OMRON

Programmable Terminals
# NS Series

NS-series Screen Designer
CX-Designer Ver. 3.2

Machine Monitoring Software
NS-Runtime
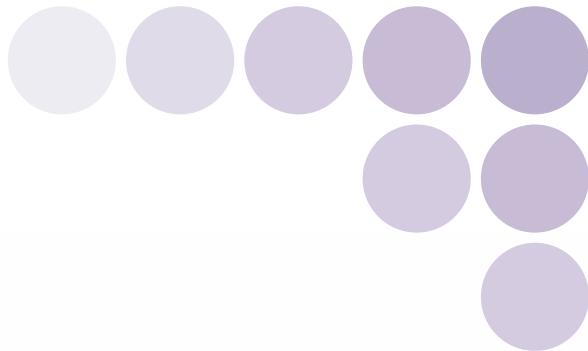
Real Value and Flexible Application

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

realizing

NS-series Value

What's New

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.

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.

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.

NS-Runtime

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

NS Series Lineup

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

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

Standard Models

15 inches

NS15-TX01 Color TFT

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

●32,768 colors ●XGA 1,024 x 768 pixels
●Screen memory size: 60 MB

●Analog touch panel method
●Silver or black models are available.

5.7 inches

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

NS5-MQ Monochrome STN

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

NS5-SQ Color TFT

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

NS5-TQ Color High-luminance TFT

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

8.4 inches

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

NS8-TV Color TFT

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

10.4 inches

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

NS10-TV Color TFT

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

12.1 inches

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

NS12-TS Color TFT
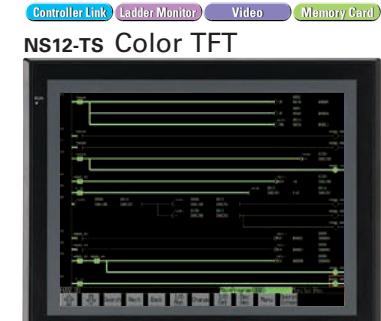
●32,768 colors ●SVGA 800 x 600 pixels
●Screen memory size: 60 MB

NS-Runtime

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

Page 36

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

Video Input Unit
NS-CA001
●NTSC/PAL video inputs (4 channels)

RGB/Video Input Unit
NS-CA002
●NTSC/PAL (2 channels)
●RGB input (1 channel)

Controller Link Interface Unit
NS-CLK21

RS-232C/RS-422A Conversion Unit
NS-AL002
●Transmission distance: 500 m max.

Communications Cable
XW2Z-S002

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

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

Integrated Controller Models

5.7 inches

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

NSJ5-SQ□□-M3D/-G5D Color TFT

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

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

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

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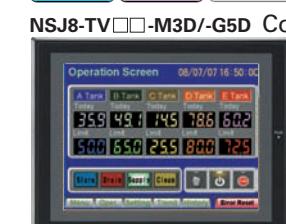
USB Slave | USB Master | Ethernet | RS-232C x 3
Controller Link | Ladder Monitor | Video | Memory Card

NSJ8-TV□□-M3D/-G5D Color TFT

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

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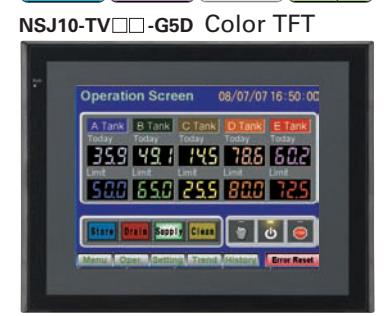
USB Slave | USB Master | Ethernet | RS-232C x 3
Controller Link | Ladder Monitor | Video | Memory Card

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

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

Hand-held PT Cable
RS-422A | RS-232C

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

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.

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

What's New

Even Simpler Equipment Operation with Outstanding Synergy

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

Greatly Increase Design Efficiency and Reduce Work over the Entire System

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

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

CJ2
EtherNet/IP
NS Series

CX-Designer

CX-Programmer

Definition of the "Motor" Symbol

Name	Data Type
Motor	
Operation_Command	INT
Frequency_Reference	UINT
Acceleration_Time	UDINT
Deceleration_Time	UDINT

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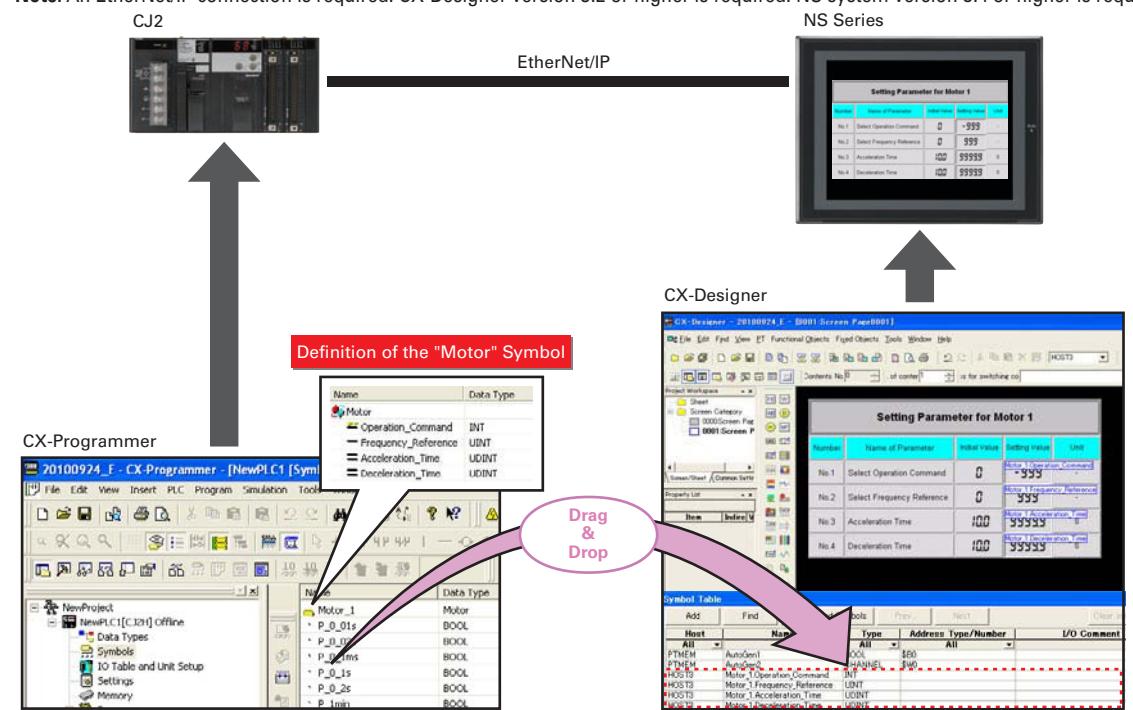
What is data structure? Data which is made of plural types of variables and treated as one data type.

FROM

Previously, all of the variables had to be registered separately simply because the data was in different units.

CX-Programmer

Name	Data Type	Address / Value
Motor1_Operation_Command	INT	E0_0
Motor1_Frequency_Reference	UINT	E0_1
Motor1_Acceleration_Time	UDINT	E0_2
Motor1_Deceleration_Time	UDINT	E0_4
Motor2_Operation_Command	INT	E0_10
Motor2_Frequency_Reference	UINT	E0_11
Motor2_Acceleration_Time	UDINT	E0_12
Motor2_Deceleration_Time	UDINT	E0_14

Units for data

TO

By using data structure, variables that have the same data structure can be easily reused.

CX-Programmer

Definition of the "Motor" Symbol

Name	Data Type
Motor	
Operation_Command	INT
Frequency_Reference	UINT
Acceleration_Time	UDINT
Deceleration_Time	UDINT

Name	Data Type	Address / Value
Motor1	Motor	E0_0
Motor2	Motor	E0_10

Elements in the data structure

NS with LED backlight

LED backlight is newly installed for NS5 color-type models (SQ/TQ models)*
*LotNo.15Z0 or later
LED backlight allows backlight brightness adjustment of up to 32 levels.
The brightness can be adjusted from the operation screens; it is favorable for ship and vessel applications
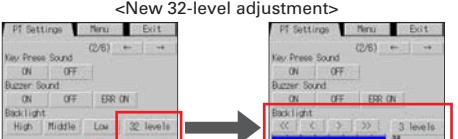
< Conventional three-level adjustment >   <New 32-level adjustment>

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

Easier Debugging and Maintenance

Easy Transfer and Editing of Screens and Ladder Programs Using USB

Transfer ladder program data to the PLC via the PT simply by connecting a computer to the USB port on the PT.
Transfer ladder data and perform online editing using USB via the PT even for a PLC that does not have a USB port.

