Programmable Terminals

# NS-series

## Best Match

- Demonstrates excellent matching with OMRON control devices. Greatly reduces the cost and effort required to connect all kinds of components, such as PLCs. Provides a wide variety of useful functional aspects of the same manufacturer.

**5.7 inches**
**Hand-held Model**

**5.7 Inches**

**8.4 Inches**

**10.4 Inches**

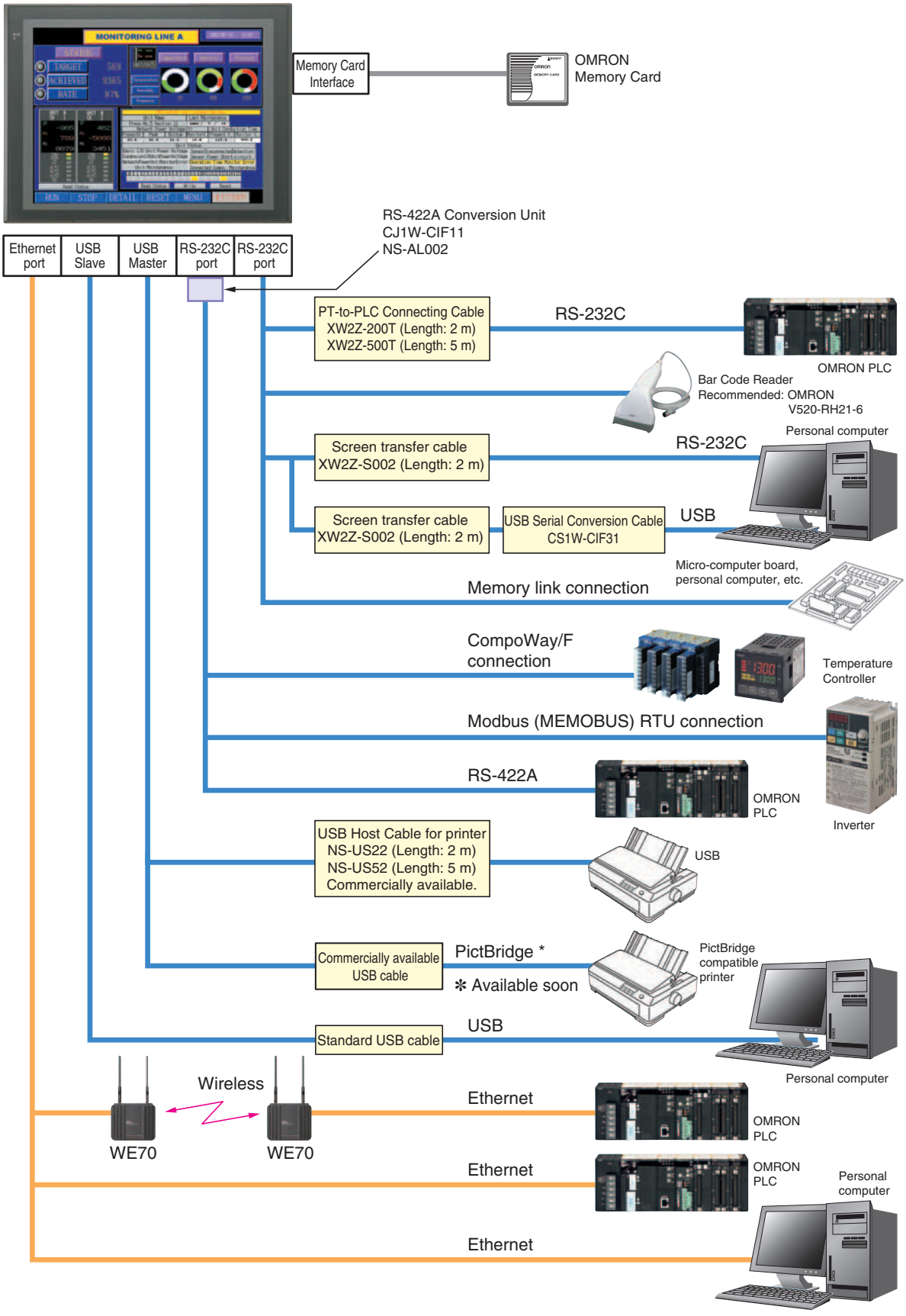
**12.1 Inches**

## Features

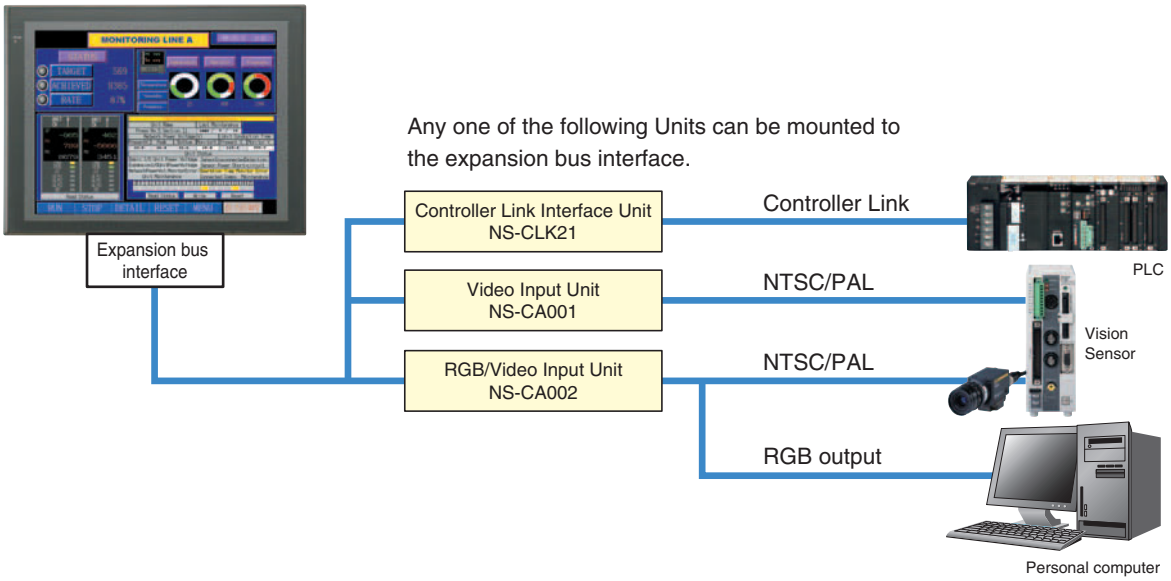
- 5.7 to 12.1 inch sizes are available
- A hand-held version of the NS5 is now available to perform operations at the production site
  The NS-series PT's have a complete set of functions that can be used at the production site
- The Smart Active Parts(SAP Library) makes it easy to connect to OMRON PLCs and components,
  OMRON provides a development environment that requires with no programming and no screen designing
- When an error occurs in a Unit in the OMRON PLCs,
  the Troubleshooter SAP Library provides an easy-to-understand explanation of the cause of the error as well as the countermeasures
- Ladder Monitor come as a Standard Feature
  The ladder program can be monitored onsite without a laptop!
  Ladder monitor lets you monitor PLC program status, search for addresses or instructions, monitor multiple I/O points, and much more
- Provides the FA integrated tool package "CX-One" for a Screen Design Software
  Integrated Simulation come as a Standard Feature
  The integrated simulation function simulates ladder programs and screen data simultaneously even without the actual hardware
- Screens support 42 languages and the Support Software supports eight
  System messages can be displayed in eight languages
- Single Port Multi Access(SPMA) come as a Standard Feature
  The ladder program and screen data can be transferred from a single port!
- Connectable PLCs and devices appear one after another
  Has become connectable with the PLCs of Mitsubishi Electric Corporation and the Inverters of OMRON Corporation

