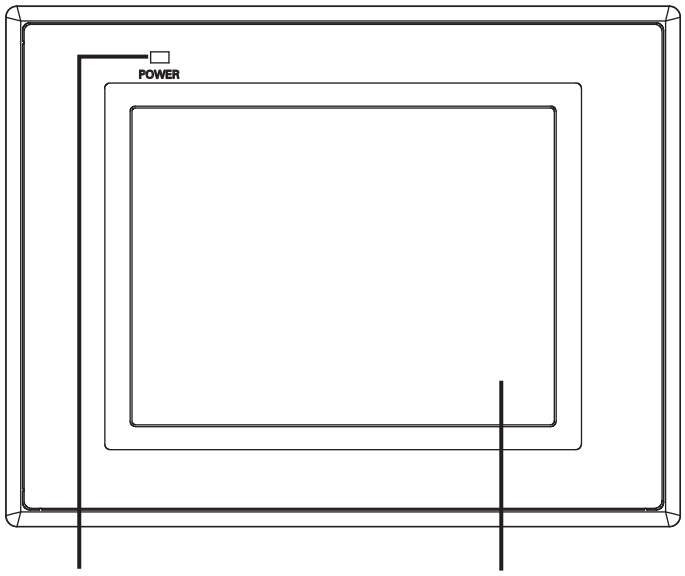


Back view

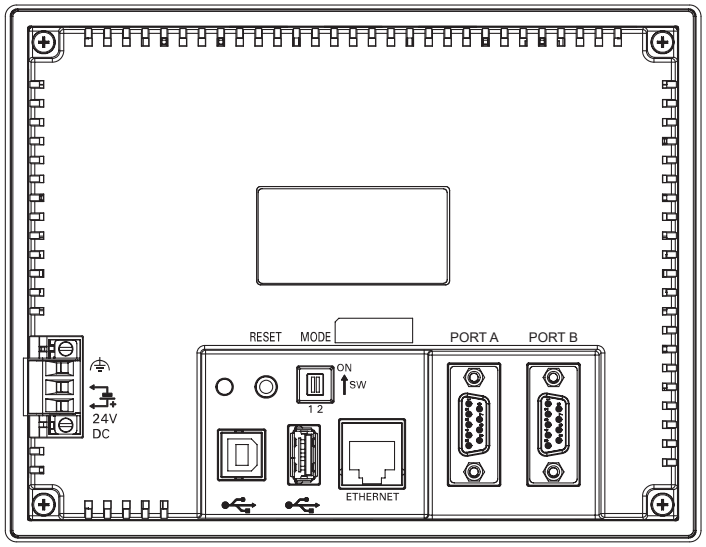


● NB5Q-TW01B-V1-S model

Front view



Back view



1-2 Part Specifications

The specifications for each part of the NS-B-series are as follows.

1-2-1 Touch Panel

Input operation can be carried out by means of the touch panel. By pressing the touch panel, the screens can be switched, and the contact information can be transmitted to the host.

⚠ WARNING

Do not use the input functions of the touch switch, etc. of the PT Unit, in applications that involve human life, in applications that may result in serious injury, or for emergency stop switches.



Never press at two or more points on the touch panel of the PT Unit at a time. Otherwise, it may activate a switch somewhere between the two points.



Precautions for Safe Use

- Do not press a touch switch with a force greater than 30N.
- Do not accidentally press the touch panel when the backlight is not lit or when the display does not appear. Make sure of the safety of the system before pressing the touch panel.
- Confirm the safety of the system before pressing the touch panel.
- Do not use hard or pointed objects to operate or scrub the screen, or the surface of the screen may be damaged.
- Signals from the touch switches may not be input if the switches are pressed consecutively at high speed. Confirm each input before proceeding to the next one.
- Deterioration over time can cause the touch points to move. If deviation of the touch points stands out, calibrate the touch panel periodically.

1-2-2 Serial Port A

Serial port A is a 9-pin D-type socket port. This port supports RS-232C communication function, making it connectable to a controller which features RS-232C function.

The pins are defined as follows:



Pins	Signals	I/O	Functions
1	NC	-	-
2	SD	O	Sending data
3	RD	I	Receiving data
4	RS(RTS)	O	Request to send*
5	CS(CTS)	I	Clear to send*
6	DC+5V	-	DC+5V output (Max. current: 250mA)
7	NC	-	-
8	NC	-	-
9	SG	-	Signal ground

* Pins 4 and 5 are not used, thus not compliant with RS or CS functions.

Precautions for Safe Use

When using the No. 6 pin of the serial communications port A connector for a voltage of DC+5V, make sure the supply equipment's current capacity is below 250 mA before using it. The DC+5V voltage output of the PT Unit is +5V±5%, and the maximum current is 250 mA.

1-2-3 Serial Port B

Serial port B is a 9-pin D-type socket port. This port supports RS-232C/RS-485/RS-422A communication function.

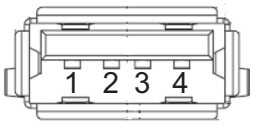
The pins are defined as follows:



Pins	Signals	I/O	Functions		
			RS-232C	RS-485	RS-422A
1	SDB+	I/O	-	-	Sending data(+)
2	SD	O	Sending data	-	-
3	RD	I	Receiving data	-	-
4	Terminal R1	-	-	Terminal resistor	
5	Terminal R2	-	-	Terminal resistor	
6	RDB+	I/O	-	Send/Receive data(+)	Receiving data(+)
7	SDA-	I/O	-	-	Sending data(-)
8	RDA-	I/O	-	Send/Receive data(-)	Receiving data(-)
9	SG	-	Signal ground		

1-2-4 USB Type-A

PT Unit is equipped with USB Type-A port. Through this port, USB memory can be connected to perform uploading, downloading and storage of related data. And its pins are defined as follows:



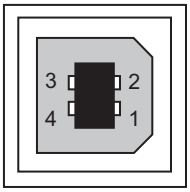
Pins	Signals	Functions
1	Vbus	Vbus +5V power supply output (Max. current: 150mA)
2	D-	Data -
3	D+	Data +
4	GND	Vbus ground

Precautions for Safe Use

When you get power supply from USB Type-A connector of the PT Unit, confirm the consumption current of connecting devices is below 150mA.
The voltage output of the PT Unit for the PT Unit is +5V±5%. The maximum current is 150mA.

1-2-5 USB Type-B

USB Type-B port can connect the USB port on PC side to perform the uploading and downloading. And its pins are defined as follows:

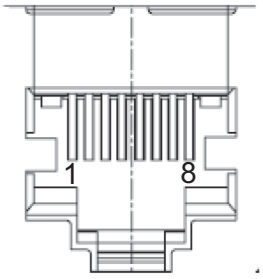


Pins	Signals	Functions
1	Vbus	Vbus
2	D-	Data -
3	D+	Data +
4	GND	Vbus ground

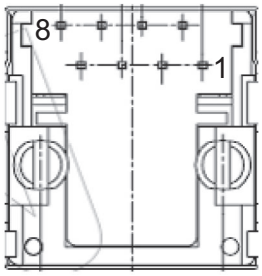
1-2-6 Ethernet Interface

PT Unit is equipped with Ethernet Interface, which is adaptive RJ-45 type interface with the transmission rate of 10M/100M. It can be connected with PC to perform the uploading and downloading of the project and can also be used to realize the communication with the controller supporting the Ethernet communication. And its pins are defined as follows:

TOP



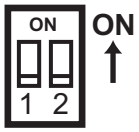
Bottom



Pins	Signals	Functions
1	TD+	Sending data +
2	TD-	Sending data -
3	RD+	Receiving data +
4	---	Not used
5	---	Not used
6	RD-	Receiving data -
7	---	Not used
8	---	Not used

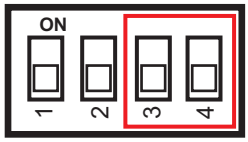
1-2-7 DIP Switch

NB5Q/NB7W-TW□□B-V1-S has two DIP switches (SW1 and SW2), and NB10W/NB15W-TW□□B-V1-S has four DIP switches (SW1 to SW4). The functions of SW1 and SW2 are common to all models. The settings and corresponding operating modes are as follows:



SW1	SW2	Operation mode	Details
ON	ON	Automatic Download Mode	Downloads the project automatically from Removable Media when the PT Unit starts up.
OFF	ON	Automatic Upload Mode	Uploads the project automatically to Removable Media when the PT Unit starts up.
ON	OFF	Manual Transfer Mode Recovery Mode	Checks the removable media and starts the recovery mode or Memory Card transfer function when the PT Unit starts up.
OFF	OFF	User Project Mode	Executes the project stored in the screen data area after the PT Unit starts up.

As mentioned above, SW1 and SW2 of NB10W/NB15W-TW□□B-V1-S are the same as the settings and operating modes assigned to SW1 and SW2 of NB5Q/NB7W-TW□□B-V1-S (see table above). The table below describes the functions assigned to SW3 and SW4 of NB10W/NB15W-TW□□B-V1-S.



Switch No. (corresponding model(s))	Status	Descriptions of Function
SW3	Reserved	
SW4	Reserved	

1-2-8 Reset Switch

When pressing the reset switch located on the back side of the PT Unit, the system will be rebooted.

2

Installing the PT Unit and Connecting Peripheral Devices

This section describes the methods used to install the PT Unit and connect peripheral devices.

2-1 Installing the PT Unit 2-2
- 2-1-1 Installation environment 2-2
- 2-1-2 Installation onto the Operation Panel 2-3
- 2-1-3 Connecting the Power Supply 2-5
- 2-1-4 Grounding Wiring 2-6

2-2 Starting the PT Unit 2-7
- 2-2-1 Operation at Startup 2-7
- 2-2-2 Starting the PT Unit for the First Time 2-8

2-3 Connecting of PT Unit with PC 2-10
- 2-3-1 Connecting by USB 2-10
- 2-3-2 Connecting by Ethernet 2-11

2-4 Using Removable Media 2-12
- 2-4-1 Installation 2-13
- 2-4-2 Replacing the System Program 2-14
- 2-4-3 Transferring Data with Removable Media 2-14
- 2-4-4 If an Error Occurs During Data Transfer with Removable Media 2-19

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 environment

When mounting the PT Unit onto the operation panel, pay attention to the following precautions.

⚠ WARNING

Always ensure that the personnel in charge confirm that installation, inspection, and maintenance were properly performed for the PT Unit.

“Personnel in charge” refers to individuals qualified and responsible for ensuring safety during machine design, installation, operation, maintenance, and disposal.



Ensure that installation and post-installation checks are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.





Precautions for Correct Use

- Do not install the product in any of the following locations:
  Locations subject to rapid changes in temperature
  Locations subject to temperatures or humidity outside the range specified in the specifications
  Locations subject to condensation as the result of high humidity
  Locations subject to corrosive or flammable gases
  Locations subject to strong shock or vibration
  Locations outdoors subject to direct wind and rain
  Locations subject to strong ultraviolet light
  Locations subject to dust
  Locations subject to direct sunlight
  Locations subject to splashing oil or chemicals
- Take appropriate and sufficient countermeasures when the product is used in the following locations:
  Locations subject to static electricity or other forms of noise
  Locations subject to strong electric field or magnetic field
  Locations close to power supply lines
  Locations subject to possible exposure to radioactivity



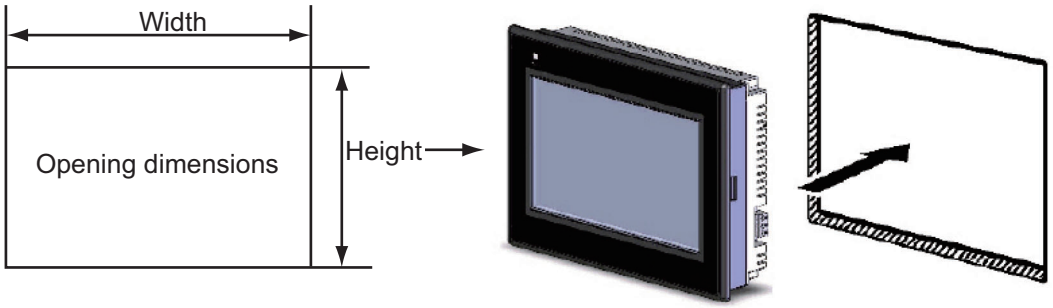
Precautions for Safe Use

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

2-1-2 Installation onto the Operation Panel

Install the PT Unit by embedding it into the operation panel.
Use the panel mounting brackets and Phillips screwdriver 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.

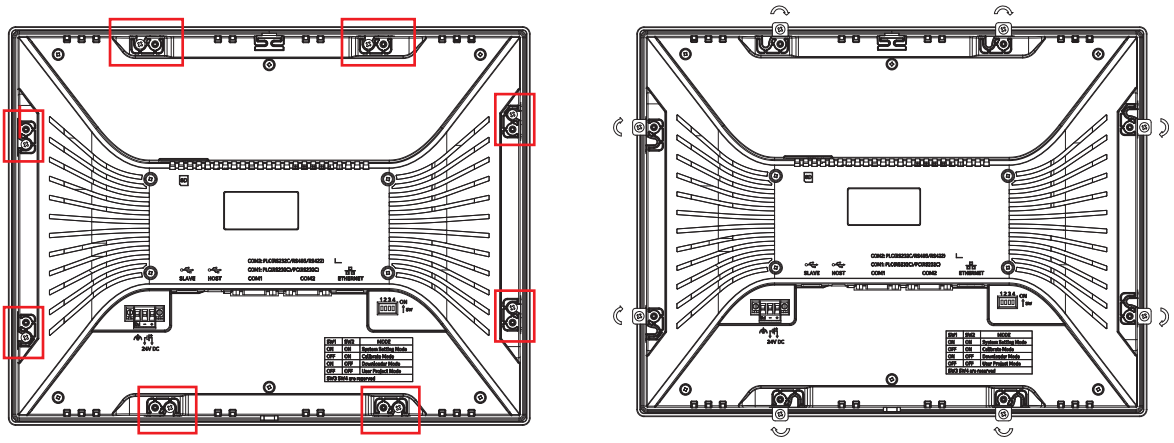


Models	Opening Dimension (W×H mm)
NB15W-TW01B-V1-S	345.0(+0.5/-0)x261.0(+0.5/-0)
NB10W-TW01B-V1-S	258.0(+0.5/-0)×200.0(+0.5/-0)
NB7W-TW01B-V1-S	191.0(+0.5/-0)×137.0(+0.5/-0)
NB5Q-TW01B-V1-S	172.4(+0.5/-0)×131.0(+0.5/-0)

2 Secure the PT Unit as shown below.

● NB15W-TW01B-V1-S

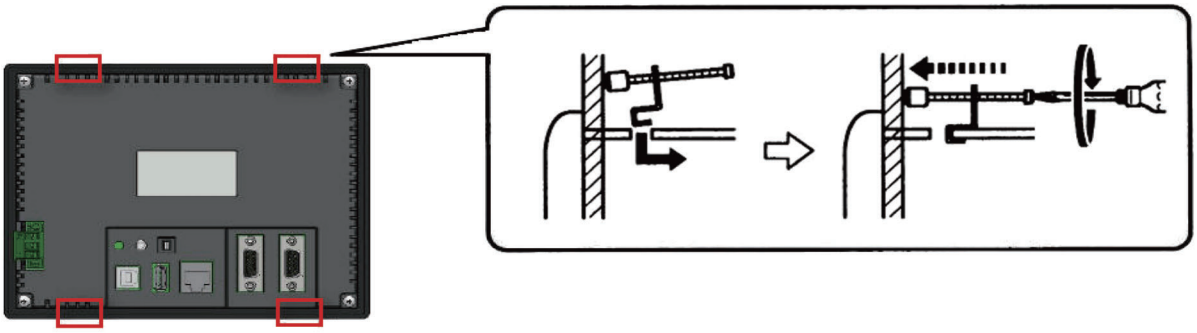
Turn the mounting screws of the PT Unit to the corresponding positions on the panel in the directions indicated by the arrows, and use a Phillips screwdriver to secure the PT Unit to the panel.



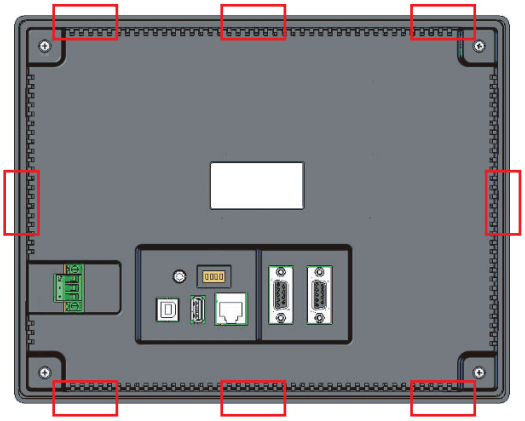
NB15W-TW01B-V1-S

● NB5Q/NB7W/NB10W-TW□□B-V1-S

Mount the panel mounting brackets to the places indicated by red rectangles on the back side of the PT Unit. Insert the feet of the brackets into the square holes of the PT Unit, and then use a Phillips screwdriver to secure the PT Unit to the panel while pulling it forward gently.



NB5Q/NB7W-TW01B-V1-S



NB10W-TW01B-V1-S

Precautions for Safe Use

- Do not let metal particles enter the Units when preparing the panel.
- The mounting panel must be between 1.6 and 4.8 mm thick. Tighten the Mounting Brackets evenly to a torque of between 0.5 and 0.6 N·m to maintain water and dust resistance. If the tightening torque exceeds the specified value, or the tightening is not even, deformation of the front panel may occur. What is more, make sure the panel is not dirty or warped and that it is strong enough to hold the Units.

2-1-3 Connecting the Power Supply

Precautions for Safe Use

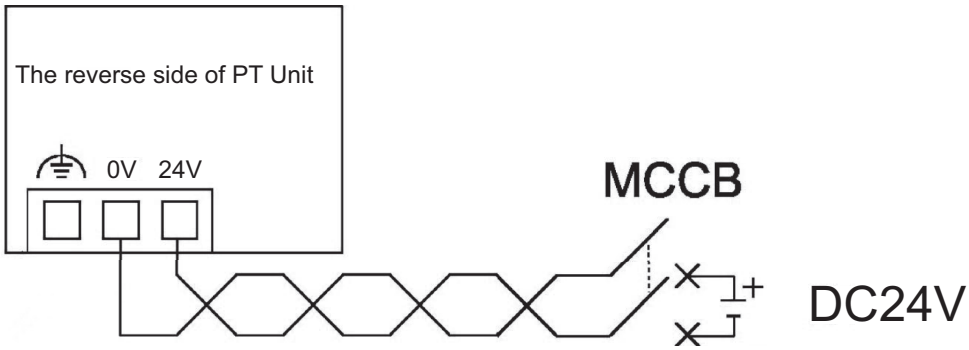
- Do not connect an AC power supply to the DC power terminals.
- Use a DC power with a slight voltage fluctuation and reinforced or double insulation, and that will provide a stable output even if the input is momentarily interrupted for 10 ms. Rated Power Supply Voltage: DC 24 V (Allowable range DC 20.4 ~ 27.6 V)

● Power Supply

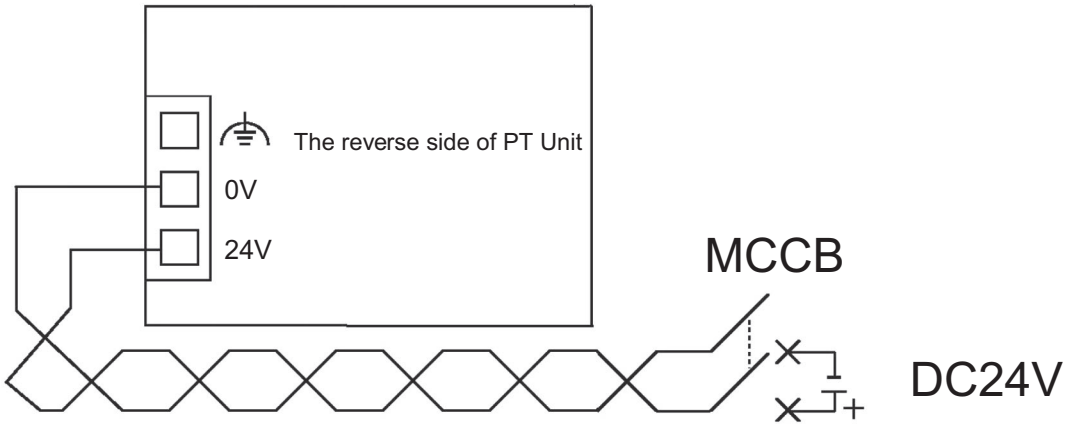
The connectable power supply specifications are as follows: figure out a suitable power supply specification so as to satisfy the requirement for power supply capacity.

Models	Rated Voltage	Allowable Voltage Range	Power
NB15W-TW01B-V1-S	DC24V	DC20.4V to 27.6V	14W
NB10W-TW01B-V1-S			8W
NB7W-TW01B-V1-S			7W
NB5W-TW01B-V1-S			7W

● NB15W-TW01B-V1-S



● NB5Q/NB7W/NB10W-TW01B-V1-S



Precautions for Safe Use

- Before connecting the power supply to the PT Unit, mount the cable on the terminal block. Make the connection by using terminal screws crimping on a twisted-pair cable with a crimping range of 12~26 AWG, and only 6.5 mm of insulation peel of the cable needs to be peeled off. Tighten the terminal screws at a torque of between 0.3 and 0.5 N·m. Make sure the screws are properly tightened.

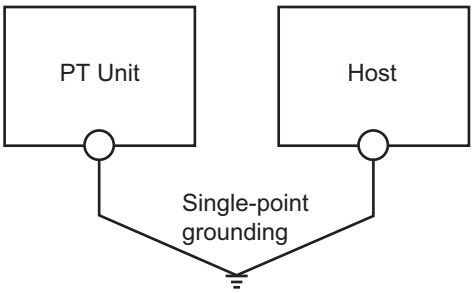
2-1-4 Grounding Wiring

The PT Unit has a functional grounding terminal ( ).

Arrange the wiring according to the following conditions.

1 When a potential difference occurs between the PT Unit and the host, arrange the grounding as illustrated. If the distance is too long to realize a single-point grounding, do not ground the of the PT Unit.

2 When the PT Unit, and noise source equipment such as motors and inverters, etc. are installed on the same panel, do not ground the of the PT Unit.



Precautions for Safe Use

To prevent malfunctions caused by noise, ground the Unit correctly.

2-2 Starting the PT Unit

Check that the hardware is connected properly, turn ON the power to the PT Unit, and then start the PT Unit.

Use the following procedure to start the PT Unit.

2-2-1 Operation at Startup

When the power is ON or the PT Unit is reset, the PT Unit will operate as follows:

Indicator lights green

Immediately after the power is turned ON, the indicator will light green.

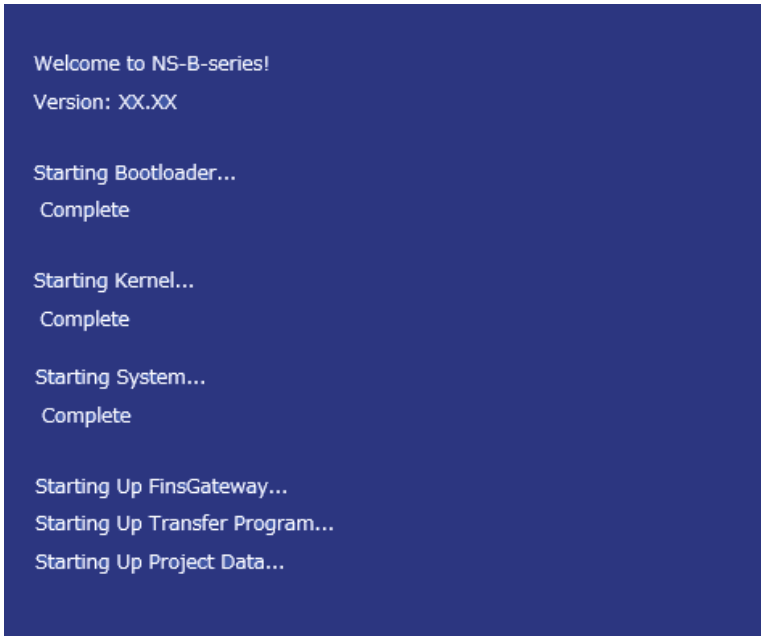
The file system will be checked and the system recovered if the power was turned OFF while a file was being written in previous operation, or if the battery capacity was low and drive safety information from the system program area screen data area could not be saved.

Startup message is displayed

A message about the startup status will be displayed.

If an error occurs, the PT Unit will stop startup procedures and display a message. (Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)*.

If an error occurs that allows startup to continue, a warning will be displayed. When a warning is displayed, the PT Unit will enter standby state and wait for touch input. Check the message and then touch the screen. The PT Unit will continue with startup procedures.



PT starts operating

The PT Unit goes into RUN mode and starts operating according to the project in the PT Unit.

When the PT Unit is connected using communications conditions other than the set conditions, a message "Connecting…" will be displayed at the bottom right of the screen, and the PT Unit will be in standby status until normal connection is established.

To change the communications settings, display the System Menu and change the settings.

Precautions for Safe Use

Confirm the safety of the system before turning the power ON and OFF or pressing the reset switch.

Additional Information

If tags are used in the project in the NS-B-series PT Unit, tags will be verified before operation is started. Refer to *3-11 Verifying Tags* on page 3-69 for details.

