

# OMRON

Programmable Terminals

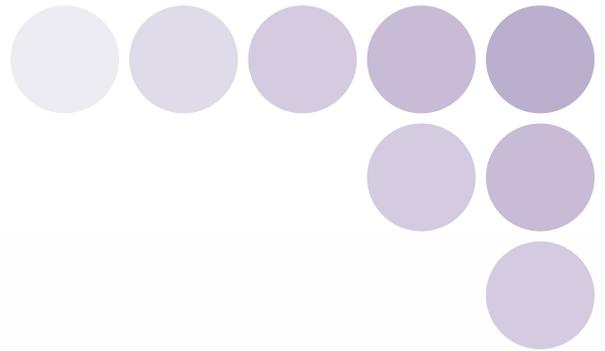
## NS Series

NS-series Screen Designer



Machine Monitoring Software

## NS-Runtime



# NS

## Real Value and Flexible Application

Provides the Functions Sought in New Displays.  
This Powerful Lineup Showcases OMRON's Unique Value.

# SERIES

realizing

# NS-series Value

## What's New

- Even Simpler Equipment Operation with Outstanding Synergy..... **P 6**
- The Expanded Lineup Supports an Even Wider Range of Applications. .... **P 8**
- The NS15 Can Do All of This. .... **P 10**
- NS series Supports SYSMAC CJ2.
- Full access to CPU memory and tag access with EtherNet/IP ..... **P12**
- Greatly Improved Ladder Monitor.  
Enhanced Visibility and Ease of Use. .... **P14**
- Further Enhancement of Basic Functions. .... **P16**

Perfect Synergy

## Best Match

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

- Eliminates Programming and Screen Designing..... P18
- SAP Library..... P19
- Single Port Multi Access (SPMA)..... P20
- Ladder Monitor..... P20
- PLC Data Trace..... P21
- PLC Troubleshooter..... P21
- Direct Connection to Temperature Controllers..... P21
- Face Plate Auto-Builder for NS..... P22
- 260,000-color Video Display..... P22

Simple Screen Designing

## Easy-to-use Software

The CX-Designer is so easy-to-use that anyone can master it, without even designing screens and ladder programs. You can create the desired screens quickly and with OMRON's integrated development environment, you can dramatically reduce the time required to design screens.

- User-friendly Screen Creation..... P24
- Reading the Symbol Table..... P25
- Reading Another Project's Screens and Objects..... P26
- Reading CAD Files..... P26
- Integrated Simulation with the PLC Ladder Program..... P26
- Editing of Multiple Objects..... P27
- Editing of Overlapping Objects..... P27
- Programming with Symbols..... P27

Complete Functionality

## Plenty of Basic Functions

The basic functions desired in new displays have been greatly improved. In addition to making the displays as easy-to-use as possible, a variety of useful functions that can precisely meet the customers' needs have been built into the displays.

- Multi-language Support..... P28
- Beautiful Screens..... P29
- Huge 60-MB Image Memory..... P29
- Easier Design of Machine Error Screens..... P30
- Easy-to-Use Multifunction Objects..... P30
- Plentiful Graphing Functions..... P31
- Screen Data Security Functions..... P32
- User Security Functions..... P32
- FTP Function..... P32
- Connect! Expand! Feel the NS Series, the power of networking..... P34

## NS-Runtime

Achieve machine/line monitoring and data logging on your office computer. .... **P36**

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What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

# NS Series Lineup

This powerful lineup showcases OMRON's unique value. Choose from 3 types to match your application and requirements.

## NS Series Plentiful screen variations and diverse functions allow use in a wide variety of applications.

Standard Models

### 15 inches

NS15-TX01 Color TFT



- USB Slave USB Master Ethernet RS-232C x 2
- Controller Link Ladder Monitor Video (RGB input only) Memory Card
- RS-422A/485 Brightness adjustment RGB output

- 32,768 colors ●XGA 1,024 x 768 pixels
- Screen memory size: 60 MB
- Analog touch panel method
- Silver or black models are available.



### 5.7 inches

- USB Slave USB Master Ethernet RS-232C x 2
- Controller Link Ladder Monitor Video Memory Card

NS5-MQ Monochrome STN



- 16 monochrome gradations
- QVGA 320 x 240 pixels
- Screen memory size: 60 MB

NS5-SQ Color TFT



- 32,768 colors ●QVGA 320 x 240 pixels
- Screen memory size: 60 MB

NS5-TQ Color High-luminance TFT



- 32,768 colors ●QVGA 320 x 240 pixels
- Screen memory size: 60 MB

### 8.4 inches

- USB Slave USB Master Ethernet RS-232C x 2
- Controller Link Ladder Monitor Video Memory Card

NS8-TV Color TFT



- 32,768 colors ●VGA 640 x 480 pixels
- Screen memory size: 60 MB

### 10.4 inches

- USB Slave USB Master Ethernet RS-232C x 2
- Controller Link Ladder Monitor Video Memory Card

NS10-TV Color TFT



- 32,768 colors ●VGA 640 x 480 pixels
- Screen memory size: 60 MB

### 12.1 inches

- USB Slave USB Master Ethernet RS-232C x 2
- Controller Link Ladder Monitor Video Memory Card

NS12-TS Color TFT



- 32,768 colors ●SVGA 800 x 600 pixels
- Screen memory size: 60 MB

## NS-Runtime

NS-NSRCL□  
This software enables PLC communications from a personal computer by manipulating PT screens created using the CX-Designer.



Page 36

## Optional Products NS-series functions, such as image processing and networking, have been expanded.



Video Input Unit  
NS-CA001

- NTSC/PAL video inputs (4 channels)



RGB/Video Input Unit  
NS-CA002

- NTSC/PAL (2 channels)
- RGB input (1 channel)



Controller Link Interface Unit  
NS-CLK21



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

- Transmission distance: 500 m max.



Communications Cable  
XW2Z-S002



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

Note: The NS-CA001 and the video input function of the NS-CA002 cannot be used with the NS15. Only the RGB input function can be used.

## SYSMAC One NSJ Series PT is unified with the Controller into one package to greatly help standardize equipment and reduce size.

Integrated Controller Models

### 5.7 inches

- USB Slave USB Master Ethernet RS-232C x 3
- Controller Link Ladder Monitor Video Memory Card

NSJ5-SQ□□-M3D/-G5D Color TFT



- (Display Section)
- 32,768 colors
  - VGA 320 x 240 pixels
  - Screen memory size: 20 MB (Controller Section)
- M3D
- I/O points: 640
  - Program capacity: 20K steps
  - Data Memory: 32K words
- G5D
- I/O points: 1,280
  - Program capacity: 60K steps
  - Data Memory: 128K words

NSJ5-TQ□□-M3D/-G5D  
Color High-luminance TFT



- (Display Section)
- 32,768 colors
  - QVGA 320 x 240 pixels
  - Screen memory size: 20 MB (Controller Section)
- M3D
- I/O points: 640
  - Program capacity: 20K steps
  - Data Memory: 32K words
- G5D
- I/O points: 1,280
  - Program capacity: 60K steps
  - Data Memory: 128K words

### 8.4 inches

- USB Slave USB Master Ethernet RS-232C x 3
- Controller Link Ladder Monitor Video Memory Card

NSJ8-TV□□-M3D/-G5D Color TFT



- (Display Section)
- 32,768 colors
  - VGA 640 x 480 pixels
  - Screen memory size: 60 MB (Controller Section)
- M3D
- I/O points: 640
  - Program capacity: 20K steps
  - Data Memory: 32K words
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### 10.4 inches

- USB Slave USB Master Ethernet RS-232C x 3
- Controller Link Ladder Monitor Video Memory Card

NSJ10-TV□□-G5D Color TFT



- (Display Section)
- 32,768 colors
  - VGA 640 x 480 pixels
  - Screen memory size: 60 MB (Controller Section)
- G5D
- I/O points: 1,280
  - Program capacity: 60K steps
  - Data Memory: 128K words

### 12.1 inches

- USB Slave USB Master Ethernet RS-232C x 3
- Controller Link Ladder Monitor Video Memory Card

NSJ12-TS□□-G5D Color TFT



- (Display Section)
- 32,768 colors
  - SVGA 800 x 600 pixels
  - Screen memory size: 60 MB (Controller Section)
- G5D
- I/O points: 1,280
  - Program capacity: 60K steps
  - Data Memory: 128K words

## NSH Series A hand-held version of the NS5 is now available to perform operations at the production site.

Hand-held Models

### 5.7 inches



- NSH5-SQR  
Color TFT
- Equipped with a red switch for an emergency stop input.
  - 32,768 colors
  - QVGA 320 x 240 pixels
  - Emergency stop (3 inputs)



- NSH5-SQG  
Color TFT
- Equipped with a gray switch for a stop input.
  - 32,768 colors
  - QVGA 320 x 240 pixels
  - Emergency stop (3 inputs)

Hand-held PT Cable



Note: For details on the NSJ-series Controllers, refer to the NSJ-series Programmable Controllers Catalog (Cat. No. V406).

What's New  
Compatibility  
Screen Design Software  
Basic Functions  
NS-Runtime  
Specifications

# What's New

## Even Simpler Equipment Operation with Outstanding Synergy

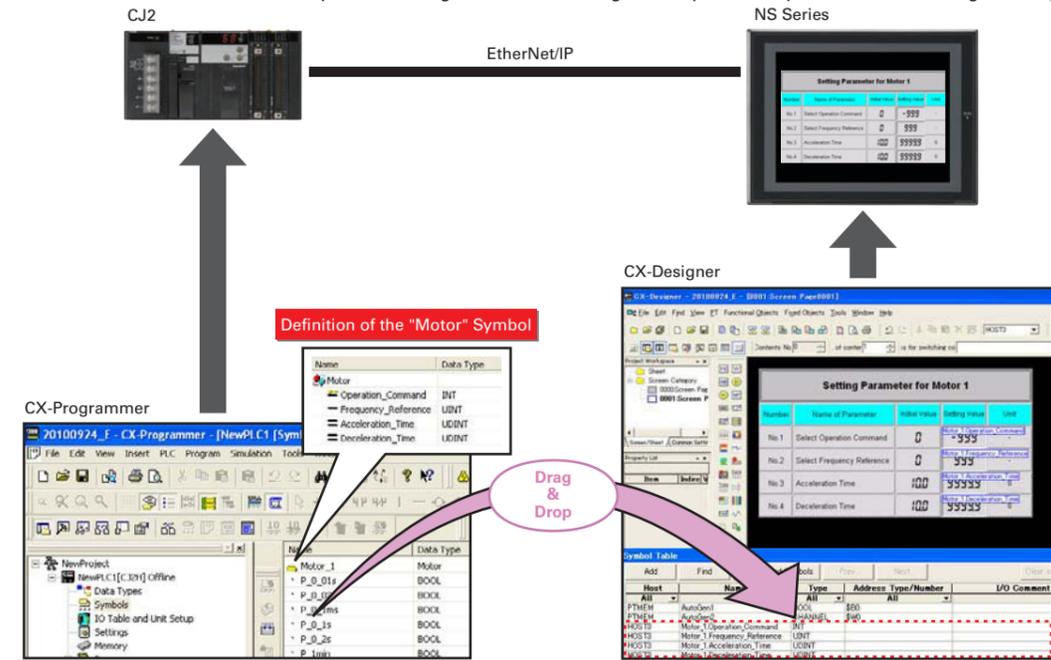
Supported Devices **CJ2** **CS1/CJ1** **CP1** Multi-vendor Support

Support for CJ2 Data Structures  
Program the PLC and Create PT Screens Using the Same Data Structures

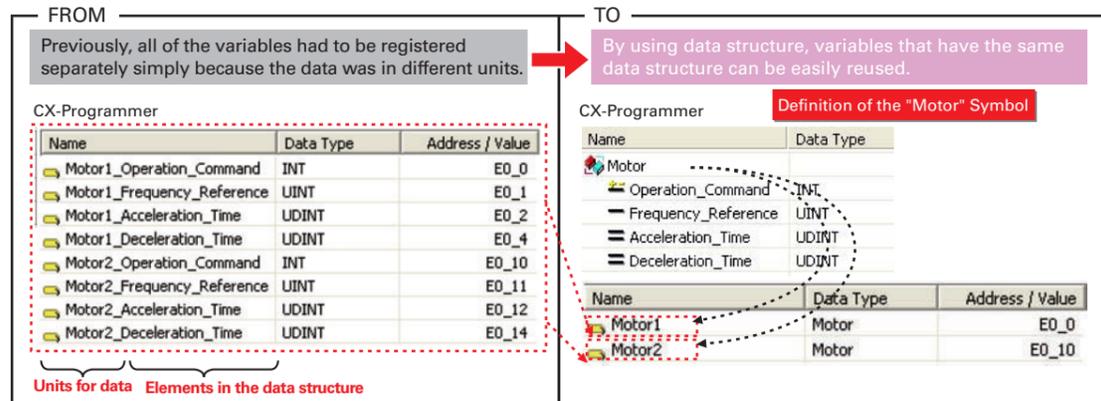
## Greatly Increase Design Efficiency and Reduce Work over the Entire System

This special feature is made possible by combining an OMRON CJ2 PLC with an NS-series PT. The data structures that you define on the CX-Programmer can be used on the CX-Designer simply by dragging and dropping them.

**Note:** An EtherNet/IP connection is required. CX-Designer version 3.2 or higher is required. NS system version 8.4 or higher is required.



**What is data structure?** Data which is made of plural types of variables and treated as one data type.



## NS with LED backlight

**LED backlight is newly installed for NS5 color-type models (SQ/TQ models)\***

\*LotNo.1520 or later

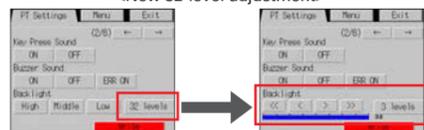
LED backlight allows backlight brightness adjustment of up to 32 levels.

The brightness can be adjusted from the operation screens; it is favorable for ship and vessel applications

< Conventional three-level adjustment >



< New 32-level adjustment >



Transfer of Ladder Programs and Screens without Changing the USB Cable Connection

## Easier Debugging and Maintenance

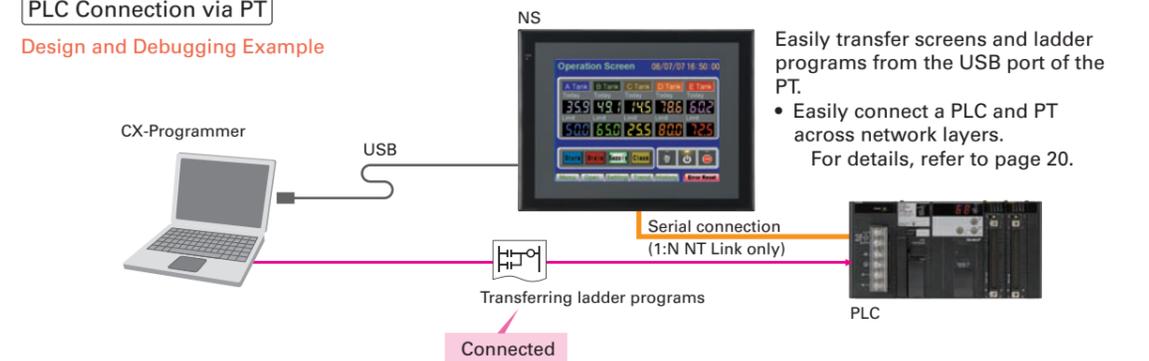
Easy Transfer and Editing of Screens and Ladder Programs Using USB

Transfer ladder program data to the PLC via the PT simply by connecting a computer to the USB port on the PT.

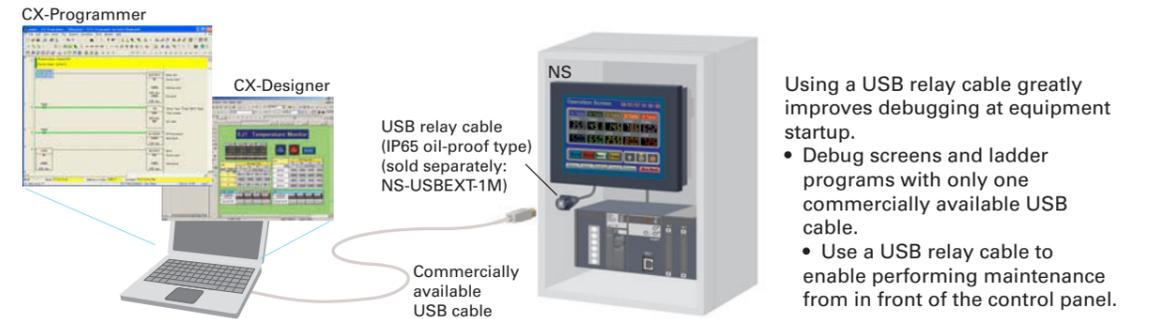
Transfer ladder data and perform online editing using USB via the PT even for a PLC that does not have a USB port.

### PLC Connection via PT

Design and Debugging Example



Startup and Maintenance Example



### PT Connection via PLC

If a CJ-series PLC is used, screens can be transferred to the PT by connecting the computer and the PLC using a USB cable.

Screens can be transferred through the PLC simply by setting the communications path to USB between the computer and the PLC in the transfer settings for the CX-Designer.

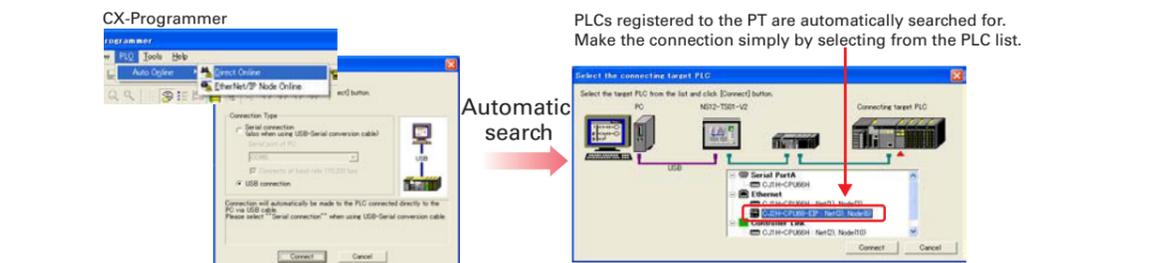
**Note:** CX-Programmer version 8.2 and higher support automatic online connection via the PT. NS system version 8.2 or higher is required.

Easy Automatic Connection

### PLC Connection via PT

A search is automatically made for the PLCs connected to the PT and the results are displayed using the automatic online connection function in the CX-Programmer.

Just select a PLC from the list to connect. This function is also supported for PLCs over network layers.



**Note:** CX-Programmer version 8.2 and higher support automatic online connection via the PT. NS system version 8.2 or higher is required.

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

Supported Devices **CJ2** **CS1/CJ1** **CP1** **Multi-vendor Support**

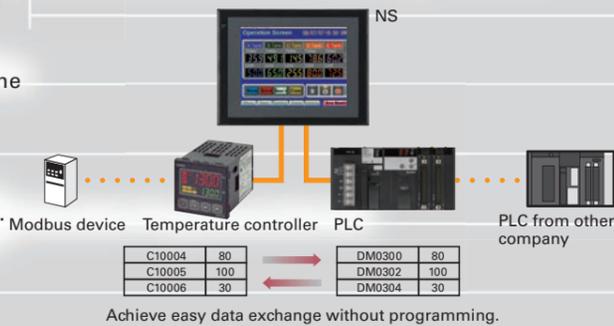
## Program-free, Macro-free Easy Data Exchange between the PLC and Components (See note 1 and 2.)

### Easy Data Exchange

For example, temperature controller alarm values can be transferred to the DM Area of the PLC's CPU Unit. No communications programming or macros are required.

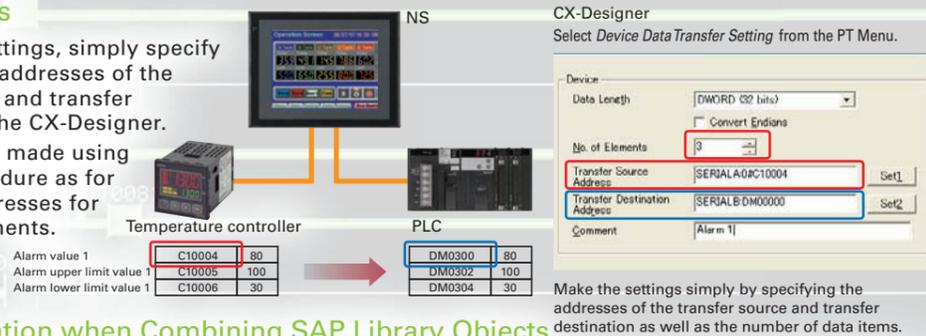
### Multi-vendor Support

Devices from multiple vendors are supported. Data can be easily exchanged with PLCs from other companies and Modbus devices.



### Easy Settings

To make the settings, simply specify the device and addresses of the transfer source and transfer destination in the CX-Designer. Settings can be made using the same procedure as for setting the addresses for normal components.



### Easier Operation when Combining SAP Library Objects

SAP data can also be exchanged. SAP data can be exchanged by checking the address of the SAP data in the dialog box of the SAP object pasted in the CX-Designer and specifying that address as the transfer source address.

**Note 1:** EtherNet/IP tags are not supported. **Note 2:** CX-Designer version 3.1 or higher is required. NS system version 8.2 or higher is required.

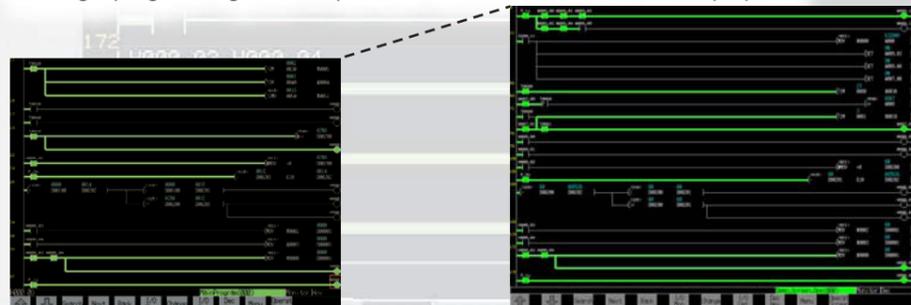
## 15 Inches XGA 1,024 x 768 Pixels, Analog Touch Panel NS15-TX01

A Large Display and High Resolution Provide...

### Greater Visibility and Easy Operation

A 15-inch XGA display provides even greater visual expressions. The display size is 1.5 times larger and the number of pixels is 1.6 times greater than the NS12.

With the Ladder Monitor, ladder diagrams can be displayed on the full screen (1,024 x 768 pixels), allowing a program segment of up to 22 rows and 21 columns to be displayed.



