Programmable Terminals

NS Series

Even Simpler Equipment Operation with Outstanding Synergy.

5.7 inches
Color TFT
STN monochrome

10.4 inches
Color TFT

15 inches
Color TFT

12.1 inches
Color TFT

8.4 inches
Color TFT

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.

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EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
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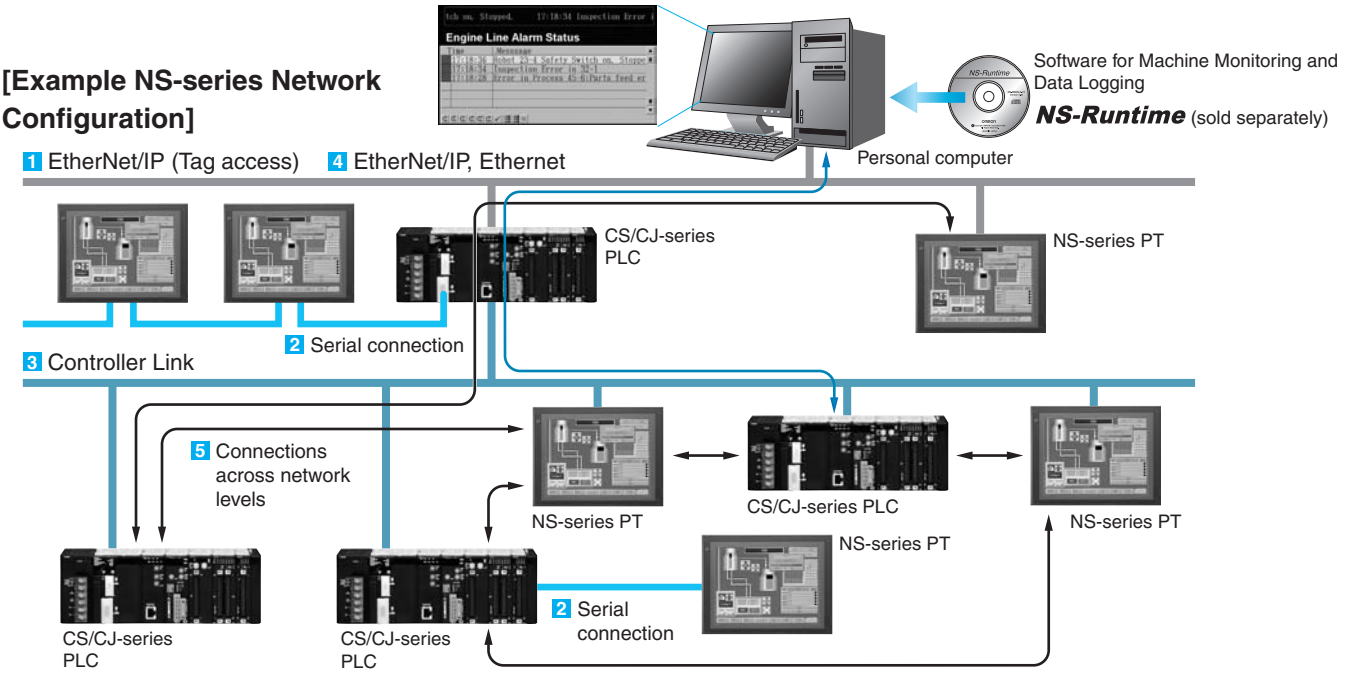
Network

Provides serial NT Link communications supporting both 1:1 and 1:N connections. The NT Link has more efficient communications than Host Link and its capabilities are especially apparent in applications with multiple PTs connect to the PLC. The NS-series PTs can also support communications with multiple PLCs and multiple NS-series PTs through Controller Link and Ethernet connections, so the network can be configured freely to match the requirements and scale of the application. In addition, using the NS-Runtime makes it possible to monitor machine status and log data from the host.

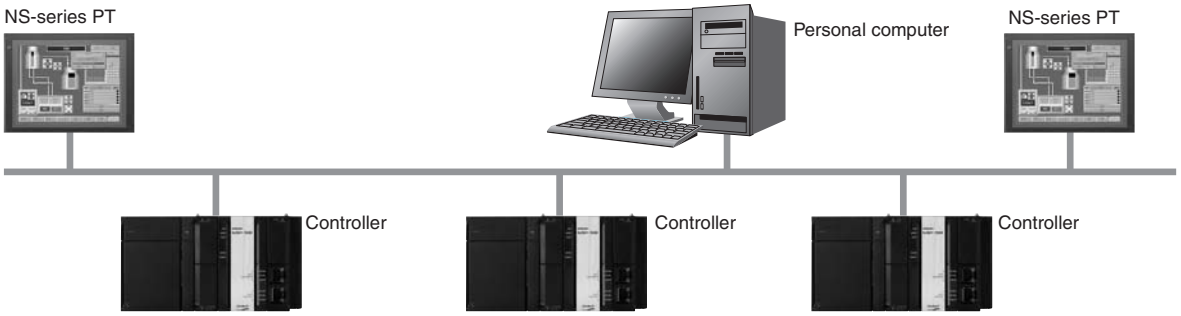
[Example NS-series Network Configuration]



Configuration of CJ2 series, NJ series and NX series

1 EtherNet/IP Connection (Tag accesses)

If an Ethernet-compatible NS-series PT is used, the PT can connect to a Controller with built-in EtherNet/IP and an Option Unit is not needed to connect at the PT.



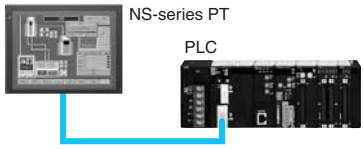
Configuration of CS series, CJ series and CP series

2 Serial connection

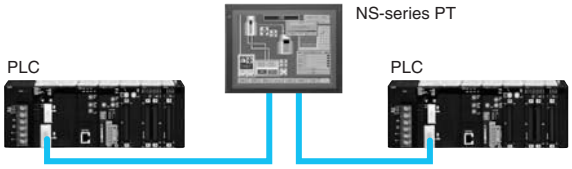
1:1 NT Link or Host Link

●**NS:PLC = 1:1**

Connecting with the PLC through port A or port B

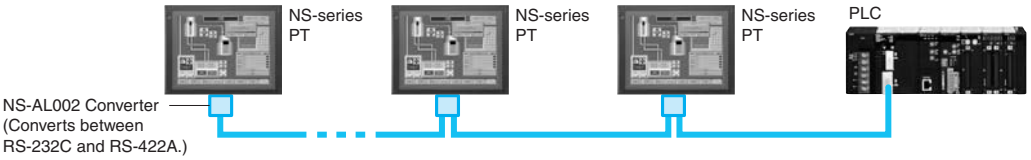


●**NS:PLC = 1:2**



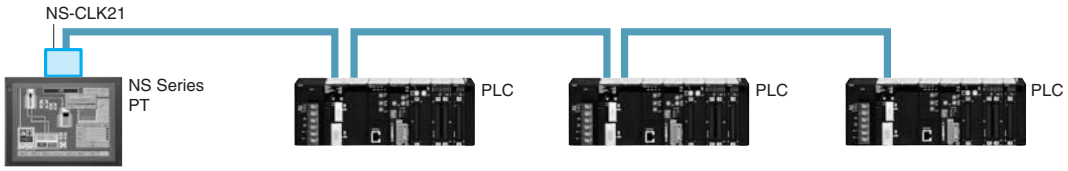
1:N NT Link

●**NS:PLC ratio = 8:1 max.** Up to 8 NS-series PTs can be connected to each of the PLC's RS-232C/RS-422A ports.



3 Controller Link Connection

The PT can be connected to an OMRON Controller Link network by mounting a Controller Link Interface Unit.



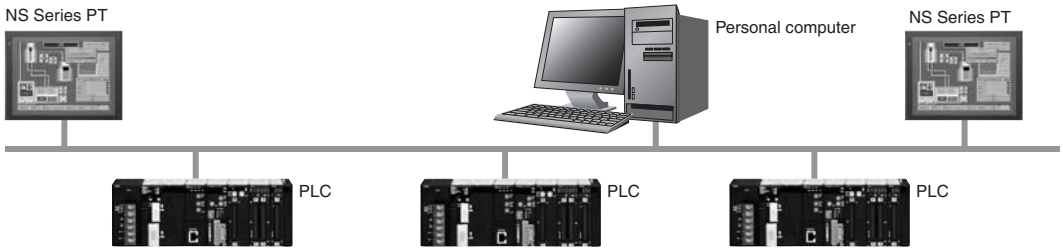
If a Controller Link connection is used, data links can be set between PLCs and multiple PLCs can be monitored/set from the NS-series PT's screen.

●**Baud rate**
2 Mbps (500 m max.)
1 Mbps (800 m max.)
500 kbps (1 km max.)