# System Configuration

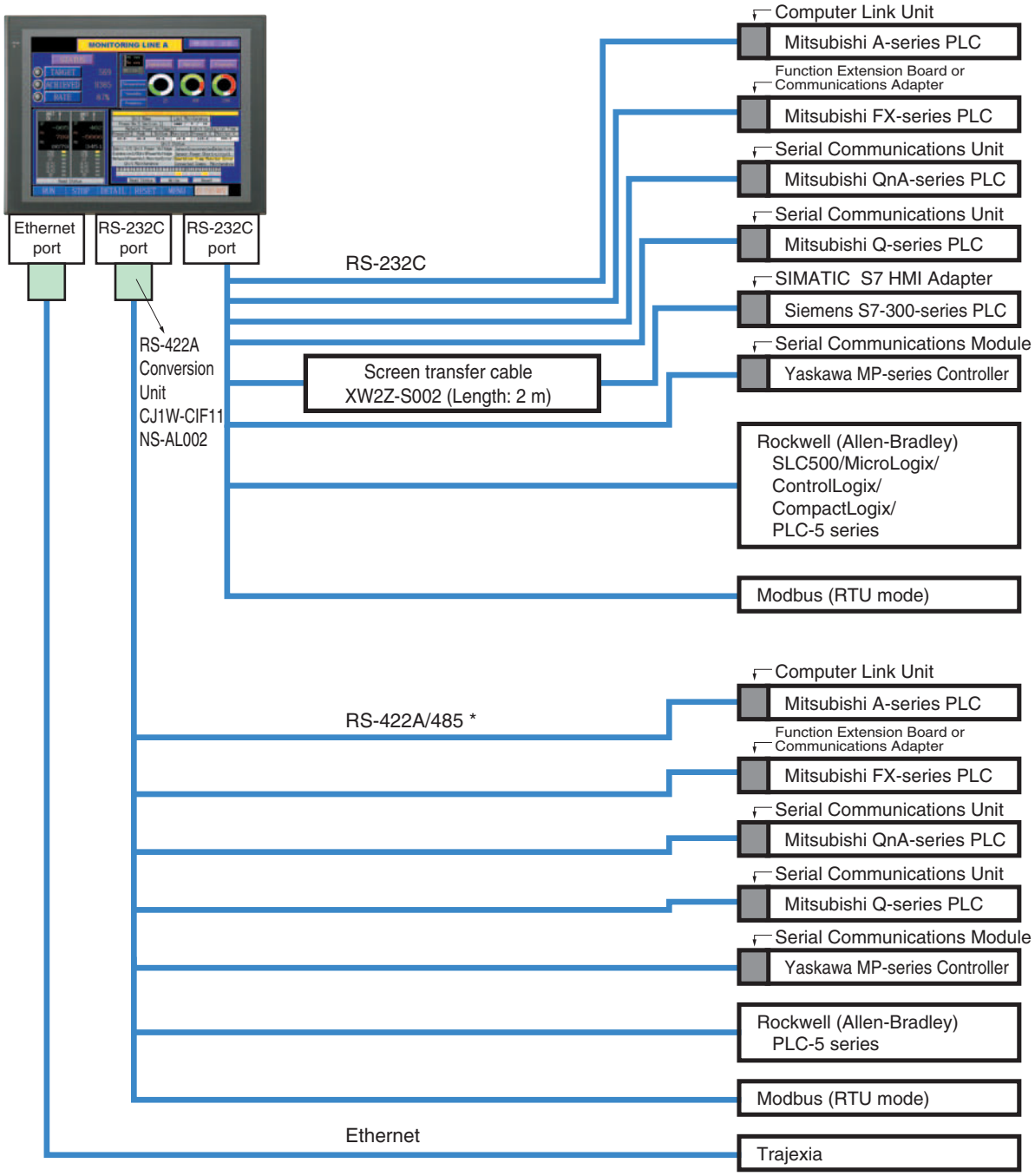
## NS5/NS8/NS10/NS12



## Expansion Bus Interface

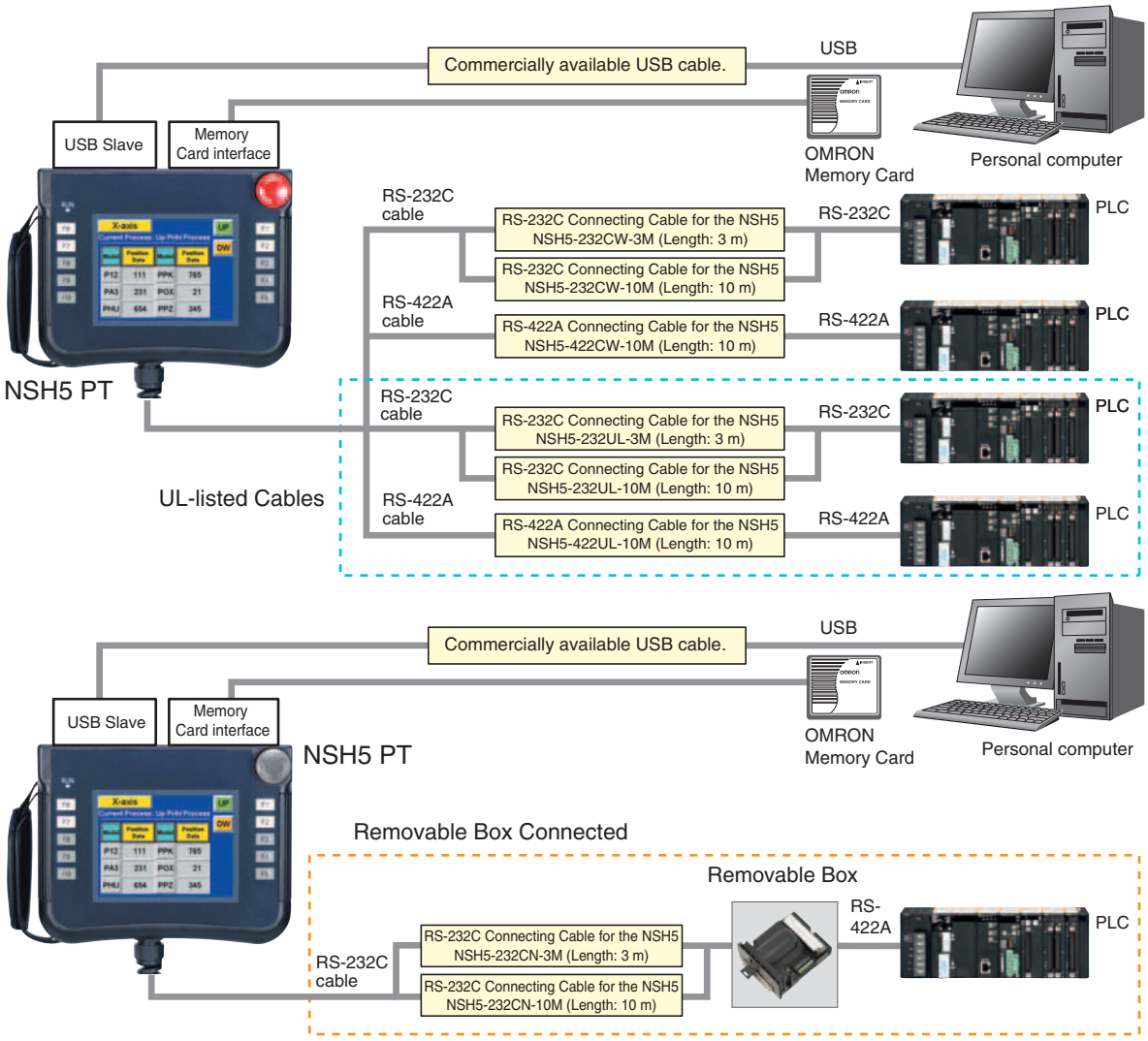


## Multi-vendor



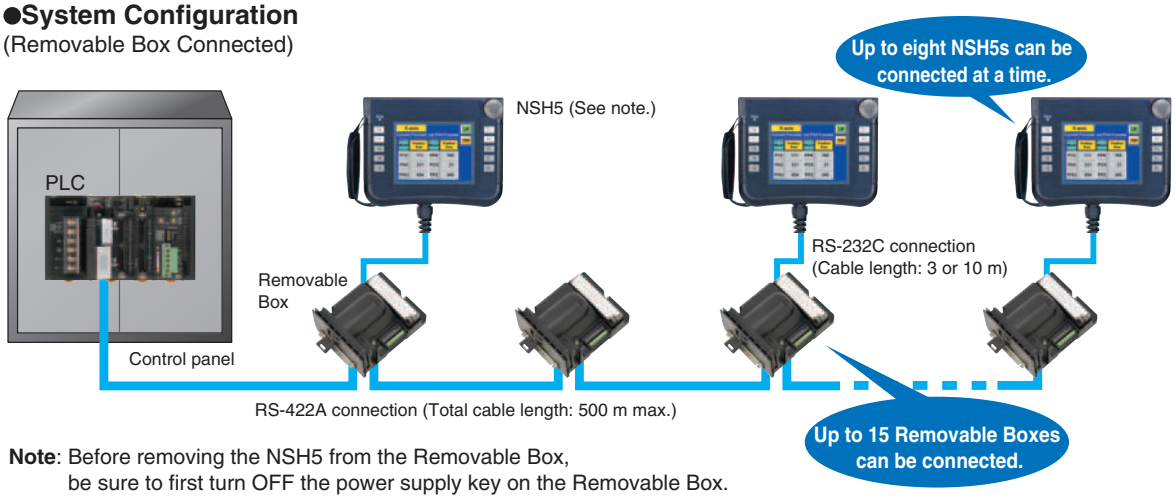

✻Connection availability using the RS-422A or RS-485 depends on the devices being connected.
For details, see the "HOST CONNECTION MANUAL (Multivendor Connection)" (V092-E1).

## NSH5 Hand-held PT




### ●System Configuration

(Removable Box Connected)




**Note**: Before removing the NSH5 from the Removable Box, be sure to first turn OFF the power supply key on the Removable Box.

# Ordering Information

## Programmable Terminals

| Model name | Specifications | | | | Model number | Standards |
|---|---|---|---|---|---|---|
| | Effective display area | Number of dots | Ethernet | Case color | | |
| NS5-V2 | 5.7-inch STN monochrome | 320 × 240 dots | No | Ivory | **NS5-MQ00-V2** | UC1, CE, N, L, UL Type4 |
| | | | | Black | **NS5-MQ00B-V2** | |
| | | | Yes | Ivory | **NS5-MQ01-V2** | |
| | | | | Black | **NS5-MQ01B-V2** | |
| | 5.7-inch STN | | No | Ivory | **NS5-SQ00-V2** | |
| | | | | Black | **NS5-SQ00B-V2** | |
| | | | Yes | Ivory | **NS5-SQ01-V2** | |
| | | | | Black | **NS5-SQ01B-V2** | |
| | 5.7-inch TFT | | No | Ivory | **NS5-TQ00-V2** | |
| | | | | Black | **NS5-TQ00B-V2** | |
| | | | Yes | Ivory | **NS5-TQ01-V2** | |
| | | | | Black | **NS5-TQ01B-V2** | |
| NS8-V2 | 8.4-inch TFT | 640 × 480 dots | No | Ivory | **NS8-TV00-V2** | UC1, CE, N, L |
| | | | | Black | **NS8-TV00B-V2** | |
| | | | Yes | Ivory | **NS8-TV01-V2** | |
| | | | | Black | **NS8-TV01B-V2** | |
| NS10-V2 | 10.4-inch TFT | 640 × 480 dots | No | Ivory | **NS10-TV00-V2** | |
| | | | | Black | **NS10-TV00B-V2** | |
| | | | Yes | Ivory | **NS10-TV01-V2** | |
| | | | | Black | **NS10-TV01B-V2** | |
| NS12-V2 | 12.1-inch TFT | 800 × 600 dots | No | Ivory | **NS12-TS00-V2** | |
| | | | | Black | **NS12-TS00B-V2** | |
| | | | Yes | Ivory | **NS12-TS01-V2** | |
| | | | | Black | **NS12-TS01B-V2** | |
| NSH5-V2 Hand-held | 5.7-inch STN | 320 × 240 dots | No | Black (Emergency stop button: Red) | **NSH5-SQR00B-V2** | UC, CE |
| | | | | Black (Stop button: Gray) | **NSH5-SQG00B-V2** | |

## NS-Runtime

| Product name | Specifications | | Media | Model number | Standards |
|---|---|---|---|---|---|
| NS-Runtime | NS-Runtime Installer, PDF manual, hardware key (See note.) | 1 license | CD | **NS-NSRCL1** | – |
| | | 3 licenses | | **NS-NSRCL3** | |
| | | 10 licenses | | **NS-NSRCL10** | |

**Note:** A hardware key (USB dongle) is required for NS-Runtime operation.

## System Requirements

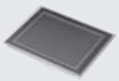
| Item | Specifications |
|---|---|
| OS | Windows XP (Professional or Home Edition) |
| CPU | Celeron, 1 GHz |
| Memory size | HDD: 50 MB min., RAM: 256 MB min., 512 MB recommended.<br>50 MB is required for the Runtime alone. (An additional 280 MB is required if CX-Server is not already installed.) |

