OMRON

NS12-V1
12-inch Model

NS10-V1
10-inch Model

NS8-V1
8-inch Model

NS5-V1
5-inch Model

Programmable Terminals

NS-NSDC1-V5

NS-Designer Version 4

NS-EXT01-V2☐☐☐

NS-Ladder Monitor *NS Ladder Monitor*

Installing a Navigator: A Totally New Concept in Programmable Terminals

NEW

NS5-V1
5-inch Model

NS8-V1
8-inch Model

NS10-V1
10-inch Model

NS12-V1
12-inch Model

Navigator for System
NS Series

Innovation in the Solution Age

OMRON INDUSTRIAL AUTOMATION
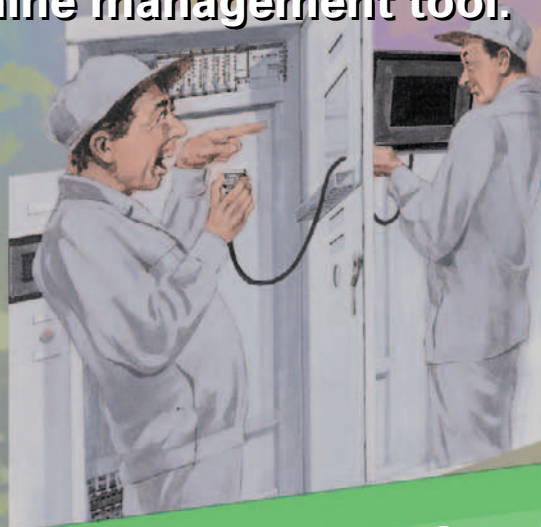
Make it More Simple

The NS is moving to the next stage, from a touch screen to an advanced machine management tool.

It's convenient but…

Switch Operation

Touch Screen Operation

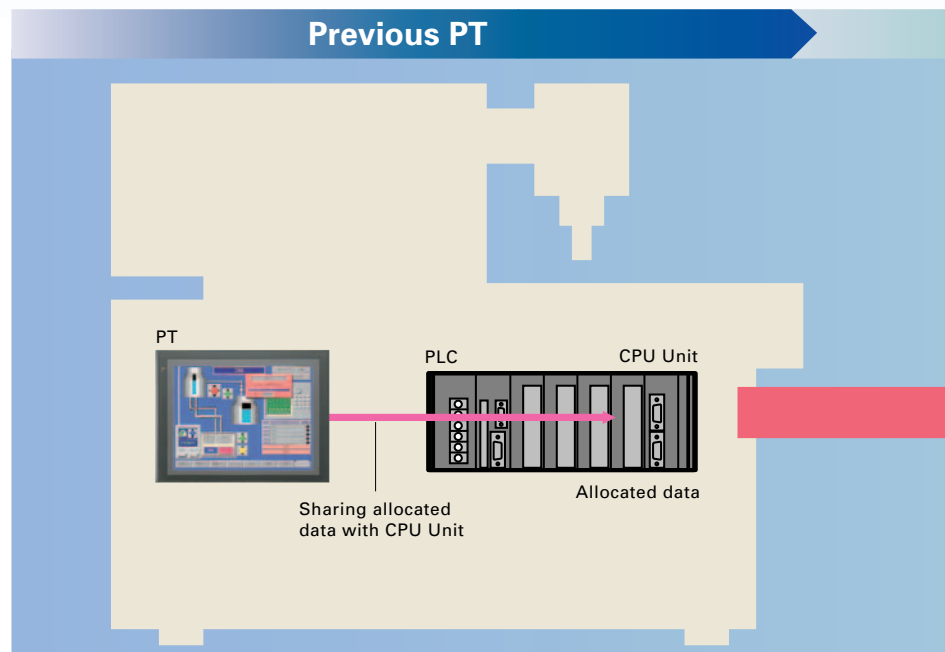**It's convenient but…**

NS Enters a New Zone

From PLC Memory Allocation to Device Access

Previous PTs shared data that was allocated in advance to specific words in the CPU Unit, and they were used to assist with device operations, and to display error locations, and countermeasures.

Previous PT

PT

PLC

CPU Unit

Sharing allocated data with CPU Unit

Allocated data

Seamless

We are always trying to provide solutions that will give the highest added value to your system. We strive to solve on-site problems with our solutions instead of just providing touch screen functions. That is what OMRON is focused on.
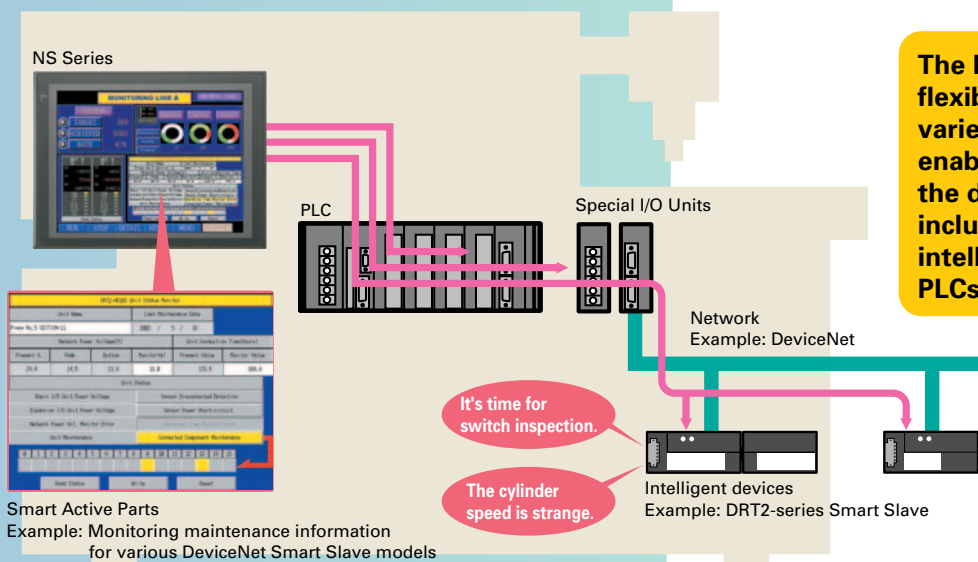
Machine Management

Smart

Turning switches into Touch Screens brings enhancements, such as minimum wiring, space savings, and improved local operation efficiency. Moreover, OMRON works to minimize the customer's energy expenditure from machine design to troubleshooting.

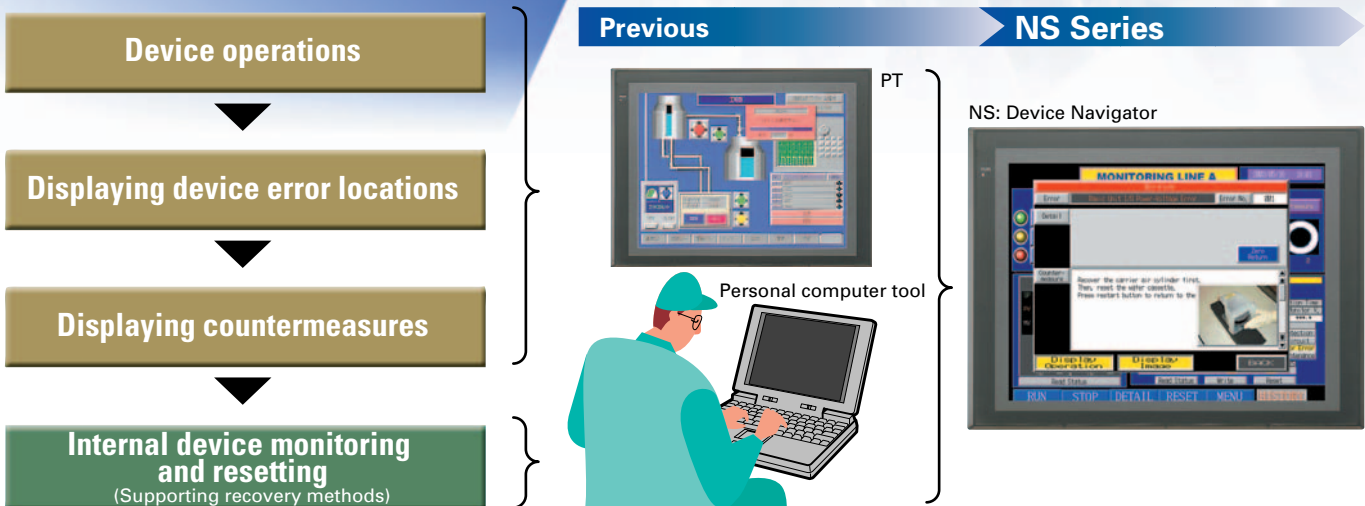**OK!**

Previous zone

New zone

NS Series

The NS Series achieves flexible data access to a variety of devices. It enables operators to reach the devices on the network including Special I/O Units, intelligent devices, and PLCs.

PLC

Special I/O Units

Network
Example: DeviceNet

It's time for switch inspection.

The cylinder speed is strange.

Intelligent devices
Example: DRT2-series Smart Slave

Smart Active Parts
Example: Monitoring maintenance information
for various DeviceNet Smart Slave models

PTs as a Machine Navigator

NS-series PTs navigate all areas of machine operation, from daily operation to error recovery.

通転 こんなとき 異常復旧 A こんなとき 異常復旧 B

OPERATION WHEN IN ERROR RESTORATION A WHEN IN ERROR RESTORATION B

For years, NS has exchanged preset data with the CPU Unit in a PLC.
Was it enough to control complex machine operations?
This Series makes a step forward to be a partially software embedded terminal to deliver the needed information. So that's why we call it "Navigator"!

Device operations

▼

Displaying device error locations

▼

Displaying countermeasures

▼

Internal device monitoring and resetting
(Supporting recovery methods)

Previous ➤ **NS Series**

PT

Personal computer tool

NS: Device Navigator

With version 1 PTs (V1 suffix in model number), hardware functions are upgraded.
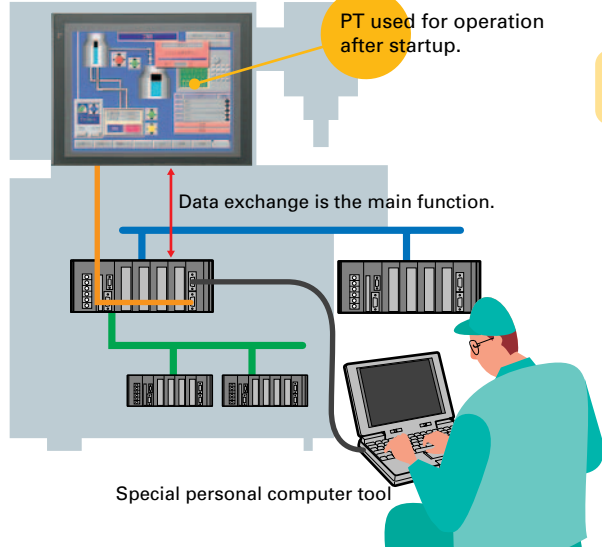
High definition

Image data: 32,768 colors
(See note.)
(Previously 256 colors)

Image data: Large capacity

Standard 20 MB (See note.)
(previously 4 MB)

Color screen printing to USB-compatible printers

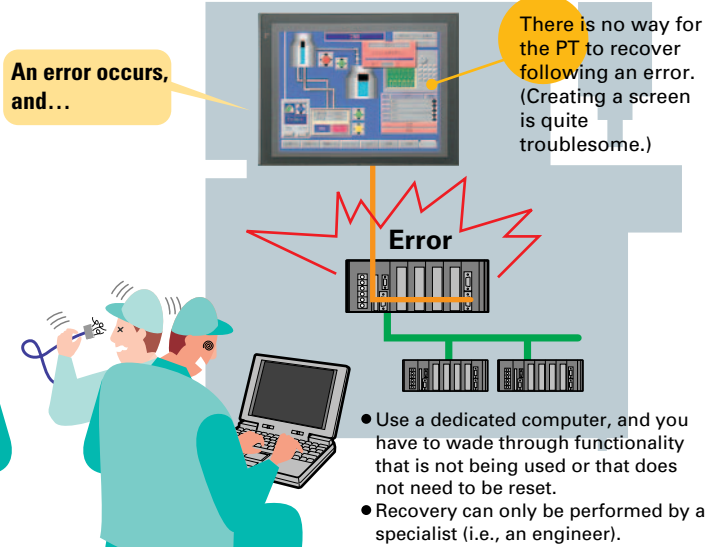**Twice as fast as former models**

Note: NS5-V1: 4,096 colors   **Note:** NS8-V1/NS5-V1: 6 MB

4

Don't you have these problems?