2-2-2 Starting the PT Unit for the First Time

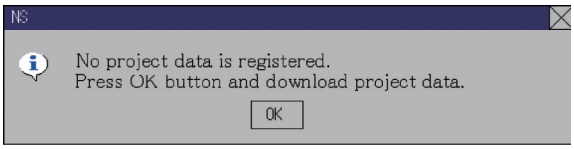
Always perform the following operations when turning ON the PT Unit for the first time after purchase.

- Language selection.
- Set the date and time.

Operate according to the following conditions.

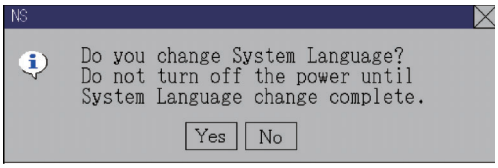
1 **Turn on the power supply of the PT Unit.**

The following error message will be displayed. Press the **OK** Button.



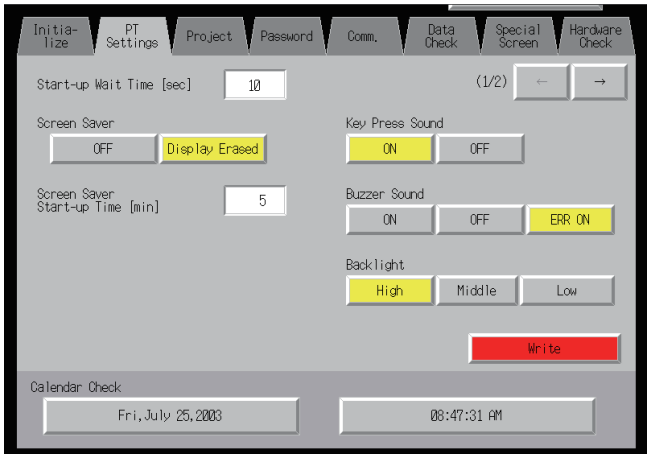
2 Press the **Initialize** Tab.

The System Menu will be displayed. The dialog boxes and System Menu are set for English-language displays at the factory. The language can be changed to Japanese at this point if desired. To change to Japanese, select it and then press the **Write** Button. The following message will be displayed. Press the **Yes** Button. Do not turn OFF the power supply until the language change process has been completed.



3 Select the **PT Settings** Tab.

Set the time and date.



4 Press the date display area under the heading *Calendar Check*.

A dialog box will be displayed. Input the date in yyyy/mm/dd format.

Example: Input January 1 2026 as **2026.1.1**.



5 Press the time display area under the heading *Calendar Check*.

A dialog box will be displayed. Input the time using a 24-hour clock in hours/minutes/seconds format.

Example: Input 06:01:01 p.m. as **18.1.1**.

The **Write** Button will be displayed, but the time and date settings will be enabled immediately after they have been input in the dialog box.

This completes the procedure required to start the PT Unit for the first time. Now transfer the project data. Refer to *2-4 Using Removable Media* on page 2-12 and *Transferring Data to the PT in the CX-Designer's Online Help*.

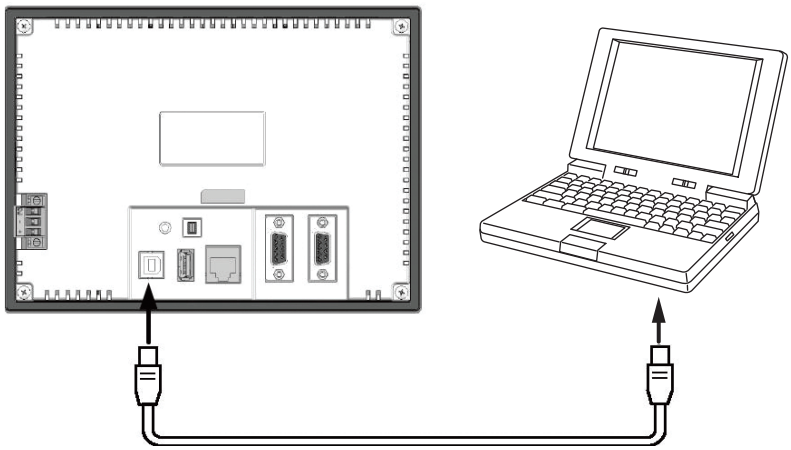
2-3 Connecting of PT Unit with PC

In order to transmit the project established by the CX-Designer to the PT Unit, the PT Unit needs to be connected to a PC with USB or Ethernet cable.

2-3-1 Connecting by USB

Use the USB transmission cable to connect the USB Type-A port on PC side with the USB Type-B port on PT Unit. As to the USB connection, there are some preparations and restrictions that need to be done or heeded. Refer to the following content to ensure a correct connection.

Take NB5Q-TW01B-V1-S as example:



● USB driver for the CX-Designer

A USB driver needs to be installed in the PC for the purpose of transmitting screen data through USB.

The USB driver is installed when CX-One or Sysmac Studio is installed.

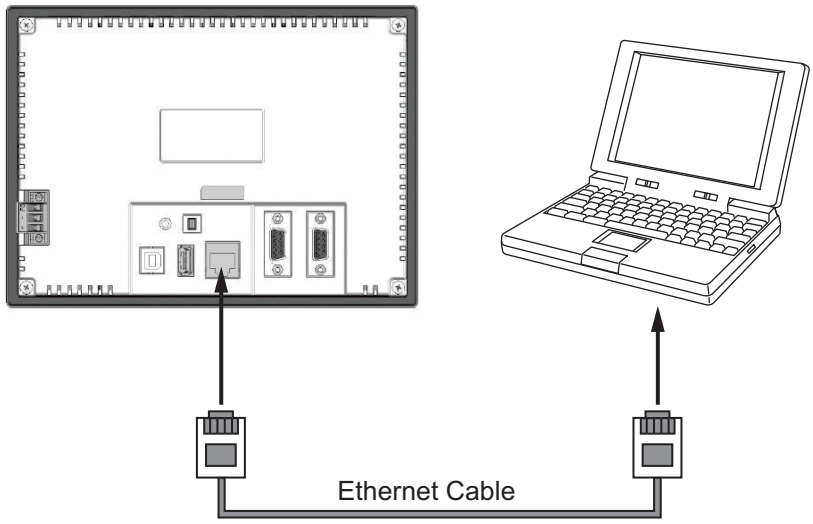
Precautions for Safe Use

- Commercially available and the recommended USB HUBs are different from the general specifications of the PT Unit. The Unit may not function well in an environment subject to noise, static electricity. Therefore, when using a USB HUB, employ sufficient noise and static electricity insulation measures, or install it at a site free of noise or static electricity.
- Do not connect a USB connector to any device that is not applicable.
- Before connecting a USB connector to a device, make sure that the device is free of damage.

2-3-2 Connecting by Ethernet

PT Unit with model number of NB□□□-TW01B-V1-S can perform the uploading & downloading of data (such as user project and recipe etc.) and the updating of system program through connecting the Ethernet cable with RJ45 connectors on both ends and the network interface on PC side.

Take NB5Q-TW01B-V1-S as example:



● Communication conditions

Select the corresponding download method by clicking PT - Transfer - Transfer Setting of the CX-Designer. For details, refer to Transfer Data to PT - Transfer Setting of the CX-Designer help.

2-4 Using Removable Media

(a) Removable media can be used with the PT Unit. History files can be stored in Removable media as CSV files. There are four different types of history file, as follows:

- Alarm/event history: Stores alarm/event history data that has been registered by CX-Designer.
- Data log: Stores trend data.
- Operation log: Stores screen operation log data.
- Error log: Stores error history data for when macros are executed.

The history data is normally saved in non-volatile memory that is backed up in the PT, but can also be saved in CSV file format. When history data is saved as a CSV file, it is stored in the Memory Card.

The CSV files containing history data are saved in a user-specified folder in the log folder created in the Memory Card.

(b) The following data can be transferred to the Memory Card.

- System programs (the programs required to operate the PT Unit, such as for communications and fonts)
- Project (data used in the PT Unit display)

There are three methods for transferring data, as follows:

- Automatic download (Transfers data from the Memory Card to the PT Unit.)
- Automatic upload (Transfers data from the PT Unit to the Memory Card.)
- Manual transfer (Direction for data transfer is selected manually.)



Precautions for Correct Use

Use a Memory Card recommended by OMRON. Incorrect operation may occur if a non-recommended memory card is used. Refer to *A-6 List of Options* on page A-14 for the products recommended by OMRON.

For details on transferring data with the computer (CX-Designer), refer to Transferring Data to the PT Unit in the CX-Designer's Online Help.

(c) The data created in Data Block Tables can be saved as CSV files in DBLK folder on a Memory Card.

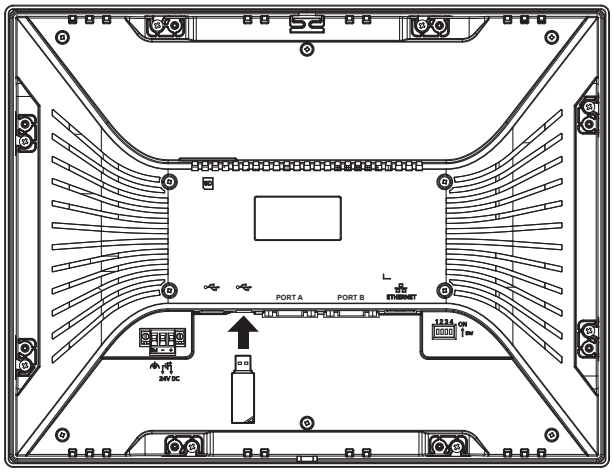
(d) The contents of the PT Unit's internal memory can be saved to Removable media using macros.

The contents of Removable media can also be written to the PT Unit's internal memory.

2-4-1 Installation

NB15W-TW01B-V1-S

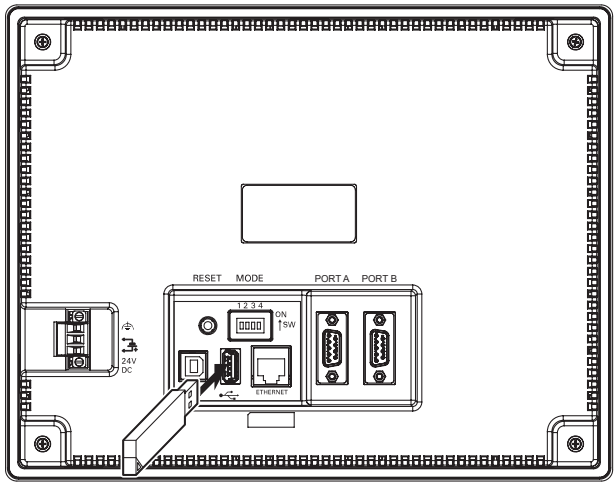
1 Insert the Removable Media into the USB Type-A port on the rear panel of the PT Unit as shown in the figure below.



2 Push the Removable Media firmly all of the way in.

Other than NB15W-TW01B-V1-S

1 Insert the Removable Media into the USB Type-A port on the rear panel of the PT Unit as shown in the figure below.



2 Push the Removable Media firmly all of the way in.

Removing the Memory Card

1. Make sure that the indication of Memory Card on the Initialize Tab of the System Menu is Ready to Remove.

   If the indication is not Ready to Remove, refer to *3-2 Initializing and Saving Data and Removing the Removable Media* on page 3-11 and then perform the operation so that it becomes Ready to Remove.

2. Remove the Removable Media.

2-4-2 Replacing the System Program

The system program in the PT can be replaced or upgraded to a higher version. The method to replace the system program is as follows:

- Using a recovery/upgrade program

Using a Recovery/Upgrade Program

For details on the procedure to replace the system program using a recovery/upgrade program, refer to ***Programs - OMRON - CX-One*** or ***Sysmac Studio - CX-DesignerV4 - How to update or recover the system program*** from the Windows Start Menu.

Restrictions on System Program Replacement

Starting the PT Unit may become impossible if the system program replacement procedure is not performed correctly. Observe the following precautions.

- When upgrading the system program (or replacing it with a previous version), use the recovery/update program at least the first time.

2-4-3 Transferring Data with Removable Media

Using a Memory Card with the PT Unit allows system programs (programs that are required to operate the PT Unit, such as those for communications and fonts) and project to be transferred to and from the PT Unit.

There are two ways to transfer the data. The data can be transferred using the system menu or by setting the DIP Switch on the back of the NS-B-series PT.

When project is transferred and modified frequently, it is convenient to transfer the data from the System Menu. Use the DIP Switch on the back of the PT instead of the screen operation to save screen data when the display screen is damaged. For details on the System Menu's *Memory Card Transfer* operation, refer to *3-8-7 Memory Card Transfers* on page 3-59.

This manual focuses on the PT Unit's rear-panel DIP switch settings. Three data-transfer operations can be set on the DIP switch: automatic download (transfers data from the Memory Card to the PT Unit), automatic upload (transfers data from the PT Unit to the Memory Card), or manual transfer (user selects whether to download or upload).

Precautions for Safe Use

- Before transferring data, check that the system programs and project types match those in the PT.
- Always reset the PT or turn ON the power again after changing the DIP switch setting.
- Do not perform the following operations while accessing the Memory Card. The data may be damaged and the Memory Card may need to be formatted.
  - Turn OFF the power to the PT.
  - Press the PT reset switch.
  - Remove the Memory Card.
- Do not remove the Memory Card while power is being supplied to it.

If the PT Unit system is damaged due to the power being turned OFF while a file is being written, or other reason, using normal downloading to replace the system programs may not be possible. For details on troubleshooting, refer to *2-4-4 If an Error Occurs During Data Transfer with Removable Media* on page 2-19.

Data Transfer Security

With NS-B-series PTs verification of a security password can be required to transfer data. This password can be used to prevent the project data from being stolen from the PT Unit or overwritten in the PT Unit.

The security password is set from the CX-Designer. Refer to information on transferring the project to the PT Unit in the online help of the CX-Designer for the setting procedure.

Additional Information

- The target bank when automatically uploading or automatically downloading with the NS-B-series is fixed to bank 1.
- Banks are automatically created under the following conditions.
  - When data is transferred to the Memory Card using the CX-Designer.
  - When data is transferred (uploaded) from the PT Unit.
- When data has already been stored in the banks of the Memory Card and uploading is executed, the previous data in the specified bank will be deleted. Always check the data stored in the banks before uploading.
- If the \BANK□\DATA and \BANK□\SYSTEM are created manually in the Memory Card, and used for purposes other than transferring data, when uploading is performed, the data in the folders will be deleted, and the data in the PT will be copied to the folders. Therefore, do not use \BANK□\DATA or \BANK□\SYSTEM when creating folders in the Memory Card.
- Set all pins to OFF when using the PT for normal operations.

Automatic Download

An automatic download transfers system programs and project from the Memory Card to the PT Unit.

For the DIP switch settings for automatically downloading, refer to *1-2-7 DIP Switch* on page 1-9.

Use the following procedure to automatically download data.

1 Turn OFF the power to the PT Unit.

2 Set the DIP switch.

3 Insert Removable Media containing the data required for bank 1 into the PT Unit.

4 Turn ON the power to the PT Unit.

The system programs and project will be written to the PT Unit.

5 When a short buzzer beep starts to sound regularly, turn OFF the power.

6 Remove the Memory Card.

7 Turn OFF all the DIP switch pins.

8 Turn ON the power.

A warning message will not be displayed when automatic download is executed even if the PT model, version, and language for the system programs and project that are stored in the PT Unit are different from those that are stored in the Removable Media.

Always check carefully that the PT Unit model and Memory Card details match before transferring data automatically.

When data transfer security has been set for the project data stored in the PT Unit to protect the project data from unauthorized data transfers, an automatic download will not be performed. To download the data, use the manual transfer procedure described in *Manual Transfer* on page 2-17, below.

Automatic Upload

An automatic upload transfers system programs and project from the PT Unit to the Removable Media.

For the DIP switch settings for automatically uploading, refer to *1-2-7 DIP Switch* on page 1-9.

Use the following procedure to automatically upload data.

1 Turn OFF the power to the PT Unit.

2 Set the DIP switch.

3 Insert the Memory Card into the PT Unit.

4 Turn ON the power to the PT Unit.

The system programs and project will be written to the Removable Media.

5 When a short buzzer beep starts to sound regularly, turn OFF the power.

6 Remove the Removable Media.

7 Turn OFF all the DIP switch pins.

8 Turn ON the power.

A warning message will not be displayed when automatic upload is executed even if the PT model, version, and language for the system programs and screen data that are stored in the PT Unit are different from those that are stored in the Removable Media.

Always check carefully that the PT model and Memory Card details match before transferring data automatically.

When data transfer security has been set for the project data stored in the PT Unit to protect the project data from unauthorized data transfers, an automatic upload will not be performed. To upload the data, use the manual transfer procedure described in *Manual Transfer* on page 2-17, below.

Manual Transfer

Use screen operations to select the direction (download or upload), contents (Project, Project & System, or System), and banks.

Use one of the following procedures to manually transfer data.

- Turn OFF the power to the PT Unit, set the DIP switch to manual transfer mode, and turn ON the power. For the DIP switch settings for manually transferring, refer to *1-2-7 DIP Switch* on page 1-9.
- Execute *Memory Card Transfe*r from the *Special Screen Tab Page* of the System Menu. Refer to *3-8-7 Memory Card Transfers* on page 3-59 for details.

Use the following procedure to manually transfer data mentioned above in step 1.

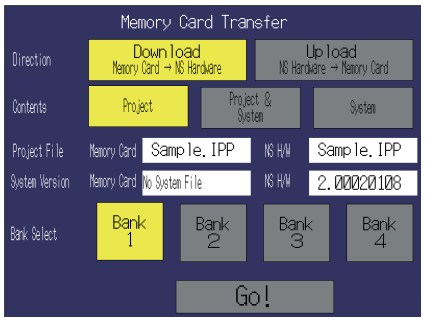
1 Turn OFF the power to the PT Unit.

2 Set the DIP switch to manual transfer mode.

3 Insert the Memory Card into the PT Unit.

4 Turn ON the power.

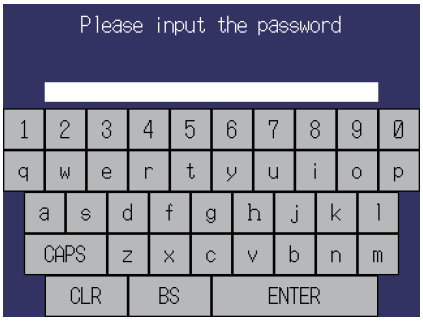
5 The following screen will be displayed on the PT Unit.



6 Specify the direction of the transfer (download or upload), the transfer contents (project, project and system program, or system program), and bank.

The IPP file name and system version that are stored in both the specified bank of the Memory Card and the PT Unit will be displayed in the Project File and System Version fields. After confirming the details, press the **Go** Button.

7 When data transfer security has been set for the project data stored in the PT Unit to protect the project data from unauthorized data transfers, the following password-entry screen will be displayed. Input the password and press the **ENTER** Button.



8 A message confirming the transfer will be displayed. Press the **OK** Button to execute the specified data transfer operation.

When downloading, the screen data previously stored in the PT Unit will be deleted. Also, specify whether or not to delete the log data.

Precautions for Correct Use

Always clear the log data for the following.

- When changing settings related to alarms, events, or the data logs.
- When transferring a different project to the PT.

Additional Information

- A warning message will be displayed if the PT model, system program/screen data versions, or language stored in the PT do not match the corresponding data stored in the Memory Card. Press the **Yes** Button to continue transferring the data.
- The uploading/downloading screen will be displayed while data is being transferred. A screen indicating that the transfer has completed will be displayed when the transfer has finished. (If an error occurs, a transfer error screen will be displayed. Refer to *2-4-4 If an Error Occurs During Data Transfer with Removable Media* on page 2-19 if an error occurs.)

9 When the screen indicating that the transfer has completed is displayed, turn OFF the power.

10 Set all of the DIP switches to OFF.

11 Turn ON the power.

The system settings cannot be changed for the upload operation.

2-4-4 If an Error Occurs During Data Transfer with Removable Media

During Automatic Transfer

The indicator on the front panel will flash red if an error occurs during data transfer. Check the following items if an error occurs.

- Is the Memory Card inserted into the PT Unit?
- Does bank 1 exist in the Removable Media? (During downloading)
- Is the size of the transfer data greater than the free space in the PT Unit or Memory Card?

Check these items before transferring data again.



Additional Information

An error message will not be displayed if an error occurs.

During Manual Transfer

If an error occurs during data transfer, a transfer error screen will be displayed.

Check the following items for each message displayed.

Error message	Check item
Memory Card Error Could not recognize a Memory Card. Check the Memory Card and reset the PT Hardware.	Is the Memory Card inserted into the PT Unit? Is the Memory Card damaged?
Project Transmission Error Transmission Failed. Check the Memory Card and reset the PT Hardware.	Was the Memory Card removed during data transfer? Is the free space on the Memory Card insufficient? Is the Memory Card damaged? Does the screen data volume exceed the memory capacity of the PT Unit?
System Transmission Error Transmission Failed. Check the Memory Card and reset the PT Hardware.	
Cannot find source data. Are you sure to continue Downloading/Uploading?	Does the transfer source directory or file exist? (Note: If the **Yes** Button is pressed and data is transferred, the previous data at the transfer destination will be deleted.)
The password is incorrect. Check the password. Reset the PT.	Check whether the password is correct.

After checking the message, reset the PT Unit, and transfer the data again.

System Program Recovery/Update

It may not be possible to replace the system program using a normal download if the PT Unit's system has been damaged, e.g., if the power was turned OFF while a file was being written.

Use the following procedure to operate the PT Unit if system program replacement is not possible or the system program is damaged and the PT Unit does not start.

Select ***Programs - Omron - CX-One*** or ***Sysmac Studio - CX-DesignerV4 - How to recover or update the system program*** from the Windows Start Menu.

3

System Menu Operations

This section describes the methods for operating the System Menu.
This section also provides details on functions that are useful for NS-B-series PT applications and for system maintenance.

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3-1 Operating Modes and System Menu

The System Menu can be used to set various PT settings by operating the touch switches on the screen. The following diagram shows the menu configuration in the System Menu. Refer to *3-1-4 Using the System Menu* on page 3-8 for details on System Menu operations.

3-1-1 Mode Configuration

The NS-B-series PTs have the following operating modes.

Mode	**System Menu**		Displays the System Menu, and sets each of the settings for the PT Unit.
	RUN mode		Displays screens, allows data input, and communicates with each device.
	TRANSFER mode	**Data transfer with CX-Designer**	Uploads and downloads project and system programs between the CX-Designer and PT Unit.
		Removable Media transfer	Uploads and downloads project and system programs via the Removable Media.
	ERROR mode	**Fatal error**	Stops operating and displays error message.
		Non-fatal error	Continues operating without displaying error message.

3-1-2 System Menu Configuration

The System Menu items and functions are as follows:

System Menu	**Initialize** **Save**	Initializes or saves operation log, alarm/event histories, data log, error log, and formats project, initializes internal holding memories, provides a function to remove the Removable Media, and sets the system language.
	PT	Sets the system startup waiting time, screen saver, key press sound, buzzer, backlight, and calendar check. Also makes the alarm monitor registration method.
	Project	Displays the project title, number of labels, history recording method, and addresses allocated to the system memory. Displays and sets the screen numbers displayed at startup time.
	Password	Sets the password functions (including passwords with levels). Also sets and changes passwords.
	Comm	Sets the communications conditions for serial ports A and B, and Ethernet.
	Data Check	Checks the stored screen contents without communications.
	Special Screen	Displays the operation log, alarm history, error log, communication test, version display, and capture data. Also lists devices connected to the USB port.
	Hardware Check	Performs a hardware check, such as checking that the touch panel is operating properly.

3-1-3 Overview of Menu Items

The following tables show the eight menu items and provide an overview of their contents.

