

# OMRON

Programmable Terminals

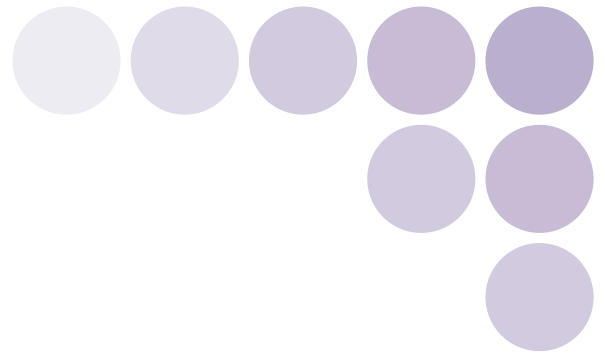
## NS Series

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

New 15-inch Model!



realizing

# NS-series Value

## What's New

- Even Simpler Equipment Operation with Outstanding Synergy..... **P 6**
- The NS-series PT Is Now Available with a Large 15-inch Display!
- 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**

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.



**NEW**

For details, refer to *What's New* on page 8.

### 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 STN



- 4,096 colors ●QVGA 320 x 240 pixels
- Screen memory size: 60 MB

NS5-TQ Color 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

XW22-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 STN



- (Display Section)
- 4,096 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

NSJ5-TQ-M3D/-G5D Color 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

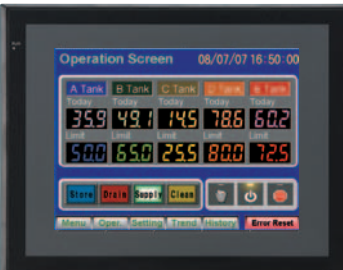


- (Display Section)
- 32,768 colors
  - VGA 640 x 480 pixels
  - Screen memory size: 60 MB
- (Controller Section)
- M3D
- I/O points: 640
  - Program capacity: 20K steps
  - Data Memory: 32K words
- G5D
- I/O points: 1,280
  - Program capacity: 60K steps
  - Data Memory: 128K words

### 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)
- 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)
- 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

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



NSH5-SQR

Color STN

- Equipped with a red switch for an emergency stop input.
- 4,096 colors
- QVGA 320 x 240 pixels
- Emergency stop (3 inputs)



NSH5-SQG

Color STN

- Equipped with a gray switch for a stop input.
- 4,096 colors
- QVGA 320 x 240 pixels
- Emergency stop (3 inputs)

Hand-held PT Cable

RS-422A RS-232C



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

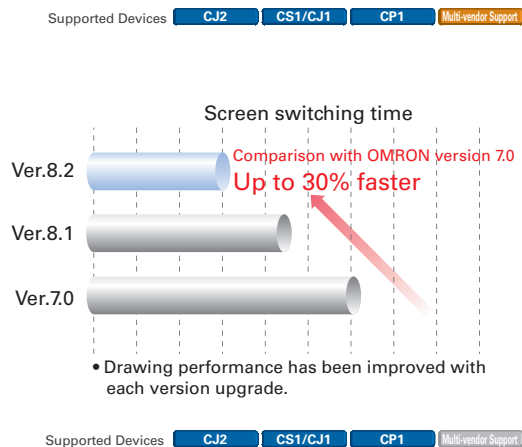
Specifications

# What's New

## Even Simpler Equipment Operation with Outstanding Synergy

### Quick Screen Changes

Improved system programming greatly enhances screen display speed.  
The speed is up to 30% faster than system version 7.0.  
All models from 5.7 to 15 inches feature faster display for better screen operation.



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

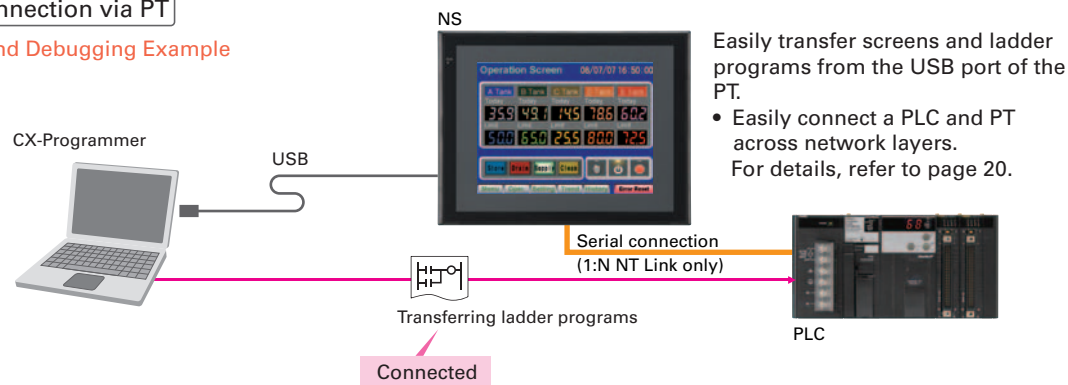
### Easier Debugging and Maintenance

#### 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.

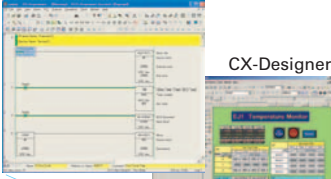
#### PLC Connection via PT

##### Design and Debugging Example



##### Startup and Maintenance Example

#### CX-Programmer



#### CX-Designer

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

Commercially available USB cable



Using a USB relay cable greatly improves debugging at equipment startup.

- Debug screens and ladder programs with only one commercially available USB cable.
- Use a USB relay cable to enable performing maintenance from in front of the control panel.

#### 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.

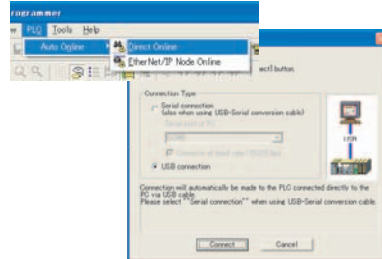
**Note:** CX-Programmer version 8.2 and higher support automatic online connection via the PT. NS system version 8.2 or higher is required.

### 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.

#### CX-Programmer



Automatic search

PLCs registered to the PT are automatically searched for. Make the connection simply by selecting from the PLC list.



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

Supported Devices: CJ2, CS1/CJ1, CP1, Multi-vendor Support

### Program-free, Macro-free

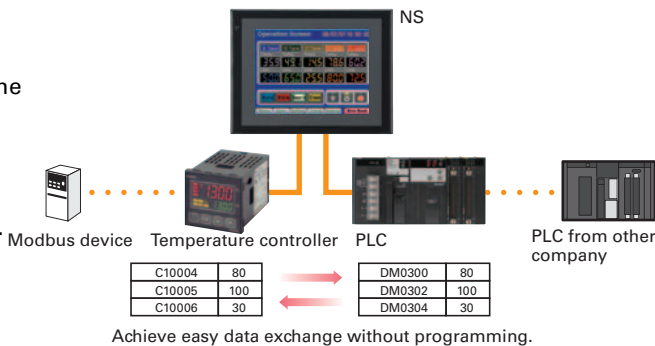
### Easy Data Exchange between the PLC and Components

#### 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

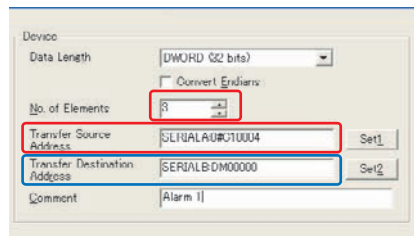
To make the settings, simply specify the device and addresses of the transfer source and transfer destination in the CX-Designer.  
Settings can be made using the same procedure as for setting the addresses for normal components.

Alarm value 1	C10004	80
Alarm upper limit value 1	C10005	100
Alarm lower limit value 1	C10006	30

DM0300	80
DM0302	100
DM0304	30

#### CX-Designer

Select Device Data Transfer Setting from the PT Menu.



Make the settings simply by specifying the addresses of the transfer source and transfer destination as well as the number of data items.

### 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.

### Easy Connection to the CP1E

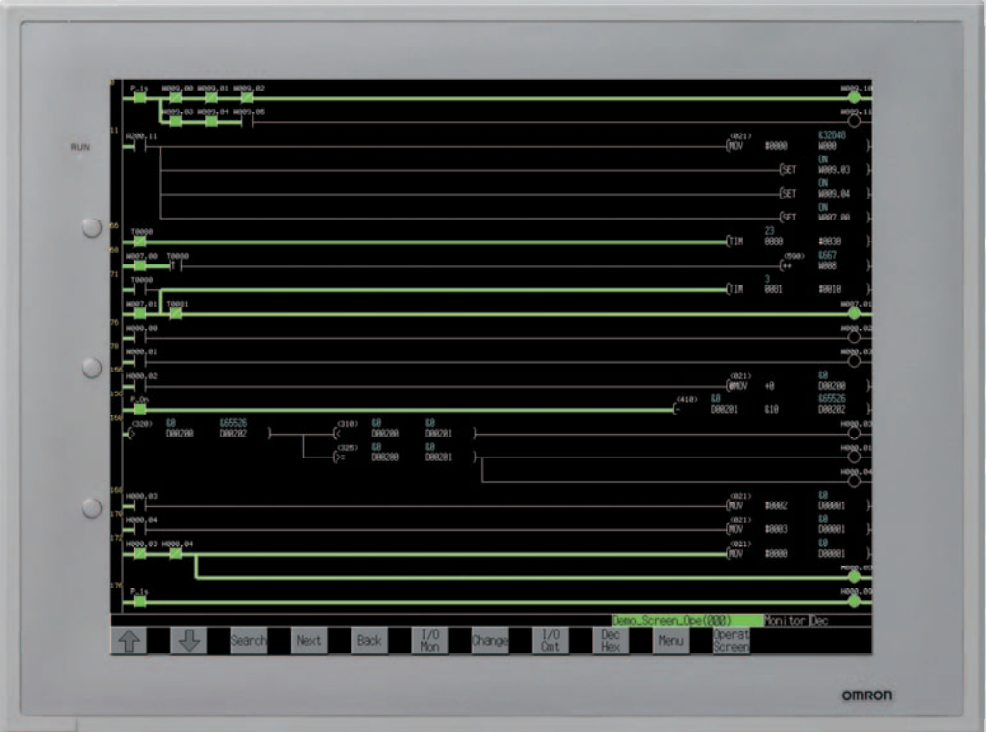
**Note:** NS system version 8.2 or higher is required.



The NS-series PT Is Now Available with a Large 15-inch Display!  
The Expanded Lineup Supports an Even Wider Range of Applications.

Background images are actual size.

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

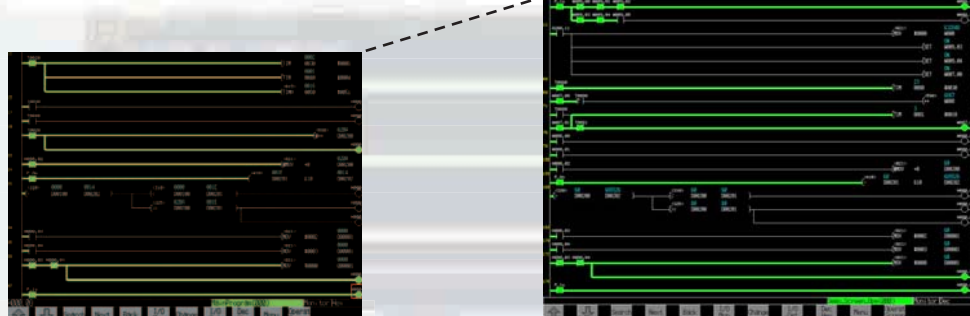


Both Stylish Silver and Sleek Black Models Are Available

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)

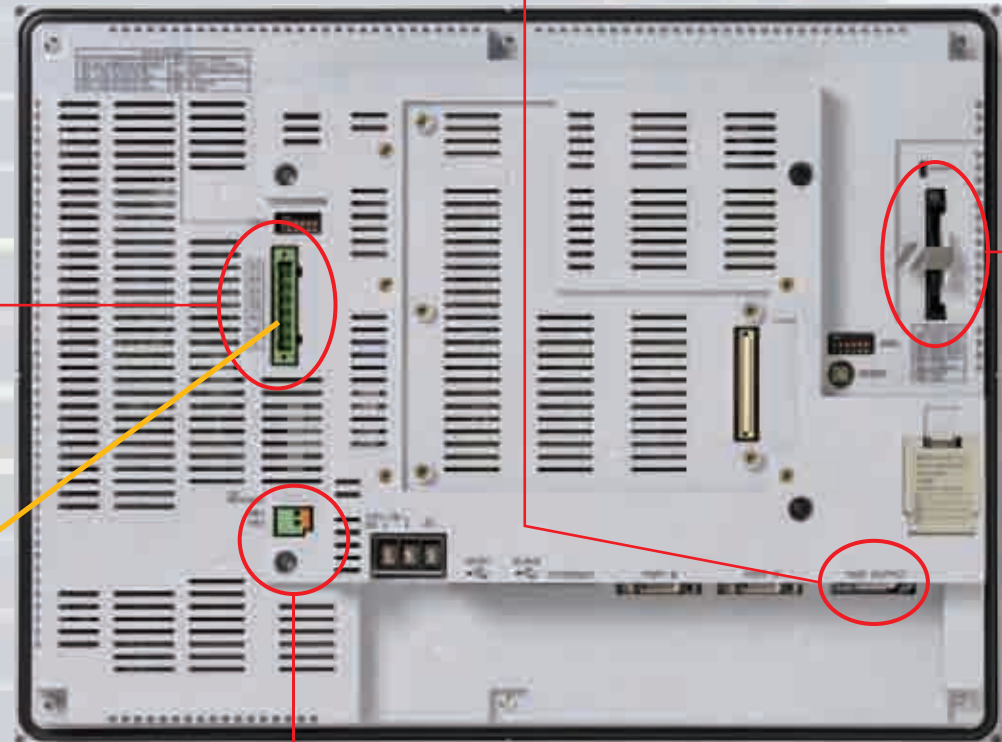
**NS15**  
22 rows x 21 columns max.  
XGA (1,024 x 768 pixels)

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.

Continued.



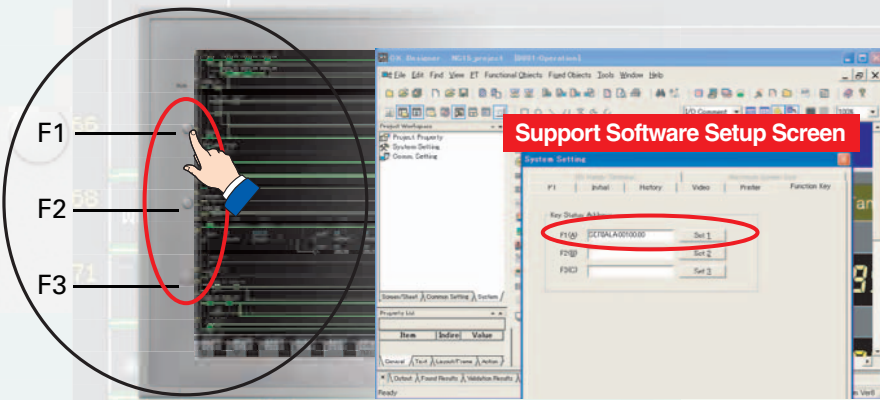
The NS15 Can Do All of This.

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)



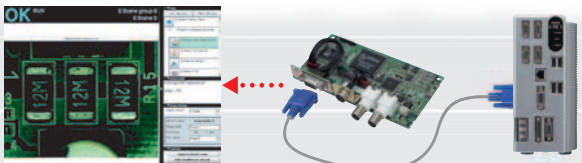
Screen objects are automatically enlarged.

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.

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

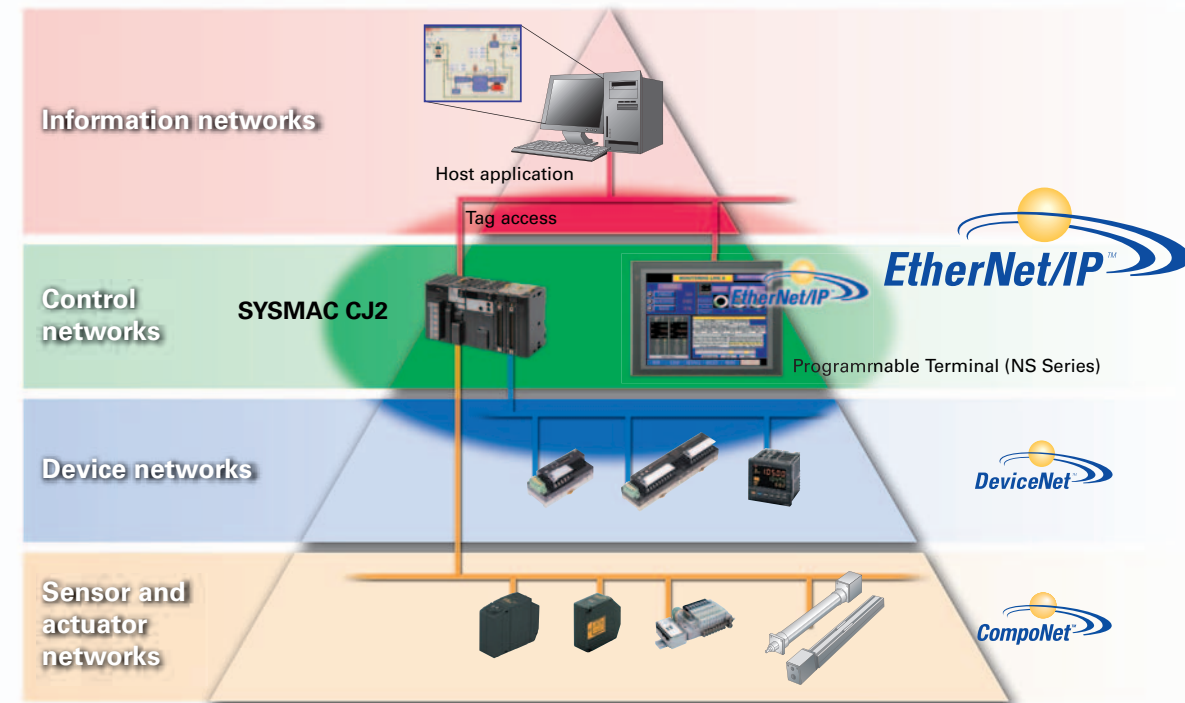
Note: The NS15 supports Ethernet as a Standard Feature.