Using all of the device-specific personal computer tools at startup is okay, but using the personal computer tools for error recovery during operation is overly difficult.

Previous

Personal computer tools

Various device-specific tools
- Peripheral Devices for PLC
- Network control
- Temperature settings and monitoring tools
- Setting tool for position control

Wouldn't it be simpler to use the PT instead?

OMRON ORIGINAL

With the NS, just drag and drop the Smart Active Parts (Device Library) to customize the interface for your machine.

Only with NS! The NS Series utilizes Smart Active Parts (Device Library) that make it possible to directly access various devices.

Just attach to a screen.

Colors and sizes can be changed.

Example: RS-232C
Example: Ethernet

NS Series

Devices accessed without a program.
Example: DeviceNet

Smart Active Parts (Device Library)

Smart Active Parts

Smart Active Parts include communications functions, so it is possible to communicate with a remote device simply by attaching Smart Active Parts to the screen and setting the path to the remote device.

Note: Contact your OMRON representative for more information on Smart Active Parts including sales and customization services.

PLC System Objects

Previously a CX-Programmer was required.

Position Control Objects

Previously CX-Position was required.

DeviceNet Objects

Previously a DeviceNet Configurator was required.

Controller Link Objects

Previously CX-Net was required.

5

■ When the System is Started

PT used for operation after startup.

Data exchange is the main function.

Special personal computer tool

■ When an Error Occurs during Operation

An error occurs, and…

There is no way for the PT to recover following an error. (Creating a screen is quite troublesome.)

Error

- Use a dedicated computer, and you have to wade through functionality that is not being used or that does not need to be reset.
- Recovery can only be performed by a specialist (i.e., an engineer).

Only with NS!

With Smart Active Parts…

The PT can be customized according to the specifications of the device manufacturer to optimize operation as a tool. This enables equipment maintenance by personnel other than engineers.

Minor maintenance can be performed on the PT during operation.

Customizing and optimizing PT

Simply attaching a Smart Active Parts, and then making simple settings

Smart Active Parts

Improved efficiency in creating maintenance screen

Setting specified parameters and checking status

Smart Active Parts accessed without a program

No ladder program
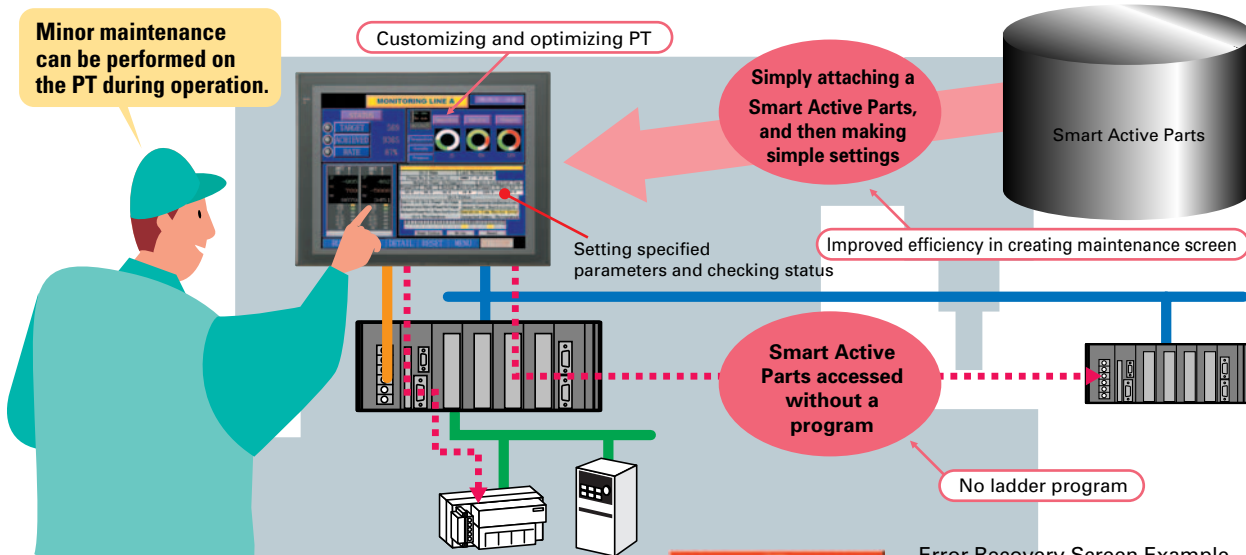
Create a screen like this as a device troubleshooter.

When an error occurs, rapid recovery is critical. With the NS Series, the following type of screen can be easily prepared to guide on-site workers to carry out the operations required for recovery.

- Display explanations of error contents and methods for recovery. (Text file direct specification)
- Use diagrams to show error locations and methods for recovery. (Bit map file direct specification)
- Display only the buttons required for recovery operations.

Notification that an error has occurred
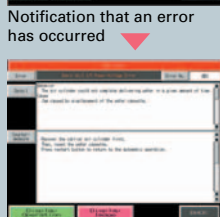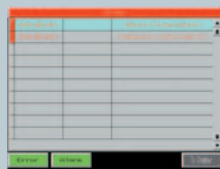
Error Recovery Screen Example

Text and BMP files can be directly specified, so operations such as correcting contents for recovery and replacing diagrams and photographs can be executed without requiring any special tools. For example, if the recovery operation procedure is changed by system improvements, screens can be changed by simply replacing text and BMP files, allowing for rapid implementation of improvements and countermeasures.

Note: Transfer tools must be used for transfers.

❶ Error contents and recovery methods are displayed.

❷ Error location and explanations of recovery methods can be further displayed by bit maps.

❸ Recovery operation screen is displayed. (Only the buttons required for operations are shown.)

Note: In addition to the Troubleshooter for the machine above, there is a PLC troubleshooter for CS/CJ-series PLCs. Contact your OMRON representative for information on Troubleshooters.

Machine Localization with PTs

A Multi-language Input Environment Using Excel
- No special PT tools are required for translation operations.
- Translations can be requested using e-mail attachments.

Label Switching Function for Up to 16 Languages
- Devices can be started with Japanese-language screens, and then operated with screens in other languages.
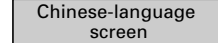- The languages can be switch to the one preferred by the device operators.

Previous Either a single screen data file was divided between Japanese and English screens, or else multiple screen data files had to be created.

English and Japanese screen data
- Japanese-language screen
- English-language screen
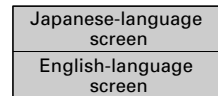
Chinese screen data
- Chinese-language screen

Dual-language screen data
- NS project
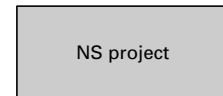
Because multiple labels can be set, screen data needs to be set only once. Multi-language capability is simply a matter of switching labels.

Only with NS!

You can get multi-language support in Excel. Switching to as many as 16 languages is as easy as switching labels.

Language A screen data — NS project
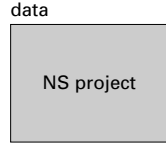
Language A Excel data — CSV

CSV Attachment

Dual-language input in Excel by translation companies and local companies
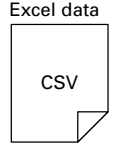
Dual-language screen data — NS project
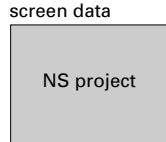
Language A and B Excel data — CSV

File conversion utlity

CSV Attachment

Note: Windows 2000 or XP is required for multi-language support.
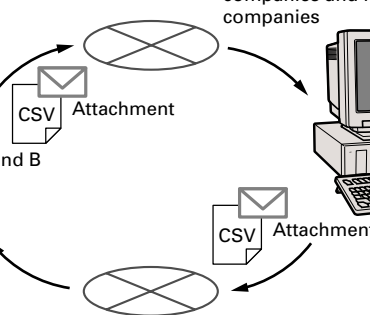
Example: When device is started

English
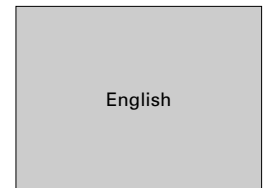
During device operation

Chinese

16 languages max.

Label 0 | Label 1 | ... | Label 15

Réglage De l'Écran / Setting Screen / 设立画面
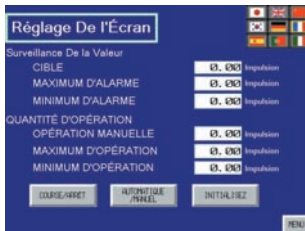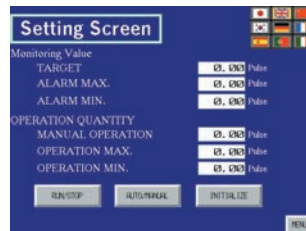
NS Series

Multi-Language PT
- **Asian Languages**
Japanese, Simplified Chinese (see note 1), Korean, and Traditional Chinese (see note 2)
- **European Languages**
English, French, German, Italian, Portuguese, Spanish, Swedish, Dutch, Finnish, Norwegian, Basque, Catalan, and Danish

Only with NS!

- Support for 17 languages
- Switching to as many as 16 languages by simply switching the labels

Example: Switching the operator to the operator's language with one touch

Language

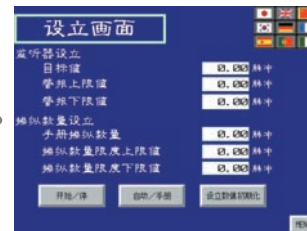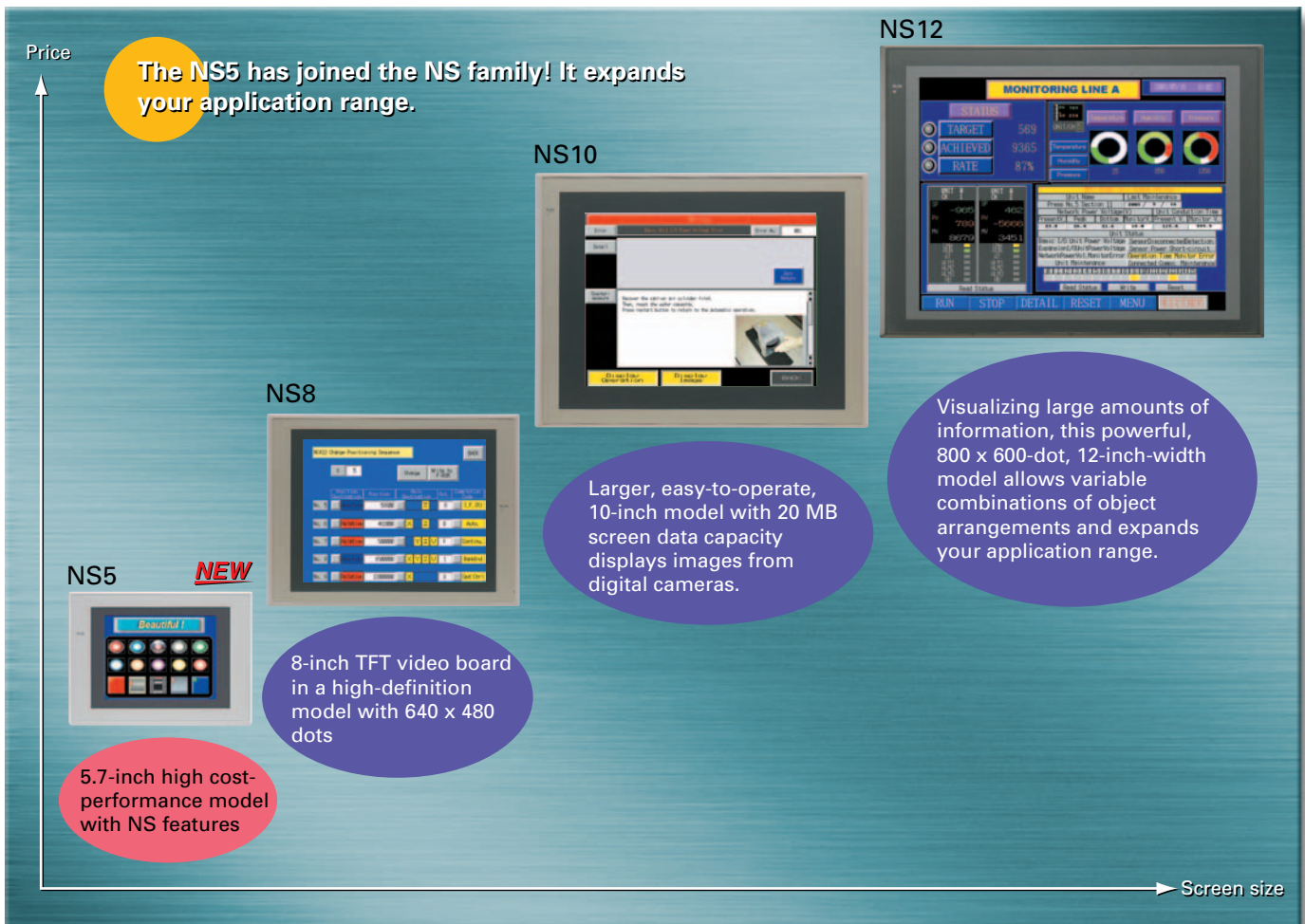From English to Spanish or Portuguese

Note 1: Simplified Chinese: Chinese with partially simplified characters, mostly used in Mainland China.
2: Traditional Chinese: Chinese with traditional characters, mostly used in Hong Kong and Taiwan.