● Initialize Tab

Item	Function	Page
Screen Data Area	Formats project.	*3-2-1 Screen Data Area Format* on page 3-13
Alarm/Event History	Initializes or saves in a CSV file in the Removable Media the alarm/event history data that has been generated during operation.	*3-2-2 Initializing or Saving the Alarm/Event History* on page 3-14
Data Log	Initializes or saves in a CSV file in the Removable Media the data log data that registers changes to the contents of an address, or saves in the Removable Media as a CSV file.	*3-2-3 Initializing and Saving Data Log* on page 3-15
Operation Log	Initializes or saves in a CSV file in the Removable Media the operation log data, such as that for functional object operations and screen switching.	*3-2-4 Initializing and Saving the Operation Log* on page 3-16
Error Log	Initializes or saves in a CSV file in the Removable Media the error log data that is generated by macro errors.	*3-2-5 Initializing and Saving the Error Log* on page 3-18
Select language	The language to display system menus, input keypads, error messages, etc., can be set to Japanese, English, Italian, Spanish, French, German, or Chinese (traditional or simplified).	*3-2-6 Language Selection* on page 3-19
Removable Media	The Removable Media in the PT Unit can be removed.	*3-2-7 Removing the Removable Media* on page 3-20
Internal Holding Memory ($HB/$HW)	Initializes the Internal Holding Bit/Word Memories.	*3-2-8 Initializing Internal Holding Memories ($HB/$HW)* on page 3-21

● PT Settings Tab

Item	Function	Page
Start-up Waiting Time	Sets the system startup waiting time. Communications are not performed during this specified time when the power is turned ON or the PT Unit is reset. The default is 0 s.	*3-3-1 Start-up Wait Time* on page 3-27
Screen Saver	Sets the screen saver to ON or OFF. The default setting is OFF.	*3-3-2 Screen Saver* on page 3-28
Screen Saver Start-up Time	Sets the amount of time after which the screen saver is started. The default setting is 15 min. If the screen saver start-up time is indirectly specified, the address of the allocation destination will be displayed.	
Key Press Sound	Sets whether a sound will be heard when a touch switch is pressed. The default setting is ON.	*3-3-3 Key Press Sound* on page 3-29
Buzzer Sound	Sets whether a buzzer will be heard when a command from the host is received or an error occurs. The default setting is ERR ON.	*3-3-4 Buzzer Sound* on page 3-29
Backlight Brightness	The brightness of the backlight can be adjusted to one of three or one of 32 levels. The default is the highest level for 3-level adjustment. With the 32-level adjustment, the brightness can be adjusted to a lower level than the low level of 3-level adjustment.	*3-3-5 Backlight Brightness* on page 3-30

Item	Function	Page
Calendar Check	Displays and sets the date and time for the internal clock.	*3-3-6 Calendar Check* on page 3-31
CJK Han Unification Priority	The CJK Han unification setting is used to select what character style (traditional Chinese, simplified Chinese, or Japanese) will be given priority for display.	*3-3-7 CJK Han Unification Priority* on page 3-32
Alarm Monitor Registration Method	Specifies the method for performing monitor registration of alarms and events.	*3-3-8 Alarm Monitor Registration Procedure* on page 3-32
Tag Update Notification Message Setting	Specifies whether to display a confirmation message before starting tag verification when tags are verified while the PT Unit is operating.	*3-3-9 Setting the Tag Update Notification Message* on page 3-33
Double-touch interval	One corner of the screen must be touched twice in a row to move to the System Menu. The interval between the touches can be set.	*3-3-10 Double-touch Interval* on page 3-33

● Project Tab

Item	Function	Page
Project Title	Displays the project title.	*3-4-1 Project Title* on page 3-35
Number of Labels	Displays the number of corresponding labels.	*3-4-2 Number of Labels* on page 3-35
Initial Screen	Sets and displays the screen numbers first displayed after the power is turned ON.	*3-4-3 Initial Screen* on page 3-35
Initial Label	Sets and displays the label number shown on the screen after the power is turned ON.	*3-4-4 Initial Label* on page 3-35
Barcode input when using keypad	Disables data input from barcodes when the keypad is being used.	*3-4-5 Barcode Input When Using Keypad* on page 3-36
Alarm/Event Recording Method	Displays the method for recording the alarm/event histories.	*3-4-6 Alarm/Event History Recording Method* on page 3-36
Data Log Recording Method	Displays the method for recording the data log.	*3-4-7 Data Log Recording Method* on page 3-36
Operation Log Recording Method	Displays the method for recording the operation log.	*3-4-8 Operation Log Recording Method* on page 3-37
Error Log Recording Method	Displays the method for recording the error log.	*3-4-9 Error Log Recording Method* on page 3-37
System Memory ($SB)	Displays the allocated addresses of the system bit memory ($SB).	*3-4-10 System Memory* on page 3-38
System Memory ($SW)	Displays the allocated address of the system word memory ($SW).	

Password Tab

Item	Function	Page
Level 1	Changes the level 1 password.	*3-5-1 Changing the Password* on page 3-39
Level 2	Changes the level 2 password.	
Level 3	Changes the level 3 password.	
Level 4	Changes the level 4 password.	
Level 5	Changes the level 5 password.	
Password mode	Selects the password function (including passwords with levels).	*3-5-2 Setting the Password Function* on page 3-40
Time Out	Specifies whether user authentication is automatically canceled after a set time has elapsed.	
Timeout (min)	Sets the timeout time.	
Switch Screen when canceling the authentication	Specifies whether the screen is switched automatically when authentication is canceled.	
Switch Screen No.	Sets the screen number that is displayed at when authentication is canceled.	

Comm Tab

Item	Function	Page
Comms. Auto-return	Selects whether automatic recovery is used when a communications error occurs.	*3-6-1 Communications Conditions* on page 3-42
Timeout interval	Sets and displays the timeout monitor time.	
Retry Counts	Sets and displays the number of communications retries.	
Serial Port A	Sets and displays whether serial port A is used, the communications method, and other details.	
Serial Port B	Sets and displays whether serial port B is used, the communications method, and other details.	
Ethernet	Sets and displays whether Ethernet is used and communications details.	*3-6-4 Ethernet and EtherNet/IP Settings* on page 3-46

Data Check Tab

Item	Function	Page
Screen Number	Sets the screen number that is displayed as a sample.	*3-7 Screen Data Check* on page 3-50
Show Address	Displays the communications addresses set for the sample display.	

Special Screen Tab

Item	Function	Page
Alarm History	Displays the alarm history screen.	*3-8-1 Alarm History* on page 3-52
Operation Log	Displays the screen for recording the operation log.	*3-8-2 Operation Log* on page 3-52
Error Log	Displays the screen for recording the error log.	*3-8-3 Error Log* on page 3-53
Special Functions	Displays communications test screen, etc. This function also starts external applications, lists USB devices or displays capture data.	*3-8-4 Communication Test* on page 3-54 *3-8-5 USB Device List* on page 3-57 *3-8-6 Display Capture Data* on page 3-58 *3-8-7 Memory Card Transfers* on page 3-59 *3-8-8 External Application Startup* on page 3-62
System Version	Displays the version display screen.	*3-8-9 Version Display* on page 3-63

Hardware Check Tab

Item	Function	Page
LCD Check	Checks the LCD.	*3-9-1 LCD Check* on page 3-64
Touch Switch Check	Checks the touch switches.	*3-9-2 Touch Switch Check* on page 3-65
Touch panel Calibration	Calibrates the touch positions.	*3-9-3 Touch Panel Calibration* on page 3-66

3-1-4 Using the System Menu

Information on using the menus, such as displaying the System Menu, and selecting menu items, is provided here.

Additional Information

The system settings set in the project are given priority over those set in the System Menu.

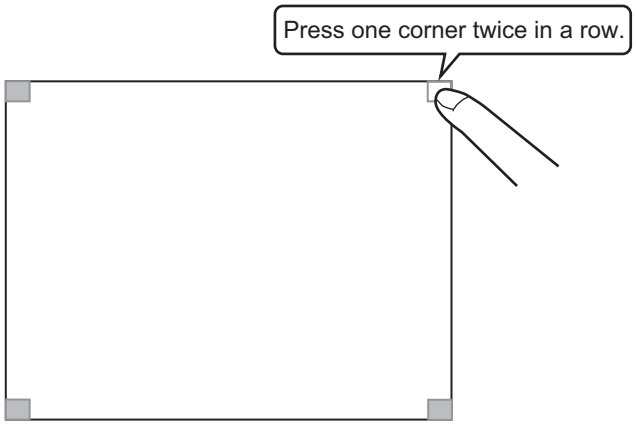
Displaying the System Menu

The System Menu can be displayed by using any of the following methods.

(a) Press one of the four corners of the touch panel twice in a row.
(b) Press the command button in the System Menu display.
(c) Press a command button set to switch the screen to the system menu.
(d) Specify screen number 4002 BCD (FA2 binary) and switch the screen.
(e) Press or change the value of a Multifunction Object set to display the System Menu.

● Press one of the four corners of the touch panel twice in a row

Press one of the four corners of the touch panel of the PT Unit twice in a row.



Make sure you press a corner where no functional object is displayed. If there is a functional object at the corner you press, the function of the functional object will be executed.

Additional Information

The touch interval (i.e., speed) for pressing one of the four corners of the touch panel twice in a row can be adjusted using the double-touch interval setting on the PT Tab Page in the System Menu.

● Pressing the Command Button in the System Menu

While creating screens, if a command button for displaying the System Menu is created in the screen, the System Menu can be displayed by pressing this command button.

● Pressing Command Buttons to Switch Screens

The *Display System Menu* function of command buttons includes an option to display the **Initialize** Tab (the first screen of the System Menu). Press a command button for which this option has been set.

Alternatively, the *Screen Switch* command button functions include a *Indirect Specification of Screen No.* function. Store the BCD value 4002 (binary FA2) in the communications address for indirect specification and press the command button. Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for information on command buttons.

● Storing 4002 in $SW0 (in System Memory)

A BCD value of 4002 (binary FA2) can be stored in $SW0 (in System Memory). Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for information on the system memory.

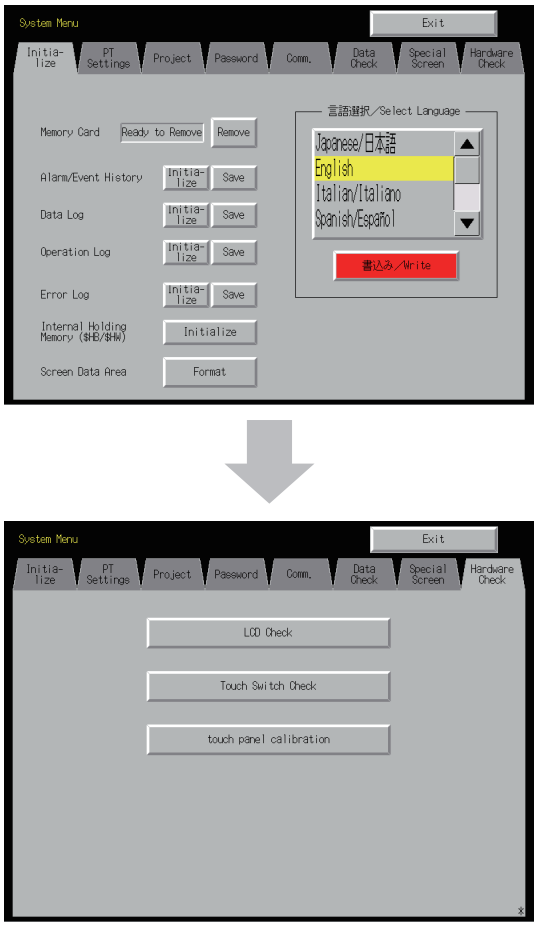
● Press a Multifunction Object to Display the System Menu

Press the **Switch Screen** Button of Multifunction Object and set it to *Display System Menu - System Menu Top Page [Initialize Tab]*. Then touch or change the value of this Multifunction Object to display the System Menu.

Selecting Menu Items

Items in the System Menu can be displayed by simply pressing the tab of the menu item to be displayed.

Example: Press the **Hardware Check** Tab in the System Menu to display the Hardware Check Screen.



Switching to RUN Status from the System Menu

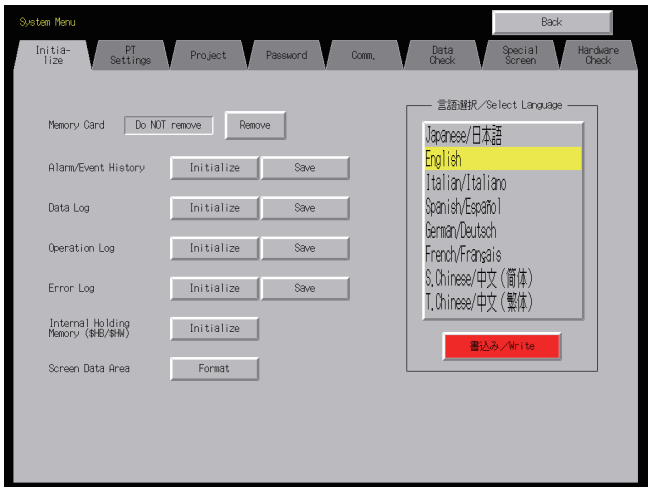
Press the **Exit** Button to return to RUN mode.

3-2 Initializing and Saving Data and Removing the Removable Media

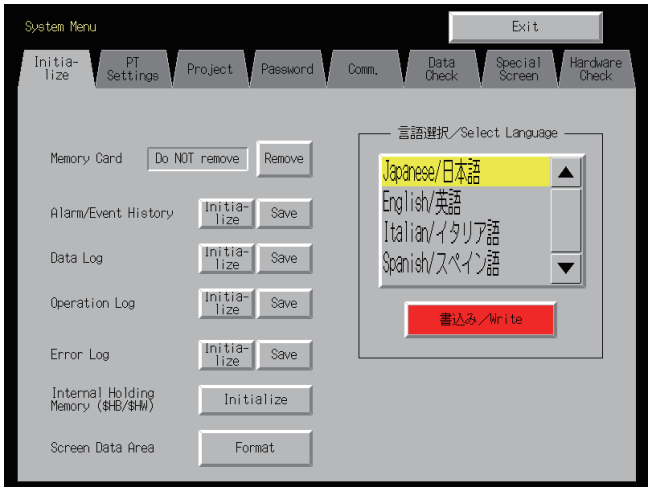
The Initialize Tab is used to initialize or save the PT Unit data and specify the system language. Use these function whenever necessary.

- Removable Media (remove)
- Alarm/event history (initialize, save)
- Data log (initialize, save)
- Operation log initialization (initialize, save)
- Error log (initialize, save)
- Internal Holding Memories ($HB/$HW) (initialize)
- Screen data area (format)

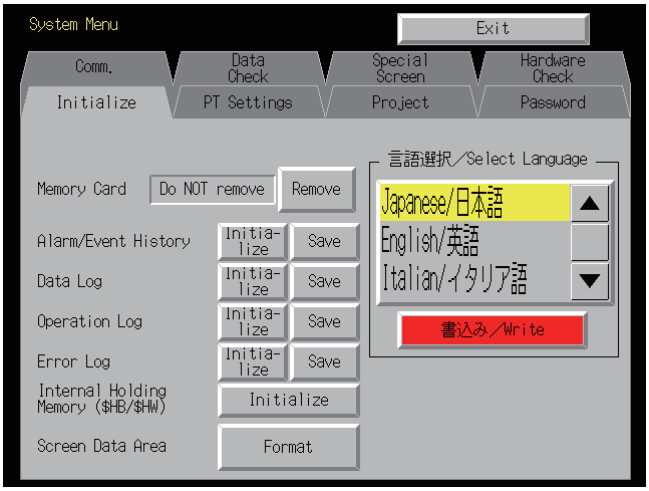
● NB15W-TW01B-V1-S



● NB10W-TW01B-V1-S

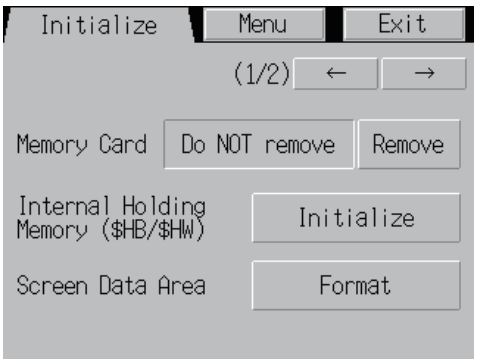


● NB7W-TW01B-V1-S

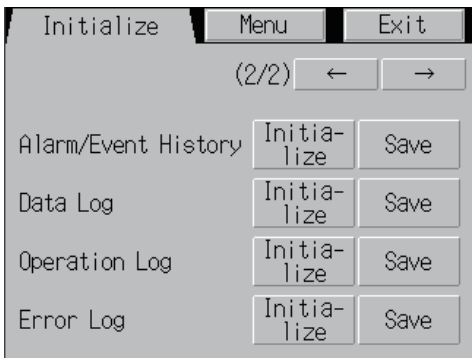


● NB5Q-TW01B-V1-S

Page 1



Page 2



3-2-1 Screen Data Area Format

This function formats the PT Unit screen data area. Project must be formatted if it is corrupted and cannot start up properly. The data recorded for the operation log, alarm history, data log, and error log is not initialized when screen data is formatted.

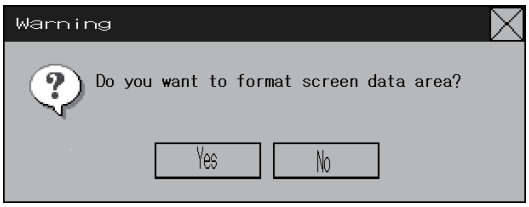
Precautions for Safe Use

Before formatting project, check that the project has been backed up from the CX-Designer.

Format the screen data area by using operations from the Initialize Data Tab Page in the System Menu, as follows:

1 Press the **Screen Data Area** Button. A confirmation message will be displayed. Press the **Yes** Button to format the data.

Press the **No** Button to cancel the initialize function.



2 When the PT Unit has completed formatting screen data area, the following dialog box will be displayed.



3 An error message will be displayed if the System Menu is closed while screen data area is being formatted. Always transfer the project from the CX-Designer or Removable Media after formatting.

Additional Information

The PT Unit must be restarted after screen data area has been transferred.

3-2-2 Initializing or Saving the Alarm/Event History

This function initializes or saves the alarm/event histories saved in the PT Unit.

Use this function when project has been changed, for initializing history data, or for saving history data in the Removable Media as a CSV file.

While the PT Unit is running, the alarm/event histories continually check the status of bits registered as alarms/events and record the date, time, and number of times the bits turned ON/OFF.

Up to 1,024 alarms/events can be recorded.

Additional Information

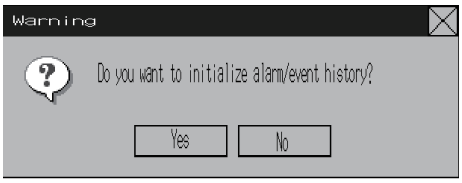
- The alarm/event histories can also be initialized by turning ON $SB32 in system memory from the host.
- The alarm/event histories will be deleted when project or system programs are downloaded.
- The alarm/event histories can also be saved by turning ON $SB33 in system memory from the host. Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

Initialize or save alarm/event histories by using operations from the Initialize Tab Page in the System Menu, as follows:

● Initializing Alarm/Event Histories

1 Press the **Initialize** Button. A confirmation message will be displayed. Press the **Yes** Button to initialize the data.

Press the **No** Button to cancel the initialize function.



2 When the PT Unit has completed initializing the alarm/event histories, a dialog box will be displayed indicating that the alarm/event histories have finished being initialized.

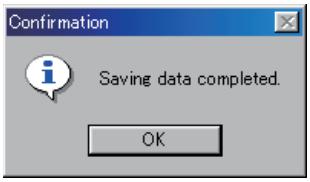


● Saving Alarm/Event Histories

1 Press the **Save** Button.

The Save Button will be lit yellow while data is being saved.

2 When the PT Unit has completed saving the alarm/event histories, the Save Button will return to its normal color. A dialog box will be displayed indicating that the save has been finished.



3-2-3 Initializing and Saving Data Log

This function initializes or saves the data log saved in the PT Unit.

Use this function when project has been changed, or for initializing history data. The data log is used to record changes over time to the contents of an address that is registered in the log.

Up to 50,000 events can be recorded.

Additional Information

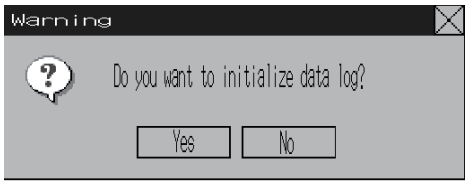
- The data log for the specified group can be initialized by setting the group number in $SW37 and turning ON $SB35 in the system memory from the host. The data logs for all groups can be initialized by setting $SW37 to 0.
- The data log will be deleted when project or system programs are downloaded.
- The data log for the specified group can be saved by setting the group number in $SW37 and turning ON $SB36 in the system memory from the host. The data logs for all groups can be saved by setting $SW37 to 0.

Initialize or save the data log by using operations from the Initialize Tab Page in the System Menu, as follows:

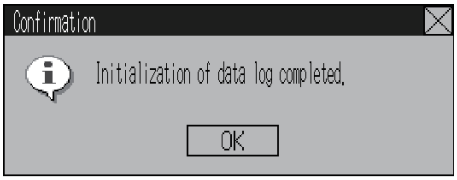
● Initializing the Data Log

1 Press the **Initialize** Button. A confirmation message will be displayed. Press the **Yes** Button to initialize the data.

Press the **No** Button to cancel the initialize function.



2 When the PT Unit has completed initializing the data log, a dialog box will be displayed indicating that the data log has finished being initialized.



● Saving the Data Log

1 Press the **Save** Button.

The Save Button will be lit yellow while data is being saved.

2 When the PT Unit has completed saving the data log, the Save Button will return to its normal color. A dialog box will be displayed indicating that the save has been finished.

3-2-4 Initializing and Saving the Operation Log

This function initializes or saves the operation log saved in the PT Unit.

Up to 1,024 operations can be recorded in order of occurrence.

Use this function when project has been changed, for initializing log data, or for saving log data as a CSV file in the Removable Media.

The operation log is used to record the number of times the following operations are performed and the order in which they occur.

- Functional object operation history
- Screen display history
- Macro execution history
- Communications address (bit) value change history

Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

Additional Information

- The functional objects that can be recorded are ON/OFF buttons, word buttons, Numeral Display & Input, String Display & Input, thumbwheel switches, data block tables, and Multifunction Objects.
- The following methods can also be used to initialize operation log data with an NS-B-series PT.
  - Turn ON $SB37 in system memory from the host.
  - Execute a Multifunction Object set to initialize the operation log.

    For details on how to execute Multifunction Objects that have the operation log data initialization function set, refer to the *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)*.
- The operation log will be deleted when project or system programs are downloaded.
- The following methods can be used to save operation log data with an NS-B-series PT.
  - Press the **Operation Log (Sort by Occurrence)** Button or **Operation Log (Sort by Frequency)** Button in the System Menu.
  - Turn ON $SB38 in system memory from the host.
  - Execute a Multifunction Object set to save the operation log.

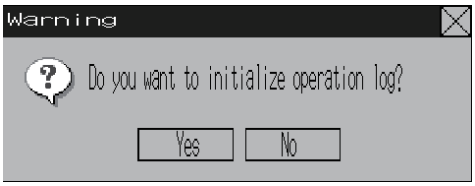
    For details on how to execute Multifunction Objects that have the operation log data saving function set, refer to *3-8-2 Operation Log* on page 3-52 and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)*.

Initialize or save the operation log by using operations from the Initialize Tab Page in the System Menu, as follows:

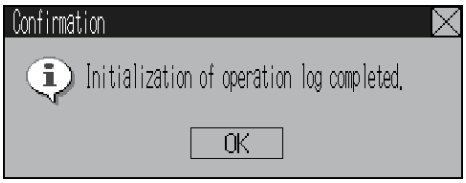
● Initializing the Operation Log

1 Press the **Initialize** Button. A confirmation message will be displayed. Press the **Yes** Button to initialize the data.

Press the **No** Button to cancel the initialize function.



2 When the PT Unit has completed initializing the operation log, a dialog box will be displayed indicating that the operation log has finished being initialized.



● Saving the Operation Log

1 Press the **Save** Button.

The Save Button will be lit yellow while data is being saved.

2 When the PT Unit has completed saving the operation log, the Save Button will return to its normal color. A dialog box will be displayed indicating that the save has been finished.

Additional Information

When saving the operation log, the operation log must be controlled from the system memory. For details on controlling the operation log, refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)*.

3-2-5 Initializing and Saving the Error Log

This function initializes the macro error history saved in the PT Unit or saves the history in the Removable Media.

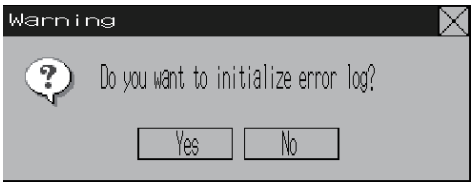
Up to 100 errors can be recorded in the error log. The number of errors that can be recorded, however, also depends on the free space in the memory.

The error log records the errors that occur when the macro function is executed. Initialize or save the error history by using operations from the Initialize Tab Page in the System Menu, as follows:

● Initializing the Error Log

1 Press the **Initialize** Button. A confirmation message will be displayed. Press the **Yes** Button to initialize the data.

Press the **No** Button to cancel the initialize function.



2 When the PT Unit has completed initializing the error log, a dialog box will be displayed indicating that the error log has finished being initialized.

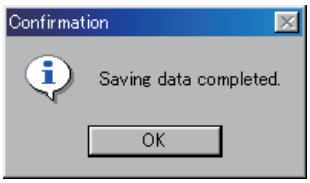


● Saving the Error Log

1 Press the **Save** Button.

The Save Button will be lit yellow while data is being saved.

2 When the PT Unit has completed saving the error log, the Save Button will return to its normal color. A dialog box will be displayed indicating that the save has been finished.



Additional Information

- The error log is deleted when project or system programs are downloaded.
- The error log can also be initialized by turning ON $SB42 in system memory from the host, and can be saved by turning ON $SB43 in system memory from the host.

  Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

3-2-6 Language Selection

The system language can be set to Japanese, English, Italian, Spanish, French, German, or Chinese (traditional or simplified).

The system language will be used on the System Menu, input keypads, message dialog boxes, etc, on the PT Unit.

The system language is set from the **Initialize** Tab Page in the System Menu Window using the following procedure.

1 Select the system language in the *Select Language* Area.



2 After specifying the language, click the **Write** Button. The system language will be switched after the new setting has been saved.

Additional Information

If ASCII codes are set as the character display format for String Display & INPUT, list display, or data block tables (character fields), the following character codes will be used depending on the system language that is set.

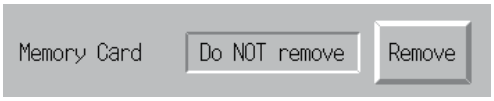
System Language	Character display	Display example (character code B5)
Japanese	Shift-JIS code	ｵ
Chinese (traditional and simplified)	GB2312 code	The corresponding character does not exist, so nothing is displayed.
English and other languages	Latin 1 code	µ

The above codes will also be used when indirect specifications are made for label strings for label objects.