Details on CJ2 compatibility



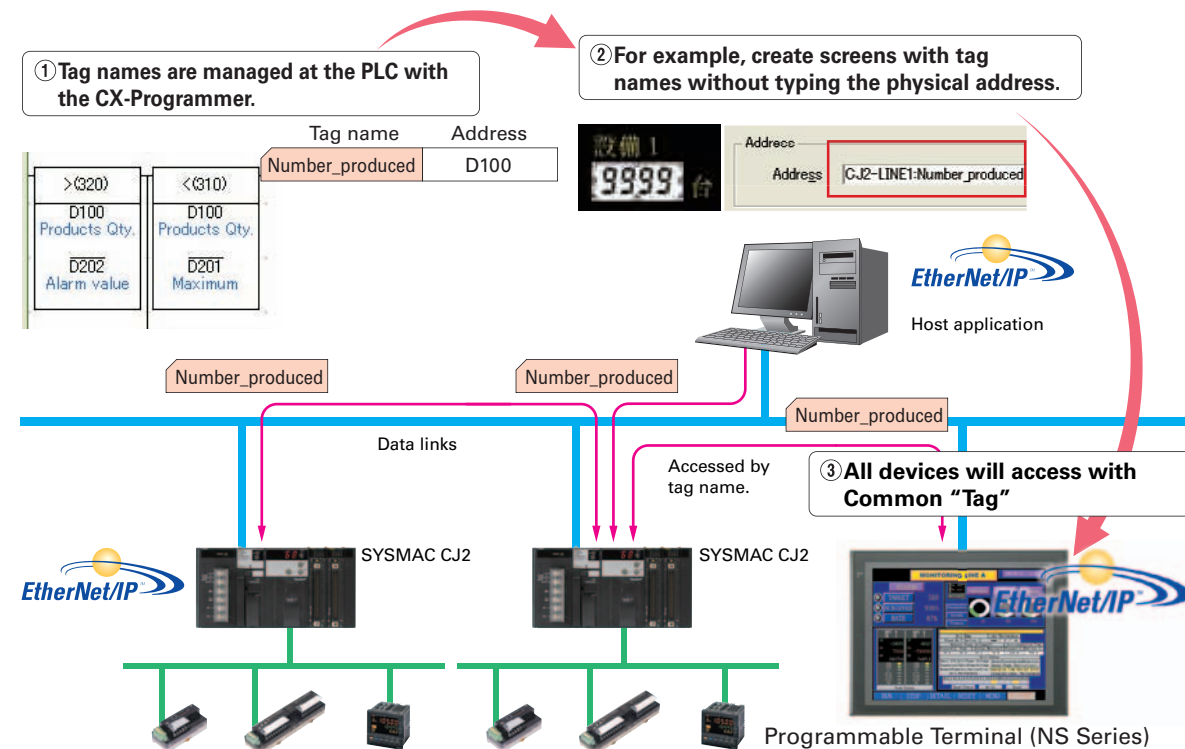
# What's New

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



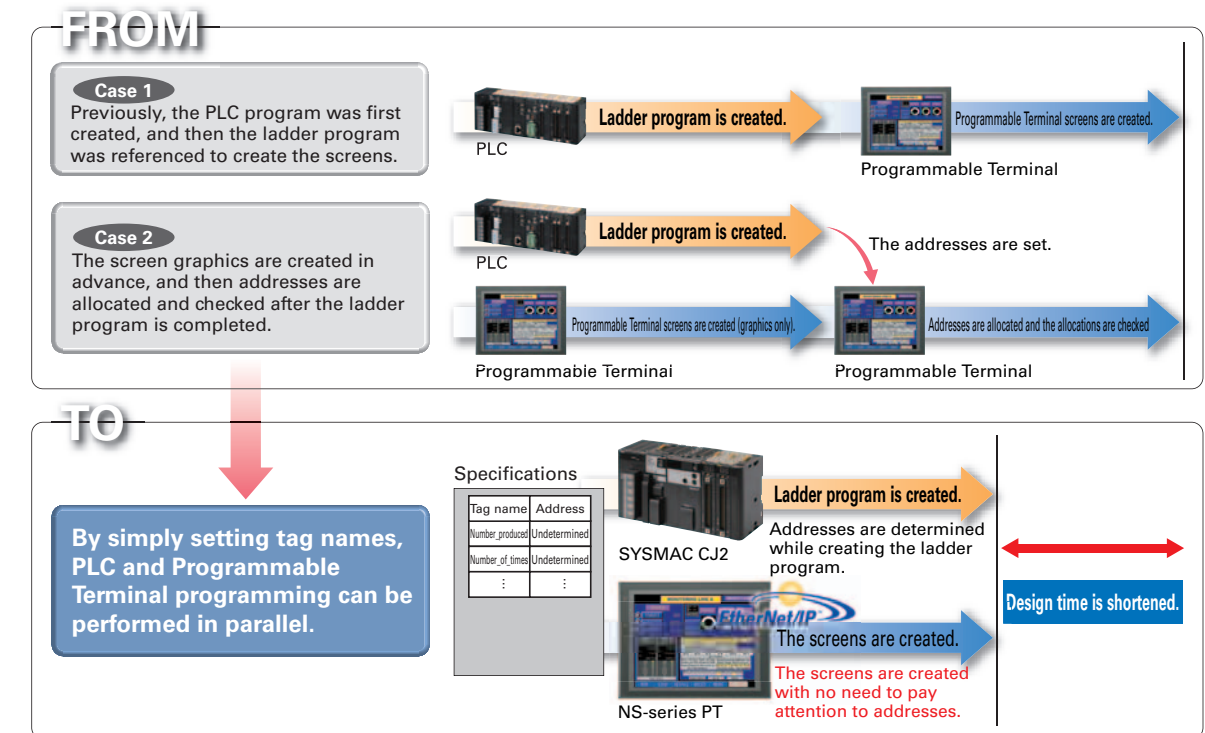
## What is tag access with EtherNet/IP?

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.



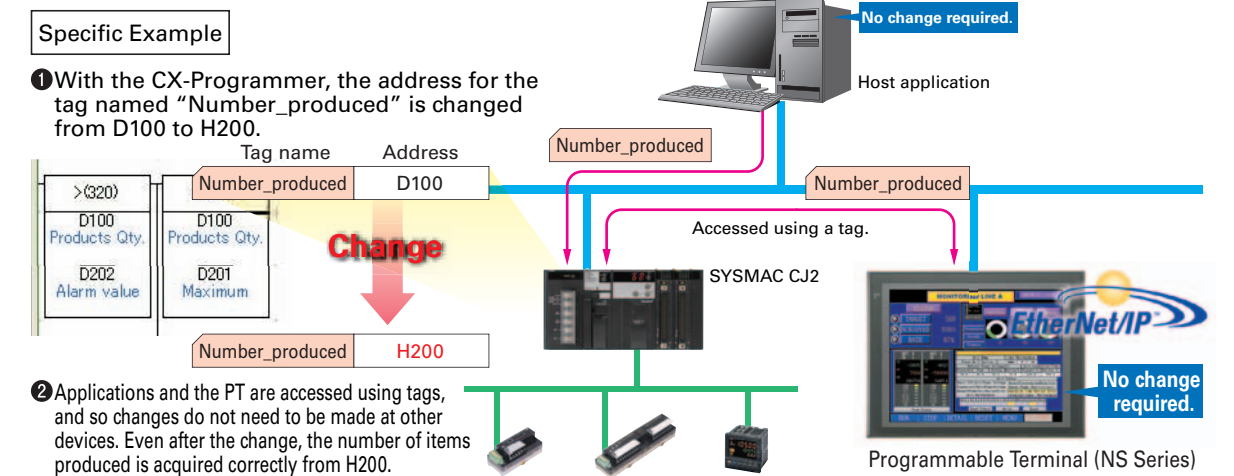
Supported Devices **CJ2** CS1/CJ1 CP1 Multi-vendor Support

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.

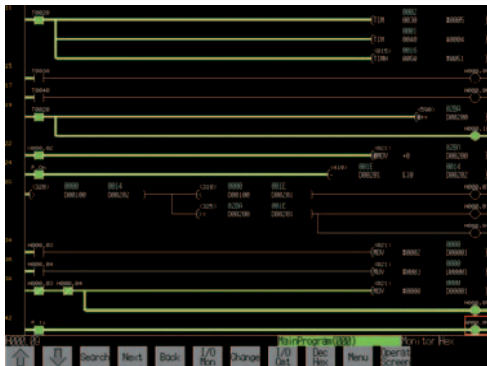
Standard Feature  
(See note.)

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.



The cursor is displayed with a red frame. This is useful to specify the program section, execute a search, and to display the search results.



Up to three lines can be used for comments. The comment display can be selected from three lines, one line, or no comments.

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.



Select Read I/O Comment Reading from the Menu.






The I/O comments are displayed.

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.



Found it!



“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.

1 Why is this output not turning ON?

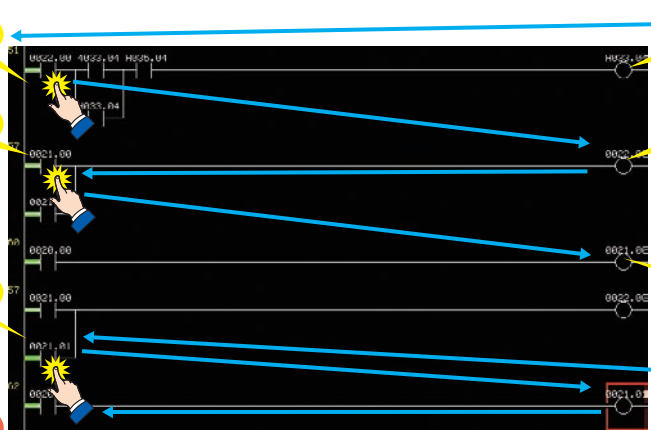
2 Is this input the cause? What output corresponds to this input?

3 Which of these two inputs is the cause? Let's look at CIO 21.00 first.

4 So is it input CIO 21.01 after all?

5 There's no problem with input CIO 21.00. Let's go back to the previous program section.

6 Yes, the problem is here!



Back


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.

1 Select the input bit for which the output will be forced ON.

2 Select the address by touching the panel.

3 Select the Forced Set Option and then press the Update Button.



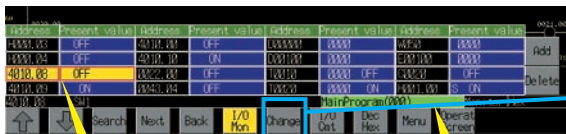
Change Value

Forced ON

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

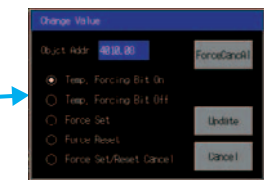
*Check and Change I/O While You View the Ladder Diagram on the I/O Monitor*

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



Make the selection with the I/O monitor by touching the screen.

Changing the present value of the address selected with the Change Value Button

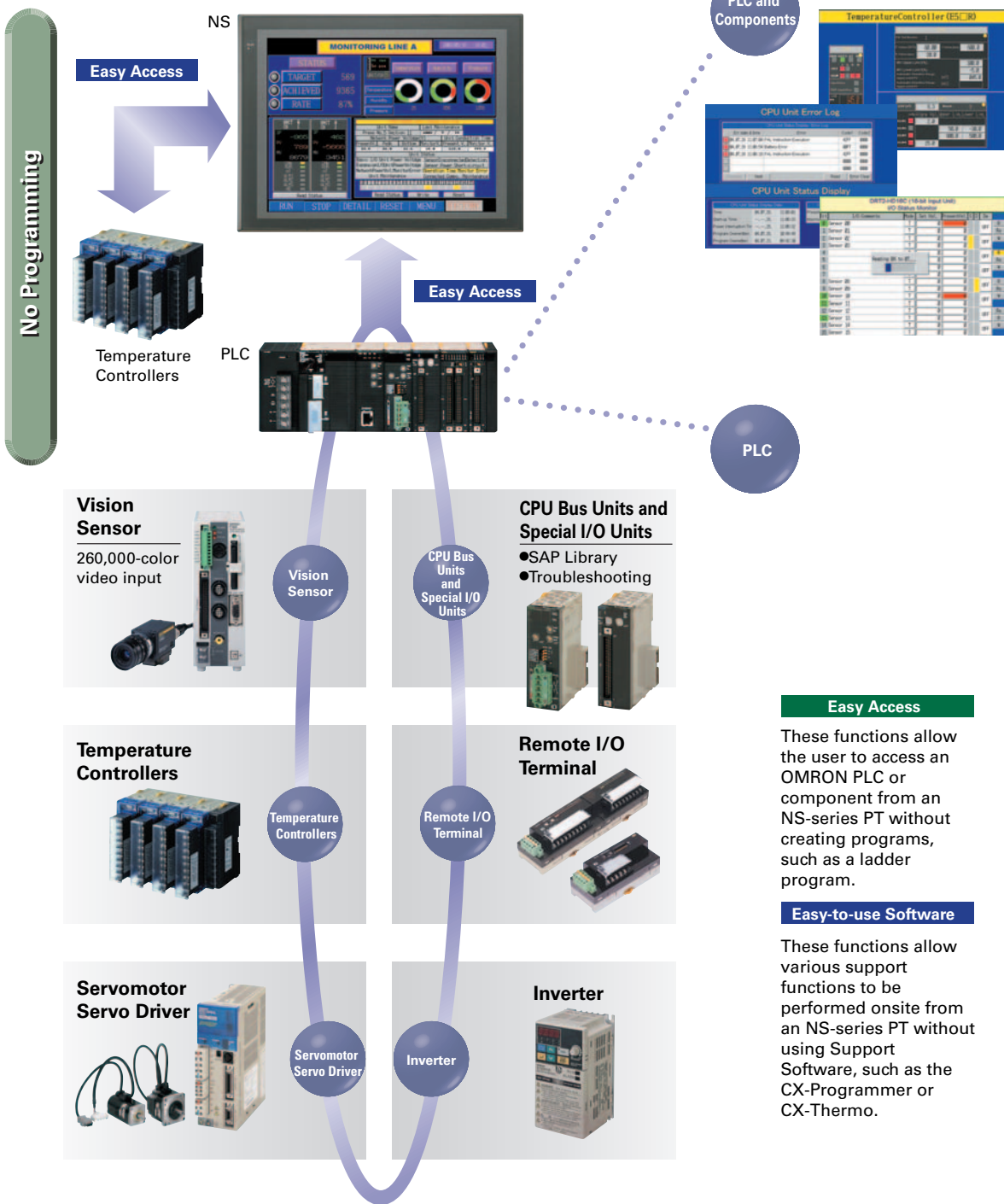






## Best Match with OMRON Products, Eliminates Programming and Screen Designing

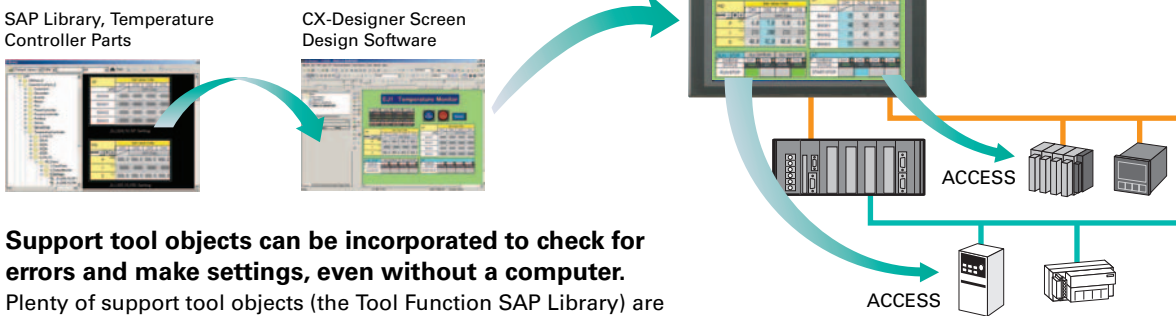
The Smart Active Parts (SAP Library) for the NS Series makes it easy to connect to OMRON PLCs and components, without creating ladder programs and screen data. OMRON provides a development environment that requires with no programming and no screen designing.



## Smart Active Parts (SAP Library)

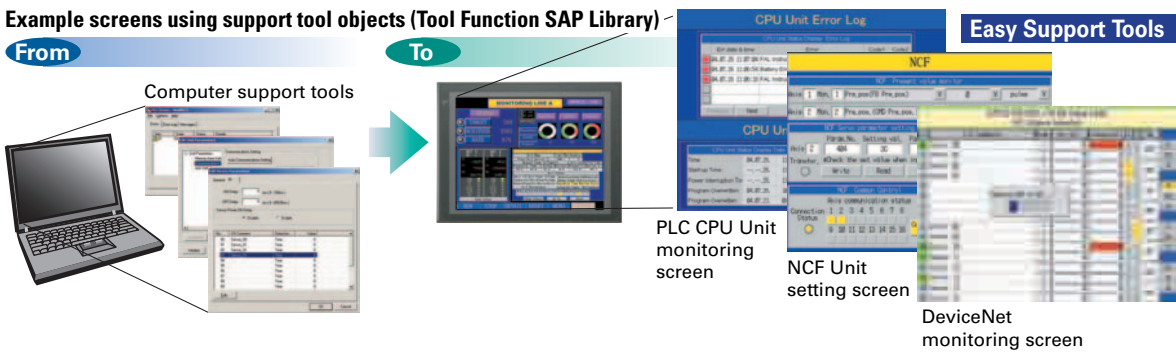
**Dramatically reduces the effort required to create ladder programming and screens.**

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) to the screen; it is completely unnecessary to create screens and ladder programming.