The 5-inch screen expands your application range.

NS12

The NS5 has joined the NS family! It expands your application range.

NS10

Larger, easy-to-operate, 10-inch model with 20 MB screen data capacity displays images from digital cameras.

Visualizing large amounts of information, this powerful, 800 x 600-dot, 12-inch-width model allows variable combinations of object arrangements and expands your application range.

NS8

NS5 *NEW*

8-inch TFT video board in a high-definition model with 640 x 480 dots

5.7-inch high cost-performance model with NS features

Price

Screen size

NS-series Lineup

Series		NS12	NS10	NS8	NS5
Appearance		NS12 12.1 inches 800 X 600 dots TFT	NS10 10.4 inches 640 x 480 dots TFT	NS8 8 inches 640 x 480 dots TFT	NS5 5.7 inchs 320 x 240 dots STN
Dimensions (W×H×D)		315 x 241 x 48.5 mm	315 x 241 x 48.5 mm	232 x 177 x 48.5 mm	195 x 142 x 54 mm
Effective display area		12.1 inch	10.4 inch	8 inch	5.7 inch
Display device		TFT	TFT	TFT	STN
Number of dots		800 x 600 dots	640 x 480 dots	640 x 480 dots	320 x 240 dots
Display colors	Basic colors (objects, background, etc.)	256 colors	256 colors	256 colors	256 colors
	Image data (BMP or JPG images)	32,768 colors	32,768 colors	32,768 colors	4,096 colors
	Images displayed via video input (See note.)	260,000 colors	260,000 colors	260,000 colors	—
Screen data capacity		20 Mbytes	20 Mbytes	6 Mbytes	6 Mbytes
Memory Card		○	○	○	○
Ladder Monitor function		○	○	○	—
Video Input Unit support		○	○	○	—
Controller Link Interface Unit support		○	○	—	—

Note: The video input is not supported by the NS5-V1.

The NS Series is more beautiful and user-friendly.

More beautiful: You can make beautiful screens with simple operations.

Windows fonts can be used for switches and lamps `Ver.5`

● Auto font resizing function `Ver.5`
Automatically resizes fonts to the object size.
No need to adjust font sizes manually anymore!

● Beautiful BMP Parts Collection has been newly added `Ver.5`
Simply select the desired part, paste it on your screen, and make your screens neat!

● 32,768-color display
The color variation displays pictures brilliantly!

More user-friendly

You can partially replace text and pictures from your computer.

● FTP (File Transfer Protocol) has been added!
Texts, lists, and recipes can be replaced with the put/get command from your computer!
You can even replace BMP files from your computer easily.

Screens, bitmaps, text, recipe data
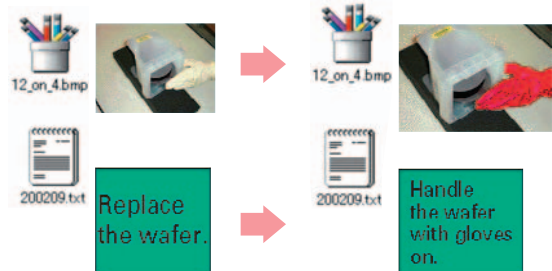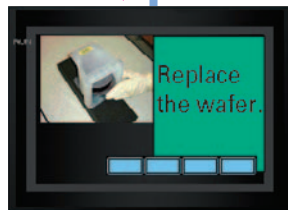
More strength in applications

The NS can be connected to a Board PC. The NS can also be directly connected to an OMRON Temperature Controller.

A Memory Link has been added to the communications method. It allows the NS to communicate with a Board PC. `Ver.5`

Memory link
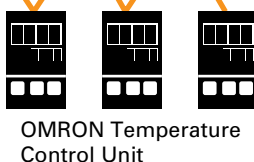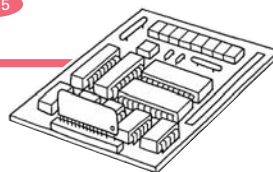
The NS can be directly connected to the OMRON Temperature Controllers listed on the right.

OMRON Temperature Control Unit

The following models, which have an RS-485 communications port and support CompoWay/F communications, can be connected to the NS.

Unit	Series	Model
Modular Temperature Controllers	E5ZN	E5ZN-SCT24S-500 (terminal unit)
Digital Temperature Controllers	E5AN	E5AN-□□M□-500 + E53-AK03
	E5EN	E5EN-□□M□-500 + E53-AK03
	E5CN	E5CN-□□M□-500 + E53-CNH03 or E53-CN03
	E5GN	E5GN-□□□03□-FLK
Digital Controllers	E5AR	E5AR-QC43DB-FLK
		E5AR-QQ43DW-FLK
		E5AR-CC43DWW-FLK
	E5ER	E5ER-QC43B-FLK
		E5ER-PRQ43F-FLK
		E5ER-QT3DW-FLK
		E5ER-CT3DW-FLK

Upgrade with NS-V1

Beautiful

High definition

Displays image data (BMP and JPG) beautifully.

NS5	4,096 colors
NS8	32,768 colors
NS10	32,768 colors
NS12	32,768 colors

Previous: 256 colors

NS-V1: 32,000 colors

Large

Large-capacity image data

Five times the standard for image data capacity

NS5	6 MB
NS8	6 MB
NS10	20 MB
NS12	20 MB

Previous screen data capacity

4 MB standard

Expansion Memory

16MB
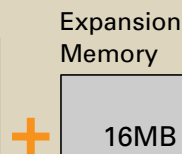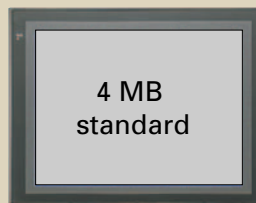
NS-V1 screen data capacity

20 MB standard
(See note.)
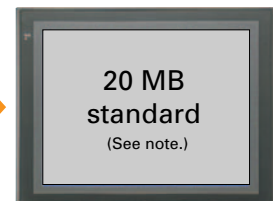
Printer Support

USB port compatibility with commercially available printers

Hard copies of screens can be printed out in color by USB-compatible printers.

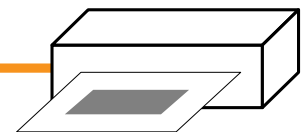|	
NS5	See note.
NS8	Supported
NS10	Supported
NS12	Supported

Note: Supporting a printer connection by mounting a USB interface is planned for the future.
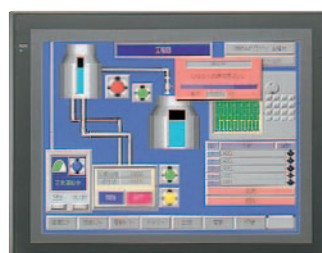
USB port included as standard equipment

General printer compatible with USB port

USB cable

EPSON and Canon printers supported.

- Manufacturer: EPSON or Canon
- Recommended models
  EPSON: PM-2200C, PM-930C, PM-870C, PM-740C
  Canon: BJ-M70, Pixus50i, 550i

Faster

Faster drawing speed

Twice as fast as former models

NS5	See note.
NS8	Yes
NS10	Yes
NS12	Yes

Note: The NS5 uses a different graphic controller from other models.
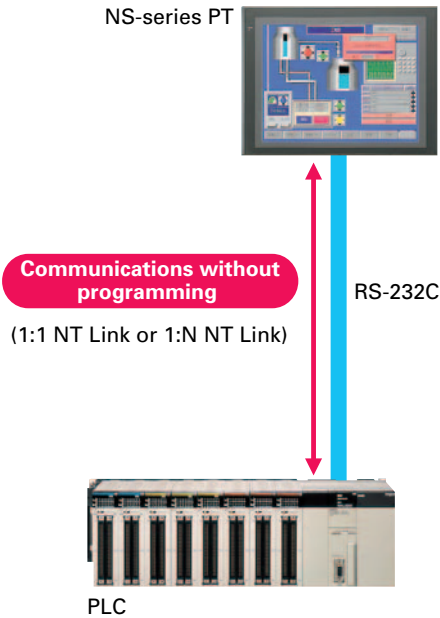
Faster drawing speed made possible by new hardware.
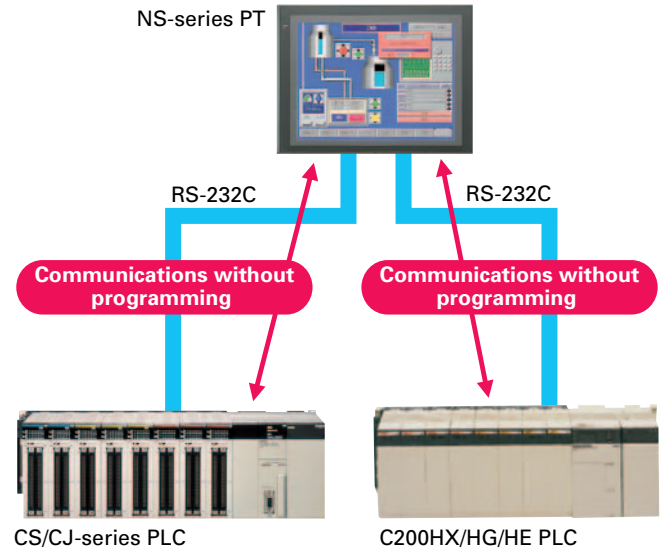
200-MHz RISC CPU
High-speed graphics controller