●**Max. number of nodes: 32 nodes**

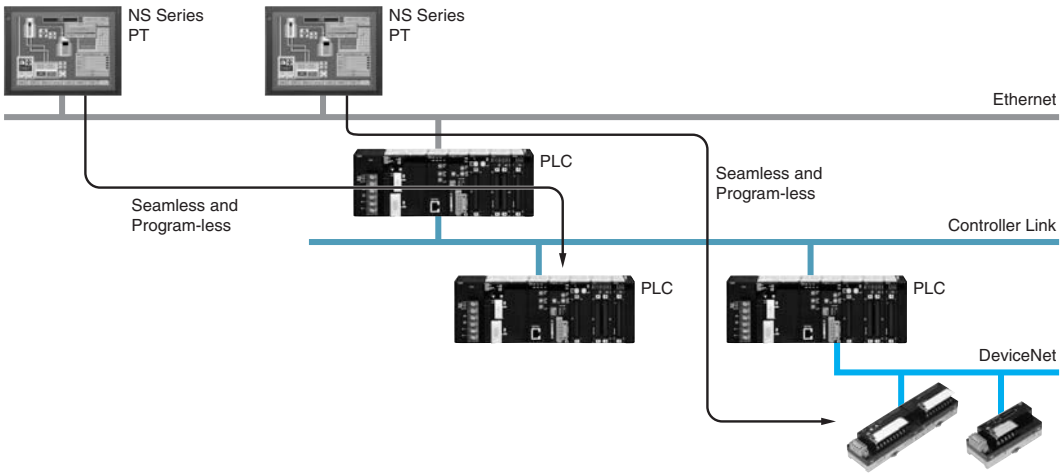
4 EtherNet/IP or Ethernet Connection

If an Ethernet-compatible NS-series PT is used, the PT can connect to a PLC with an Ethernet Unit and an Option Unit is not needed to connect at the PT.



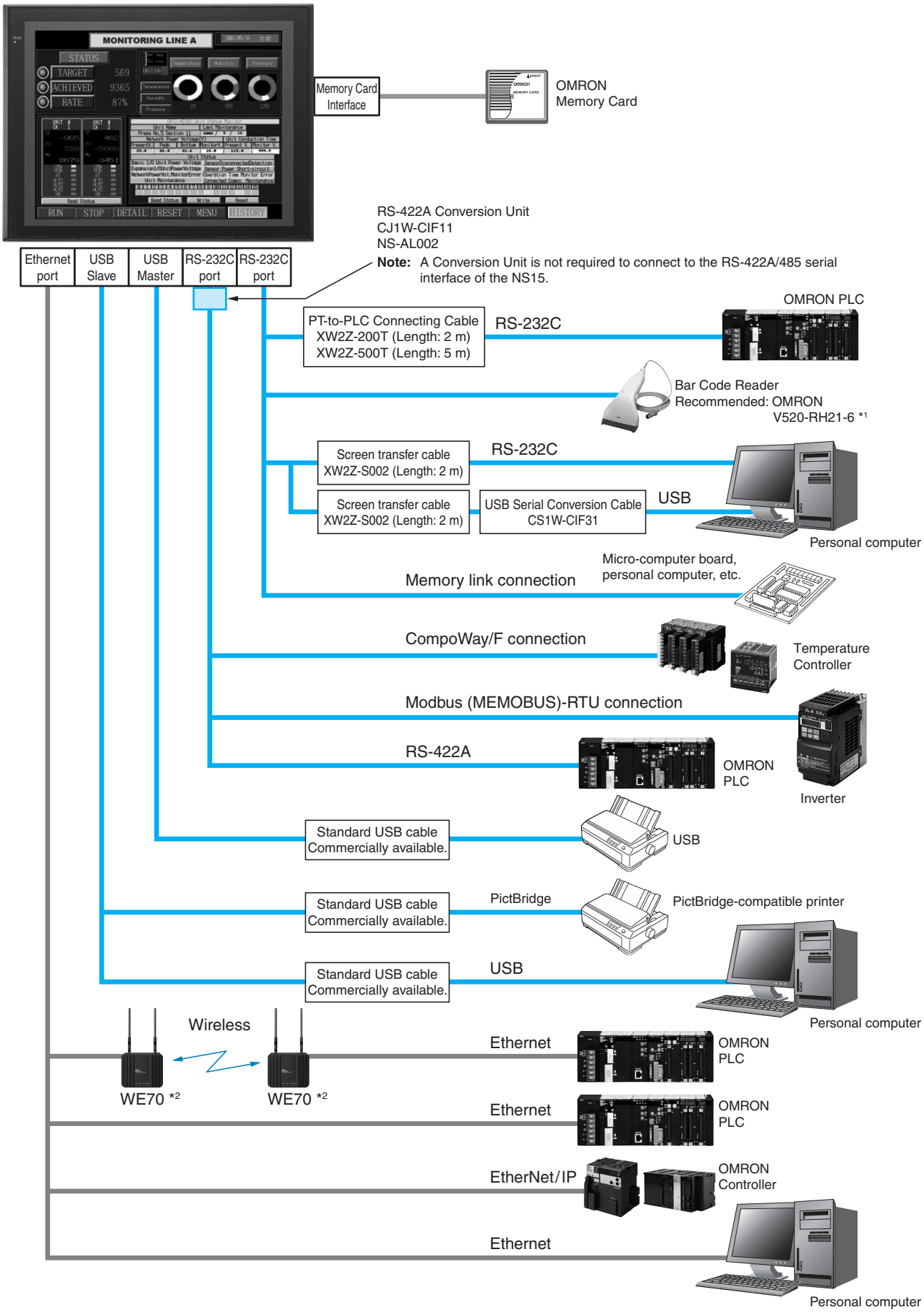
5 Connections Over Network Levels

The NS-series PTs can connect to a variety of devices in the network, through as many as 3 network levels.
For example, if SAP (Smart Active Parts) are being used, an NS-series PT connected by Ethernet can be used to monitor the information in a PLC connected through Controller Link as well as the information in the DeviceNet Slaves connected to that PLC.



System Configuration

NS5/NS8/NS10/NS12/NS15



***1.** Bar Code Reader (V520-RH21-6) was discontinued at the end of August 2016.
***2.** Wireless (WE70) is final order entry date at the end of June 2020.

Expansion Bus Interface

Expansion bus interface

Any one of the following Units can be mounted to the expansion bus interface.

- Controller Link Interface Unit NS-CLK21 — Controller Link — PLC
- Video Input Unit NS-CA001 — NTSC/PAL — Vision Sensor
- RGB/Video Input Unit NS-CA002 — NTSC/PAL — Vision Sensor
- RGB/Video Input Unit NS-CA002 — RGB output — Personal computer

Note: Video Input Units and RGB Video Input Units cannot be used with some models.

Multi-vendor

RS-232C port

RS-232C port

RS-232C

RS-422A Conversion Unit CJ1W-CIF11 NS-AL002

Note: A Conversion Unit is not required to connect to the RS-422A/485 serial interface of the NS15.

Screen transfer cable XW2Z-S002 (Length: 2 m)