**NS12**  
17 rows x 16 columns max.  
SVGA (800 x 600 pixels)

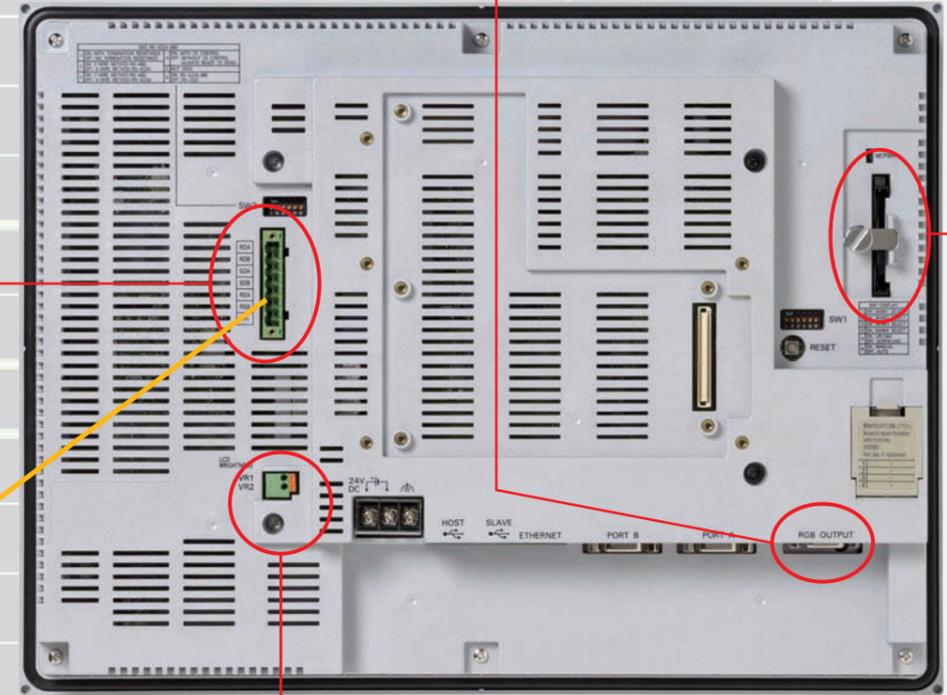
**NS15**  
22 rows x 21 columns max.  
XGA (1,024 x 768 pixels)

Using an analog touch panel enables even more detailed operations and inputs.

## Large-screen Display Enabled!

### Analog RGB Output Standard Feature

The NS15 screen (XGA) can be displayed on an on-site display that has RGB inputs.



## For Use in Dark Places!

### A Connector for Brightness Adjustment Standard Feature

The brightness can be lowered in dark places.

A potentiometer (variable resistor) can be connected to this connector to adjust the brightness according to changes in resistance.

Recommended resistance: 0 to 50 kΩ (minimum brightness: 15 cd/m<sup>2</sup>)

Conforms to LR and NK standards when used with recommended cable length (AWG10 to AWG26, 2 m max.).

## Easy to Use!

### Rear-panel Memory Card Interface Standard Feature

A Memory Card interface is provided on the rear panel, making it easier to insert and remove the Memory Card.

## No Conversion Unit Required.

### RS-422A/485 Serial Interface Standard Feature

An RS-422A/485 serial interface is provided as a standard feature, enabling connection with no RS-232C/RS-422A Conversion Adapter.

**Note:** Either RS-232C serial port B or the RS-422A/485 serial interface can be used, but not both. The selection is made with a DIP switch setting.

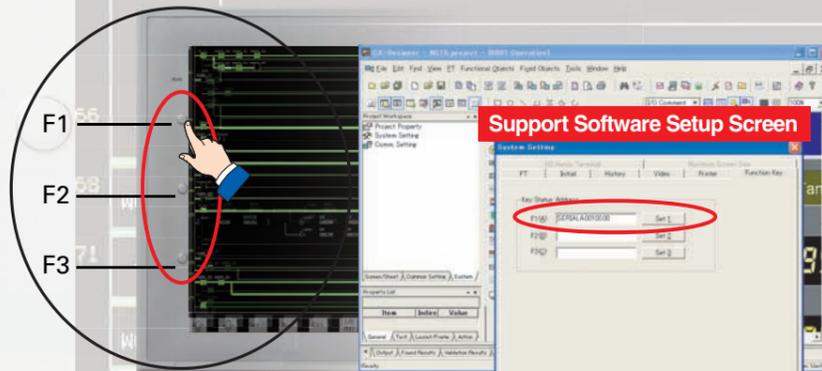
## The NS15 Can Do All of This.

External Function Keys Enable...

Standard Feature

### Simultaneous Two-point Pressing

Contacts can be allocated to external function keys. This makes it possible, for example, to support applications which will not operate unless two points are pressed simultaneously.



Addresses can be easily allocated to function keys using Support Software.

Automatic Screen Enlargement Is Supported During Conversion to...

### Greatly Reduce Revisions for Each Screen

Standard Feature

Not only can legacy NS5/8/10/12 screen data be reused, but, for example, objects can be automatically enlarged to match the screen size when converting to the NS15. This can greatly reduce the time involved in modifying screens. Automatic enlargement is also enabled when converting between earlier models, such as from the NS5 to the NS8, NS10, or NS12. In addition, NS-Runtime screens can now be converted to NS-series PT screens.

NS12 (800 x 600 pixels)

NS15 (1,024 x 768 pixels)



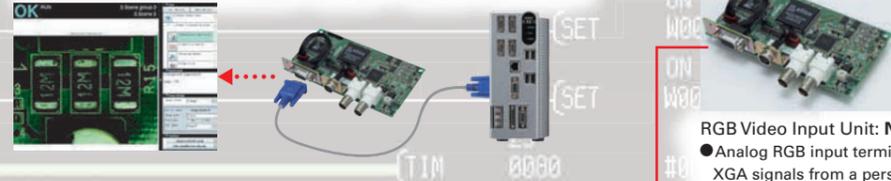
Screen objects are automatically enlarged.

Note: Font sizes must be adjusted manually.

## Expansion Units

Previous NS-series options can still be used. The following Units can be mounted to the expansion bus interface.

### Connect OMRON FZ3-series Vision Sensors



**RGB Video Input Unit: NS-CA002**

- Analog RGB input terminals can be used to display XGA signals from a personal computer.
- Note: The NS-CA002 video input function cannot be used with the NS15. Analog RGB input function can be used.
- Note: The NS-CA001 cannot be used.



**Controller Link Interface Unit: NS-CLK21**

- A Controller Link connection can be used.



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

- Communications distance: 500 m max.
- In addition to the RS-422A/485 serial interface which is supported as a standard feature on the NS15, the Conversion Unit can be used as before. This feature can be used in situations where two RS-422A/485 systems are employed.

Ethernet Port Included as a Standard Feature.

### Compatible with the SYSMAC CJ2. Full Access to CPU Memory. EtherNet/IP Support.

An Ethernet port is included as a Standard Feature. In addition to the existing FINS communications, the next-generation FA network EtherNet/IP is now supported.



NS-series Ethernet port

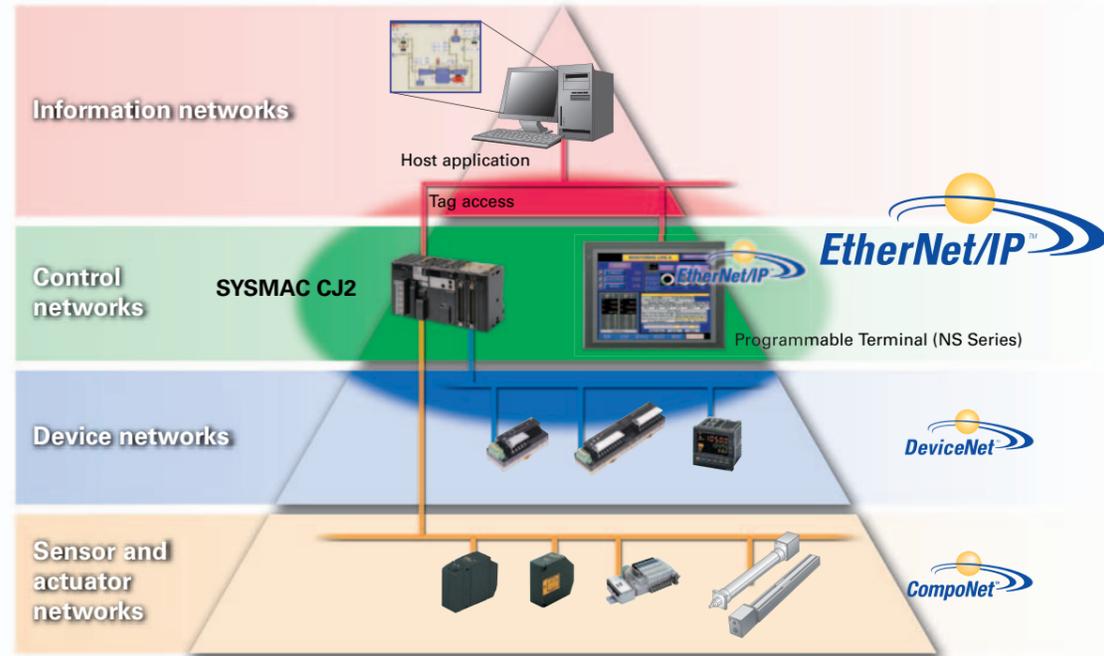
Note: The NS15 supports Ethernet as a Standard Feature.

Details on CJ2 compatibility



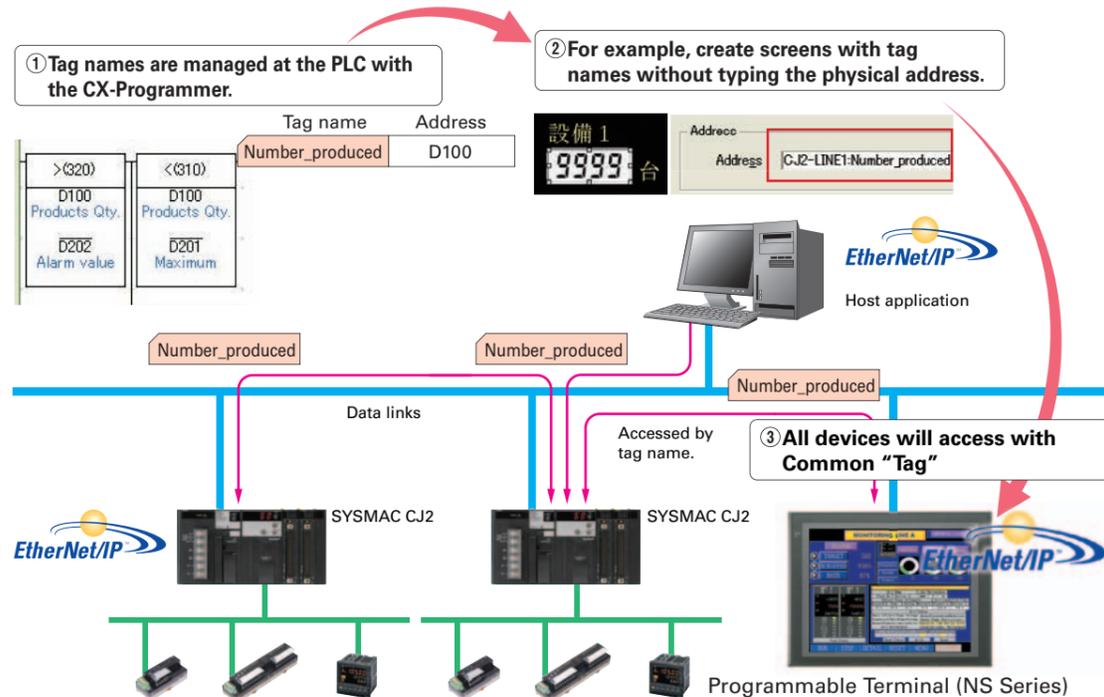
# What's New

**NS series Supports SYSMAC CJ2. Full access to CPU memory and tag access with EtherNet/IP.**

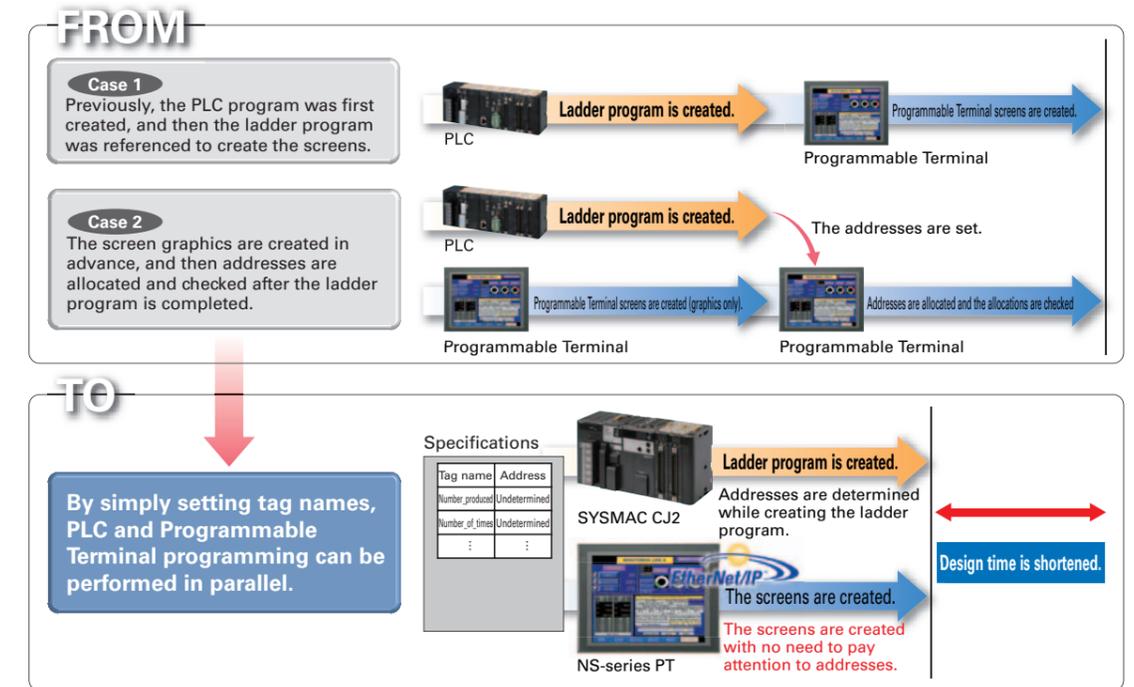


## What is tag access with EtherNet/IP?

A tag is a name given to an address. Tags are managed in the CJ2 CPU Unit, where they are defined as network symbols. The common user-defined tag names are used from Programmable Terminals and host applications to access memory in a CJ2 CPU Unit without knowing the physical address.

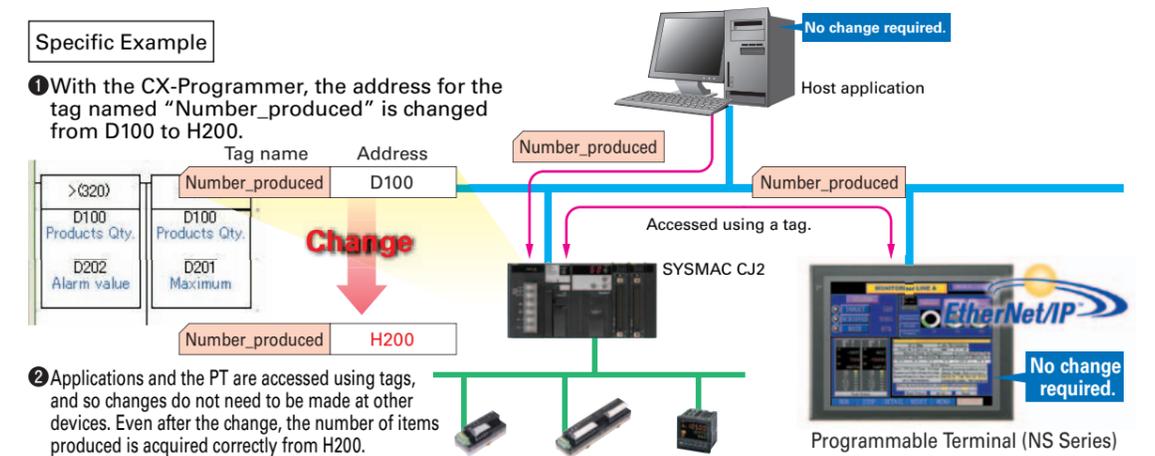


The PLC, PT, and host applications can be designed using tag names. *Parallel development shortens design time.*



## Minimize side effect of address changes. *So Machine Modifications Go Smoothly*

Previously, a change in the address of one location affected a variety of devices and time was required to fix this range of changes and check operation. With the CJ2 CPU Units, it is possible to access memory with tags, so the PT and host application are not affected even if the address of data in the PLC is changed.



What's New  
Compatibility  
Screen Design Software  
Basic Functions  
NS-Runtime  
Specifications

Note: Operation is not supported for a connection with a CP1E PLC.

## Greatly Improved Ladder Monitor. Thoroughly focused on Visibility and Ease of Use.

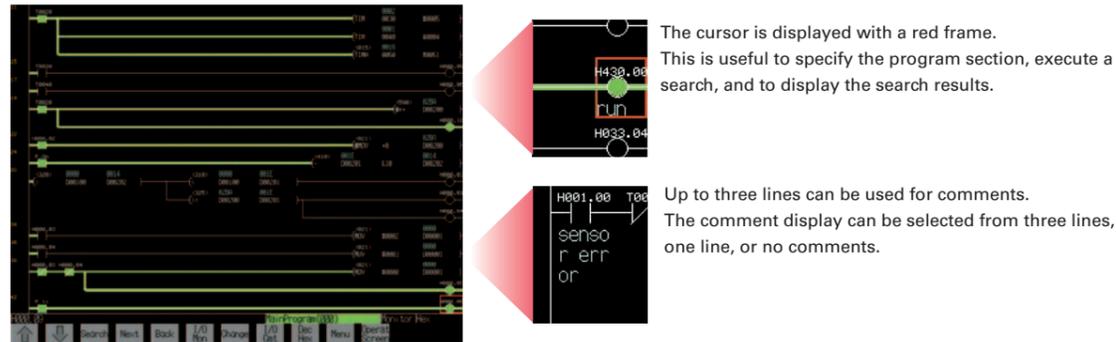
Standard Feature  
(See note.)

Note: Not supported for the 5.7-inch model.

The Ladder Diagram can be fully displayed on the entire screen,  
*so it is easier to see and work.*

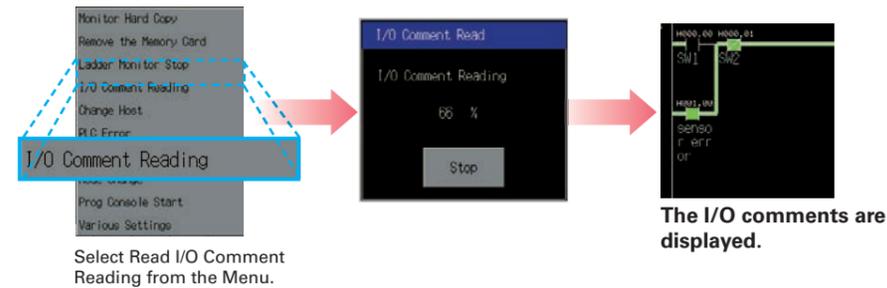
The ability to change the color and size in which the Ladder Monitor is displayed greatly improves visibility. The ladder diagram can be displayed on the entire screen (800 x 600 dots) even for the NS12 with a maximum display of 17 rows and 16 columns of a ladder diagram.

The ladder diagram is easy to see display in black and green.



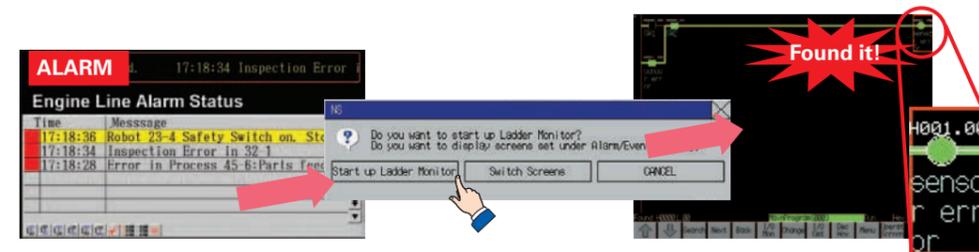
I/O comments can be read directly from the PLC in a single operation,  
*so no extra work to show I/O comments.*

Read I/O comments directly from the PLC. I/O comments do not have to be stored in a Memory Card.



Automatically jumping from the alarm message  
*Easy checking the alarm bit and shortens searching time.*

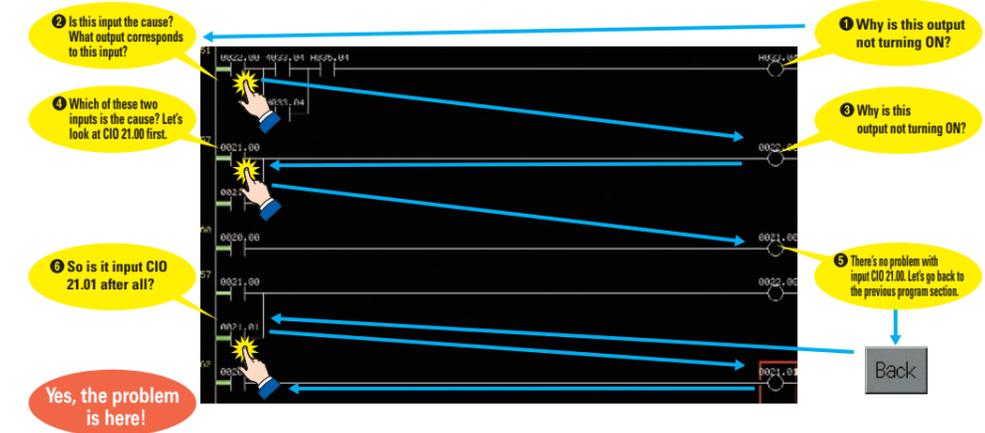
When an alarm occurs, touch the message to automatically search for the alarm bit (output bit) for the alarm. This enables you to quickly check the alarm address and investigate why the bit turned ON.



"Find Back", "Find Next", CX-Programmer useful Function Also Supported by the NS-series.  
*Reduced Time to Investigate Which Output or Input Is Causing the Problem*

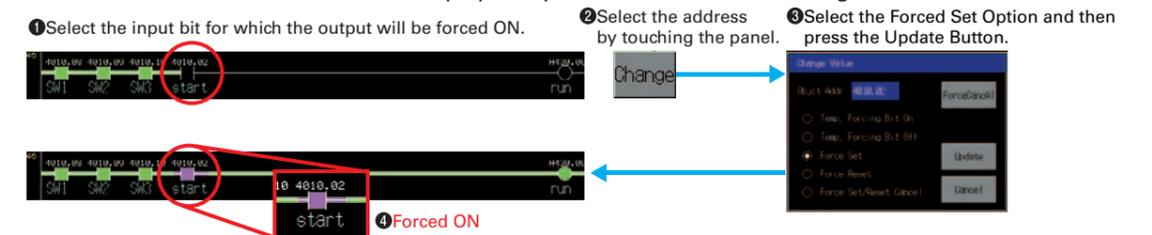
Function	Operation with NS-series PT.	CX-Programmer
Find the address at specified by the cursor.	Next	N Key
Find the output from the input bit or find the input bit from the output at the cursor.	Double-click	Space Key
Return to the previous search position.	Back	B Key

For example, easily search for the cause using steps 1 to 6 as shown in the following figure.