System Configurations

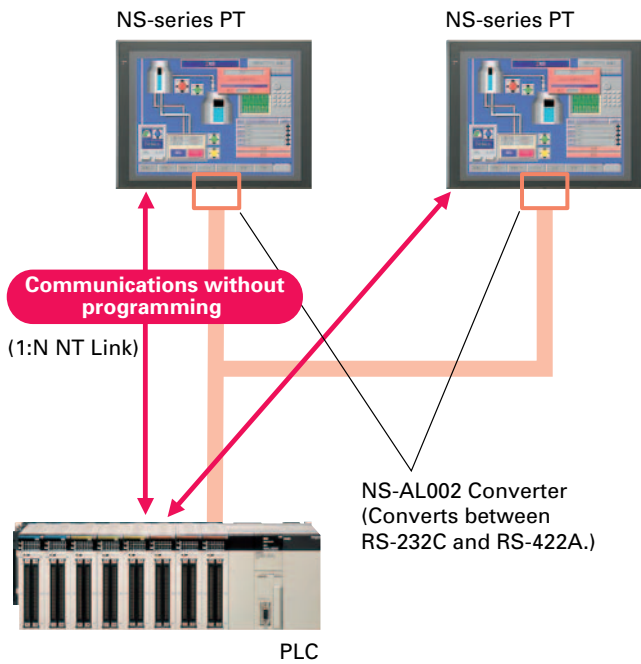**Various connections, such as 1:1, 1:2, 1:N, and M:N, are supported with Ethernet or serial connections.**
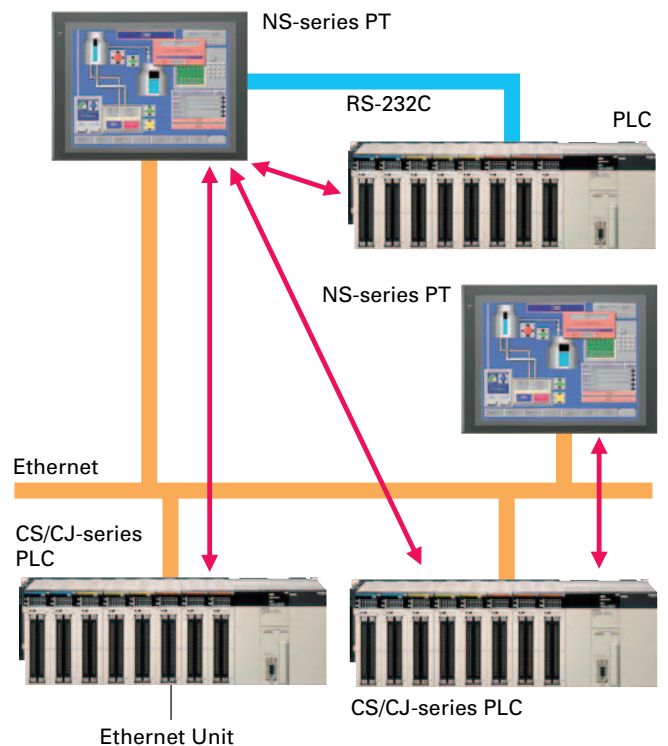
PT:PLC = 1:1

NS-series PT

Communications without programming

(1:1 NT Link or 1:N NT Link)

RS-232C

PLC

PT:PLC = 1:2

NS-series PT

RS-232C   RS-232C

Communications without programming

Communications without programming

CS/CJ-series PLC   C200HX/HG/HE PLC

PT:PLC = 1:N

NS-series PT   NS-series PT

Communications without programming

(1:N NT Link)

NS-AL002 Converter
(Converts between
RS-232C and RS-422A.)

PLC

PT:PLC = M:N

NS-series PT

RS-232C   PLC

NS-series PT

Ethernet

CS/CJ-series
PLC

Ethernet Unit   CS/CJ-series PLC

Host Registration Function
It is possible to register two or more PLCs as hosts and communicate with the PLCs by specifying the host ID and address.

Powerful networking

Exchanging Data with a PLC over a Network (Multihost)

### Communicating with a PLC via NT Link, using Ethernet without Special PLC Programming

Ethernet Communications without Programming
NS-series PTs can communicate with a CS/CJ-series PLC (equipped with an Ethernet Unit) through "program-free" communications just like NT Link communications. Data is transferred through Ethernet through a simple PLC address and initial communications setup.

Using Data Links between the PT and the PLC

Controller Link Interface Unit
The Controller Link is an FA network that can send and receive large data packets flexibly and easily among OMRON PLCs and IBM PC/AT or compatible computers. The NS12 and NS10 PTs can be connected to the Controller Link network easily via a Controller Link Interface Unit. When a Controller Link network is used, data can be transferred between multiple PLCs and NS12/NS10 PTs without writing ladder programming to manage the communications.
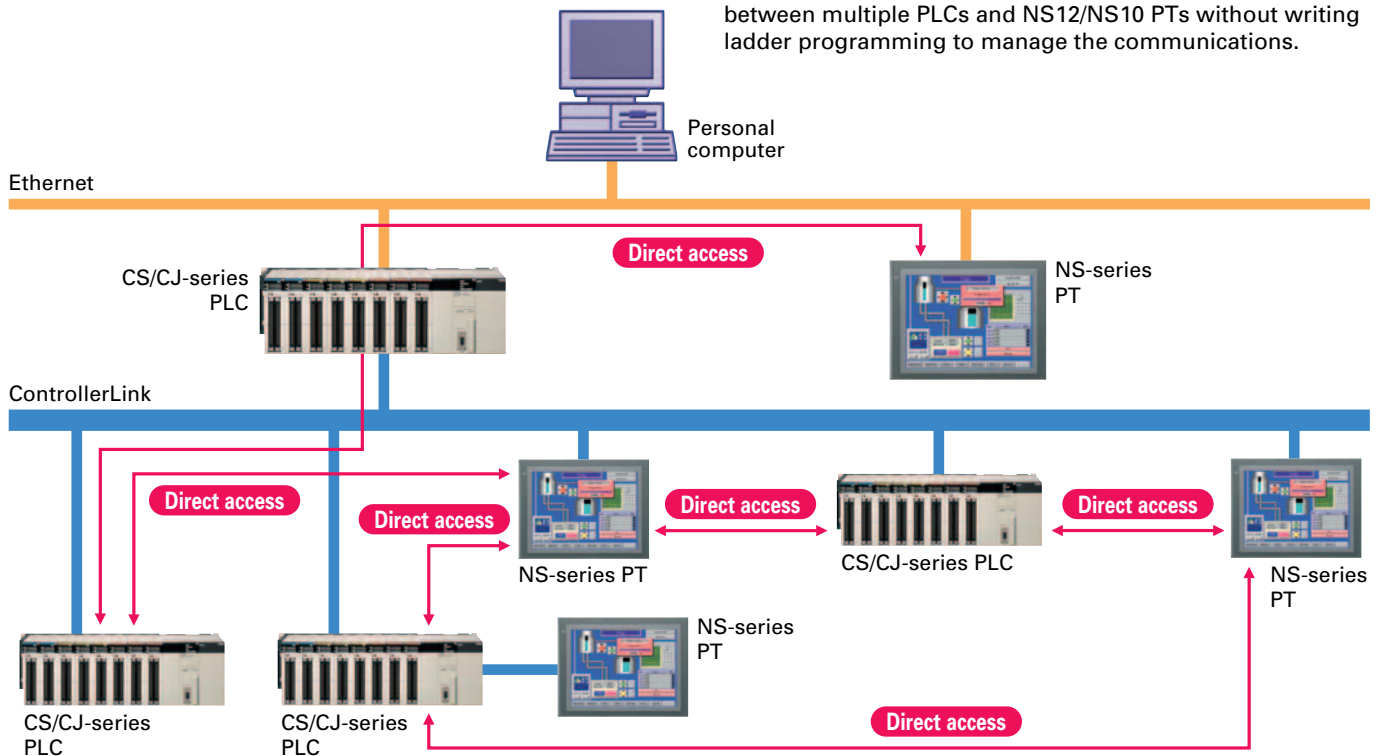
SPMA (Single Port Multi Access) Function

When transferring screen data from the NS-Designer to the NS-series PT, the data can be transferred through a PLC as long as the PT is connected to the PLC by a serial connection or network connection. Also, when monitoring/transferring a PLC ladder program from the

CX-Programmer, the PLC ladder program can be monitored/transferred through an NS-series PT as long as the PT is connected to the PLC by a serial connection or network connection.
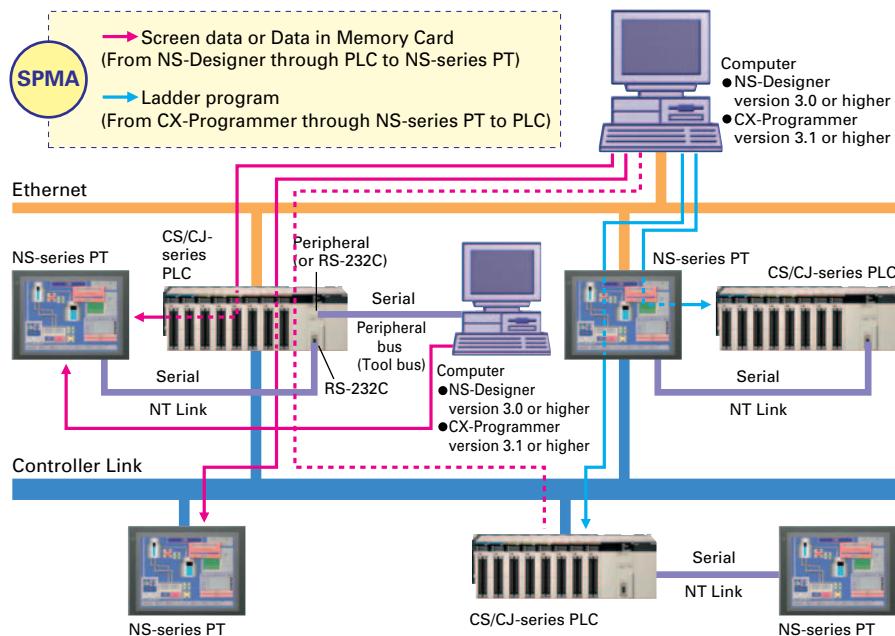
* To use the SPMA function through the PLC, the following software and hardware versions are required.
● NS-series PT: System version 3.0 or higher
● NS-Designer: Version 3.0 or higher
● CX-Programmer: Version 3.1 or higher
● PLC: Lot No. 030201 and later (Refer to the following table.)

| PLC series	CPU model	Lot number
CJ Series	CJ1H-CPU65H	030201
	CJ1H-CPU66H	
	CJ1G-CPU42H	
	CJ1G-CPU43H	
	CJ1G-CPU44H	
	CJ1G-CPU45H	
	CJ1M-CPU11	
	CJ1M-CPU21	
	CJ1M-CPU12	
	CJ1M-CPU13	
	CJ1M-CPU22	
	CJ1M-CPU23	
CS Series	CS1H-CPU63H	030201
	CS1H-CPU64H	
	CS1H-CPU65H	
	CS1H-CPU66H	
	CS1H-CPU67H	
	CS1G-CPU42H	
	CS1G-CPU43H	
	CS1G-CPU44H	
	CS1G-CPU45H	

Facilitate Equipment Maintenance

Integrating Special Unit Functions or Component Peripheral Tool Functions into PTs

● Smart Active Parts (Device Libraries)

The Smart Active Parts with the following functionality are installed as a standard feature in NS-Designer version 4 or higher.

These libraries can be used from the NS-Designer menu bar (Tool – Use Library).

(1) CJ1M
   Built-in I/O settings and origin search/return settings
(2) DRT2
   ID16/ID16S/ID08/HD16C/OD16/OD08/OD08C
(3) DeviceNet E5ZN
   PID settings, operation commands, target settings, setting area 0 settings, faceplates
(4) Network monitoring
   Monitoring Controller Link and DeviceNet networks
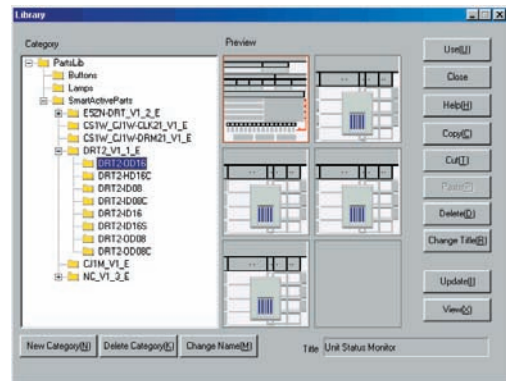
(5) Position Control Units
   Direct operation, jogging, origin searches, origin returns, teaching, changing present values, inputting data

Multiple Language Support

Switching Error Messages between English and Japanese

### A Dual-language (English/Japanese) System Program

With an NS-series PT, the display language for the system menu and error messages can be switched between English and Japanese with the System Menu's Select Language function. Like the Label Switching function, the Dual-language setting is useful for exported products because the language can be set to English for normal operation and switched to Japanese when Japanese staff need to operate the equipment or perform maintenance.