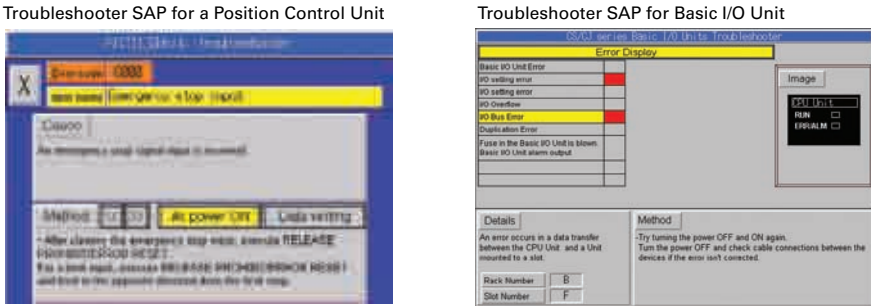
**Support tool objects can be incorporated to check for errors and make settings, even without a computer.**

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.



**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.



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.



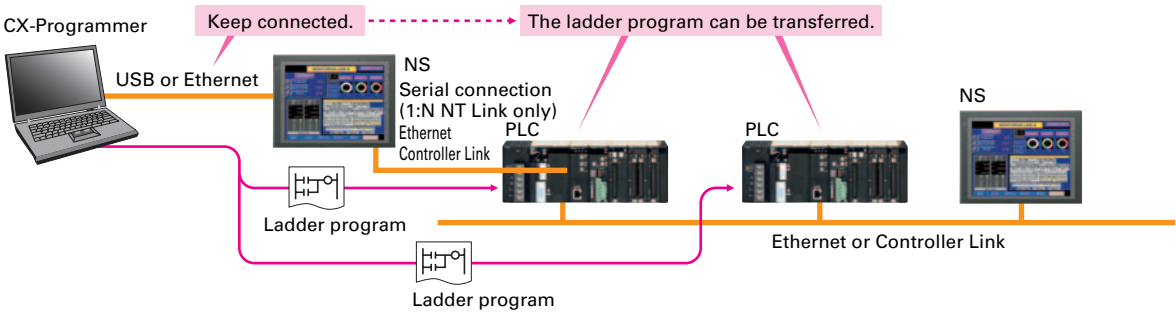
Single Port Multi Access (SPMA)

Easy Access

Standard Feature

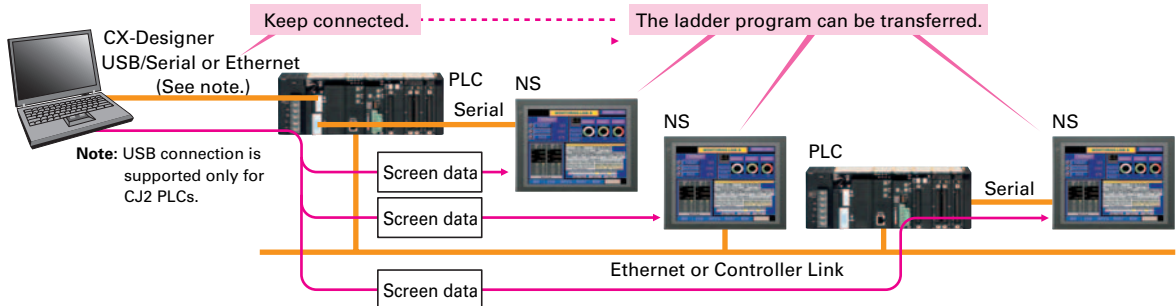
The ladder program and screen data can be transferred from a single port!  
The ladder program can be transferred through the PLC and the PT's screen data can also be transferred, all while the computer remains connected to the PT's port (such as a USB port).

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

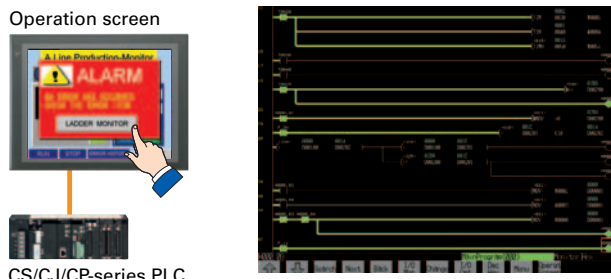
Standard Feature

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.



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

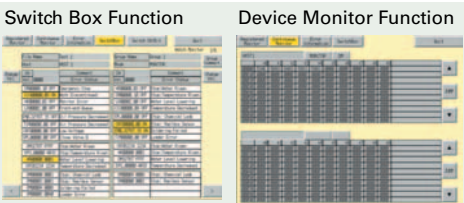
Easy Support Tools

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

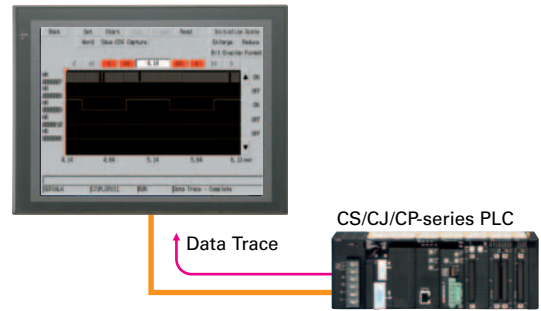
The PLC's operation can be checked!

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.

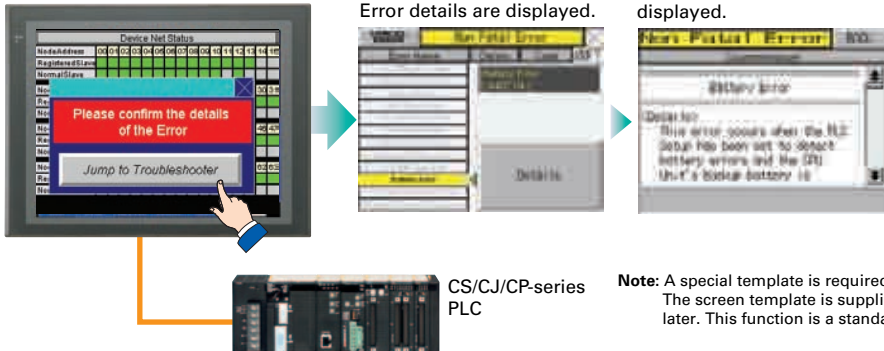


PLC Troubleshooter

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.

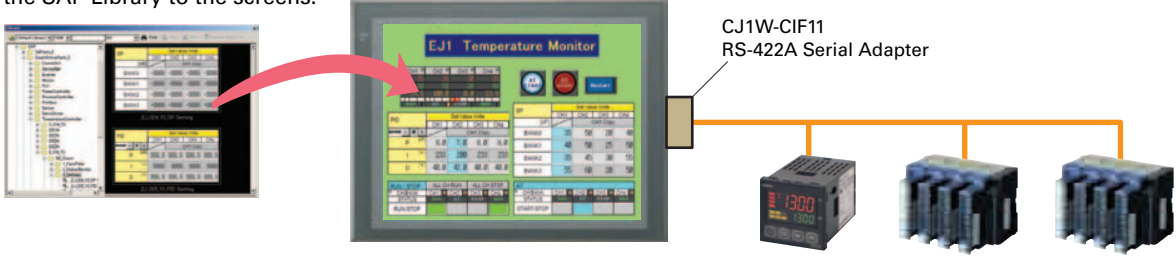
Direct Connection to Temperature Controllers

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.


## Screens for Loop Controllers can be easily and automatically created.

### Compatibility with CX-Process Is Also Outstanding.

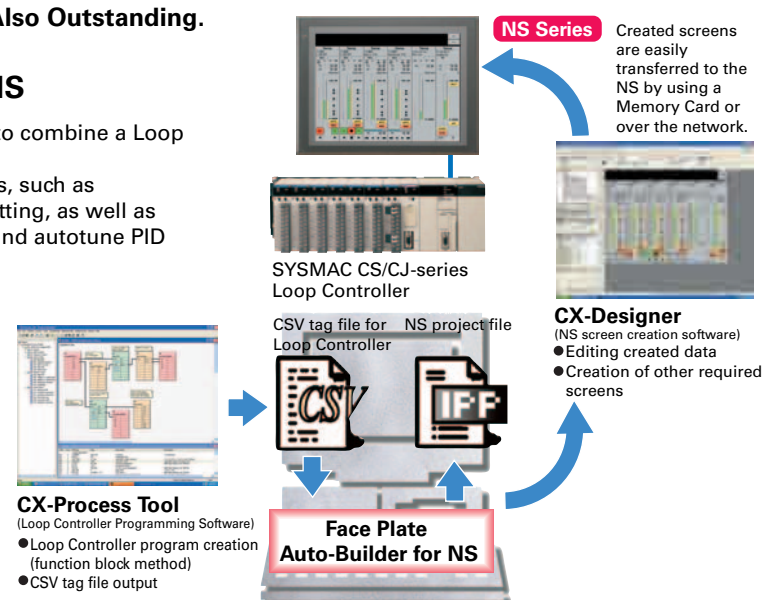
## WS02-NSFC1-EV3

## Face Plate Auto-Builder for NS

Significantly reduces the effort required to combine a Loop Controller with an NS-series PT.

- Easy automatic generation of faceplates, such as faceplates for PV monitoring and SV setting, as well as tuning screens, such as screens to set and autotune PID constants.
  - A total of 17 function blocks are supported, with eleven function blocks, such as Ratio Setting and Motor Manipulators newly supported (version 3 of higher).
  - Comments are automatically entered for automatically assigned unit and scale settings when a project is generated (version 3 and higher).
- 
- GX-Process Tool**

**Note:** Refer to the PLC-based Process Control Catalog (Cat. No. P051) and the Loop-control CPU Unit Catalog (Cat. No. R128) for details on Loop Controllers.



## 260,000-color Video Display

**Equipment and workpiece movements can also be displayed in beautiful video!**

Two kinds of video interfaces are available to connect to various applications. Provides compatibility with OMRON Vision Sensors (F150, F160, and F250) in addition to video and CCD camera connections. A Console Unit is not needed to connect, either.

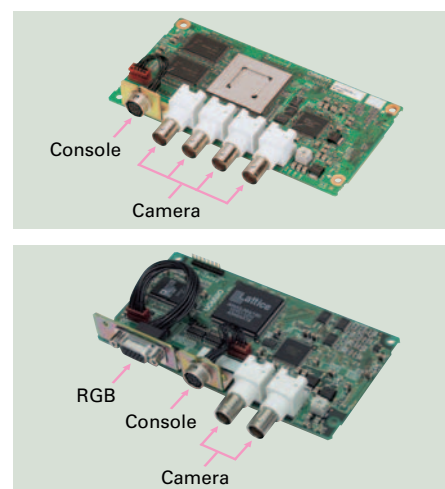
## NS-CA001 Video Input Unit

Four video inputs or CCD cameras can be connected and up to four images can be displayed simultaneously if the image size is 320x240 pixels. The NS-CA001 cannot be used with the NS5 or the NS15.

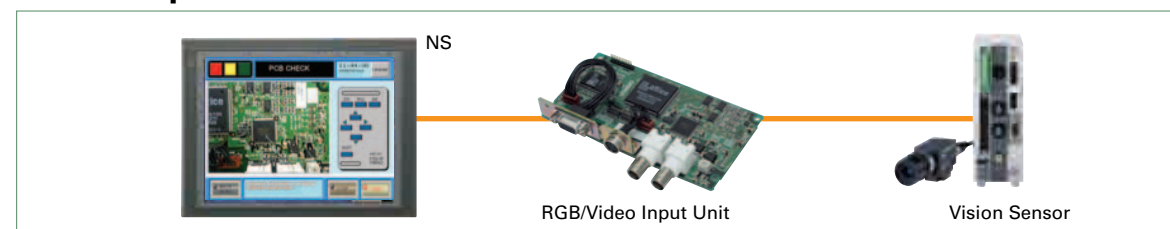
## NS-CA002 RGB/Video Input Unit

There is an analog RGB input terminal in addition to the two video input terminals. Either of the video signals or the analog RGB signal can be displayed on the NS-series PT. The NS-CA002 cannot be used with the NS5.

**Note:** Video input cannot be used with the NS15. Only RGB input can be used.



**Also Compatible with OMRON Vision Sensors.**



MEMO.



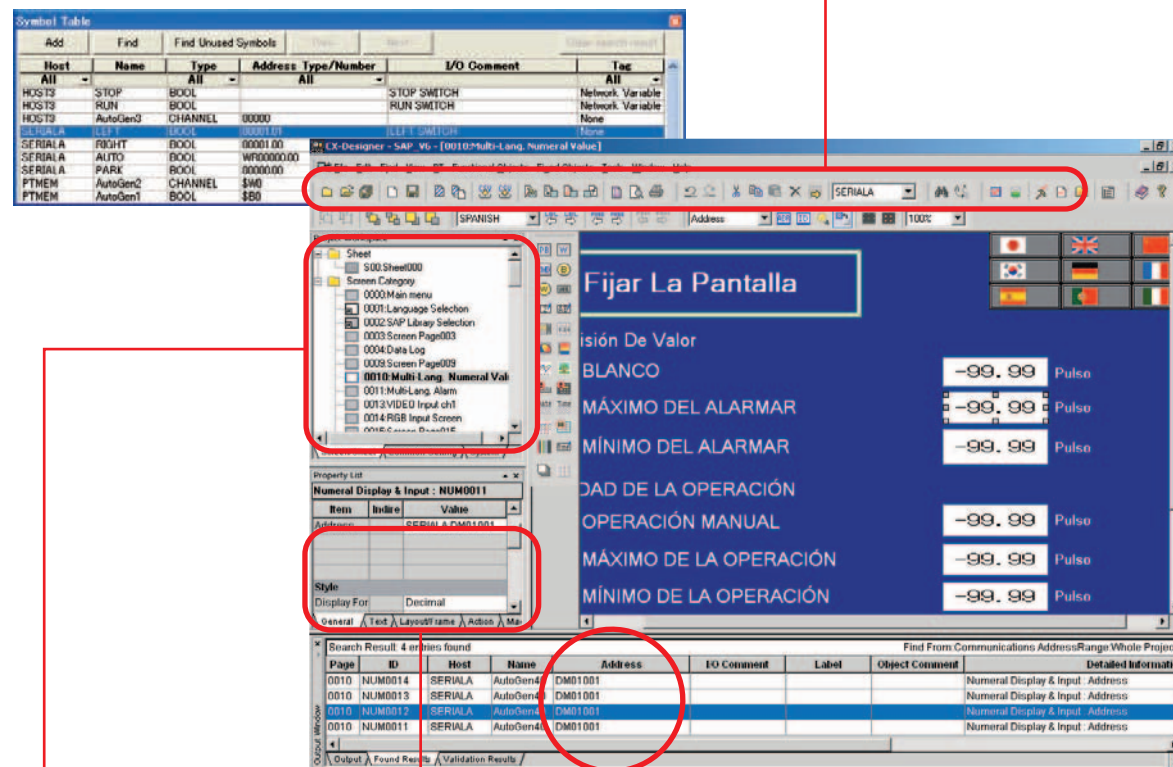
## User-friendly Screen Creation

**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.

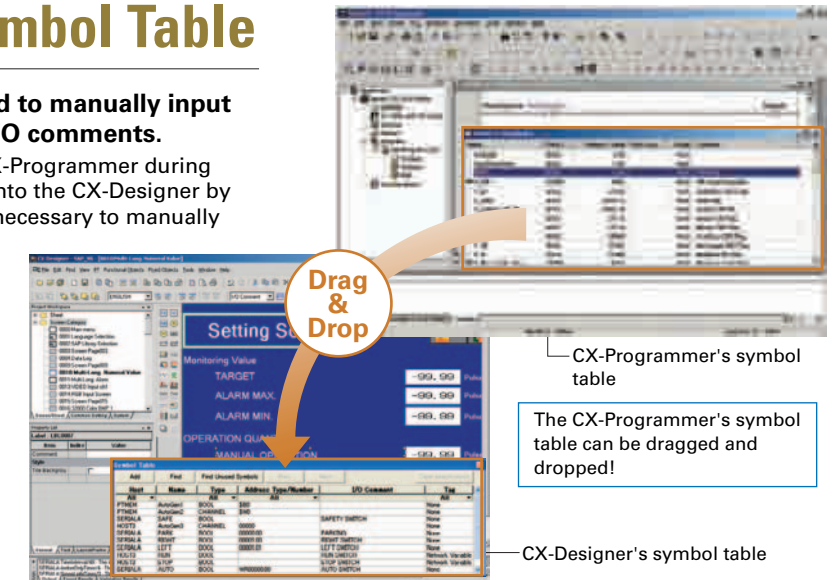
Note: The same type of Project Workspace and Output Window as in the CX-Programmer are provided for the user interface.

## 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.

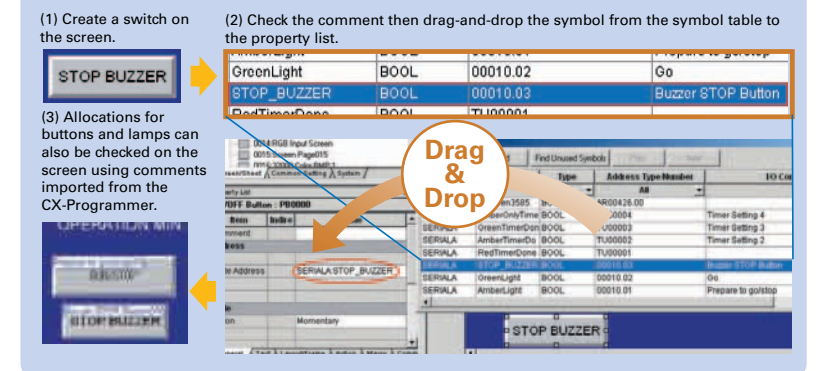
**Note:** Version 8.0 or higher of the CX-Programmer support tags (i.e., network symbols).