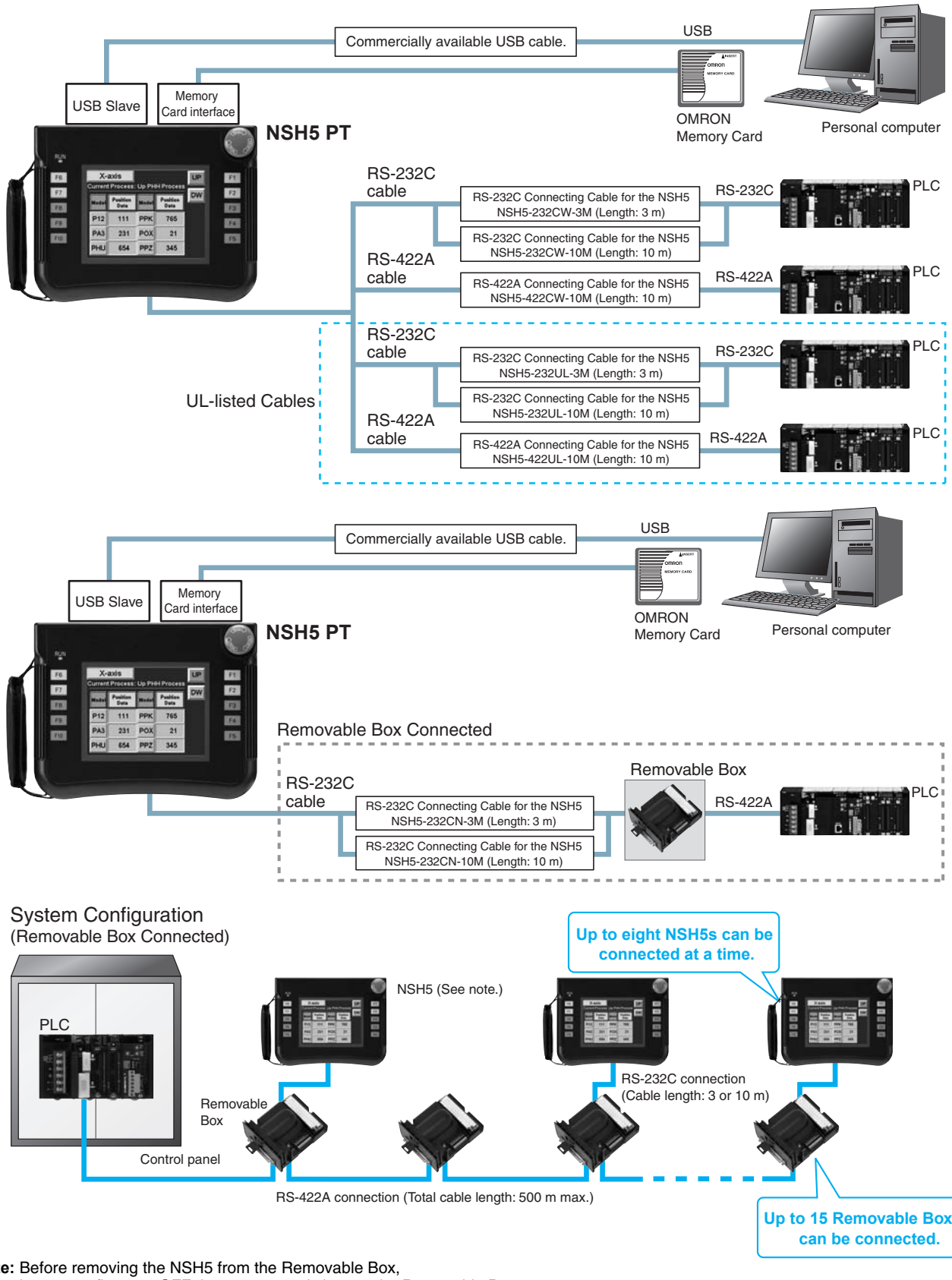
- Computer Link Unit — Mitsubishi A-series PLC
- Function Extension Board or Mitsubishi FX-series PLC Communications Adapter — Mitsubishi FX-series PLC
- Serial Communications Unit — Mitsubishi QnA-series PLC
- Serial Communications Unit — Mitsubishi Q-series PLC
- Computer Link Module — Yokogawa's FA-M3(R) Series
- SIMATIC S7 HMI Adapter — Siemens S7-300-series PLC
- Serial Communications Module — Yaskawa MP-series PLC
- **Rockwell (Allen-Bradley)** SLC500/Micrologix/ControlLogix/ CompactLogix/PLC-5-series PLC
- Modbus device (RTU mode)

RS-422A/485 (See note.)

- Computer Link Unit — Mitsubishi A-series PLC
- Function Extension Board or Mitsubishi FX-series PLC Communications Adapter — Mitsubishi FX-series PLC
- Serial Communications Unit — Mitsubishi QnA-series PLC
- Serial Communications Unit — Mitsubishi Q-series PLC
- Computer Link Module — Yokogawa's FA-M3(R) Series
- Serial Communications Module — Yaskawa MP-series PLC
- **Rockwell (Allen-Bradley)** PLC-5-series PLC
- Modbus device (RTU mode)

Note: Whether an RS-422A or RS-485 connection is supported depends on the device that you are connecting to. For details, refer to the Connectable Devices page or NS-Series Programmable Terminals HOST CONNECTION MANUAL Multivendor Connection (Cat.V092).

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

International Standards

- The standards are availabled as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Programmable Terminals

Product name	Specifications				Model	Standards
	Effective display area	Number of dots	Ethernet	Case color		
NS5-V2 *1	5.7-inch *2 TFT color LED backlight	320 × 240 dots	No	Ivory	NS5-SQ10-V2	UC1, CE, N, L, UL Type4
				Black	NS5-SQ10B-V2	
			Yes	Ivory	NS5-SQ11-V2	
				Black	NS5-SQ11B-V2	
	5.7-inch *2 High-luminance TFT color LED backlight		No	Ivory	NS5-TQ10-V2	
				Black	NS5-TQ10B-V2	
			Yes	Ivory	NS5-TQ11-V2	
				Black	NS5-TQ11B-V2	
NS8-V2	8.4-inch *2 TFT LED backlight	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 *2 TFT LED backlight	640 × 480 dots	No	Ivory	NS10-TV00-V2	UC1, CE, N, L, UL Type4
				Black	NS10-TV00B-V2	
			Yes	Ivory	NS10-TV01-V2	
				Black	NS10-TV01B-V2	
NS12-V2	12.1-inch *2 TFT LED backlight	800 × 600 dots	No	Ivory	NS12-TS00-V2	
				Black	NS12-TS00B-V2	
			Yes	Ivory	NS12-TS01-V2	
				Black	NS12-TS01B-V2	
NS15-V2	15-inch TFT	1,024 × 768 dots	Yes	Silver	NS15-TX01S-V2	
				Black	NS15-TX01B-V2	
NSH5-V2 *1 Hand-held	5.7-inch TFT	320 × 240 dots	No	Black (Emergency stop button: Red)	NSH5-SQR10B-V2	UC, CE
				Black (Stop button: Gray)	NSH5-SQG10B-V2	

✻1. As of July 2008, the image memory has been increased to 60 MB.
✻2. Lot No. 15Z0 or later of NS5 color-type models, Lot No. 28X1 or later of NS8 models, Lot No. 11Y1 or later of NS10 models, Lot No. 14Z1 or later of NS12 models, LotNo.31114K or later of NS15 models.

NS-Runtime

Product name	Specifications		Media	Model	Standards
NS-Runtime	NS-Runtime Installer, PDF manual, hardware key (See note.)	1license	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 7 (32-bit/64-bit version)/Windows 8 (32-bit/64-bit version)/Windows 10 (32-bit/64-bit version)
CPU	Celeron, 1.3 GHz or higher (Recommended)
Memory size	HDD: 50 MB min., RAM: 512 MB min. (Windows 7: 1 GB min.). 50 MB is required for the Runtime alone. (An additional 280 MB is required if CX-Server is not already installed.)

✻ Ver. 1.30 or later of NS Runtime do not support Windows XP (Service Pack 3 or higher) and Windows Vista.

Software

●How to Select Required Support Software for Your Controller

The required Support Software depends on the Controller to connect. Please check the following table when purchasing the Support Software.

Item	Omron PLC System	Omron Machine Automation Controller System
Controller	CS, CJ, CP, and other series	NJ-series and NX-series
Programmable Terminals	NS-series	NS-series with an Ethernet port
Software	FA Integrated Tool Package CX-One	Automation Software Sysmac Studio

●FA Integrated Tool Package CX-One

Product name	Specifications	Number of licenses	Media	Model	Standards
FA Integrated Tool Package CX-One Ver.4.□	The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components. CX-One runs on the following OS. Windows XP (Service Pack 3 or higher, 32-bit version) / Windows Vista (32-bit/64-bit version) / Windows 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) / Windows 10 (32-bit/64-bit version) CX-One Version 4.□ includes CX-Designer Ver.3.□. For details, refer to the CX-One catalog (Cat. No. R134)	1 license *	DVD	**CXONE-AL01D-V4**	—

✻ Multi licenses (3, 10, 30, or 50 licenses) and DVD media without licenses are also available for the CX-One.

●Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include any DVD.

Product name	Specifications	Number of licenses	Media	Model	Standards
Sysmac Studio Standard Edition Ver.1.□	The Sysmac Studio provides an integrated development environment to set up, program, debug, and maintain NJ/NX Series CPU Units, NY-series Industrial PC, Controllers and other Machine Automation Controllers, as well as EtherCAT slaves. Sysmac Studio runs on the following OS. Windows 7 (32-bit/64-bit version) / Windows 8 (32-bit/64-bit version) / Windows 8.1 (32-bit/64-bit version) / Windows 10 (32-bit/64-bit version) *1 The Sysmac Studio Standard Edition DVD includes Support Software to set up EtherNet/IP Units, DeviceNet slaves, Serial Communications Units, and Support Software for creating screens on HMIs (CX-Designer). Refer to your OMRON website for details.	- (Media only)	Sysmac Studio (32-bit) DVD	**SYSMAC-SE200D**	—
		- (Media only)	Sysmac Studio (64-bit) DVD	**SYSMAC-SE200D-64**	—
		1 license *2	—	**SYSMAC-SE201L**	—

Note: To connect the NJ5 Controller, NS system version 8.5 or higher is required. CX-Designer version 3.3 or higher is also required.
To connect the NJ1/NJ3 Controller, NS system version 8.61 or higher is required. CX-Designer version 3.4 or higher is also required.
To connect the NX7 Controller, NS system version 8.9 or higher is required. CX-Designer version 3.64 or higher is also required.
To connect the NX1 controller, NS system version 8.96 or higher is required. CX-Designer version 3.70 or higher is also required.
To connect the NX1P controller, NS system version 8.93 or higher is required. CX-Desiner version 3.70 or higher is also required.