Language Selection Tab Page
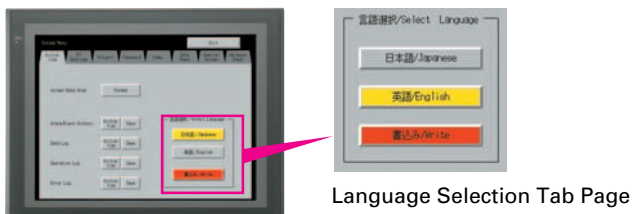
Creating Chinese, Korean, or Other Language Screens in Any Language Version of Windows

Multi-language Input (When Windows 2000 or XP is Used)

When Windows 2000 or XP is being used, Simplified Chinese (see note), Traditional Chinese (see note), Korean, and other language text can be input in NS-Designer. Select the desired language with Global IME to input a different language.
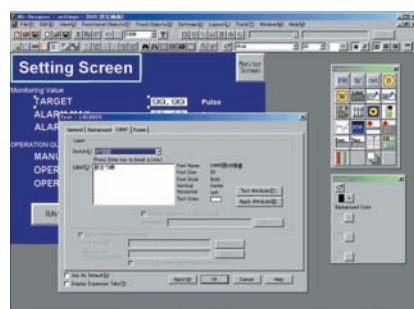
Note: Simplified Chinese: Chinese with partially simplified characters, mostly used in Mainland China.
Traditional Chinese: Chinese with traditional characters, mostly used in Hong Kong and Taiwan.

Making Multiple Language Versions with a Single Screen Data File

Label Switching Function

Up to 16 groups of labels (labels 0 to 15) can be registered for functional objects such as buttons, lamps, labels, and alarm settings. (Each label can correspond to a different language, for example, label 0 = Japanese, label 1 = Simplified Chinese, label 2 = Korean, label 3 = English, etc.) Once all of the labels have been input in each language with the multilingual input function, all of the labels can be switched to a different language at once just by specifying the corresponding label number from the PLC.

Example: The label switch function can be used to switch between English and Simplified Chinese.

Having a Japanese Label Converted into Multiple Languages by a Translation Company

CSV File Input/Output

The property settings for each functional object can be exported in CSV format. The settings data can be imported again after it has been edited with a program such as Excel.

The NS monitors machine status for who and how machines are managed to help speed recover from problems.
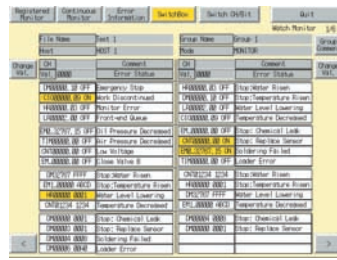
Monitoring and Setting PLC Data

For Operators

Display machine status simply.

Do not want to be aware of ladder programs and PLC memory areas.
Only want to display I/O comments and I/O status.

Solve with the Switch Box function

Easily Displaying the Status of Particular Bits in Ladder Programs when Errors Occur

Switch Box Function
The Switch Box Function has been added to the NS-series Programmable Terminals. The Switch Box Function can be used to monitor the status of each bit in a word or a combination of user-selected bits organized like a ladder program section. The Switch Box Function makes it possible to perform basic troubleshooting on the factory floor even without a computer.

Display PLC memory areas without using tools.

Want to display and change the PLC memory areas without showing the PLC program.

Solve with the Device Monitor function
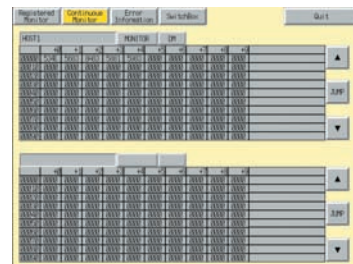
### Monitoring PLC I/O Data for the Purpose of Device Debugging and Maintenance

Device Monitor Function
The Device Monitor Function is a standard feature in the NS-series Programmable Terminals. Data in the PLC's I/O memory can be accessed directly (read and written.) The Device Monitor provides functions that can significantly reduce the time needed to set up the system, such as displaying a block of consecutive PLC data area addresses and inputting/verifying parameters in CPU Bus Units and Special I/O Units.

Display program without using tools

Want to identify the fault location by checking the actual PLC program.
Want to change part of the program, a timer/counter, without connecting tools.

Solve with the Ladder Monitor function
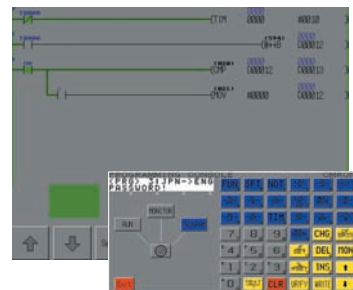
Monitoring Execution of the PLC's Ladder Program

Ladder Monitor Function
(NS12-V1/NS10-V1/NS8-V1)
Save the NS-EXT01 Ladder Monitor system program on a Memory Card (the NS-EXT01 is sold separately) and install the Memory Card to enable monitoring of a ladder program (I/O bit status monitor, address/instruction search, multiple I/O bit monitor, etc.) being executed in a CS/CJ-series PLC connected by a serial connection. It is also possible to display I/O comments created with the CX-Programmer.

For Experts

Using Video Inputs

Capturing Moving Images from a Video Camera and Image Outputs from a Vision Sensor, and Doing Layout on a PT Screen

Video Input Interface
(Supported by the NS12-V1/NS10-V1/NS8-V1.)
Four video input interfaces are provided, so four video or CCD cameras can be connected. Up to four images can be displayed simultaneously if the image size is 320x240 pixels.

Console
Camera
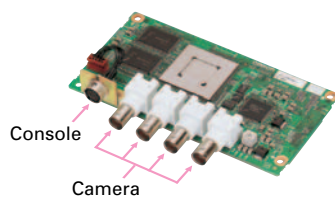
Saving Displayed Video Images to a Memory Card in BMP Format

Image Capture Function
When necessary, the displayed image can be captured and saved in a Memory Card in BMP format. The saved image can then be uploaded from remote personal computer via Ethernet or Serial connection.
The number of images that can be saved depends on the capacity of Memory Card. As an example, about 50 images from a 640x480 display (about 600 Kbytes each) can be saved in a 30-Mbyte Memory Card.
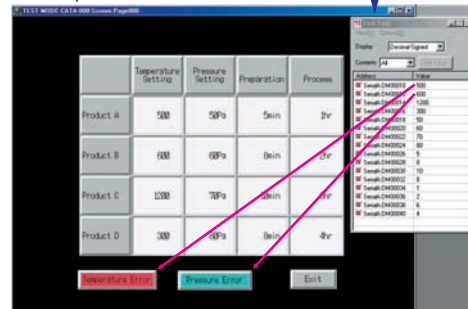
Using a Personal Computer to Check PT Operation

Using a Personal Computer to Check the Operation of Created Functional Objects

Simulation via the "Test Function"
When a test is started, a test screen and virtual PLC will be displayed on the computer.
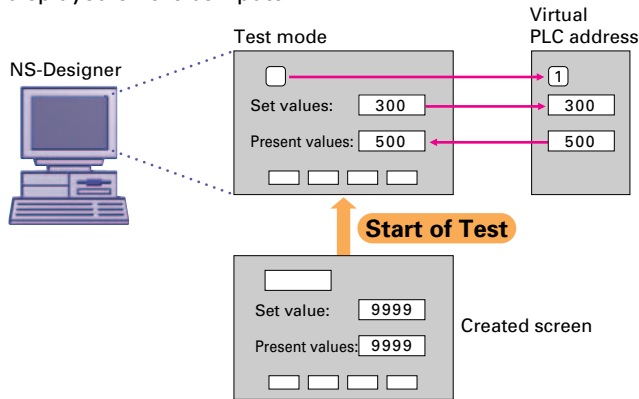

Test Mode Window — **Virtual PLC address**

Operating (clicking with the mouse) the functional objects on the test screen will change the corresponding address in the virtual PLC. Conversely, changing the content of a virtual PLC address will change the corresponding functional objects. It is also possible to confirm pop-up screens. This function can be used to confirm the actual operation of a screen during the editing.
The test function enables debugging screens without NS and PLC Hardware.

Transferring Screen Data to the PT On-site from a Memory Card

Memory Card: Upload/Download Function
It is possible to download the screen data and system program to Memory Card and upload the same data from the Memory Card. It is also possible to automatically upload the data from the Memory Card to NS-Designer or automatically download the data from Memory Card to PT when the power of PT is turned ON.
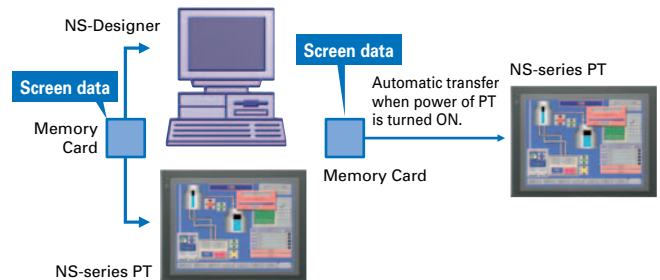
Using General Software

Setting Functional Object Properties in Excel

CSV File Input/Output
The property settings for each functional object can be exported in CSV format. The settings data can be imported again after it has been edited with a program such as Excel.

Editing Text and Bitmap File with Your Favorite Text Editor

Editor Specifying Function
The user can select the editor when editing text or bitmap files.

Creating System-related Documents

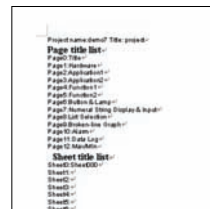### Outputting Project Information in RTF
Data such as screen information and object information can be output in an RTF file. The RTF file can be read into Word Processor to produce a system manual.

Example of an RTF File Read into Word Processor
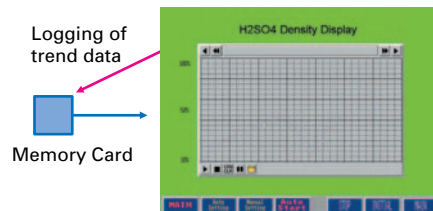
- Pasted Screen Data as RTF Data
- Object Properties as RTF Data

Using Excel to Analyze Data, Such as the Alarm/Event History, Operation Log, and Error Log, and to Create Daily Reports

Memory Card: Data Logging Function
Logging data (trend data, up to 1000 points with a sampling cycle of 1 to 86,400 s/group) can be stored in the Memory Card in CSV format.

Using Excel to Analyze Time-series Data and to Create Daily Reports

Memory Card: History Storage Function
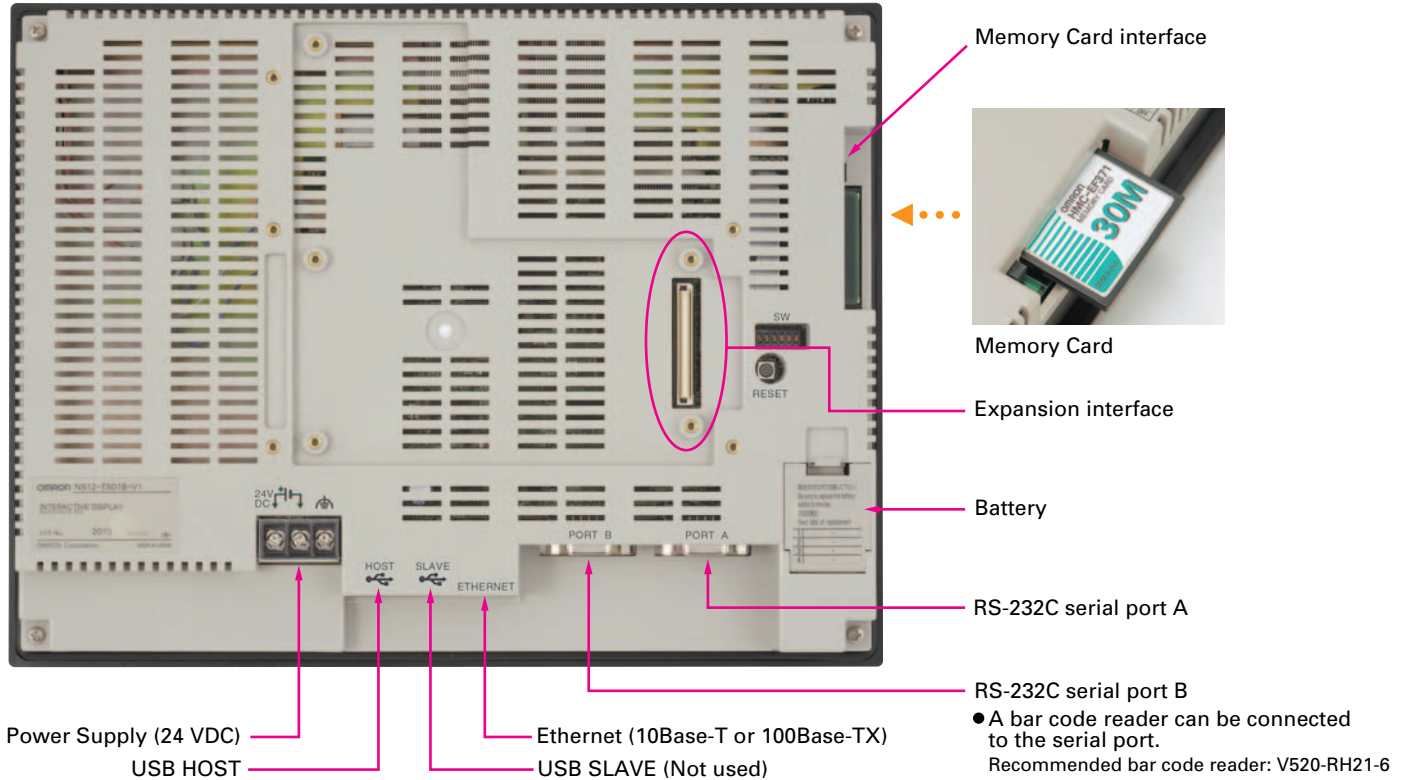The following data can be saved to the Memory Card in CSV format.
- Alarm/Event History (Alarm/ Event history data)
- Operation Log (Screen operation history data)
- Error Log (Error log data recorded during macro program execution)