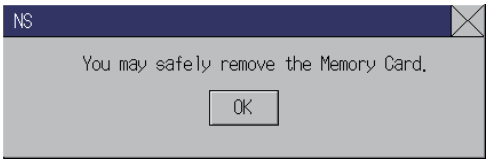
3-2-7 Removing the Removable Media

The Removable Media can be removed from the PT Unit while the PT Unit is ON. Use the following procedure from the Initialize Tab Page of the System Menu to remove the Removable Media.

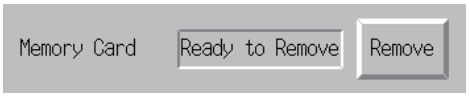
1 Press the **Remove** Button next to *Memory Card*.



2 The following dialog box will be displayed when it is safe to remove the Removable Media. Press the **OK** Button.



3 Confirm that it is safe to remove the Removable Media, and remove it from the PT Unit.



Precautions for Safe Use

When the Removable Media is removed, reinsert the Removable Media into the PT Unit to use it again. Once a Removable Media is removed, it must be reinserted before the PT Unit can access it.

Additional Information

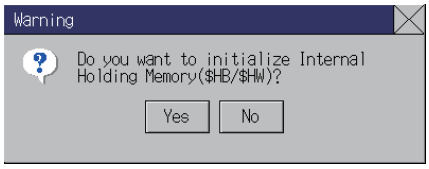
The Removable Media in the PT Unit can be removed if the system memory bit $SB50 turns ON (indicating that the Removable Media is ready to be removed) when the Host turns ON system memory bit $SB49. Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

3-2-8 Initializing Internal Holding Memories ($HB/$HW)

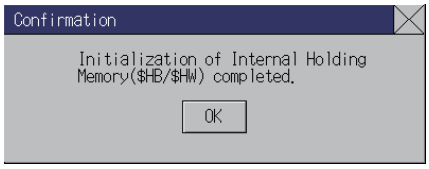
The following procedure is used to initialize the Internal Holding Memories in the PT Unit ($HB0 to $HB8191 and $HW0 to $HW8191).

Use the following procedure from the Initialize Tab Page of the System Menu to initialize the Internal Holding Memories.

1 Press the **Initialize** Button for the Internal Holding Memories ($HB/$HW). The following confirmation message will be displayed. Press the **Yes** Button to initialize.



2 When Internal Holding Memory ($HB/$HW) initialization has been completed, the following notification message will be displayed. Press the **OK** Button.



Additional Information

The NS-B-series PT's internal holding memory ($HB/$HW) can be initialized by turning ON the system memory bit $SB34 from the host. Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details.

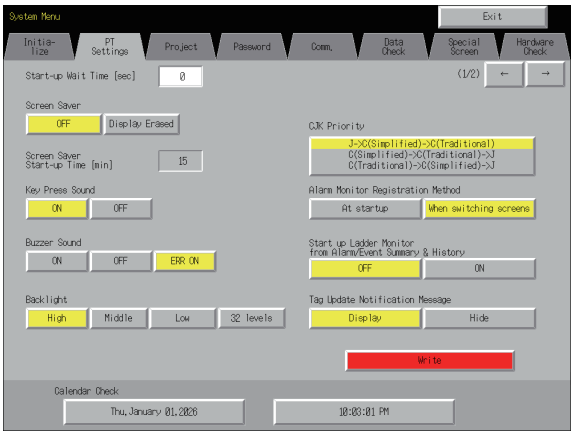
3-3 PT Settings

The PT Tab Page is used to set the following functions.

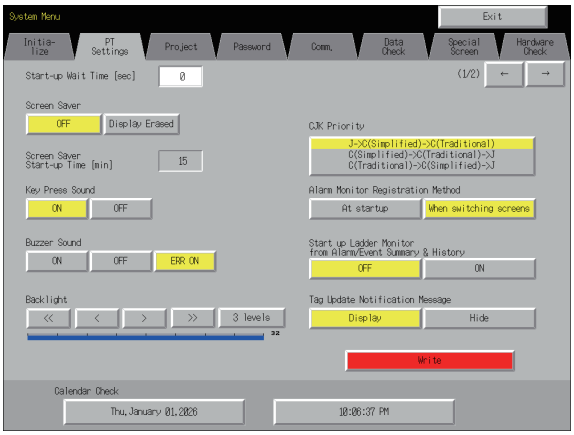
- Start-Up Wait Time
- Screen Saver
- Key Press Sound
- Buzzer Sound
- Backlight Brightness
- Calendar Check
- CJK Han Unification Priority
- Alarm Monitor Registration Procedure
- Setting the Tag Update Notification Message
- Double-touch Interval

● NB15W-TW01B-V1-S

(Page 1) Backlight Brightness Adjustment to Three Levels



(Page 1) Backlight Brightness Adjustment to 32 Levels

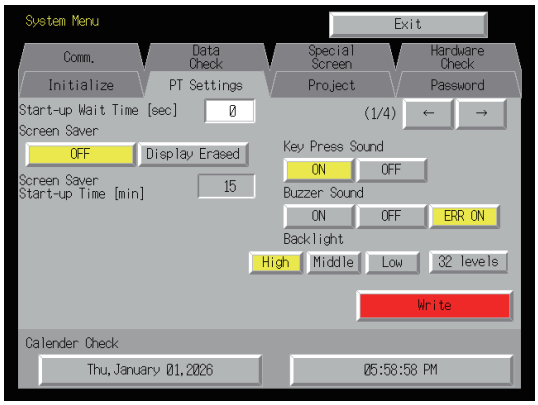


(Page 2)

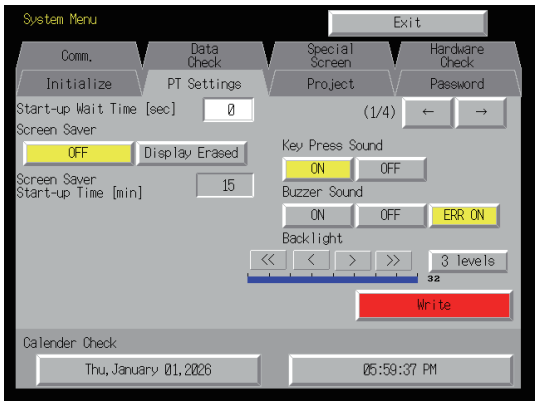


● NB10W-TW01B-V1-S, NB7W-TW01B-V1-S

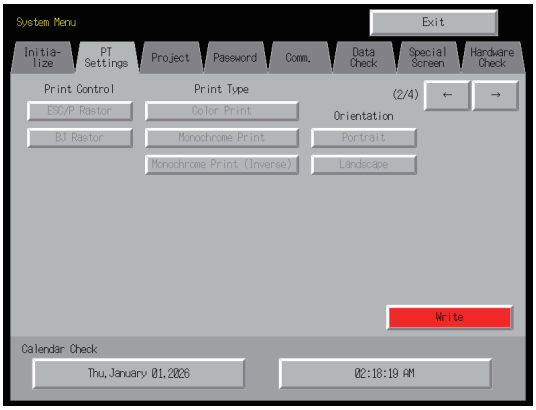
(Page 1) Backlight Brightness Adjustment to Three Levels



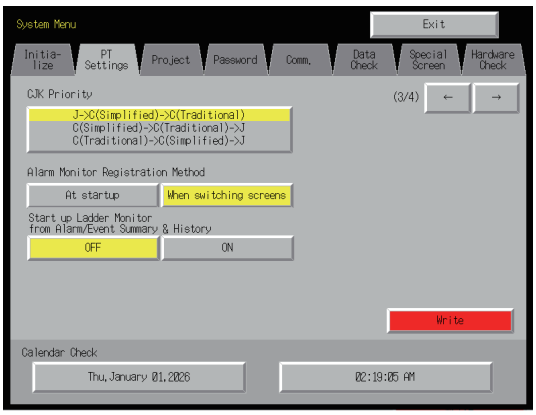
(Page 1) Backlight Brightness Adjustment to 32 Levels



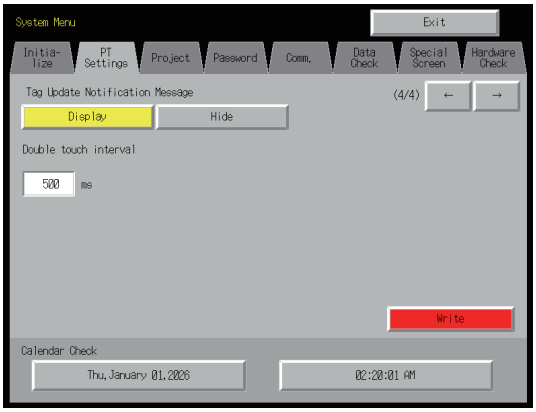
(Page 2)



(Page 3)

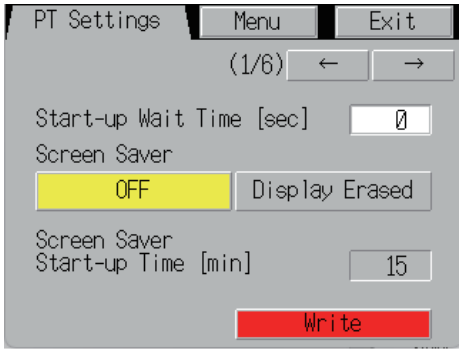


(Page 4)

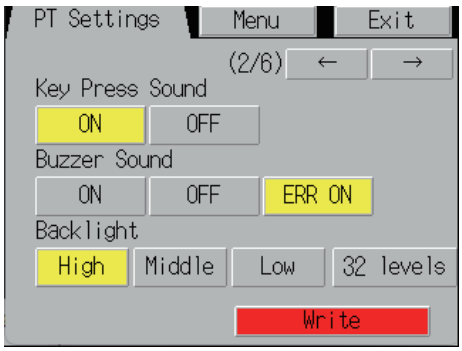


● NB5Q-TW01B-V1-S

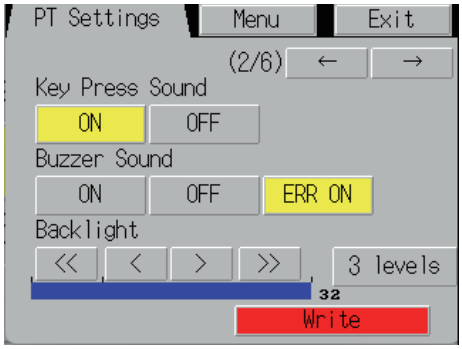
(Page 1)



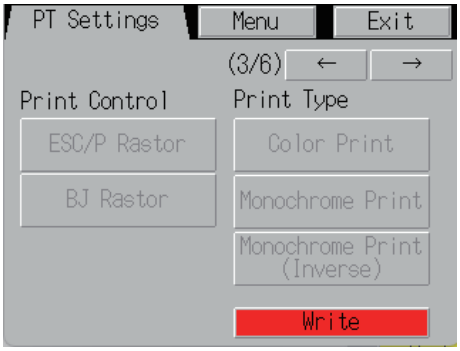
(Page 2) Backlight Brightness Adjustment to Three Levels



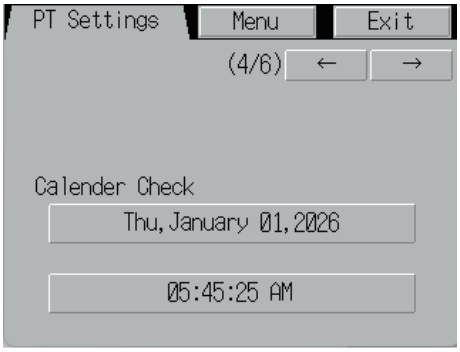
(Page 2) Backlight Brightness Adjustment to 32 Levels



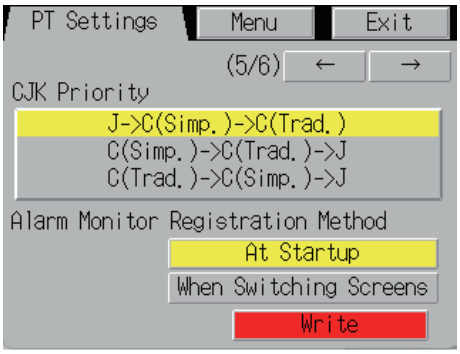
(Page 3)



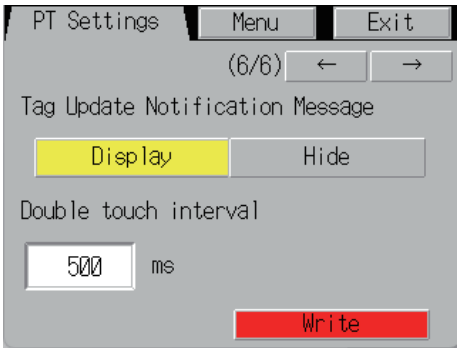
(Page 4)



(Page 5)



(Page 6)



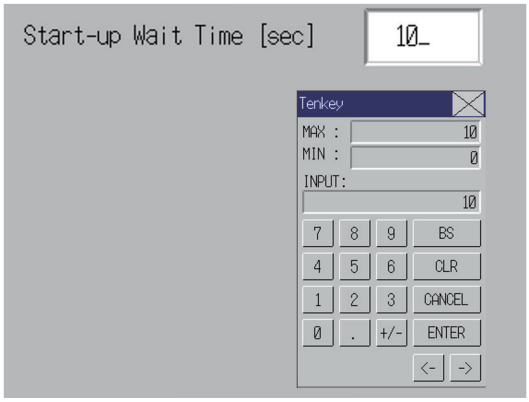
3-3-1 Start-up Wait Time

The start-up wait time refers to the waiting time before the PT Unit starts communicating with the host after the PT Unit power is turned ON or the PT Unit is reset Set the system startup waiting time when the host requires time before it starts running.

The setting range is between 0 and 10 s and the default is 0 s.

Set the system startup waiting time by using operations from the PT Tab Page in the System Menu, as follows:

1 Set the waiting time in the *Start-up Wait Time* field in second units. Input the value in the dialog box that is displayed by pressing the setting input column.



2 After setting, press the **Write** Button to save the setting.

Additional Information

- Nothing is displayed during the system startup waiting time.
- The system startup waiting time is calculated from when initialization finishes.

  Therefore, if the startup waiting time is set to 0 s, the PT Unit will not start actual communications with the host immediately after the power is turned ON.

3-3-2 Screen Saver

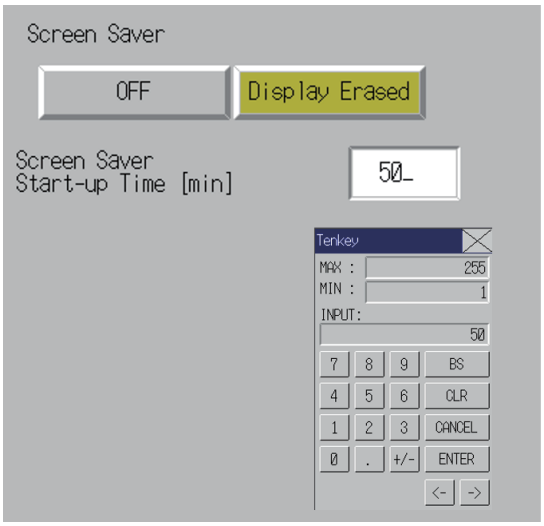
To extend the life of the backlight, the screen saver function turns OFF the screen display when operations are not performed for a fixed period of time.

The default setting is for no screen saver.

The time before the screen saver function is activated can be set in one-minute units between 1 and 255 minutes. The default setting is 15 min.

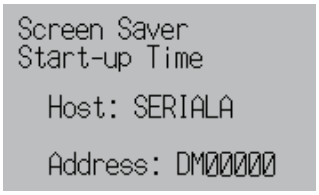
Set the screen saver movement by using operations from the PT Tab Page in the System Menu, as follows:

1. Select either **OFF** or **Display Erased** for the screen saver.
2. If **Display Erased** is selected, set the screen saver startup time. Input the value in the dialog box that is displayed by pressing the setting input column.



3. After setting, press the **Write** Button to save the setting.

If the screen saver start-up time is set to *Indirect Specification* with the CX-Designer, the address of the allocation destination will be displayed. The address of the allocation destination will be displayed only. It cannot be changed.



Additional Information

Pressing any part of the touch panel will cancel the screen saver and display the previously displayed screen. When canceling the screen saver, If the part of the touch panel corresponds to the input for a functional object, the screen saver will be cancelled only. The input for the functional object will not be processed.

3-3-3 Key Press Sound

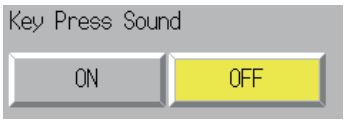
This function sets whether an input sound is heard when the touch switches that allow input functions for the PT Unit are pressed.

ON: Input sound is heard when the touch switches that allow input functions for the PT Unit are pressed.

OFF: Input sound is not heard when the touch switches that allow input functions for the PT Unit are pressed.

The default setting is ON.

1 Select either **ON** or **OFF** for the touch switch input sound.



2 After setting, press the **Write** Button to save the setting.

3-3-4 Buzzer Sound

The buzzer is used at times such as when a command from the host is received or an error occurs. This function is set to ON or OFF in the System Menu.

ON: Buzzer turns ON when a command is received from the host or an error occurs.

OFF: Buzzer is OFF.

ERR ON:Buzzer turns ON when an error occurs only.

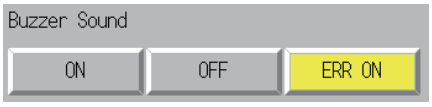
The default setting is ERR ON.

Additional Information

- Other commands and settings associated with the buzzer exist, but the settings here have the highest priority.
- When the buzzer is set to ON or ERR ON, the buzzer will be heard when messages are displayed with a cross (X) or exclamation mark (!) icon.
- Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the buzzer function.

Set the buzzer to ON/OFF by using operations from the PT Tab Page in the System Menu, as follows:

1 Select either **ON**, **OFF**, or **ERR ON** for the buzzer setting.



2 After setting, press the **Write** Button to save the setting.

3-3-5 Backlight Brightness

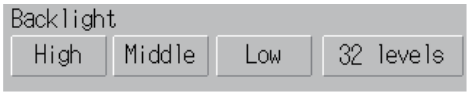
This function sets the backlight brightness.

The brightness can be set to one of three levels or one of 32 levels.

The default is the highest level for 3-level adjustment.

Set the brightness of the backlight by using operations from the PT Settings Tab Page in the System Menu, as follows:

1 Select one of the three backlight brightness levels, high, middle, or low, or select setting to one of 32 levels.



2 After setting, press the **Write** Button to save the setting.

3 If setting to one of 32 levels is selected, the following setting screen will appear.



Brightness Setting Button Functions

<<	Decreases the brightness by 5 levels.	>>	Increases the brightness by 5 levels.
<	Decreases the brightness by 1 level.	>	Increases the brightness by 1 level.

4 The backlight brightness will change when any of the brightness setting buttons is pressed.

If the Write Button is not pressed and no other operation is performed for 30 seconds after setting the brightness, the brightness setting will return to the original setting, and the PT settings, including the backlight brightness setting, will not be written.

5 After setting, press the **Write** Button within 30 seconds to save the setting.

Precautions for Safe Use

If the brightness of the backlight is reduced, the display may be very dark. Do not reduce the brightness of the backlight so far that the display cannot be seen.

3-3-6 Calendar Check

This function displays the time and date of the PT's internal system clock.

The factory settings for the date and time are not correct.

Set and display the date and time by using operations from the PT Tab Page in the System Menu, as follows:

1 The currently set date and time will be displayed in the *Date and Time Setting* field.

2 To change the date/time, set the date/time in the dialog box that is displayed by pressing the date and time field.



- Use the following input format to set the date:
  yyyy.mm.dd (yyyy: year, mm: month, dd: day)

  Set the year using four digits.

  Example: Set March 15, 2002 as **2002.3.15**.
  (Adding 0 prefix to single-digit settings is not required.)
- Use the following input format to set the time.
  hh.mm.ss (hh: hour, mm: minute, ss: second)

  Set the year using the 24-hour clock.

  Example: Set 06:01:01 p.m. as **18.1.1**.
  (Adding 0 prefix to single-digit settings is not required.)

3 Press the **Enter** Button to enable the settings.

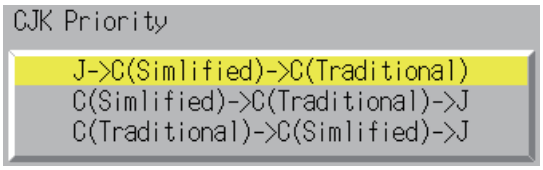
3-3-7 CJK Han Unification Priority

The CJK Han unification setting is used to select what character style (traditional Chinese, simplified Chinese, or Japanese) will be given priority for display.

If Japanese or Chinese is used, the displayed character form will differ even if the character code is the same. In this case, use the CJK Han unification priority setting to select what character style will be given priority for display. Use the following procedure starting from the **PT Settings** Tab in the System Menu to select the priority.

1 In the *CJK Priority* Area, select from *J → C (Simplified) → C (Traditional), C (Simplified) → C (Traditional) → J*, or *C (Traditional) → C (Simplified) → J*.

"J" indicates Japanese and "C" indicates Chinese.



2 After completing the setting, press the **Write** Button. The setting will be saved.

3-3-8 Alarm Monitor Registration Procedure

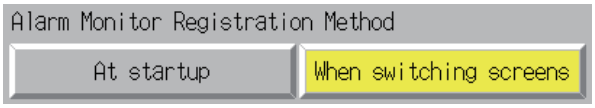
Set the method for performing monitor registration of alarms and events.

Normally, the method is set to *When switching screens*.

If multiple alarms or events are registered, the screen-switching speed may increase if the *At startup* Option is selected. If there is no difference, set the method to *When switching screens*.

Set the alarm monitor registration method by performing the following operation from the PT Tab Page in the System Menu.

1 Set either *At startup* or *When switching screens* for the alarm monitor registration method.



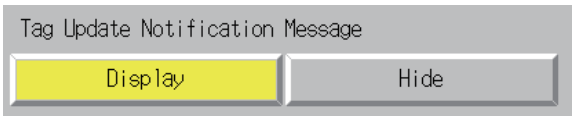
2 After completing the setting, press the **Write** Button. The setting will be saved.

3-3-9 Setting the Tag Update Notification Message

If tags are used by projects in the NS-B-series PT, tags will be automatically verified when ladder data is downloaded to the host. Set whether to display a confirmation message before the system starts to verify the tags.

Make the setting on the PT Operation Tab Page in the System Menu.

1 Select either **Display** or **Hide** for the tag update notification message setting.



Additional Information

- Refer to *3-11 Verifying Tags* on page 3-69 for information on verifying tags.
- Tags can be used when connected using EtherNet/IP to a CPU Unit with a built-in EtherNet/IP port.

3-3-10 Double-touch Interval

One corner of the screen must be touched twice in a row to move to the System Menu. The interval between the touches is called the double-touch interval and it can be set to between 500 and 1,500 ms. The default setting is 1,000 ms. The display will change to the System Menu if any corner of the screen is pressed twice within this interval. If switching to the System Menu is difficult, increase the interval.

Perform the following procedure from the PT Operation Tab Page of the System Menu.

1 Set the desired value for the double-touch interval in milliseconds. An input dialog box will be displayed when the input field for the setting is touched.

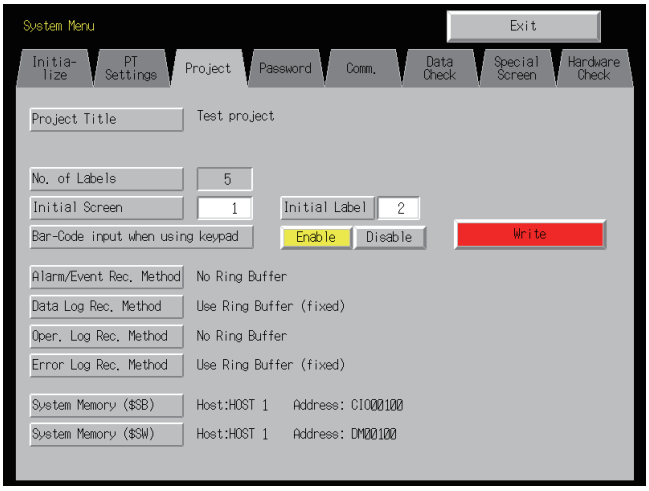


2 Press the **Write** Button. The setting will be saved.

3-4 Project Settings

The Project Tab Page is used to display and set the following functions.

- Project title
- Number of labels
- Initial screen
- Initial label
- Barcode input when using keypad:
  This setting is used to disable data input from barcodes when the keypad is being used.
- Alarm/event history recording method:
  Method for recording log of generated and deleted alarms/events.
- Data log recording method:
  Method for recording log of changes to addresses.
- Operation log recording method:
  Method for recording log of functional object operations, screen switching, and macro executions.
- Error log recording method:
  Method for recording log of macro execution errors.
- System memory:
  The addresses allocated in system memory will be displayed.



3-4-1 Project Title

This function displays title of projects that are registered in the PT Unit.

The title is read-only and cannot be edited.

3-4-2 Number of Labels

Multiple label data can be created in each project. This function displays the number of labels set for the project that is registered in the PT Unit.

The number of labels is read-only and cannot be edited.