● **Example of Reading the Symbol Table**

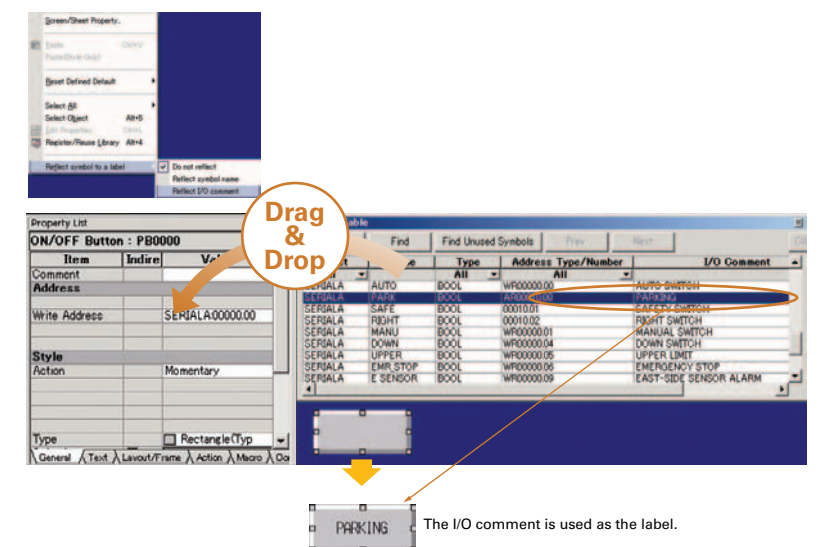
The symbol table read from the CX-Programmer can be directly dragged and dropped to the touch switch and lamp.

### Example of Easy Address Allocation



● **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.)



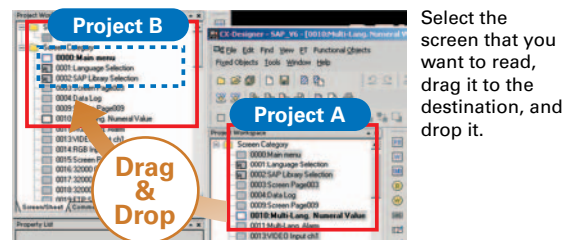


## Reading Another Project's Screens and Objects

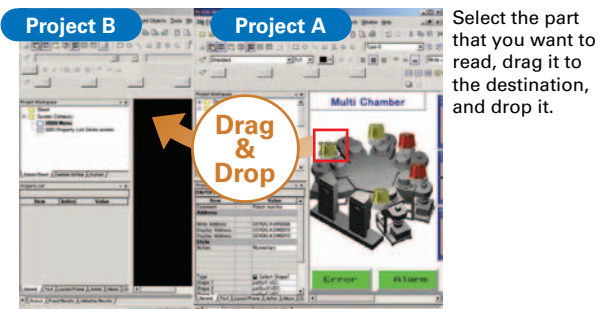
**Easily reuse screen resources by dragging and dropping them.**

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]

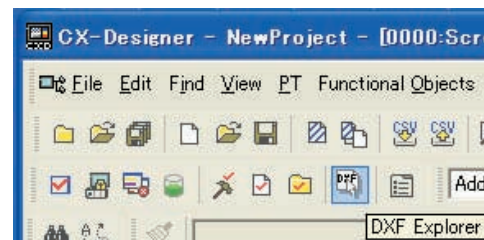


[Example screen 2]



## Reading CAD Files

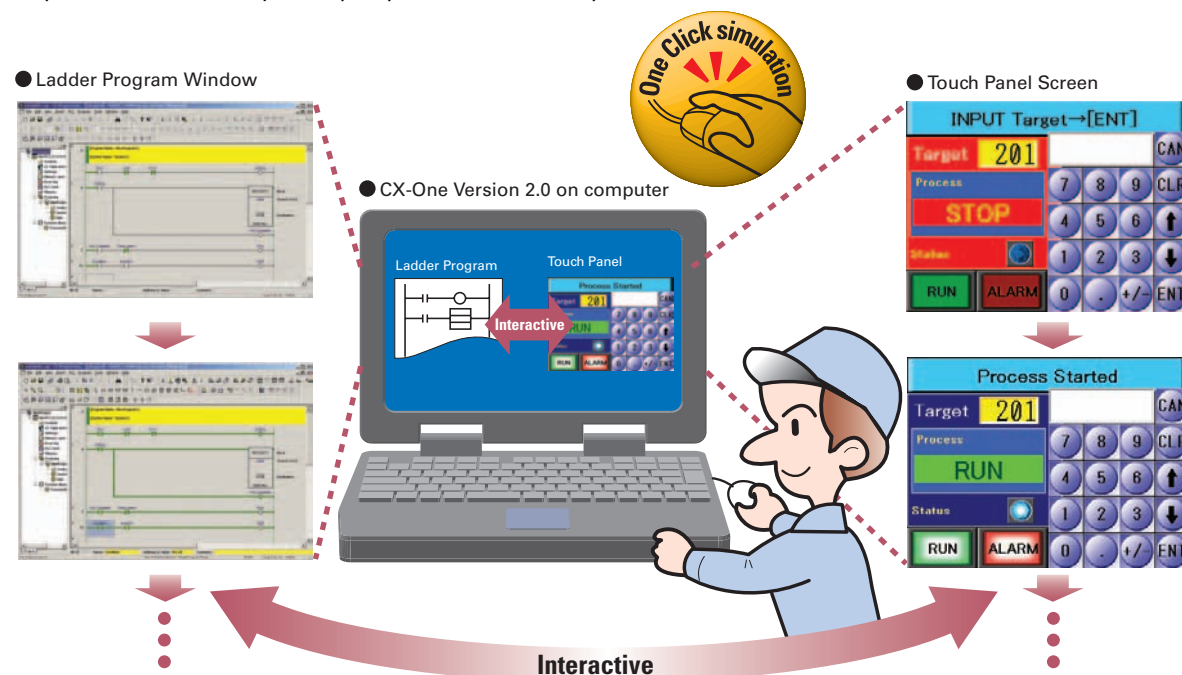
It is possible to import DXF files by dragging and dropping them. The files are read as a diagram, and so less capacity is used than with images. It is also easy to customize the diagram by changing the shape or color.



## 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.

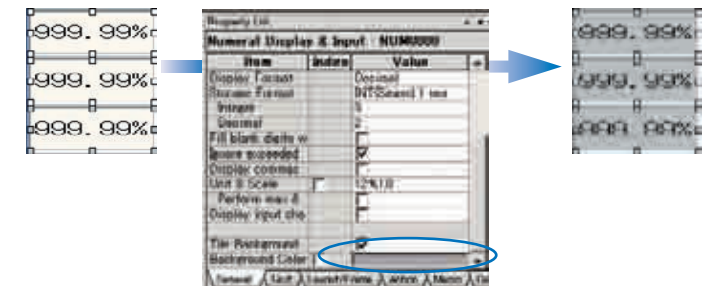
**The attributes of multiple parts can be edited together, too.**

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.



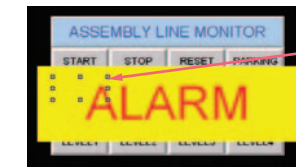
## Editing of Overlapping Objects

**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.



All types	Object Comment	ID	X	Y
	PI0000	96	136	
	PI0001	200	136	
	PI0002	304	136	
	PI0003	408	136	
	PI0004	512	136	
	PI0005	200	164	
	PI0006	304	164	
	PI0007	408	164	
	PI0008	512	164	
	PI0009	200	192	
	PI0010	304	192	
	PI0011	408	192	
	PI0012	512	192	
	PI0013	200	220	
	PI0014	304	220	
	PI0015	408	220	
	PI0016	512	220	
	PI0017	96	248	

[Filter Function]

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



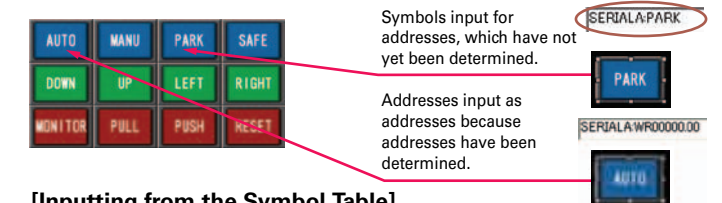
Only the edited object is displayed and it can be edited easily.



## 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]

Host	Name	Type	Address	Comment	Type
ALL	AutoStart	BOOL	0		
PTMEM	AutoStart	CHANNEL	0		
SERIALA	PARK	BOOL	0		
SERIALA	SAFE	BOOL	0		
HOSTD	AutoStart	CHANNEL	0		
SERIALA	RIGHT	BOOL	0		
SERIALA	LEFT	BOOL	0		
HOSTD	RUN	BOOL	0		
HOSTD	STOP	BOOL	0		
SERIALA	AUTO	BOOL	0		

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

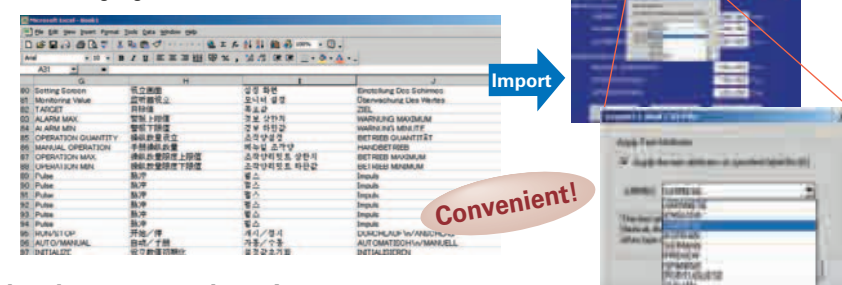


ราชอาณาจักรไทย  
Thai Displays Also Supported

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

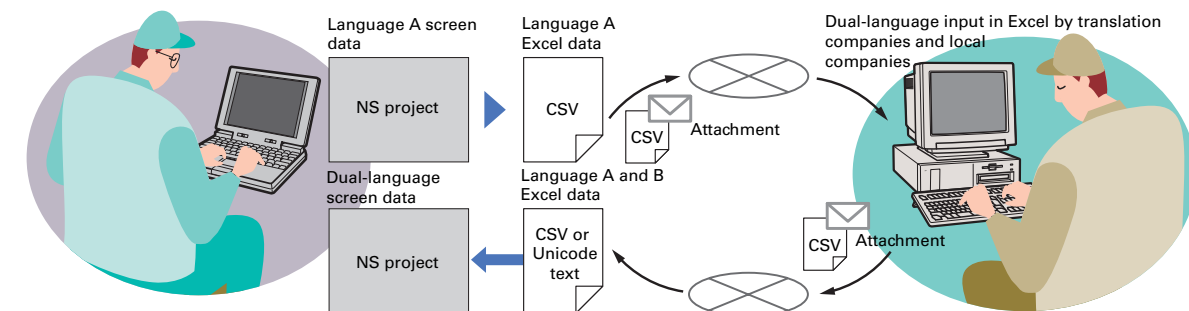
When screen data is imported, text attributes can be applied to the specified labels and attributes such as the font and text color can be reflected to other languages labels.

Multi-language CSV data



**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.

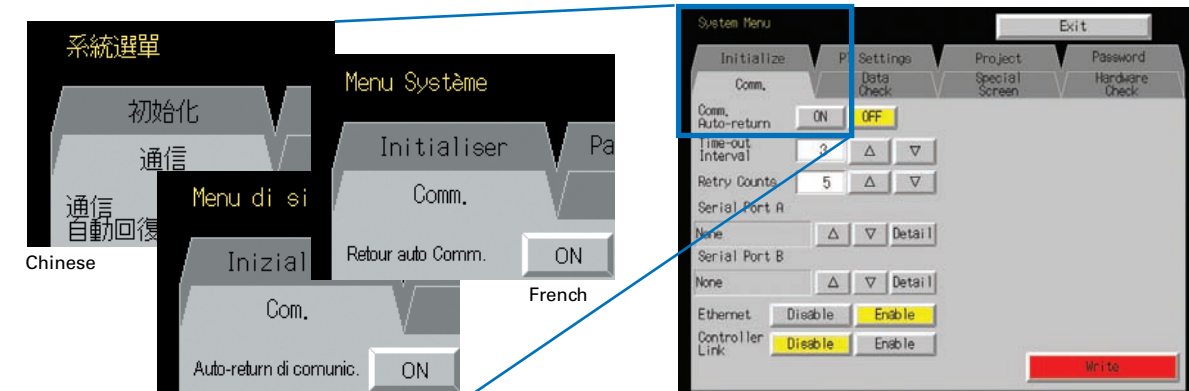


**Note:** Windows 2000 or XP is required for multi-language support.

**Multi-language System Messages**

First in the Industry\* 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.



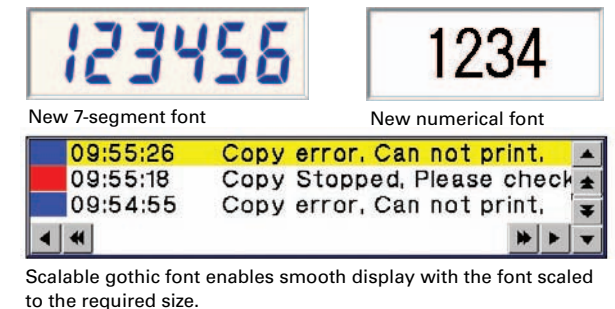
Chinese  
Italian  
French  
English system menu (maintenance menu)

\*: OMRON research as of July 2007.

## Greater Beauty

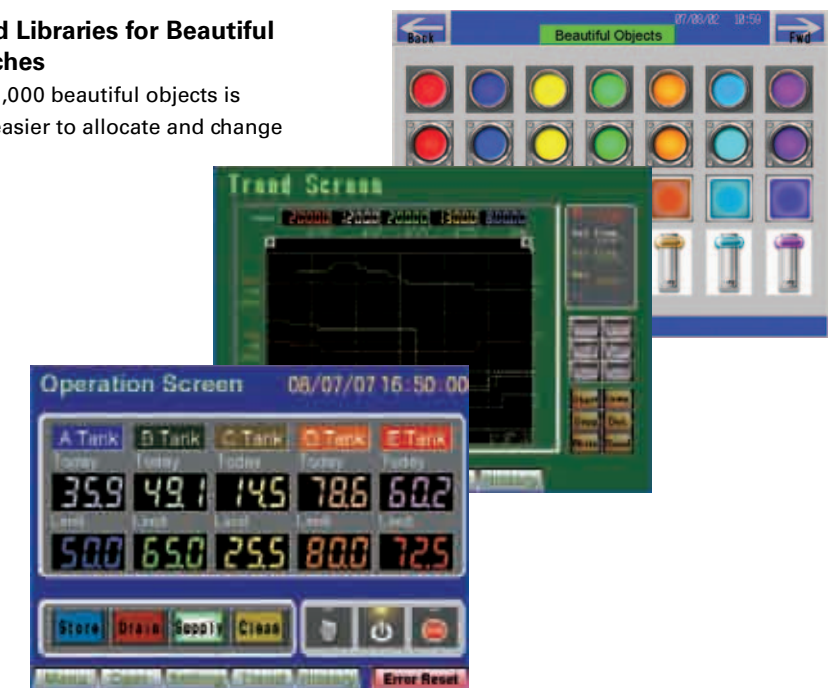
**Make numeral displays and input objects more attractive, and increase or decrease the character string font size as desired.**

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.)



**Greatly Enhanced Libraries for Beautiful Lamps and Switches**

A selection of over 1,000 beautiful objects is provided. Also, it's easier to allocate and change objects.



## 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.



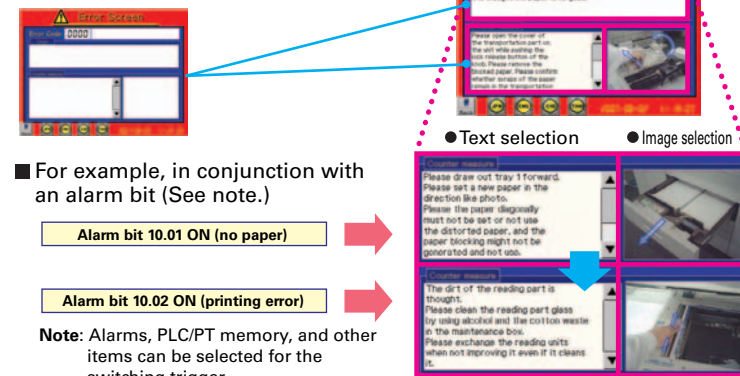
When an error occurs, the location of the error can be shown realistically in a picture.

## 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.

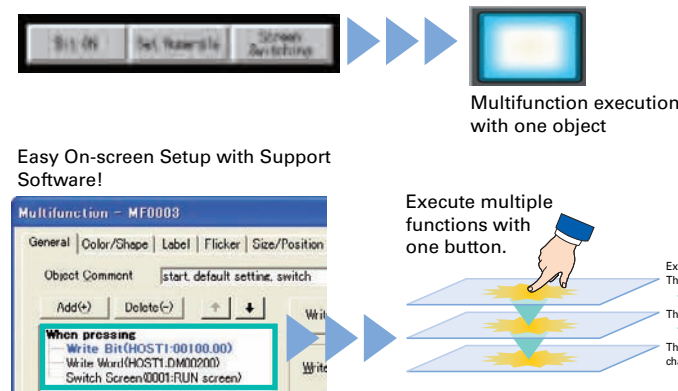
With this system, this frame is shared, and the error details in the pink frames are switched with an alarm or other item as the trigger.



## Easy-to-Use Multifunction Objects

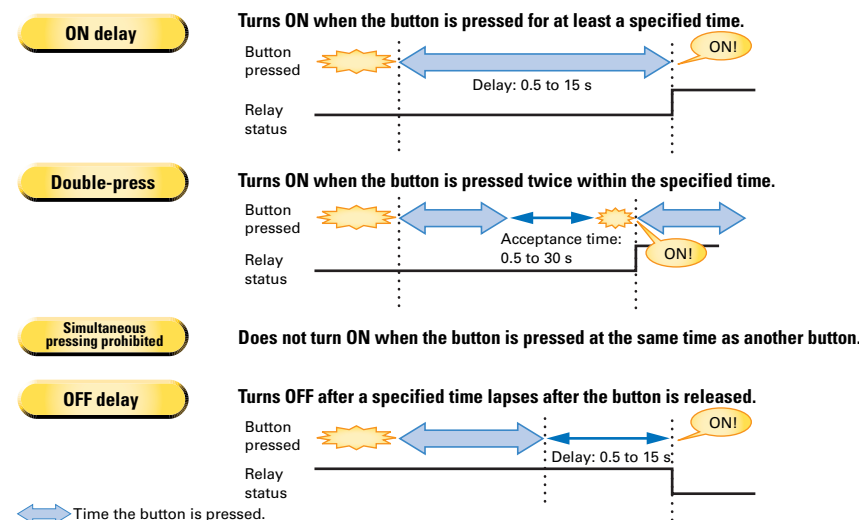
**Multiple functions can be executed on-screen with one button without macros.**

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

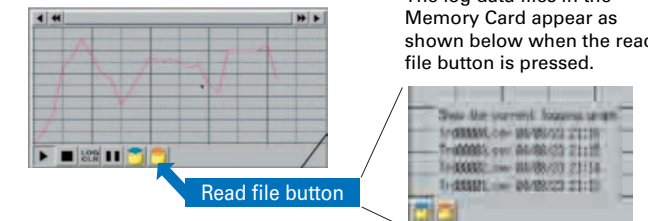
**A device's operation is easier to understand when presented visually.**

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.