PLC Connection via PT

Design and Debugging Example

NS

CX-Programmer

USB

Serial connection
(1:N NT Link only)

Transferring ladder programs

PLC
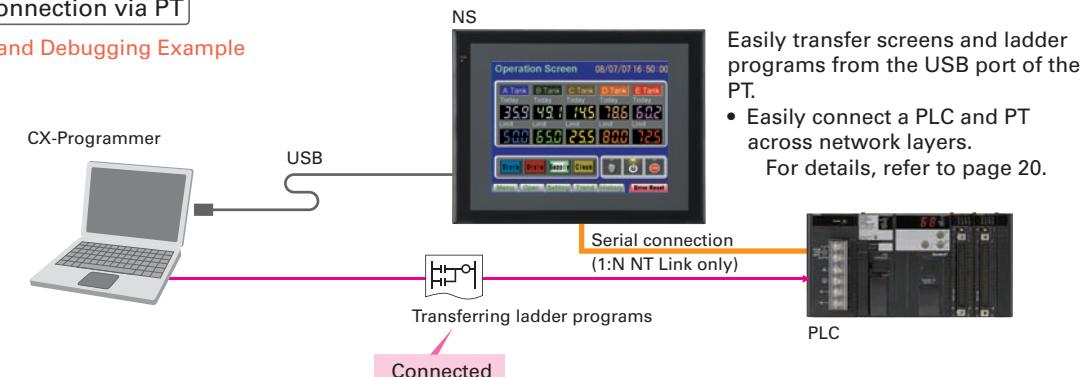
Connected

Easily transfer screens and ladder programs from the USB port of the PT.
• Easily connect a PLC and PT across network layers.
  For details, refer to page 20.

Startup and Maintenance Example

CX-Programmer

CX-Designer

NS

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

Commercially available USB cable
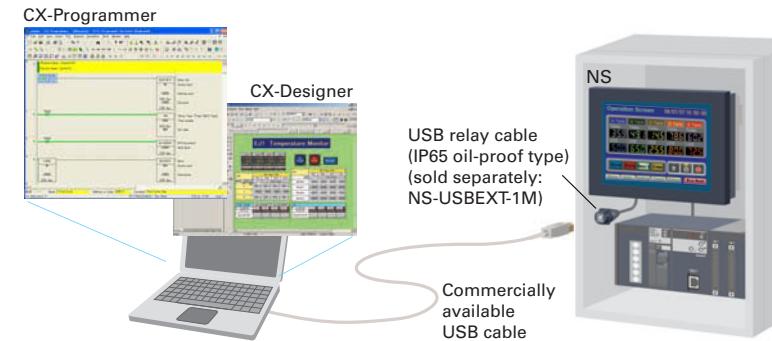
Using a USB relay cable greatly improves debugging at equipment startup.
• Debug screens and ladder programs with only one commercially available USB cable.
• Use a USB relay cable to enable performing maintenance from in front of the control panel.

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

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

Automatic search

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

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

What's New

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

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

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

Easy Data Exchange

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

Multi-vendor Support

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

NS

Modbus device | Temperature controller | PLC | PLC from other company

C10004	80		DM0300	80
C10005	100		DM0302	100
C10006	30		DM0304	30

Achieve easy data exchange without programming.

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.

NS

CX-Designer
Select *Device Data Transfer Setting* from the PT Menu.

Temperature controller | PLC

	Alarm value 1	C10004	80		DM0300	80
Alarm upper limit value 1	C10005	100		DM0302	100
Alarm lower limit value 1	C10006	30		DM0304	30

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.

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

A Large Display and High Resolution Provide...
Greater Visibility and Easy Operation

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

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

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

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

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

Large-screen Display Enabled!
Analog RGB Output Standard Feature

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

For Use in Dark Places! Standard Feature
A Connector for Brightness Adjustment

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^2)
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.

OMRON

Background images are actual size.

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.

Support Software Setup Screen

F1
F2
F3
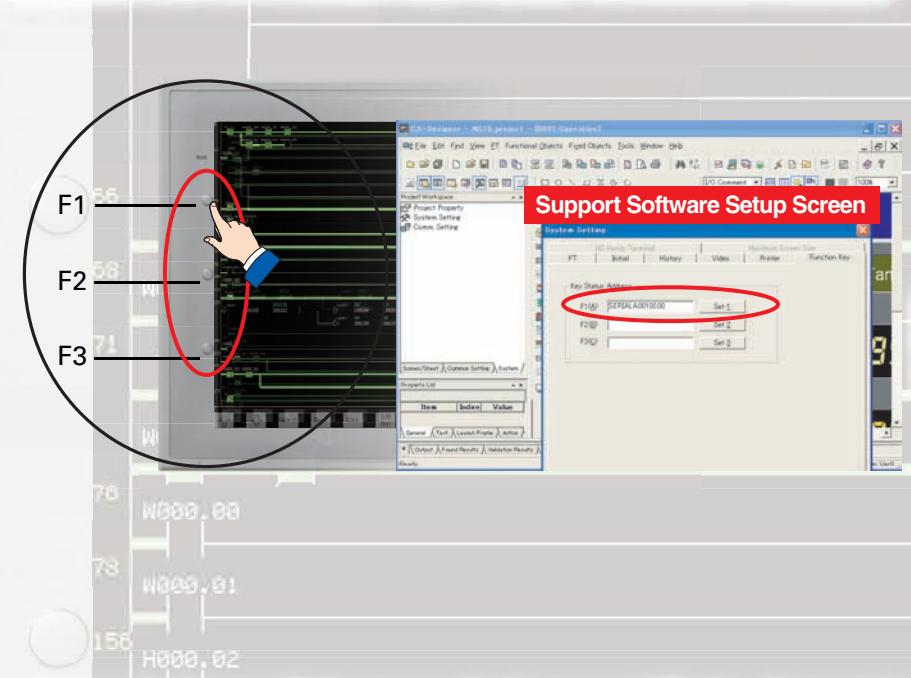
Addresses can be easily allocated to function keys using Support Software.

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)

Convert
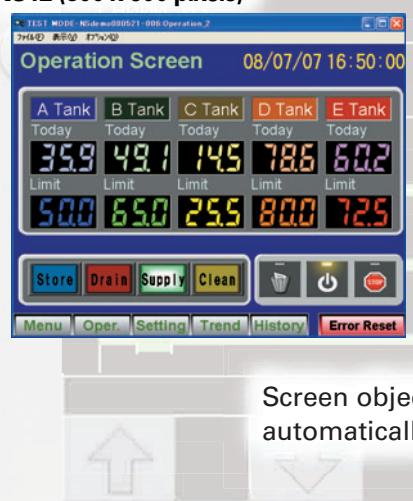
Screen objects are automatically enlarged.
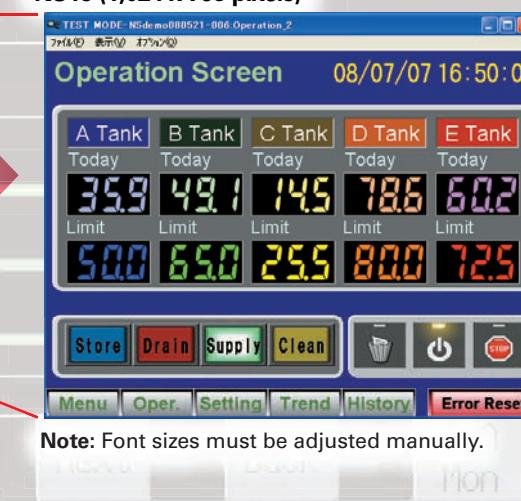
Note: Font sizes must be adjusted manually.