✻**1.** Model "SYSMAC-SE200D-64" runs on Windows 10 (64 bit).
✻**2.** Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).

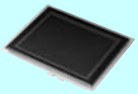
Cable

Product name	Specifications		Model	Standards
Cable *1	Screen transfer cable for DOS/V (CX-Designer ↔ PT)	Length: 2 m	**XW2Z-S002**	–
	USB-Serial Conversion Cable	Length: 0.5 m	**CS1W-CIF31**	N
	USB relay cable	Length: 1 m	**NS-USBEXT-1M**	–
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 *2	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**	

***1.** Use a standard USB Type A male to Type B type male Cable to connect the NS series PT to a personal computer (CX-Designer). We recommend that you use a USB cable with a ferrite core attached to ensure stable communications. (Examples: FH-VUAB from OMRON and U2C-BF series (US2-BF□□BK) from ELECOM as of February 2016)
Use a standard USB cable to connect the NS series PT to a PictBridge-compatible printer. USB cable type depends on the printer.

***2.** To connect the NS series PT to NJ series Controller, using a commercially available 10/100-BASE-TX twisted-pair cable.
For detail, refer to the NS series SETUP MANUAL (Cat. No.V083).

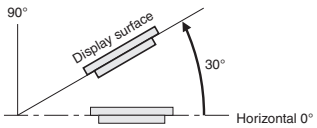
Options

Product name	Specifications		Model	Standards
Video Input Unit	Inputs: 4 channels Signal type: NTSC/PAL		**NS-CA001**	UC1, CE
	Input channels: 2 video channels and 1 RGB channel *1 Signal type: NTSC/PAL		**NS-CA002**	
Controller Link Interface Unit	For Controller Link Communications		**NS-CLK21**	UC1, CE
RS-422A Adapter	Transmission distance: 500 m total length **Note:** Use this model when connecting PT models without a V□ suffix. **Note:** PT models with the V□ suffix can also be connected.		**NS-AL002**	–
	Transmission distance: 50 m total length **Note:** Only PT models with a suffix of V□ are connectable. 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)	NS15	**NS15-KBA04**	–
		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 (1 cover included) (Transparent)	NS15	**NS15-KBA05N**	
	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	128 MB		**HMC-EF183**	
	256 MB		**HMC-EF283**	
	512 MB		**HMC-EF583**	
Memory Card Adapter	---		**HMC-AP001**	CE
Replacement Battery	Battery life: 5 years (at 25°C)		**CJ1W-BAT01**	–
Bar Code Reader *3	CCD handheld bar code reader (RS-232C interface)		**V520-RH21-6**	

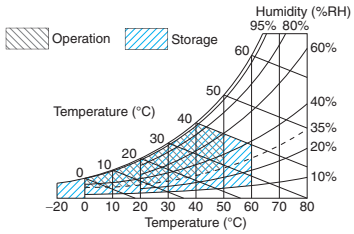
***1.** One screen cannot display two video inputs simultaneously.
***2.** A Chemical-resistant Cover (NT30-KBA01) is available only for the NS5.
***3.** Bar Code Reader (V520-RH21-6) was discontinued at the end of August 2016.

General Specifications

NS5/NS8/NS10/NS12/NS15

Series	NS5-V2	NS8-V2	NS10-V2	NS12-V2	NS15-V2
Rated power supply voltage	24 VDC				
Allowable voltage range	20.4 to 27.6 VDC (24 VDC ±15%)				
Power consumption	15 W max.	25 W max.			45 W max.
Ambient operating temperature	0 to 50 °C (See note on the next page.) **Note:** The ambient operating temperature is subject to the following restrictions according to the mounting angle. Mounting angle of 0 to 30° to the horizontal: • When no Expansion Units are mounted, the operating temperature range is 0 to 45°C. • When a Video Input Unit or a Controller Link Interface Unit is mounted, the ambient operating temperature is 0 to 35°C. Mounting angle of 30 to 90° to the horizontal: Operating temperature range of 0 to 50°C 				
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/s² 30 min each in X, Y, and Z directions				5 to 8.4 Hz, 3.5 mm single amplitude, 8.4 to 150 Hz, 9.8 m/s² 10 min times each in X, Y, and Z directions
Shock resistance (during operation)	147 m/s² 3 times each in direction of X, Y, and Z				
Weight	1.0 kg max.	2.0 kg max.	2.3 kg max.	2.5 kg max.	4.2 kg max.
Degree of protection	Front operating panel: IP65 oil-proof type and NEMA4 UL type 4. *2 **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 right diagram.
***2.** Support for NS5, NS10, NS12 and NS15.



NSH5 Hand-held PT

Series	NSH5-V2	
Type	5.7-inch Color TFT (Hand-held Version)	
Case color	Black	
Built-in Ethernet port	No	
Model	NSH5-SQR10B-V2 (Emergency stop button: Red)	NSH5-SQG10B-V2 (Stop button: Gray)
Rated power supply voltage	24 VDC	
Allowable voltage range	20.4 to 27.6 VDC (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) Normal mode: 300 Vp-p Pulse width: 100 ns to 1 μs, Rise time: 1-ns pulse	
Vibration resistance (during operation)	10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/s² 30 min each in X, Y, and Z directions	
Shock resistance (during operation)	147 m/s² 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.	

Performance/Specifications

NS5

Series		NS5-V2							
Model		NS5-SQ10-V2	NS5-SQ11-V2	NS5-SQ10B-V2	NS5-SQ11B-V2	NS5-TQ10-V2	NS5-TQ11-V2	NS5-TQ10B-V2	NS5-TQ11B-V2
Built-in Ethernet port		No	Yes	No	Yes	No	Yes	No	Yes
Case color		Ivory		Black		Ivory		Black	
Display device		TFT color LCD				Color High-luminance TFT *1			
Effective display area		Width 117.2 × height 88.4 mm (5.7 inches)							
Display colors		256 colors							
Number of dots		320 dot horizontal × 240 dot vertical							
View angle		Left/right: 80°, Top: 80°, Bottom: 60° *5							
Screen data capacity		60 Mbytes							
Image data (BMP or JPG images)		32,768 colors							
Memory Card		Supported							
Ladder Monitor function		Not supported							
Video Input Unit support		Not supported							
Controller Link Interface Unit (Wired) support		Not supported							
Backlight *2	Service life * 3	75,000 hours min.							
	Brightness adjustment	Three-level or 32-level brightness adjustment from the touch panel screen. * 4							
	Backlight error detection *5	Error is detected automatically, and the RUN indicator flashes green as notification.							
Touch panel (matrix type)	Method	Matrix resistive membrane type							
	Number of switches/ resolution	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. 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, Ukrainian, Georgian, Icelandic, Afrikaans, Faroese, Indonesian, Greek, Turkish, Estonian, Latvian, Lithuanian, Thai (supported only with scalable Gothic font)							
Text attributes	Color	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. Fixed objects: Select from three flicker types.							
Numeral units and scale settings		1.000 max.							
Alarm/event settings		5,000 max.							
Expansion interface		For Expansion Interface Units (Beginning with units produced in Feb. 2018, connectors are not mounted)							

***1.** NS5-TQ series (high luminance TFT) luminance is better than that of NS5-SQ series by about 110 cd/m^2.
***2.** Contact your nearest OMRON representative to replace the backlight.
***3.** 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).
***4.** Lot No. 15Z0 or later of NS5 models.
***5.** 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.

NS8/NS10/NS12/NS15

Series		NS8-V2				NS10-V2				NS12-V2				NS15-V2	
Model		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	NS15-TX01S-V2	NS15-TX01B-V2
Built-in Ethernet port		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Case color		Ivory		Black		Ivory		Black		Ivory		Black		Silver	Black
Display device		High-definition TFT color LCD				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)				Width 304.1 × height 228.1 mm (15 inches)	
Display colors		256 colors													
Number of dots		640 dot horizontal × 480 dot vertical								800 dot horizontal × 600 dot vertical				1,024 dot horizontal × 768 dot vertical	
View angle		Left/right: 80°, Top: 80°, Bottom: 60° *3				Left/right: 70°, Top: 65°, Bottom: 65° *3				Left/right: 80°, Top: 80°, Bottom: 80° *3				Left/right: 80°, Top: 70°, Bottom: 60°	
Screen data capacity		60 Mbytes													
Image data (BMP or JPG images)		32,768 colors													
Memory Card		Supported													
Ladder Monitor function		Supported													
Video Input Unit support		Supported (Image displayed via video input is 260,000 colors)												(Only RGB input is enabled.)	
Controller Link Interface Unit (Wired) support		Not supported				Supported									
Backlight *1	Service life * 2	50,000 hours min.													
	Brightness adjustment	Three-level or 32-level brightness adjustment from the touch panel screen. * 3													
	Backlight error detection *4	Error is detected automatically, and the RUN indicator flashes green as notification.													
Touch panel (matrix type)	Method	Matrix resistive membrane type												Analog resistive membrane type *5	
	Number of switches/ resolution	768 (32 horizontal × 24 vertical) 20 × 20 dots for each switch				1,200 (40 horizontal × 30 vertical) 16 × 16 dots for each switch				1,900 (50 horizontal × 38 vertical) 16 × 16 dots for each switch				Resolution: 1,024 (horizontal) × 1,024 (vertical)	
	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. 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, Ukrainian, Georgian, Icelandic, Afrikaans, Faroese, Indonesian, Greek, Turkish, Estonian, Latvian, Lithuanian, Thai (supported only with scalable Gothic font)														
Text attributes	Color	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. Fixed objects: Select from three flicker types.													
Numeral units and scale settings		1.000 max.													
Alarm/event settings		5,000 max.													
Expansion interface		For Expansion Interface Units													

✻1. Contact your nearest OMRON representative to replace the backlight.
✻2. 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).
✻3. Lot No. 28X1 or later of NS8 models, Lot No. 11Y1 or later of NS10 models, Lot No. 14Z1 or later of NS12 models, Lot No. 31114K or later of NS15 models.
✻4. 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.
✻5. An analog touch panel is used with the NS15. Do not press the touch panel in two or more places simultaneously.
If the touch panel is pressed in two or more places simultaneously, it may activate a switch between the points that are pressed.