## Programming Devices

| Model name | Specifications | Number of licenses | Media | Model number | Standards |
|---|---|---|---|---|---|
| **CX-One FA Integrated Tool Package Ver. 2.□** | The CX-One is an integrated tool package that provides programming and monitoring software for OMRON PLCs and components. The CX-One runs on any of the following operating systems: OS: Windows 98 SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), XP, or Vista. **Note:** Windows 95 is not supported. | 1 license | CD | **CXONE-AL01C-EV2** | – |
| | | | DVD | **CXONE-AL01D-EV2** | |
| | | 3 licenses | CD | **CXONE-AL03C-EV2** | |
| | | | DVD | **CXONE-AL03D-EV2** | |
| | | 10 licenses | CD | **CXONE-AL10C-EV2** | |
| | | | DVD | **CXONE-AL10D-EV2** | |
| | | 30 licenses | CD | **CXONE-AL30C-EV2** | |
| | | | DVD | **CXONE-AL30D-EV2** | |
| | | 50 licenses | CD | **CXONE-AL50C-EV2** | |
| | | | DVD | **CXONE-AL50D-EV2** | |
| | The CX-Designer can also be ordered individually using the following model number. | | | | |
| **CX-Designer Ver.2.□** | Screen Designer for NS Series OS: Window 98 SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), XP or Vista. The Ladder Monitor Software is included with CX-Designer version 2.□. **Note:** The Ladder Monitor Software is used to monitor CS/CJ-series PLC ladder programs from an NS-series PT. A Memory Card and Memory Card Adapter (both sold separately) are required to use the Ladder Monitor Software with the NS8-V1, NS10-V1, or NS12-V1, or with the NS8-V2, NS10-V2, or NS12-V2 with system program version 6.6 or lower. | 1 license | CD | **NS-CXDC1-V2** | – |
| **Cable (See note.)**  | Screen transfer cable for DOS/V (CX-Designer ↔ PT) | Length: 2 m | | **XW2Z-S002** | – |
| | USB Host Cable (For a printer) | Length: 5 m | | **NS-US52** | |
| | USB Host Cable (For a printer) | Length: 2 m | | **NS-US22** | |
| | USB-Serial Conversion Cable | Length: 0.5 m | | **CS1W-CIF31** | N |
| **NSH5 Cables** | RS-422A cable (loose wires + D-Sub 9-pin) | Length: 10 m | | **NSH5-422CW-10M** | – |
| | RS-232C cable (loose wires + D-Sub 9-pin) | Length: 3 m | | **NSH5-232CW-3M** | |
| | RS-232C cable (loose wires + D-Sub 9-pin) | Length: 10 m | | **NSH5-232CW-10M** | |
| **UL-compliant NSH5 Cable** | RS-422A cable (loose wires) | Length: 10 m | | **NSH5-422UL-10M** | CU |
| | RS-232C cable (loose wires + relay cable) | Length: 3 m | | **NSH5-232UL-3M** | |
| | RS-232C cable (loose wires + relay cable) | Length: 10 m | | **NSH5-232UL-10M** | |
| **PT-to-PLC Connecting Cable** | PT connection: 9 pins PLC connection: 9 pins | Length: 2 m | | **XW2Z-200T** | – |
| | | Length: 5 m | | **XW2Z-500T** | |
| | PT connection: 9 pins PLC peripheral port | Length: 2 m | | **XW2Z-200T-2** | |
| | | Length: 5 m | | **XW2Z-500T-2** | |
| **NSH5 Removable Box Cable** | RS-232C Cable (connectors) | Length: 3 m | | **NSH5-232CN-3M** | |
| | | Length: 10 m | | **NSH5-232CN-10M** | |
| **NSH5 Removable Box** | – | | | **NSH5-AL001** | |
| **NSH5 Wall-mounting Bracket** | – | | | **NSH5-ATT02** | |
| **NSH5 Visor** | – | | | **NSH5-ATT01** | |

✻ Use an OMRON USB Host Cable to connect an NS-series PT to a printer.
Use a commercially available USB cable to connect the NS Series main unit with a PictBridge compliant printer.

## Options

| Model name | Specifications | | Model number | Standards |
|---|---|---|---|---|
| **Video Input Unit**   | Inputs: 4 channels<br>Signal type: NTSC/PAL | | **NS-CA001** | UC1, CE |
| | Input channels: 2 video channels and 1 RGB channel *1<br>Signal type: NTSC/PAL | | **NS-CA002** | |
| **Special Cable for the Console** | Cable length: 2 m | | **F150-VKP (2 m)** | – |
| | Cable length: 5 m | | **F150-VKP (5 m)** | |
| **Controller Link Interface Unit**  | For Controller Link Communications | | **NS-CLK21** | UC1, CE |
| **RS-422A Adapter**   | Transmission distance: 500 m total length<br>**Note:** Use this model when connecting PT models without a V□ suffix.<br>**Note:** PT models with the V□ suffix can also be connected. | | **NS-AL002** | – |
| | Transmission distance: 50 m total length<br>**Note:** Only PT models with a suffix of V□ are connectable.<br>Use the NS-AL002 to connect models without a V□ suffix. | | **CJ1W-CIF11** | UC1, N, L, CE |
| **Sheet/Cover *2**  | Anti-reflection Sheets (5 surface sheets) | NS12/10 | **NS12-KBA04** | – |
| | | NS8 | **NS7-KBA04** | |
| | | NS5 | **NT30-KBA04** | |
| | Protective Covers (5 pack) (anti-reflection coating) | NS12/10 | **NS12-KBA05** | |
| | | NS8 | **NS7-KBA05** | |
| | | NS5 | **NT31C-KBA05** | |
| | Protective Covers (5 covers included) (Transparent) | NS12/10 | **NS12-KBA05N** | |
| | | NS8 | **NS7-KBA05N** | |
| | | NS5 | **NT31C-KBA05N** | |
| **Attachment** | NT625C/631/631C Series to NS12/10 Series | | **NS12-ATT01** | |
| | NT625C/631/631C Series to NS12/NS10 Series (Black) | | **NS12-ATT01B** | |
| | NT610C Series to NS12/10 Series | | **NS12-ATT02** | |
| | NT620S/620C/600S Series to NS8 Series | | **NS8-ATT01** | |
| | NT600M/600G/610G/612G Series to NS8 Series | | **NS8-ATT02** | |
| **Memory Card**  | 128MB | | **HMC-EF183** | L, N, CE |
| | 256 MB | | **HMC-EF283** | CE |
| | 512 MB | | **HMC-EF583** | |
| **Memory Card Adapter** | – | | **HMC-AP001** | |
| **Replacement battery** | Battery life: 5 years (at 25°C) | | **CJ1W-BAT01** | |
| **Bar Code Reader** | CCD/Handy type barcode reader (RS-232C I/F) | | **V520-RH21-6** | – |

**✻1.** One screen cannot display two video inputs simultaneously.
**✻2.** A Chemical-resistant Cover (NT30-KBA01) is available only for the NS5.

### International Standards

- The standards indicated in the "Standards" column are those current for UL, CSA, cULus, cUL, NK, and Lloyd standards and EC Directives as of the end of January 2008. The standards are abbreviated as follows: U: UL: U1: UL (Class I Division 2 Product for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Product for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, CE: EC Directives.
- Ask your OMRON representatives for the conditions under which the standards were met.

### EC Directives

The EC Directives applicable to PLCs include the EMC Directives. OMRON complies with these directives as described below.

**EMC Directives**

Applicable Standards EMI: EN61131-2
EN61000-6-4
EMS: EN61131-2
EN61000-6-2

PLCs are electrical devices that are incorporated in machines and manufacturing installations. OMRON PLCs conform to the related EMC standards so that the devices and machines into which they are built can more easily conform to EMC standards. The actual PLCs have been checked to ensure conformity to EMC standards. Whether these standards are satisfied for the actual system, however, must be checked by the customer.

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

**Note:** The applicable EMS standards depend on the product.

# Individual Specifications

## NS5/NS8/NS10/NS12

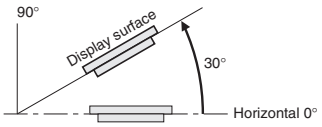
| Series | | NS5-V2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | | 5.7-inch Monochrome STN | | | | 5.7-inch Color STN | | | | 5.7-inch Color TFT | | | |
| Appearance | |  | | | |  | | | |  | | | |
| Display device | | Monochrome LCD | | | | STN color LCD | | | | Color TFT | | | |
| Effective display area | | Width 117.2 × height 88.4 mm (5.7 inches) | | | | | | | | | | | |
| Case color | | Ivory | | Black | | Ivory | | Black | | Ivory | | Black | |
| Built-in Ethernet port | | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Model number | | NS5-MQ00-V2 | NS5-MQ01-V2 | NS5-MQ00B-V2 | NS5-MQ01B-V2 | NS5-SQ00-V2 | NS5-SQ01-V2 | NS5-SQ00B-V2 | NS5-SQ01B-V2 | NS5-TQ00-V2 | NS5-TQ01-V2 | NS5-TQ00B-V2 | NS5-TQ01B-V2 |
| Display colors | | 16 gradations | | | | 256 colors | | | | | | | |
| Number of dots | | 320 dot horizontal × 240 dot vertical | | | | | | | | | | | |
| View angle | | Left/right: 45°, Top: 20°, Bottom: 40° | | | | Left/right: 50°, Top: 45°, Bottom: 50° | | | | Left/right: 70°, Top: 70°, Bottom: 50° | | | |
| Screen data capacity | | 20 Mbytes | | | | | | | | | | | |
| Image data (BMP or JPG images) | | 16 gradations | | | | 4,096 colors | | | | 32,768 colors | | | |
| Memory Card | | Supported | | | | | | | | | | | |
| Ladder Monitor function | | Not supported | | | | | | | | | | | |
| Video Input Unit support | | Not supported | | | | | | | | | | | |
| Image displayed via video input | | – | | | | | | | | | | | |
| Controller Link Interface Unit (Wired) support | | Not supported | | | | | | | | | | | |
| Backlight<br>Note: Contact your nearest OMRON representative to replace the backlight. | Service life | 50,000 hours min. | | | | 75,000 hours min. | | | | | | | |
| | | **Note:** This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value. The service life will be dramatically shortened if PT is used at low temperatures. For example, using the PT at temperatures of 0°C will reduce the service life to approximately 10,000 hours (reference value). | | | | | | | | | | | |
| | Brightness adjustment | There are 3 levels that can be set with the touch panel.<br>**Note:** The brightness cannot be adjusted much. | | | | | | | | | | | |
| | Backlight error detection | Error is detected automatically, and the RUN indicator flashes green as notification.<br>**Note:** This function does not indicate that the service life has been reached. It detects when the backlight is not lit due to a disconnection or other errors. Backlight error detection indicates that all backlights (2) are OFF. | | | | | | | | | | | |
| Touch panel (matrix type) | Method | Resistive membrane | | | | | | | | | | | |
| | Number of switches | 300 (20 horizontal × 15 vertical) 16 × 16 dots for each switch | | | | | | | | | | | |
| | Input | Pressure-sensitive | | | | | | | | | | | |
| | Service life | 1,000,000 touch operations. | | | | | | | | | | | |
| Display text | Labels | Can be specified in CX-Designer. Font, style, and size can be specified. | | | | | | | | | | | |
| | Numerals, alarms, and character strings | Scalable Gothic: Magnification: 6 to 255 points | | | | | | | | | | | |
| | | Rough: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | Standard: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | Fine: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | 7-segment display: Can display only numerals, dates, and times. | | | | | | | | | | | |
| | Supported languages (42 languages) | Scalable Gothic, rough, standard, and fine can be used for 42 languages.<br>Japanese, simplified Chinese, traditional Chinese, Korean, English, French, German, Italian, Portuguese, Spain, Swedish, Dutch, Finnish, Norwegian, Basque, Catalan, Danish, Albanian, Croatian, Czech, Hungarian, Polish, Romanian, Slovak, Slovenian, Bulgarian, Belarusian, Russian, Serbian, Macedonian, Ukranian, Georgian, Icelandic, Afrikaans, Faroese, Indonesian, Greek, Turkish, Estonian, Latvian, Lithuanian, Thai (supported only with scalable Gothic font) | | | | | | | | | | | |