Force-setting and force-resetting are possible,  
*so conditions can be established as required.*

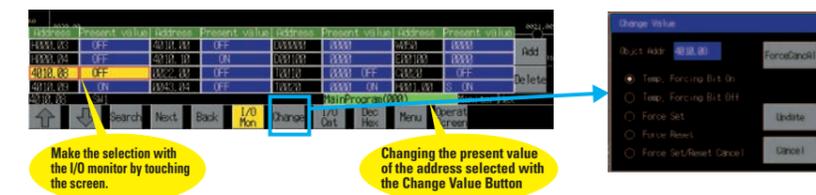
Locations that have been force-set are displayed in pink and can be checked at a glance.



Minor changes in values of timers or counters can be made without Support Software.

*Check and Change I/O While You View the Ladder Diagram on the I/O Monitor*

Display and change the present value by specifying the address. It is also possible to force-set/reset bits with the I/O monitor.



## Further Enhanced Basic Functions

### Monitor and Record Input Operations on the Control Panel Supported Devices: [CJ2](#) [CS1/CJ1](#) [CP1](#) [Multi-vendor Support](#) *What Was Touched When? can be recorded with Operating log.*

Functionality has been improved with the addition of a log to record operators' use of the panels. It is now possible to record and display the time, date, and operation details for buttons (i.e., hardware switches) pressed on the control panel in addition to operations on the touch panel. The operation log can be saved in a CSV file on a Memory Card mounted in the NS-series PT.

Switch directly from the user screen to the log operation display screen.

Multiple operation log files can be saved on a Memory Card with date and time data.

Operat\_080520\_173000.csv  
 Operat\_080521\_173000.csv  
 Operat\_080522\_173000.csv

The files can be opened in Excel.

No.	Date&Time	O	Message	Page	ID	Event
1	2008/7/7 15:49 M	A	Message	PO	100	EV00
2	2008/7/7 15:49 M	O	Stop button	PO	106	EV00
3	2008/7/7 15:49 M	O	Stop button	PO	106	EV01

A comment of up to 32 characters can be set and displayed for each operation to provide easy-to-understand information about what type of operation was performed.

For example, with a control panel comprised of the NS-series PT, hardware switches, and an emergency stop button, you can even record and display operation of the emergency stop button.

## Multi-vendor Support

In addition to the previously supported models, it is possible to connect to Mitsubishi Q-series PLCs and QnA-series PLCs, Siemens PLCs, and Rockwell PLCs. Connection can also be made with the RTU mode of Modbus devices. And connection is possible to the FA-M3(R) Series of PLCs from Yokogawa Electric. For details on the connection methods, refer to the list of connectable models on page 52.

■ PLC				
Manufacturer	Series	CPU	Connection form	
Mitsubishi Electric	A Series	A1SHCPU	1:1	
		A2USCPU		
		A2USHCPU-S1		
		A2APU		
	FX Series	FX0N	1:1	
		FX1S		
		FX1N		
		FX1NC		
		FX2N		
		FX3UC		
	Q/QnA Series	Q00CPU	1:1	
		Q01CPU		
		Q00CPU		
		Q01CPU		
		Q00JCPU		
		Q02CPU		
		Q02HCPU		1:N
		Q06HCPU		
		Q12HCPU		
		Q25HCPU		
Q2ASCPU	1:N			
Q2ASCPU-S1				
Q2ASHCPU				
Q2ASHCPU-S1				

■ PLC			
Manufacturer	Series	CPU	Connection form
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F	1:1
		F3SP21-0N	
		F3SP28-3S	
		F3SP58-6S	
		F3SP67-6S	
Siemens	S7-300 Series	313CPU	1:1
		SCPU315-2DP	
		CPU317-2PD/DP	
Rockwell (Allen-Bradley)	SLC500	SLC5/03	1:1
		SLC5/04	
		SLC5/05	
		MicroLogix	
ControlLogix	Logix5555	1:1	
CompactLogix	1769-31	1:1	
PLC-5	PLC-5/20	1:1	

■ Motion Controller			
Manufacturer	Series	CPU	Connection form
Yaskawa Electric	MP900 Series	MP920	1:1
	MP2000 Series	MP2200	1:N

■ Inverters		
Manufacturer	Series	Connection form
OMRON	3G3MV (Varispeed)	1:N
	3G3JV (Varispeed)	

■ Modbus Devices  
 Connection is now possible with Modbus devices (RTU mode).

## More Beautiful, More Convenient NS Screen Templates

"Cool" Screen Templates  
 Professionally designed screen templates are provided. There are seven different types of attractive screen templates for different themes. Simply select the best template from the library.

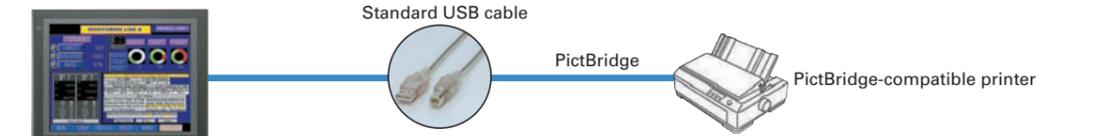
Drag and drop from the library.

### "Cool" Objects

Backgrounds, buttons, labels, message boxes, and other objects are also provided for various themes.

## Easy Printing with PictBridge

The screens of all models from the 5.7 inches to 15 inches can print to a printer. Using a printer that is compatible with PictBridge, you can print with one USB cable.

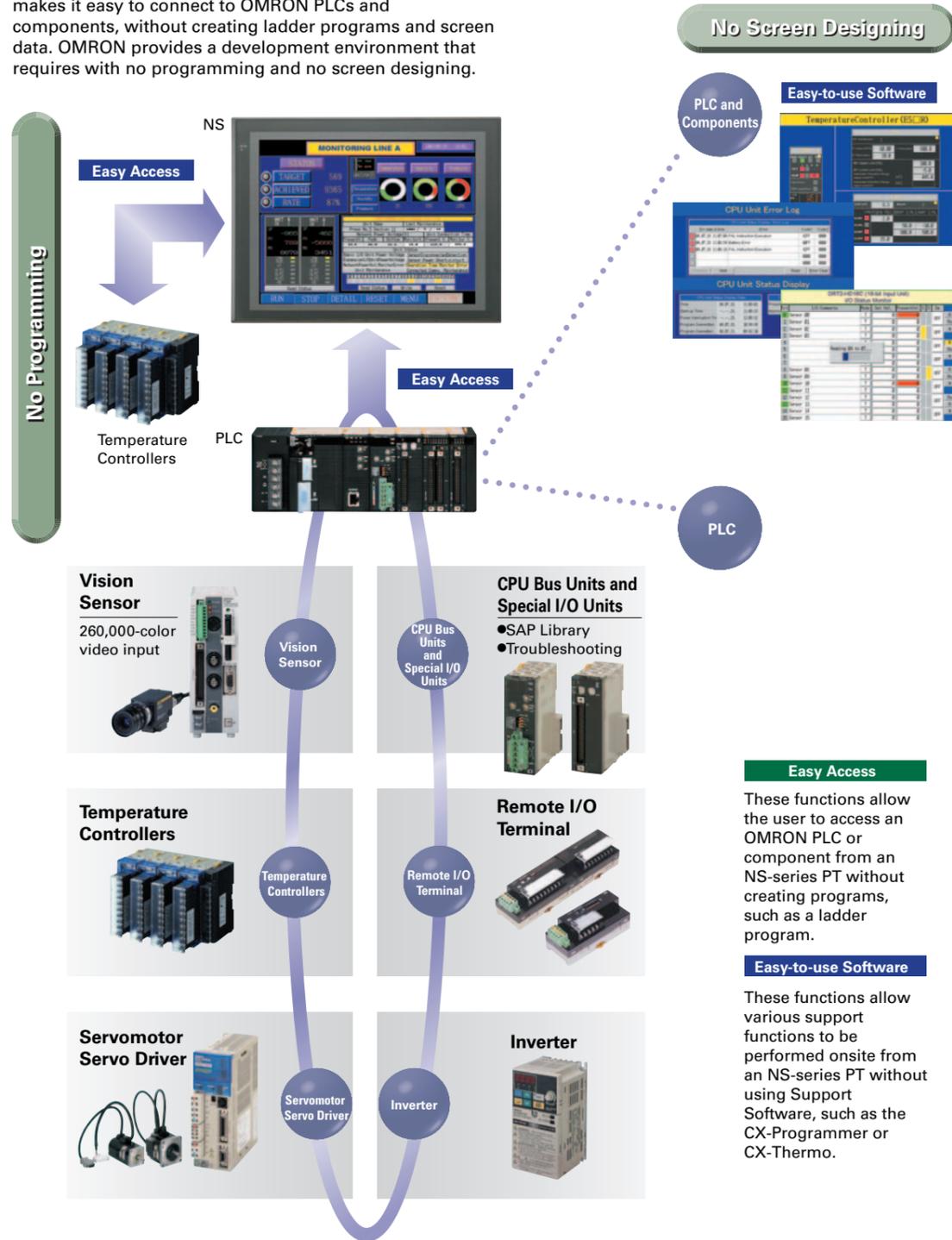


Note: Refer to page 48 for recommended PictBridge-compatible printers.

# Best Match

## Best Match with OMRON Products, Eliminates Programming and Screen Designing

The Smart Active Parts (SAP Library) for the NS Series makes it easy to connect to OMRON PLCs and components, without creating ladder programs and screen data. OMRON provides a development environment that requires with no programming and no screen designing.



## Smart Active Parts (SAP Library)

**Dramatically reduces the effort required to create ladder programming and screens.**

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

SAP Library, Temperature Controller Parts

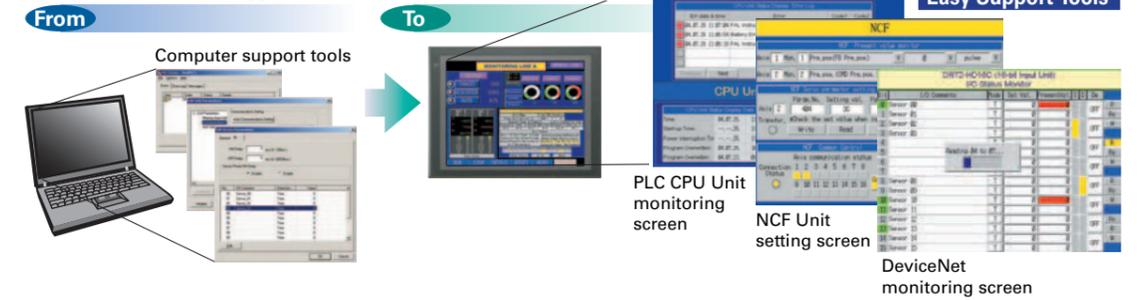
CX-Designer Screen Design Software



**Support tool objects can be incorporated to check for errors and make settings, even without a computer.**

Plenty of support tool objects (the Tool Function SAP Library) are available, which can be easily incorporate support tool functions in the NS-series PT. Just paste the support tool objects in the screen to check for errors and make settings, even without a computer.

**Example screens using support tool objects (Tool Function SAP Library)**



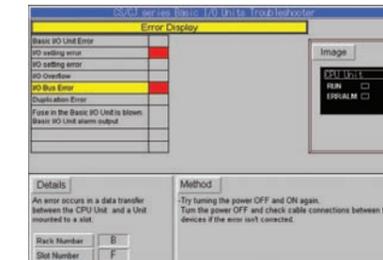
**CPU Bus Unit and Special I/O Unit Troubleshooting Can Be Also Performed with the SAP Library.**

A Troubleshooter SAP Library is available to troubleshoot each Unit in the PLC. When an error occurs in a Unit, the Troubleshooter SAP Library provides an easy-to-understand explanation of the cause of the error as well as the countermeasures.

Troubleshooter SAP for a Position Control Unit



Troubleshooter SAP for Basic I/O Unit



The Troubleshooter SAP Library is included as a standard feature for the CX-One and CX-Designer. For details, refer to page 56. Successive development for Ethernet Units and MC Units is planned for the future.

## Single Port Multi Access (SPMA)

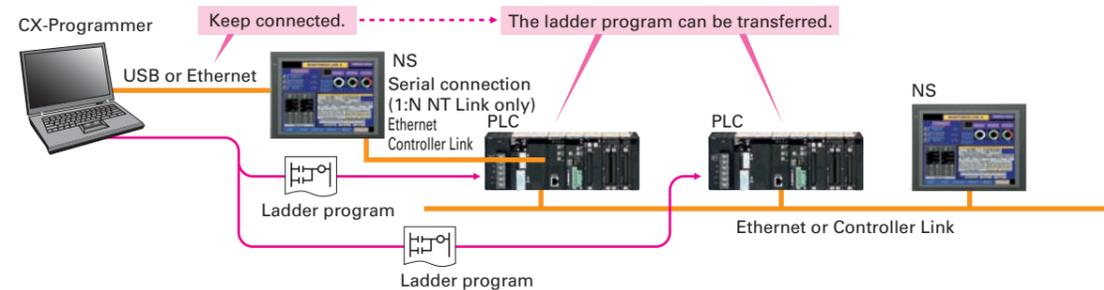
Easy Access  
Standard Feature

The ladder program and screen data can be transferred from a single port!

The ladder program can be transferred through the PLC and the PT's screen data can also be transferred, all while the computer remains connected to the PT's port (such as a USB port).

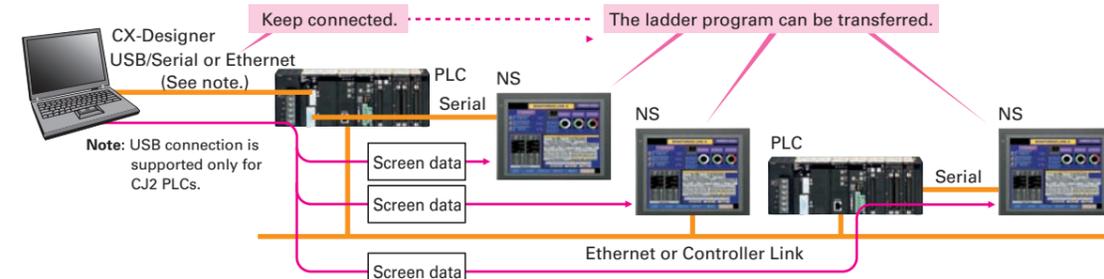
The PT can transfer data over network levels by the following routes.

Computer (Serial/USB) → NS-series PT (Ethernet) → PLC (Ethernet or Controller Link) → PLC



SPMA significantly improves maintenance efficiency when the NS-series PT and PLC are some distance apart.

Computer (Serial) → PLC (Ethernet or Controller Link) → NS-series PT



Note: SPMA can be used in CS/CJ-series PLCs with lot number 030201 or later.

Note: SPMA via a PLC is not supported when a CP-series PLC is connected. (SPMA via an NS-series PT is supported with a CP-series PLC.)

## Ladder Monitor

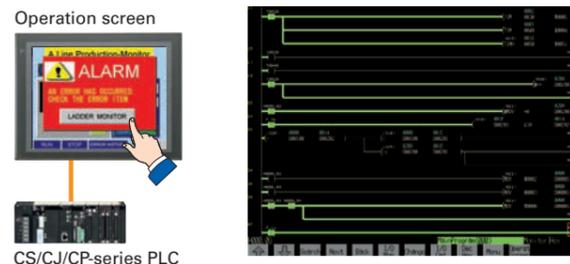
Easy Support Tools  
Standard Feature

The ladder program can be monitored onsite without a laptop!

Ladder programs with I/O comments can be monitored on the PT's screen and the ladder program can also be edited with the Programming Console function.

Note: The Ladder Monitor function is not supported by the 5.7-inch models.

Note: The ladder monitor function is not supported for connection with a CP1E PLC. It is also not supported by the CJ2M.



Also meets the requirements of users who need to display devices onsite, instead of the ladder program.

Easy Support Tools  
Standard Feature

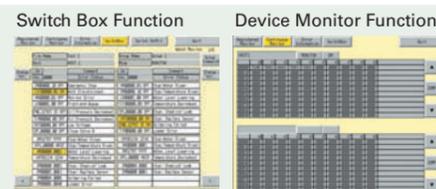
### [Switch Box Function]

The operator can check the PLC status by displaying just the I/O comments and status.

### [Device Monitor Function]

Displays the device's contents, allowing settings to be input and checked and making startup operations more efficient.

Note: The machine monitor function, and switch box function are not supported when a CP1E PLC is connected.



## PLC Data Trace

Easy Support Tools  
Standard Feature

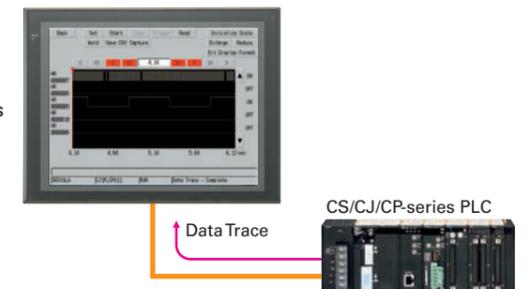
The PLC's operation can be checked!

The PLC Data Trace function is built into the PT in addition to the Ladder Monitor and Device Monitor. A bit's status and operation can be viewed in a time chart just by setting the desired PLC bit's address in the PT. It is also now possible to display word data, save data in CSV files, and save time chart screens in BMP files.

Note: There are differences between this Data Trace function and the CX-Programmer's Data Trace function. Refer to the NS-series Programmable Terminal Programming Manual (Cat. No. V073) for details.

Note: The PLC data trace function cannot be used with the 5.7-inch model.

Note: The PLC data trace function is not supported for connection with a CP1E PLC.

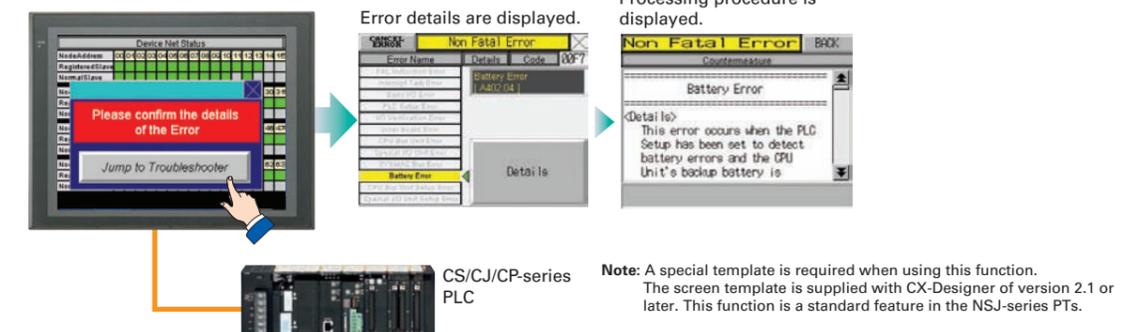


## PLC Troubleshooter

Easy Support Tools

Constantly monitors PLC errors.

Automatically detects PLC errors and displays the error details and recovery procedure on the screen. Even if a problem occurs, it can be resolved quickly without referring to the manuals.



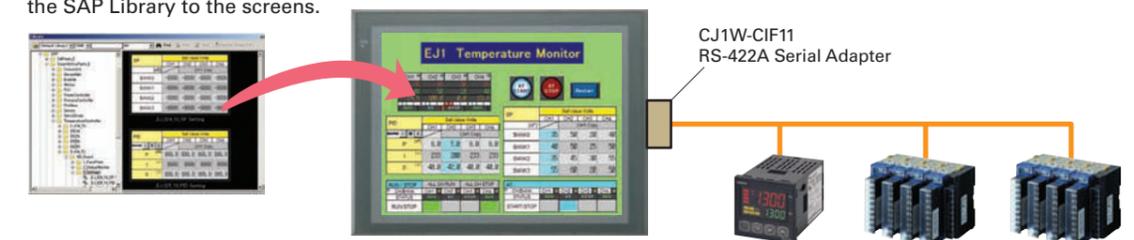
Note: A special template is required when using this function. The screen template is supplied with CX-Designer of version 2.1 or later. This function is a standard feature in the NSJ-series PTs.

## Direct Connection to Temperature Controllers

Easy Access  
Standard Feature

Connect OMRON Temperature Controllers directly to the NS-series PT.

OMRON Temperature Controllers can be connected directly to the NS-series PT's RS-232C port. Data does not pass through the PLC, so ladder programming is not required. Also, there are plenty of objects in the SAP Library for Temperature Controllers, and Temperature Controller screens can be created easily just by pasting objects from the SAP Library to the screens.



Note: An RS-422A Serial Adapter is needed to connect directly to a Temperature Controller. Refer to page 53 for a list of the Temperature Controllers that can be connected. A Conversion Unit is not required to connect to the RS-422A/485 serial interface of the NS15.



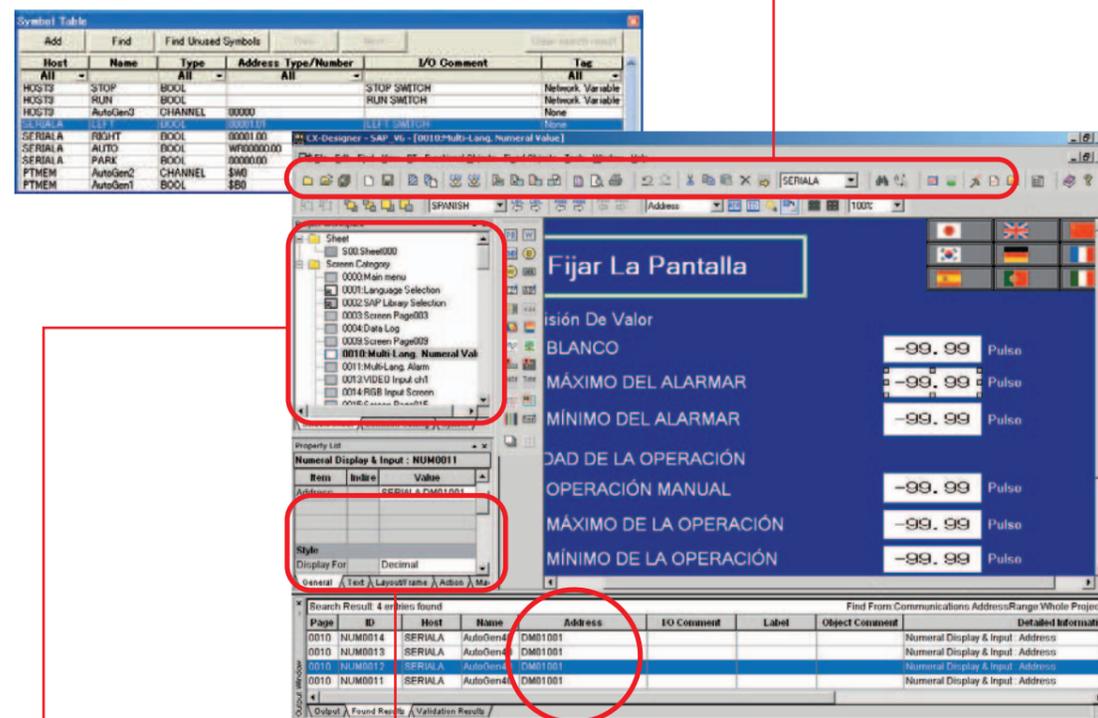
## User-friendly Screen Creation

So easy to use, anyone can master it.