Expansion Units

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

Connect OMRON FZ3-series Vision Sensors
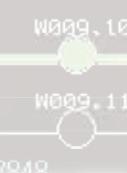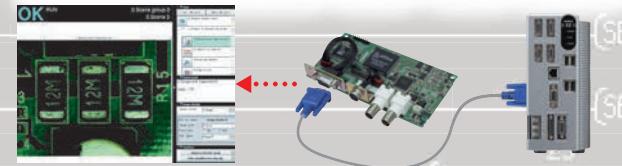
RGB Video Input Unit: **NS-CA002**
● Analog RGB input terminals can be used to display XGA signals from a personal computer.
Note: The NS-CA002 video input function cannot be used with the NS15. Analog RGB input function can be used.
Note: The NS-CA001 cannot be used.

Controller Link Interface Unit: **NS-CLK21**
● A Controller Link connection can be used.

RS-232C/RS-422A Conversion Unit: **NS-AL002**
● Communications distance: 500 m max.
● In addition to the RS-422A/485 serial interface which is supported as a standard feature on the NS15, the Conversion Unit can be used as before. This feature can be used in situations where two RS-422A/485 systems are employed.
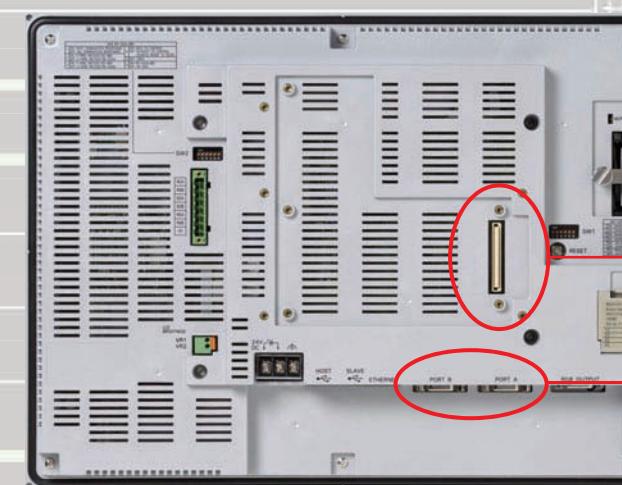
Ethernet Port Included as a Standard Feature.

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

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

EtherNet/IP™

**NS-series Ethernet port**

Note: The NS15 supports Ethernet as a Standard Feature.

Details on CJ2 compatibility

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

OMRON

What's New

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

Information networks

Host application

Tag access

EtherNet/IP

Control networks

SYSMAC CJ2

Programmable Terminal (NS Series)

EtherNet/IP

Device networks

DeviceNet

Sensor and actuator networks

CompoNet
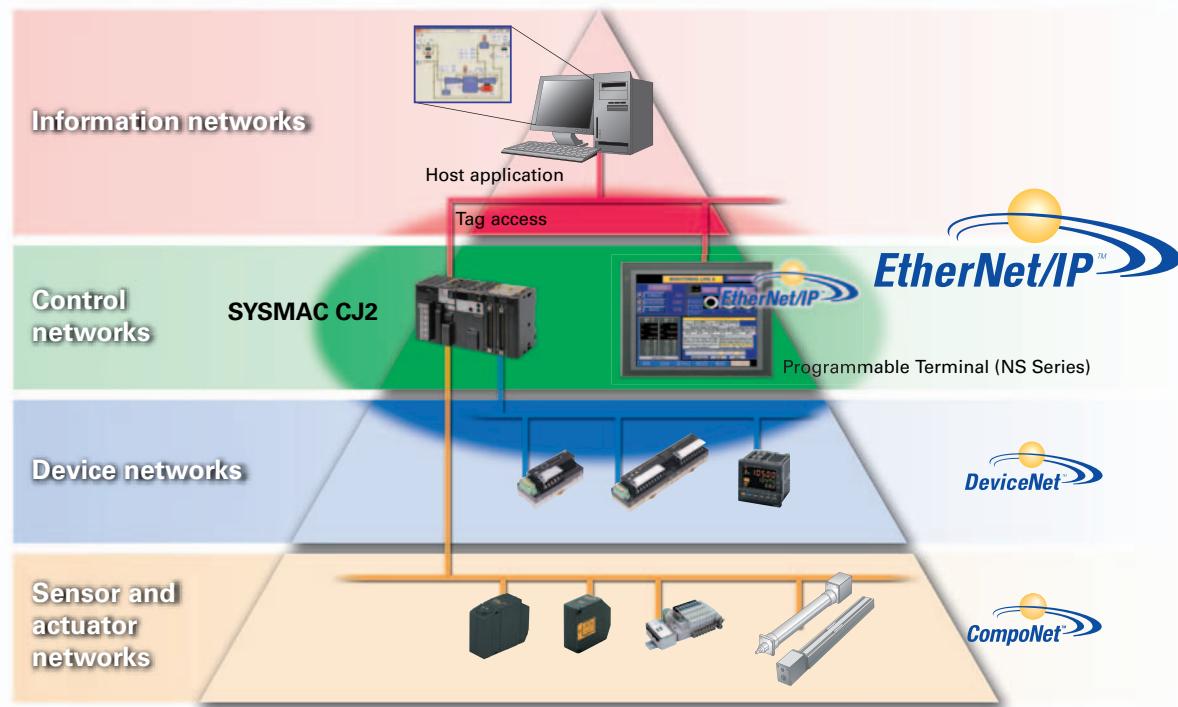
What is tag access with EtherNet/IP?

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.

① Tag names are managed at the PLC with the CX-Programmer.

② For example, create screens with tag names without typing the physical address.

Tag name	Address
Number_produced	D100

設備1 9999 台

Address
Address CJ2-LINE1:Number_produced

>(320) D100 Products Qty. D202 Alarm value
<(310) D100 Products Qty. D201 Maximum

EtherNet/IP

Host application

Number_produced Number_produced Number_produced

Data links

Accessed by tag name.

③ All devices will access with Common "Tag"

SYSMAC CJ2   SYSMAC CJ2

EtherNet/IP   EtherNet/IP

Programmable Terminal (NS Series)

The PLC, PT, and host applications can be designed using tag names.

Parallel development shortens design time.

FROM

Case 1
Previously, the PLC program was first created, and then the ladder program was referenced to create the screens.

PLC   Ladder program is created.   Programmable Terminal screens are created.

Programmable Terminal

Case 2
The screen graphics are created in advance, and then addresses are allocated and checked after the ladder program is completed.

PLC   Ladder program is created.   The addresses are set.

Programmable Terminal screens are created (graphics only).   Addresses are allocated and the allocations are checked

Programmable Terminal   Programmable Terminal

TO

By simply setting tag names, PLC and Programmable Terminal programming can be performed in parallel.

Specifications

Tag name	Address
Number_produced	Undetermined
Number_of_times	Undetermined

SYSMAC CJ2

Ladder program is created.

Addresses are determined while creating the ladder program.

Design time is shortened.

The screens are created.

The screens are created with no need to pay attention to addresses.

NS-series PT

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.

Specific Example

❶ With the CX-Programmer, the address for the tag named "Number_produced" is changed from D100 to H200.

No change required.

Host application

Number_produced

Tag name	Address
Number_produced	D100

>(320) D100 Products Qty. D202 Alarm value
D100 Products Qty. D201 Maximum

Change

Number_produced

Accessed using a tag.

SYSMAC CJ2

Number_produced	H200

❷ Applications and the PT are accessed using tags, and so changes do not need to be made at other devices. Even after the change, the number of items produced is acquired correctly from H200.

Number_produced

EtherNet/IP

No change required.

Programmable Terminal (NS Series)

Supported Devices | CJ2 | CS1/CJ1 | CP1 (See note.) | Multi-vendor Support

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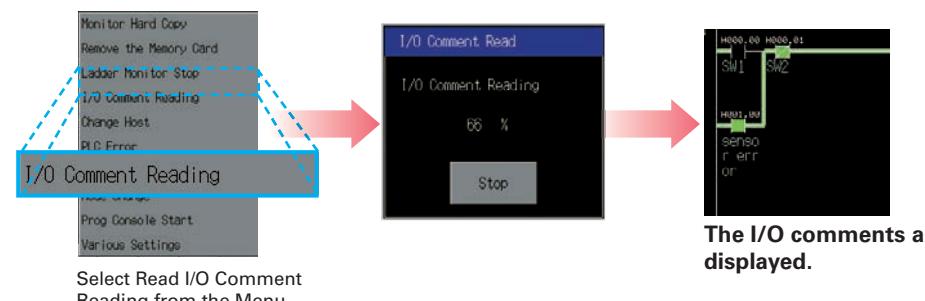
Automatically jumping from the alarm message
Easy checking the alarm bit and shortens searching time.