| Series | | | NS5-V2 | | |
|---|---|---|---|---|---|
| Type | | | 5.7-inch Monochrome STN | 5.7-inch Color STN | 5.7-inch Color TFT |
| Text attributes | Color | | Monochrome, 16 gradations | 256 colors | |
| | Font style (only when vector font is specified) | | Bold or italic | | |
| | Vertical alignment | | Top, center, or bottom | | |
| | Horizontal alignment | | Left-justified, centered, or right-justified | | |
| Flicker | Objects supporting flicker | | Functional objects: Select from up to 10 types of registered flicker settings. The flicker speed and flicker range can be set.<br>Fixed objects: Select from three flicker types. | | |
| Numeral units and scale settings | | | 1.000 max. | | |
| Alarm/event settings | | | 5,000 max. | | |
| Memory Card | | Interface | One ATA-Compact Flash interface slot | | |
| | | Functions | Used to transfer and store screen data, store logging data, and store history data. (Alarm/Event History, Operation Log, and Error Log generated during Macro execution). | | |
| Expansion interface | | | For Expansion Interface Units | | |
| Serial Communications | Port A | Connector | Conforms to EIA RS-232C. D-Sub female 9-pin connector<br>5-V output (250 mA max.) through pin 6 (See note.)<br>**Note:** The 5-V outputs of serial ports A and B cannot be used at the same time. | | |
| | | Functions | Host (PLC) access: 1:N NT Links (connections with CS/CJ/CP-series PLCs and C200HX/HG/HE(-Z) PLCs),<br>1:1 NT Links, or Host Link (connections with C Series or CVM1/CV-series PLCs)<br>Direct access to Temperature Controllers using Smart Active Parts: CompoWay/F and bar code reader connections (Read directly from display.) | | |
| | Port B | Connector | Conforms to EIA RS-232C. D-Sub female 9-pin connector<br>5-V output (250 mA max.) through pin 6 (See note.) The 5-V outputs of serial ports A and B cannot be used at the same time.<br>**Note:** The 5-V outputs of serial ports A and B cannot be used at the same time. | | |
| | | Functions | Host (PLC) access: 1:N NT Links (connections with CS/CJ/CP-series PLCs and C200HX/HG/HE(-Z) PLCs) or<br>1:1 NT Links (connections with C Series or CVM1/CV-series PLCs)<br>Direct access to Temperature Controllers using Smart Active Parts: CompoWay/F and bar code reader connections (Read directly from display.) | | |
| USB SLAVE Specifications | USB rating | | USB1.1 | | |
| | Connector | | TYPE-B (Slave) | | |
| | Functions | | Connection with the CX-Designer (for screen data transfers) | | |
| USB HOST Specifications | USB rating | | None | | |
| | Connector | | | | |
| | Functions | | | | |
| Built-in Ethernet Specifications (NS□-□□01-V2 only) | | Conformance standards | Conforms to IEEE 802.3/Ethernet (10Base-T/100Base-TX). | | |
| | | Function | Host (PLC) access and connection with the CX-Designer (for screen data transfers) | | |
| Controller Link (Wired-type) Specifications | | Baud rate | – | | |
| | | Transmission path | – | | |
| | | Functions | – | | |
| Video Input Specifications | Resolution | | – | | |
| | Input signal | | – | | |
| | Number of video inputs | | – | | |

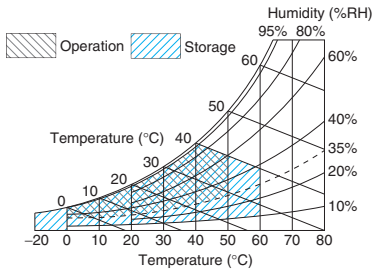
| Series | | NS8-V2 | | | | NS10-V2 | | | | NS12-V2 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | | 8.4-inch Color TFT | | | | 10.4-inch Color TFT | | | | 12.1-inch Color TFT | | | |
| Appearance | |  | | | |  | | | |  | | | |
| Display device | | High-definition TFT color LCD | | | | High-definition TFT color LCD | | | | High-definition TFT color LCD | | | |
| Effective display area | | Width 170.9 × height 128.2 mm (8.4 inches) | | | | Width 215.2 × height 162.4 mm (10.4 inches) | | | | Width 246.0 × height 184.5 mm (12.1 inches) | | | |
| Case color | | Ivory | | Black | | Ivory | | Black | | Ivory | | Black | |
| Built-in Ethernet port | | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Model number | | NS8-TV00-V2 | NS8-TV01-V2 | NS8-TV00B-V2 | NS8-TV01B-V2 | NS10-TV00-V2 | NS10-TV01-V2 | NS10-TV00B-V2 | NS10-TV01B-V2 | NS12-TS00-V2 | NS12-TS01-V2 | NS12-TS00B-V2 | NS12-TS01B-V2 |
| Display colors | | 256 colors | | | | 256 colors | | | | 256 colors | | | |
| Number of dots | | 640 dot horizontal × 480 dot vertical | | | | 640 dot horizontal × 480 dot vertical | | | | 800 dot horizontal × 600 dot vertical | | | |
| View angle | | Right/left: ±65°, Top: 50°, Bottom: 60° | | | | Right/left: ±60°, Top: 35°, Bottom: 65° | | | | Right/left: ±60°, Top: 45°, Bottom: 75° | | | |
| Screen data capacity | | 60 Mbytes | | | | 60 Mbytes | | | | 60 Mbytes | | | |
| Image data (BMP or JPG images) | | 32,768 colors | | | | 32,768 colors | | | | 32,768 colors | | | |
| Memory Card | | Supported | | | | Supported | | | | Supported | | | |
| Ladder Monitor function | | Supported | | | | Supported | | | | Supported | | | |
| Video Input Unit support | | Supported | | | | Supported | | | | Supported | | | |
| Image displayed via video input | | 260,000 colors | | | | 260,000 colors | | | | 260,000 colors | | | |
| Controller Link Interface Unit (Wired) support | | Not supported | | | | Supported | | | | Supported | | | |
| Backlight<br>**Note:** Contact your nearest OMRON representative to replace the backlight. | Service life | 50,000 hours min. | | | | 50,000 hours min. | | | | 50,000 hours min. | | | |
| | | **Note:** This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value. The service life will be dramatically shortened if PT is used at low temperatures. For example, using the PT at temperatures of 0°C will reduce the service life to approximately 10,000 hours (reference value). | | | | | | | | | | | |
| | Brightness adjustment | There are 3 levels that can be set with the touch panel.<br>**Note:** The brightness cannot be adjusted much. | | | | | | | | | | | |
| | Backlight error detection | Error is detected automatically, and the RUN indicator flashes green as notification.<br>**Note:** This function does not indicate that the service life has been reached. It detects when the backlight is not lit due to a disconnection or other errors. Backlight error detection indicates that all backlights (2) are OFF. | | | | | | | | | | | |
| Touch panel (matrix type) | Method | Resistive membrane | | | | | | | | | | | |
| | Number of switches | 768 (32 horizontal × 24 vertical)<br>20 × 20 dots for each switch | | | | 1,200 (40 horizontal × 30 vertical)<br>16 × 16 dots for each switch | | | | 1,900 (50 horizontal × 38 vertical)<br>16 × 16 dots for each switch | | | |
| | Input | Pressure-sensitive | | | | | | | | | | | |
| | Service life | 1,000,000 touch operations. | | | | | | | | | | | |
| Display text | Labels | Can be specified in CX-Designer. Font, style, and size can be specified. | | | | | | | | | | | |
| | Numerals, alarms, and character strings | Scalable Gothic: Magnification: 6 to 255 points | | | | | | | | | | | |
| | | Rough: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | Standard: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | Fine: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8 | | | | | | | | | | | |
| | | 7-segment display: Can display only numerals, dates, and times. | | | | | | | | | | | |
| | Supported languages (42 languages) | Scalable Gothic, rough, standard, and fine can be used for 42 languages.<br>Japanese, simplified Chinese, traditional Chinese, Korean, English, French, German, Italian, Portuguese, Spain, Swedish, Dutch, Finnish, Norwegian, Basque, Catalan, Danish, Albanian, Croatian, Czech, Hungarian, Polish, Romanian, Slovak, Slovenian, Bulgarian, Belarusian, Russian, Serbian, Macedonian, Ukranian, Georgian, Icelandic, Afrikaans, Faroese, Indonesian, Greek, Turkish, Estonian, Latvian, Lithuanian, Thai (supported only with scalable Gothic font) | | | | | | | | | | | |