Communications

NS5/NS8/NS10/NS12/NS15

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).
Serial Communications	**Port A**	**Connector**	Conforms to EIA RS-232C. D-Sub female 9-pin connector 5-V output (250 mA max.) through pin 6. 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), 1:1 NT Links, or Host Link (connections with C Series or CVM1/CV-series PLCs) 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. 5-V output (250 mA max.) through pin 6. 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 1:1 NT Links (connections with C Series or CVM1/CV-series PLCs) 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) Connecting to a PictBridge-compatible Printer Recommended printers: EPSON: PM-G4500, PX-G5300, PX-5600, EP-901F Canon: PIXUS MX7600, PIXUS iP100, PIXUS iX5000
USB HOST Specifications *1		**USB rating**	USB1.1
		Connector	TYPE-A (Host)
		Functions	Connection with a printer (for hard copies) Recommended printers: EPSON: PX-G930
Built-in Ethernet Specifications *2		**Conformance standards**	Conforms to IEEE 802.3/Ethernet (10 Base-T/100 Base-TX).
		Functions	Host (PLC) access and connection with the CX-Designer (for screen data transfers)
Controller Link (Wired-type) Specifications *3		**Baud rate**	2 M/1 M/500 K bps
		Transmission path	Shielded twisted-pair cable (special cable)
		Functions	Host (PLC) access and data links
Video Input Specifications *4		**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

***1.** Except NS5.
***2.** NS□-□□□1-V2 only.
***3.** Except NS5 and NS8.
***4.** Except NS5 and NS15. NS15 provides RGB input. (NS-CA002)

Connectable Devices

Supported OMRON PLCs

PLC series	PLC model name	RS-232C *1			Ethernet		Controller Link *4
		1:1 NT Link	1:N NT Link	Host Link	FINS *2	EtherNet/IP *3	
C Series	CQM1	Yes	No	Yes	No	No	No
	CQM1H	Yes	Yes	Yes	No	No	Yes
	CPM1	Yes	No	Yes	No	No	No
	CPM1A	Yes	No	No	No	No	No
	CPM2A	Yes	No	Yes	No	No	No
	CPM2C	Yes	No	Yes	No	No	No
	C200HS	Yes	No	Yes	No	No	No
	C200HE (-Z)	Yes	Yes	Yes	No	No	Yes
	C200HG (Z)	Yes	Yes	Yes	No	No	Yes
	C200HX (-Z)	Yes	Yes	Yes	No	No	Yes
CVM1/CV Series	CV500/1000/2000	Yes	No	Yes	Yes	No	Yes
	CVM1	Yes	No	Yes	Yes	No	Yes
CS Series	CS1H	No	Yes	Yes	Yes	Yes	Yes
	CS1G	No	Yes	Yes	Yes	Yes	Yes
	CS1D	No	Yes	Yes	Yes	Yes	Yes
CJ Series	CJ1H	No	Yes	Yes	Yes	Yes	Yes
	CJ1G	No	Yes	Yes	Yes	Yes	Yes
	CJ1M	No	Yes	Yes	Yes	Yes	Yes
	CJ2H	No	Yes	Yes	Yes	Yes *5	Yes
	CJ2M	No	Yes	Yes	Yes	Yes *5	Yes
CP Series	CP1H	No	Yes	Yes	Yes	Yes	No
	CP1L	No	Yes	Yes	Yes	No	No
	CP1E	No	Yes	Yes	No	No	No
	CP2E	No	Yes	Yes	Yes	No	No
NJ Series	NJ5/NJ3/NJ1	Yes *6	Yes *6	Yes *6	No	Yes *7	No
NX Series	NX7/NX1/NX1P	No	No	No	No	Yes *8	No

Note: Including models whose production were discontinued.

∗1. To connect a NS with a PLC via a RS-422A connection, OMRON's NS-AL002, or CJ1W-CIF11 RS-232C/RS-422A Converter can be used to convert the RS-232C port on the NS to RS-422A.
∗2. A NS with Ethernet port is necessary.
When connecting a PLC with the NS, an Ethernet port is necessary on the PLC, too. Use a PLC CPU Unit with a built-in Ethernet port, or add an Ethernet Unit.
∗3. A NS with Ethernet port is necessary.
When connecting a PLC with the NS, an EtherNet/IP port is necessary on the PLC, too. Use a PLC CPU Unit with a built-in EtherNet/IP port, or add an EtherNet/IP Unit.
∗4. Install a Controller Link Interface Unit on the NS. A Controller Link Unit is necessary for the PLC.
∗5. For CJ2, CX-Designer version 3.2 or later, and NS system version 8.4 or later are required.
∗6. Mount a Serial Communications Unit on the NJ-series Controller. A NS can access only to the Controller's memory used for CJ-series unit.
∗7. When using a EtherNet/IP Unit to connect the NJ-series Controller, NJ Troubleshooter is not supported.
For NJ5, CX-Designer version 3.3 or later, and NS system version 8.5 or later are required.
For NJ3, CX-Designer version 3.4 or later, and NS system version 8.61 or later are required.
Moreover, the multidimensional array is supported in the combination with NJ.
∗8. For NX7, CX-Designer version 3.64 or later, and NS system version 8.9 or later are required.
For NX1P, CX-Designer version 3.70 or later, and NS system version 8.93 or later are required.
For NX1, CX-Designer version 3.70 or later, and NS system version 8.96 or later are required.
Moreover, the multidimensional array is supported in the combination with NX.

Function Comparison

PLC series	PLC model name	Ladder Monitor	Device Monitor/ Switch Box	PLC Data Trace	SPMA	SAP	EtherNet/IP Tag access (Network symbols)	PLC Troubleshooter	NJ Troubleshooter/ Integrated NS-series PT simulation *4
C series	CQM1	No	No	No	No	No	No	No	No
	CQM1H	No	No	No	No	No	No	No	No
	CPM1	No	No	No	No	No	No	No	No
	CPM1A	No	No	No	No	No	No	No	No
	CPM2A	No	No	No	No	No	No	No	No
	CPM2C	No	No	No	No	No	No	No	No
	C200HS	No	No	No	No	No	No	No	No
	C200HE (-Z)	No	No	No	No	No	No	No	No
	C200HG (-Z)	No	No	No	No	No	No	No	No
	C200HX (-Z)	No	No	No	No	No	No	No	No
CVM1/CV series	CV500/1000/2000	No	No	No	No	No	No	No	No
	CVM1	No	No	No	No	No	No	No	No
CS series	CS1H	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CS1G	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CS1D	Yes	Yes	Yes	Yes	Yes	No	Yes	No
CJ series	CJ1H	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CJ1G	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CJ1M	Yes	Yes	Yes	Yes	Yes	No	Yes	No
	CJ2H	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
	CJ2M	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
CP series	CP1H	Yes	Yes	Yes	Yes *1	Yes	No	No	No
	CP1L	Yes	Yes	Yes	Yes *1	Yes	No	No	No
	CP1E	No	No	No	Yes *1	No	No	No	No
	CP2E	No	No	No	Yes *1	No	No	No	No
NJ series	NJ5/NJ3/NJ1	No	Yes *2	No	No	Yes *3	Yes	No	Yes
NX Series	NX7/NX1/NX1P	No	No	No	No	No	Yes	No	Yes

Note: Including models whose production were discontinued.

✻1. The SPMA relaying a PLC is not supported.
✻2. Only Device Monitor function is supported. Monitoring function that uses tags (variables) is not supported.
✻3. The SAP for CJ-series Special I/O Units and CPU Bus Units that can be used with NJ-series Controller is supported.
✻4. Sysmac Studio version 1.02 or higher (CX-Designer version 3.41 or higher) is required.