Additional Information

- For details on setting multiple labels for a project, refer to *System Settings and Project Properties* in the CX-Designer's Online Help.
- Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for information on how to set multiple labels for a functional object.

3-4-3 Initial Screen

This function displays and sets the screen number of the screen that is first displayed when the PT Unit is started.

Display and set the initial screen number by using operations from the Project Tab Page in the System Menu, as follows:

1 The number of the screen that is displayed when the PT Unit is started is displayed in the initial screen field.

2 To change the initial screen number, input the value using the tenkey, which is displayed by pressing the display area.

3 After setting, press the **Write** Button to save the setting.



Additional Information

The initial screen number can also be set from the CX-Designer.

3-4-4 Initial Label

This function displays and sets the label number that is shown on the screen when the PT Unit is started.



Additional Information

This initial label number can also be set from the CX-Designer.

3-4-5 Barcode Input When Using Keypad

You can disable data input from barcodes when the keypad is being used.



Additional Information

The setting for data input from barcodes when the keypad is being used can also be made from the CX-Designer.

3-4-6 Alarm/Event History Recording Method

This function displays the method for recording the alarm/event histories. The alarm/event history recording method is read-only and cannot be edited.

This alarm/event history recording method is set from the CX-Designer.

If a ring buffer is used, when the specified number of records is exceeded, the oldest data is deleted and the new data is recorded.

If the ring buffer is not used, the PT Unit stops collecting history data when the specified number of records has been reached. Initialize the alarm/event histories to reopen the history records.



Additional Information

Refer to *3-2-2 Initializing or Saving the Alarm/Event History* on page 3-14 for details on initializing the alarm/event histories.

3-4-7 Data Log Recording Method

This function displays the data log recording method. The data log recording method is read only and cannot be edited. The use of a ring buffer for the data log recording method is fixed. When the specified number of log entries is exceeded, the oldest data is deleted and the new data is recorded.

Use the CX-Designer to set the number of log entries.



Additional Information

Refer to *3-2-3 Initializing and Saving Data Log* on page 3-15 in this manual and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the data log.

3-4-8 Operation Log Recording Method

This function displays the method for recording the operation log. The operation log recording method is read only and cannot be edited. This operation log recording method is set from the CX-Designer.

If *Save in Ring Buffer Format* is set, when the specified number of items is exceeded, the oldest data is deleted and the new data is recorded.

If the log is not saved in ring buffer format, the PT Unit stops collecting log data when the specified number of items has been reached. Initialize the operation log to reopen the record.



Additional Information

Refer to *3-2-4 Initializing and Saving the Operation Log* on page 3-16 in this manual and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the operation log.

3-4-9 Error Log Recording Method

This function displays the error log recording method. The error log recording method is read only and cannot be edited. The use of a ring buffer for the error log recording method is fixed.

When the maximum number of items is exceeded, the oldest data is deleted and the new data is recorded.



Additional Information

Refer to *3-2-5 Initializing and Saving the Error Log* on page 3-18 in this manual and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the error log.

3-4-10 System Memory

The system memory is used to control the PT Unit and exchange information between the host and the PT Unit, such as notifying the host of PT status. The system memory can be allocated to host addresses or to PT memory.

Allocating the system memory as host addresses allows operations such as controlling the PT Unit from the host. The allocated location in the host is displayed in the System Memory and cannot be edited.

The location where the system bit memory and system word memory is allocated (allocated host and address) is displayed in the System Bit Memory ($SB) and System Word Memory ($SW).



Additional Information

Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the system memory.

If the system memory has been set to NT compatibility, allocations for the Control Area, Notification Area, and Window Control Area will be displayed.

3-5 Setting Passwords

The NS-B-series PT's password function is divided into the following two functions.

- Password Function

  Requires a password input before allowing operations on a password-protected functional object.
- Password with Levels Function

  Requires a password for authentication when performing operations on a password-protected functional object for the first time. Once authentication has been completed, operations can be performed on all functional objects of the same or lower password levels. Operations cannot be performed on functional objects protected with higher-level passwords.

The passwords are set from the CX-Designer and up to five passwords (5 levels) can be set for a single project. The passwords can be set and changed from the System Menu.

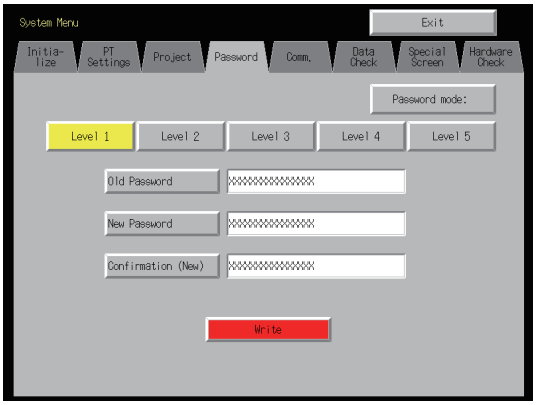
Additional Information

When Indirect Password Specification is used, these settings can not be changed on the PT Unit.

3-5-1 Changing the Password

Perform the following procedure from the System Menu to change the password.

1 Select the **Password** Tab.



2 Select the password to be changed using the **Level 1** to **Level 5** Buttons.

3 Input the old password and new password in the corresponding fields, and then input the new password again in the confirmation field. Input the password using the virtual keyboard (text input dialog box) that is displayed by pressing the input column.



4 After changing the password, press the **Write** Button to save the setting. Save separately for each password level that is changed.

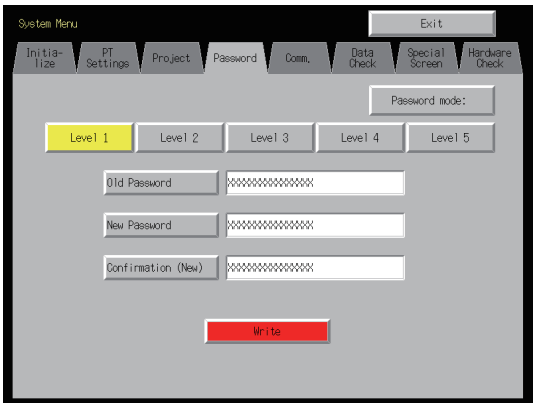
Precautions for Safe Use

- When changing passwords, do not reset the PT Unit or turn OFF the power until the write operation has been completed (i.e., the **Write** Button has returned to the status before being pressed). If the password is not saved properly, the screen may malfunction.
- If the password is forgotten, it cannot be checked from the PT Unit. Check the password using the CX-Designer.

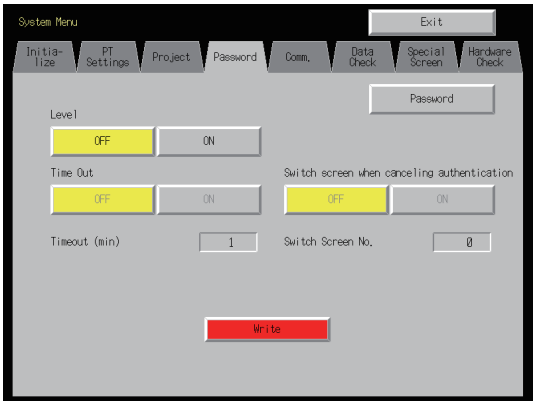
3-5-2 Setting the Password Function

Perform the following procedure from the System Menu to set a password.

1 Select the **Password** Tab.



2 Press the **Password mode** Button.



3 After making the required settings, press the **Write** Button to save the settings.

Settings for the Password Function

The following table describes the password function's setting items.

Setting item		Function
Level		Press the **OFF** (password) or **ON** (password with levels) Button to select the function.
	OFF	Requires a password input before allowing operations on a password-protected functional object.
	ON	Requires a password input for level authentication. During a session from authentication to cancellation, the user only can perform operations on functional objects that are allowed for the password level that was input at the start of the session. The user cannot perform operations on functional objects at higher levels.
Time Out		Click the **ON** or **OFF** Button to specify whether authentication is automatically canceled (timed out) after a set time has elapsed. This option can be set when the password with levels function has been turned ON.
	ON	A user is automatically timed out if there are no functional object operations within the timeout time.
	OFF	Authentication is not automatically canceled. To cancel authentication, press a command button set for cancellation.
Timeout (min)		When the *Time Out* Option is set to *ON*, this setting specifies the timeout time in minutes (1 to 60 minutes).
Switch Screen when canceling the authentication		Click the **ON** or **OFF** Button to specify whether the screen is automatically switched to a specified screen when a user logs out. This option can be set when the password with levels function has been turned ON.
	ON	The screen is switched to the specified *Switch Screen No.* when authentication is canceled.
	OFF	The screen is not switched when authentication is canceled.
Switch Screen No.		If switching the screen when authentication is canceled has been turned ON, the screen is changed to the screen number set here when authentication is canceled.



Additional Information

The password settings can also be made from the CX-Designer.

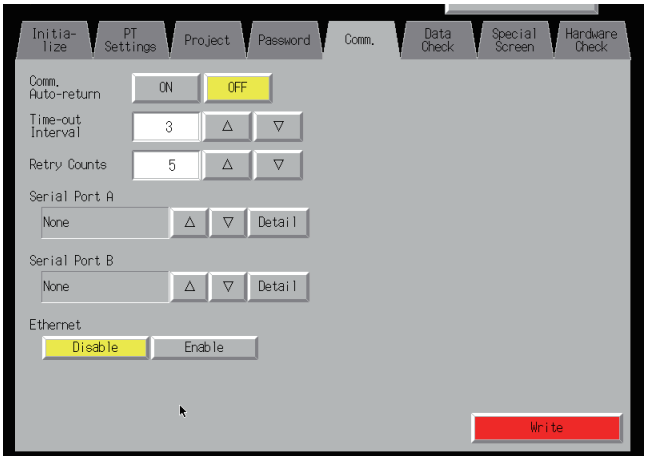


Precautions for Safe Use

- When changing passwords, do not reset the PT Unit or turn OFF the power until the write operation has been completed (i.e., the **Write** Button has returned to the status before being pressed). If the password is not saved properly, the screen may malfunction.
- If the password is forgotten, it cannot be checked from the PT Unit. Check the password using the CX-Designer.

3-6 Communications Settings

The methods for setting the communications conditions with the host are described here.



3-6-1 Communications Conditions

Set the communications conditions by using operations from the Comm. Tab Page in the System Menu, as follows:

After inputting the communications conditions, press the **Write** Button to save the settings.

Changed settings are enabled after the PT Unit is restarted.

Communications Conditions Setting Items

The setting items for the communications conditions between the PT Unit and host are as follows:

● Communications Auto-return

Select whether or not to use communications auto-return using the **ON** and **OFF** Buttons.

- ON

  The PT Unit will automatically return to RUN mode when a communications error occurs, without displaying an error message dialog box.
- OFF

  The PT Unit will stop running when a communications error occurs and an error message dialog box will be displayed. Press the **OK** Button in the error message dialog box to return to RUN mode. The default setting is OFF.

● Time-out Interval

Set the time before a timeout error occurs when a response is not received from the host. The time-out interval can be set to between 1 and 10 (unit: s). Input the value by using the tenkey or the Up (△) and Down (▽) buttons that are displayed by pressing the display area. The default setting is 3 s.

Precautions for Safe Use

Set the time-out interval to 3 s min. when using 1:N NT Links. If the time-out interval is less than 3 s, abnormal communications may occur.

Retry Counts

Set the number of retries for communications before an error screen will be displayed, when a communications error occurs while communicating with the host. If communications are unsuccessful after the number of communications retries specified here have been executed, processing set for the communications auto return will be executed. The number of retries can be set to between 0 and 255 times. Input the value by using the tenkey or the Up (△) and Down (▽) buttons that are displayed by pressing the display area.

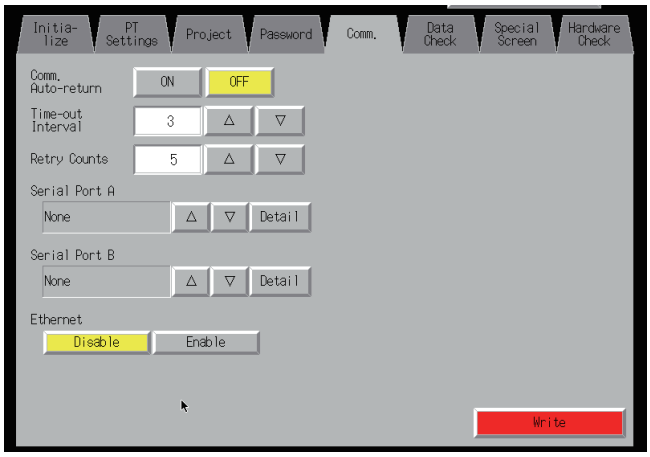
The default setting is 5 retries.

Precautions for Safe Use

Set the retry counts to 5 retries min. when using 1:N NT Links. If less than 5 retries is set, abnormal communications may occur.

Port Communications Method and Communications Type

Set the communications method for serial ports A and B, and for Ethernet. The right half of the screen will change according to the settings.



Additional Information

- To change the communications method for another port, the **Write** Button must be pressed before continuing. The settings will not be saved if the communications method is switched without pressing the **Write** Button.
- Refer to *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)* for details on the setting method and other information related to each connection method.

Supported Communications Method Combinations

It is not possible to connect to a PLC via NT Link (1:N) with both serial ports A and B at the same time.
It is not possible to use a Bar Code Reader with both serial ports A and B at the same time.

Serial ports A and B, and Ethernet can be used any combination with other communications methods.

Serial ports A and B, and Ethernet, however, cannot be all used simultaneously (except when using a Bar Code Reader).



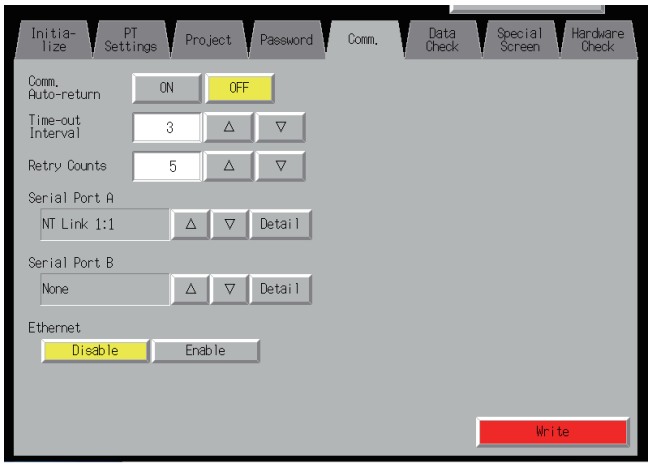
Additional Information

Serial ports A and B, and Ethernet can be set to be used simultaneously, but proper operations cannot be guaranteed (except when using a Bar Code Reader). Therefore, do not set all the ports to be used simultaneously.

3-6-2 Setting 1:1 NT Link

Select the **Comm.** Tab from the System Menu, and select *NT Link 1:1* (1:1 NT Link) as the communications method for serial port A or B.

After setting, press the **Write** Button to save the setting. When 1:1 NT Link is selected, there are no details settings.

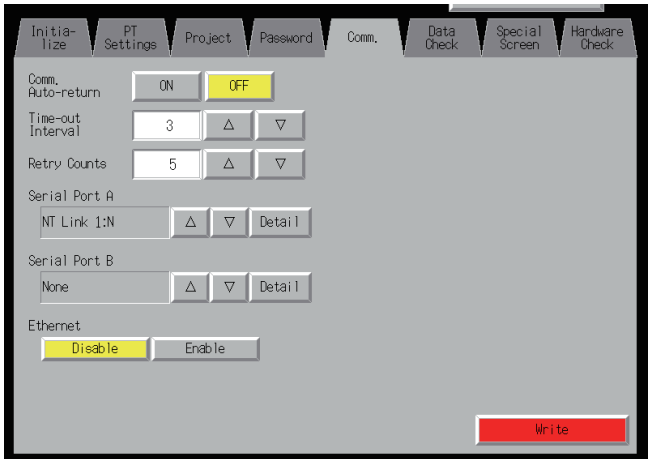


3-6-3 Setting High-speed 1:N NT Links (Standard, High-speed)

Select the **Comm.** Tab from the System Menu, and select *NT Link 1:N* (1:N NT Link) as the communications method for serial port A or B.

Press the **Detail** Button to display the setting items for high-speed 1:N NT Links on the right side of the screen. Set the unit number and communications speed.

After setting, press the **Write** Button.



● Communications Conditions for 1:N NT Links

Setting item	Function	Settings
Unit number	Sets the unit number.	0 to 7
Communications Speed	Sets the baud Communications speed.	Standard, high-speed

Additional Information

The unit numbers are for a host to distinguish each PT Unit when multiple PT Unit are connected to the host.

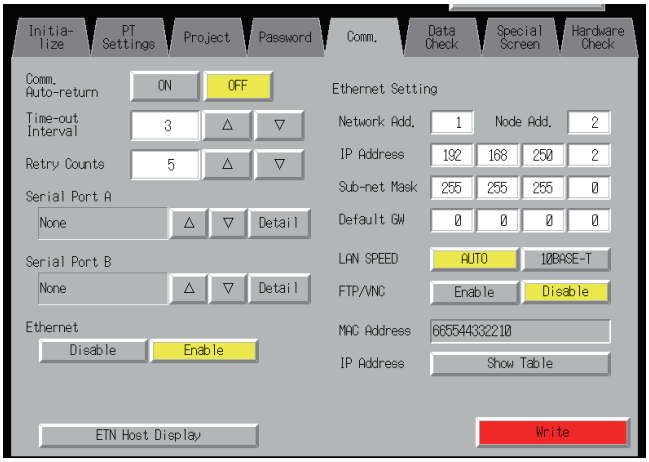
The unit numbers that can be set depend on the type of host used, as follows:

- C200HE(-Z):
  Unit numbers 0 to 3 (up to four PTs for each port of the host)
- C200HG(-Z), C200HX(-Z), CS1G/H, CS1G/H-H, CQM1H, CJ1G, and CJ1G/H-H:
  Unit numbers 0 to 7 (up to eight PTs for each port of the host)
  Refer to *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)* for the host settings.
- If the **Detail** Button is pressed for the NB15W-TW01B-V1-S, the display will switch to the Protocol Setting Dialog Box.
  Make the settings and press the **Write** Button.
  Press the **Comm.** Button to return to the Comm Tab Page.

3-6-4 Ethernet and EtherNet/IP Settings

To use Ethernet, select the **Comm** Tab from the System Menu and press the **Enable** Button. The setting items for Ethernet will be displayed on the right side of the screen.

Display and set the network address, node address, IP address, subnet mask, and default gateway. Display the MAC address and IP address table display. After setting, press the **Write** Button.



● Setting Ethernet Communications Conditions

Setting item	Function	Settings
Network Add.	Sets the network address used for Ethernet communications.	1 to 127
Node Add.	Sets the local node address.	0 to 254
IP address	Sets the local IP address.	0.0.0.0 to 255.255.255.255*1
Sub-net	Sets the subnet mask of the local node.	0.0.0.0 to 255.255.255.255
Default gateway	Sets the IP router.	0.0.0.0 to 255.255.255.255
MAC address	Displays the MAC address (device-especific information to identify each device connected to the network.)	Read-only.
LAN SPEED	Selects the method used to set the Ethernet baud rate.	Automatic switch or fixed 10Base-T

Setting item	Function	Settings
FTP	Selects whether or not to use the FTP server.	Enable or disable
IP Address: Show Table	Displays the node numbers and IP addresses of other nodes connected through Ethernet.	Node addresses: 1 to 254 IP addresses: 0.0.0.0 to 255.255.255.255

*1. Do not set the following values for the IP address.

- Host ID with all bits set to 0 or 1 (e.g., **192.168.21.0**).
- Net ID with all bits set to 0 or 1 (e.g., **255.255.21.16**).
- Subnet ID with all bits set to 1 (e.g., **192.168.255.16**).
- IP addresses that begin with 127 (e.g., **127.35.21.16**).

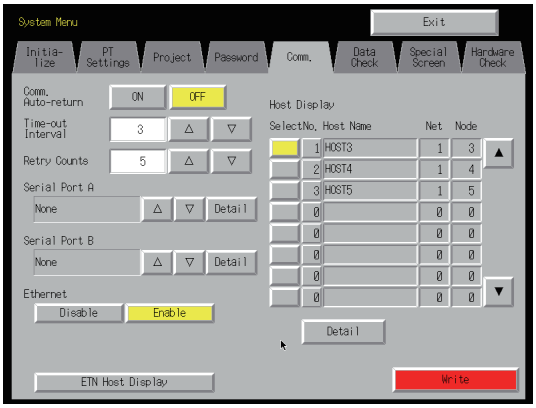
Host Settings

This setting is used to display detailed data for hosts connected using Ethernet.

The host type, network address, and node address for each host can also be changed.

1 Press the **ETN Host Display** Button.

The registered hosts will be displayed in a list.



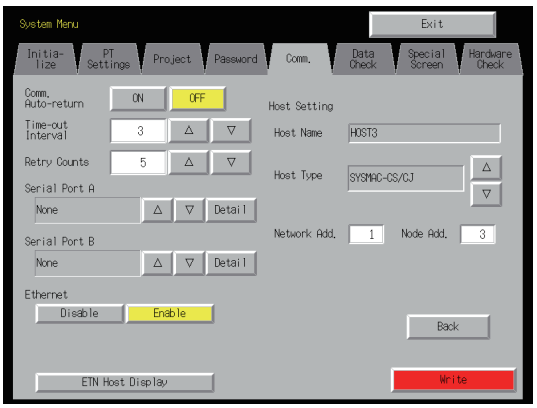
2 Select the host by pressing the button to the left of the host name.

3 Press the **Detail** Button.

4 The settings for the selected host can be changed. The settings depend on the communications protocol set in the host.

- Using FINS (Ethernet)

  The host type, network address, and node address for the selected host can be changed.

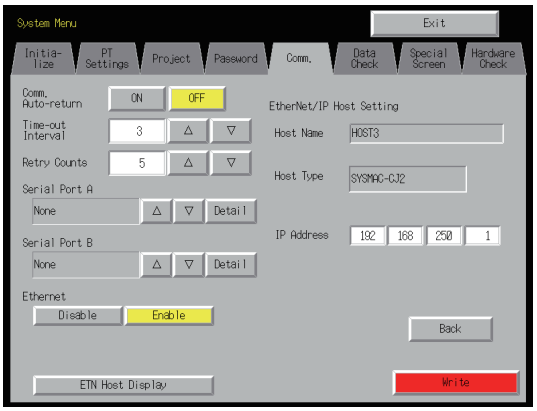


Setting item	Function	Details
Host type	Change the host type by pressing the **Up** (△) and **Down** (▽) Buttons.	SYSMAC-CS/CJ, SYSMAC-CV, SYSMAC-CJ2, SYSMAC-NJ
Network address	Set the network address of the host.	1 to 127
Node address	Set the node address of the host.	1 to 254

- Using EtherNet/IP

  The IP address of the selected host can be changed.

  The host type and route path are displayed only. They cannot be changed.



Setting item	Function	Details
Host type	The host type is displayed.	Display only
IP address	Set the IP address of the host (if IP address is selected as the method to specify the communications destination.)	0.0.0.0-255.255.255.255
Route path	The route path of the host is displayed (if route path is selected as the method to specify the communications destination.)	Display only

5 After completing the settings, press the **Write** Button.

3-6-5 Setting Bar Code Readers

The PT Unit has a Bar Code Reader input function allowing input of barcode data as character strings in the String Display & Input object.

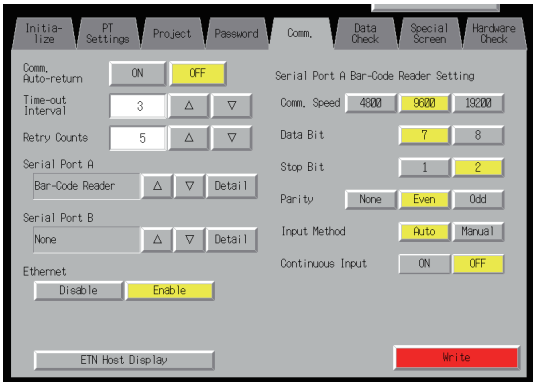
The methods for setting the communications conditions with the Bar Code Reader are described here.

Additional Information

- Refer to *NB-S-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)* for information on methods for connecting Bar Code Readers.
- The Bar Code Reader can be connected to either serial port A or serial port B only.

Set the communications conditions and confirmation method for the Bar Code Reader using the following procedure from the System Menu.

1. Set the Bar Code Reader's communications method for serial port A or serial port B.
2. The setting items for the Bar Code Reader will be displayed on the right side of the screen. Set the Communications speed, data bits, stop bits, parity, and input method. After setting, press the **Write** Button to save the settings.



● Setting Communications Conditions for Bar Code Reader Mode

Setting item	Function	Settings
Comm. speed	Sets the communications speed for communications with the Bar Code Reader.	4800, 9600, or 19200 (bps)
Data bits	Sets the data bit length.	7 or 8 bits
Stop bits	Sets the data stop bit length.	1 or 2 bits
Parity	Sets the data parity bits.	None, odd, or even
Input method	Sets the confirmation method used after inputting data in the input column.	Auto or manual confirmation
Continuous input	Sets continuous barcode input to Yes or No.	Yes or No

3-7 Screen Data Check

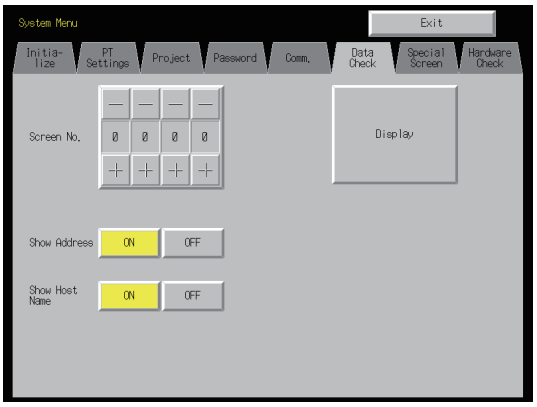
Registered screens (numbers 0 to 3,999) can be displayed and checked using operations from the System Menu.