| Series | | | NS8-V2 | NS10-V2 | NS12-V2 |
|---|---|---|---|---|---|
| Type | | | 8.4-inch Color TFT | 10.4-inch Color TFT | 12.1-inch Color TFT |
| Text attributes | Color | | Monochrome, 16 gradations | 256 colors | |
| | Font style (only when vector font is specified) | | Bold or italic | | |
| | Vertical alignment | | Top, center, or bottom | | |
| | Horizontal alignment | | Left-justified, centered, or right-justified | | |
| Flicker | Objects supporting flicker | | Functional objects: Select from up to 10 types of registered flicker settings. The flicker speed and flicker range can be set.<br>Fixed objects: Select from three flicker types. | | |
| Numeral units and scale settings | | | 1.000 max. | | |
| Alarm/event settings | | | 5,000 max. | | |
| Memory Card | | Interface | One ATA-Compact Flash interface slot | | |
| | | Functions | Used to transfer and store screen data, store logging data, and store history data. (Alarm/Event History, Operation Log, and Error Log generated during Macro execution). | | |
| Expansion interface | | | For Expansion Interface Units | | |
| Serial Communications | Port A | Connector | Conforms to EIA RS-232C. D-Sub female 9-pin connector<br>5-V output (250 mA max.) through pin 6 (See note.)<br>**Note:** The 5-V outputs of serial ports A and B cannot be used at the same time. | | |
| | | Functions | Host (PLC) access: 1:N NT Links (connections with CS/CJ/CP-series PLCs and C200HX/HG/HE(-Z) PLCs),<br>1:1 NT Links, or Host Link (connections with C Series or CVM1/CV-series PLCs)<br>Direct access to Temperature Controllers using Smart Active Parts: CompoWay/F and bar code reader connections (Read directly from display.) | | |
| | Port B | Connector | Conforms to EIA RS-232C. D-Sub female 9-pin connector<br>5-V output (250 mA max.) through pin 6 (See note.) The 5-V outputs of serial ports A and B cannot be used at the same time.<br>**Note:** The 5-V outputs of serial ports A and B cannot be used at the same time. | | |
| | | Functions | Host (PLC) access: 1:N NT Links (connections with CS/CJ/CP-series PLCs and C200HX/HG/HE(-Z) PLCs) or<br>1:1 NT Links (connections with C Series or CVM1/CV-series PLCs)<br>Direct access to Temperature Controllers using Smart Active Parts: CompoWay/F and bar code reader connections (Read directly from display.) | | |
| USB SLAVE Specifications | USB rating | | USB1.1 | | |
| | Connector | | TYPE-B (Slave) | | |
| | Functions | | Connection with the CX-Designer (for screen data transfers) | | |
| USB HOST Specifications | USB rating | | USB1.1 | | |
| | Connector | | TYPE-A (Host) | | |
| | Functions | | Connection with a printer (for hard copies)<br>• Manufacturer: EPSON or Canon<br>• Recommended models: EPSON: PM-2200C, PM-930C, PM-870C, PM-740C, PM-900C, PM-D600, PM-G720, PM-G730, and PX-A650<br>Canon: BJ M70, BJ M40, PIXUS 550i, PIXUS 50i, PIXUS 80i, PIXUS iP2000, PIXUS iP3100, PIXUS iP4100, and PIXUS iP4100R | | |
| Built-in Ethernet Specifications (NS□-□□01-V2 only) | | Conformance standards | Conforms to IEEE 802.3/Ethernet (10Base-T/100Base-TX). | | |
| | | Function | Host (PLC) access and connection with the CX-Designer (for screen data transfers) | | |
| Controller Link (Wired-type) Specifications | | Baud rate | – | 2 M/1 M/500 K | |
| | | Transmission path | – | Shielded twisted-pair cable (special cable) | |
| | | Functions | – | Host (PLC) access and data links | |
| Video Input Specifications | Resolution | | NS-CA001: 320 × 240, 640 × 480, 800 × 600 dots | NS-CA002: User-defined size | |
| | Input signal | | NS-CA001: NTSC composite video or PAL | NS-CA002: NTSC composite video or PAL | |
| | Number of video inputs | | NS-CA001: Number of cameras: 4 max. | NS-CA002: 2 cameras + RGB | |

## General Specifications

| | |
|---|---|
| **Rated power supply voltage** | 24 VDC |
| **Allowable voltage range** | 20.4 to 27.6 VDC (24 VDC ±15%) |
| **Power consumption** | 25 W max. (15 W max. for the NS5) |
| **Ambient operating temperature** | 0 to 50°C *1<br>**Note:** The ambient operating temperature is subject to the following restrictions according to the mounting angle.<br>Mounting angle of 0 to 30° to the horizontal:<br>• When no Expansion Units are mounted, the operating temperature range is 0 to 45°C.<br>• When a Video Input Unit or a Controller Link Interface Unit is mounted, the ambient operating temperature is 0 to 40°C.<br>Mounting angle of 30 to 90° to the horizontal: Operating temperature range of 0 to 50°C<br>  |
| **Storage temperature** | −20 to 60°C *1 |
| **Ambient operating humidity** | 35 to 85% (0 to 40°C) 35 to 60% (40 to 50°C) (with no condensation) |
| **Operating environment** | No corrosive gases. |
| **Noise immunity** | Conforms to IEC61000-4-4, 2 kV (power lines). |
| **Vibration resistance (during operation)** | 10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/s$^2$ 30 min each in X, Y, and Z directions |
| **Shock resistance (during operation)** | 147 m/s$^2$ 3 times each in direction of X, Y, and Z |
| **Weight** | NS5: 1.0 kg max.; NS8: 2.0 kg max.; NS10: 2.3 kg max.; NS12: 2.5 kg max. |
| **Degree of protection** | Front operating panel: Equivalent to IP65 Oil-proof type and NEMA4. *2<br>**Note:** May not be applicable in locations with long-term exposure to oil. |
| **Ground** | Ground to 100 Ω or less. |
| **Battery life** | 5 years (at 25°C): Replace battery within 5 days after the battery runs low (indicator lights orange). |
| **Applicable standards** | Certified for conformance to UL 508, UL 1604, EMC Directive, NK, and LR Standards. |

**✻1.** Operate the PT within the temperature and humidity ranges shown in the following diagram.




**✻2.** NS5 only.

## NSH5 Hand-held PT

| Series | NSH5-V2 | |
|---|---|---|
| Type | 5.7-inch Color STN (Hand-held Version) | |
| Appearance |   |   |
| Case color | Black | |
| Built-in Ethernet port | No | |
| Model number | NSH5-SQROOB-V2 (Emergency stop button: Red) | NSH5-SQGOOB-V2 (Stop button: Gray) |
| Rated power supply voltage | 24 VDC | |
| Allowable voltage range | 20.4 to 27.6VDC (24 VDC ±15%) | |
| Power consumption | 10 W max. | |
| Ambient operating temperature | 0 to 40°C | |
| Storage temperature | −20 to 60°C | |
| Ambient operating humidity | 35% to 85% (0 to 40°C) with no condensation | |
| Operating environment | No corrosive gases. | |
| Noise immunity | Common mode: 1,000 Vp-p (between power supply terminals and panel)<br>Normal mode: 300 Vp-p<br>Pulse width: 100 ns to 1 ms, Rise time: 1-ns pulse | |
| Vibration resistance (during operation) | 10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 $m/s^2$ 30 min each in X, Y, and Z directions | |
| Shock resistance (during operation) | 147 $m/s^2$ 3 times each in direction of X, Y, and Z | |
| Weight | 1 kg max. | |
| Degree of protection | Equivalent to IP65. | |
| Ground | Ground to 100 Ω or less. | |
| Battery life | 5 years (at 25°C): Replace battery within 5 days after the battery runs low (indicator lights orange). | |
| Applicable standards | Certified for conformance to UL 508, EMC Directive, and EN 60204-1. | |

# Connectable PLCs

## Link Connection

| PLC series | PLC model name | Model number | Specifications |
|---|---|---|---|
| C Series | CQM1 | CQM1-CPU□□-V1 | With RS-232C connector (9-pin type) |
| | CQM1H | CQM1H-CPU□□ | |
| | CPM1 | CPM1-□□CDR-□+CPM1-CIF01 | Connect to peripheral port. |
| | CPM1A | CPM1A-□□CD□-□+CPM1-CIF01 | |
| | CPM2A | CPM2A-□□CD□□-□+CPM1-CIF01 | Connect to RS-232C or peripheral port. |
| | CPM2C | CPM2C-10/20□□□□□□-□ *1 | With RS-232C connector (9-pin type) |
| | C200HS | C200HS-CPU□ | |
| | C200HE(-Z) | C200HE-CPU□(-Z) *2 | |
| | C200HG(-Z) | C200HG-CPU□(-Z) *2 | |
| | C200HX(-Z) | C200HX-CPU□(-Z) *2 | |
| CVM1/CV Series | CV500/1000/2000 | CV500/1000/2000-CPU□-V1 | With RS-232C connector (switching/9-pin type) |
| | CVM1 | CVM1-CPU□-V2 | |

**✻1.** Use an Adapter Cable (CPM2C-CN111 or CS1W-CN114/118), CPM1-CIF01 RS-232C Adapter, or CPM1-CIF11 RS-422A Adapter to connect.
**✻2.** A C200HW-COM02(-V1), C200HW-COM04(-V1), C200HW-COM05(-V1), or C200HW-COM06(-V1) Communications Board is required.
**Note:** The NS-Runtime can be connected only to CS/CJ/CP/CV-series PLCs. Use a peripheral bus (toolbus), Host Link, or Ethernet connection.