Without screen creation and ladder programming, the CX-Designer Screen Design Software is so easy-to-use that anyone can master it. Quickly create the required screen by dragging and dropping objects. OMRON's unified development environment lets you drastically reduce the work required to create screens.

All addresses and comments can be managed using a single Symbol Table.

Shows a list of addresses, names, and comments used in project screen data. Addresses, names, and I/O comments for the CX-Programmer can also be imported.



Improved Icons and Help

The project Workspace enables the user to look through the entire project.

- Screens you want to edit can be opened right away.
- Perform screen management, such as copying or deleting screens, by simply right-clicking.
- Reusing screens from other projects is easy with the CX-Designer.
- Settings for alarms, data logs, communications, and other functions can be easily accessed.

Drastically reduce the number of clicks in the project.

Just click on the object once to display or change properties. Multiple objects can be selected to display and change shared properties all at once.

The Output Window shows search results.

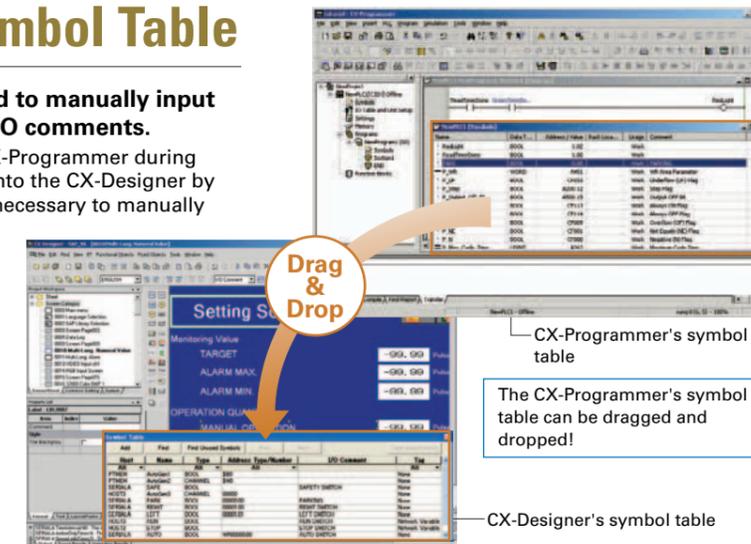
In addition to addresses and I/O comments used in screen data, labels can also be used as search strings and the results can be displayed.

## Reading the Symbol Table

Dramatically reduces the need to manually input data such as addresses and I/O comments.

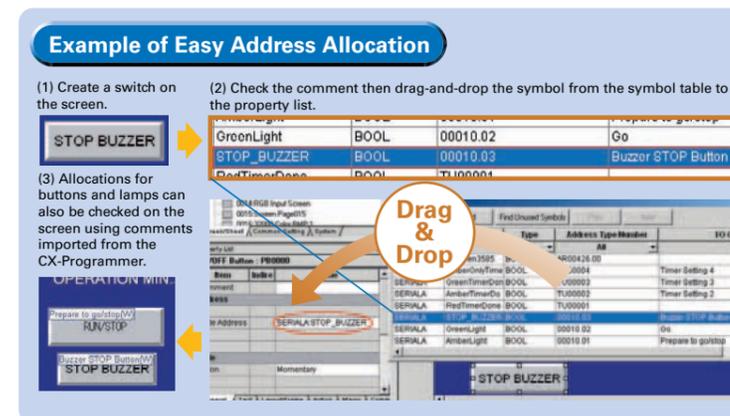
The symbol table created in the CX-Programmer during ladder programming can be read into the CX-Designer by dragging and dropping, so it isn't necessary to manually data such as input addresses and I/O comments. Tags (i.e., network symbols) can also be read into the CX-Designer.

**Note:** Version 8.0 or higher of the CX-Programmer support tags (i.e., network symbols).



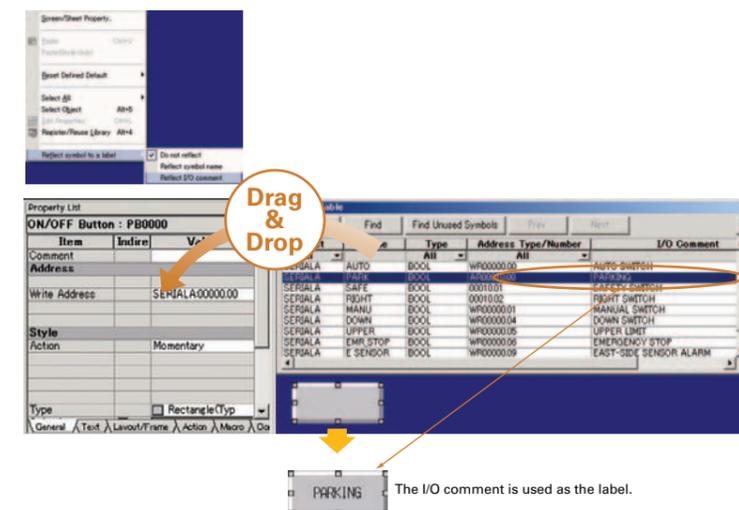
Example of Reading the Symbol Table

The symbol table read from the CX-Programmer can be directly dragged and dropped to the touch switch and lamp.



Example of Reading I/O Comments

If Use I/O comment is selected in advance for the Use symbol text as label, the I/O comments are automatically used as labels when addresses are dragged and dropped from the symbol table. (If Use symbol names is selected, the symbol names are used as the labels.)



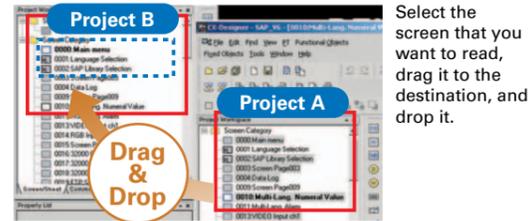
Note: The same type of Project Workspace and Output Window as in the CX-Programmer are provided for the user interface.

## Reading Another Project's Screens and Objects

Easily reuse screen resources by dragging and dropping them.

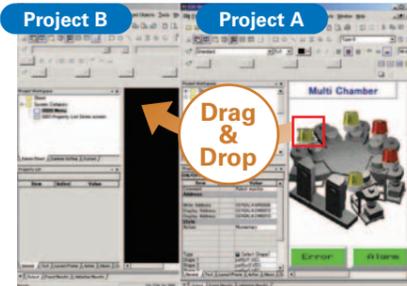
Resources from another project can be easily reused by just selecting the screen or objects that you want to read and dragging and dropping it, so screens can be created intuitively.

[Example screen 1]



Select the screen that you want to read, drag it to the destination, and drop it.

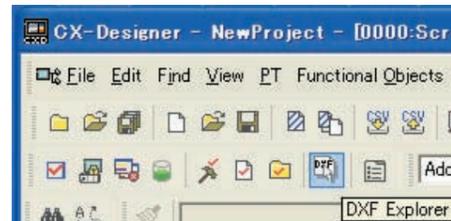
[Example screen 2]



Select the part that you want to read, drag it to the destination, and drop it.

## Reading CAD Files

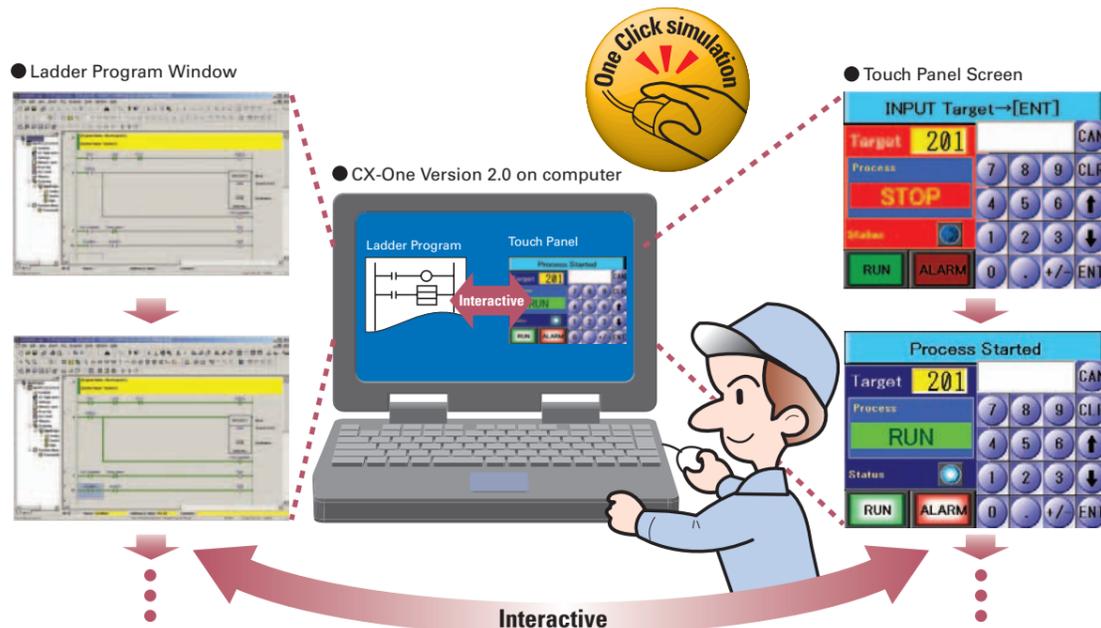
It is possible to import DXF files by dragging and dropping them. The files are read as a diagram, and so less capacity is used than with images. It is also easy to customize the diagram by changing the shape or color.



## Integrated Simulation with the PLC Ladder Program

The screen data and ladder program can be checked simultaneously in the computer.

The CX-Designer and CX-Programmer interconnects the test functions in the computer through the CX-Simulator. The screens and ladder program checks are performed simultaneously, which significantly increases debugging efficiency. The CX-Programmer also has a new button for integrated simulation. And, work efficiency is further improved with the ability to keep required work screens pinned on front and to zoom in or out as desired.



## Editing of Multiple Objects

Objects can be edited very efficiently in a list!

Addresses and other settings, such as labels and colors, can be set together in a list, making editing operations much more efficient.

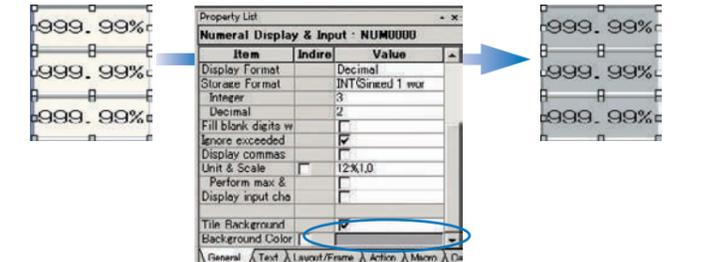
The attributes of multiple parts can be edited together, too.

When the common attributes (such as background color and text color) of multiple parts are being changed, the attributes can be changed together using the property list.

[Example screen 1] After editing the settings in the list, press the OK Button to make the new settings effective immediately.



[Example screen 2] If the background color is changed from white to gray in the property list, the background color is changed for all of the selected objects.



## Editing of Overlapping Objects

The Select Object command and filter function are the solution for overlapping objects!

The Select Object command is a powerful tool when you want to edit object hidden by overlapping. A filter function can also be used to aid editing by displaying only the objects to be edited.

[Object Selection Window]

Right-click and select Select Part to display the objects (all types) on the screen.



Object Comment	ID	X	Y
P10000	96	136	
P10001	200	136	
P10002	354	136	
P10003	499	136	
P10004	56	114	
P10005	200	114	
P10006	354	114	
P10007	499	114	
P10008	96	232	
P10009	200	232	
P10010	354	232	
P10011	499	232	
P10012	96	280	
P10013	200	280	
P10014	354	280	
P10015	499	280	
LBL0016	72	168	
LBL0017	96	80	

[Filter Function]

Use the Select Part command's filter function to select the objects (ON/OFF Button) that you want to edit.



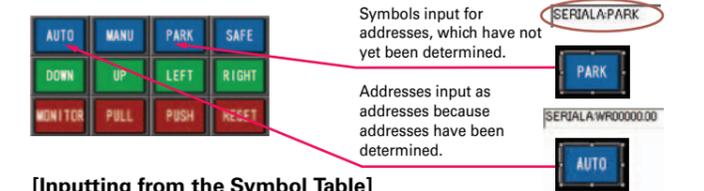
Only the edited object is displayed and it can be edited easily.



## Programming with Symbols

Screens can be created even when addresses are unknown.

Screens can be created even if the addresses have not been determined. Addresses can be input as either names or actual addresses and the addresses can be input from the symbol table after the addresses are determined.



[Inputting from the Symbol Table]

Addr	Name	Type	Address	Type/Number	I/O Comment	Type
All	All	All	All	All	All	All
PTMEM	AutoGen1	BOOL	800			None
PTMEM	AutoGen2	CHANNEL	840			None
SERIALA	PARK	BOOL			PARKING	None
SERIALA	SAFE	BOOL			SAFETY SWITCH	None
HOSTD	AutoGen3	CHANNEL	10000			None
SERIALA	RIGHT	BOOL	10000	01	RIGHT SWITCH	None
SERIALA	LEFT	BOOL	10001	01	LEFT SWITCH	None
HOSTD	RUN	BOOL			RUN SWITCH	Network Variable
HOSTD	STOP	BOOL			STOP SWITCH	Network Variable
SERIALA	AUTO	BOOL	WP000000		AUTO SWITCH	None

Addresses are input in the symbol table after the addresses are determined.

# Plenty of Basic Functions

## Multi-language Support

There are 42 languages\* supported and useful label switch functions are also built into the PT. Unicode is supported and 42 Asian and European languages can be combined in screens. Also, it is possible to switch between up to 16 labels using the label switching function, so it is possible to support up to 16 languages in a single screen just by specifying the language to be displayed in each label. (\*Refer to page 44 for details.)

NS Series

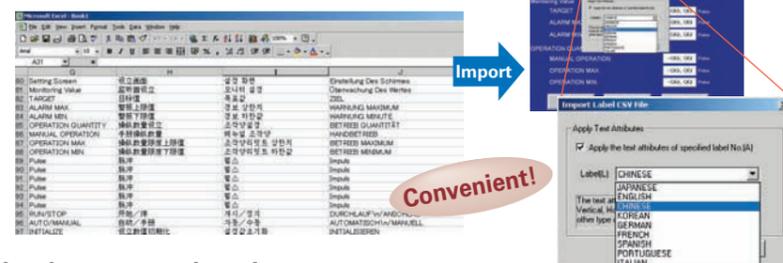


ราชอาณาจักรไทย  
Thai Displays Also Supported

[The labels' text attributes can also be reflected when importing.]

When screen data is imported, text attributes can be applied to the specified labels and attributes such as the font and text color can be reflected to other languages.

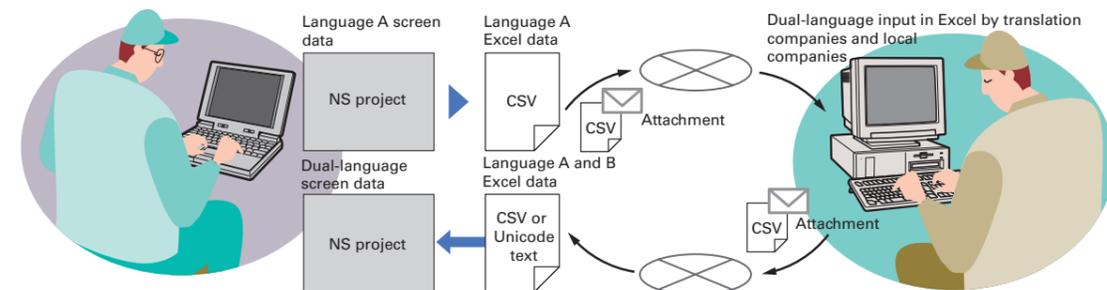
Multi-language CSV data



Convenient!

### Multi-language conversion has become much easier.

The screen data in the source language is exported to a CSV file and sent to a translation agency by e-mail for translation. Later, the translated CSV file is just imported to easily provide multi-language support.

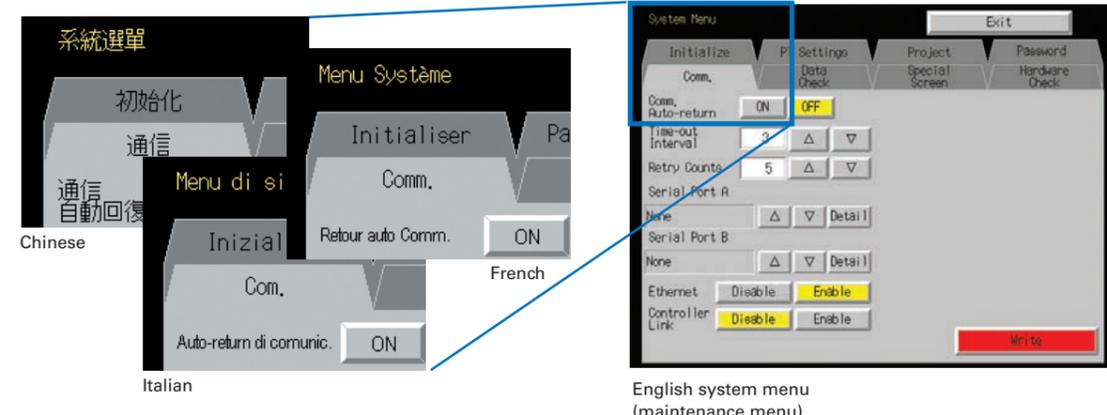


Note: Windows XP (Service Pack3 or higher), Vista or 7 is required for multi-language support.

### Multi-language System Messages

Eight Languages Supported as Standard Feature

The system program of NS-series PTs supports Chinese and European languages. All eight languages are a standard feature, including Chinese (traditional and simplified), Spanish, Italian, German, and French, in addition to the previous Japanese and English. Along with maintenance menus, messages for communications errors, communications settings, and screen transfers can be displayed in any of eight languages. Maintenance can be performed in the desired language. The language can be easily set using the NS-series PT or screen data.



English system menu (maintenance menu)

## Greater Beauty

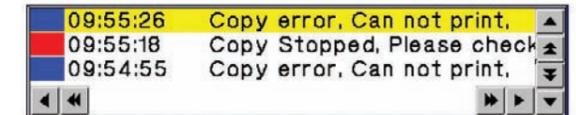
Make numeral displays and input objects more attractive, and increase or decrease the character string font size as desired.

Use an attractive font for numerals that looks good on the display even when it is enlarged. Seven-segment fonts are also available. And, smooth fonts are used for alarms and character strings, and scalable fonts can be selected. In addition, worldwide support is provided with 42 languages, including Thai. (Refer to page 44 for details.)



New 7-segment font

New numerical font



Scalable gothic font enables smooth display with the font scaled to the required size.

### Attractive Screens

Easily create attractive screens with a professional touch by dragging and dropping a template from the library.



## Huge 60-MB Image Memory

Real images can be used liberally, without worrying about memory capacity!

The industry's highest standard image memory: 60 MB. Take full advantage of the 32,768-color palette and spacious memory to design realistic images.



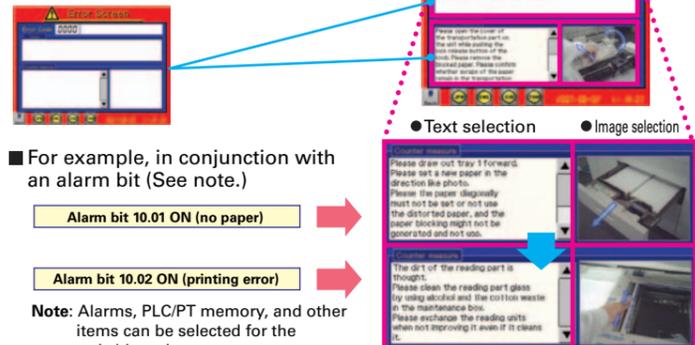
When an error occurs, the location of the error can be shown realistically in a picture.

## Easier Design of Machine Error Screens

You can easily make a machine troubleshooter without making similar error screens.

Individual error screens that were previously made for each error can now be integrated into one. It is possible to switch only the error details (text and screen) without ladder programming in conjunction with the alarm bit.

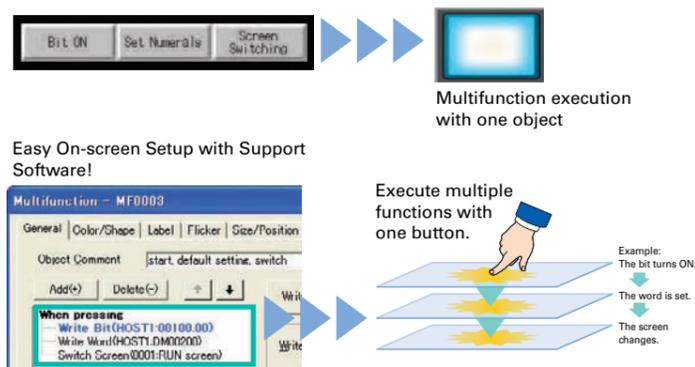
With this system, this frame is shared, and the error details in the pink frames are switched with an alarm or other item as the trigger.



## Easy-to-Use Multifunction Objects

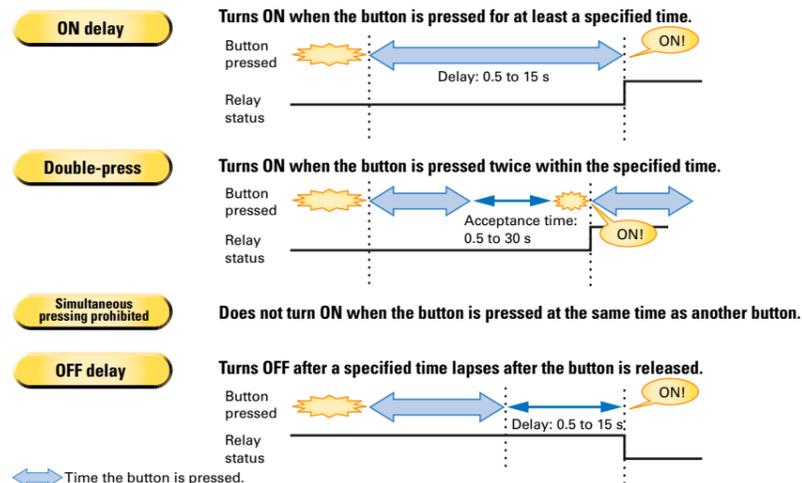
Multiple functions can be executed on-screen with one button without macros.