Additional Information

- The screen displayed when checking screen data is a sample and cannot be used to communicate with the host. The flicker function is also disabled.
- Only the user screens (0 to 3,999) can be displayed. System screens cannot be displayed.

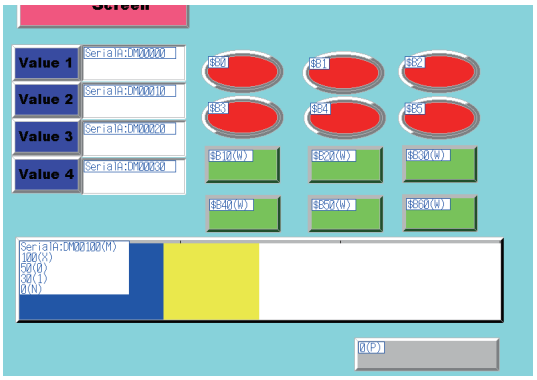
Display check screens by using the following procedure from the System Menu.

1. Select the **Data Check** Tab.



2. Set the screen number and press the **Display** Button to display the screen as a sample.
3. Press the **ON** Button next to the *Show Address* heading and display the sample screen to display the set address instead of the functional object label.

   At this point you can also switch between displaying or not displaying the host name by setting *Show Host Name* to ON or OFF.



4. Press any part of the sample screen that is displayed to return to the Screen Data Check Screen.

Additional Information

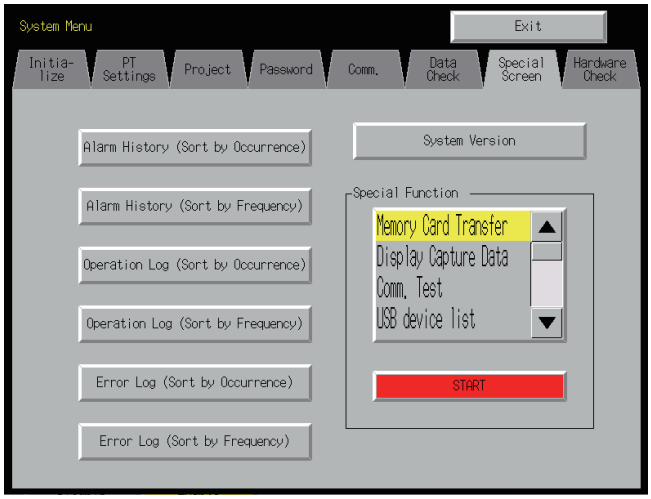
Addresses are not displayed for data block tables.

3-8 Special Screens

These screens are used to display the data histories, communications test, and version information.

Item		Function
Alarm history		Displays the alarm history.
Operation log		Displays the operation log.
Error log		Displays the error log.
Special function		Performs the following special functions.
	Communications test	Checks the communications functions.
	USB device list	Displays a list of the devices connected to the USB port.
	Display Capture Data	Displays screen capture data stored in a Removable Media.
	Memory Card Transfer	Transfers project and the system program on the PT Unit to a Removable Media.
	External applications	Starts external applications.
System Version		Displays information on the PT Unit version.

Details on how to use the functions are explained here.

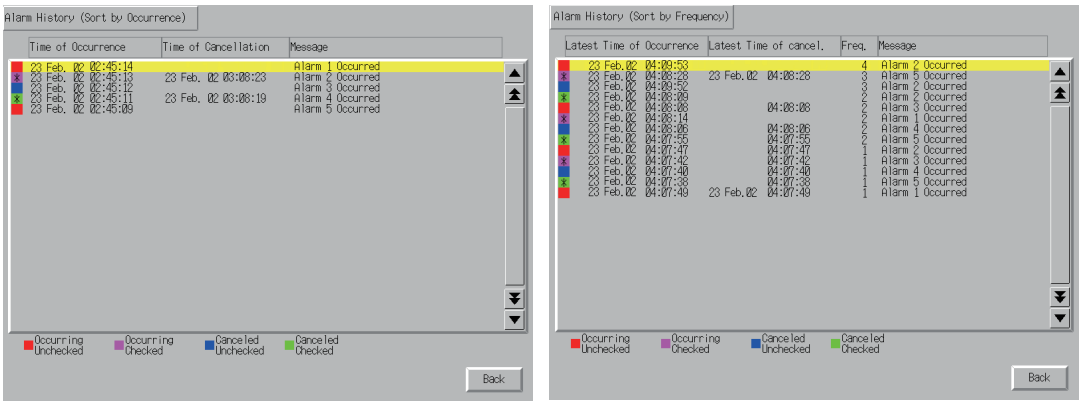


3-8-1 Alarm History

This function displays the alarm history. The alarm history can be displayed in order of occurrence or frequency.

Display alarm history data by using operations from the Special Screen Tab Page in the System Menu, as follows:

1 Press the **Alarm History (Sort by Occurrence)** Button or **Alarm History (Sort by Frequency)** Button to display the history contents.



2 Press the **Back** Button to return to the Special Screen.

Additional Information

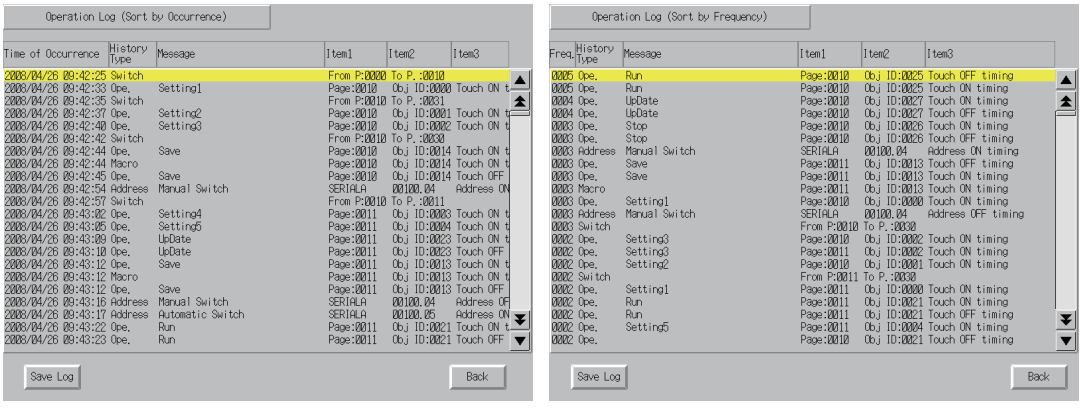
Refer to *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the alarm history function.

3-8-2 Operation Log

This function displays the operation log. The operation log can be displayed in order of occurrence or frequency.

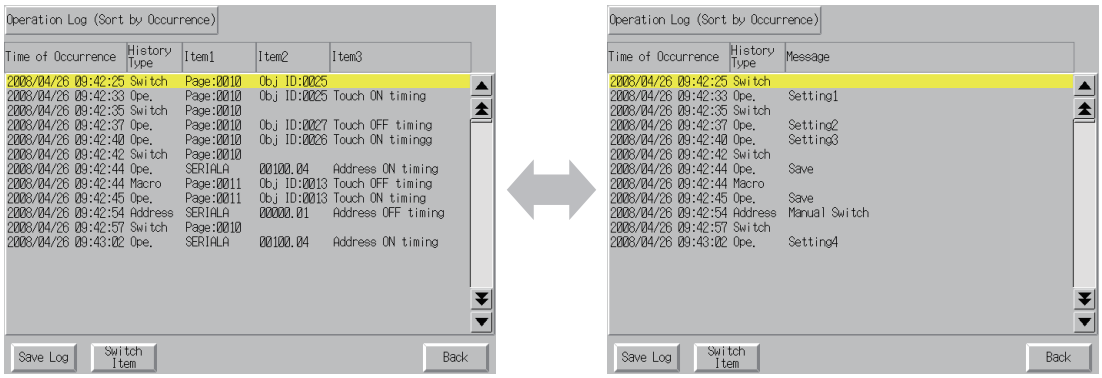
Display operation log data by using operations from the Special Screen Tab Page in the System Menu, as follows:

1 Press the **Operation Log (Sort by Occurrence)** Button or **Operation Log (Sort by Frequency)** Button to display the operation log contents.



Additional Information

With the NB5Q-TW01B-V1-S, press the **Switch Item** Button to change the items that are displayed.



2 Press the **Save Log** Button. The operation log data will be saved to the Removable Media as a CSV file.

3 Press the **Back** Button to return to the Special Screen.

Additional Information

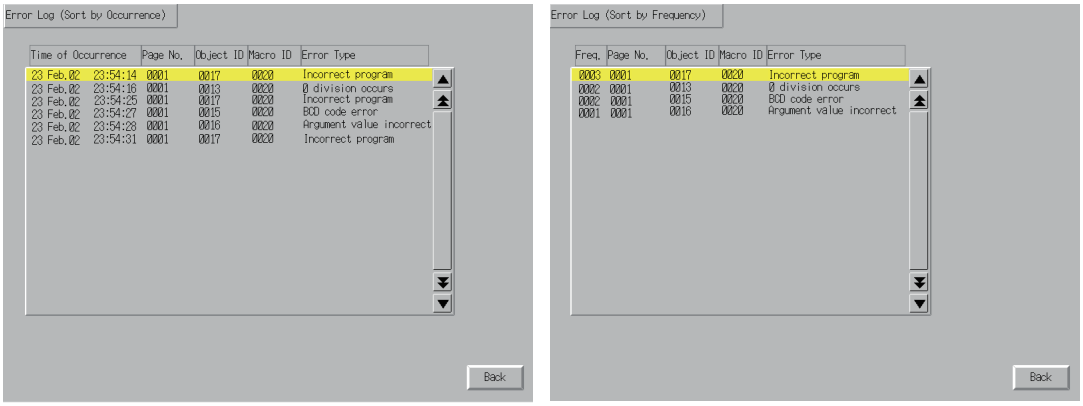
Refer to *3-2-4 Initializing and Saving the Operation Log* on page 3-16 in this manual and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the operation log.

3-8-3 Error Log

This function displays the macro error history. Macro errors can be displayed in order of occurrence or frequency.

Display error log data by using operations from the Special Screen Tab Page in the System Menu, as follows:

1 Press the **Error Log (Sort by Occurrence)** Button or **Error Log (Sort by Frequency)** Button to display the error log contents.



2 Press the **Back** Button to return to the Special Screen.

Additional Information

Refer to *3-2-5 Initializing and Saving the Error Log* on page 3-18 in this manual and *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on the error log.

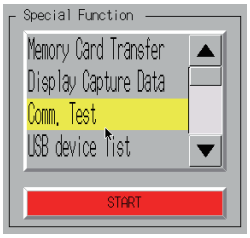
3-8-4 Communication Test

This function checks whether communications are enabled, by performing simple communications.

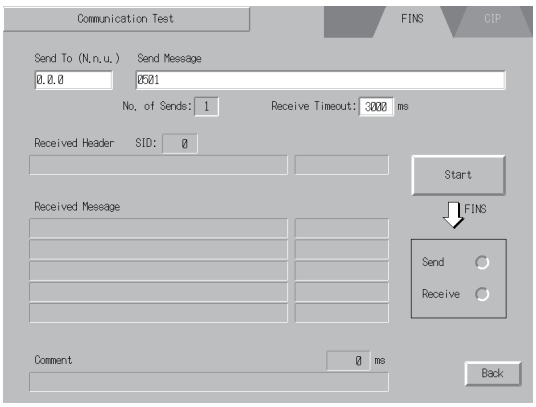
Screen	Method of connection with host
FINS communications test	Serial port Ethernet
CIP communications test	EtherNet/IP

Display the Communication Test Screen by using operations from the Special Screen Tab Page in the System Menu, as follows:

1 Select **Communication Test** from the *Special Functions* List Box, and press the **START** Button.



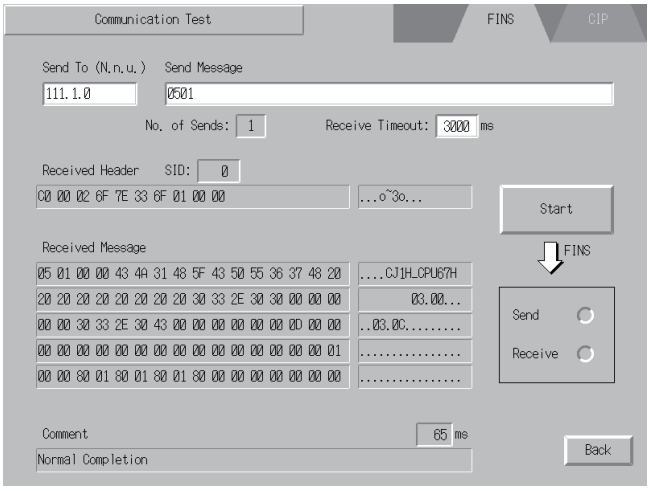
2 Press the **Communication Test** Button to switch to the Communications Test Screen.



3 Select either **FINS** or **CIP**.

4 Press the **Back** Button to return to the **Special** Window.

FINS Communications Test



1 Set each of the setting items, as follows:

- Setting and Display Items in Communication Test Screen

Item	Details
Send to	Sets the address of the transmission destination in the format *(network address).(node address).(unit number)*. Sets the following addresses when performing a communications test for a node connected to serial port A or B. Serial port A: 111.1.0 Serial port B: 112.1.0
Send message	Sets the FINS command being to be sent.
Number of sends	Displays the number of times messages are transmitted. The number of times is fixed to 1.
Receive Timeout	Sets the time before the message timeout occurs. Displays an error message when the timeout time is exceeded after transmission. The setting time is applicable for Ethernet only. For serial communications, the timeout monitor time set from the Comm Tab is used.

2 Press the **Start** Button to start transmission. The sending indicator will remain lit until the transmission is completed. After transmission, the Receiving indicator will remain lit until reception is completed.

3 If communications are normal, a response will be received from the transmission destination and the following items will be displayed. Refer to the *FINS Command Reference Manual (Cat. No. W227)* for details on FINS commands and information displayed in comments.

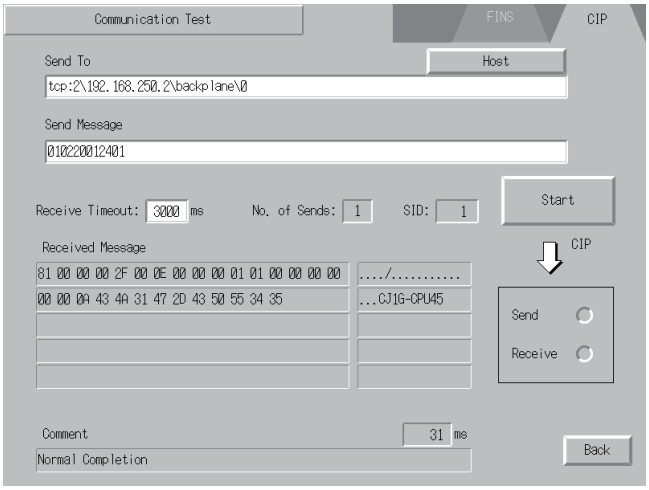
- Display Items in Communication Test Screen

Item	Details
SID*1	The SID used for transmission is displayed as a hexadecimal. The SID is incremented between 0 and 0xFF and returns to 0 after 0xFF is exceeded.
Received header	Displays the FINS header that is received.*2
Received message	Displays the received message.
ms	Displays the time lapsed in ms from sending the FINS command until receiving the FINS response.
Comment	Displays the status, such as “normal completion,” according to the completion code after reception.

*1. SID is the source process ID.

*2. The FINS header is the header that precedes the FINS command. Refer to the *FINS Command Reference Manual (Cat. No. W227)* for details on FINS commands.

CIP Communications Test



1 Set each of the setting items, as follows:

Item	Details
Send To	Sets route path of the send destination. Also, if you click the **Host** Button, a list of hosts registered in the project will be displayed. You can select the host of the send destination from the list.
Send message	Inputs an explicit message.
Number of Sends	Displays the number of times messages are transmitted. The number of times is fixed to 1.
Receive Timeout	Sets the time before the message timeout occurs.

2 Press the **Start** Button to start transmission. The sending indicator will remain lit until the transmission is completed. After transmission, the Receiving indicator will remain lit until reception is completed.

3 If communications are normal, a response will be received from the transmission destination and the following items will be displayed.

Item	Details
SID	Displays the identification number of the explicit message.
Received Message	Displays the received message.
ms	Displays the time from sending the command message to receiving the response message.
Comment	Displays the status, such as “normal completion,” according to the completion code after reception.

Additional Information

- For details on explicit messages, refer to documentation on EtherNet/IP and CIP specifications.
- To obtain documentation on EtherNet/IP and CIP specifications, contact an ODVA office.

3-8-5 USB Device List

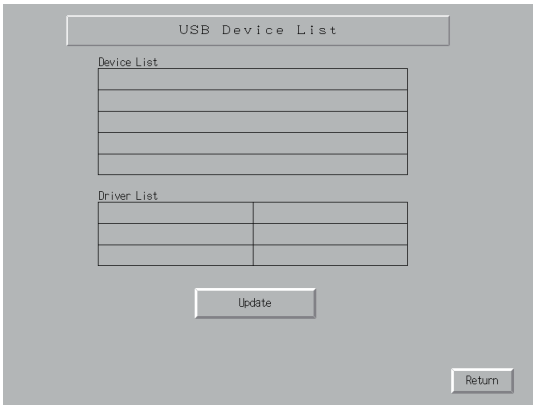
This function displays information about the devices connected to the PT's USB port.

Item	Details
Device list	A list of the devices currently connected to the USB port is displayed.
Driver list	A list of connectable USB devices that are supported by the PT Unit is displayed.

1 Select **USB Device List** from the *Special Functions* List Box, and press the **START** Button.



2 The USB Device List Window will be displayed.



A list of USB devices currently connected and a list of USB devices supported by the NS-B-series are displayed. Press the **Update** Button to reconfirm the connected USB devices and refresh the display.

3 Press the **Return** Button to return to the Special Screen.

Additional Information

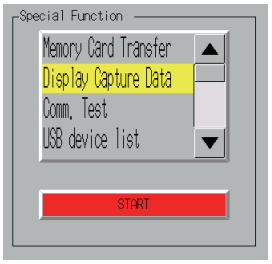
The USB Device List Window displays the devices connected to the USB Type-A connector on the PT.

3-8-6 Display Capture Data

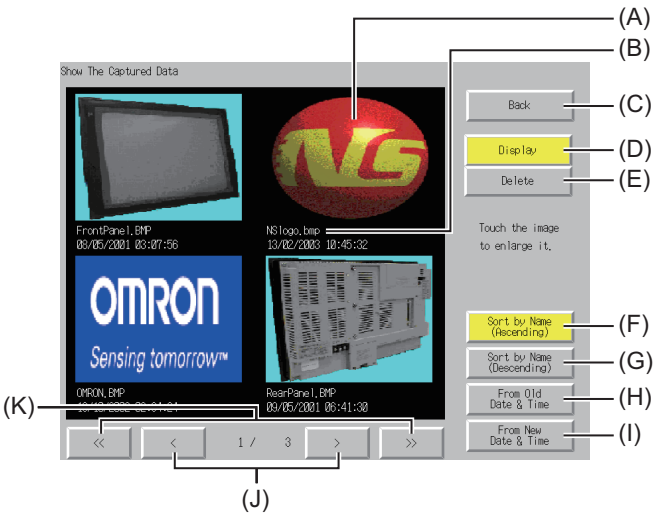
Screen capture data stored in a Removable Media can be displayed.

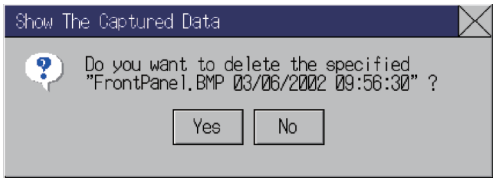
Perform the following procedure under *Special Screen Tab* on the System Menu.

1 Select **Display Capture Data** from the *Special Function* List Box and press the **START** Button.



2 The Show The Captured Data Screen will be displayed.



No.	Item	Details
(A)	Data	Displays a BMP file stored in the LOG/CAPTURE folder in the Removable Media.
(B)	File name	Display the file name and time stamp of the BMP file.
(C)	Back	Press to return to the Special Screens Tab Page.
(D)	Display	Switches to display mode. Pressing a BMP in display mode displays only the specified image enlarged. In the enlarged display state, the following operations are possible. Press the **Full Screen** Button to display the BMP file in original format. The original display divided into four areas will return if BACK is pressed.
(E)	Delete	The following dialog box will appear if the **Delete** Button and then the bitmap are pressed.  Press the **Yes** Button to delete the BMP. The capture display screen will return if the **No** Button is pressed.

No.	Item	Details
(F)	Sort by name (Ascending)	Press to sort the bitmap file names alphabetically.
(G)	Sort by name (Descending)	Press to sort the bitmap file names reversed alphabetically.
(H)	From Old Date & Time	Press to sort the bitmap file names starting from the oldest one.
(I)	From New Date & Time	Press to sort the bitmap file names starting from the newest one.
(J)	< Button and > Button	Press to display the next or previous page (4 files) of bitmaps.
(K)	<< Button and >> Button	Press to display the page back or forward by 3 pages (12 files) of bitmaps.

3-8-7 Memory Card Transfers

With a Removable Media is inserted into the PT Unit, please perform the following procedures using the Special Screens Tab Page of the System Menu. You can manually transfer project and system programs without manipulating the DIP switch on the PT Unit. The Removable Media can be used to transfer data in the following situations.

- To transfer data to or from a Removable Media already inserted to save or read data such as data logs and captured data.
- To transfer data after replacing a Removable Media already inserted to save data such as data logs and captured data with a Removable Media for data transfer.
- To transfer data after inserting a Removable Media to a PT Unit without one.

Perform the following procedures as required by the application.

● Transferring Data to a Removable Media in the PT Unit

No special action is required prior to transferring data to the Removable Media.

● Replacing a Removable Media in the PT Unit with Another Removable Media Used to Save Data

Use the following procedure to replace the Removable Media already in the PT Unit with another Removable Media that will be used to save data.

Perform the following procedure from the Initialize Tab Page of the System Menu. Remove the Removable Media that is currently inserted, and insert another one.

1 Press the **Remove** Button next to *Memory Card* of the Initialize Tab Page.

2 Confirm that it is safe to remove the Removable Media, and remove it from the PT Unit.

3 Insert the Removable Media that will be used to save data into the PT Unit.

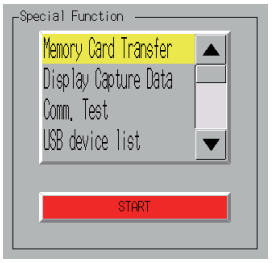
● Inserting a Removable Media into a PT Unit without One

Insert the Removable Media into the PT Unit.

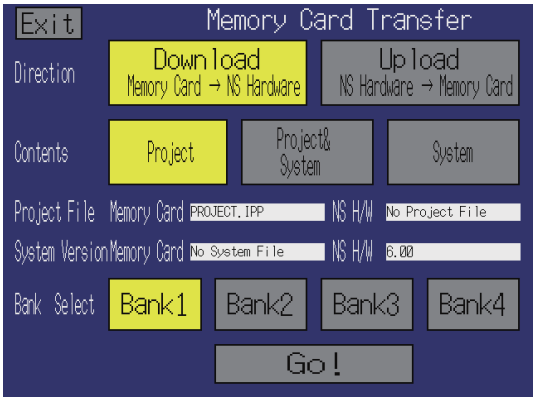
Transferring Memory Card Data

Use the following procedure from the Special Screen Tab Page of the System Menu to transfer data to Memory Card. Press the **EXIT** Button at the top left of the Memory Card Transfer screen to reset the PT Unit.

1 Select **Memory Card Transfer** from the Special Functions list, and press the **Start** Button.

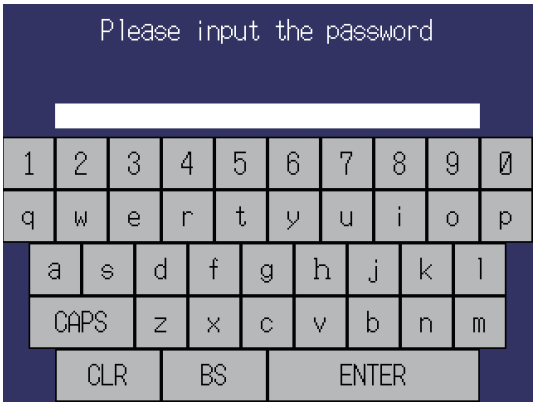


2 A Memory Card transfer will be executed, and the following screen will be displayed on the PT Unit.



3 Specify the direction (download or upload), contents (Project, Project & System, or System), and banks. The IPP file name and system version that are stored in both the specified bank of the Removable Media and the PT Unit will be displayed in the Project File and System Version Fields. After confirming the details, press the **Go** Button.