## 1:N NT Link Connection

| PLC series | PLC model name | Model number | Specifications |
|---|---|---|---|
| CS series | CS1G | CS1G-CPU□□(-V1) *1 | With RS-232C connector (9-pin type) |
| | | CS1G-CPU□□H *1 | |
| | CS1H | CS1H-CPU□□(-V1) *1 | |
| | | CS1H-CPU63H/CPU64H/CPU65H/ CPU66H/CPU67H *1 | |
| | CS1D | CS1D-CPU□□H *1 | |
| CJ series | CJ1G | CJ1G-CPU□□H *2 | |
| | Loop-control CPU Unit | CJ1G-CPU□□P | |
| | CJ1H | CJ1H-CPU□□H *2 | |
| | CJ1M | CJ1M-CPU□□ *2 | |
| CP series | CP1H | CP1H-□□ *3 | Connect to the RS-232C connector of a CP1W-CIF01 RS-232C Option Board. |
| | CP1L | CP1L-M□□/L□□ *3 | |
| C series | CQM1H | CQM1H-CPU61/51 with a CQM1H-SCB41 Serial Communications Board | With RS-232C connector (9-pin type) |
| | C200HE(-Z) | C200HE-CPU32(-Z) *4/CPU42(-Z) | |
| | C200HG(-Z) | C200HG-CPU33(-Z) *4/CPU43(-Z)/ CPU53(-Z) *4/CPU63(-Z) | |
| | C200HX(-Z) | C200HX-CPU34(-Z) *4/CPU44(-Z)/ CPU54(-Z) *4/CPU64(-Z)/CPU65-Z/ CPU85-Z | |

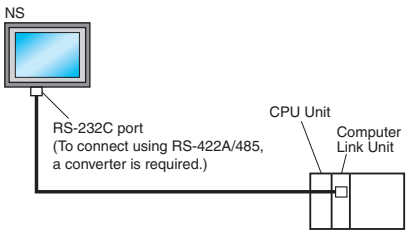
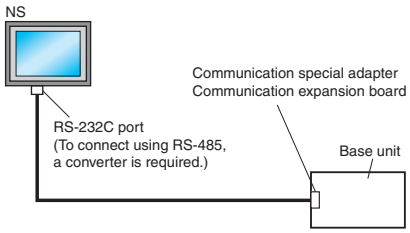
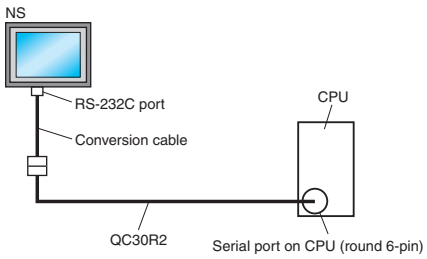
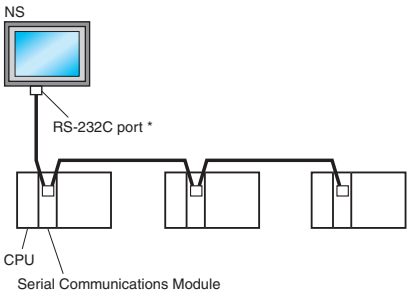
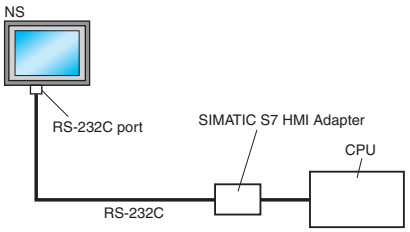
**✻1.** Connection is also possible to a CS1W-SCB□□-V1 Serial Communications Board or CS1W-SCU□□-V1 Serial Communications Unit.
**✻2.** Connection is also possible to the CJ1W-BCU□□-V1 Serial Communications Unit.
**✻3.** The SPMA, machine monitor function, and switch box function are not supported when a CP-series PLC is connected.
**✻4.** A C200HW-COM02/COM04/COM05/COM06(-V1) Communications Board is required.
**Note:** The NS-Runtime can be connected only to CS/CJ/CP/CV-series PLCs. Use a peripheral bus (toolbus), Host Link, or Ethernet connection.

## Connecting by Host Link

| PLC series | PLC model name | Model number | Specifications |
|---|---|---|---|
| C series | CPM1 | CPM1-□□CDR-□/CPM1A-□□CD□-□ | RS-232C or RS-422A adapter connected to peripheral port |
| | CPM2A | CPM2A-□□CD□□-□ | With RS-232C connector (9-pin type) |
| | CPM2C | CPM2C-10/20□□□□□□-□ | Communications connectors include both a peripheral port and RS-232C port (branching possible through CPM2C-CN111 Conversion Cable).<br>Used as separate peripheral and RS-232C ports through CS1WCN114/118 Conversion Cable. |
| | CQM1 | CQM1-CPU□□-V1 | With RS-232C connector (9-pin type) |
| | CQM1H | CQM1H-CPU□□ | With RS-232C connector (9-pin type)<br>(CQM1H-CPU11: peripheral port only) |
| | C200HS | C200HS-CPU□□ | With RS-232C connector (switching/9-pin type) |
| | C200HE(-Z) | C200HE-CPU□□(-Z) *1 | |
| | C200HG(-Z) | C200HG-CPU□□(-Z) *1 | |
| | C200HX(-Z) | C200HX-CPU34 (-Z) *1/CPU44 (-Z)/CPU54 (-Z) *1/CPU64 (-Z)/CPU65-Z/CPU85-Z | |
| CS series | CS1G | CS1G-CPU□□(-V1) *2 | With RS-232C connector (9-pin type) |
| | | CS1G-CPU□□H *2 | |
| | CS1H | CS1H-CPU□□(-V1) *2 | |
| | | CS1H-CPU□□H *2 | |
| CJ series | CJ1G | CJ1G-CPU□□H *3 | |
| | Loop-control CPU Unit | CJ1G-CPU□□P | |
| | CJ1H | CJ1H-CPU□□H *3 | |
| | CJ1M | CJ1M-CPU□□ *3 | |
| CP series | CP1H | CP1H-□□ *4 | Connect to the RS-232C connector of a CP1W-CIF01 RS-232C Option Board. |
| | CP1L | CP1L-M□□/L□□ *4 | |
| CVM1/CV series | CV500/1000/2000 | CV500-CPU01-V1/CV1000-CPU01-V1/ CV2000-CPU01-V1 | With RS-232C connector (switching/9-pin type) |
| | CVM1 | CVM1-CPU□□-V2 | |

**✻1.** A C200HW-COM02/COM04/COM05/COM06(-V1) Communications Board is required.
**✻2.** Connection is also possible to a CS1W-SCB□□-V1 Serial Communications Board or CS1W-SCU□□-V1 Serial Communications Unit.
**✻3.** Connection is also possible to the CJ1W-SCU□□-V1 Serial Communications Unit.
**✻4.** The SPMA, machine monitor function, and switch box function are not supported when a CP-series PLC is connected.
**Note:** The NS-Runtime can be connected only to CS/CJ/CP/CV-series PLCs. Use a peripheral bus (toolbus), Host Link, or Ethernet connection.

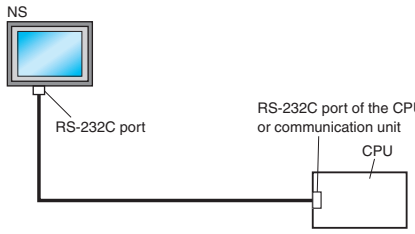
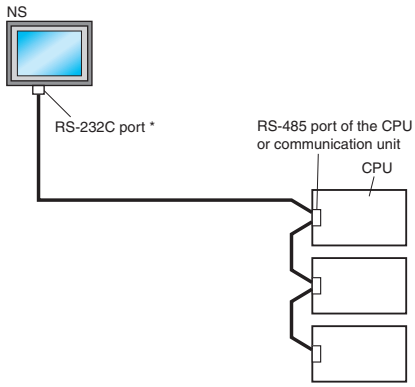
## Connecting to Another Company's PLC

| Manufacturer | Series | CPU | Communication Unit/Adapter/Board | Connection diagram | |
|---|---|---|---|---|---|
| Mitsubishi Electric | A Series | A1SHCPU<br>A2USCPU<br>A2USHCPU-S1 | Computer Link Unit<br>A1SJ71UC24-R□<br>A1SJ71UC24-PRF |  | 1:1 |
| | | A2ACPU | Computer Link Unit<br>AJ71UC24 | | |
| | FX Series | FX0N<br>FX1S<br>FX1N<br>FX1NC<br>FX2N<br>FX3UC | Communication special adapter<br>FX3U-232-ADP<br>FX2NC-232ADP<br>FX0N-232-ADP<br><br>Communication expansion board<br>FX□□-232-BD |  | 1:1 |
| | Q/QnA Series | Q00CPU<br>Q01CPU | RS-232C port on the CPU Module |  | 1:1 |
| | | Q00CPU<br>Q01CPU<br>Q00JCPU<br>Q02CPU<br>Q02HCPU<br>Q06HCPU<br>Q12HCPU<br>Q25HCPU | Serial Communications Module<br>QJ71C24N-R2<br>QJ71C24N-R4<br>QJ71C24N |  <br>✻ To connect using RS-485, an RS-232C/422A converter (e.g. NS-AL002) is required.<br>Up to 32 sequencers can be connected when using RS-485. | 1:N |
| | | Q2ASCPU<br>Q2ASCPU-S1<br>Q2ASHCPU<br>Q2ASHCPU-S1 | Serial Communications Module<br>A1SJ71QC24N | | |
| Siemens | S7-300 Series | CPU313<br>CPU315-2DP<br>CPU317-2PN/DP | SIMATIC S7 HMI Adapter<br>6ES7 972-0CA1□-0XA0 |  | 1:1 |
| Rockwell (Allen-Bradley) | SLC500 | SLC5/03<br>SLC5/04<br>SLC5/05 | RS-232C port on the CPU Module | RS-232C | 1:1 |
| | MicroLogix | MicroLogix 1500 | RS-232C port on the CPU Module | RS-232C | 1:1 |
| | ControlLogix | Logix5555 | RS-232C port on the CPU Module | RS-232C | 1:1 |
| | CompactLogix | 1769-L31 | RS-232C port on the CPU Module | RS-232C | 1:1 |
| | PLC-5 | PLC-5/20 | RS-232C port or RS-485 port on the CPU Module | RS-232C/RS-485 (4-wire) | 1:1 |

# Connectable Motion Controllers

| Series | CPU | Communication Unit | Connection |
|---|---|---|---|
| Trajexia | TJ1-MC16<br>TJ1-MC04 | Ethernet port on the Controller | Ethernet |

## Connecting to Another Company's PLC

| Manufacturer | Series | CPU | Communications Unit/Adapter/Board | Connection | |
|---|---|---|---|---|---|
| Yaskawa Electric | MP900 Series | MP920 | (Use the RS-232C port or RS-485 port on the Machine Controller) | RS-232C<br>  | 1:1 |
| | MP2000 Series | MP2200 | Serial Communication Module 217IF-01 | RS-485<br>  <br>✻ To connect using RS-485, a converter (e.g. NS-AL002) is required.<br>Up to 32 controllers can be connected when using RS-485. | 1:N |

# Connectable Inverters

| Series | Communication Unit | Connection | |
|---|---|---|---|
| 3G3MV | (Use the RS-422/485 tarminal on the Inverter) | RS-422/RS-485 (4-wire)/RS-485 (2-wire) | 1:N |
| 3G3JV | 3G3JV-PSI485J | | |