Multifunction Objects combine the functions of multiple objects into one object. Multiple functions can be executed by pressing one button without using troublesome macros. Setup is easy. For example, a setting can be made on-screen using the Support Software to turn ON a bit to start a machine, set a value, and then change the screen.



Multifunction Objects support four safety functions.

Switches that do not immediately operate when touched can be easily made without ladder programming.



## Plentiful Graphing Functions

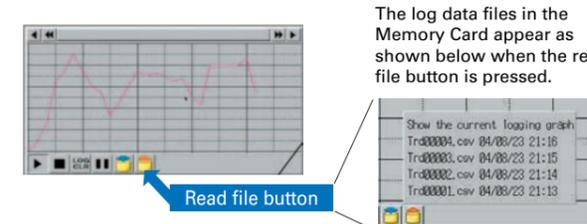
A device's operation is easier to understand when presented visually.

A variety of graphing functions are built into the PTs, such as the trend graph, which can log data over a long term, and the line graph, which can display overlapping graphs. A device's operation is easier to understand when presented visually.

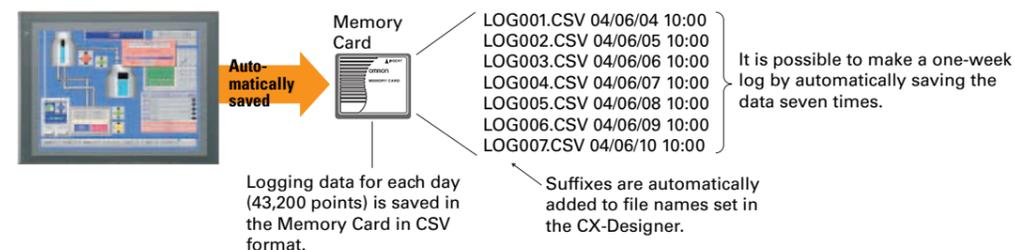
Long-term data logging and storage are also easily achieved.

### [Trend Graph (Data Log) Function]

Logging data is stored as a CSV file in the Memory Card mounted in the NS-series PT. The data stored in the Memory Card can be read or deleted from the screen.



A log can be saved automatically, without any programming, just by selecting the Save the data periodically Option in the Data Log Setting Window.

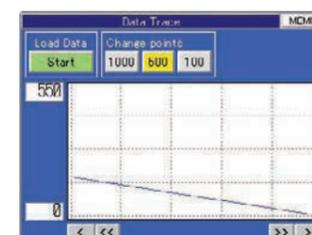


The earlier line graph function has been further improved.

### [Line Graph Function]

The data logged by the PLC can be displayed in overlapping graphs, so a device's operation can be compared for evaluation and analysis. In addition, up to 1,000 words of consecutive data can be displayed as a line graph, data can be displayed together, and any region can be magnified.

(1) Graphs can be superimposed.



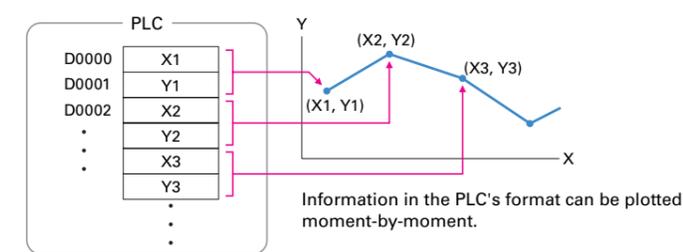
(2) The display can be magnified.



Any position from the host (PLC) can be plotted as a graph.

### [Continuous Line Function]

A graph can be plotted in any position by specifying the X and Y coordinates of the vertices. Also, the graph can be moved on the screen by specifying the movements from the PLC.



## Screen Data Security Functions

### Protect important screen data with a password.

If password protection is set in the data transfer security settings when the screen data is designed, a password must be entered to download or upload the screen data, so important screen data can be protected.

A password between 4 and 64 characters long can be set. The download/upload will start if the user inputs the password that was set when the screen was designed. (Password input will be disabled if the wrong password is input 3 times in a row.)

If a password has been set, the password is required to transfer screen data (download or upload) with the Memory Card.

Security password

## User Security Functions

### Operator access rights and the operating format can be set to one of five password levels.

Each operator can be given one of 5 password levels using the User Security (level authentication) function. A password level can be set for each object, so various objects can be made inoperable or hidden based on the operator's access level.

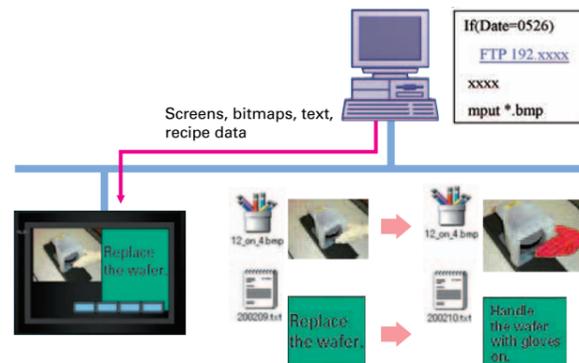
Operator passwords are managed in 5 levels. Passwords can be up to 16 characters long and the access rights increase as the level number increases.

The operator cannot manipulate objects with a password level (authentication level) higher than the operator's login level.

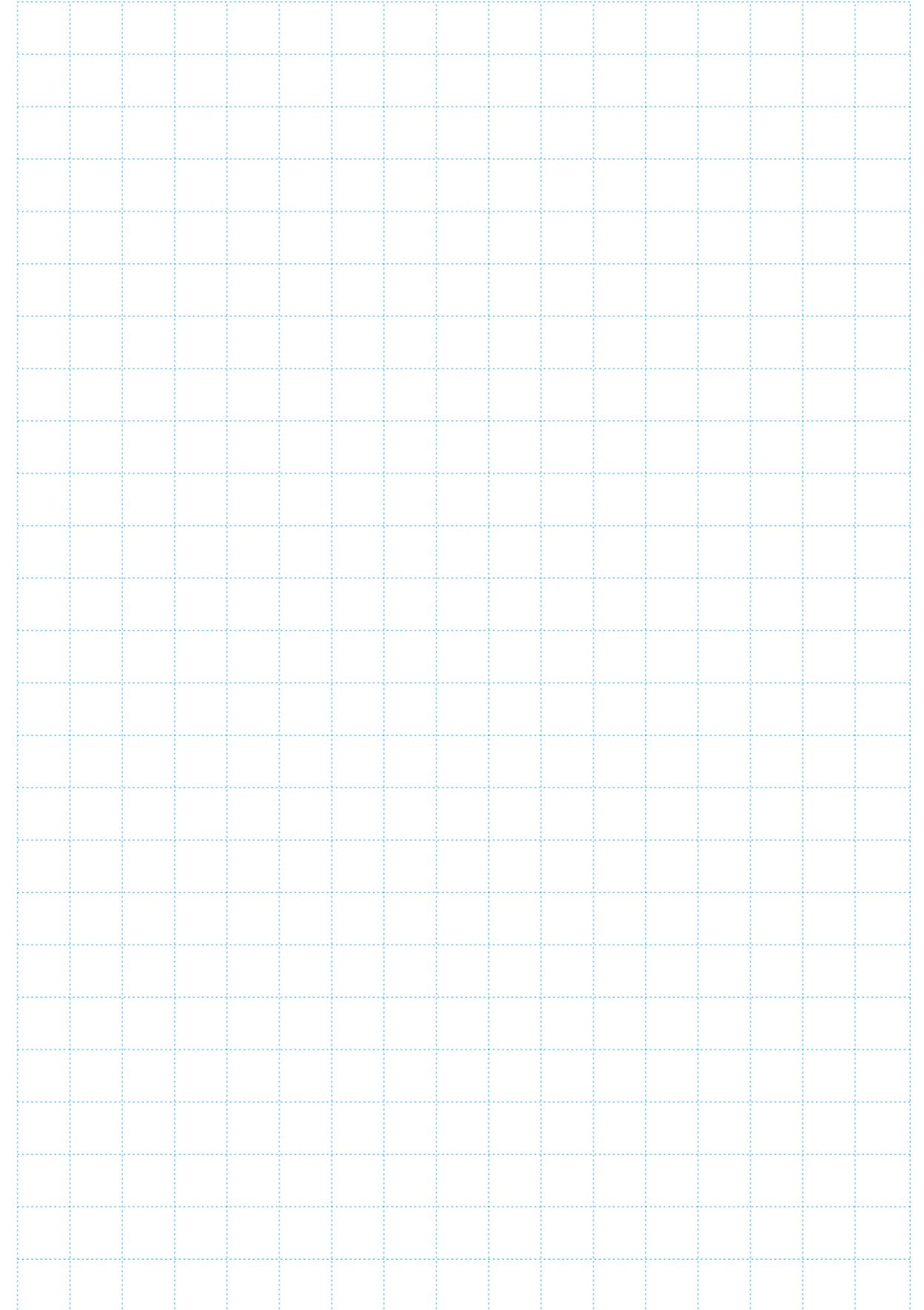
## FTP Function

### 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.



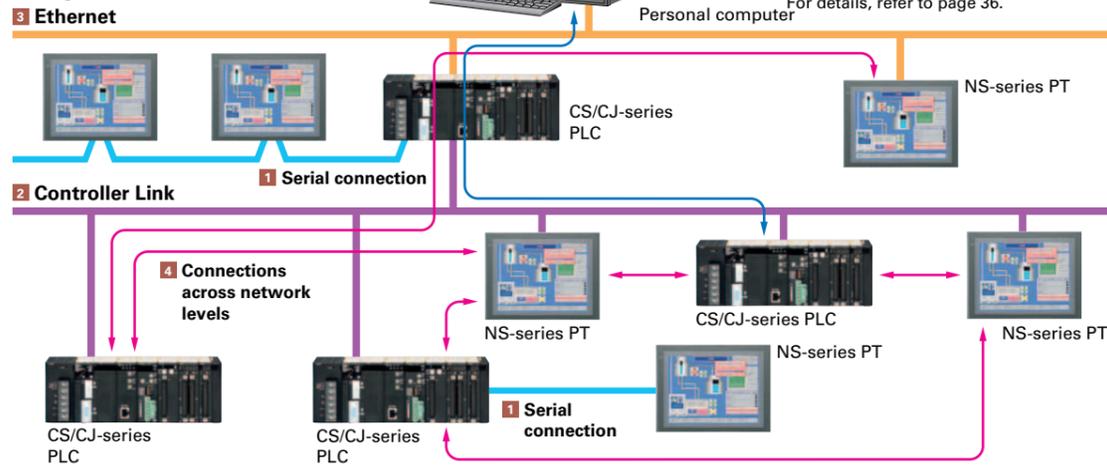
MEMO.



## Connect! Expand! Feel the NS Series, the power of networking.

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]



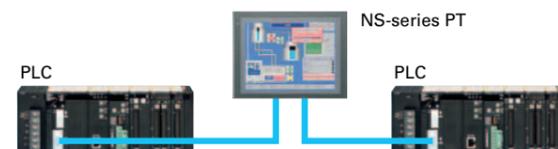
### 1 Serial connection

#### 1:1 NT Link or Host Link

- NS:PLC = 1:1  
Connecting with the PLC through port A or port B

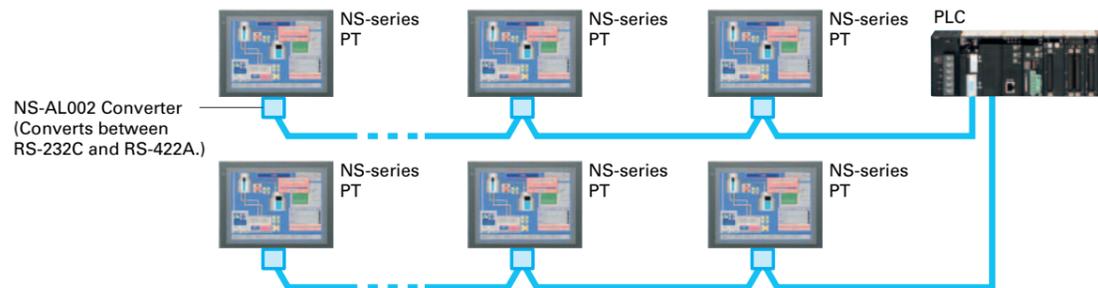


- NS:PLC = 1:2



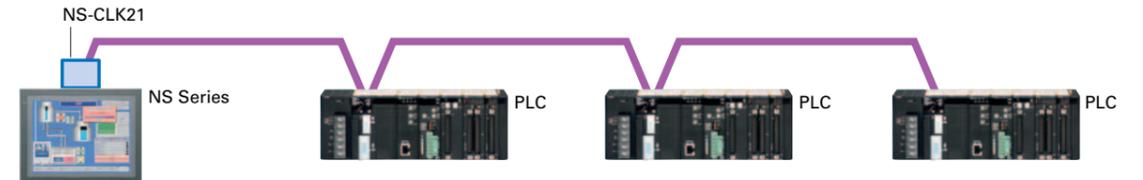
#### 1:N NT Link

- 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.



### 2 Controller Link Connection

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

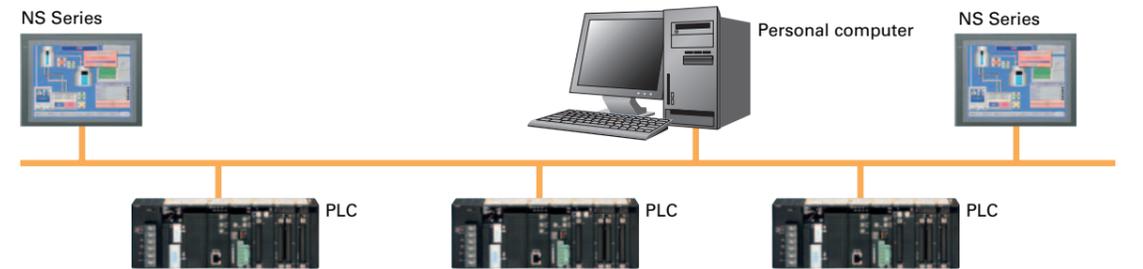


If a Controller Link connection is used, data links can be set between PLCs and multiple PLCs can be monitored/set from the NS-series PT's screen.

- Baud rate  
2 Mbps (500 m max.)  
1 Mbps (800 m max.)  
500 kbps (1 km max.)
- Max. number of nodes: 32 nodes

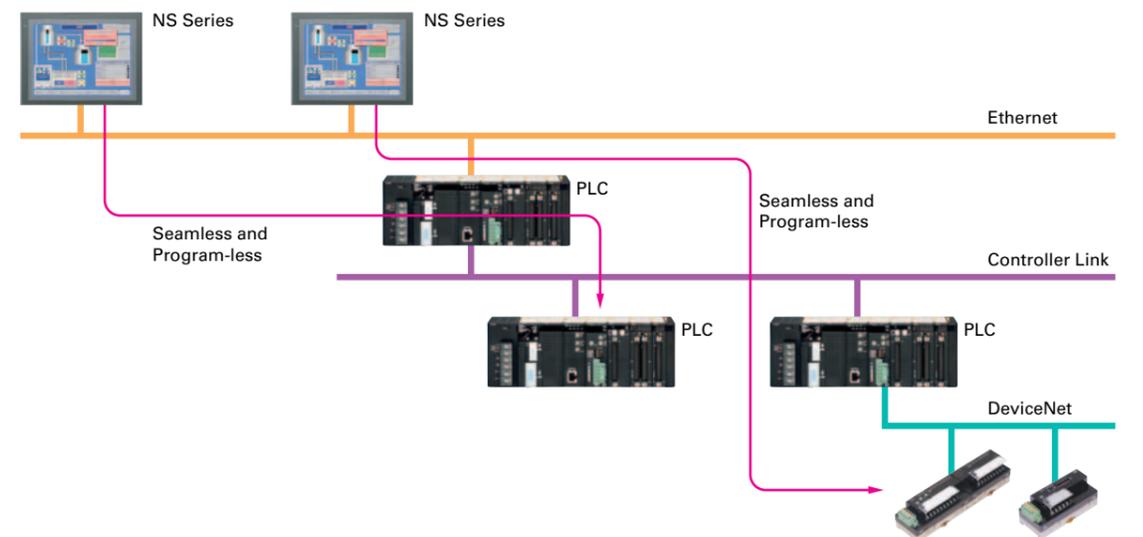
### 3 Ethernet Connection

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.



### 4 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.



# NS-Runtime

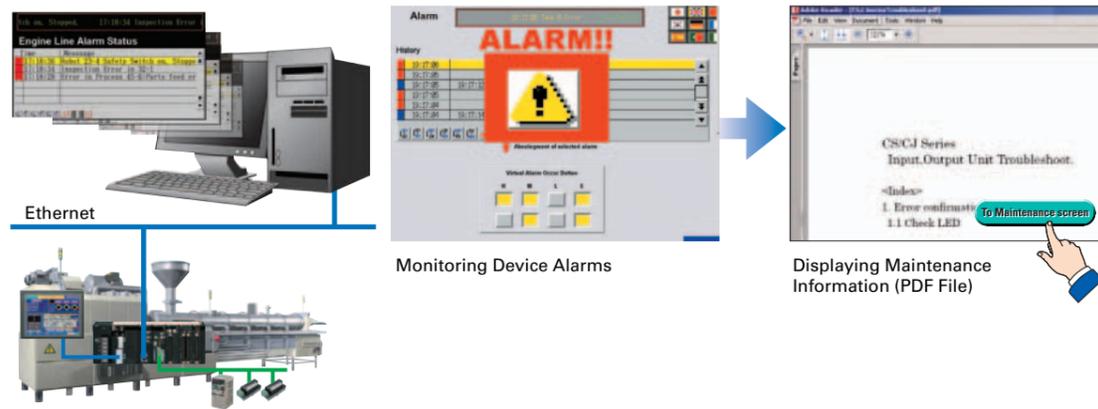
Achieve machine/line monitoring and data logging on your office computer.

**Note:** To convert screens from an NS-series PT, the system version must be 8.1 or lower. Screens with system version 8.2 cannot be converted to NS-Runtime.

## Machine Viewer

**Machine monitoring in an office environment.**

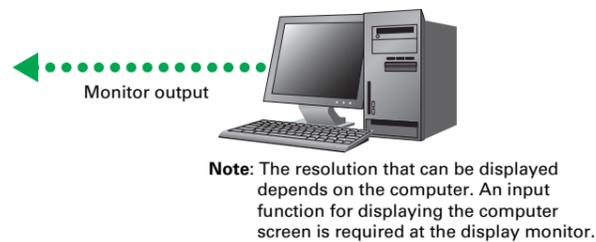
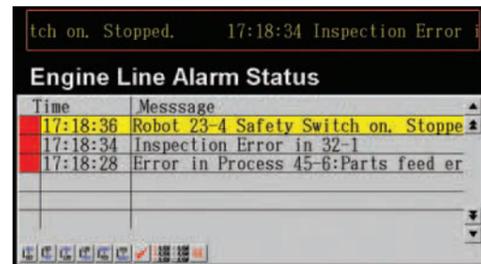
There is no need to create complex host applications. Moreover, when an alarm occurs, a PDF file can be displayed as maintenance information. NS Series screens can be reused on the computer, and screens can be also newly created independently of touch panels at the production site.



## Wide Screen

**Computer output can be displayed on another wide-screen monitor.**

XGA (1,024 x 768 dots) and up to a maximum screen size of 3,840 x 2,400 is supported. Alarms occurring in devices or the line can be monitored.

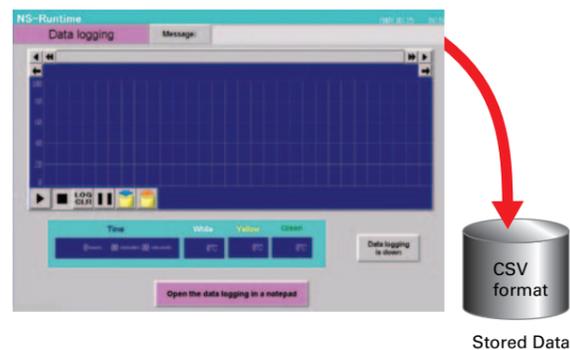


## Data Logger

**Log large amounts of data using a personal computer.**

Data can be logged through background processing, with up to 160,000 points stored in one file. The logged data is stored in CSV format, and data can be displayed on data log graphs.

Example: 160,000 Points  
Data can be logged for approximately 7.4 days, assuming data is logged every two seconds for 12 hours a day. By using automatic file saving, data logging can be continued even longer than 7.4 days.

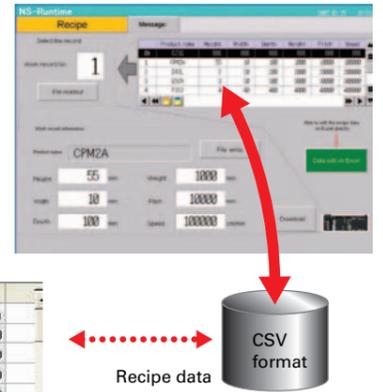


## Recipe Handling

**Checking machine data or switching processes from a host computer is easy.**

Parameter groups in the PLC can be transferred together to a computer, and the transferred data can be checked and edited in CSV format, e.g., using Excel. The edited data can then be transferred together back to the PLC.

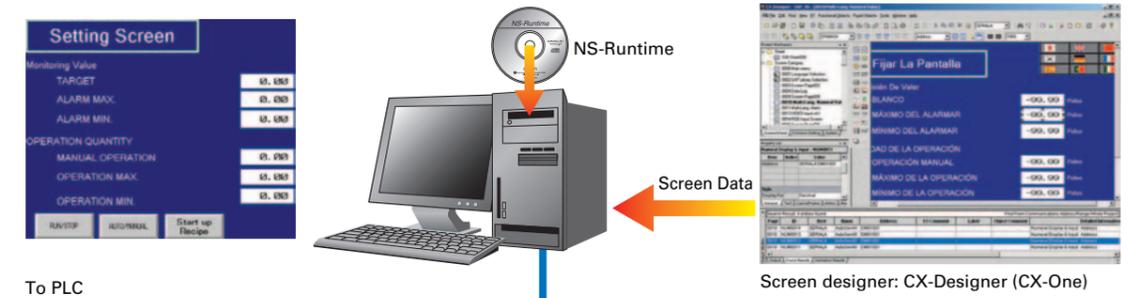
	A	B	C	D	E
1	001	C/JIG	000	000	000
2	002	CPM2A	55	18	100
3	003	D1JL	2	20	200
4	004	E5GN	3	30	300
5	005	F3SJ	4	40	400



## Easy Installation

**After installing the NS-Runtime, just place the screen data in a specified folder and start, that's it.**

To get started, just install the NS-Runtime in the computer and place the screen data in the applicable folder. NS/NSJ-series screens and NS-Runtime screens can all be managed using one single tool.