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.

❶ Why is this output not turning ON?
❷ Is this input the cause? What output corresponds to this input?
❸ Why is this output not turning ON?
❹ Which of these two inputs is the cause? Let's look at CIO 21.00 first.
❺ There's no problem with input CIO 21.00. Let's go back to the previous program section.
❻ So is it input CIO 21.01 after all?
Yes, the problem is here!

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.

❶Select the input bit for which the output will be forced ON.
❷Select the address by touching the panel.
❸Select the Forced Set Option and then press the Update Button.

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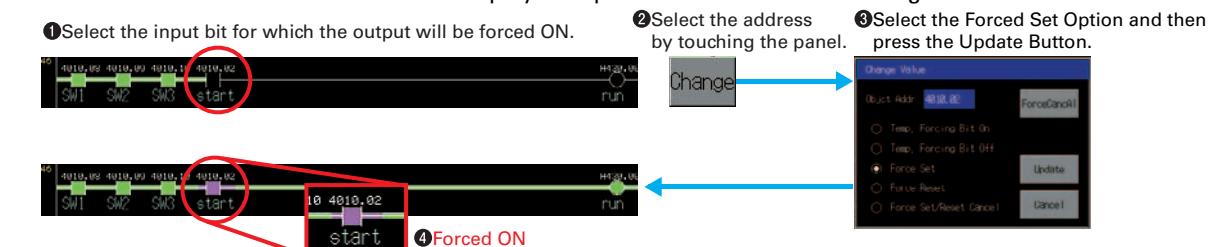
Minor changes in values of timers or counters can be made without Support Software.

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

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

What's New

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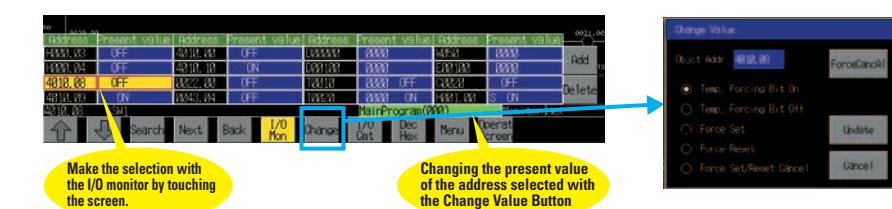
Further Enhanced Basic Functions

Monitor and Record Input Operations on the Control Panel

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

What Was Touched When? can be recorded with Operating log.

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

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

Saved automatically

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

Operat_080520_173000.csv
Operat_080521_173000.csv
Operat_080522_173000.csv

Memory Card

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

The files can be opened in Excel.

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

Multi-vendor Support

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

■PLC

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

■PLC

Manufacturer	Series	CPU	Connection form
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F	1:1
		F3SP21-0N	
		F3SP28-3S	
		F3SP58-6S	
		F3SP67-6S	
Siemens	S7-300 Series	313CPU	1:1
		SCPU315-2DP	
		CPU317-2PD/DP	
Rockwell (Allen-Bradley)	SLC500	SLC5/03	1:1
		SLC5/04	
		SLC5/05	
	MicroLogix	MicroLogix1500	1:1
	ControlLogix	Logix5555	1:1
	CompactLogix	1769-31	1:1
	PLC-5	PLC-5/20	1:1

■Motion Controller

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

■Inverters

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

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

More Beautiful, More Convenient

NS Screen Templates

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

Cool Library Folder

Drag and drop from the library.

New Page
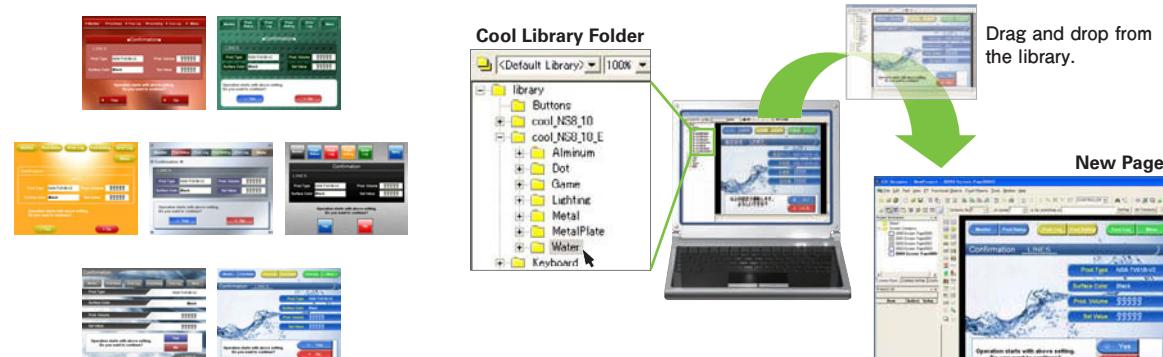
"Cool" Objects
Backgrounds, buttons, labels, message boxes, and other objects are also provided for various themes.

Aluminum

Metal

Game

Lighting

Dot

Metalplate

Water

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

Easy Printing with PictBridge

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

Standard USB cable

PictBridge

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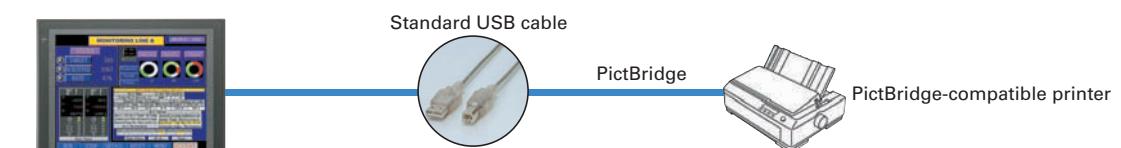
Note: Refer to page 48 for recommended PictBridge-compatible printers.

Best Match

Best Match with OMRON Products,
Eliminates Programming and Screen Designing

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

No Screen Designing

Easy-to-use Software

PLC and Components

TemperatureController Q5C30

CPU Unit Error Log

CPU Unit Status Display

No Programming

Easy Access

NS

Easy Access

Temperature Controllers

PLC

PLC

Vision Sensor

260,000-color video input

Vision Sensor

CPU Bus Units and Special I/O Units
●SAP Library
●Troubleshooting

CPU Bus Units and Special I/O Units

Temperature Controllers

Temperature Controllers

Remote I/O Terminal

Remote I/O Terminal

Servomotor Servo Driver

Servomotor Servo Driver

Inverter

Inverter

Easy Access

These functions allow the user to access an OMRON PLC or component from an NS-series PT without creating programs, such as a ladder program.

Easy-to-use Software

These functions allow various support functions to be performed onsite from an NS-series PT without using Support Software, such as the CX-Programmer or CX-Thermo.

Smart Active Parts (SAP Library)

Easy Access
Standard Feature

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

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

SAP Library, Temperature Controller Parts

CX-Designer Screen Design Software

The Temperature Controller's setting and monitor screens are completed in no time.

ACCESS

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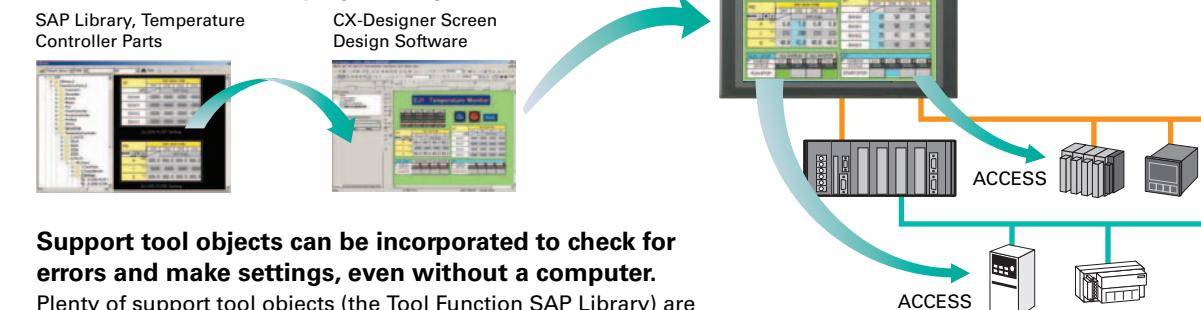
Support tool objects can be incorporated to check for errors and make settings, even without a computer.