# Connectable Temperature Controllers

The following Temperature Controllers can be connected directly to an NS-series PT.

| Unit name | Series | Model | Remarks |
|---|---|---|---|
| Modular Temperature Controller | EJ1 | EJ1-EDU End Unit | SAP screens are available. |
| Modular Temperature Controller | E5ZN | E5ZN-SCT24S Terminal Unit | |
| Digital Controller | E5AR | E5AR-□□□□□□□□□-FLK | |
| | E5ER | E5ER-□□□□□□□□□-FLK | |
| Digital Temperature Controller | E5CN | E5CN-□□□□□T-FLK Multi-input (Thermocouple/Resistance Thermometer) Type | |
| | | E5CN-□□□□□L-FLK Analog Input Type | |
| | E5AN/E5EN | E5AN-□□□□□T-FLK Multi-input (Thermocouple/Resistance Thermometer) Type | |
| | | E5AN-□□□□□L-FLK Analog Input Type | |
| | | E5EN-□□□□□T-FLK Multi-input (Thermoccouple/Resistance Thermometer) Type | |
| | | E5EN-□□□□□L-FLK Analog Input Type | |
| | E5GN | E5GN-□□□TC-FLK Thermocouple Input Type | |
| | | E5GN-□□□P-FLK Resistance Thermometer Input Type | |

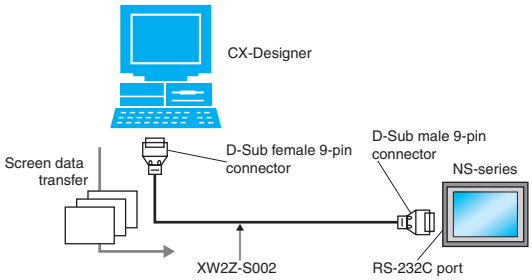
**Note:** The NS-Runtime cannot be connected directly to a Temperature Controller.

# Connection Configurations

## Transferring Screens (Connecting the CX-Designer and PT)

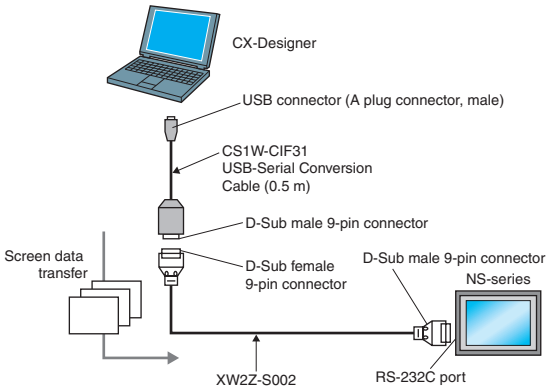
### Connecting to the Computer's RS-232C Port

Use a XW2Z-S002 Cable for screen transfers.

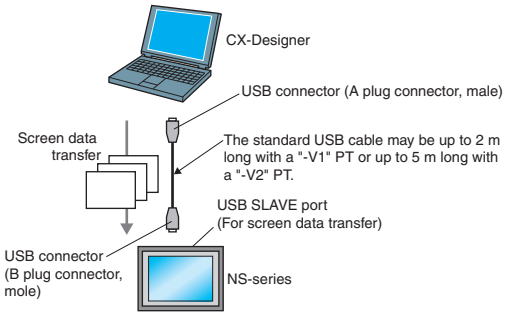



### Connecting to the Computer's USB Port

Use a CS1W-CIF31 USB-Serial Conversion Cable and XW2Z-S002 Cable for screen transfers.



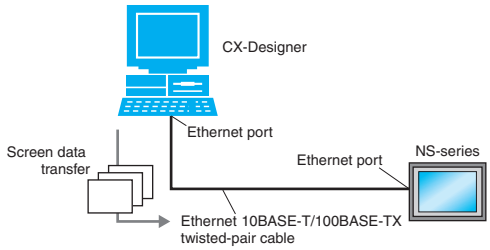

A commercially available USB cable can be used as well. *



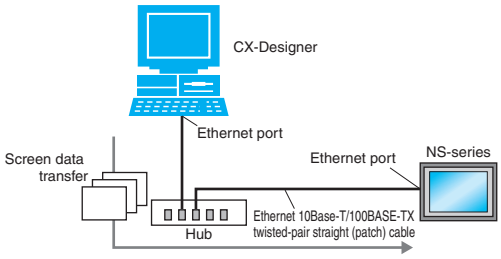

✻ Commercially available USB cables cannot be used for the NS main units of which the lot. No. is prior to 0325 (made on Feb. 3, 2005).

### Connecting to the Computer's LAN (Ethernet) Port

#### Connecting Directly (1:1) to the Computer




#### Connecting to the Computer through a Hub

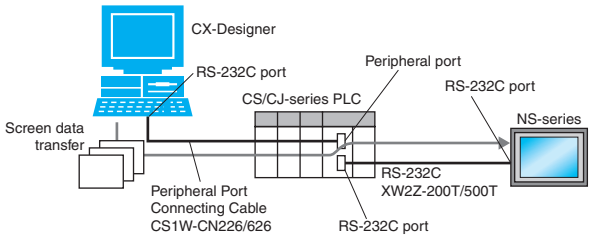



**Note:** An NS-series PT can also connect to a network configured for 10Base-5 when using a hub and transceiver set for 10Base-5 communications.

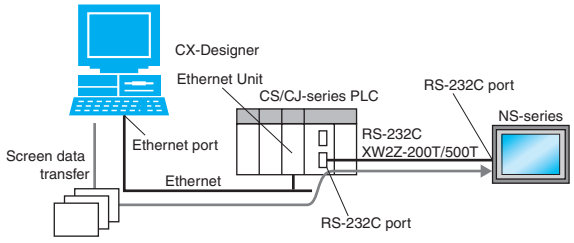
### Connecting through a PLC

If the PLC is a CS/CJ-series PLC, screen data can be transferred to an NS-series PT through the PLC. *

**Using a Serial → Serial Connection**




**Using an Ethernet → Serial Connection**

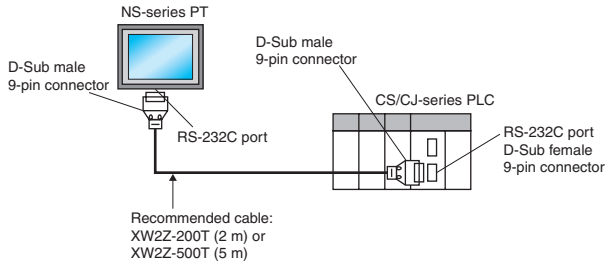



✻ Not available for the CPU units of which the lot No. is prior to 03020.

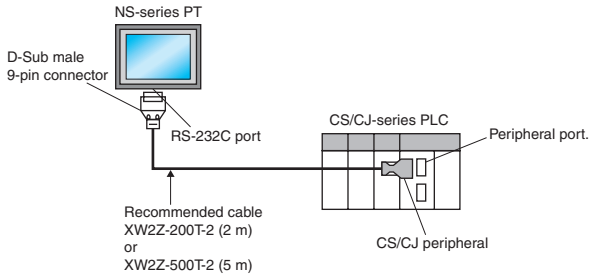
## Operation (Connection between NS-series PT and PLC)

### Using a Serial Connection

**When connecting to a CS/CJ-series PLC's RS-232C port, use an XW2Z-200T/500T Cable between the PT and PLC.**

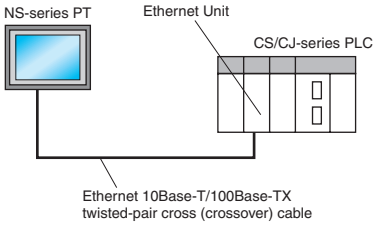



**When connecting to a CS/CJ-series PLC's peripheral port, use an XW2Z-200T-2/500T-2 Cable between the PT and PLC.**

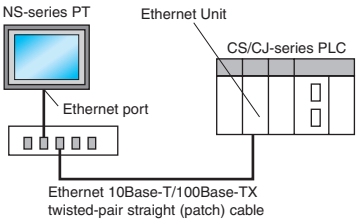



### Using an Ethernet Connection

**Connecting Directly (1:1) to the Computer**




**Connecting to the Computer via a Hub**




**Note:** An NS-series PT can also connect to a network configured for 10Base-5 when using a hub and transceiver set for 10Base-5 communications.

In addition, the NS-series PT can be connected through Controller Link by mounting an NS-CLK21 Controller Link Interface Unit to the PT.

# Smart Active Parts (SAP) Library Contents

## For monitor setting

More than 3,000 Library parts (Smart Active Parts) are available, which can directly access OMRON PLCs and components. The objects can just be pasted from the Smart Active Parts (SAP Library) Library to the screen; it is completely unnecessary to create screens and ladder programming. The following Smart Active Parts are provided on the CX-One/CX-Designer.

### For CS/CJ CPU Unit

Error Log Monitor, Online Battery Change Button, etc.

### For Serial Communications Boards/Units

Communications Status Displays (Error Monitor), Ports Settings, etc.

### For Ethernet Units/CLK Units

Network Status Displays (Error Monitor and Network Node Status), etc.

### For MC/MCH Unit

JOG Running, Search Zero Position, Program Running, Error Displays, I/O Status Monitor, PV Monitor, etc.

### For NC/NCF Unit

JOG Running, Direct Running, Memory Running (NC Only), Error Displays I/O Status Monitor, PV Monitor, etc.

### For Wireless Terminals for WT30

Monitoring Slave Operating Status in a Wireless Environment

### For Servo (R88D-WT, R7D-AP) (See note 1.)

PV Monitor, Parameter Settings, Error Displays, Driver Information Displays, I/O Status Monitor, etc.

### For Inverters (See note 1.)

Rotation Speed/Monitoring Output Frequency, Other Parameter Settings, etc.

### For DeviceNet DRT2

DRT2 Maintenance/Status Information, IN/OUT Information, etc.

### For Temperature Controllers (E5□R, E5ZN, E5□N, EJ1 and CJ1W-TC) (See note 2.)

Operation Monitor, PID Settings, SP Settings, Alarm Settings, Input Shift Settings, etc.

### For Sensors (E3X-DRT)

Threshold Settings, Monitoring Light Reception Levels, etc.

### For the SmartSlice GRT1 Series

Communications Unit Status, Warning/Alarm Flags, Network Joining/Leaving Status

### For CompoNet

Master/Save Monitor, Maintenance Information, Analog I/O Monitor, IN/OUT Information Monitor, etc.