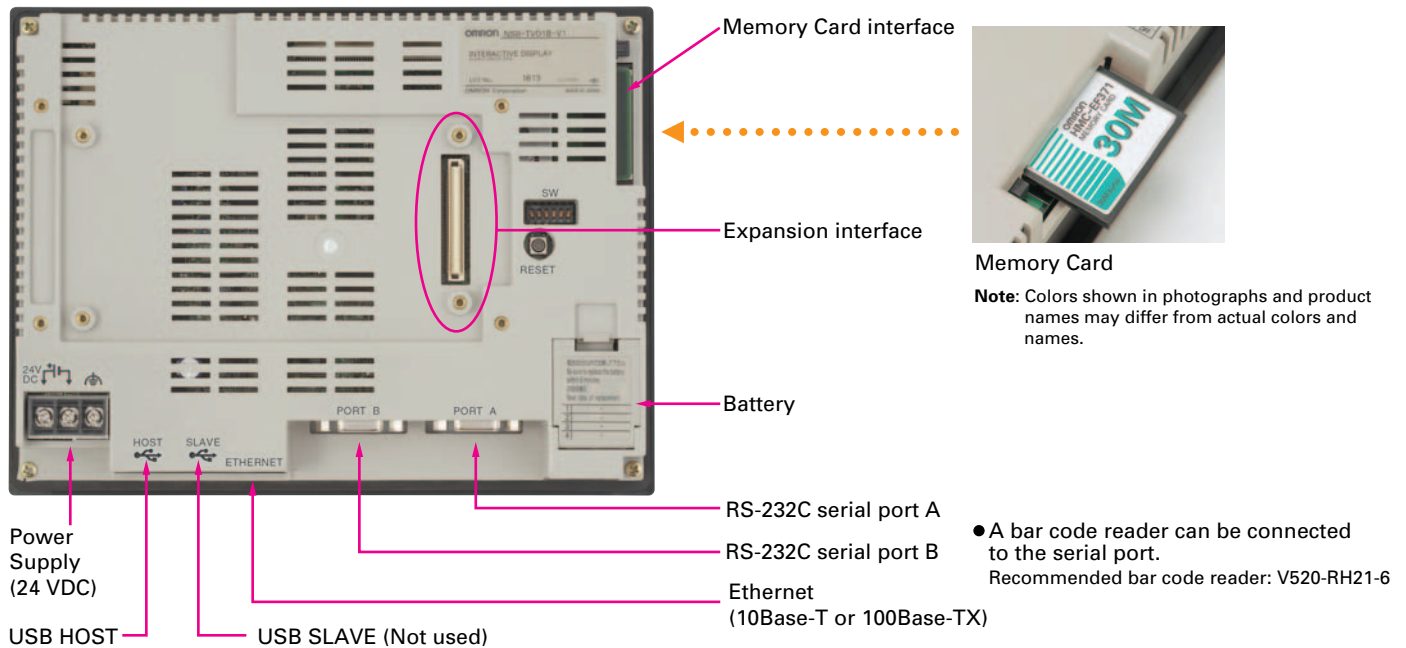# High-reliability and Advanced Functions in the Industry's Slimmest PT

■ Super-thin 48.5-mm Body for a Slimmer Control Panel

This thin-profile model has few protrusions so it can be incorporated easily into a panel or machine. The PT can help save space when space is at a premium.

● NS12, NS10

Memory Card interface

Memory Card

Expansion interface

Battery

RS-232C serial port A

RS-232C serial port B

- A bar code reader can be connected to the serial port.
  Recommended bar code reader: V520-RH21-6

Power Supply (24 VDC)

USB HOST

Ethernet (10Base-T or 100Base-TX)

USB SLAVE (Not used)

● NS8

Memory Card interface

Expansion interface

Memory Card

Note: Colors shown in photographs and product names may differ from actual colors and names.

Battery

RS-232C serial port A

RS-232C serial port B

- A bar code reader can be connected to the serial port.
  Recommended bar code reader: V520-RH21-6

Power Supply (24 VDC)

USB HOST

USB SLAVE (Not used)

Ethernet (10Base-T or 100Base-TX)

■ Built-in Expansion Interface

The NS-series PTs have a built-in Expansion Interface for future expandability.
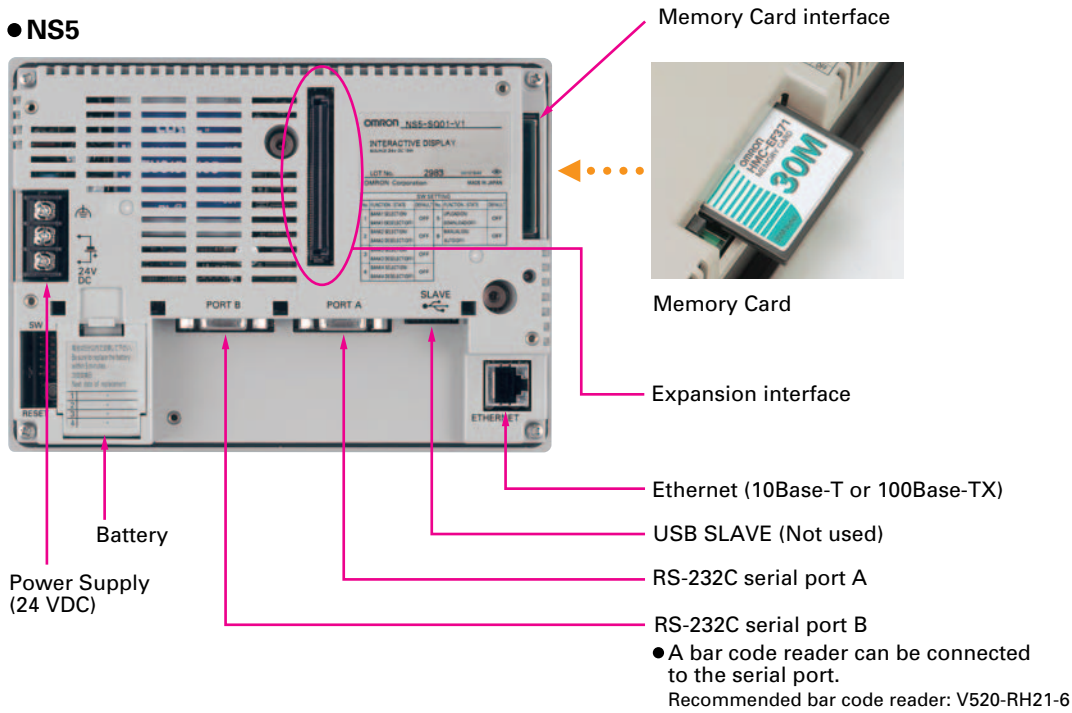
■ USB Ports

A printer can be connected to the USB HOST port. Be sure to use USB cables made by OMRON (NS-US52/NS-US22). Refer to *Printer Support* on page 10 for recommended printers.

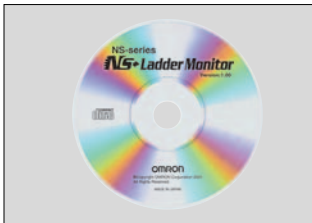## ■ NS-series PTs have backlights with the longest life expectancy in the industry.

At room temperature, the average life expectancy is 50,000 hours min. for the NS12, NS10 and NS5, 40,000 hours min. for the NS8.
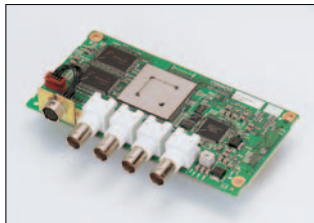
● NS5

Memory Card interface

Memory Card

Expansion interface

Ethernet (10Base-T or 100Base-TX)

USB SLAVE (Not used)

RS-232C serial port A

RS-232C serial port B
● A bar code reader can be connected to the serial port.
  Recommended bar code reader: V520-RH21-6

Battery

Power Supply (24 VDC)

Optional Products

Ladder Monitor program

Video Input Unit (with Cover)

Controller Link Interface Unit (with Cover)
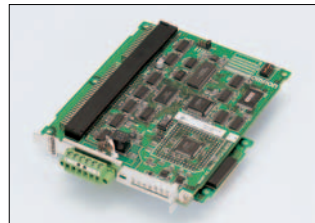
Memory Card
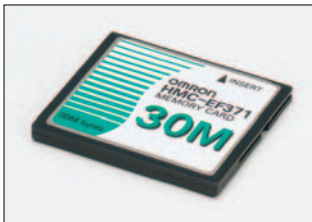
Memory Card Adapter

RS-422A Adapter

CJ1W-CIF11
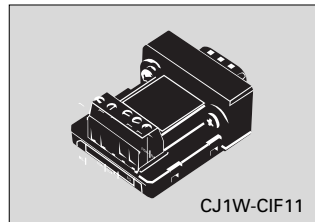
RS-232/RS-422A Conversion Unit

NS-AL002

Communications Cable
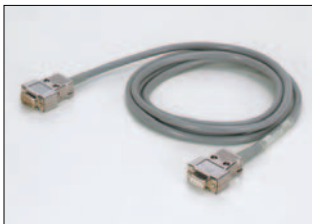
Protective Cover/Anti-reflection Sheet for NS-series PT
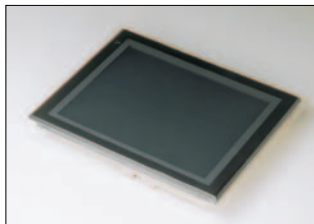
USB Serial Conversion Cable

CS1W-CIF31

Note: Colors shown in photographs and product names may differ from actual colors and names.