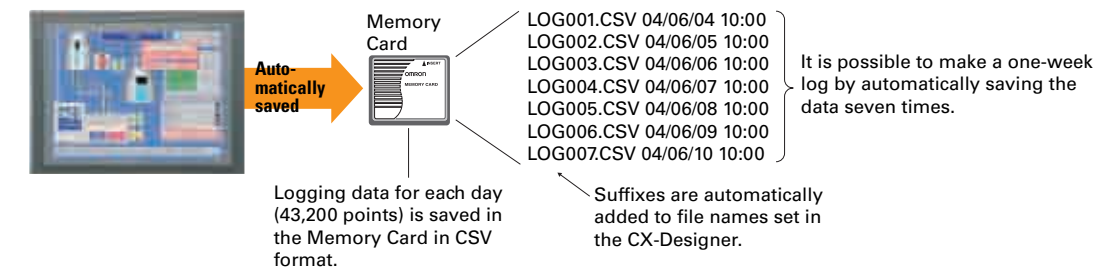
**Long-term data logging and storage are also easily achieved.**

**[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 as been further improved.**

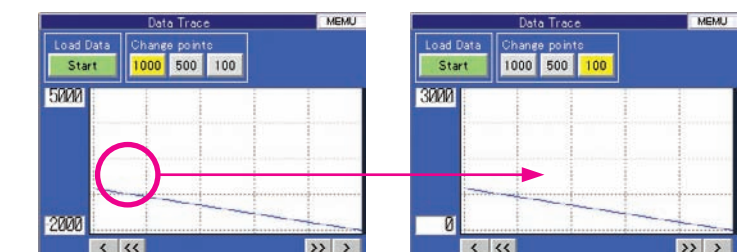
**[Line Graph Function]**

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.



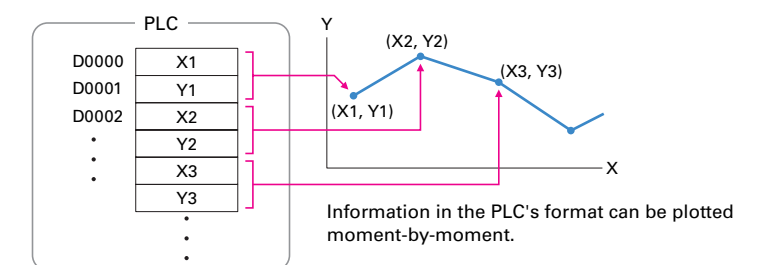
(2) The display can be magnified.



**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.

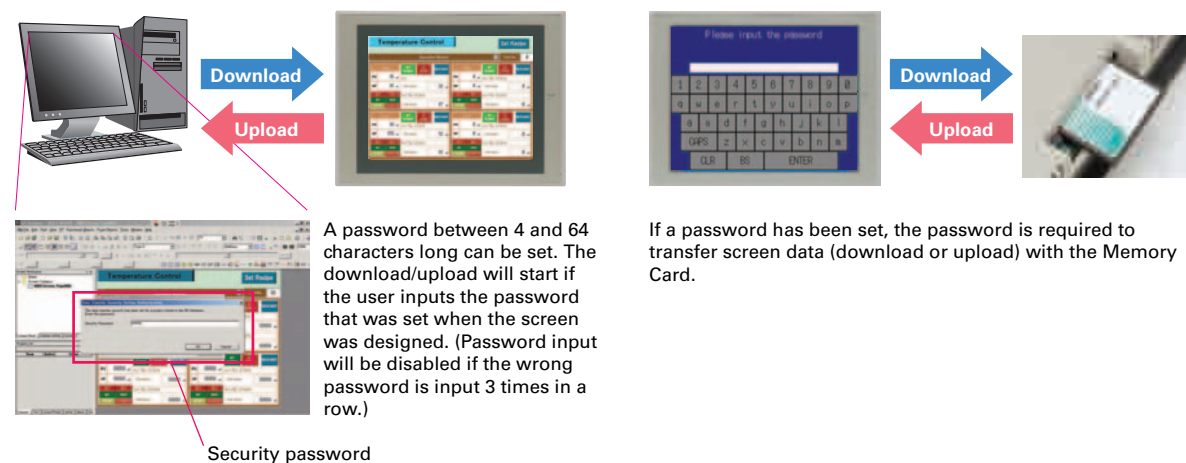




## Screen Data Security Functions

**Protect important screen data with a password.**

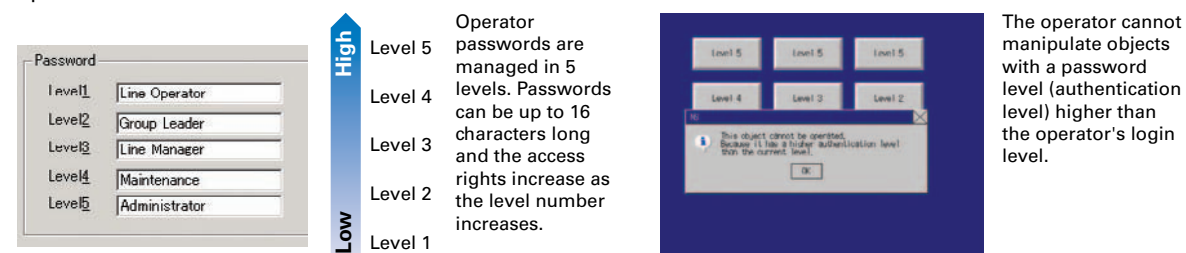
If password protection is set in the data transfer security settings when the screen data is designed, a password must be entered to download or upload the screen data, so important screen data can be protected.



## User Security Functions

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

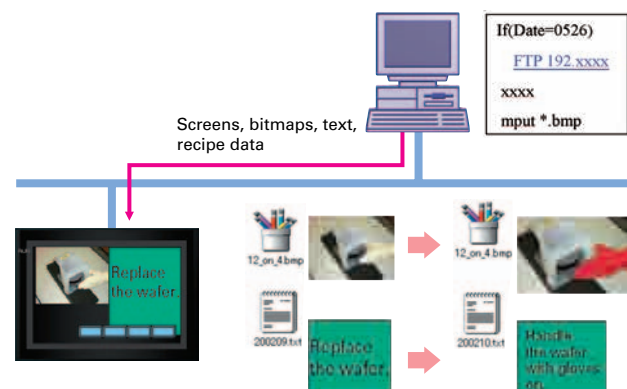
Each operator can be given one of 5 password levels using the User Security (level authentication) function. A password level can be set for each object, so various objects can be made inoperable or hidden based on the operator's access level.



## 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.

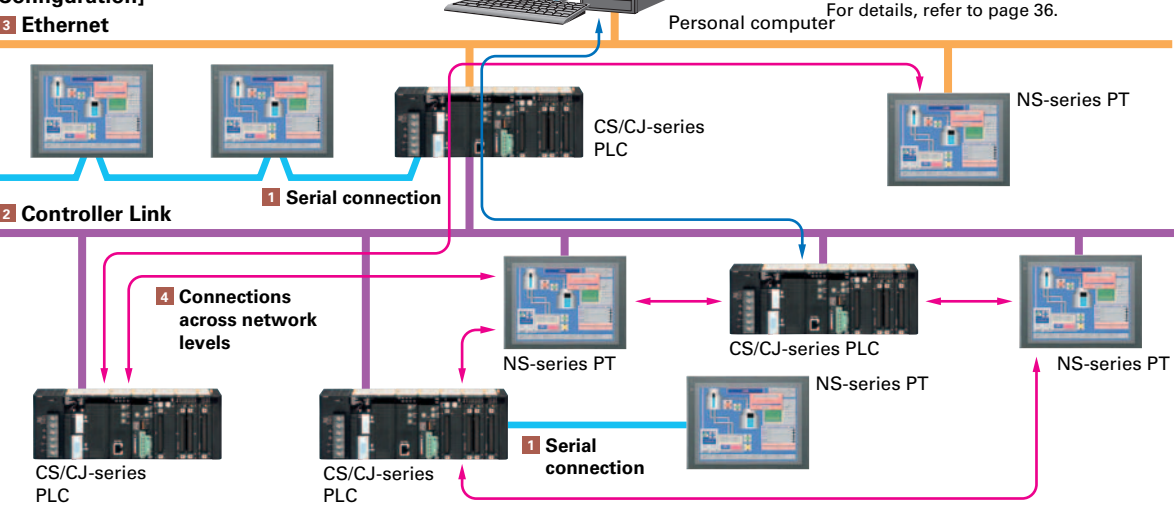


MEMO.

## 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.

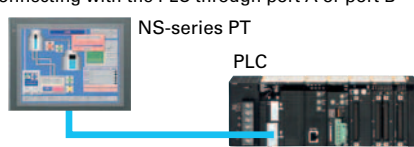
### [Example NS-series Network Configuration]



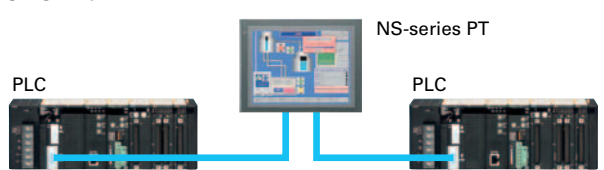
### 1 Serial connection

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

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

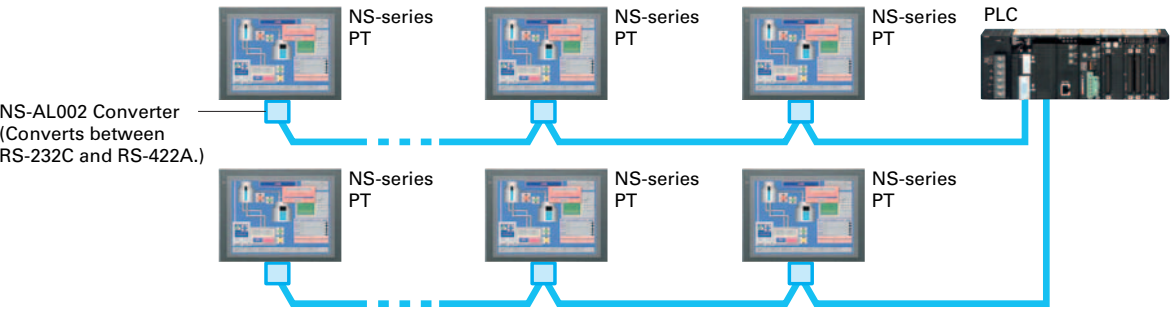


- NS:PLC = 1:2



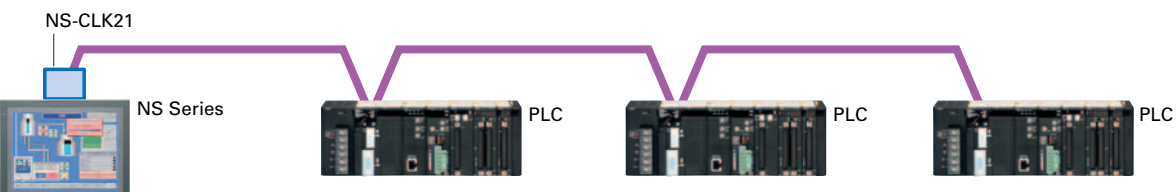
#### 1:N NT Link

- 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.

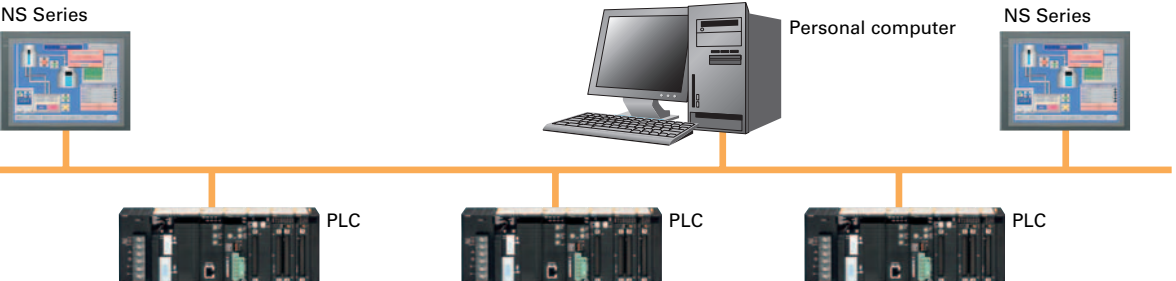


If a Controller Link connection is used, data links can be set between PLCs and multiple PLCs can be monitored/set from the NS-series PT's screen.

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

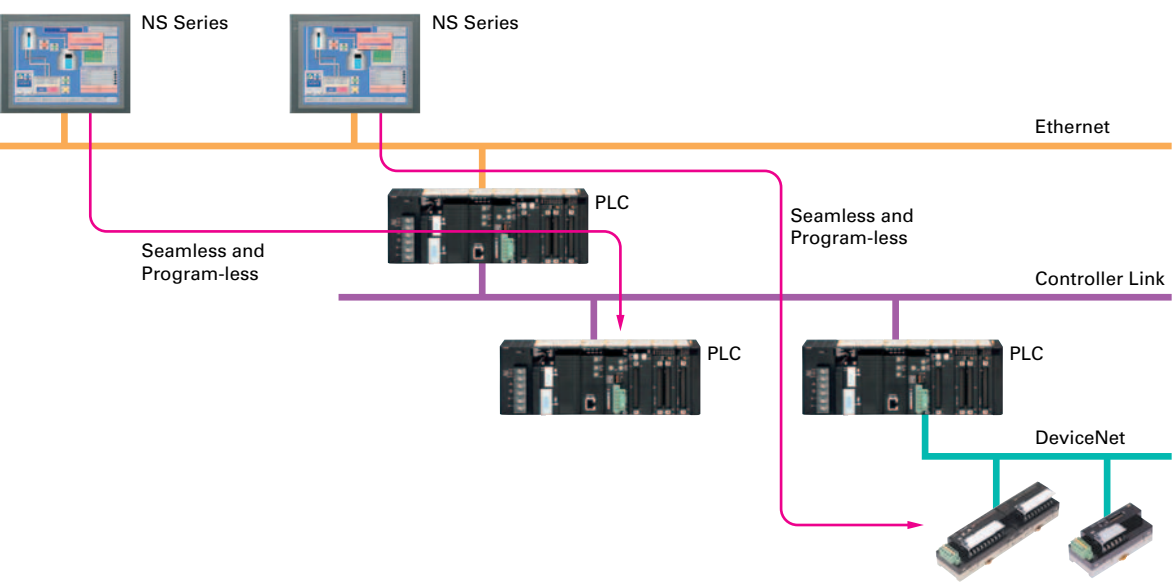
### 3 Ethernet Connection

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

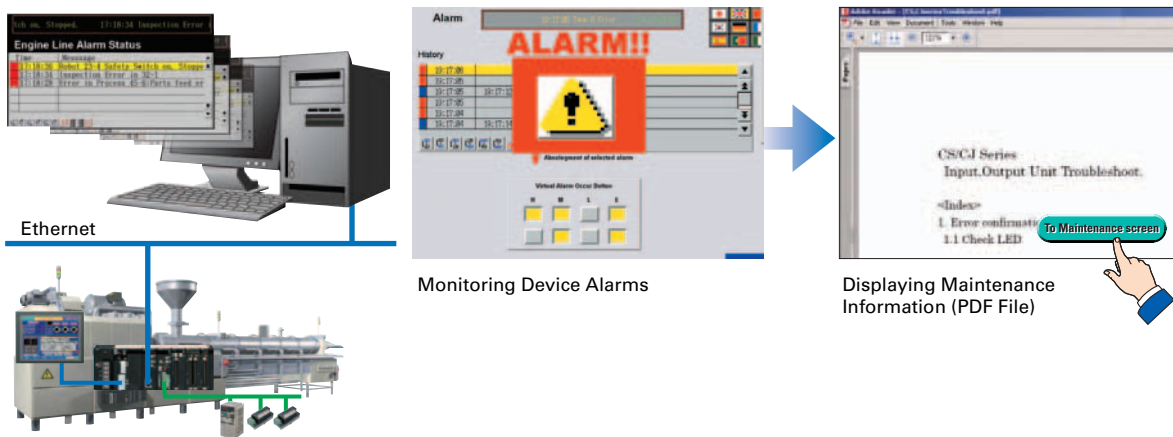
Achieve machine/line monitoring and data logging on your office computer.