4 The following screen will be displayed if data transfer security has been set for the project stored in the PT Unit to protect the project data in the PT Unit from unauthorized data transfers. Input the password and press the **ENTER** Button.



5 A message confirming the transfer will be displayed. Press the **OK** Button to execute the specified data transfer operation. When downloading, the project previously stored in the PT Unit will be deleted. Also, specify whether or not to delete the log data.

Precautions for Correct Use

Always clear the log data for the following.

- When changing settings related to alarms, events, or the data logs.
- When transferring a different project to the PT Unit.

6 A warning message will be displayed if the PT Unit model, system program/screen data versions, or language for the data stored in the PT Unit are different from that for the data stored in the Removable Media. Press the **Yes** Button to continue transferring the data.

7 The uploading/downloading screen will be displayed while data is being transferred. A screen indicating that the transfer has been completed will be displayed when the transfer has finished. (If an error occurs, a transfer error screen will be displayed. Refer to *If an Error Occurs During Data Transfer with Removable Media* on page 19.)

8 The following screen will be displayed when the transfer is completed.



9 If you want to continue using the Removable Media, press the **Reset** Button to reset the PT Unit. If you remove or replace the Removable Media, press the **Reset** Button immediately after removal or replacement to reset the PT Unit.

Precautions for Correct Use

- Please refer to the procedure above for removing a Removable Media when transferring data and always follow the messages displayed on the PT Unit. If a Removable Media is removed at the wrong time, the data that has been transferred may not work properly.
- The data that can be transferred using the Memory Card Transfer operation on the System Menu is only the project and system program data can be manually transferred with a Removable Media inserted. The DIP switch on the PT Unit must be manipulated to insert a Removable Media and automatically upload/download project or system program data.

  Refer to *2-4 Using Removable Media* on page 2-12 for details.

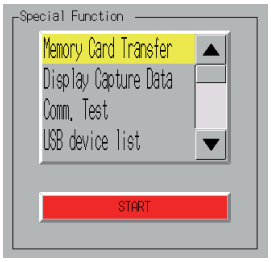
3-8-8 External Application Startup

This function closes the regular work screen and starts up an external application, such as the Communication Test.

The following describes the procedure for starting up external applications. Refer to the individual manual for more details on functions and operations applicable to the application.

Start up an external application by using operations from the **Special Screen** Tab in the **System Menu** as follows:

1. Select an external application from the Special Functions List Box, and press the **START** Button.



2. The PT Unit resets.
3. The PT Unit reboots, and the selected application starts up.

If an application displays a message, refer to its manual.

Additional Information

Communication Test, **USB Device List** and **Display Capture Data** are not external applications. The screen in the **System Menu** switches when you press the START button with one of these selected, but the NS-B-series PT does not reset.

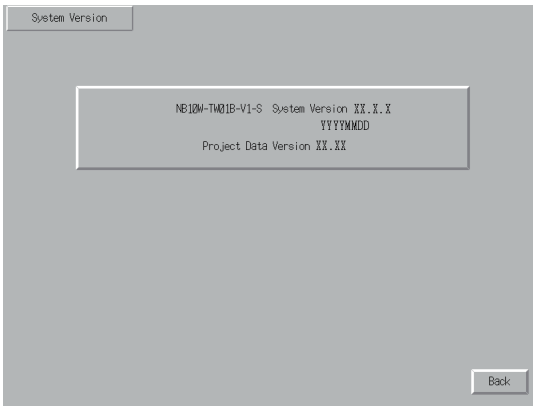
3-8-9 Version Display

This function displays information on the PT Unit version.

Display the Version Display Screen by using operations from the **Special Screen** Tab Page in the System Menu, as follows:

1 Press the **System Version** Button to switch to the Version Display Screen.

2 The product model and version will be displayed.



3 Press the **Back** Button to return to the Special Screen.

3-9 Hardware Check

The hardware check is used to check the following functions.

Item	Function
LCD check	Checks the LCD.
Touch switch check	Checks touch panel input.
Touch panel Calibration	Calibrates the touch positions.

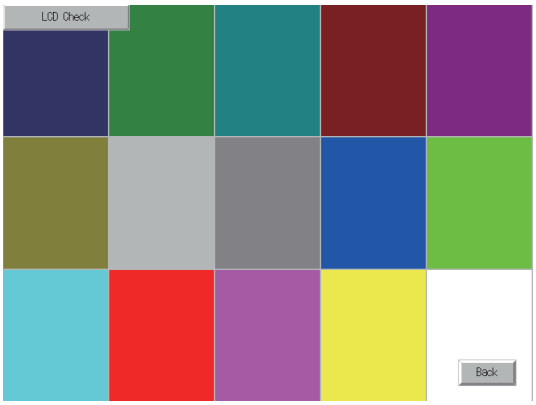


3-9-1 LCD Check

This function checks whether the LCD is operating normally.

Check the LCD by using operations from the Hardware Check Tab Page in the System Menu, as follows:

1. Press the **LCD Check** Button to switch to the LCD Check Screen.



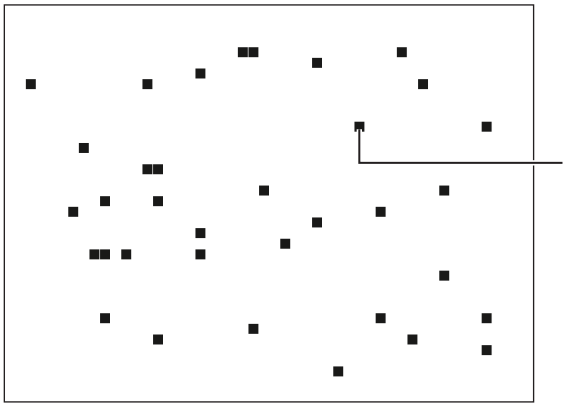
2. Press the **Back** Button to return to the Hardware Check Screen.

3-9-2 Touch Switch Check

This function checks whether the touch switches are operating normally.

Check the touch panel by using operations from the Hardware Check Tab Page in the System Menu, as follows:

1. Press the **Touch Switch Check** Button to switch to the Touch Switch Check Screen.
2. Press the screen. If the part of the screen touched is shown in inverse display, the touch switch is operating normally.



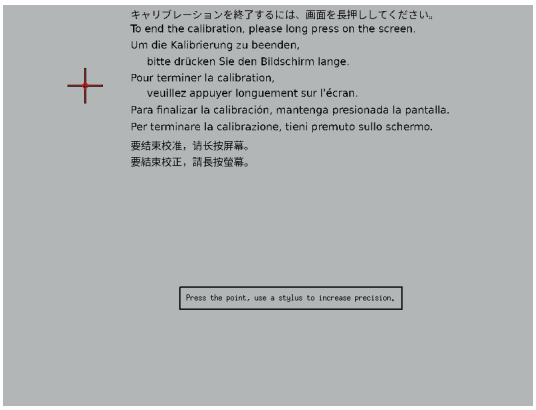
3. Press and hold any point on the screen to return to the Hardware Check Screen.

3-9-3 Touch Panel Calibration

This function calibrates the touch positions on the touch panel.

Use the following procedure from the Hardware Check Tab Page of the System Menu to perform the calibration.

1 Press the **Touch panel Calibration** Button. The Calibration Display will appear.



2 Press the marks in the four corners of the screen and the mark in the center of the screen. The marks may be pressed in any order.

3 The touch positions will be calibrated.

4 Press the blue button at the top of the display. The Hardware Check Tab Page will be displayed again.

3-10 Starting Operations

The host and PT Unit connected to it start operating after the project has finished being transferred and the System Menu settings (communications conditions with the host, etc.) have been completed.



Precautions for Safe Use

Start actual operation only after sufficiently checking the operation of the project and host programming.

Switching to RUN Mode and Starting Up

Pressing the Exit Button at the top right of the screen in the System Menu will display the screen that was displayed before moving to the System Menu, change the status to RUN mode, and start running the PT Unit. The pop-up screens that were open before switching to the System Menu, however, will not be displayed.



Additional Information

The error message indicating a project read error will be displayed if the System Menu is closed while project is being initialized. Always transfer the screen data from the CX-Designer or Removable Media after initializing project.

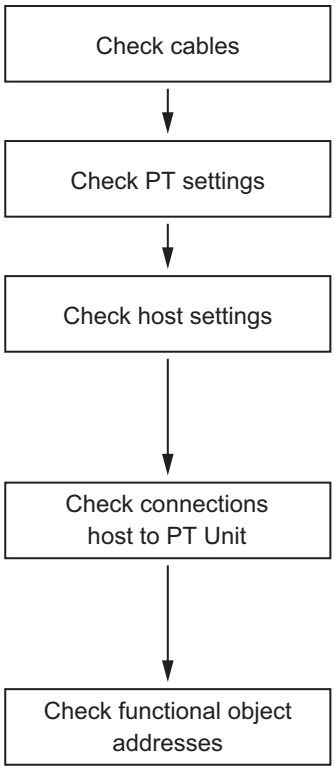
Checking Communications with the Host

Execute the host program and check that the following operations are normal.

- Check that the screens will switch according to the host program. If the screen displays cannot be switched normally, check whether the PT Unit and host are connected properly, and whether the hardware settings are correct. For details, refer to *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)*.
- Use the Support Software (CX-Programmer, etc.) to display the details on words and bits to check that the results of button operations and numerical/character string input operations have been properly transmitted to the host.
- If the operation results are not transmitted to the host properly, check the functional object settings. Refer to the functional object descriptions in the *NS-B-series Programmable Terminal Software User's Manual (Cat. No. V130)* for details on functional object settings.

Communications Not Established with Host

Use the following procedure to check communications if the PT Unit and host are not communicating normally.



Check the cable models and cable pins.

Refer to *A-4 Fabrication of the Connection Cable* on page A-10.

Check the communications settings under the System Menu. Refer to *3-6 Communications Settings* on page 3-42.

Check the host settings using the CX-Programmer or other Programming Device.

Refer to *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)*.

Check the connections between the PT Unit and the host.

Refer to *NS-B-series Programmable Terminal Host Connection User's Manual (Cat. No. V131)*.

Check the addresses and host names set for functional objects. Be sure that all address settings are within range.

Precautions for Correct Use

The whole system may stop, depending on the method used to turn the power ON and OFF. Always follow the specified procedure when turning the power ON or OFF.

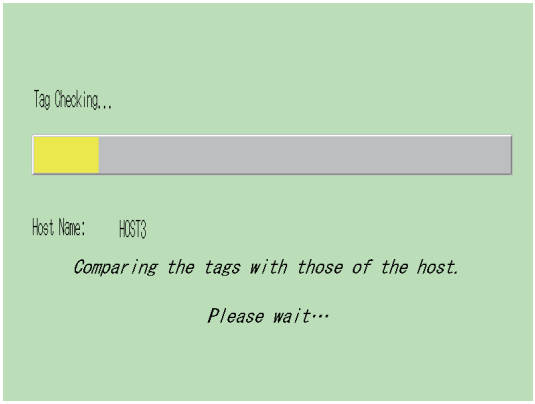
3-11 Verifying Tags

If tags are used by projects in the PT Unit, verification will be perform to check whether the tag settings match the host tag settings (i.e., network variables).

Tags will be verified in the following cases.

- When the PT Unit is started
- When ladder data is downloaded to the host (i.e., tag settings are updated)

1 The following screen will be displayed when the PT Unit is started or ladder data is downloaded to the host.

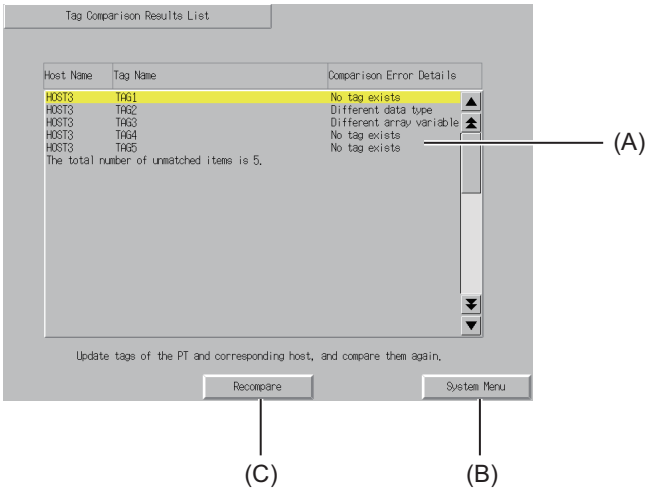


2 When verification has been completed, the user screen will be displayed if the tags of the NS-B-series PT and the host match.

● If the verification result is that the tags do not match

If the tags do not match, the Tag Comparison Results List will be displayed.

Check the differences and then correct the project or host tag settings (i.e., network variables).



No.	Item	Details
(A)	Verification Error Details	Displays details of the verification error. For details, refer to *Verification error details list*.
(B)	System Menu	Switches to the System Menu. This menu allows you to check the communications settings of the host and perform operations such as Memory Card transfers.
(C)	Recompare	Performs tag verification again. Use this after, for example, correcting the host tag settings (i.e., network variables).

Verification error details list

Item	Details
Missing tag	A tag that is registered in the project is not registered in the host.
Different data type	The data type set for the tag registered in the project is different from the setting for the host tag.
Different array size	The setting for the number of elements for array tags registered in the project is different from the setting for the host tag.
Maximum number of tags is exceeded	A tag is registered in the project, but the maximum number of tags (20,000) is exceeded.
Communications error	An error occurred in communications with the host.



Additional Information

- Tags can be used when connection is made to a CJ2H-CPU□□-EIP, CJ2M-CPU3□, CJ3M-CPU3□, NJ□01-□□□□, NX□0□-□□□□, or NX1P2-□□□□ CPU Unit using EhterNet/IP.
- If ladder data is downloaded to the host, the tags will be verified once downloading has been completed when the host tags are monitored.

  Examples for the Following project

Host	Host 1 and host 2
Screen 1	Using tags for host 1 and not host 2
Screen 2	Using tags for host 2

  While screen 1 is displayed, tags will not be verified when ladder data is downloaded to host 2.

  Tags will be verified when you switch to screen 2.
- When ladder data is downloaded to the host, you can display a confirmation message before the system starts to verify tags. For information on the setting method, refer to *3-3-9 Setting the Tag Update Notification Message* on page 3-33.
- The Tag Comparison Results List Screen can display up to 50 results.
- If you are connected to an NJ□01-□□□□, NX□0□-□□□□, or NX1P2-□□□□ Controller, some time may be required to verify tags, depending on the task execution times. Allow leeway in the task period settings in comparison with the task execution times, or verify the tags when task execution is stopped.

4

Maintenance

This section describes the maintenance and inspection methods for preventing errors occurring, and troubleshooting measures when errors occur in the PT Unit.

4-1 Maintenance **4-2**
4-2 Inspection and Cleaning **4-4**
4-3 Requesting a Replacement PT Unit **4-6**

4-1 Maintenance

Perform maintenance operations to maintain the PT Unit in optimum condition.

⚠ WARNING

Do not attempt to take the PT Unit apart and do not touch any internal parts while the power is being supplied. Doing either of these may result in electrical shock.



Backing up Project

Always back up project and store it in a safe place when the PT Unit malfunctions and needs to be sent out for repair, or when replacing the PT Unit.

Spare Units

Prepare a spare PT Unit to allow quick recovery of the system at such times as when the malfunctions, or the service life of the backlight has expired causing poor screen visibility.

Backlight

The backlight must be replaced when the brightness of the display backlight dims and the display becomes difficult to see. The backlight cannot be replaced by the user.

Contact your nearest OMRON representative.

● Backlight Replacement Guidelines

Replace the backlight according to the following guidelines under normal conditions.

After 50,000 hours of use at room temperature and humidity

LEDs are used in the backlights of NS-B-series: Operation at high temperatures will reduce the life of the backlight. If the backlight become darker, making it difficult to see the screen, replace the backlight.

Capacitor

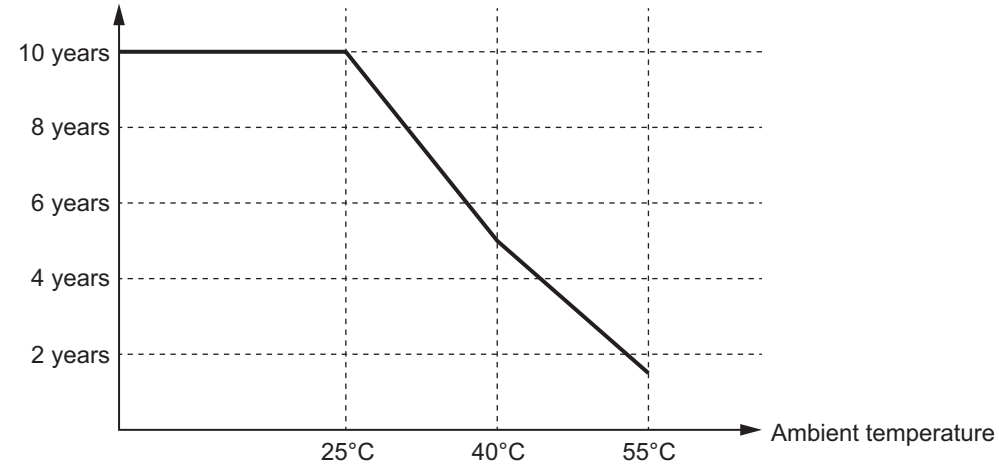
The NS-B-series has a built-in capacitor for retention of the calendar and clock settings. The capacitor retention period depends on the continuous power-ON duration of the PT Unit as described below.

Continuous power-ON duration of the PT Unit*1	Retention period at ambient temperature of 40°C with power-OFF
100 hours	Approx. 10 days
8 hours	Approx. 8 days
1 hour	Approx. 7 days

*1. This is equivalent to the time required to charge the built-in capacitor when it is completely discharged.

The period of validity of the capacitor retaining the calendar and clock settings is five years at 40°C, regardless of whether power is supplied to the unit. Note that the service life will be shortened if used at higher ambient temperatures.

Capacitor period of validity



4-2 Inspection and Cleaning

Clean and inspect the PT Unit periodically to maintain it in optimum condition for use.

Cleaning Methods

The screen visibility will be impaired if the display becomes dirty. Clean the display periodically using the following methods:

- For daily cleaning, wipe with a soft, dry cloth. Attempting to remove heavy dirt with the cloth may scratch the front panel sheet. Use a damp cloth and wipe the surface again to remove dirt.
- If dirt cannot be removed using a dry cloth, dampen the cloth sufficiently with a neutral cleaning agent solution (approximately 2%), squeeze the cloth out, and then wipe the surface.
- Materials such as rubber, vinyl, or tape that are attached to the PT Unit will leave stains if left for a long time. If such material is attached to the PT Unit, remove when cleaning.

Precautions for Correct Use

Never use benzene, thinner, or other volatile solvents, or chemical cloths to clean the PT Unit.

Inspection Methods

Inspect the PT Unit once every six to twelve months. Shorten the interval between inspections when using the PT Unit in extreme conditions, such as under high temperatures, high humidity, or environments subject to large quantities of dust.

● Inspection Items

Inspect the PT Unit for the following items to check whether the PT Unit is operating within the specified criteria. If the PT Unit is outside the criteria, use measures such as improving the operating environment to conform to the standards, or tightening screws.

Inspection items	Inspection details	Criteria	Inspection means
Power supply	Power terminal voltage fluctuation	Allowable voltage range (24 VDC ±15%)	Tester
Ambient environment	Ambient temperature (temperature in control panel)	0 to 50°C (Refer to *Appendix 1*.)	Thermometer
	Ambient humidity (temperature in control panel)	20% to 90% (Refer to *Appendix 1*.)	Temperature meter
	Presence of dust	No dust accumulated.	Visual inspection
	Presence of oil	No oil between front panel sheet and molding.	Visual inspection
Mounting conditions	Looseness of fixed mounting bracket	Specified torque.	Phillips screwdriver
	Connection status of Connecting Cable Connectors	Fully inserted, locked, and with No looseness.	Phillips screwdriver
	Looseness of external wiring screws	No looseness.	Phillips screwdriver
	Status of external connecting cables	No breaks or other damage	Visual inspection, tester

Inspection items	Inspection details	Criteria	Inspection means
Parts with limited service life	Backlight brightness	Sufficient brightness. Backlight life (at room temperature of 25°C) is 50,000 hours, as a guideline.	Visual inspection
	Capacitor	5 years (at 40°C).	Replace every 5 years*1
Touch panel input position accuracy	Shifted input positions on the touch panel	Calibrate the touch panel if the input positions have shifted.	Touch panel operation

*1. The built-in capacitor cannot be replaced. Replace the PT Unit if problems are found, such as if the calendar or clock settings are lost.

Precautions for Safe Use

- Do not disassemble, repair, or modify the PT Unit.
- Follow all local government regulations, where applicable, when disposing of the Unit.

4-3 Requesting a Replacement PT Unit

Always observe the following precautions when faults are detected during inspection and the PT Unit is to be replaced.

- Create a backup of the project.
  Project may be deleted when the PT Unit is repaired by OMRON.
- Always turn OFF the power before replacing the PT Unit.
- After replacing the PT Unit, check to confirm that the new PT Unit has no faults.
- When returning a faulty PT Unit for repair, include a document with the PT Unit that provides as many details on the fault as possible, and send to your OMRON representative.

A

Appendices

A-1 Specifications A-2
A-1-1 General Specifications A-2
A-1-2 Performance Specifications A-3
A-1-3 Communication Specifications A-5
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A-1 Specifications

A-1-1 General Specifications

● Specifications other than power consumption and weight

Items	Specifications			
	NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
Rated power supply voltage	DC24V±15%(DC20.4~27.6V)			
Ambient operating temperature	0°C~50°C			
Ambient storage temperature	-20°C~60°C			
Ambient operating humidity	10%~90% RH (without condensation)			
Ambient storage humidity	10%~90% RH (without condensation)			
Operating environment	No corrosive gases			
Noise Immunity	Compliant with IEC61000-4-4, 2KV (Power cable)			
Vibration resistance (During operation)	10 to 57Hz with a 0.075mm amplitude, 57 to 150Hz 9.8m/s^2 for 30 min each in X, Y and Z directions			
Shock resistance (During operation)	147m/s^2 for 3 times each in X, Y and Z directions, with each time lasting for 11 ms			
Dimensions W×H×D (mm)	356.0×272.0×45.0	268.8×210.8×54.0	202.0×148.0×46.0	184.0×142.0×46.0
Panel opening dimension W×H (mm)	345.0×261.0	258.0×200.0	191.0×137.0	172.4×131.0
Panel thickness range	1.6~4.8 mm			
Degree of protection	Front operation part: IP65 (Dust proof and drip proof only from the front of the panel)			
Capacitor life	5 years (at 40°C)			
Clock and calendar	Ambient temperature 25°C: Maximum error of -37.2 to -28.5 seconds per month			
Applicable standards	EC Directives, KC, UL61010-2-201			

● Power consumption and weight

Model	Power consumption	Weight
NB15W-TW01B-V1-S	14W	2625g
NB10W-TW01B-V1-S	8W	1465g
NB7W-TW01B-V1-S	7W	705g
NB5Q-TW01B-V1-S	7W	660g

A-1-2 Performance Specifications

● Display specifications

Items		Specifications			
		NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
Display panel	Display device	15.0”TFT LCD	10.1”TFT LCD	7”TFT LCD	5.7”TFT LCD
	Number of dots	1024×768	1024×600	800×480	320×240
	Display color	16.2 M colors	65536 colors		
	Valid display area W×H(mm)	304×228*1	221×133*1	154×85*1	113×85*1
Backlight	Life	50,000 hours (Typ) of operating time at the normal temperature (25 °C) with 40% brightness*2			
Front-side LED		ON: power connected OFF: power disconnected			

*1. Some models display a screen close to the frame of a front sheet. When placing texts or figures at the edges of the screen (top, bottom, left, right), please be aware that there might be slight differences in appearance between on CX-Designer and an actual PT unit.

*2. Standard value for brightness to decrease by 60% at the normal temperature and humidity.OMRON undertakes to repair and diagnose PT Unit, including the display, within five years from the date of manufacturing. A unit requiring repair will be exchanged for a new product. OMRON performs diagnosis to identify a faulty module. (Service uncovered under warranty is not free of charge.)