Dimensions

■ **NS12/10 PT** Units: mm

● Recommended
Panel Cutout Dimensions

■ **NS8 PT** Units: mm

● Recommended
Panel Cutout Dimensions
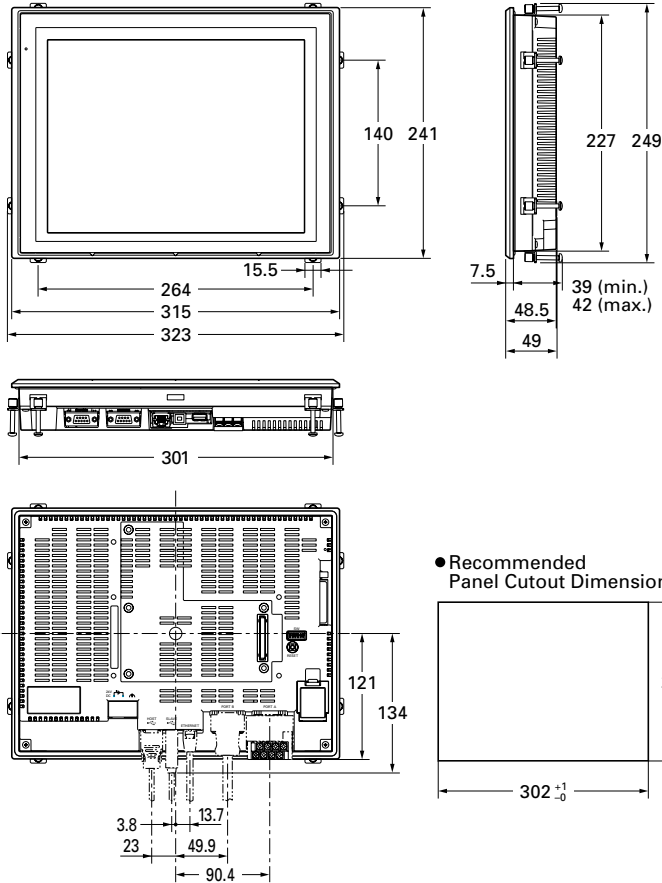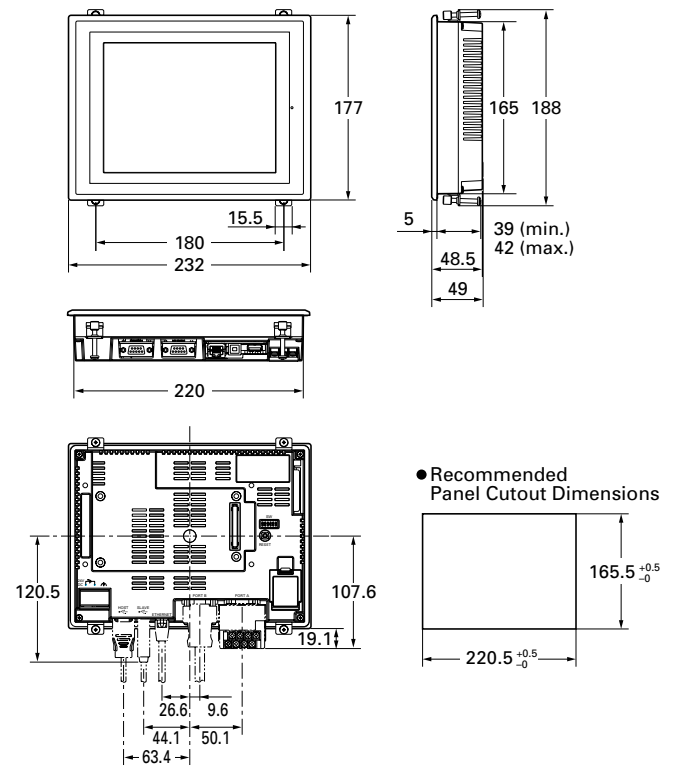
■ **NS5 PT** Units: mm

(For the NS5-SQ01□-V1)

● Recommended
Panel Cutout Dimensions
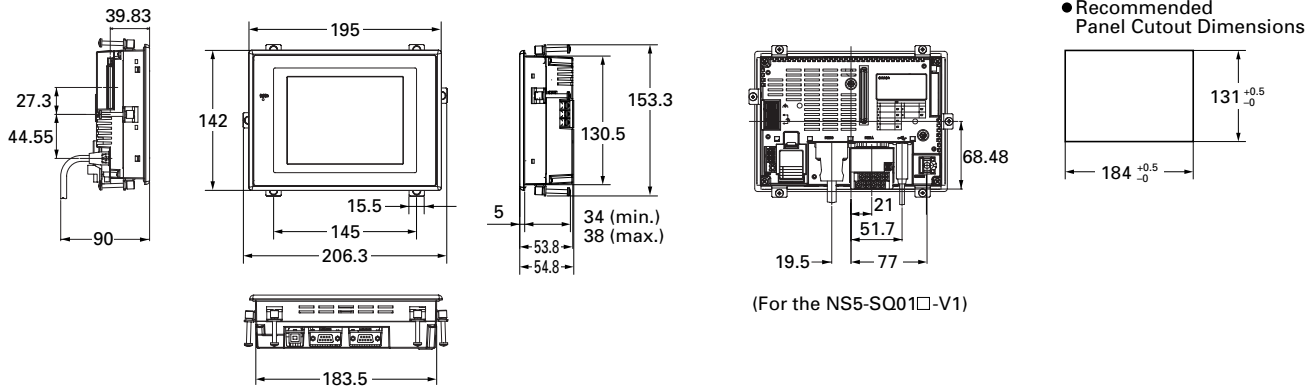
■ **NS-CA001
Video Input
Unit**
Units: mm
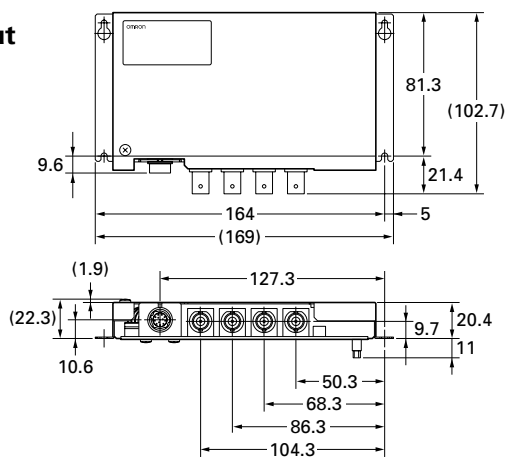
■ **NS-CLK21
Controller Link
Interface Unit**
Units: mm

Performance / Specifications

■General Specifications

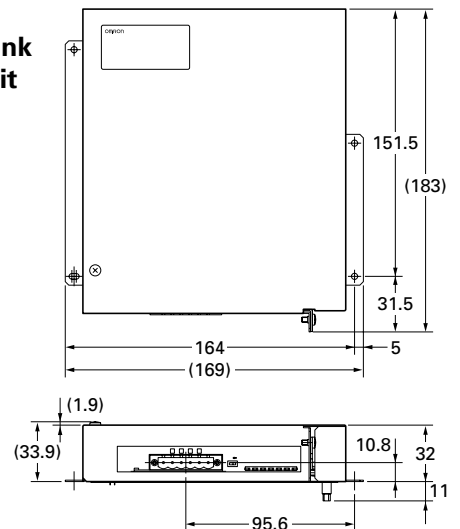| Item	Specifications
Rated power supply voltage	24 VDC
Allowable voltage range	20.4 to 27.6 VDC (24 VDC ±15 %)
Power consumption	25 W max.
Ambient operating temperature	0 to 50°C (See notes 1 and 4.)
Storage temperature	−20 to 60°C (See note 2.)
Ambient operating humidity	35% to 85% (0 to 40°C) with no condensation 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)	Conforms to JIS C0040. 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)	Conforms to JIS C0041. 147 m/s² 3 times each in direction of X, Y, and Z.
Weight	NS12: 2.5 kg max.; NS10: 2.3 kg max.; NS8: 2.0 kg max.; NS5: 1.0 kg max.
Enclosure rating	Front operating panel: IP65F and NEMA4 compliant (See note 3.)
Battery life	5 years (at 25°C) Replace battery within 5 days after the battery runs low (indicator lights orange).
Applicable standards	cULus and EC directives

Note 1: The operating temperature is subject to the following restrictions according to the mounting angle.
Mounting angle of 0 to 30° to the horizontal:
Operating temperature range of 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: See note 4.

Note 2: Operate the PT within the temperature and humidity ranges shown in the following diagram.
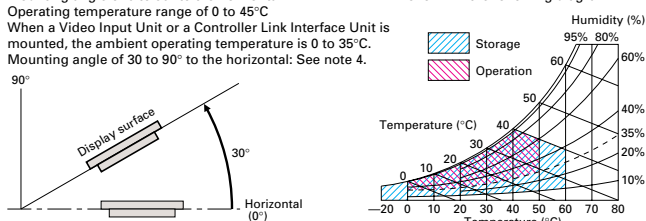
Note 3: May not be applicable in locations with long-term exposure to oil.
Note 4: •NS12-V1/NS10-V1/NS5-V1
Mounting angle of 30° to 90° or less to the horizontal: Operating temperature range of 0 to 50°C
•NS8-V1
Mounting angle of 30° to less than 90° to the horizontal: Operating temperature range of 0 to 45°C
Mounting angle of 90° to the horizontal: Operating temperature range of 0 to 50°C

■Characteristics

●Display Specifications

Item		NS12-V1	NS10-V1	NS8-V1	NS5-V1
Display panel	Display device	High-definition TFT color LCD			STN color LCD
	Number of dots	800 dot horizontal x 600 dot vertical	640 dot horizontal x 480 dot vertical		320 dot horizontal x 240 dot vertical
	Display color	256 colors			
	Effective display area	Width 246.0 mm x height 184.5 mm (12.1 inches)	Width 215.2 mm x height 162.4 mm (10.4 inches)	Width 162.2 mm x height 121.7 mm (8 inches)	Width 117.2 mm x height 88.4 mm (5.7 inches)
	Field of vision	Left/right ±60°, Top 45°, bottom 55°	Left/right ±60°, Top 35°, bottom 65°	Left/right ±60°, Top 50°, bottom 60°	Left/right ±50°, Top 30°, bottom 50°
Backlight (See note 4.)	Service life	50,000 hours min. (See note 1.)		40,000 hours min. (See note 1.)	50,000 hours min.
	Brightness adjustment	There are 3 levels that can be set with the touch panel. (See note 2.)			
	Backlight error detection	Error is detected automatically, and the RUN indicator flashes green as notification. (See note 3.)		———	———

Note 1: 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 drastically 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).
2: The brightness cannot be adjusted much.
3: 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.
4: Contact your nearest OMRON representative to replace the backlight.

●Operating Specifications

Item			Specification
Touch panel (Matrix type)	Method		Resistive membrane
	Number of switches	NS12-V1	1,900 (50 horizontal x 38 vertical) 16 x 16 dots for each switch.
		NS10-V1	1,200 (40 horizontal x 30 vertical) 16 x 16 dots for each switch.
		NS8-V1	768 (32 horizontal x 24 vertical) 20 x 20 dots for each switch.
		NS5-V1	300 (20 horizontal x 15 vertical) 16 x 16 dots for each switch.
	Input		Pressure-sensitive
	Service life		1,000,000 touch operations.

●Data capacity specificaton

Item	NS12-V1	NS10-V1	NS8-V1	NS5-V1
Standard screen data capacity	20MB			6MB

●External Interface Specifications

Item	Specifications
Memory card interface	One ATA-Compact Flash interface slot. Used to transfer and store screen data and to store history data.
Expansion interface	For Expansion Interface Units Used to install various Interface Units that are currently in development.

■Communications Specifications

●Serial Communications

Item	Specification
Port A	Conforms to EIA RS-232C. D-Sub female 9-pin connector 5-V output (250 mA max.) through pin 6 (See note.)
Port B	Conforms to EIA RS-232C. D-Sub female 9-pin connector 5-V output (250 mA max.) through pin 6 (See note.)

Note: The 5-V outputs of serial ports A and B cannot be used at the same time.

●Controller Link (Wired-type) Specifications

Item	Specification
Baud rate	2M/1M/500K
Transmission path	Shielded twisted-pair cable (special cable)

●Ethernet Specifications (NS12-TS01(B) and NS10/8-TV01(B) only)

Item	Specification
Conformance standards	Conforms to IEEE 802.3/Ethernet (10Base-T/100Base-TX).

●Video Input Specifications

Item	Specification
Resolution	320 x 240, 640 x 480, or 800 x 600 dots
Input signal	NTSC composite video or PAL
Cameras	Number of cameras: 4 max.