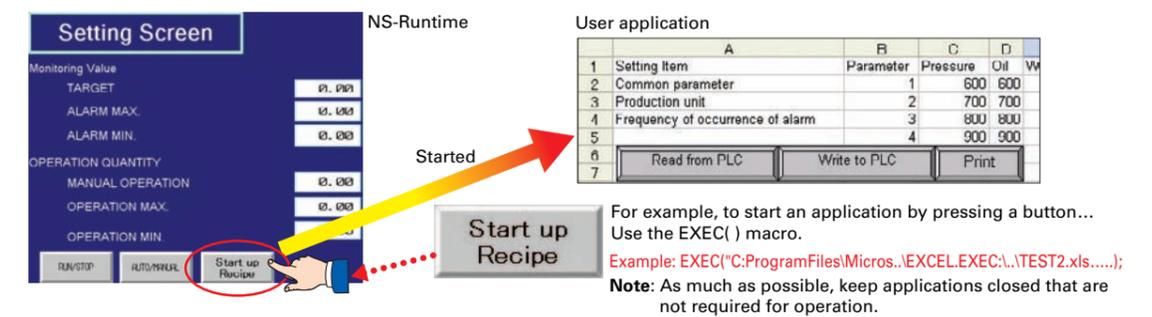


**Note:** The NS-Runtime will operate in a computer environment even if the CX-Designer installed is not installed. The hardware key (USB dongle) that is supplied with the NS-Runtime is required for operation.

## Application Startup Function

**User applications can be started from NS-Runtime.**

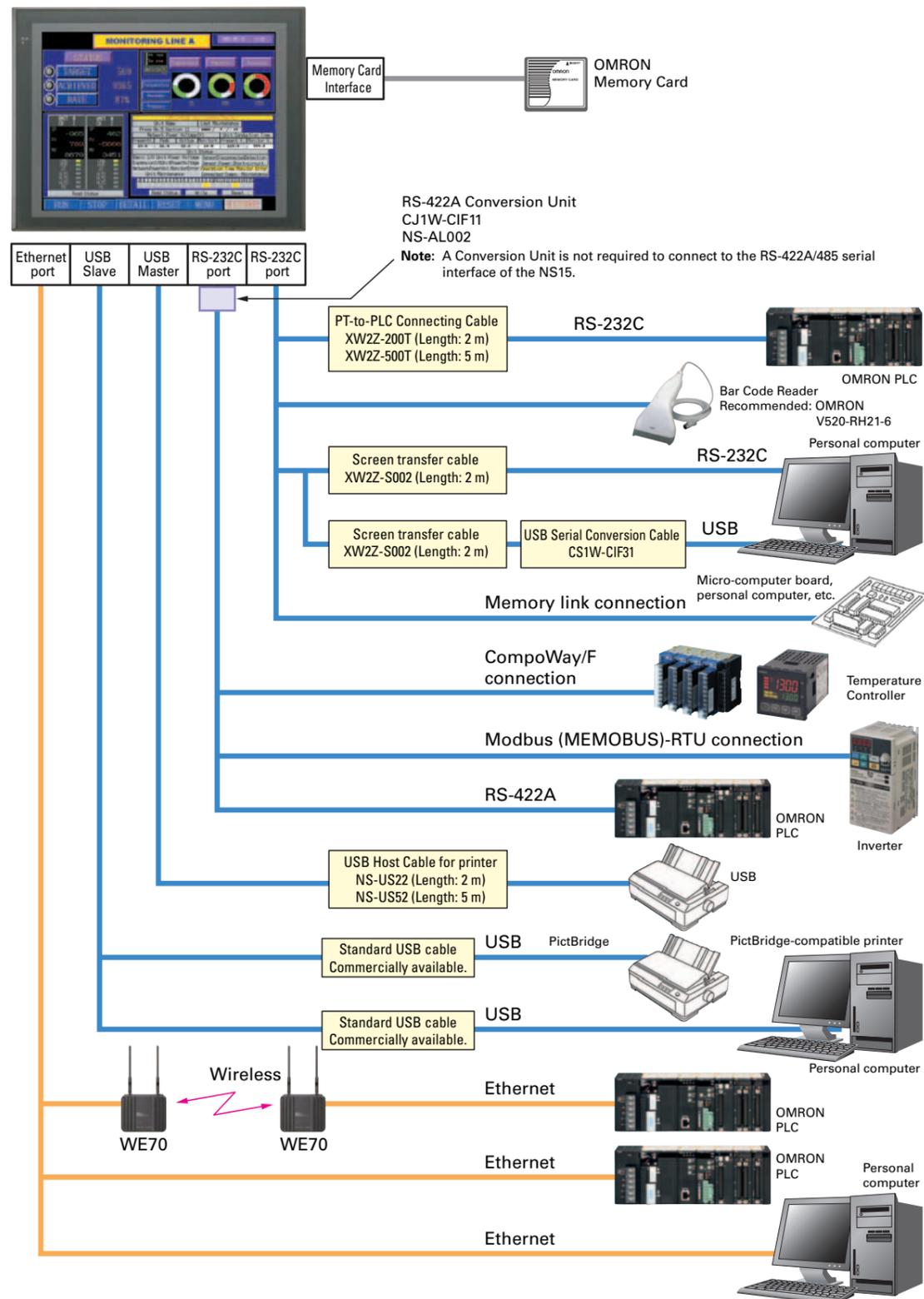
Applications can be started simply by pressing buttons on the screen.



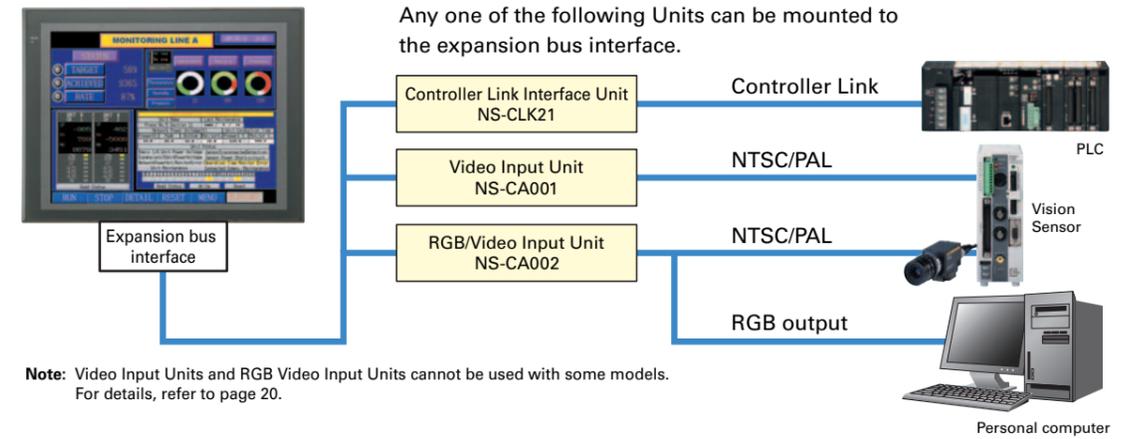
- Do not use this product for 24-hour operation in an FA environment.
- OMRON shall not be responsible if the computer or application does not operate properly due to problems such as noise.
- OMRON shall not be responsible for any problems that may be caused by any applications other than OMRON products.

# System Configuration

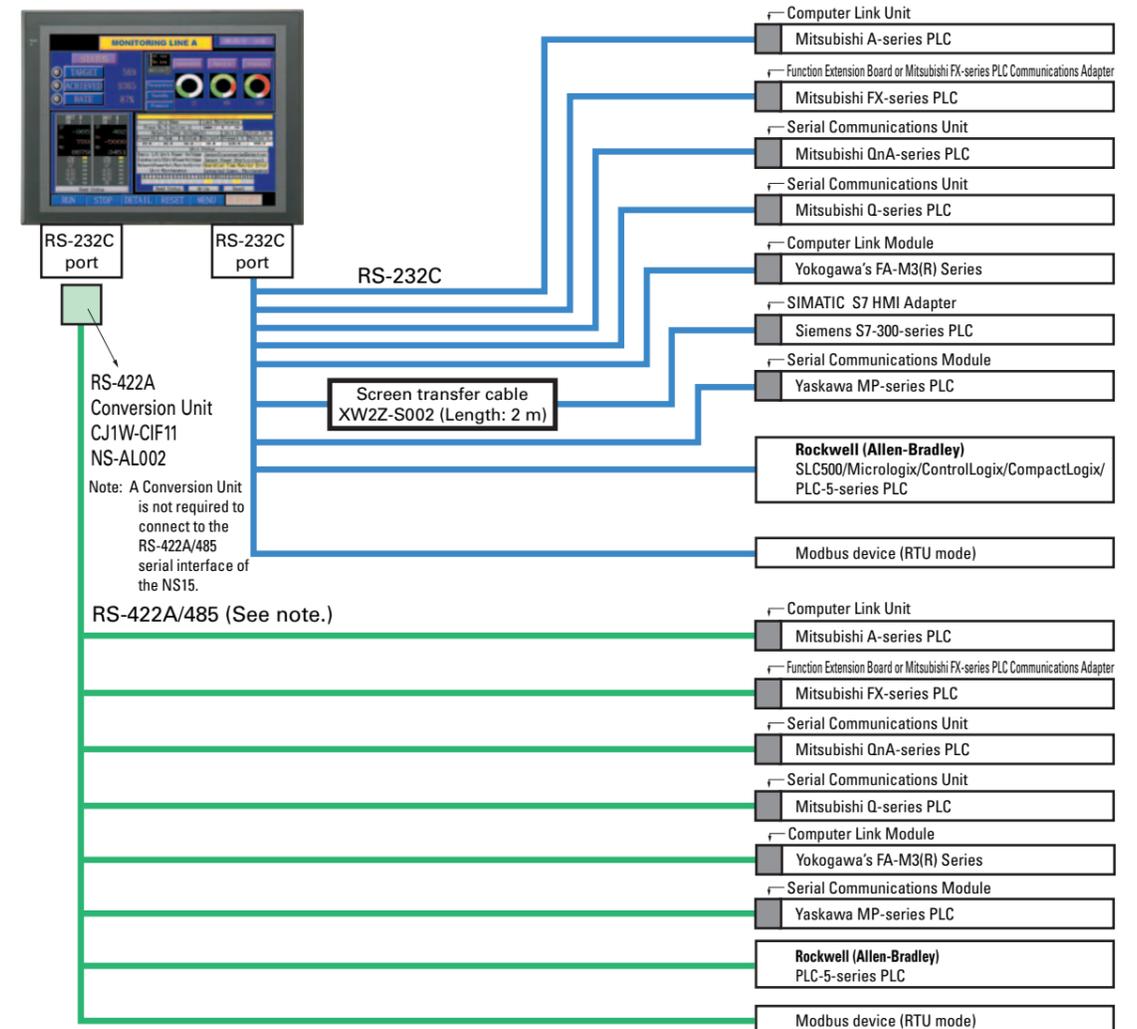
## System Configuration Diagram



## System Configuration Diagram (Expansion Bus Interface)



## System Configuration Diagram (Multi-vendor)



**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 list of connectable devices on page 52 and the NS-series Host Connection Manual: Multi-vendor (Cat. No. V085)

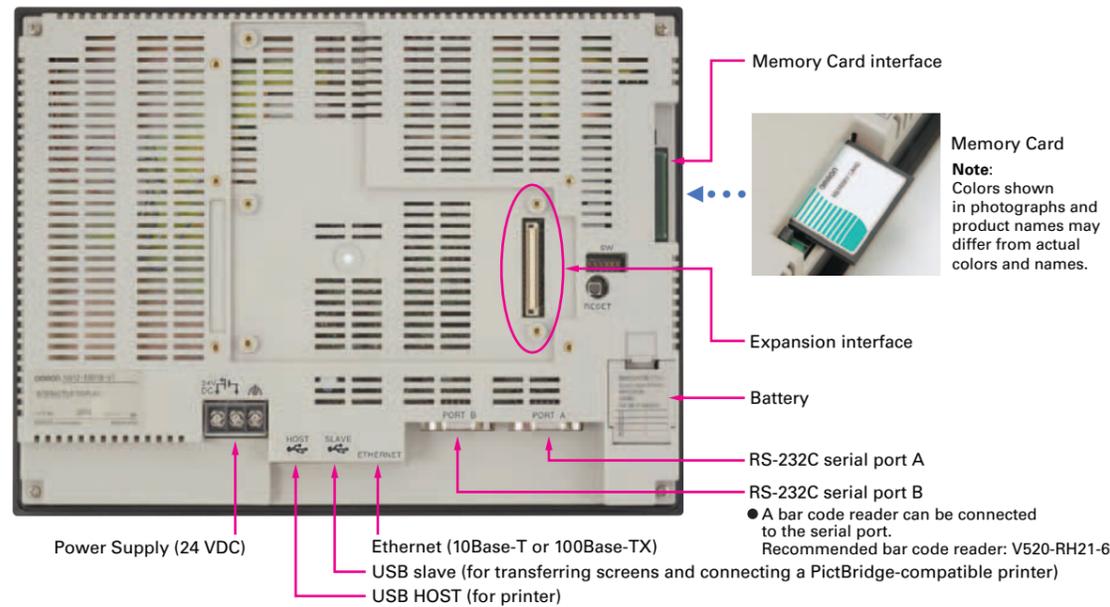
# Component Names and Options

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

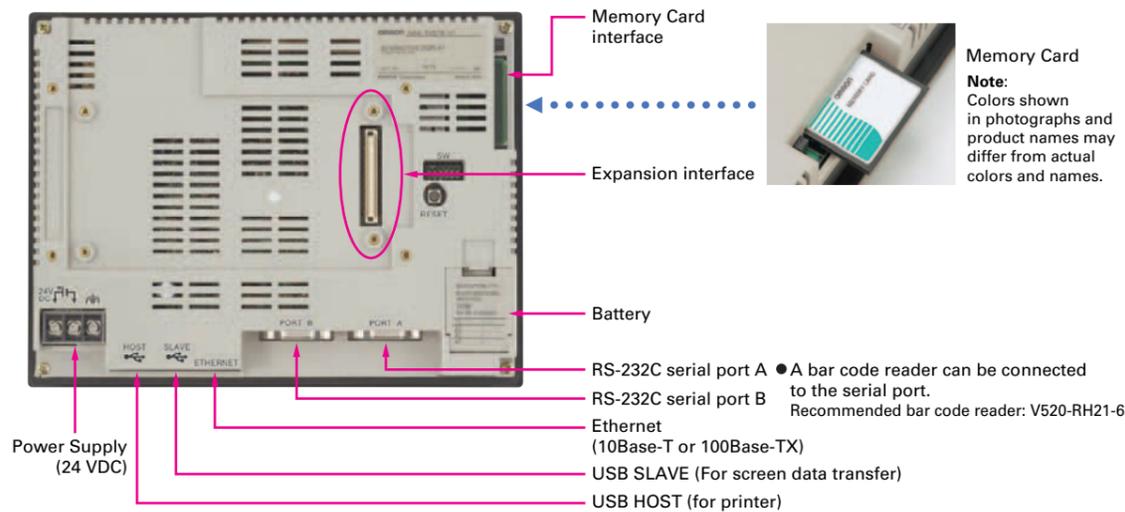
### Super-thin 48.5-mm Body for a Slimmer Control Panel

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



#### ■ NS8



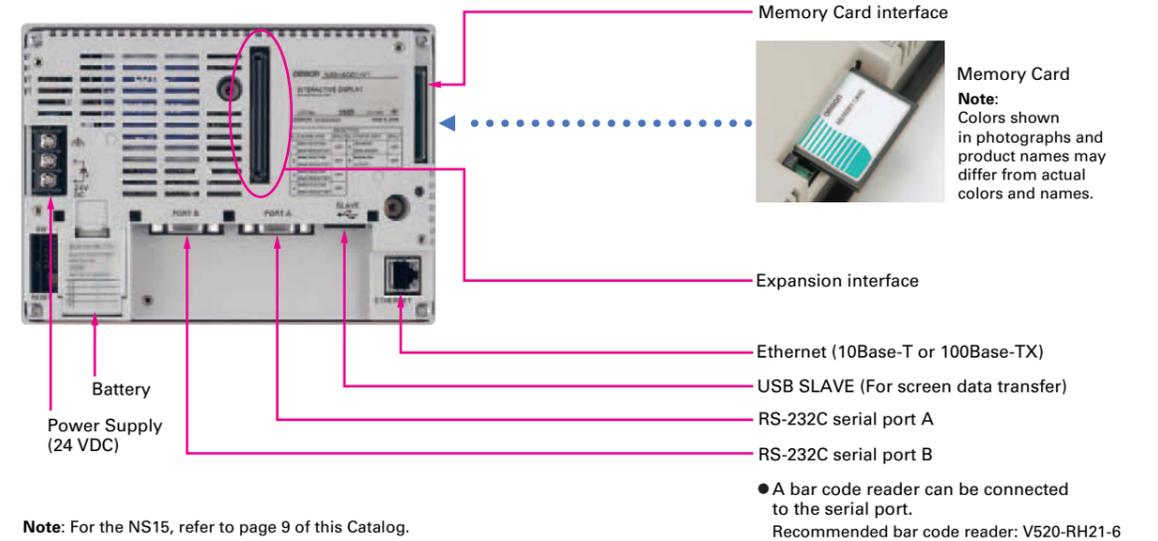
#### ● Built-in Expansion Interface

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

#### ● USB Ports

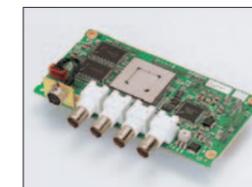
A printer can be connected to the USB port. Refer to page 49 for recommended printers.

#### ■ NS5

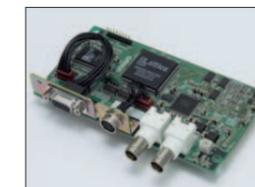


Note: For the NS15, refer to page 9 of this Catalog.

## Optional Products



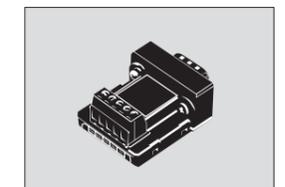
Video Input Unit  
NS-CA001 (with Cover)



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



Controller Link Interface Unit  
NS-CLK21 (with Cover)



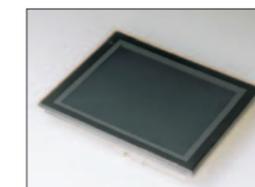
RS-422A Adapter  
CJ1W-CIF11



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

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

# NSH5 Series

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, such as the SAP Library, multi-language support, and Programming Console functions.

**Function Switches**  
Use the ten functions switches.  
F1, F2, F6, F7: Wired outputs  
F3 to F5, F8 to F10: Communications outputs

**Memory Card Interface and USB Slave Connector.**  
Easily transfer screens or save logs at high speed using a USB connection.

**Emergency Stop Switch.**  
3PST-NC Structure  
DPST-NC: Increase safety (wired outputs).  
SPST-NC: Input to internal NSH5 memory, output to a lamp for emergency stop switch operation, or output via communications, e.g., to a PLC.

**Water Resistance to IP65**  
The water-resistant structure is equivalent to IP65 on all surfaces.  
**Note:** The PT may not be suitable for use in environments with long-term water exposure.

**3-Position Enable Switch**  
Increased safety with DPST-NO structure (wired outputs).

**PT and Cable Sold Separately**  
Select the Cable according to the application (RS-232C/RS-422A).  
Connector-loose wires, UL connector, 3 m or 10 m.

## ● Precautions for Emergency Stop Switches

When using a hand-held NSH5 that will be installed and removed from a control panel or Removable Box, always use the specified Stop Switch (Gray/NSH5-SQG10B-V2) to conform to Safety Standards (EN 60204-1).

## ● Options

### ■ Removable Box

A separate external circuit is not required because the Removable Box has been configured so that the emergency stop switch line will not turn OFF (i.e., so that the emergency stop circuit will operate) even when the NSH5 is removed.

### ■ Visor

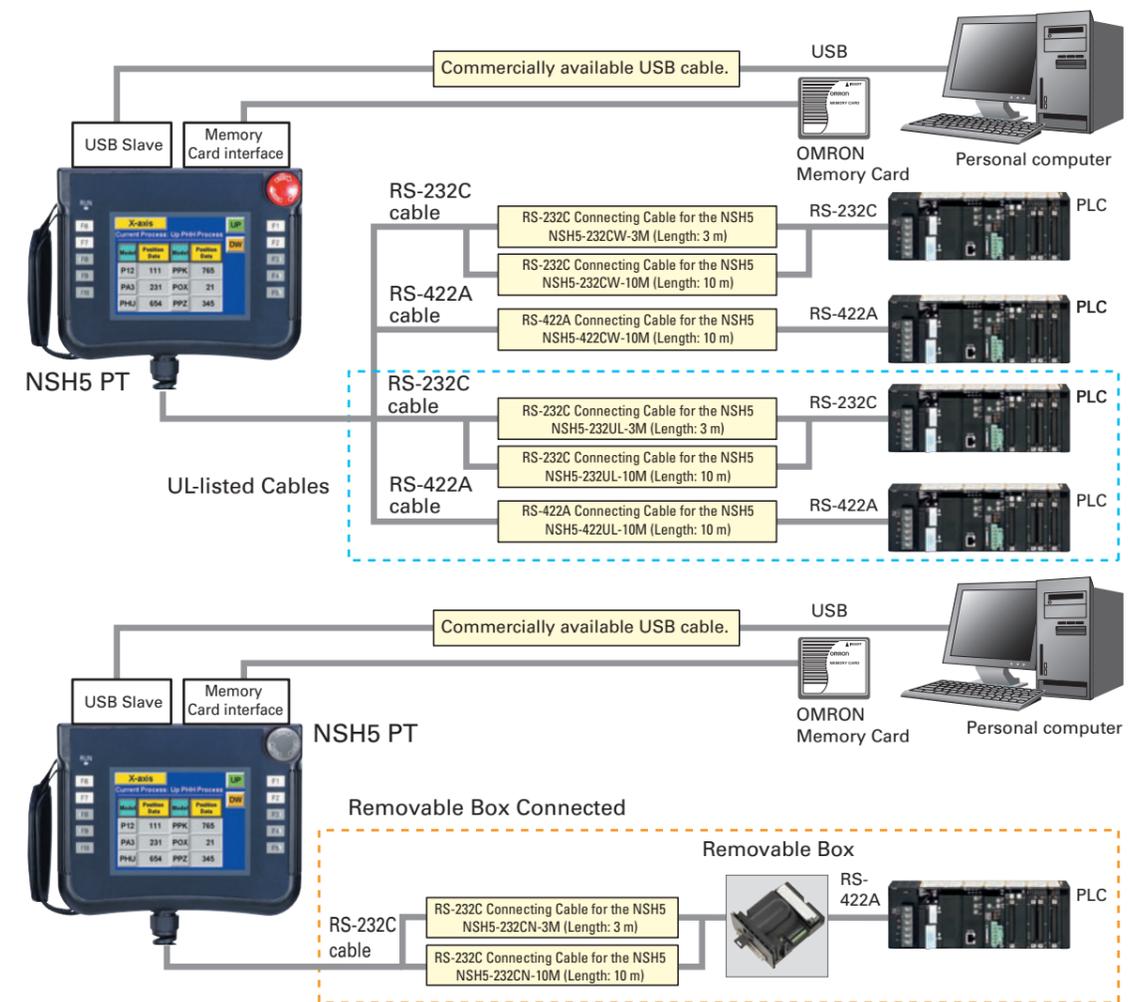
Use when the NSH5 is in direct sunlight. Installing a visor also helps protect the Emergency Stop Switch and prevents improper operation from occurring inadvertently when the PT is put down.