● Operation part specifications

Items	Specifications			
	NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
Touch panel	Type: resistive type			
	Resolution: 1,024×1,024			
	Operation force: 0.5~0.8 N			
	Press endurance: min. 1,000,000 times (at 25 °C)			

● Data capacity specifications

Items	Specifications			
	NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
Standard screen data capacity	60 MB			

● External I/F specifications

Items	Specifications			
	NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
USB Type-B	1 port (for project transmission with a PC) Equivalent of USB 2.0 Full speed			
USB Type-A	1 port Equivalent of USB 2.0 Full speed			
SD Memory Card Slot	1 slot Compliant with SD/SDHC	-	-	-

● Software for making project

Name/Version	Specifications			
	NB15W -TW01B-V1-S	NB10W -TW01B-V1-S	NB7W -TW01B-V1-S	NB5Q -TW01B-V1-S
CX-Designer version 3.□	Not Supported			
CX-Designer version 4.□	Support			

A-1-3 Communication Specifications

● Serial port communication specifications

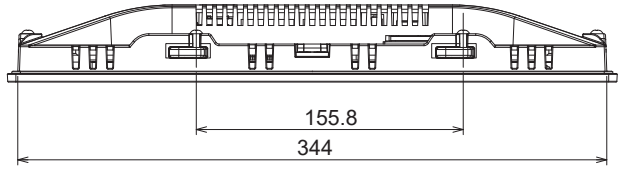
Items	Specifications			
	NB15W-TW01B-V1-S	NB10W-TW01B-V1-S	NB7W-TW01B-V1-S	NB5Q-TW01B-V1-S
Serial port A	Compliant with EIA RS-232C D-sub, 9-pin connector socket Pin 6 DC +5V output (Max. current: 250mA) Communication cable length: Max.15m			
Serial port B	Compliant with EIA RS-232C/422A/485 D-sub, 9-pin connector socket At one point, only one from RS-232C and RS-422A can be designated to perform communications Communication cable length: Max.15m (RS-232C) Max. 500m (RS-422A)			

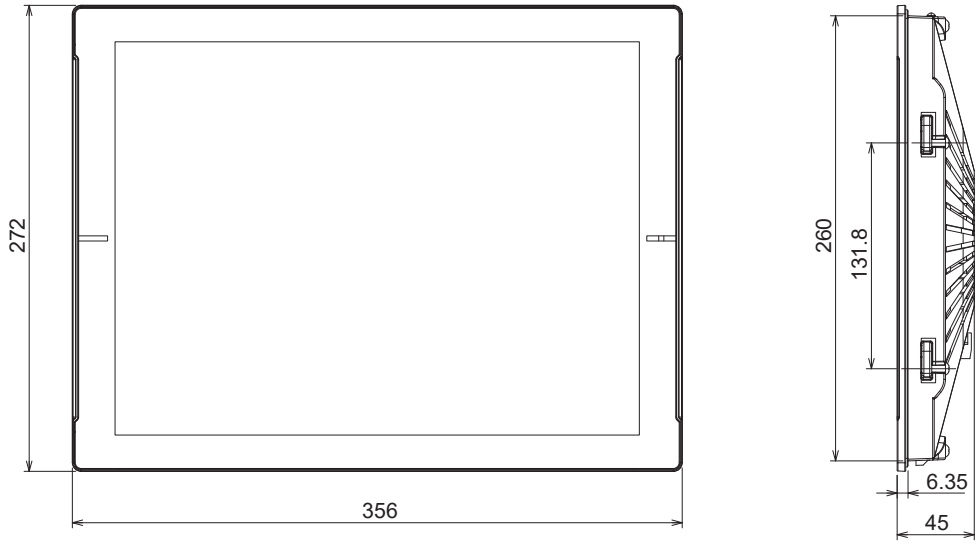
● Ethernet communication specifications

Items	Specifications
Conformance standards	Conforms to IEEE 802.3 / Ethernet (10/100Base-T)
Transmission medium	2 pair Cat 3 UTP 22 to 26AWG, Cat 5, Cat 5e, Cat 6
Transmission distance	100 m (node-to-hub and hub-to-hub)
Connector	8-pin modular connector

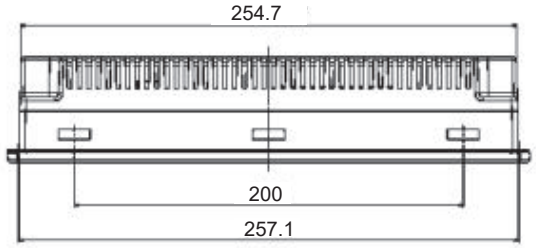
A-2 External Dimensions

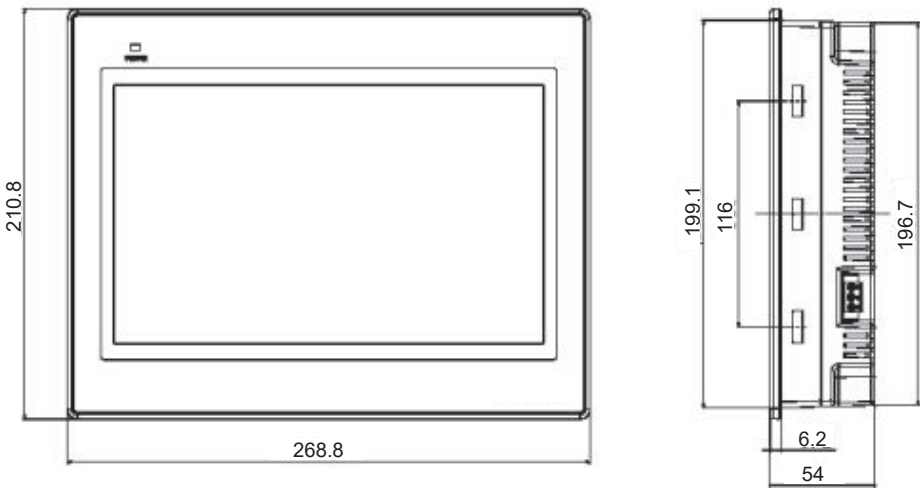
- **NB15W-TW01B-V1-S model**



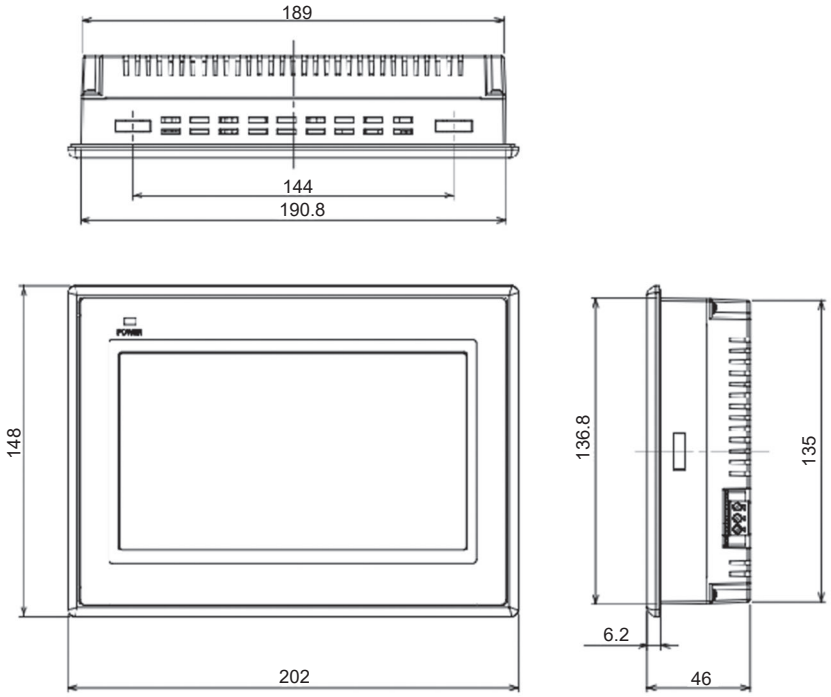


- **NB10W-TW01B-V1-S model**

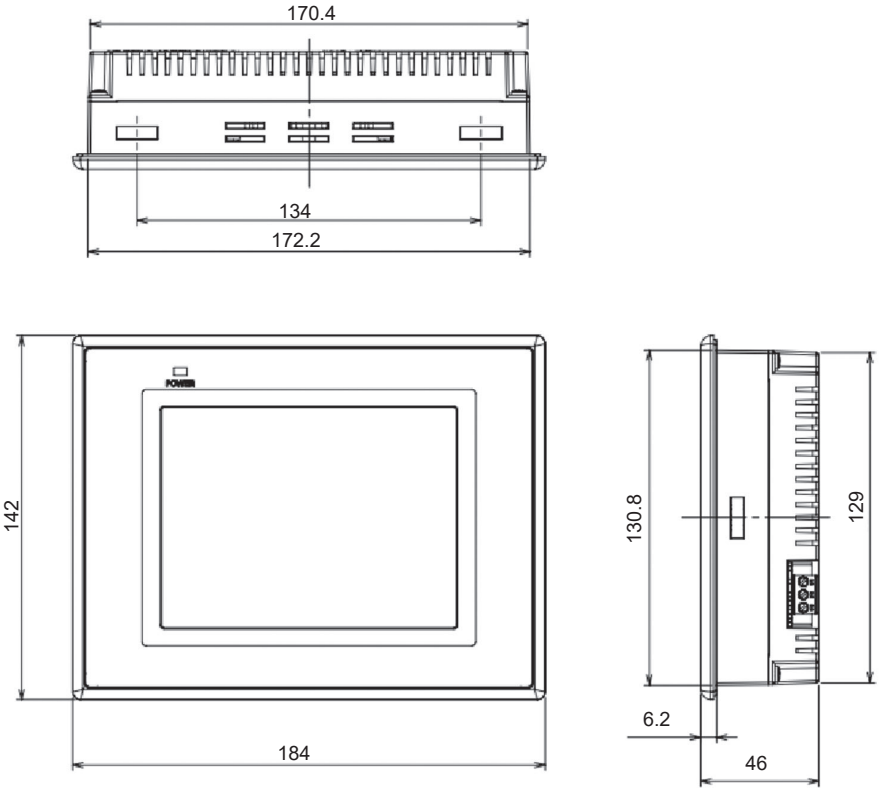




● NB7W-TW01B-V1-S model



● NB5Q-TW01B-V1-S model



A-3 RS-422A/485 Connections

A-3-1 Grounding and Shielding of the Cables

When performing communications using RS-422A/485, carry out the connections, shielding and grounding as follows:

● Grounding wiring

The PT Unit has a functional grounding terminal (FG: ⏚).

(1) Generally, make the grounding according to Fig. (a).
- Connect the grounding terminals (GR) of the devices and the functional grounding terminal (⏚), at only one point make a D-type grounding (Max. grounding resistance 100Ω).
- Short-circuit the LG terminal and GR terminal of the PLC.
- Use a cable with a minimum of 2 mm^2 for the grounding cable.
- For details about the connection methods, refer to the related communication Unit manuals.

(2) As shown in Fig. (b), when the PT Unit, and noise source equipments such as motors and inverters, etc. are installed on the same panel, do not ground the PT Unit's functional grounding terminal (⏚).

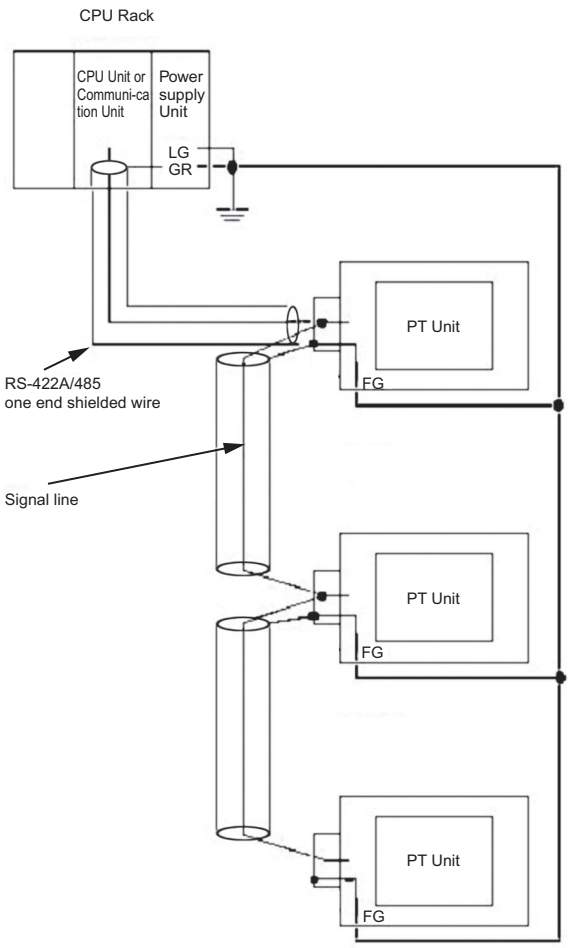
● Shielding of RS-422A/485 Cables

Be sure to shield the RS-422A/485 cables. Connect the grounding terminals (GR) of the devices and the functional grounding terminals (⏚), at only one point make a D-type grounding (Max. grounding resistance 100Ω), carry out a single-end shielding according to Fig. (a).

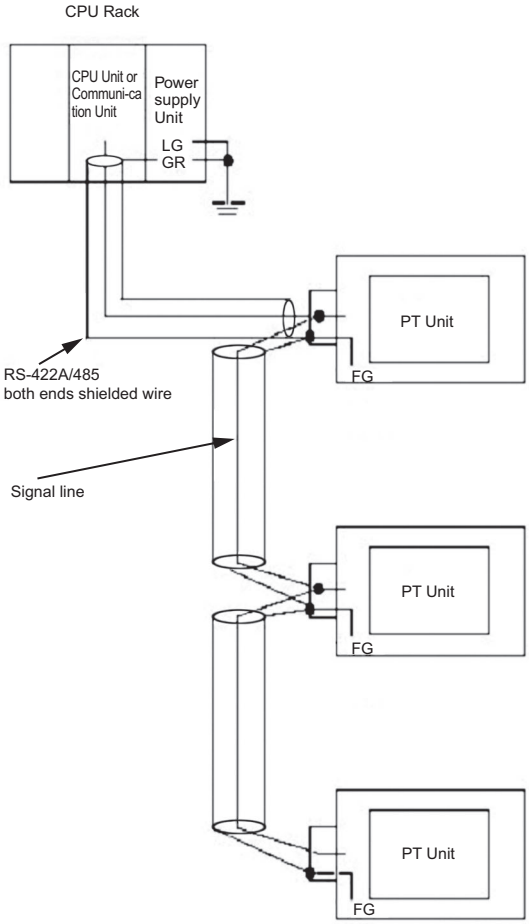
If grounding is not done to the functional grounding terminal (⏚) of the PT Unit, shield both ends as shown in Fig. (b).

Note: In order to avoid malfunctions caused by interferences, shield the cables properly.

Figure(a)



Figure(b)



Note: When connecting an PT Unit with an Omron PLC using the Host Link method, only 1:1 communication is supported. Do not connect multiple PLCs with an PT Unit.

A-4 Fabrication of the Connection Cable

Fabricate the connection cable following the procedures below.

A-4-1 Cable Processing

1 Cut the cable to the required length.

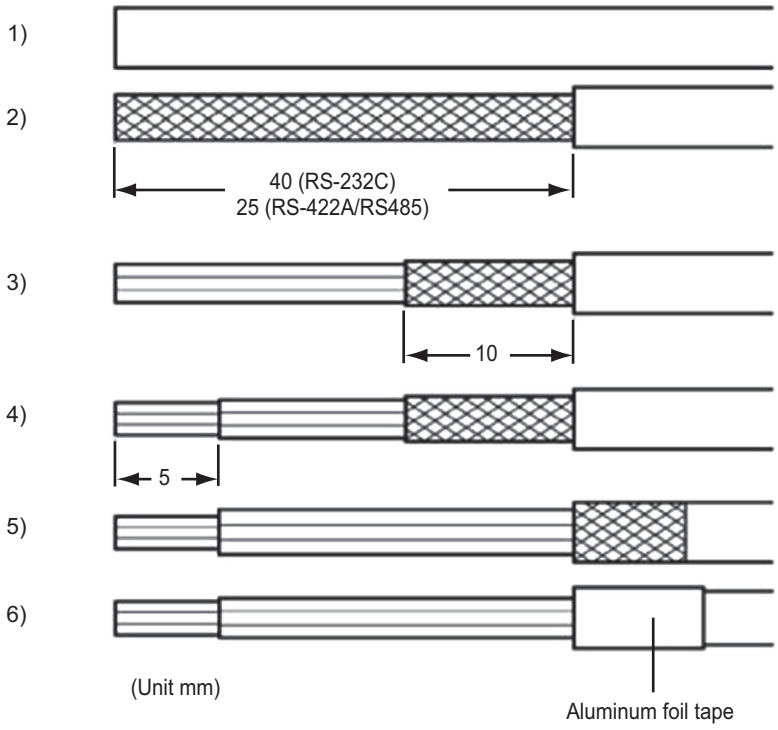
2 Use a tool like a razor, etc. to cut off the ethylene peel of the cable. Be care not to damage the shielding layer (for grouping purpose)

3 Use a pair of scissors to snip off the shielding layer.

4 Bring out the core of each wire using a wire stripper.

5 Fold back the shielding layer.

6 Wrap the folded part of the shielding layer with aluminum foil tape.

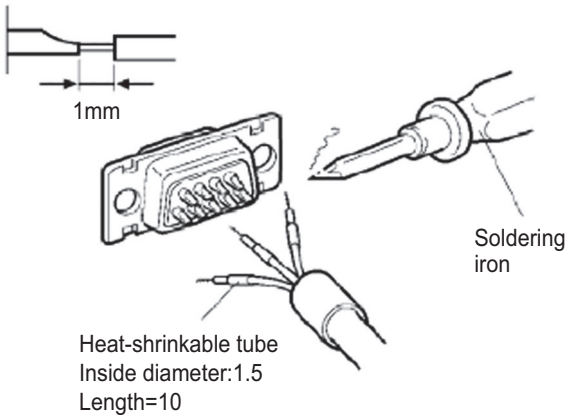


A-4-2 Soldering

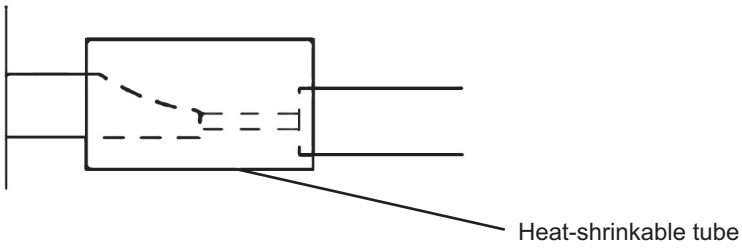
1 Sheathe each wire with a heat shrinkable tube.

2 Place some standby soldering tin on each wire and each pin of the connector.

3 Solder each wire and each pin of the connector.

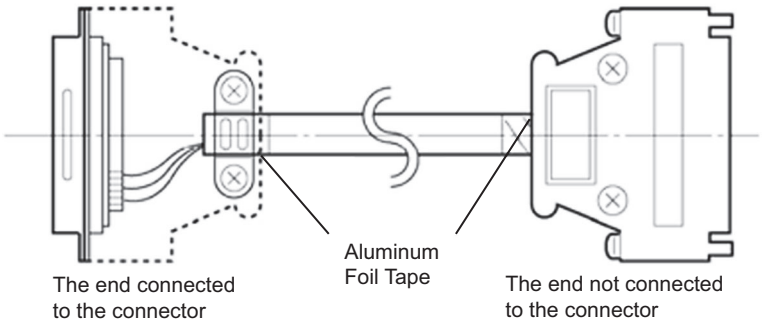


4 Pull the heat shrinkable tubes back to the soldering parts, heat them with a heat shrinking gun to make them shrink.



A-4-3 Shield Assembly

Assemble the connector shield as shown below.

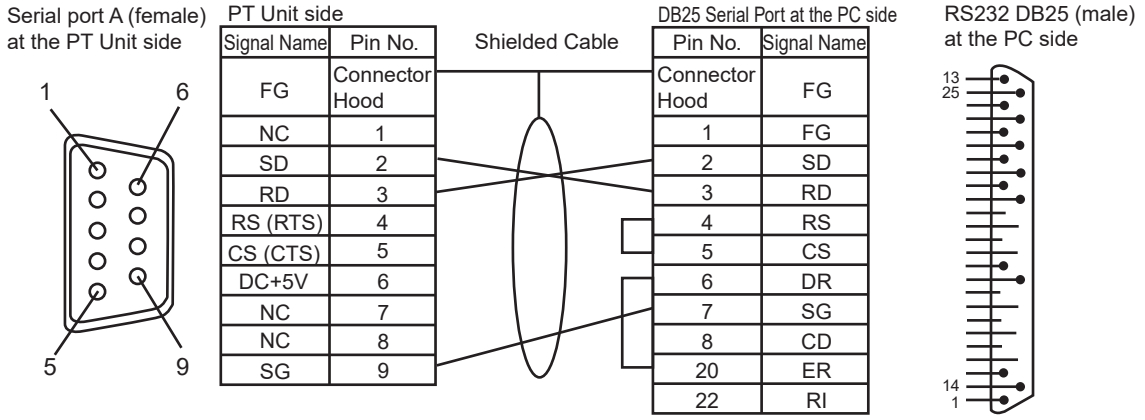


A-4-4 Method for fabricating the cable for connection to PC

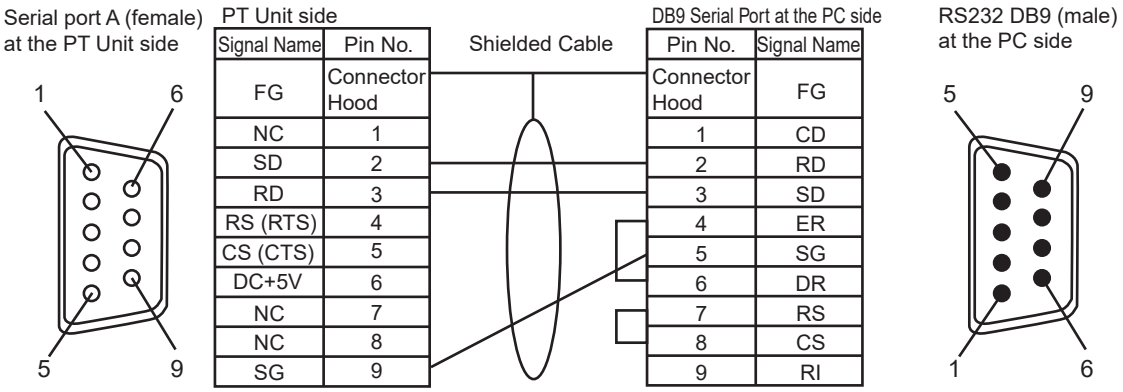
When fabricating the cable for connecting with PC, refer to the following methods:

Depending on the type of the RS-232C connector compatible with PCs according to PC, deploy the wiring as shown below:

25-pin Connector



9-pin Connector



A-5 List of Models

● PT Unit

Models	Resolution	Size	Communication	USB (Equivalent of USB 2.0 Full Speed)	SD Removable Media
NB15W-TW01B-V1-S	XGA 1024×768	15.0 inches	Serial port A, Serial port B, Ethernet	Type-A, Type-B	SD/SDHC
NB10W-TW01B-V1-S	WSVGA 1024×600	10.1 inches	Serial port A, Serial port B, Ethernet	Type-A, Type-B	-
NB7W-TW01B-V1-S	WVGA 800×480	7 inches	Serial port A, Serial port B, Ethernet	Type-A, Type-B	-
NB5Q-TW01B-V1-S	QVGA 320×240	5.7 inches	Serial port A, Serial port B, Ethernet	Type-A, Type-B	-

● PT Unit Related Software

Name	Descriptions	Remarks
CX-Designer	The software that creates project for NS-B-series PT.	CX-Designer supports the following operating systems. Windows 11

● Related connecting objects

Cable with connectors (PT Unit ↔ PLC)

Models	Cable Length	Object Unit	Communications methods	Specifications
XW2Z-200T	2m	Units with 9-pin connectors by OMRON	Host Link, NT Link (RS-232C)	9-pin ↔9-pin
XW2Z-500T	5m			
NB-RSEXT-2M	2m	RS-422/485 Communication Units by PLC manufacturers	Host Link, NT Link (RS-422)	9-pin ↔5-wire

A-6 List of Options

● Protective Sheet

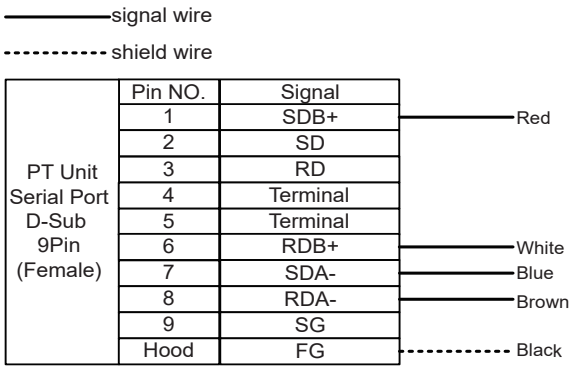
It adheres to the display preventing reflection and also dirt from sticking to the display. The sheet is colorless and transparent, with 1 set containing 5 pieces.

PT Unit Models	Models	Specifications
NB15W-TW01B-V1-S	NB15W-KBA04	5 pieces
NB10W-TW01B-V1-S	NB10W-KBA04	
NB7W-TW□□B-V1-S	NB7W-KBA04	
NB5Q-TW□□B-V1-S	NB5Q-KBA04	

● Installation fittings

Models	Descriptions
NB15W-ATT01	When users switch from the NS-series to NS-B-series, due to the difference of the unit size, installation fittings can be utilized to guarantee the process quick and smooth.
NB10W-ATT02	
NB7W-ATT01	
NB5Q-ATT01	

● RS-422A/RS-485 Communication Cable

Models	Descriptions
NB-RSEXT-2M	Only applies to the Serial port A of the NS-B-series product, when performing communications using RS-422A/RS485, can be equipped with this communication cable.  Conform to UL2464, AWG28 Cause a short circuit at terminal resistance. How to use: Open the connector of RS-422A/485 communication cable and cause a short circuit at PIN4 and PIN5. Make sure not to cause short circuit the other pins except PIN4 and PIN5. When the short circuit is completed, assemble the connector.

● USB Memory

It can be connected to the USB Type-A port on the back of PT Unit to perform the uploading, downloading and storage of related data.

Recommended Purchasing Model	Descriptions
FZ-MEM2G	USB disk with 2GB capacity manufactured by OMRON
FZ-MEM16G	USB disk with 16GB capacity manufactured by OMRON

I

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