### For Multi-point Power Controllers (G3ZA)

Process Variable Read, Status Read, Heater Current Read, Manipulated Variable Write, etc.

### For NE1A Safety Network Controllers and DST1 Safety I/O Terminals

Maintenance Information, IN/OUT Information Monitor, Error Status Information, etc.

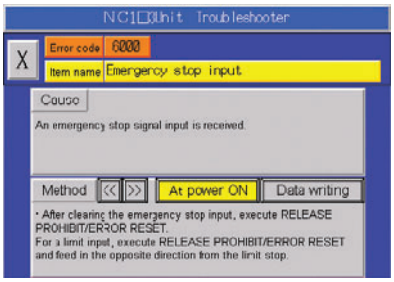
**Note: 1.** Smart Active Parts require a Serial Communications Units/Boards (version 1.2 or later).
**2.** The NS-Runtime cannot be connected directly to a Temperature Controller.

## For Troubleshooter

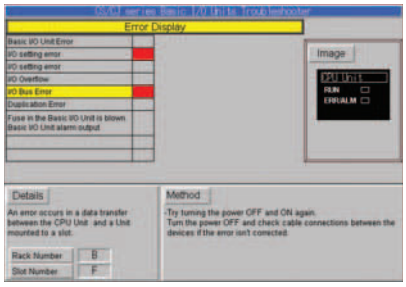
A Troubleshooter SAP Library is available to troubleshoot each Unit in the PLC. When an error occurs in a Unit, the Troubleshooter SAP Library provides an easy-to-understand explanation of the cause of the error as well as the countermeasures.
The CX-One/CX-Designer includes the following Troubleshooter SAP library as standard.

**DeviceNet unit**
**NC unit**
**NCF unit**
**Standard I/O unit**
**Analog Input / Output / I/O unit**
**SCU unit**
**High speed counter unit**
**CLK unit**
**ID sensor unit**

Troubleshooter SAP for a Position Control Unit



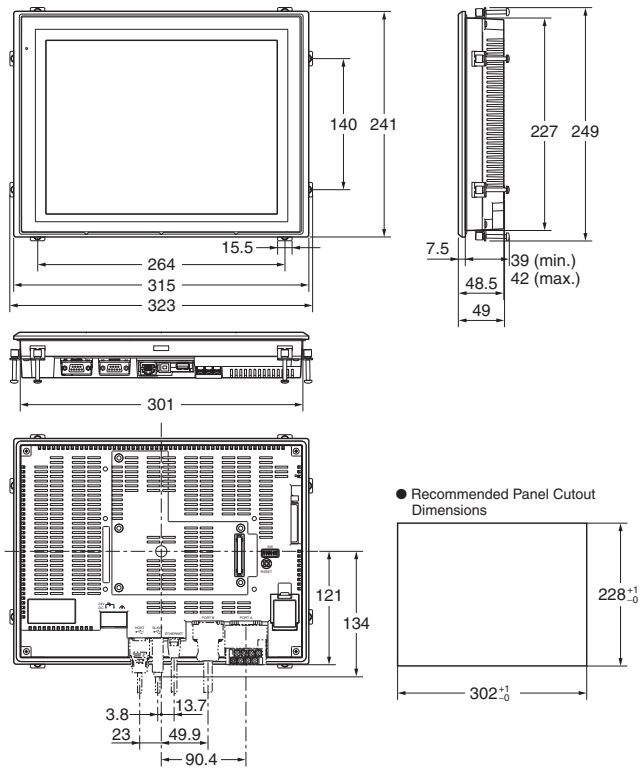

Troubleshooter SAP for Basic I/O Unit



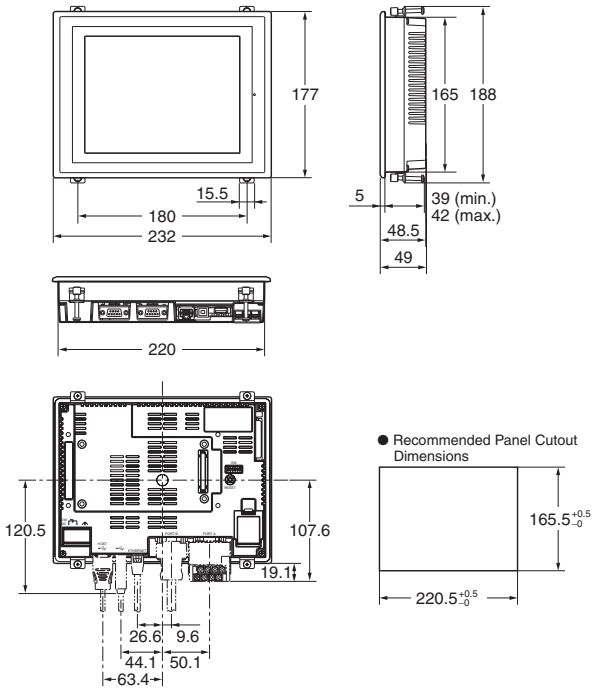
# Dimensions

(Unit: mm)

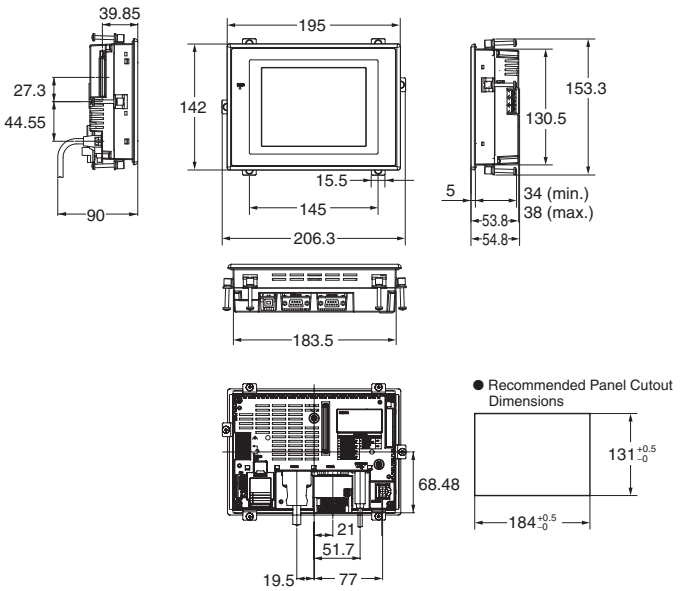
## NS12/10



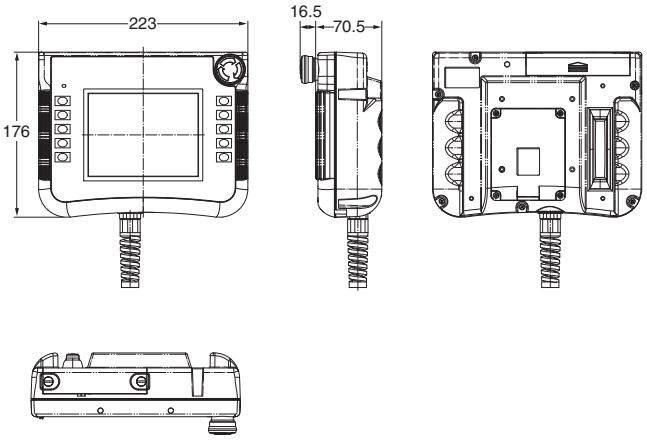

## NS8



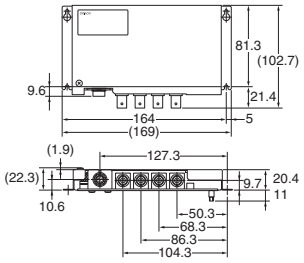
## NS5



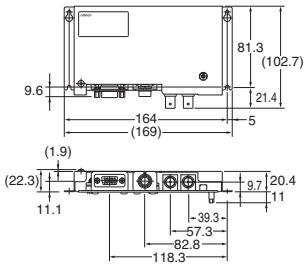

## NSH5



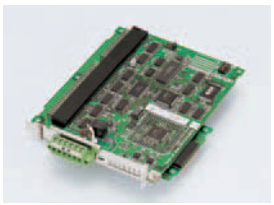
**Video Input Unit**
**NS-CA001 (with Cover)**

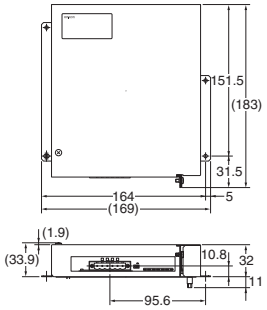



**RGB/Video Input Unit**
**NS-CA002 (with Cover)**




**Controller Link Interface Unit**
**NS-CLK21 (with Cover)**





## Related Manual

The related manuals are organized as shown in the chart below.

| Cat.No. | Model | Name | Applications | Description |
|---|---|---|---|---|
| **V072-E1** | NS12-TS00□-V1/-V2<br>NS12-TS01□-V1/-V2<br>NS10-TV00□-V1/-V2<br>NS10-TV01□-V1/-V2<br>NS8-TV00□-V1/-V2<br>NS8-TV01□-V1/-V2<br>NS8-TV10□-V1<br>NS8-TV11□-V1<br>NS5-SQ00□-V1/-V2<br>NS5-SQ01□-V1/-V2<br>NS5-TQ00□-V2<br>NS5-TQ01□-V2<br>NS5-MQ00□-V2<br>NS5-MQ01□-V2 | Programmable Terminals NS-Series SETUP MANUAL | To learn how to use the programmable terminal NS Series | Describes how to connect or use the NS Series. |
| **V073-E1** | NS12-TS00□-V1/-V2<br>NS12-TS01□-V1/-V2<br>NS10-TV00□-V1/-V2<br>NS10-TV01□-V1/-V2<br>NS8-TV00□-V1/-V2<br>NS8-TV01□-V1/-V2<br>NS8-TV10□-V1<br>NS8-TV11□-V1<br>NS5-SQ00□-V1/-V2<br>NS5-SQ01□-V1/-V2<br>NS5-TQ00□-V2<br>NS5-TQ01□-V2<br>NS5-MQ00□-V2<br>NS5-MQ01□-V2 | Programmable Terminals NS-Series PROGRAMMING MANUAL | To learn how to program using the programmable terminal NS Series | Describes the NS Series screen configurations, specifications of functional parts, and other functions. |
| **V088-E1** | NS-CXDC1-V2 | CX-Designer USER'S MANUAL | To learn how to use the screen data creation software CX-Designer | Describes how to install and use the CX-Designer. |

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