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

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

From   To   Easy Support Tools

Computer support tools

PLC CPU Unit monitoring screen

NCF Unit setting screen

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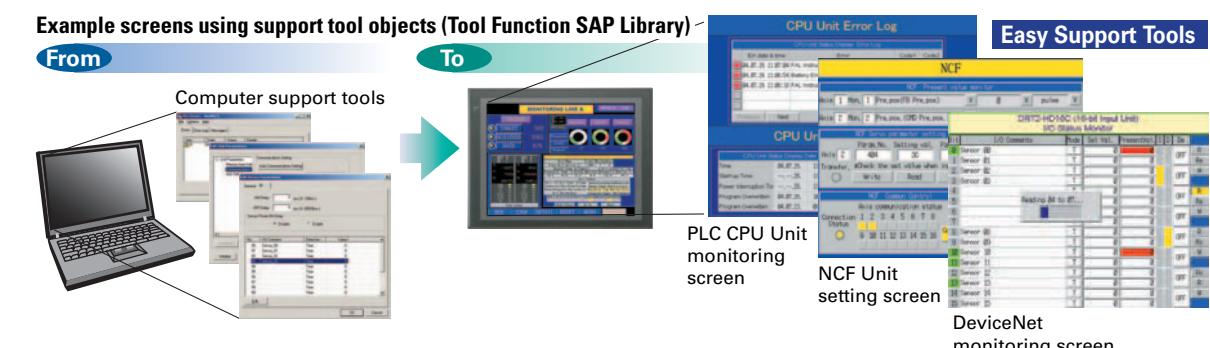
CPU Bus Unit and Special I/O Unit Troubleshooting Can Be Also Performed with the SAP Library.

Easy Support Tools

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

Troubleshooter SAP for a Position Control Unit

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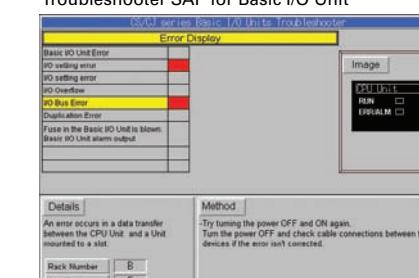
The Troubleshooter SAP Library is included as a standard feature for the CX-One and CX-Designer. For details, refer to page 56. Successive development for Ethernet Units and MC Units is planned for the future.

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

Best Match

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

CX-Programmer
Keep connected. — The ladder program can be transferred.
USB or Ethernet
NS
Serial connection (1:N NT Link only)
Ethernet
Controller Link
PLC
PLC
NS
Ladder program
Ethernet or Controller Link
Ladder program
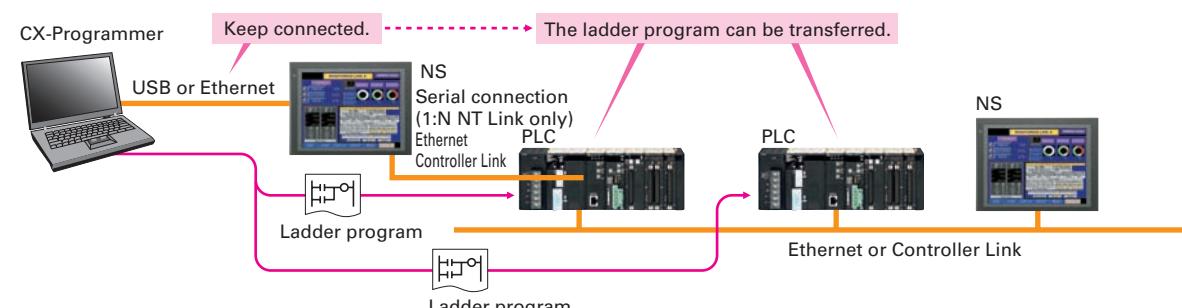
SPMA significantly improves maintenance efficiency when the NS-series PT and PLC are some distance apart.
Computer (Serial) → PLC (Ethernet or Controller Link)→NS-series PT

CX-Designer
Keep connected. — The ladder program can be transferred.
USB/Serial or Ethernet (See note.)
PLC
NS
Serial
NS
NS
PLC
Serial
NS
Screen data
Screen data
Ethernet or Controller Link
Screen data

Note: USB connection is supported only for CJ2 PLCs.
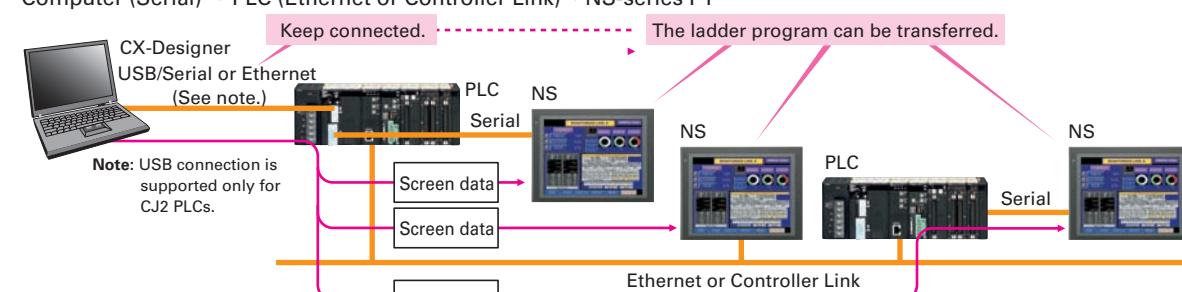
Note: SPMA can be used in CS/CJ-series PLCs with lot number 030201 or later.
Note: SPMA via a PLC is not supported when a CP-series PLC is connected. (SPMA via an NS-series PT is supported with a CP-series PLC.)

Ladder Monitor

Easy Support Tools | Standard Feature

**The ladder program can be monitored onsite without a laptop!**
Ladder programs with I/O comments can be monitored on the PT's screen and the ladder program can also be edited with the Programming Console function.
Note: The Ladder Monitor function is not supported by the 5.7-inch models.
Note: The ladder monitor function is not supported for connection with a CP1E PLC. It is also not supported by the CJ2M.

Operation screen
A Line Production Monitor
ALARM
LADDER MONITOR
CS/CJ/CP-series 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.
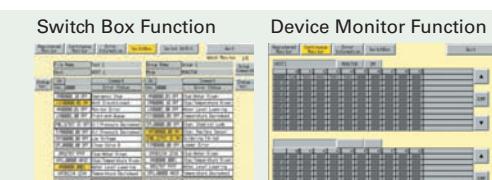
[Device Monitor Function]
Displays the device's contents, allowing settings to be input and checked and making startup operations more efficient.

Switch Box Function | Device Monitor Function

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.
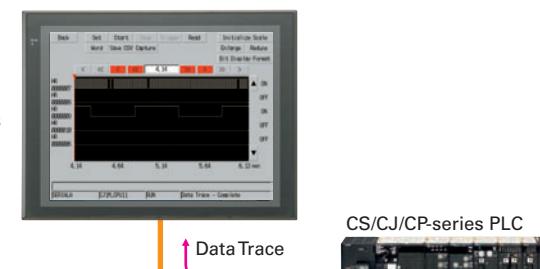
Data Trace
CS/CJ/CP-series PLC

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.
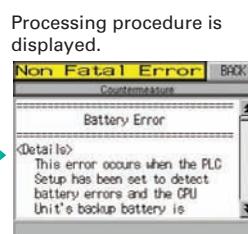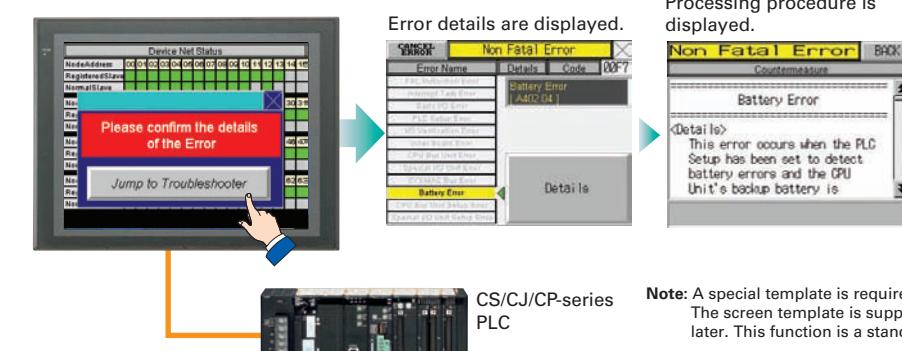
Error details are displayed.
Processing procedure is displayed.