### ■ Mounting Bracket

Use to attach the NSH5 to a control panel.



## System Configuration Diagram (NSH5 Hand-held PT)



## ● System Configuration (Removable Box Connected)



# Standard Models

## ■ Programmable Terminals

Model name	Specifications				Model number	Standards		
	Effective display area	Number of dots	Ethernet	Case color				
NS5-V2 (See note.)	5.7-inch STN monochrome	320 × 240 dots	No	Ivory	NS5-MQ10-V2	UC1, CE, N, L, UL Type4		
				Black	NS5-MQ10B-V2			
			Yes	Ivory	NS5-MQ11-V2			
				Black	NS5-MQ11B-V2			
			No	Ivory	NS5-SQ10-V2			
				Black	NS5-SQ10B-V2			
	Yes		Ivory	NS5-SQ11-V2				
			Black	NS5-SQ11B-V2				
	5.7-inch TFT color		No	Ivory	NS5-TQ10-V2		UC1, CE, N, L, UL Type4	
				Black	NS5-TQ10B-V2			
			Yes	Ivory	NS5-TQ11-V2			
				Black	NS5-TQ11B-V2			
No		Ivory	NS5-TQ10-V2	UC1, CE, N, L, UL Type4				
		Black	NS5-TQ10B-V2					
Yes	Ivory	NS5-TQ11-V2						
	Black	NS5-TQ11B-V2						
NS8-V2	8.4-inch TFT	640 × 480 dots	No		Ivory	NS8-TV00-V2		UC1, CE, N, L
					Black	NS8-TV00B-V2		
			Yes		Ivory	NS8-TV01-V2		
					Black	NS8-TV01B-V2		
NS10-V2	10.4-inch TFT	640 × 480 dots	No		Ivory	NS10-TV00-V2	UC1, CE, N, L, UL Type4	
					Black	NS10-TV00B-V2		
			Yes		Ivory	NS10-TV01-V2		
					Black	NS10-TV01B-V2		
NS12-V2	12.1-inch TFT	800 × 600 dots	No	Ivory	NS12-TS00-V2	UC1, CE, N, L, UL Type4		
				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		UC, CE	
				Black	NS15-TX01B-V2			
NSH5-V2 (See note.) 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			

Note: As of July 2008, the image memory has been increased to 60 MB.

## ■ NS-Runtime

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

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

## ● System Requirements

Item	Specifications
OS	Windows XP (Service Pack 3 or higher), Vista, or 7 (Support 64-bit version for only Windows 7.)
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.)

## ■ Programming Devices

Model name	Specifications	Number of licenses	Media	Model number	Standards
CX-One FA Integrated Tool Package 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. OS: Windows XP (Service Pack 3 or higher), Vista or 7. <b>Note:</b> Except for Windows XP 64-bit version. CX-One Ver.4.□ includes CX-Designer Ver.3.□. For details, refer to the <i>CX-One catalog</i> (Cat. No. R134).	1 license (See note 2.)	DVD (See note 3.)	CXONE-AL01D-V4	---
	The CX-Designer can also be ordered individually using the following model number.				
CX-Designer Ver.3.□	Screen Designer for NS Series OS: Windows XP (Service Pack 3 or higher), Vista or 7. <b>Note:</b> Except for Windows XP 64-bit version. The Ladder Monitor Software is included with CX-Designer version 3.□. <b>Note:</b> The Ladder Monitor Software is used to monitor CS/CJ/CP-series PLC ladder programs from an NS-series PT. A Memory Card and Memory Card Adapter (both sold separately) are required to use the Ladder Monitor Software with the NS8-V1, NS10-V1, or NS12-V1, or with the NS8-V2, NS10-V2, or NS12-V2 with system program version 6.6 or lower.	1 license	CD	NS-CXDC1-V3	---

Note 1. CX-Designer version 3.008 or higher is required to use the NS15. Users who purchase CX-One version 3.□ can use the auto-update to update the version.

2. Multi licenses are available for the CX-One (3, 10, 30, or 50 licenses).

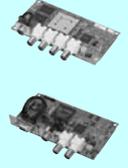
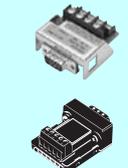
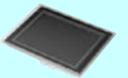
3. The CX-One is also available on CD (CXONE-AL□□-V4).

# Standard Models

Model name	Specifications	Model number	Standards
<b>Cable (See note.)</b> 	Screen transfer cable for DOS/V (CX-Designer ↔ PT)	Length: 2 m XW2Z-S002	---
	USB Host Cable (For a printer)	Length: 5 m NS-US52	
	USB Host Cable (For a printer)	Length: 2 m NS-US22	
	USB-Serial Conversion Cable	Length: 0.5 m CS1W-CIF31	N
	USB relay cable	Length: 1 m NS-USBEXT-1M	---
<b>NSH5 Cables</b>	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	
<b>UL-compliant NSH5 Cable</b>	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	
<b>PT-to-PLC Connecting Cable</b>	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	
<b>NSH5 Removable Box Cable</b>	RS-232C Cable (connectors)	Length: 3 m NSH5-232CN-3M	---
		Length: 10 m NSH5-232CN-10M	
<b>NSH5 Removable Box</b>	---	NSH5-AL001	
<b>NSH5 Wall-mounting Bracket</b>	---	NSH5-ATT02	
<b>NSH5 Visor</b>	---	NSH5-ATT01	

**Note:** Use an OMRON USB Host Cable to connect an NS-series PT to a printer.  
Use a standard USB cable to connect the NS-series PT to a PictBridge-compatible printer.

## Options

Model name	Specifications	Model number	Standards	
<b>Video Input Unit</b> 	Inputs: 4 channels Signal type: NTSC/PAL	NS-CA001	UC1, CE	
	Input channels: 2 video channels and 1 RGB channel (See note 1.) Signal type: NTSC/PAL	NS-CA002		
<b>Special Cable for the Console</b>	Cable length: 2 m	F150-VKP (2 m)	---	
	Cable length: 5 m	F150-VKP (5 m)		
<b>Controller Link Interface Unit</b> 	For Controller Link Communications	NS-CLK21	UC1, CE	
<b>RS-422A Adapter</b> 	Transmission distance: 500 m total length <b>Note:</b> Use this model when connecting PT models without a V□ suffix. <b>Note:</b> PT models with the V□ suffix can also be connected.	NS-AL002	---	
	Transmission distance: 50 m total length <b>Note:</b> 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	
<b>Sheet/Cover (See note 2.)</b> 	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		
<b>Attachment</b>	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		
<b>Memory Card</b> 	128MB	HMC-EF183	L, N, CE	
	256 MB	HMC-EF283	CE	
	512 MB	HMC-EF583		
<b>Memory Card Adapter</b>	---	HMC-AP001		
<b>Replacement Battery</b>	Battery life: 5 years (at 25°C)	CJ1W-BAT01		
<b>Bar Code Reader</b>	CCD handheld bar code reader (RS-232C interface)	V520-RH21-6	---	

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

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

# Performance/Specifications

Series		NS5-V2												NS8-V2			
Type		5.7-inch Monochrome STN				5.7-inch Color				5.7-inch Color (High-luminance)				8.4-inch Color			
Appearance																	
Display device		STN Monochrome LCD				TFT color LCD				Color High-luminance TFT (See note 1.)				High-definition TFT color LCD			
Effective display area		Width 117.2 × height 88.4 mm (5.7 inches)												Width 170.9 × height 128.2 mm (8.4 inches)			
Case color		Ivory		Black		Ivory		Black		Ivory		Black		Ivory		Black	
Built-in Ethernet port		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Model number		NS5-MQ10-V2	NS5-MQ11-V2	NS5-MQ10B-V2	NS5-MQ11B-V2	NS5-SQ10-V2	NS5-SQ11-V2	NS5-SQ10B-V2	NS5-SQ11B-V2	NS5-TQ10-V2	NS5-TQ11-V2	NS5-TQ10B-V2	NS5-TQ11B-V2	NS8-TV00-V2	NS8-TV01-V2	NS8-TV00B-V2	NS8-TV01B-V2
Display colors		16 gradations				256 colors				256 colors				256 colors			
Number of dots		320 dot horizontal × 240 dot vertical												640 dot horizontal × 480 dot vertical			
View angle		Left/right: 45°, Top: 20°, Bottom: 40°				Left/right: 80°, Top: 80°, Bottom: 60°				Left/right: 80°, Top: 80°, Bottom: 60°				Left/right: 65°, Top: 50°, Bottom: 60°			
Screen data capacity		60 Mbytes												60 Mbytes			
Image data (BMP or JPG images)		16 gradations				32,768 colors				32,768 colors				32,768 colors			
Memory Card		Supported												Supported			
Ladder Monitor function		Not supported												Supported			
Video Input Unit support		Not supported												Supported			
Image displayed via video input		---												260,000 colors			
Controller Link Interface Unit (Wired) support		Not supported												Not supported			
Backlight <small>Note: Contact your nearest OMRON representative to replace the backlight.</small>		Service life				50,000 hours min.				75,000 hours min.				50,000 hours min.			
		Brightness adjustment				There are 3 levels that can be set with the touch panel. <b>Note:</b> The brightness cannot be adjusted much.				Three-level or 32-level brightness adjustment from the touch panel screen. <b>Note:</b> 32-level adjustment is supported from the LotNo.15Z0.				There are 3 levels that can be set with the touch panel. <b>Note:</b> The brightness cannot be adjusted much.			
		Backlight error detection				Error is detected automatically, and the RUN indicator flashes green as notification. <b>Note:</b> This function does not indicate that the service life has been reached. It detects when the backlight is not lit due to a disconnection or other errors. Backlight error detection indicates that all backlights (2) are OFF.											
Touch panel (matrix type)		Method		Matrix resistive membrane													
		Number of switches/resolution		300 (20 horizontal × 15 vertical) 16 × 16 dots for each switch										768 (32 horizontal × 24 vertical) 20 × 20 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		Monochrome, 16 gradations				256 colors									
		Font style (only when vector font is specified)		Bold or italic													
		Vertical alignment		Top, center, or bottom													
		Horizontal alignment		Left-justified, centered, or right-justified													
Flicker		Objects supporting flicker		Functional objects: Select from up to 10 types of registered flicker settings. The flicker speed and flicker range can be set. Fixed objects: Select from three flicker types.													

**Note 1.** NS5-TQ series (high luminance TFT) luminance is better than that of NS5-SQ series by about 110cd/m<sup>2</sup>.



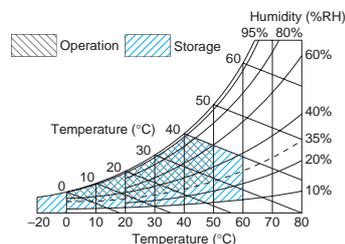
# Performance/Specifications

Series		NS5-V2		
Type		5.7-inch Monochrome STN	5.7-inch Color	5.7-inch Color (High-luminance)
Numerical units and scale settings		1,000 max.		
Alarm/event settings		5,000 max.		
Memory Card	Interface	One ATA-Compact Flash interface slot		
	Functions	Used to transfer and store screen data, store logging data, and store history data. (Alarm/Event History, Operation Log, and Error Log generated during Macro execution).		
Expansion interface		For Expansion Interface Units		
Serial Communications	Port A	Connector	Conforms to EIA RS-232C. D-Sub female 9-pin connector 5-V output (250 mA max.) through pin 6 (See note.) <b>Note:</b> 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 (See note.) The 5-V outputs of serial ports A and B cannot be used at the same time. <b>Note:</b> 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	USB rating	None		
	Connector			
	Functions			
Built-in Ethernet Specifications (NS□□□□1-V2 only)	Conformance standards	Conforms to IEEE 802.3/Ethernet (10Base-T/100Base-TX).		
	Function	Host (PLC) access and connection with the CX-Designer (for screen data transfers)		
Controller Link (Wired-type) Specifications	Baud rate	---		
	Transmission path	---		
	Functions	---		
Video Input Specifications	Resolution	---		
	Input signal	---		
	Number of video inputs	---		

## General Specifications

Series		NS5-V2		
Type		5.7-inch Monochrome STN	5.7-inch Color	5.7-inch Color (High-luminance)
Rated power supply voltage		24 VDC		
Allowable voltage range		20.4 to 27.6 VDC (24 VDC ±15%)		
Power consumption		25 W max. (15 W max. for the NS5)		
Ambient operating temperature		0 to 50°C (See note on the next page.) <b>Note:</b> 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 (See note on the next page.)		
Ambient operating humidity		35 to 85% (0 to 40°C) 35 to 60% (40 to 50°C) (with no condensation)		
Operating environment		No corrosive gases.		
Noise immunity		Conforms to IEC61000-4-4, 2 kV (power lines).		
Vibration resistance (during operation)		10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/s <sup>2</sup> 30 min each in X, Y, and Z directions		
Shock resistance (during operation)		147 m/s <sup>2</sup> 3 times each in direction of X, Y, and Z		
Weight		1.0 kg max.		
Degree of protection		Front operating panel: Equivalent to IP65 oil-proof type and NEMA4 UL type 4. (Only to NS5) <b>Note:</b> 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.		

**Note:** Operate the PT within the temperature and humidity ranges shown in the right diagram.





# Performance/Specifications

<b>Series</b>	<b>NSH5-V2</b>	
<b>Type</b>	<b>5.7-inch Color TFT (Hand-held Version)</b>	
<b>Appearance</b>	 <p>Emergency stop button (Red)</p>	 <p>Stop button (Gray)</p>
<b>Case color</b>	Black	
<b>Built-in Ethernet port</b>	No	
<b>Model number</b>	NSH5-SQR10B-V2 (Emergency stop button: Red)	NSH5-SQG10B-V2 (Stop button: Gray)
<b>Rated power supply voltage</b>	24 VDC	
<b>Allowable voltage range</b>	20.4 to 27.6VDC (24 VDC $\pm$ 15%)	
<b>Power consumption</b>	10 W max.	
<b>Ambient operating temperature</b>	0 to 40°C	
<b>Storage temperature</b>	-20 to 60°C	
<b>Ambient operating humidity</b>	35% to 85% (0 to 40°C) with no condensation	
<b>Operating environment</b>	No corrosive gases.	
<b>Noise immunity</b>	Common mode: 1,000 Vp-p (between power supply terminals and panel) Normal mode: 300 Vp-p Pulse width: 100 ns to 1 $\mu$ s, Rise time: 1-ns pulse	
<b>Vibration resistance (during operation)</b>	10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/s <sup>2</sup> 30 min each in X, Y, and Z directions	
<b>Shock resistance (during operation)</b>	147 m/s <sup>2</sup> 3 times each in direction of X, Y, and Z	
<b>Weight</b>	1 kg max.	
<b>Degree of protection</b>	Equivalent to IP65.	
<b>Ground</b>	Ground to 100 $\Omega$ or less.	
<b>Battery life</b>	5 years (at 25°C): Replace battery within 5 days after the battery runs low (indicator lights orange).	
<b>Applicable standards</b>	Certified for conformance to UL 508, EMC Directive, and EN 60204-1.	

## ■ Supported PLCs

### ● Link Connection

PLC series	PLC model name	Model number	Specifications
C Series	CQM1	CQM1-CPU□□-V1	With RS-232C connector (9-pin type)
	CQM1H	CQM1H-CPU□□	
	CPM1	CPM1-□□CDR-□+CPM1-CIF01	Connect to peripheral port.
	CPM1A	CPM1A-□□CD□-□+CPM1-CIF01	
	CPM2A	CPM2A-□□CD□□-□+CPM1-CIF01	Connect to RS-232C or peripheral port.
	CPM2C	CPM2C-10/20□□□□□□-□ (See note 2.)	
	C200HS	C200HS-CPU□□	With RS-232C connector (9-pin type)
	C200HE(-Z)	C200HE-CPU□□(-Z) (See note 3.)	
C200HG(-Z)	C200HG-CPU□□(-Z) (See note 3.)		
C200HX(-Z)	C200HX-CPU□□(-Z) (See note 3.)		
CVM1/CV Series	CV500/1000/2000	CV500/1000/2000-CPU□□-V1	With RS-232C connector (switching/9-pin type)
	CVM1	CVM1-CPU□□-V2	

**Note 1.** NS-Runtime is supported for only the CS/CJ/CP/CV-series PLCs (Peripheral Bus (toolbus), Host Link, and Ethernet) and the CJ2 (Peripheral Bus (toolbus) and Ethernet). It is not supported for an EtherNet/IP connection.

- Use an Adapter Cable (CPM2C-CN111 or CS1W-CN114/118), CPM1-CIF01 RS-232C Adapter, or CPM1-CIF11 RS-422A Adapter to connect.
- A C200HW-COM02(-V1), C200HW-COM04(-V1), C200HW-COM05(-V1), or C200HW-COM06(-V1) Communications Board is required.

### ● 1:N NT Link Connection

PLC series	PLC model name	Model number	Specifications
CS series	CS1G	CS1G-CPU□□(-V1) (See note 2.)	With RS-232C connector (9-pin type)
		CS1G-CPU□□H (See note 2.)	
	CS1H	CS1H-CPU□□(-V1) (See note 2.)	
		CS1H-CPU63H/CPU64H/CPU65H/CPU66H/CPU67H (See note 2.)	
CS1D	CS1D-CPU□□H (See note 2.)		
CJ series	CJ1G	CJ1G-CPU□□H (See note 3.)	
	Loop-control CPU Unit	CJ1G-CPU□□P	
	CJ1H	CJ1H-CPU□□H (See note 3.)	
	CJ1M	CJ1M-CPU□□ (-ETN)	
	CJ2H	CJ2H-CPU64/CPU65/CPU66/CPU67/CPU68(-EIP)	
CP series	CJ2M	CJ2M-CPU1□	Mount CP1W-CIF01/CIF11/CIF12 Serial Option Board.
	CJ2M	CJ2M-CPU3□	
	CP1H	CP1H-□□ (See note 4.)	With RS-232C connector (9-pin type)
CP1L	CP1L-M□□/□□□ (See note 4.)		
CP1E	CP1E-N□□□□-□ (See notes 4 and 5.)		
C series	CQM1H	CQM1H-CPU61/51 with a CQM1H-SCB41 Serial Communications Board	With RS-232C connector (switching/9-pin type)
	C200HE(-Z)	C200HE-CPU32(-Z) (See note 6.)/CPU42(-Z)	
	C200HG(-Z)	C200HG-CPU33(-Z) (See note 6.)/CPU43(-Z)/CPU53(-Z) (See note 6.)/CPU63(-Z)	
	C200HX(-Z)	C200HX-CPU34(-Z) (See note 6.)/CPU44(-Z)/CPU54(-Z) (See note 6.)/CPU64(-Z)/CPU65-Z/CPU85-Z	

**Note 1.** NS-Runtime is supported for only the CS/CJ/CP/CV-series PLCs (Peripheral Bus (toolbus), Host Link, and Ethernet) and the CJ2 (Peripheral Bus (toolbus) and Ethernet).

- Connection is also possible to a CS1W-SCB□□-V1 Serial Communications Board or CS1W-SCU□□-V1 Serial Communications Unit.
- Connection is also possible to the CJ1W-SCU□□-V1 Serial Communications Unit.
- SPMA via a PLC is not supported when a CP-series PLC is connected. (SPMA via an NS-series PT is supported with a CP-series PLC.)
- The machine monitor function and switch box function are not supported when a CP1E PLC is connected.
- A C200HW-COM02/COM04/COM05/COM06(-V1) Communications Board is required.

### ● Connecting by Host Link

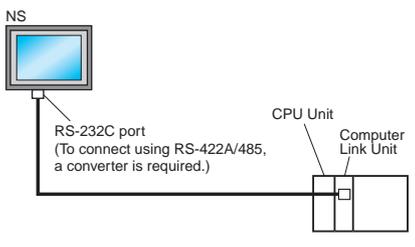
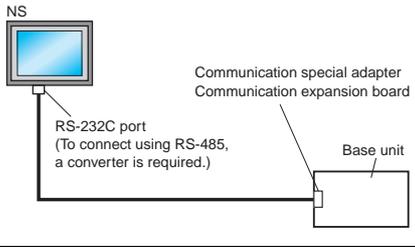
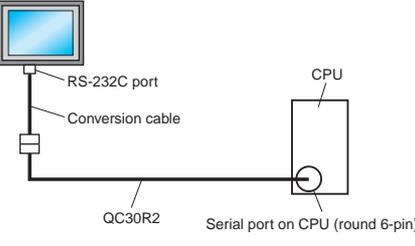
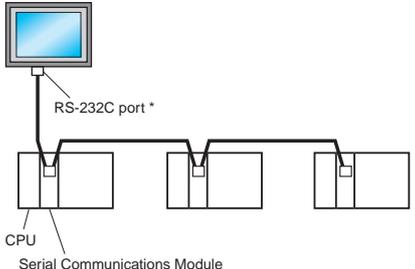
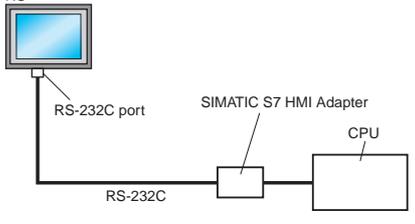
PLC series	PLC model name	Model number	Specifications
C series	CPM1	CPM1-□□CDR-□/CPM1A-□□CD□-□	RS-232C or RS-422A adapter connected to peripheral port
	CPM2A	CPM2A-□□CD□□-□	With RS-232C connector (9-pin type)
	CPM2C	CPM2C-10/20□□□□□□-□	Communications connectors include both a peripheral port and RS-232C port (branching possible through CPM2C-CN111 Conversion Cable). Used as separate peripheral and RS-232C ports through CS1WCN114/118 Conversion Cable.
	CQM1	CQM1-CPU□□-V1	With RS-232C connector (9-pin type)
	CQM1H	CQM1H-CPU□□	With RS-232C connector (9-pin type) (CQM1H-CPU11: peripheral port only)
	C200HS	C200HS-CPU□□	With RS-232C connector (switching/9-pin type)
	C200HE(-Z)	C200HE-CPU□□(-Z) (See note 2.)	
	C200HG(-Z)	C200HG-CPU□□(-Z) (See note 2.)	
C200HX(-Z)	C200HX-CPU34 (-Z) (See note 2.)/CPU44 (-Z)/CPU54 (-Z) (See note 2.)/CPU64 (-Z)/CPU65-Z/CPU85-Z		
CS series	CS1G	CS1G-CPU□□(-V1) (See note 3.)	With RS-232C connector (9-pin type)
		CS1G-CPU□□H (See note 3.)	
	CS1H	CS1H-CPU□□(-V1) (See note 3.)	
		CS1H-CPU□□H (See note 3.)	
CJ series	CJ1G	CJ1G-CPU□□H (See note 4.)	
	Loop-control CPU Unit	CJ1G-CPU□□P	
	CJ1H	CJ1H-CPU□□H (See note 4.)	
	CJ1M	CJ1M-CPU□□ (-ETN)	
	CJ2H	CJ2H-CPU64/CPU65/CPU66/CPU67/CPU68(-EIP)	
CP series	CJ2M	CJ2M-CPU1□	Mount CP1W-CIF01/CIF11/CIF12 Serial Option Board.
	CJ2M	CJ2M-CPU3□	
	CP1H	CP1H-□□	With RS-232C connector (9-pin type)
CP1L	CP1L-M□□/□□□		
CP1E	CP1E-N□□□□-□		
CVM1/CV series	CV500/1000/2000	CV500-CPU01-V1/CV1000-CPU01-V1/CV2000-CPU01-V1	With RS-232C connector (switching/9-pin type)
	CVM1	CVM1-CPU□□-V2	

**Note 1.** NS-Runtime is supported for only the CS/CJ/CP/CV-series PLCs (Peripheral Bus (toolbus), Host Link, and Ethernet) and the CJ2 (Peripheral Bus (toolbus) and Ethernet).