**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.



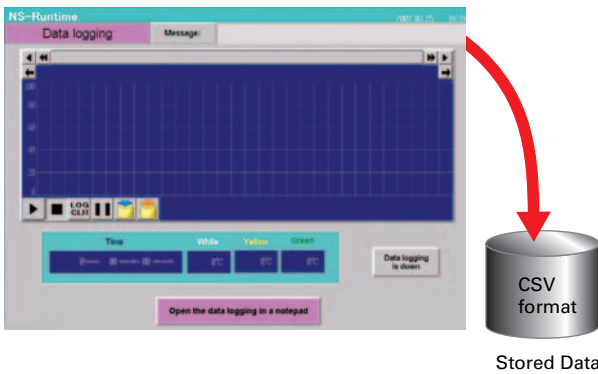
## Data Logger

### 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

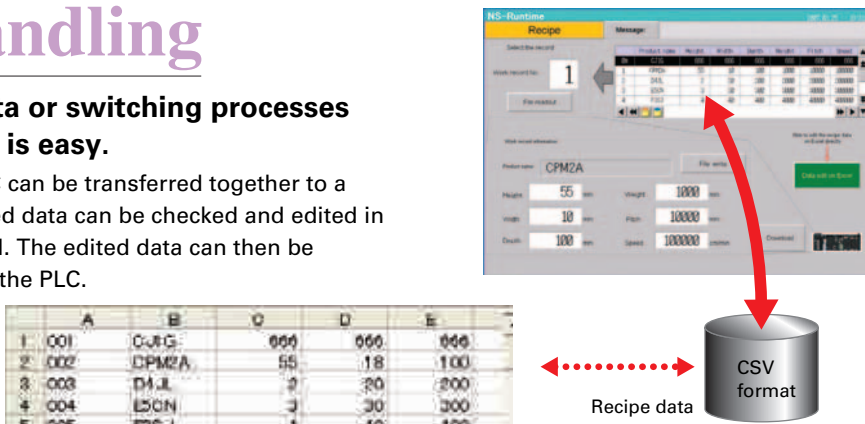
Data can be logged for approximately 7.4 days, assuming data is logged every two seconds for 12 hours a day. By using automatic file saving, data logging can be continued even longer than 7.4 days.



## Recipe Handling

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

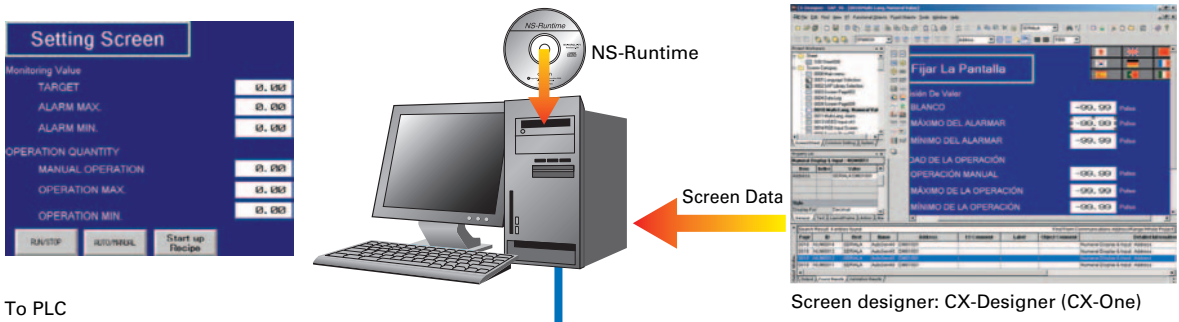
Parameter groups in the PLC can be transferred together to a computer, and the transferred data can be checked and edited in CSV format, e.g., using Excel. The edited data can then be transferred together back to the PLC.



## 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.

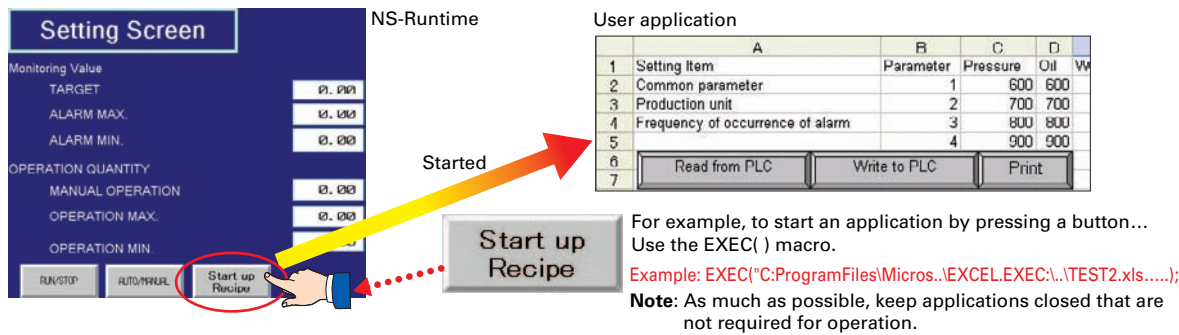


**Note:** The NS-Runtime will operate in a computer environment even if the CX-Designer installed is not installed. The hardware key (USB dongle) that is supplied with the NS-Runtime is required for operation.

## Application Startup Function

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

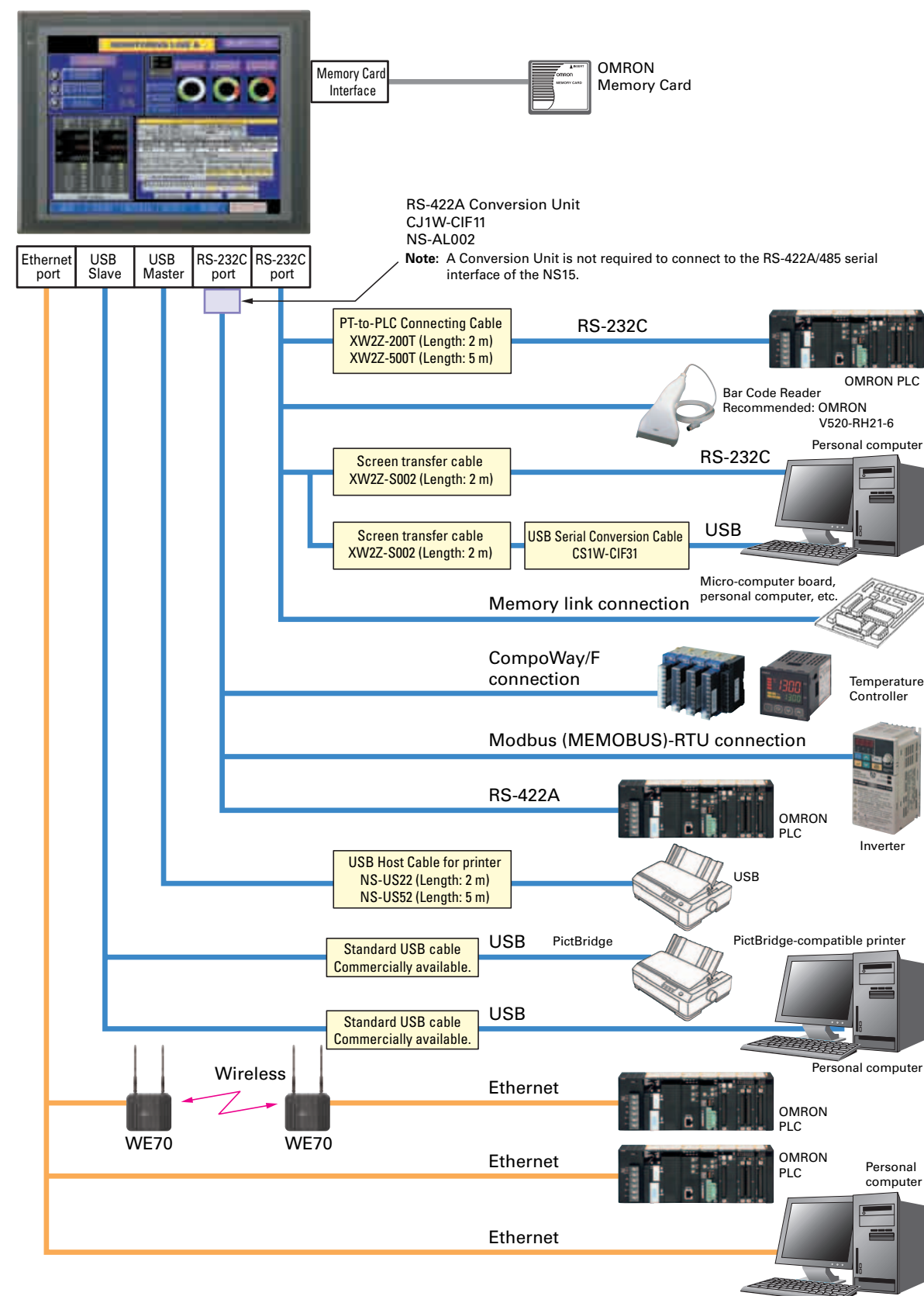
Applications can be started simply by pressing buttons on the screen.



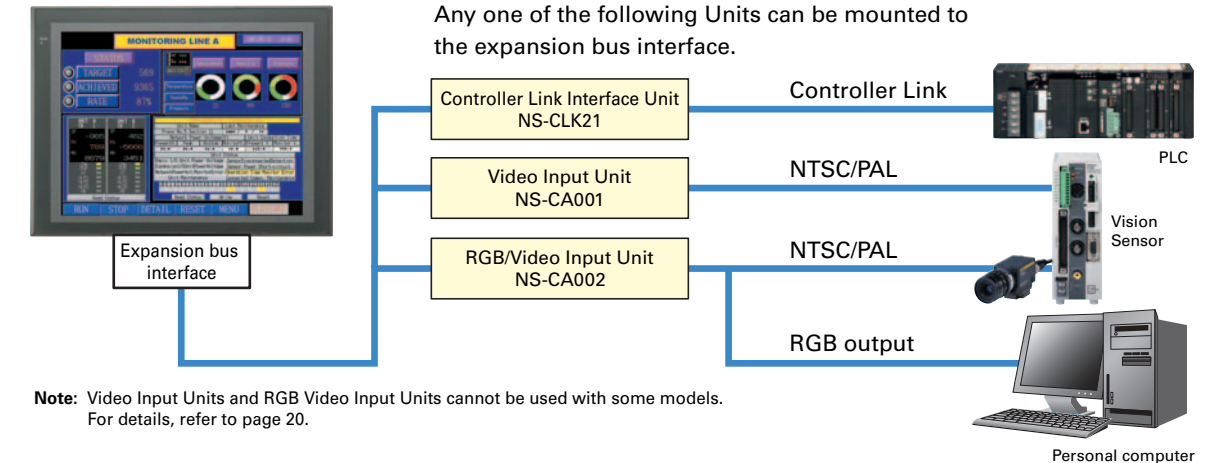
- Do not use this product for 24-hour operation in an FA environment.
- OMRON shall not be responsible if the computer or application does not operate properly due to problems such as noise.
- OMRON shall not be responsible for any problems that may be caused by any applications other than OMRON products.

# System Configuration

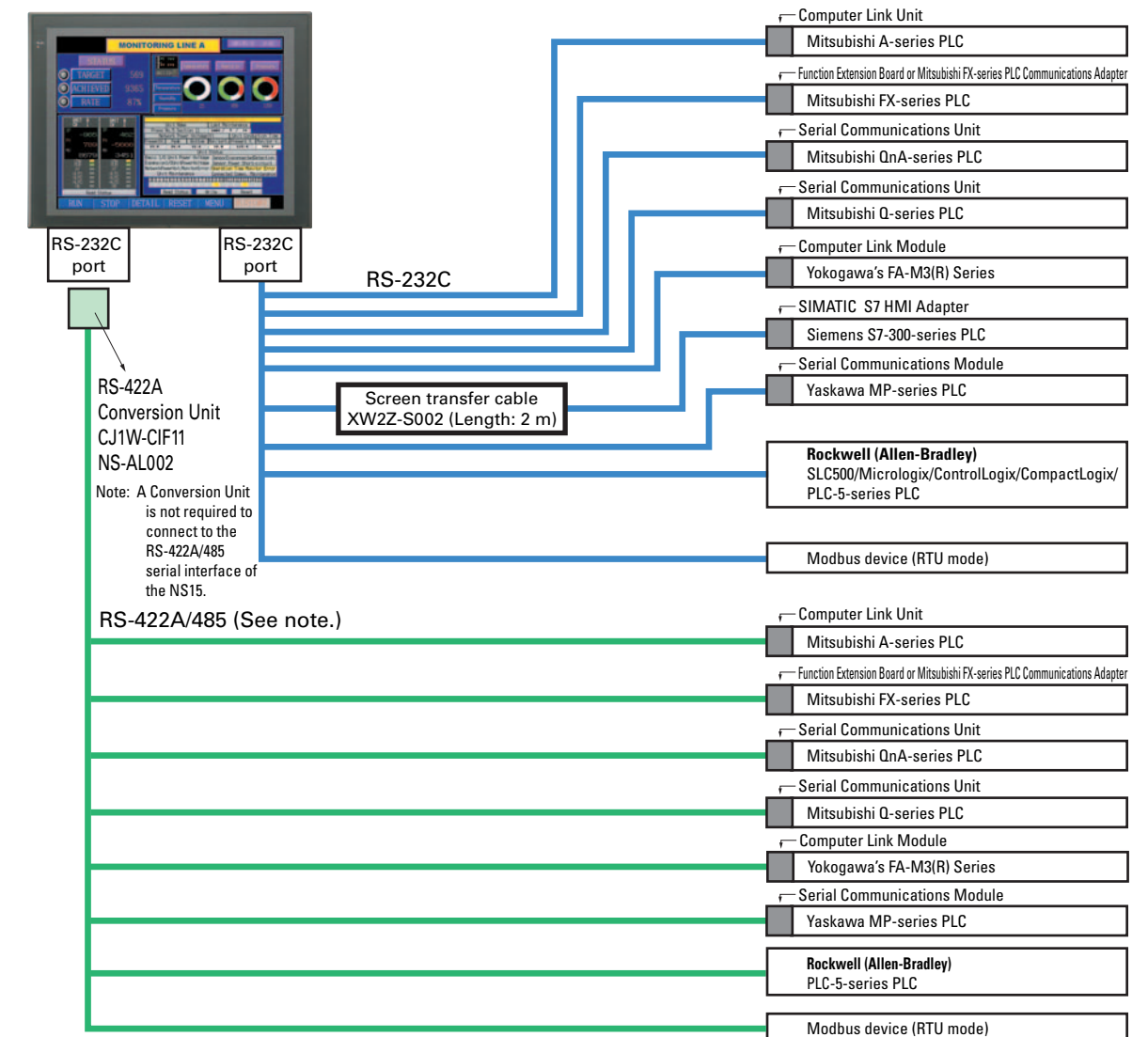
System Configuration Diagram



System Configuration Diagram (Expansion Bus Interface)



System Configuration Diagram (Multi-vendor)



What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

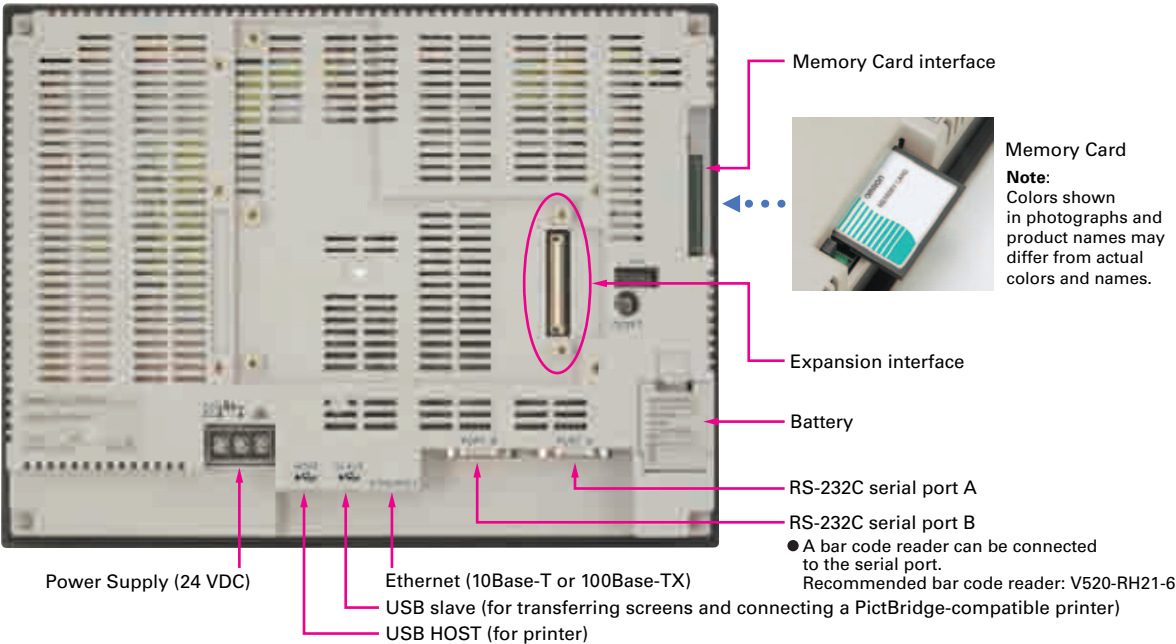


Component Names and Options

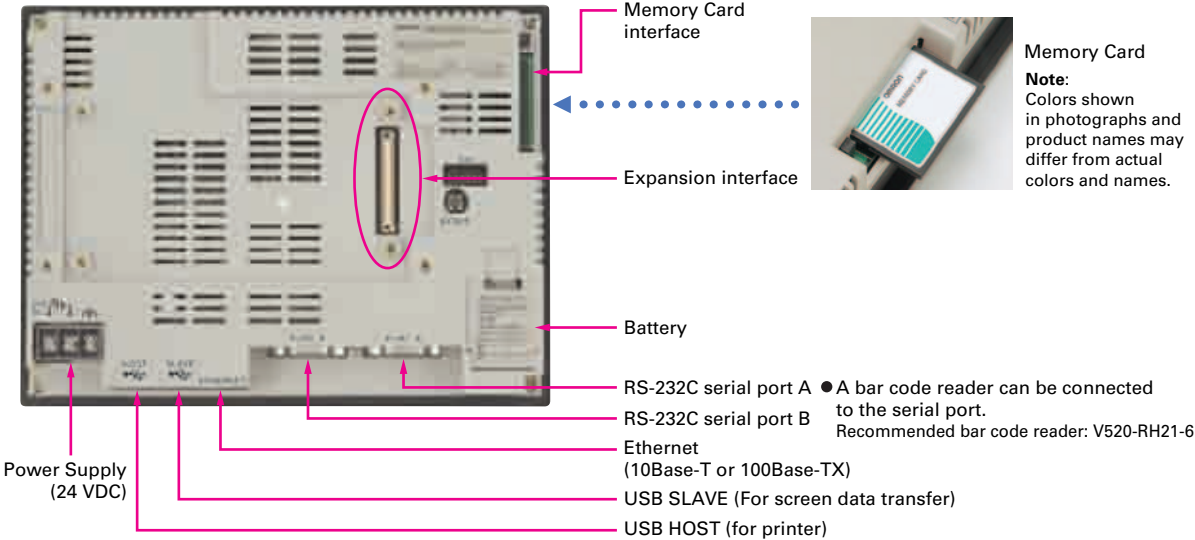
High-reliability and Advanced Functions in the Industry's Slimmest PT