CS/CJ/CP-series PLC

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.

CJ1W-CIF11
RS-422A Serial Adapter

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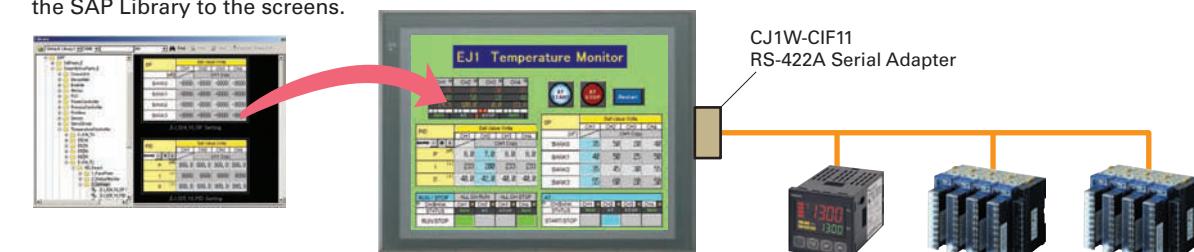
Note: An RS-422A Serial Adapter is needed to connect directly to a Temperature Controller. Refer to page 53 for a list of the Temperature Controllers that can be connected. A Conversion Unit is not required to connect to the RS-422A/485 serial interface of the NS15.

Best Match

Screens for Loop Controllers can be easily and automatically created.

Compatibility with CX-Process Tool 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).

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.

NS Series

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

SYSMAC CS/CJ-series Loop Controller

CSV tag file for Loop Controller   NS project file

CSV   IFP

CX-Process Tool
(Loop Controller Programming Software)
● Loop Controller program creation (function block method)
● CSV tag file output

Face Plate Auto-Builder for NS

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

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.

Console

Camera

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.

RGB
Console
Camera

Also Compatible with OMRON Vision Sensors.

NS

RGB/Video Input Unit   Vision Sensor
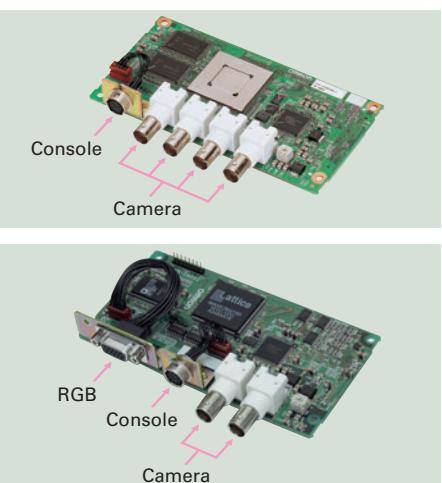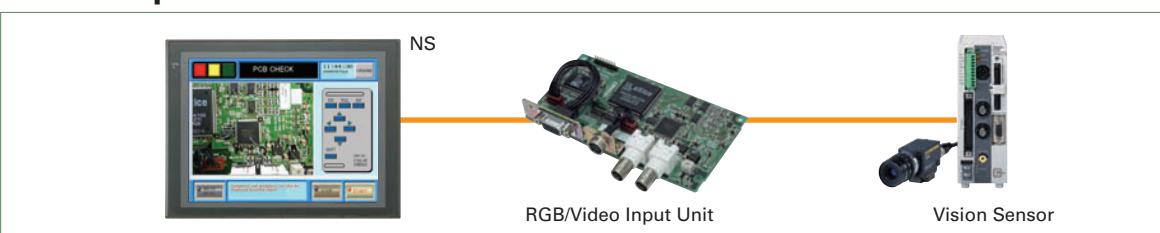
MEMO.

Easy-to-use Software

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.
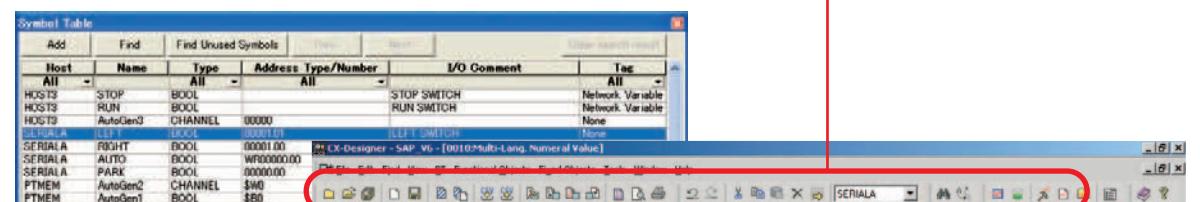
Improved Icons and Help
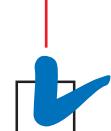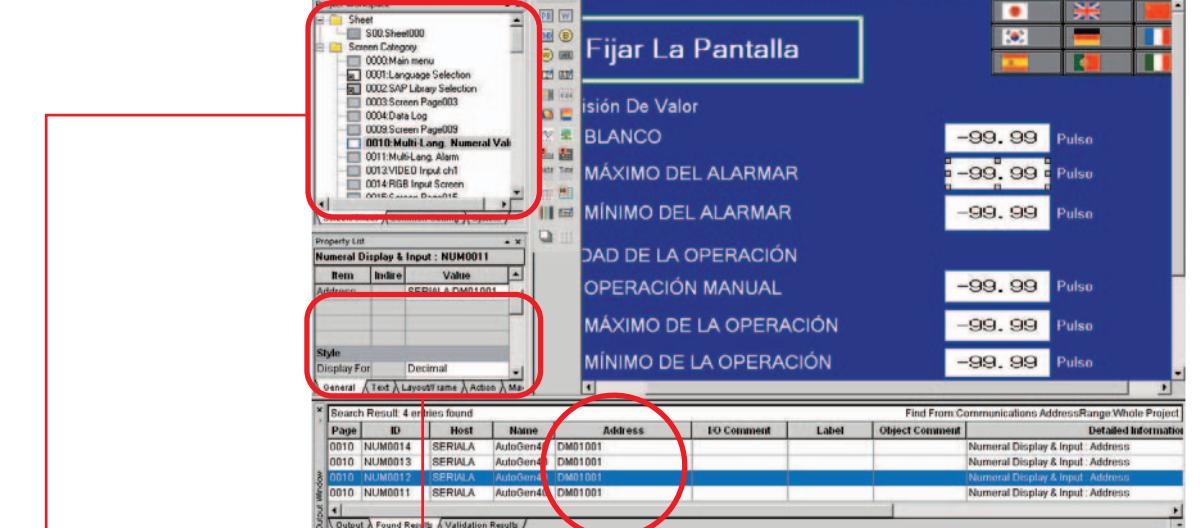
The project Workspace enables the user to look through the entire project.

- 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 input 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).

Drag & Drop

CX-Programmer's symbol table
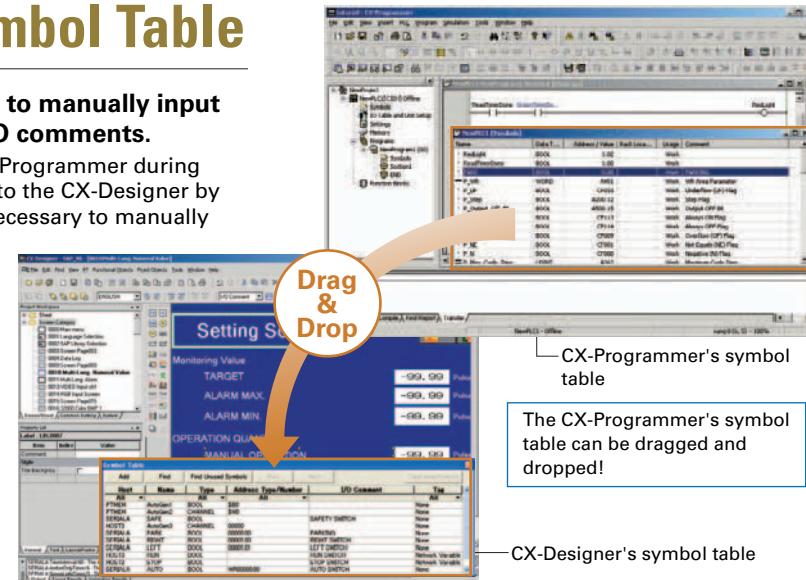
The CX-Programmer's symbol table can be dragged and dropped!