- A C200HW-COM02/COM04/COM05/COM06(-V1) Communications Board is required.
- Connection is also possible to a CS1W-SCB□□-V1 Serial Communications Board or CS1W-SCU□□-V1 Serial Communications Unit.
- Connection is also possible to the CJ1W-SCU□□-V1 Serial Communications Unit.

# Connectable Devices

## ● 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		1:1	
		A2ACPU	Computer Link Unit AJ71UC24			
	FX Series	FX0N FX1S FX1N FX1NC FX2N FX3UC	Communication special adapter FX3U-232-ADP FX2NC-232ADP FX0N-232-ADP		1:1	
			Communication expansion board FX□□-232-BD			
	Q/QnA Series	Q00CPU Q01CPU	Q00CPU Q01CPU	RS-232C port on the CPU Module		1:1
				Serial Communications Module QJ71C24N-R2 QJ71C24N-R4 QJ71C24N		
Q2ASCPU Q2ASCPU-S1 Q2ASHCPU Q2ASHCPU-S1		Serial Communications Module A1SJ71QC24N		1:N		
<p>* To connect using RS-485, an RS-232C/422A converter (e.g. NS-AL002) is required. Up to 32 sequencers can be connected when using RS-485.</p>						
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F F3SP21-0N F3SP28-3S F3SP58-6S F3SP67-6S	CPU built-in RS-232C port Personal Computer Link Module F3LC11-1F F3LC12-1F F3LC11-2F	RS-232C RS-232C, RS-422A/485	1:1	
Siemens	S7-300 Series	CPU313 CPU315-2DP CPU317-2PN/DP	SIMATIC S7 HMI Adapter 6ES7 972-0CA1□-0XA0		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)	1:1	

## ■ Connectable Motion Controllers

### ● Trajexia

Series	CPU	Communication Unit	Connection
Trajexia	TJ1-MC16 TJ1-MC04	Ethernet port on the Controller	Ethernet

### ● Connecting to Another Company's Motion Controllers

Manufacturer	Series	CPU	Communications Unit/Adapter/Board	Connection
Yaskawa Electric	MP900 Series	MP920	(Use the RS-232C port or RS-485 port on the Machine Controller)	<p>RS-232C</p> <p>1:1</p>
	MP2000 Series	MP2200	Serial Communication Module 2171F-01	<p>RS-485</p> <p>1:N</p> <p>* To connect using RS-485, a converter (e.g. NS-AL002) is required. Up to 32 controllers can be connected when using RS-485.</p>

## ■ Connectable Inverters

Series	Communication Unit	Connection
3G3MV (Varispeed)	(Use the RS-422/485 terminal on the Inverter)	RS-422/RS-485 (4-wire)/RS-485 (2-wire)
3G3JV (Varispeed)	3G3JV-PSI485J	

## ■ Connectable Temperature Controllers

The following Temperature Controllers can be connected directly to an NS-series PT (See note.).

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

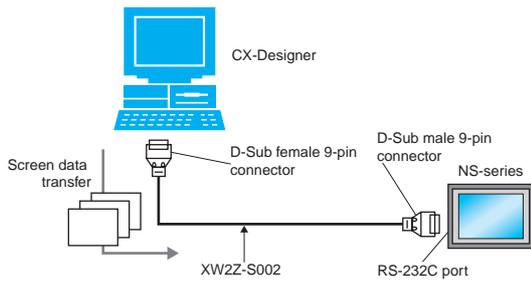
**Note:** The NS-Runtime cannot be connected directly to a Temperature Controller.

# Connection Configurations

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

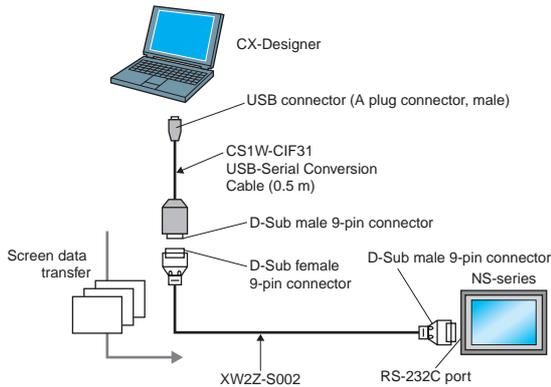
### ● Connecting to the Computer's RS-232C Port

Use a XW2Z-S002 Cable for screen transfers.

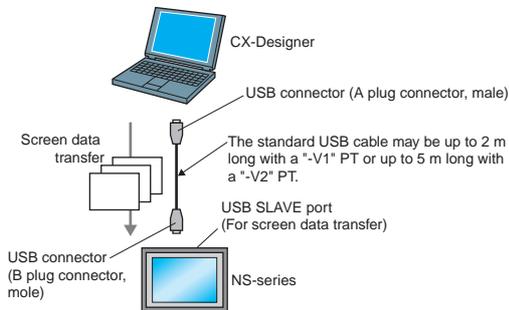


### Connecting to the Computer's USB Port

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



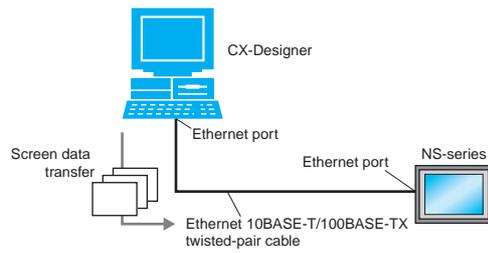
A commercially available USB cable can be used as well. \*



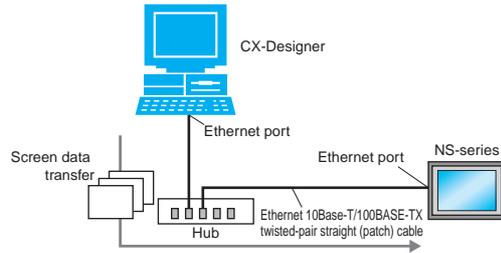
\* Commercially available USB cables cannot be used for the NS main units of which the lot. No. is prior to 0325 (made on Feb. 3, 2005).

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

Connecting Directly (1:1) to the Computer



### Connecting to the Computer through a Hub

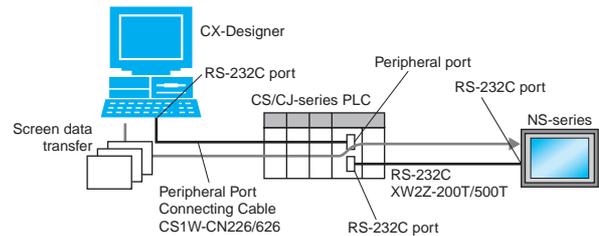


Note: An NS-series PT can also connect to a network configured for 10Base-5 when using a hub and transceiver set for 10Base-5 communications.

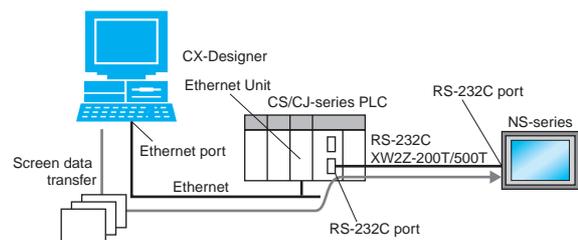
### ● Connecting through a PLC

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

Using a Serial → Serial Connection



Using an Ethernet → Serial Connection



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

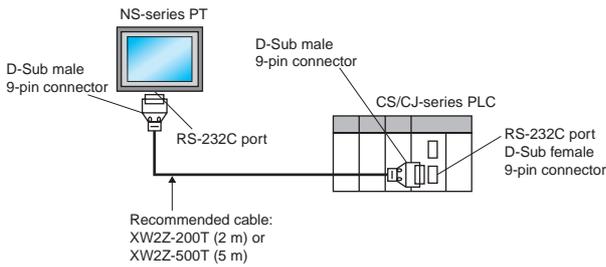
# Connection Configurations

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

### ● Using a Serial Connection

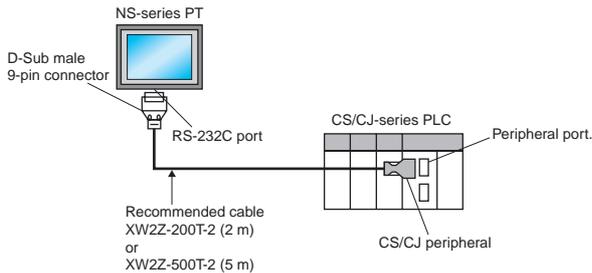
When connecting to a CS/CJ-series PLC's RS-232C port

Use an XW2Z-200T/500T Cable between the PT and PLC.



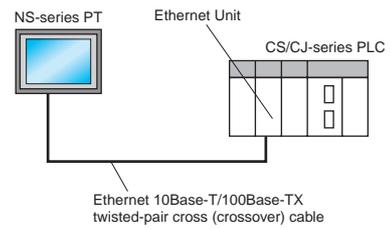
When connecting to a CS/CJ-series PLC's peripheral port

Use an XW2Z-200T-2/500T-2 Cable between the PT and PLC.

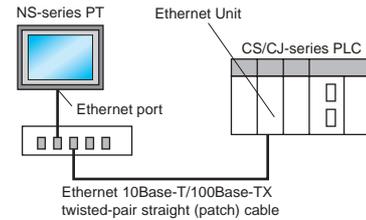


### ● Using an Ethernet Connection

Connecting Directly (1:1) to the Computer



Connecting to the Computer via a Hub



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

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

# Smart Active Parts (SAP) Library Contents

## ■ For monitor setting

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

The following Smart Active Parts are provided on the CX-One/CX-Designer.

### ● For CS/CJ CPU Unit

Error Log Monitor, Online Battery Change Button, etc.

### ● For Serial Communications Boards/Units

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

### ● For Ethernet Units/CLK Units

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

### ● For MC/MCH Unit

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

### ● For NC/NCF Unit

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

### ● For Wireless Terminals for WT30

Monitoring Slave Operating Status in a Wireless Environment

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

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

### ● For Inverters (See note 1.)

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

### ● For DeviceNet DRT2

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

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

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

### ● For Sensors (E3X-DRT)

Threshold Settings, Monitoring Light Reception Levels, etc.

### ● For the SmartSlice GRT1 Series

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

### ● For CompoNet

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

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

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

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

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

**Note 1.** Smart Active Parts require a Serial Communications Units/Boards (version 1.2 or later).

**Note 2.** The NS-Runtime cannot be connected directly to a Temperature Controller.

## ■ For Troubleshooter

A Troubleshooter SAP Library is available to troubleshoot each Unit in the PLC. When an error occurs in a Unit, the Troubleshooter SAP Library provides an easy-to-understand explanation of the cause of the error as well as the countermeasures.

The CX-One/CX-Designer includes the following Troubleshooter SAP library as standard.

### ● DeviceNet unit

### ● NC unit

### ● NCF unit

### ● Standard I/O unit

### ● Analog Input / Output / I/O unit

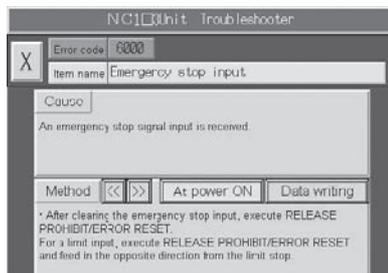
### ● SCU unit

### ● High speed counter unit

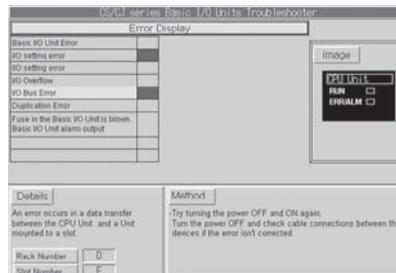
### ● CLK unit

### ● ID sensor unit

Troubleshooter SAP for a Position Control Unit



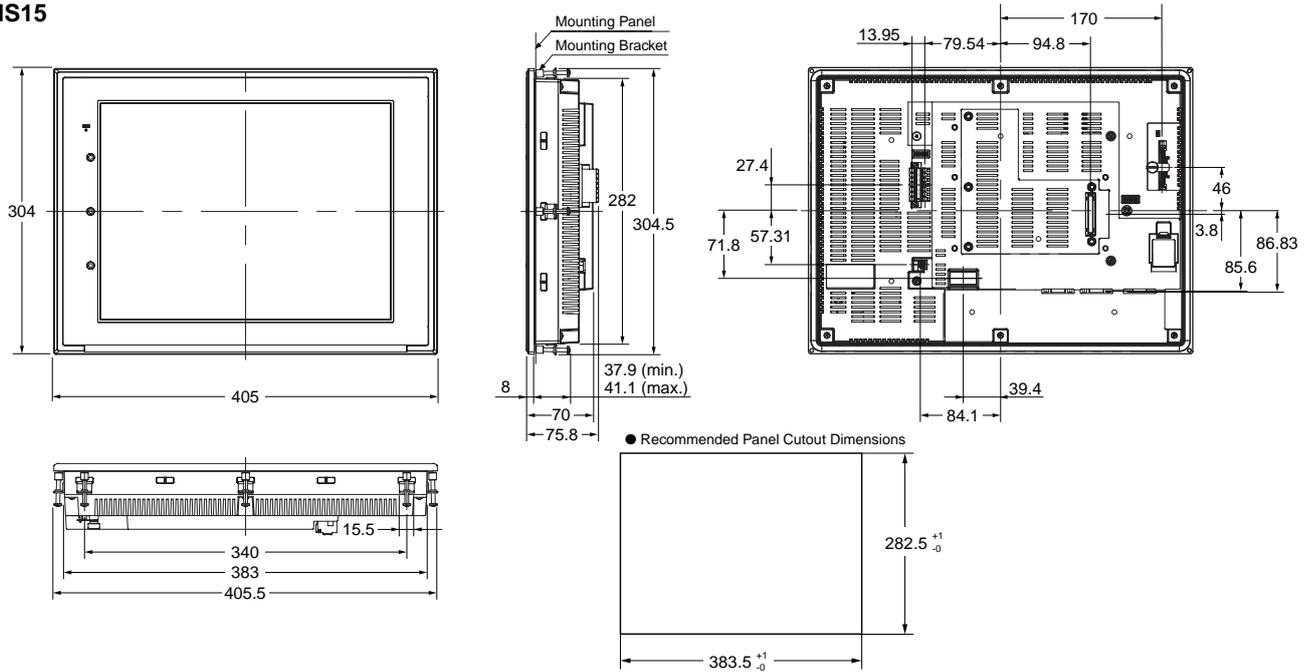
Troubleshooter SAP for Basic I/O Unit



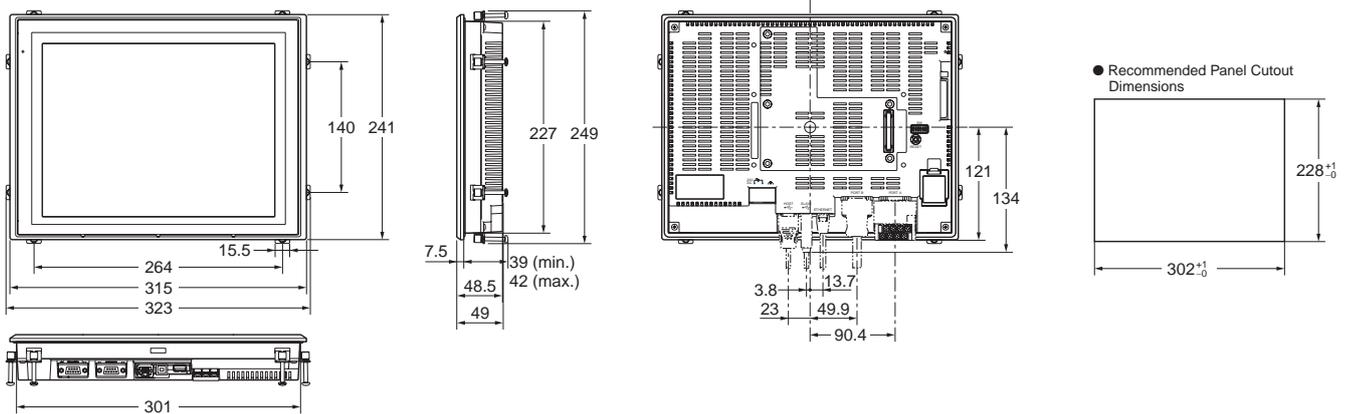
# Dimensions

(Units: mm)

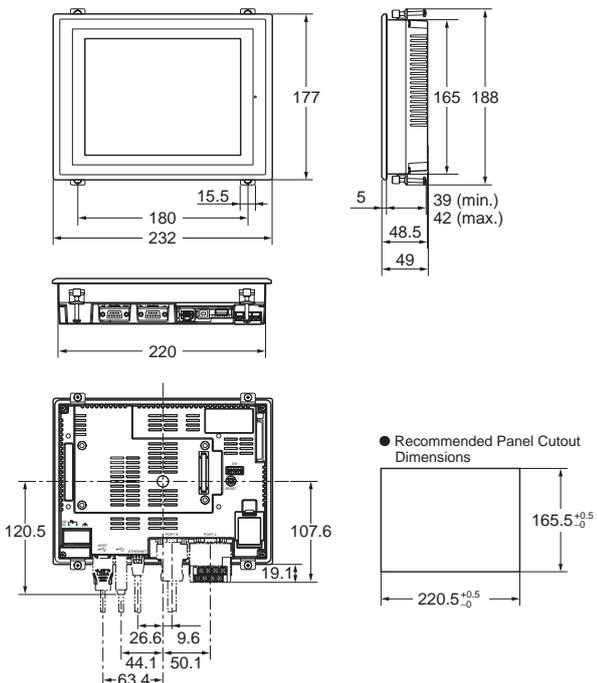
## NS15



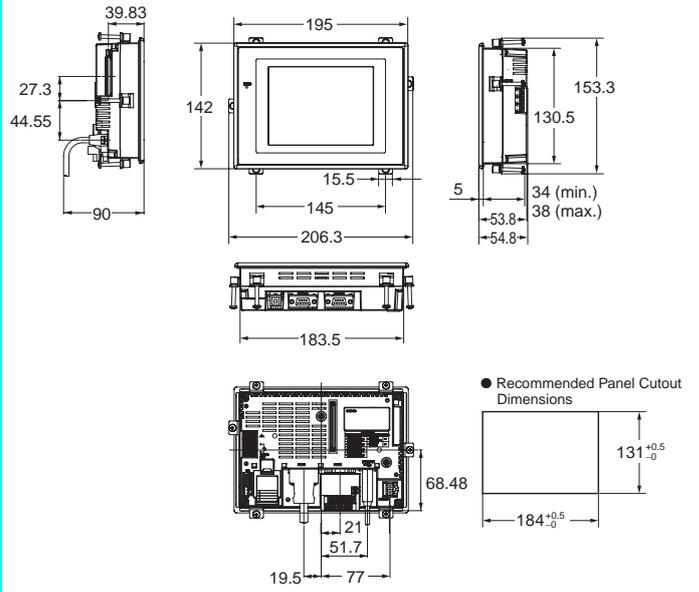
## NS12/10



## NS8



## NS5



What's New

Compatibility

Screen Design Software

Basic Functions

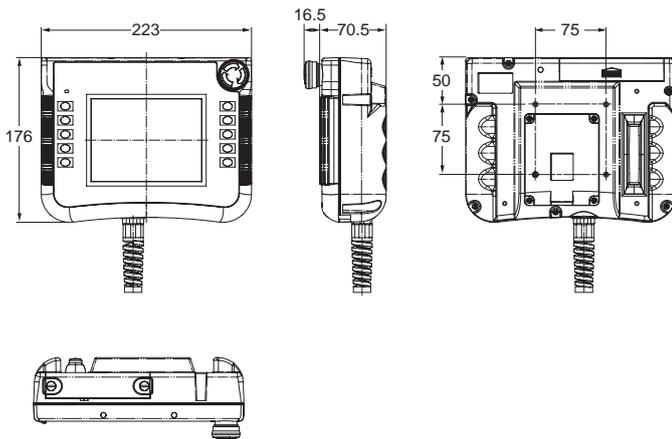
NS-RunTime

Specifications

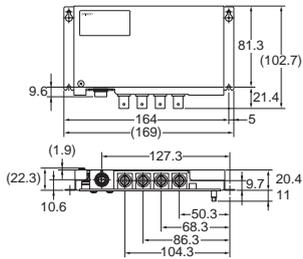
# Dimensions

(Units: mm)

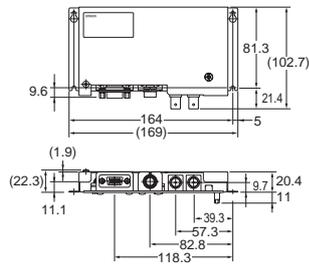
## Hand-held NS5



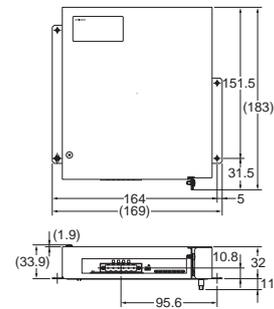
## NS-CA001 Video Input Unit



## NS-CA002 Video Input Unit



## NS-CLK21 Controller Link Interface Unit



# Ordering Information

## ● International Standards

- The standards are abbreviated 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.

## ● EC Directives

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

### ● EMC Directives

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

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

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

The applicable EMS standards depends on the product.

## Read and Understand this Catalog

Please read and understand this catalog before purchasing the product. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the product in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

**Note: Do not use this document to operate the Unit.**

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