**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



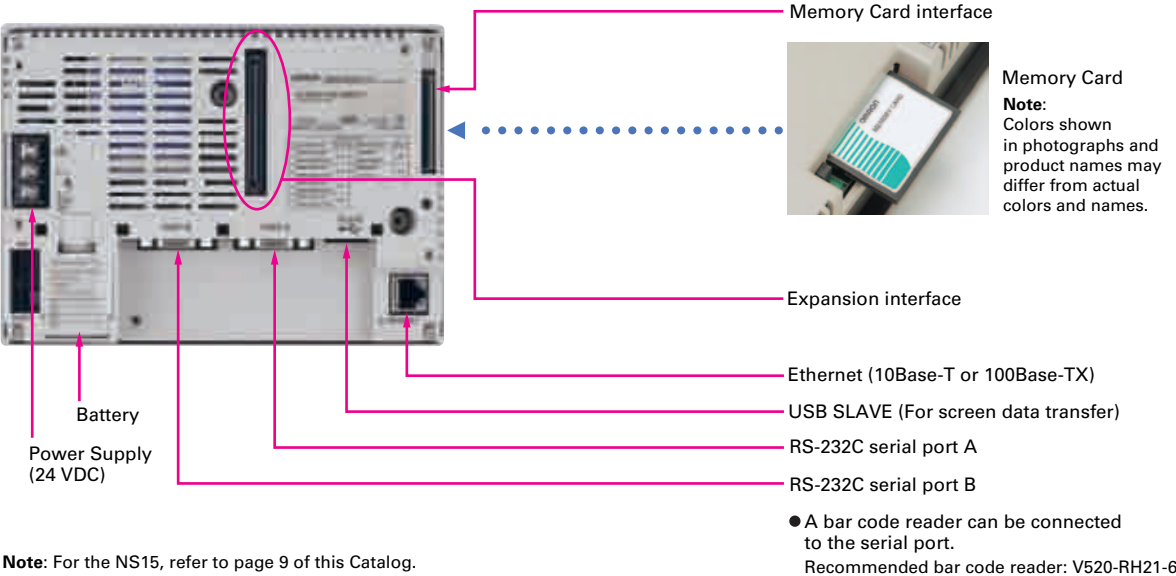
● Built-in Expansion Interface

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

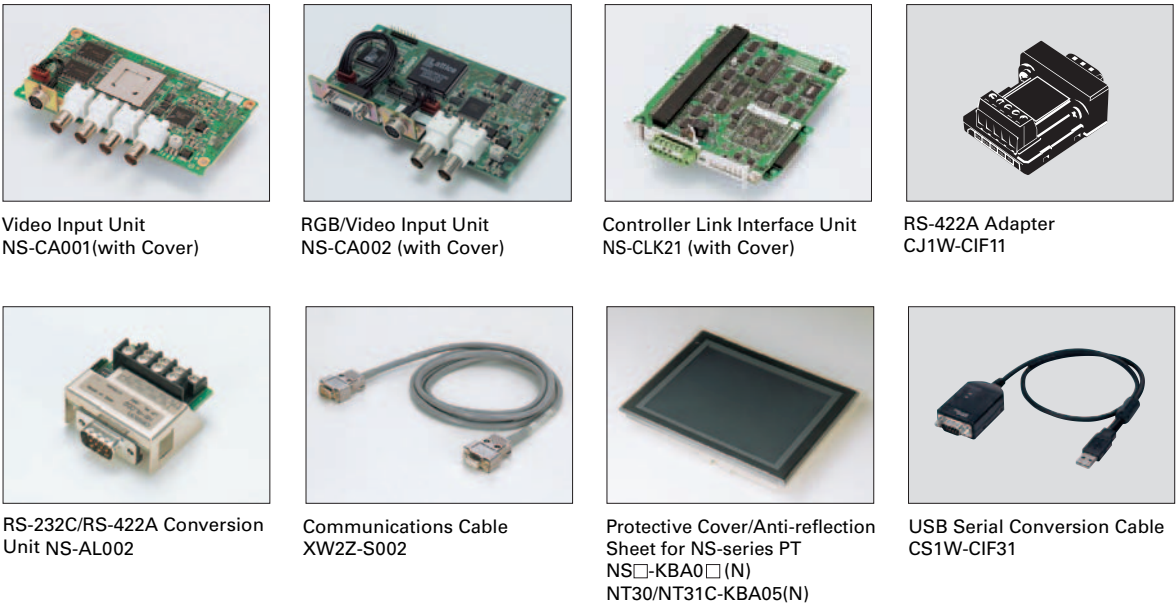
● USB Ports

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

■ NS5



Optional Products



**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 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.

**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.

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

**Superior Shock Resistance**  
Consistent with JIS B 3502, IEC 61131-2 (drop shock).



### ●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

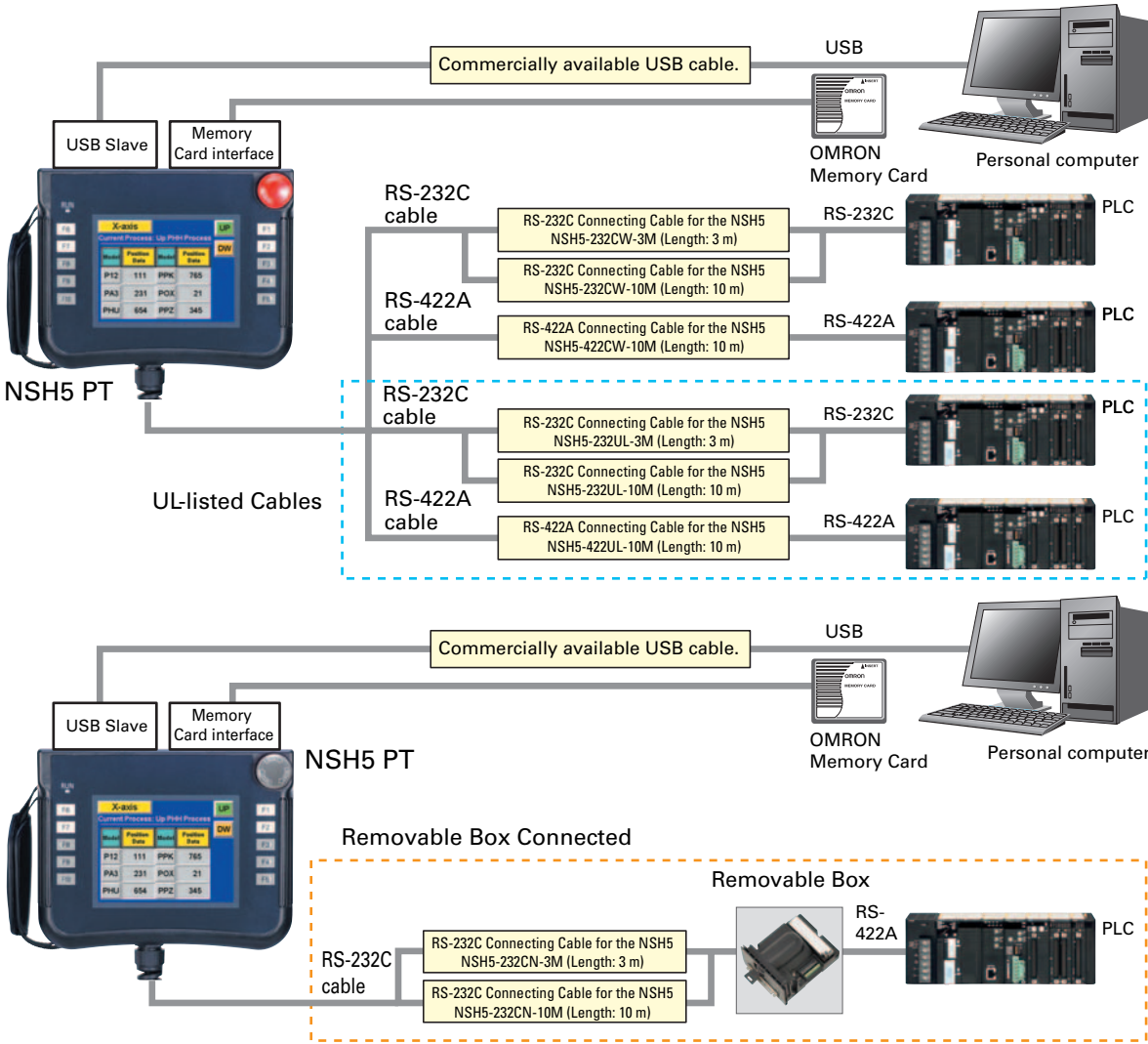
Use when the NSH5 is in direct sunlight. Installing a visor also helps protect the Emergency Stop Switch and prevents improper operation from occurring inadvertently when the PT is put down.

#### ■ Mounting Bracket

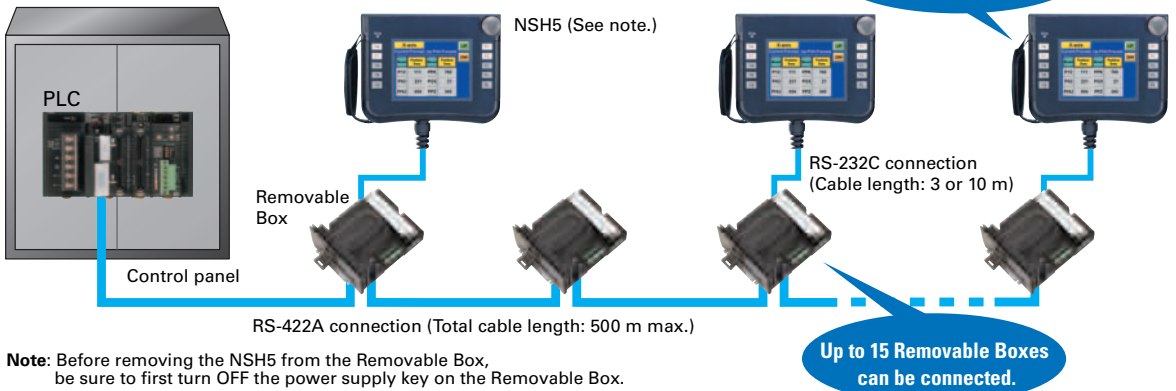
Use to attach the NSH5 to a control panel.



### 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	
	5.7-inch STN		No	Ivory	NS5-SQ10-V2	
				Black	NS5-SQ10B-V2	
			Yes	Ivory	NS5-SQ11-V2	
				Black	NS5-SQ11B-V2	
	5.7-inch TFT		No	Ivory	NS5-TQ10-V2	
				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	
				Black	NS10-TV00B-V2	
			Yes	Ivory	NS10-TV01-V2	
				Black	NS10-TV01B-V2	
NS12-V2	12.1-inch TFT	800 × 600 dots	No	Ivory	NS12-TS00-V2	
				Black	NS12-TS00B-V2	
			Yes	Ivory	NS12-TS01-V2	
				Black	NS12-TS01B-V2	
NS15-V2	15-inch TFT	1,024 × 768 dots	Yes	Silver	NS15-TX01S-V2	UC1, CE, N, L, UL Type4
				Black	NS15-TX01B-V2 <b>NEW</b>	
NSH5-V2 (See note.) Hand-held	5.7-inch STN	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.

Production of the NS5-□Q0□(B)-V2 and NSH5-SQ□00B-V2 is scheduled to be discontinued with a transition period of one year.

## ■ NS-Runtime

Product name	Specifications	Media	Model number	Standards
NS-Runtime	NS-Runtime Installer, PDF manual, hardware key (See note.)	1 license	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 2 or higher) or Vista
CPU	Celeron, 1.3 GHz
Memory size	HDD: 50 MB min., RAM: 256 MB min., 512 MB recommended. 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. 3.□	The CX-One is an integrated tool package that provides programming and monitoring software for OMRON PLCs and components. The CX-One runs on any of the following operating systems: OS: Windows 2000 (Service Pack 3 or higher), XP, or Vista.	1 license (See note 2.)	CD	CXONE-AL01C-V3	---
			DVD (See note 3.)	CXONE-AL01D-V3	
		The CX-Designer can also be ordered individually using the following model number.			
CX-Designer Ver.3.□	Screen Designer for NS Series OS: Window 2000 (Service Pack 3 or higher), XP, or Vista. 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. Multiple licenses (3, 10, 30, or 50) are available for CX-One. For details, refer to the CX-One Catalog (Cat. No. R134).

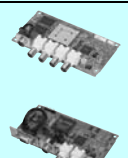

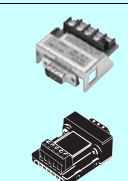
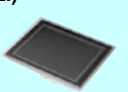

3. Before ordering the software on a DVD, be sure that your computer and drive are compatible with the DVD format.

# 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	Length: 2 m	XW2Z-200T	---
	PLC connection: 9 pins	Length: 5 m	XW2Z-500T	
	PT connection: 9 pins	Length: 2 m	XW2Z-200T-2	
	PLC peripheral port	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 STN				5.7-inch Color TFT				8.4-inch Color TFT								
Appearance																						
Display device		Monochrome LCD				STN color LCD				Color TFT				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-MQ011B-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								
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: 50°, Top: 45°, Bottom: 50°				Left/right: 70°, Top: 70°, Bottom: 50°				Left/right: 65°, Top: 50°, Bottom: 60°								
Screen data capacity		60 Mbytes												60 Mbytes								
Image data (BMP or JPG images)		16 gradations				4,096 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	<b>Note:</b> This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value. The service life will be dramatically shortened if PT is used at low temperatures. For example, using the PT at temperatures of 0°C will reduce the service life to approximately 10,000 hours (reference value).																				
	Backlight error detection	There are 3 levels that can be set with the touch panel. <b>Note:</b> The brightness cannot be adjusted much.																				
Touch panel (matrix type)	Method	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.																				
	Number of switches/resolution	Matrix resistive membrane												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																				
Supported languages (42 languages)	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.																					
	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, Ukranian, 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.																				

## Specifications

47



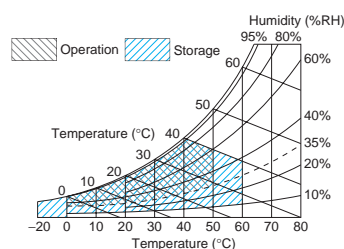
# Performance/Specifications

Series			NS5-V2		
Type			5.7-inch Monochrome STN	5.7-inch Color STN	5.7-inch Color TFT
Numeral units and scale settings			1,000 max.		
Alarm/event settings			5,000 max.		
Memory Card	Interface		One ATA-Compact Flash interface slot		
	Functions		Used to transfer and store screen data, store logging data, and store history data. (Alarm/Event History, Operation Log, and Error Log generated during Macro execution).		
Expansion interface			For Expansion Interface Units		
Serial Communications	Port A	Connector	Conforms to EIA RS-232C. D-Sub female 9-pin connector 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 Canon: PIXUS MX7600, PIXUS MP980/MP630/MP620/MP540/MP480, PIXUS iP4600/iP3600/iP100, PIXUS iX5000, PIXUS Pro9500/Pro9000		
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 STN	5.7-inch Color TFT
Rated power supply voltage		24 VDC		
Allowable voltage range		20.4 to 27.6 VDC (24 VDC $\pm 15\%$ )		
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 $\Omega$ 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.



[illegible]



# Performance/Specifications

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

## ■ 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.

2. Use an Adapter Cable (CPM2C-CN111 or CS1W-CN114/118), CPM1-CIF01 RS-232C Adapter, or CPM1-CIF11 RS-422A Adapter to connect.
3. 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.)	
CJ series	CS1D	CS1D-CPU□□H (See note 2.)	
	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)	
CP series	CJ2H	CJ2H-CPU64/CPU65/CPU66/CPU67/CPU68(-EIP)	
	CP1H	CP1H-□□ (See note 4.)	Connect to the RS-232C connector of a CP1W-CIF01 RS-232C Option Board.
	CP1L	CP1L-M□□/□□□ (See note 4.)	
C series	CP1E	CP1E-N□□□□-□ (See notes 4 and 5.)	With RS-232C connector (9-pin type)
	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). It is not supported for an EtherNet/IP connection.

2. Connection is also possible to a CS1W-SCB□□-V1 Serial Communications Board or CS1W-SCU□□-V1 Serial Communications Unit.
3. Connection is also possible to the CJ1W-SCU□□-V1 Serial Communications Unit.
4. 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.)
5. The machine monitor function and switch box function are not supported when a CP1E PLC is connected.
6. 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.)	With RS-232C connector (9-pin type)
	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	CP1H	CP1H-□□	Connect to the RS-232C connector of a CP1W-CIF01 RS-232C Option Board.
	CP1L	CP1L-M□□/□□□	
	CP1E	CP1E-N□□□□-□	With RS-232C connector (9-pin type)
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).