Connectable Inverters

Series	Communication Unit	Connection	
3G3MX2-V1	(Use the RS-485 terminal on the Inverter)	RS-485 (2-wire)	1:N
3G3JX	(Use the RS-485 connector on the Inverter)		
3G3RX-V1	(Use the RS-485 terminal on the Inverter)		

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	
Temperature Controller (Digital Controller)	E5AN/E5EN/E5CN (Basic Model)	E5CN-□□□□□T-FLK Multi-input (Thermocouple/Resistance Thermometer) Type	
		E5CN-□□□□□L-FLK Analog Input Type	
		E5EN-□□□□□T-FLK Multi-input (Thermocouple/Resistance Thermometer) Type	
		E5EN-□□□□□L-FLK Analog Input Type	
		E5AN-□□□□□T-FLK Multi-input (Thermocouple/Resistance Thermometer) Type	
		E5AN-□□□□□L-FLK Analog Input Type	
	E5AN-H/E5EN-H/ E5CN-H (Advanced Model)	E5CN-H□□□□□□□□-FLK Universal-input Model	
		E5EN-H□□□□□□□□-FLK Universal-input Model	
		E5AN-H□□□□□□□□-FLK Universal-input Model	
	E5GN	E5GN-□□□TC-FLK Thermocouple Input Type	
		E5GN-□□□P-FLK Resistance Thermometer Input Type	

Note: Including models whose production were discontinued.
✻The NS-Runtime cannot be connected directly to a Temperature Controller.

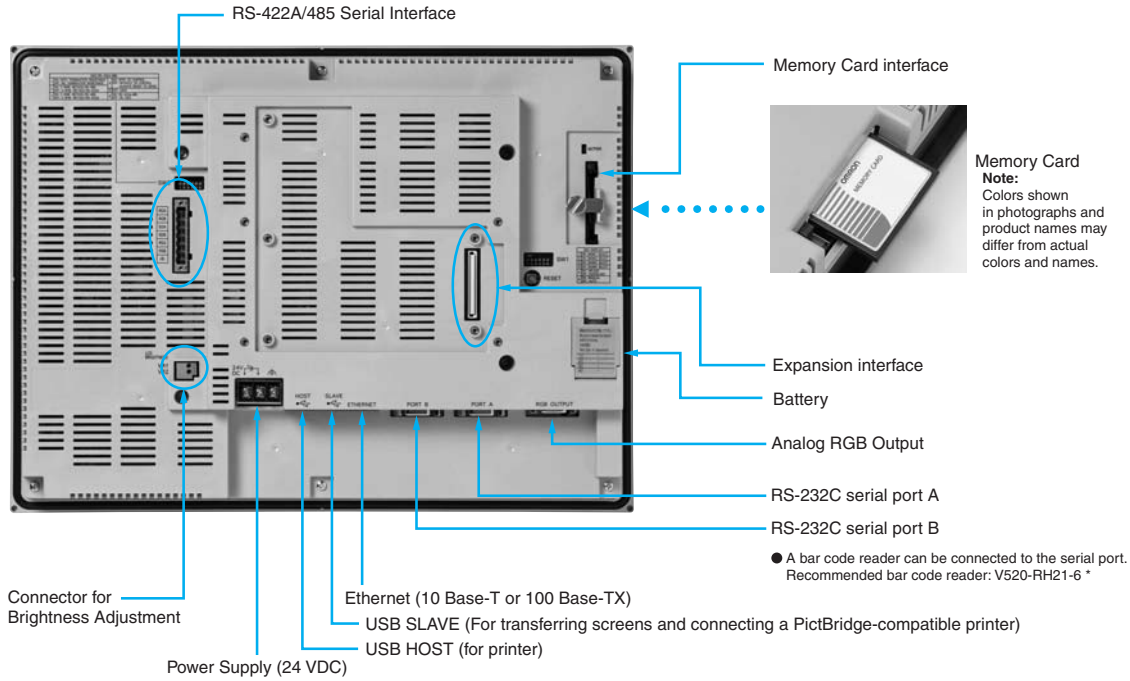
Connecting to Another Company's PLC

Manufacturer	Series	CPU	Communication Unit/Adapter/Board	Connection diagram	
Mitsubishi Electric	A Series	A1SHCPU A2USCPU A2USHCPU-S1	Computer Link Unit A1SJ71UC24-R□ A1SJ71UC24-PRF	RS-232C, RS422A/485 *1	1:1
		A2ACPU	Computer Link Unit AJ71UC24		
	FX Series	FX0N FX1S FX1N FX1NC FX2N FX3UC FX3G	Communication special adapter FX3U-232-ADP FX2NC-232ADP FX0N-232-ADP Communication expansion board FX□□-232-BD	RS-232C, RS422A/485 *1	1:1
	Q/QnA Series	Q00CPU Q01CPU	RS-232C port on the CPU Module	RS-232C	1:1
		Q00CPU Q01CPU Q00JCPU Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU Q03UDCPU Q06UDHCPU Q13UDHCPU	Serial Communications Module QJ71C24N-R2 QJ71C24N-R4 QJ71C24N	RS-232C, RS-485 (4-wire) *2	1:N
		Q2ASCPU Q2ASCPU-S1 Q2ASHCPU Q2ASHCPU-S1	Serial Communications Module A1SJ71QC24N		
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F F3SP21-0N F3SP28-3S F3SP58-6S F3SP67-6S	CPU built-in RS-232C port	RS-232C	1:1
			Personal Computer Link Module F3LC11-1F F3LC12-1F F3LC11-2F	RS-232C, RS-422A/485 *1	
Siemens	S7-300 Series	CPU313 CPU315-2DP CPU317-2PN/DP	SIMATIC S7 HMI Adapter 6ES7 972-0CA1□-0XA0	RS-232C	1:1
Rockwell (Allen-Bradley)	SLC500	SLC5/03 SLC5/04 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:N

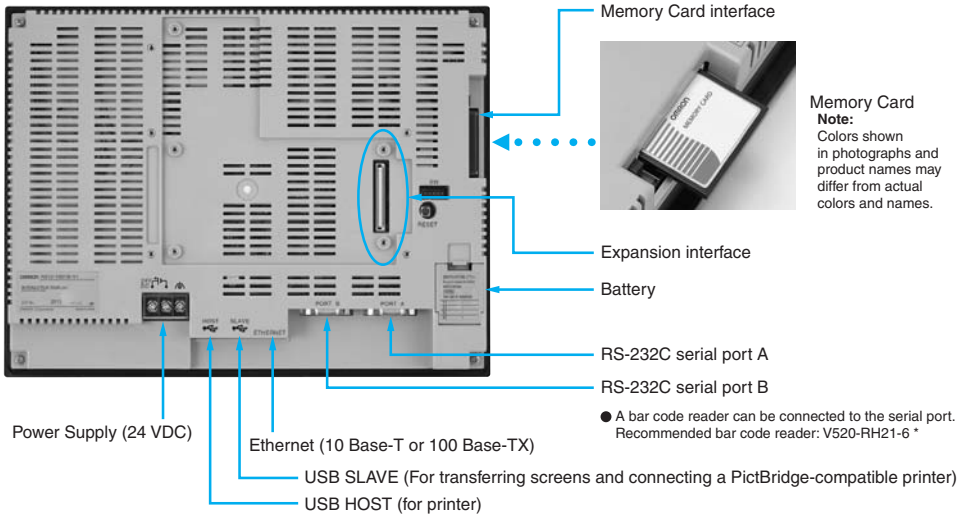
***1.** To connect using RS-422A/485, an RS-232C/422A converter (e.g. NS-AL002, CJ1W-CIF11) is required.
***2.** To connect using RS-485, an RS-232C/422A converter (e.g. NS-AL002, CJ1W-CIF11) is required.
Up to 32 sequencers can be connected when using RS-485.