CX-Designer's symbol table

●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.
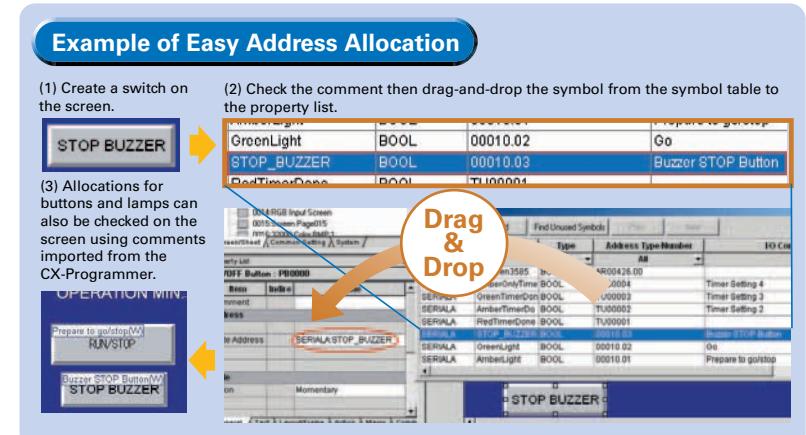
Example of Easy Address Allocation

(1) Create a switch on the screen.

(2) Check the comment then drag-and-drop the symbol from the symbol table to the property list.

(3) Allocations for buttons and lamps can also be checked on the screen using comments imported from the CX-Programmer.

Drag & Drop
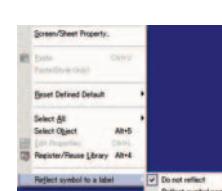
●Example of Reading I/O Comments

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.)

Drag & Drop
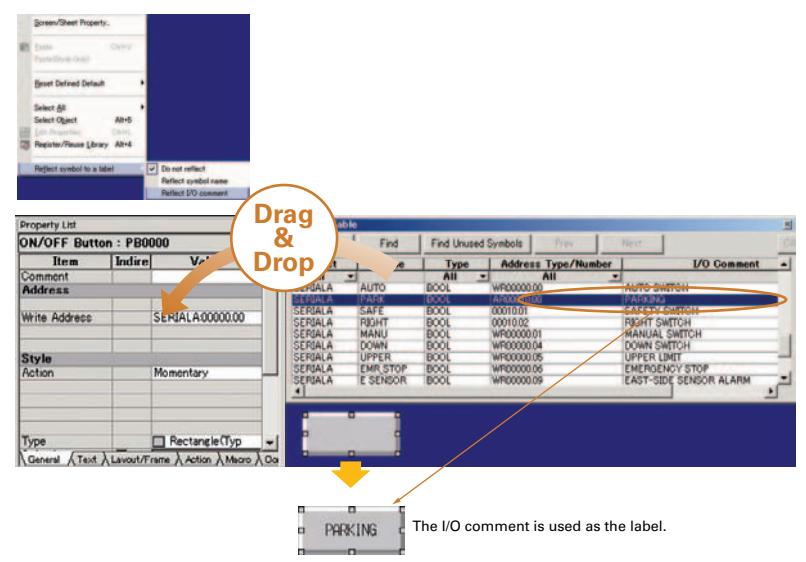
The I/O comment is used as the label.

Easy-to-use Software

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]

Project B
Project A
Drag & Drop

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

[Example screen 2]

Project B   Project A
Drag & Drop

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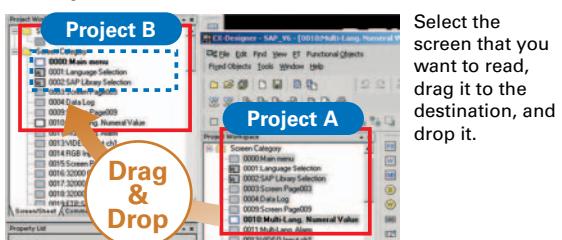
Reading CAD Files

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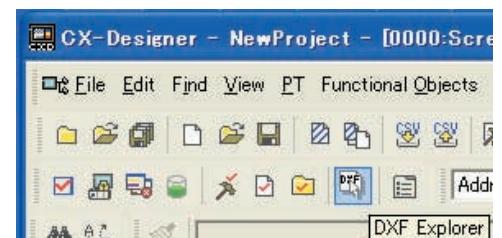
Integrated Simulation with the PLC Ladder Program

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

● Ladder Program Window

One Click simulation

● CX-One Version 2.0 on computer

Ladder Program   Touch Panel
Interactive

● Touch Panel Screen

INPUT Target→[ENT]

Process Started

Interactive
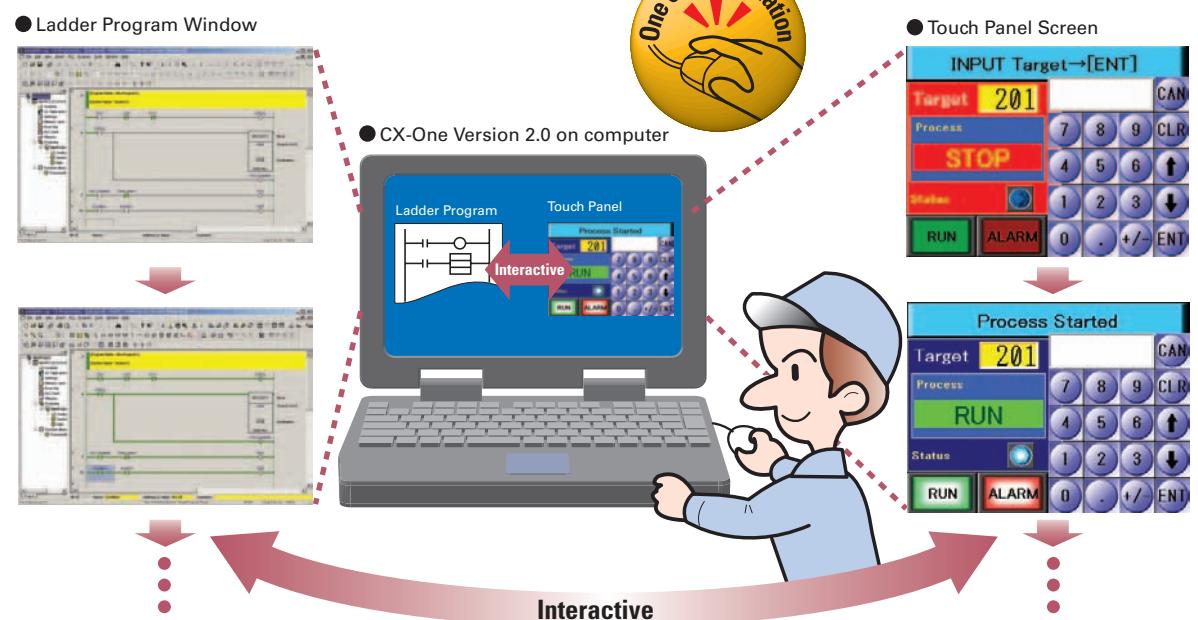
Editing of Multiple Objects

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.
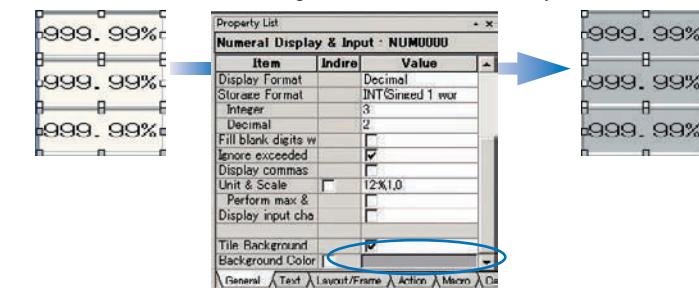
[Object Selection Window]
Right-click and select Select Part to display the objects (all types) on the screen.
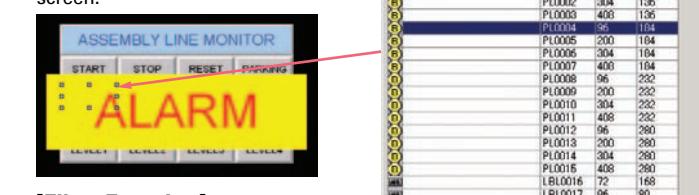
[Filter Function]
Use the Select Part command's filter function to select the objects (ON/OFF Button) that you want to edit.
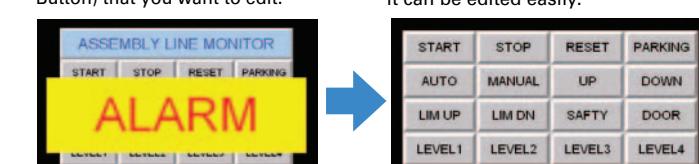
Only the edited object is displayed and it can be edited easily.