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



# Connectable Devices

## Connecting to Another Company's PLC

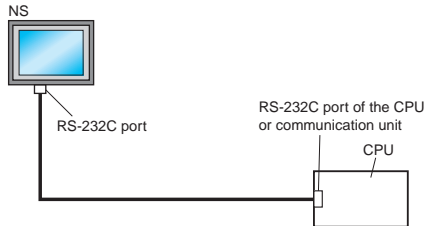
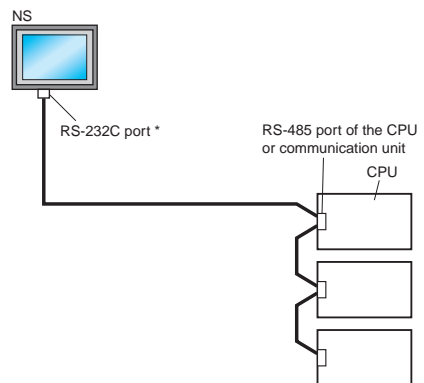
Manufacturer	Series	CPU	Communication Unit/Adapter/Board	Connection diagram	
Mitsubishi Electric	A Series	A1SHCPU A2USCPU A2USHCPU-S1	Computer Link Unit A1SJ71UC24-R□ A1SJ71UC24-PRF		1:1
		A2ACPU	Computer Link Unit AJ71UC24		
	FX Series	FX0N FX1S FX1N FX1NC FX2N FX3UC	Communication special adapter FX3U-232-ADP FX2NC-232ADP FX0N-232-ADP  Communication expansion board FX□□-232-BD		1:1
	Q/QnA Series	Q00CPU Q01CPU	RS-232C port on the CPU Module		1:1
		Q00CPU Q01CPU Q00JCPU Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	Serial Communications Module QJ71C24N-R2 QJ71C24N-R4 QJ71C24N	<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>	1:N
		Q2ASCPU Q2ASCPU-S1 Q2ASHCPU Q2ASHCPU-S1	Serial Communications Module A1SJ71QC24N		
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F F3SP21-0N F3SP28-3S F3SP58-6S F3SP67-6S	CPU built-in RS-232C port  Personal Computer Link Module F3LC11-1F F3LC12-1F F3LC11-2F	RS-232C	1:1
				RS-232C, RS-422A/485	
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)	<b>RS-232C</b> 	1:1
	MP2000 Series	MP2200	Serial Communication Module 217IF-01	<b>RS-485</b>  <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>	1:N

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

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

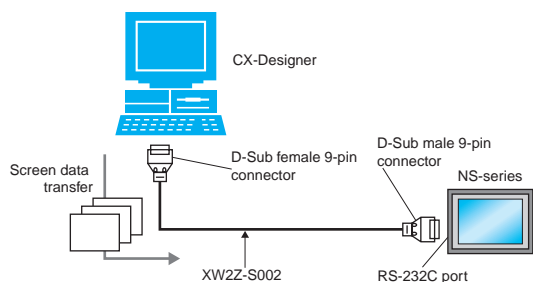


# Connection Configurations

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

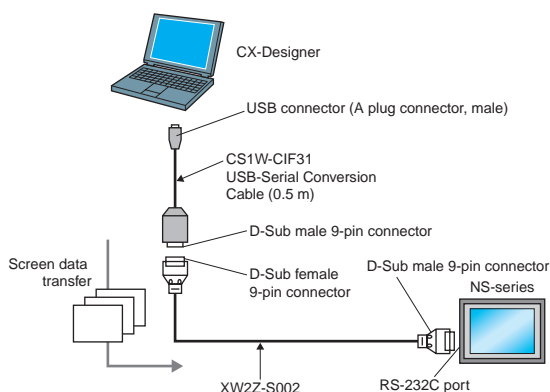
### ● Connecting to the Computer's RS-232C Port

Use a XW2Z-S002 Cable for screen transfers.

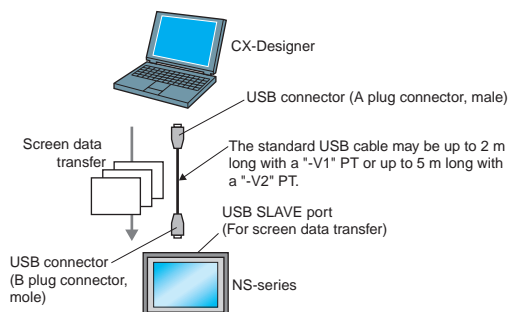


### Connecting to the Computer's USB Port

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



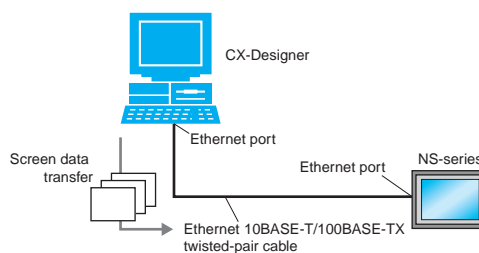
A commercially available USB cable can be used as well. \*



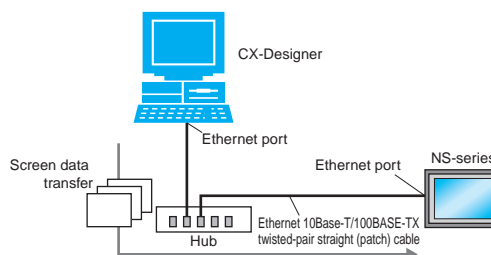
\* Commercially available USB cables cannot be used for the NS main units of which the lot. No. is prior to 0325 (made on Feb. 3, 2005).

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

Connecting Directly (1:1) to the Computer



### Connecting to the Computer through a Hub

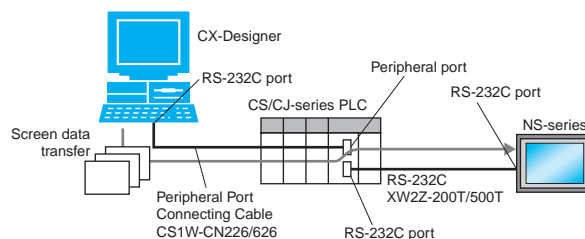


**Note:** An NS-series PT can also connect to a network configured for 10Base-5 when using a hub and transceiver set for 10Base-5 communications.

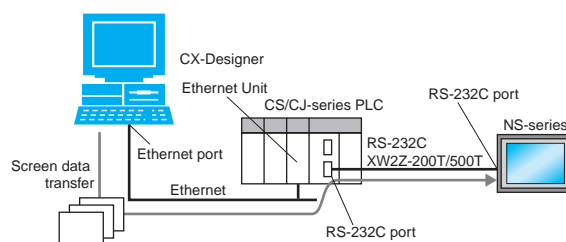
### ● Connecting through a PLC

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.

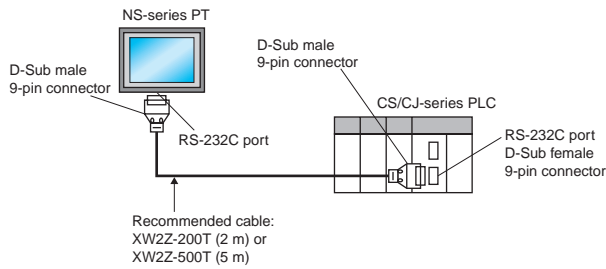
# Connection Configurations

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

### ● Using a Serial Connection

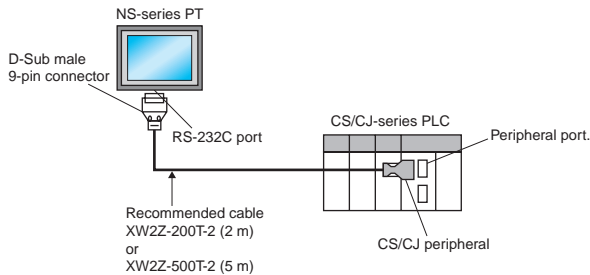
When connecting to a CS/CJ-series PLC's RS-232C port

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



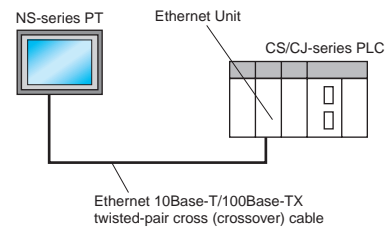
When connecting to a CS/CJ-series PLC's peripheral port

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

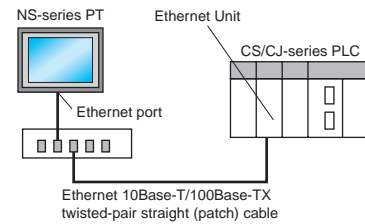


### ● Using an Ethernet Connection

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).

**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

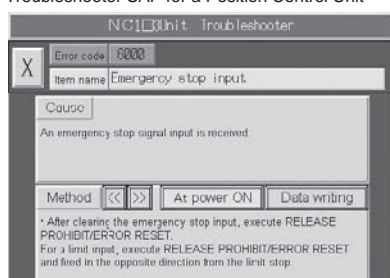
### ● SCU unit

### ● High speed counter unit

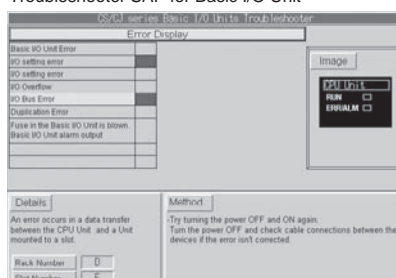
### ● CLK unit

### ● ID sensor unit

Troubleshooter SAP for a Position Control Unit



Troubleshooter SAP for Basic I/O Unit



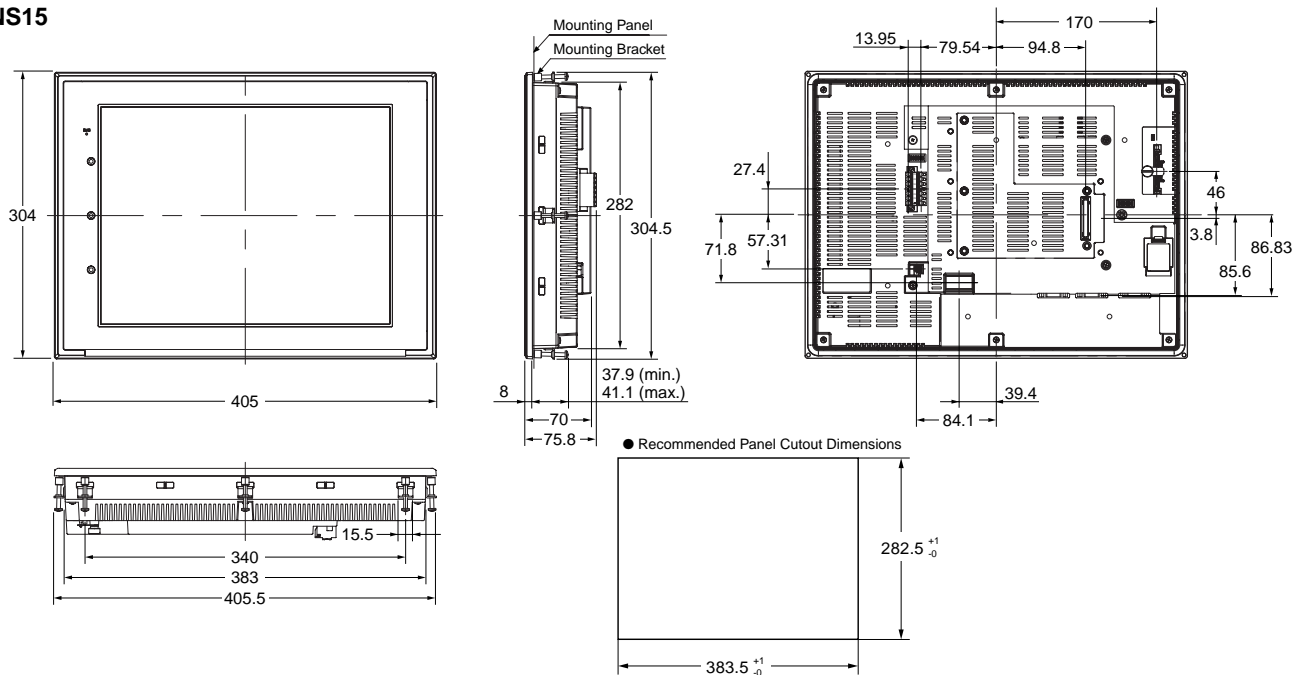
## MEMO



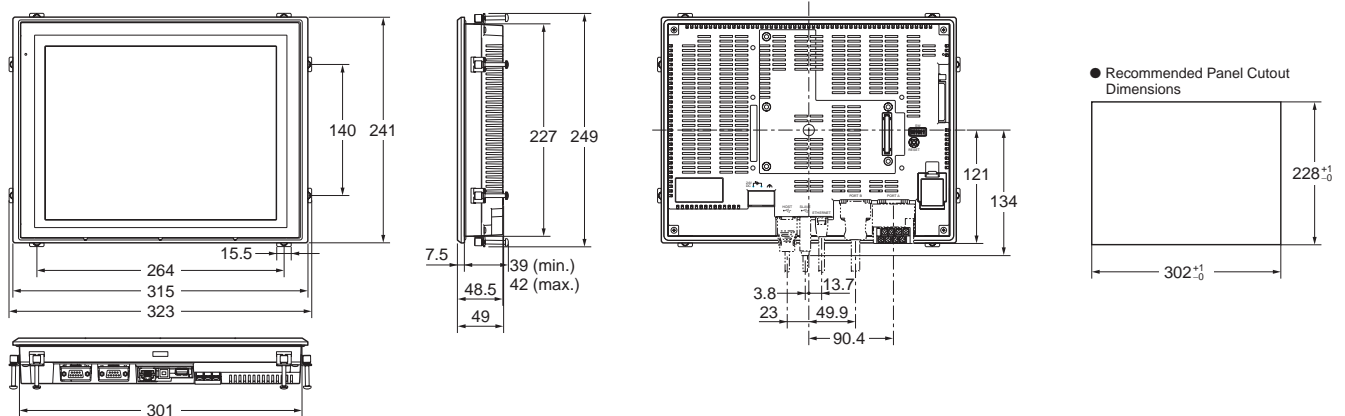
# Dimensions

(Units: mm)

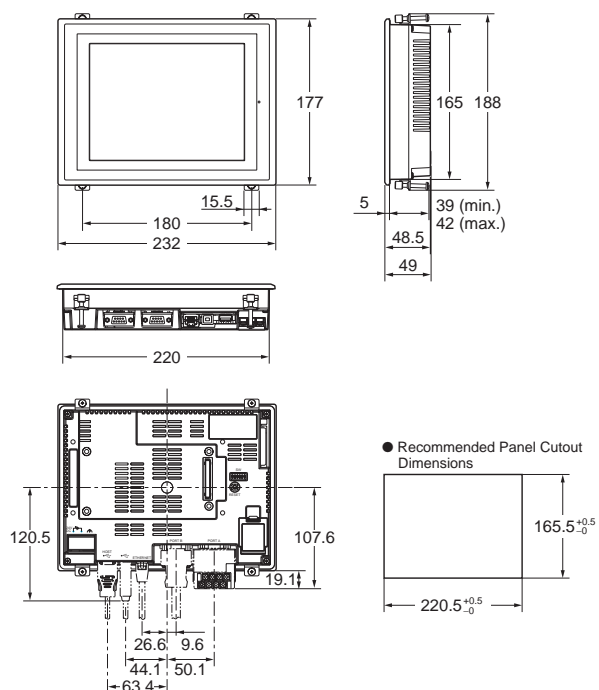
## NS15



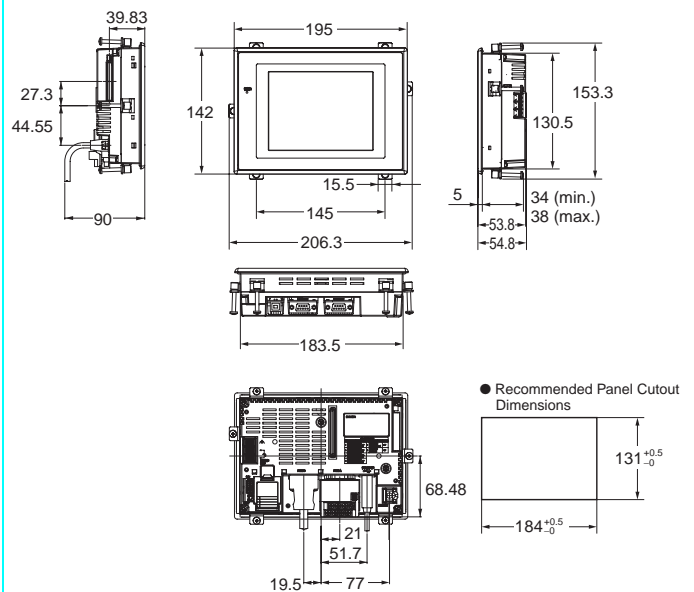
## NS12/10



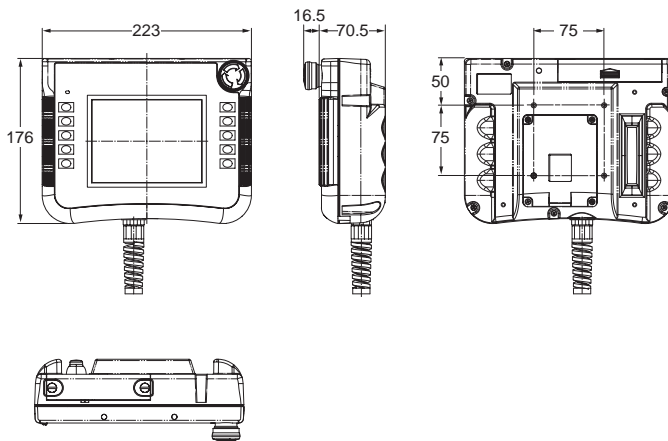
## NS8



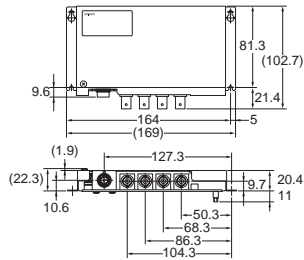
## NS5



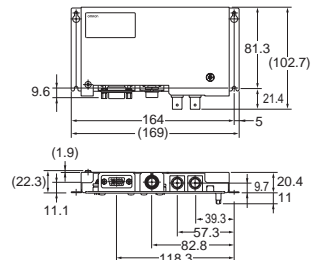
## Hand-held NS5



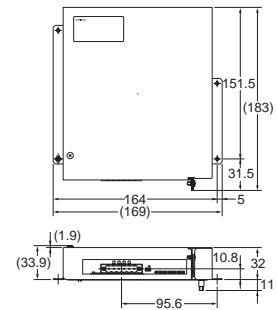
## NS-CA001 Video Input Unit



## NS-CA002 Video Input Unit



## NS-CLK21 Controller Link Interface Unit



# 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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