Component Names and Options

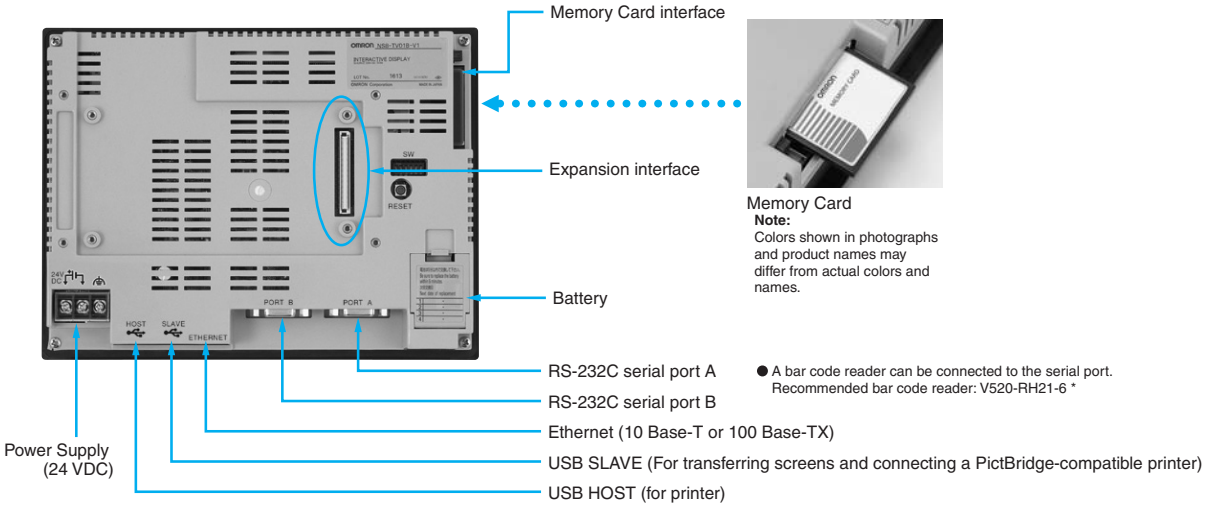
NS15



NS12/10

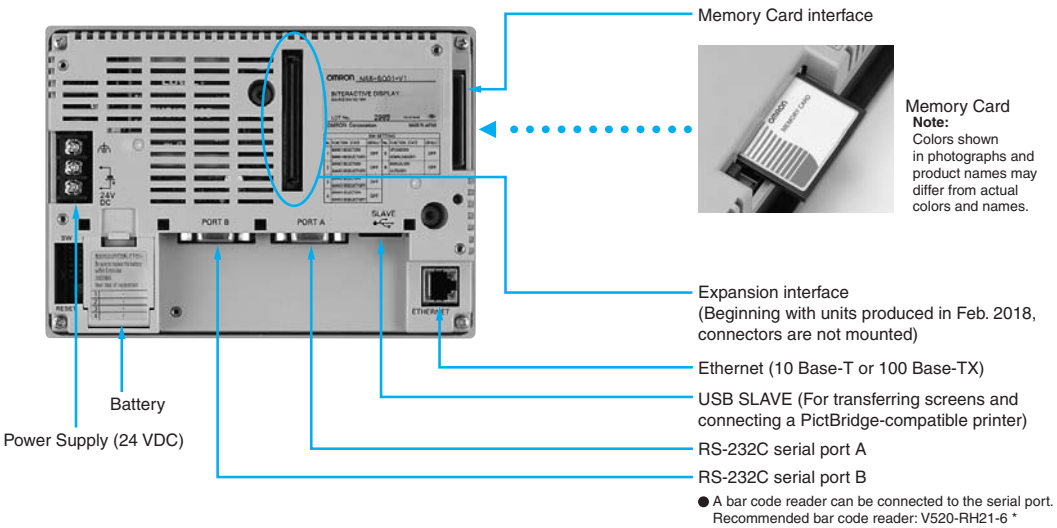


NS8



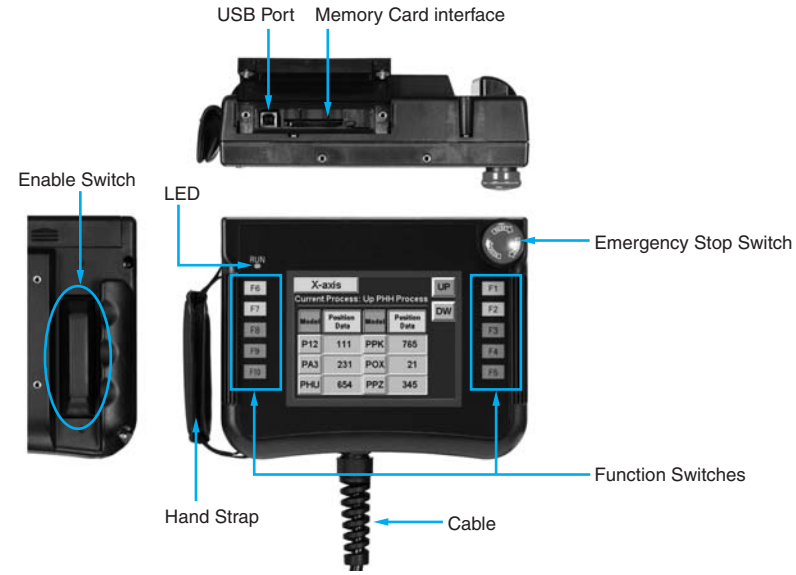
✻Bar Code Reader (V520-RH21-6) was discontinued at the end of August 2016.

NS5

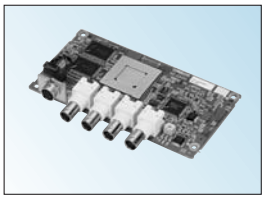


✻Bar Code Reader (V520-RH21-6) was discontinued at the end of August 2016.

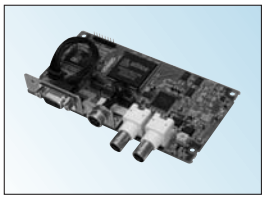
NSH5



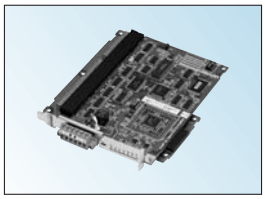
Optional Products



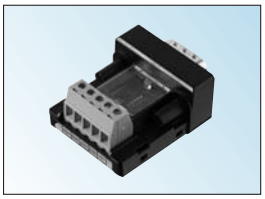
Video Input Unit
NS-CA001 (with Cover)



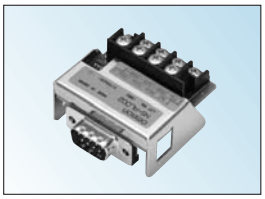
RGB/Video Input Unit
NS-CA002 (with Cover)



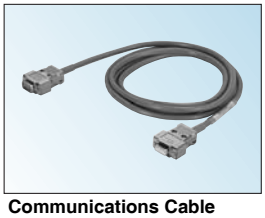
Controller Link Interface Unit
NS-CLK21 (with Cover)



RS-422A Adapter
CJ1W-CIF11



RS-232C/RS-422A Conversion Unit
NS-AL002



Communications Cable
XW2Z-S002

Protective Cover/Anti-reflection Sheet for NS-series PT
NS-KBA0 (N)
NT30/NT31C-KBA05 (N)