●USB Specifications

Item	Specifications
USB rating	USB1.1
Connector	Type A (Host), Type B (Slave)

■Display Element Specifications

Item			Specification	
Display text	Raster font		Displayable characters	Base size
	Font name	Rough	Alphanumeric characters or Japanese katakana	8 x 8 / 1 x 1, 1 x 2, 2 x 1, 2 x 2, 3 x 3, 4 x 4, 8 x 8
		Standard	Alphanumeric characters or Japanese, Chinese (Simplified, Traditional) or Korean	8 x 16 16 x 16 / 1 x 1, 1 x 2, 2 x 1, 2 x 2, 3 x 3, 4 x 4, 8 x 8
		Fine	Alphanumeric characters or Japanese katakana Japanese kanji	16 x 32 32 x 32 / 1 x 1, 1 x 2, 2 x 1, 2 x 2, 3 x 3, 4 x 4, 8 x 8
	Vector font (text objects only)		Can be specified in NS-Designer. Font, style, and size can be specified.	
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 that can flicker	Functional objects	Up to 10 types can be registered. The flicker speed and flicker range can be set.	
		Fixed objects	Select from 3 types. The flicker speed and flicker range are fixed.	
Numeral units and scale settings			1,000 max.	
Alarm/event settings			1000 max.	
Display colors			256 colors max.(32,000 colors for BMP)	

■NS-Designer Operating Environment

Recommended CPU	Intel Celeron 400 MHz min.
Recommended memory	32 Mbytes min.
Hard disk free space	200 Mbytes are required at setup.
CD-ROM drive	Required for installation.
Display	A minimum resolution of 800 x 600 pixels is recommended.
Compatible OS	Microsoft Windows 95, Windows 98, Windows NT 4.0 (service pack 3 or higher), Windows Me, or Windows 2000 or Windows XP

Macro Processing List

Item	Contents	
Conditional judgments	IF ELSEIF ELSE ENDIF	
Conditional expressions	A == B, A > B, A >= B, A AND B, A OR B, etc.	
Basic arithmetic instructions	Assignment, addition, subtraction, multiplication, division, remainder, logical OR, logical AND, negation (NOT), logical exclusive OR, 1's complement, bit shift (left), bit shift (right), etc.	
Functions	BCD ←→Binary conversion	Numeral (binary)→BCD
		BCD→Numeral (binary)
	Character string operations	Copy string
	Character string operations	Convert multibyte string to Unicode string.
		Convert Unicode string to multibyte string.
	Alarm/event history	Clear the alarm/event counter to 0.
	HMI (user interface) instructions	Read numeral write value or numeral change value.
		Switch screen
		Move object display area
	Message dialog box display	Get object's display shape.
		Move pop-up window screen.
		Move pop-up window screen up.
		Move pop-up window screen down.
		Move pop-up window screen left.
		Move pop-up window screen right.
		Close pop-up window screen.
	Communications	Read data from the specified address.
		Write data to the specified address.
	Exit processing	Exit macro program.

Note: Macro execution conditions:
- Registration to the project when the project is loaded, alarm/event goes ON, or alarm event goes OFF.
- Registration to screen when screen is loaded or unloaded.
- Registration to functional object when an object is touched to turn it ON, a value is changed, just before Numeral or String Input start, just before Numeral or String Input write, list selection, etc.

Compatible OMRON PLCs

■CPU Units (1:1 NT Link Connection)

Model number	Specifications	PLC model name
CQM1-CPU41-V1/CPU42-V1/CPU43-V1/CPU44-V1	With RS-232C connector (9-pin type)	C-series CQM1
CQM1H-CPU21/CPU51/CPU61		C-series CQM1H
CPM1-10/20CDR-□+ CPM1-CIF01	Connect to peripheral port.	C-series CPM1
CPM1A-10/20/30/40CD□-□+ CPM1-CIF01		C-series CPM1A
CPM2A-30/40/60CD□□-□+ CPM1-CIF01	Connect to RS-232C or peripheral port.	C-series CPM2A
CPM2C-10/20□□□□□-□(See note 1)	With RS-232C connector (9-pin type)	C-series CPM2C
C200HS-CPU21/CPU23/CPU31/CPU33		C-series C200HS
C200HE-CPU32(-Z) (See note 2) /CPU42(-Z)		C-series C200HE (-Z)
C200HG-CPU33(-Z) (See note 2) /CPU43(-Z) /CPU53(-Z) (See note 2) /CPU63(-Z)		C-series C200HG (-Z)
C200HX-CPU34(-Z) (See note 2) /CPU44(-Z) /CPU54(-Z) (See note 2) /CPU64(-Z) /CPU65-Z/CPU85-Z		C-series C200HX (-Z)
CV500/1000/2000-CPU01-V1 CVM1-CPU01-V2/CPU11-V2/CPU21-V2	With RS-232C connector (switching/9-pin type)	CVM1/CV-series CVM1 or CV500/CV1000/CV2000

Note 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.

■CPU Units (1:N NT Link Connection)

Model number	Specifications	PLC model name
CS1G-CPU42H/CPU43H/CPU44H/CPU45H	With RS-232C connector (9-pin type)	CS-series CS1G
CS1H-CPU63H/CPU64H/CPU65H/CPU66H/CPU67H		CS-series CS1H
CS1D-CPU65H/CPU67H		CS-series CS1D
CJ1G-CPU42H/CPU43H/CPU44H/CPU45H (See note 1)		CJ-series CJ1G
CJ1H-CPU65H/CPU66H (See note 1)		CJ-series CJ1H
CJ1M-CPU12/CPU13/CPU22/CPU23/CPU11/CPU21 (See note 1)		CJ-series CJ1M
CQM1H-CPU61/51 with a CQM1H-SCB41 Serial Communications Board		C-series CQM1H
C200HE-CPU32(-Z) (See note 2) /CPU42(-Z)		C-series C200HE(-Z)
C200HG-CPU33(-Z) (See note 2) /CPU43(-Z) /CPU53(-Z) (See note 2) /CPU63(-Z)		C-series C200HG(-Z)
C200HX-CPU34(-Z) (See note 2) /CPU44(-Z) /CPU54(-Z) (See note 2) /CPU64(-Z) /CPU65-Z/CPU85-Z		C-series C200HX(-Z)

Note 1: The CJ1W-SCU41 Serial Communications Unit can also be connected.
2: A C200HW-COM02/COM04/COM05/COM06(-V1) Communications Board is required.

Standard Models

Model name	Specifications		Ethernet	Case color	Model number
NS12	12-inch TFT 800 x 600 dots		No	Ivory	NS12-TS00-V1
				Black	NS12-TS00B-V1
			Yes	Ivory	NS12-TS01-V1
				Black	NS12-TS01B-V1
NS10	10-inch TFT 640 x 480 dots		No	Ivory	NS10-TV00-V1
				Black	NS10-TV00B-V1
			Yes	Ivory	NS10-TV01-V1
				Black	NS10-TV01B-V1
NS8	8-inch TFT 640 x 480 dots		No	Ivory	NS8-TV00-V1
				Black	NS8-TV00B-V1
			Yes	Ivory	NS8-TV01-V1
				Black	NS8-TV01B-V1
NS5	5-inch STN 320 x 240 dots		No	Ivory	NS5-SQ00-V1
				Black	NS5-SQ00B-V1
			Yes	Ivory	NS5-SQ01-V1
				Black	NS5-SQ01B-V1
NS-Designer Screen design software	Windows version on CD-ROM				NS-NSDC1-V5
Cable (See note 1.)	Screen transfer cable for DOS/V				XW2Z-S002
	USB Host Cable, cable length: 5 m				NS-US52 (5 m)
	USB Host Cable, cable length: 2 m				NS-US22 (2 m)
	USB-RS-232-C Conversion Cable, cable length: 0.5 m				CS1W-CIF31
PT-to-PLC Connecting Cable	PT connection: 9 pins PLC connection: 9 pins	Length: 2 m			XW2Z-200T
		Length: 5 m			XW2Z-500T
Accessories	Ladder Monitor Software	One CD-ROM Ladder Monitor application (See note 2.) and I/O Comment File Extraction Tool (See note 3.) A Memory Card (sold separately) is required to use the software in the NS-series PT. An HMC-AP001 Memory Card Adapter is required in order to copy the data from the CD-ROM in the computer to the Memory Card.			NS-EXT01-V2
					NS-EXT01-V2L03 (3 licenses)
					NS-EXT01-V2L10 (10 licenses)
					NS-EXT01-V2HMC (with 64-Mbyte Memory Card)

Model name	Specifications		Model number
Accessories	Video Input Unit	Inputs: 4 channels Signal type: NTSC/PAL	NS-CA001
	Special Cable for the Console		F150-VKP (2m)
			F150-VKP (5m)
	Controller Link Interface Unit	For Controller Link Communications	NS-CLK21
	RS-422A Adapter	Transmission distance: 500 m total length	NS-AL002 (See note 4.)
		Transmission distance: 50 m total length	CJ1W-CIF11 (See note 5.)
	Anti-reflection Sheets (5 surface sheets)	NS12/10	NS12-KBA04
		NS8	NS7-KBA04
		NS5	NT30-KBA04
	Protective Covers (5 pack)	NS12/10	NS12-KBA05
		NS8	NS7-KBA05
		NS5	NT31C-KBA05
	Attachment (NT631Series → NS12/10 Series)		NS12-ATT01
	Memory Card	15 MB	HMC-EF172
		30 MB	HMC-EF372
		64 MB	HMC-EF672
	Memory Card Adapter		HMC-AP001
	Battery		CJ1W-BAT01
	Bar Code Reader (Refer to the Catalog for details.)		V520-RH21-6

Note 1: Be sure to use cables made by OMRON when connecting NS hardware to a printer.
2: NS-series PT application used to monitor a SYSMAC CS/CJ-series PLC's ladder program from the PT.
3: This tool extracts I/O comment data from the CX-Programmer's CXT file and converts the data to a format that can be used by the Ladder Monitor Software for NS.
4: This model is available for NS Hardware without "-V1" suffix.
5: This model is available for NS Hardware with "-V1" suffix only.
Be sure to use NS-AL002 when connecting to NS Hardware without "-V1" suffix.
6: A Chemical Resistant Cover (NT30-KBA01) is also available for the NS5.

■Superior environmental resistance meets IP65F standards.

Flush surface construction is used for superior environmental resistance and the enclosure rating for the front of the PT is IP65F compliant.
IP → International Protection
 6 → Dust and dirt will not enter interior.
    (Enclosure protects against foreign objects.)
 5 → There are no adverse effects from a water stream from any direction.
    (Enclosure protects against water intrusion.)
 F → There are no harmful effects from oil droplets or spray from any direction. (Enclosure protects against oil intrusion.)

Note: May not be applicable in environments with long-term exposure to water or oil.

■Meets International Standards and Exports are Not Restricted

The PTs conform to UL standards (cULus) and EC Directives.
In addition, there are no export restrictions on the PTs.

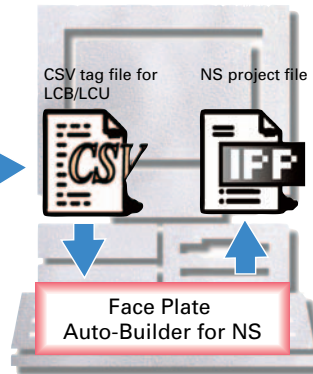# WS02-NSFC1-E Face Plate Auto-Builder for NS

Significantly reduces the engineering time required by combining LCB/LCU and the NS Series.

● Automatic generation of control screens and tuning screens. Automatic generation of NS screen data by the software from tag information created with CX-Process Tool.
● NS communications address allocation, ladder programs, etc., are completely unnecessary.
● Data that has been generated can be freely edited and processed by NS-Designer (NS screen creation software).

NS Series

Created screens are easily transferred to the NS by means of a Memory Card or over the network.

SYSMAC CS1 + LCB/LCU

NS-Designer
(NS screen creation software)
● Editing created data
● Creation of other required screens

CSV tag file for LCB/LCU   NS project file

CX-Process Tool
(LCB/LCU programming software)
● LCB/LCU program creation (function block method)
● CSV tag file output

Face Plate Auto-Builder for NS

■**Specifications**

Product name	Specifications	Model number
Face Plate Auto-Builder for NS	CSV tag files for LCB/LCU used in Face Plate Auto-Builder for NS	WS02-NSFC1-E

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