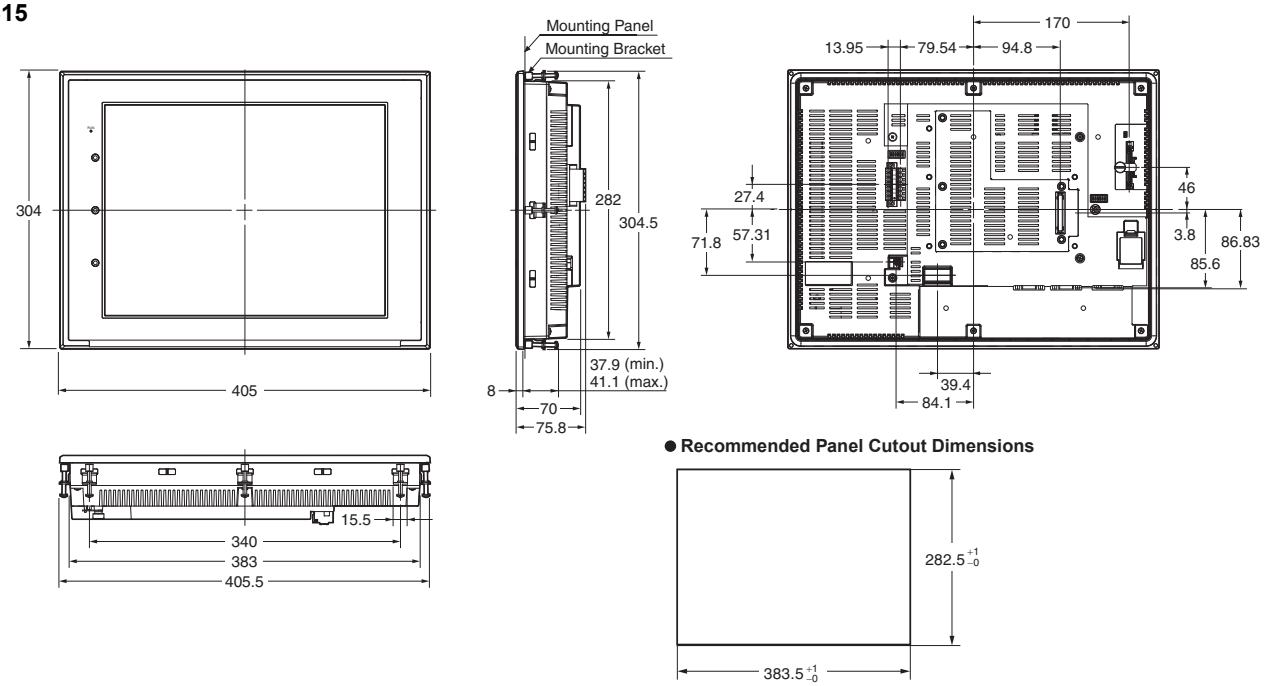
USB Serial Conversion Cable
CS1W-CIF31

USB relay cable
(IP65 oil-proof type)
NS-USBEXT-1M

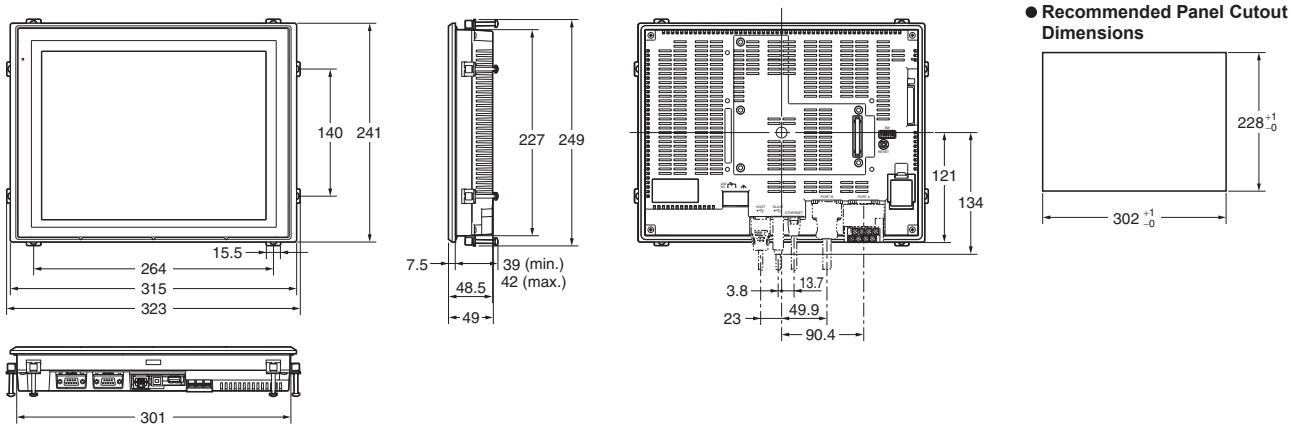
Dimensions

(Units: mm)

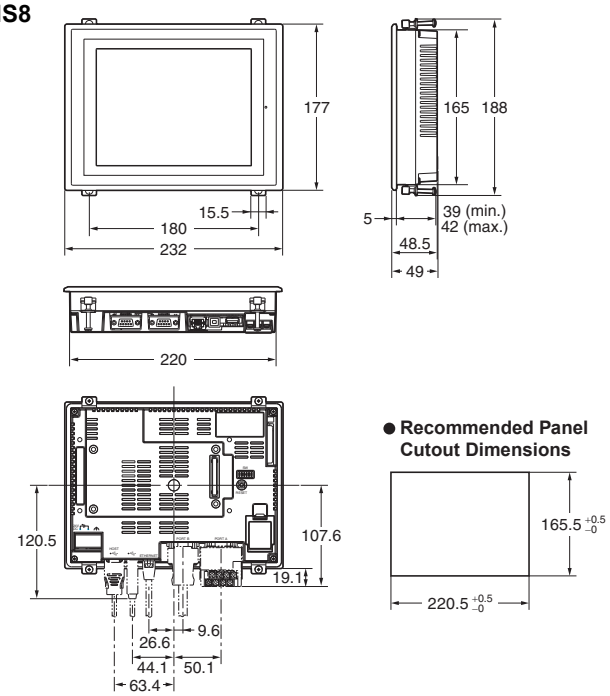
NS15



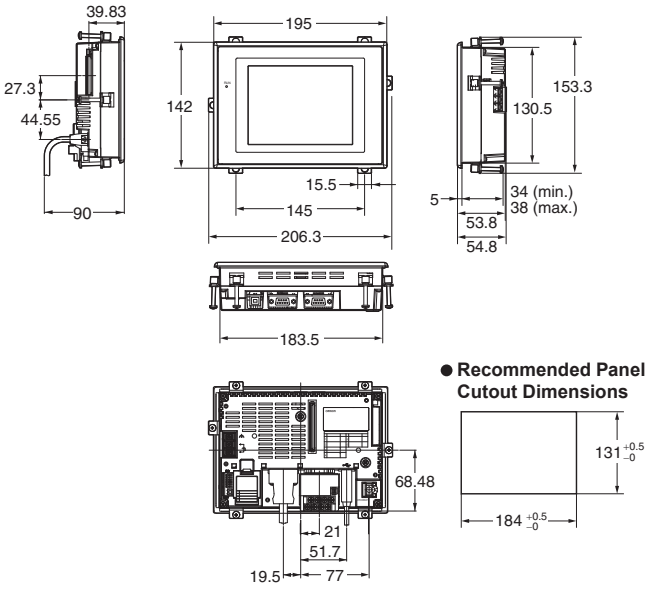
NS12/10



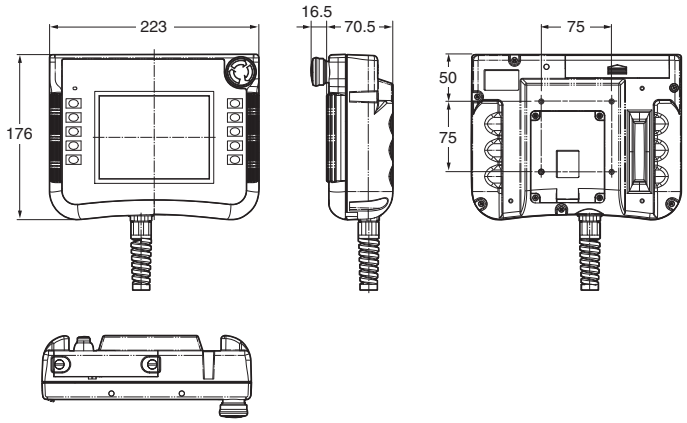
NS8



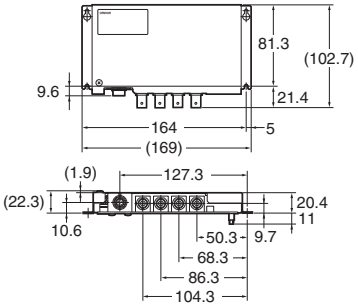
NS5



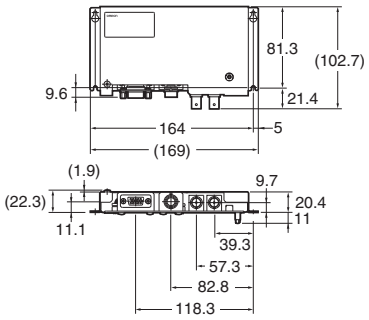
Hand-held NS5



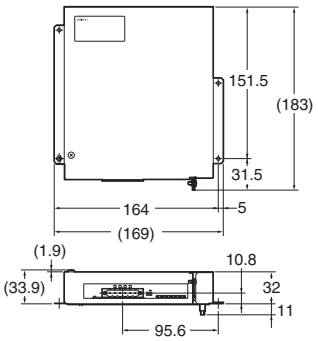
NS-CA001
Video Input Unit



NS-CA002
Video Input Unit



NS-CLK21
Controller Link Interface Unit



Related Manuals

Cat. No.	Model	Manual
V083	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals SETUP MANUAL
V073	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals PROGRAMMING MANUAL
V099	NS-CXDC1-V3	CX-Designer Ver.3.□ USER'S MANUAL
V082	NS	NS-Series Ladder Monitor OPERATION MANUAL (Ladder Monitor I/O Comment Extracting Tool)
V086	NS-CA002	NS-Series RGB and Video Input Unit OPERATION MANUAL
V090	NSH5	NSH5-Series Hand-held Programmable Terminal OPERATION MANUAL
V098	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals HOST CONNECTION MANUAL (Host Link) OPERATION MANUAL
V085	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals HOST CONNECTION MANUAL
V092	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals HOST CONNECTION MANUAL Multivendor Connection
V075	NS15/NS12/NS10/NS8/NS5	NS-Series Programmable Terminals Macro Reference
V093	NS-NSRCL□□	NS-NSRCL□□ NS-Runtime Software USERS MANUAL

OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • automation.omron.com

OMRON CANADA, INC. • HEAD OFFICE
Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • automation.omron.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE
Ciudad de México • 52.55.5901.4300 • 01.800.386.6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE
San Pedro Garza García, N.L. • 81.12.53.7392 • 01.800.386.6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE
Eugenio Garza Sada,León, Gto • 01.800.386.6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE
São Paulo, SP, Brasil • 55 11 5171-8920 • automation.omron.com

OMRON ARGENTINA • SALES OFFICE
Buenos Aires, Argentina • +54.11.4521.8630 • +54.11.4523.8483
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OTHER OMRON LATIN AMERICA SALES
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• Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

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• Digital Panel Meters • Monitoring Products

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• Solid State Relays

Software
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