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.

Symbols input for addresses, which have not yet been determined.

Addresses input as addresses because addresses have been determined.
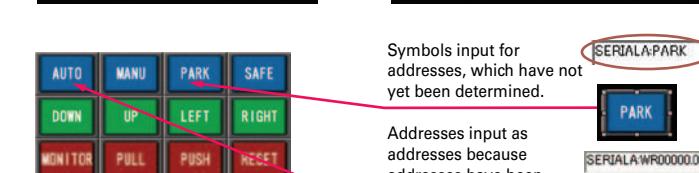
[Inputting from the Symbol Table]
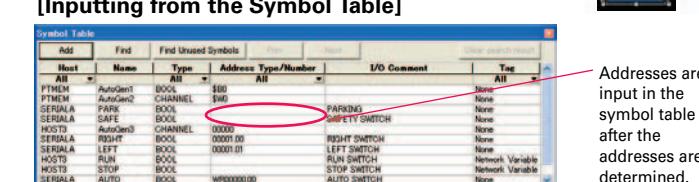
Addresses are input in the symbol table after the addresses are determined.

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

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

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

Import

Convenient!
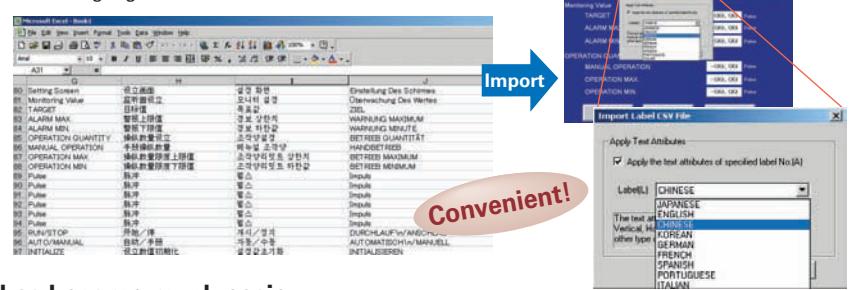
Multi-language conversion has become much easier.

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

Language A screen data — NS project — CSV — Attachment
Dual-language screen data — NS project — CSV or Unicode text
Language A Excel data — CSV
Language A and B Excel data — CSV — Attachment
Dual-language input in Excel by translation companies and local companies
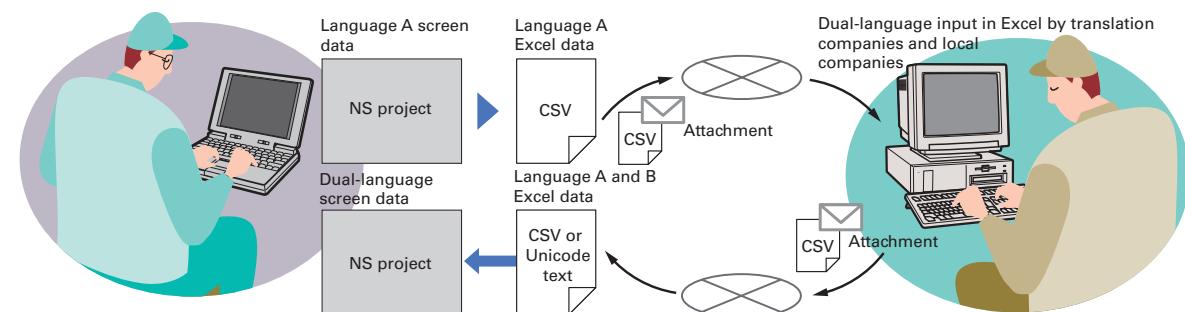
Note: Windows XP (Service Pack3 or higher), Vista or 7 is required for multi-language support.

Multi-language System Messages

Eight Languages Supported as Standard Feature

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

Chinese

Italian

French

English system menu (maintenance menu)
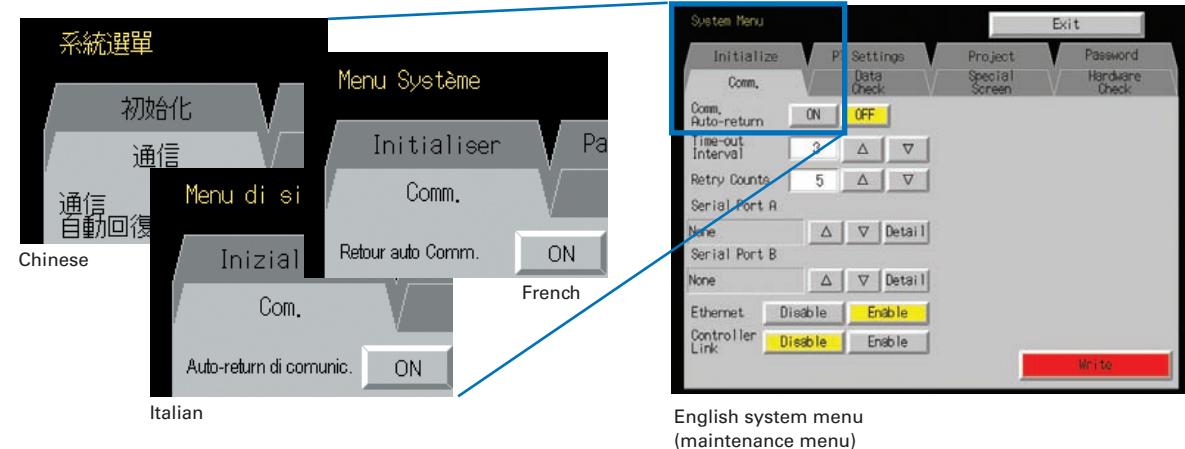
Greater Beauty

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

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

New 7-segment font

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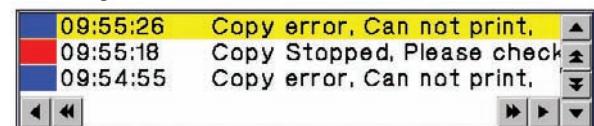
Scalable gothic font enables smooth display with the font scaled to the required size.

Attractive Screens

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

Huge 60-MB Image Memory

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

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

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

Plenty of Basic Functions

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.

● Text selection   ● Image selection

■ For example, in conjunction with an alarm bit (See note.)

Alarm bit 10.01 ON (no paper)

Alarm bit 10.02 ON (printing error)

Note: Alarms, PLC/PT memory, and other items can be selected for the switching trigger.
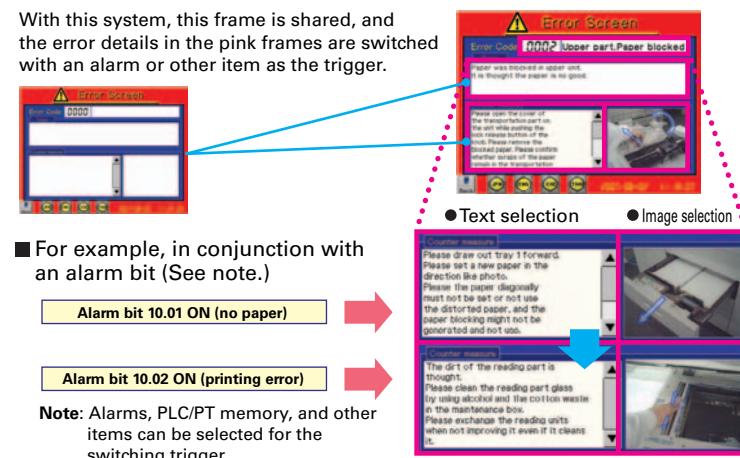
Easy-to-Use Multifunction Objects

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 execution with one object

Easy On-screen Setup with Support Software!

Execute multiple functions with one button.

Example:
The bit turns ON.
The word is set.
The screen changes.

Multifunction Objects support four safety functions.

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

ON delay   Turns ON when the button is pressed for at least a specified time.

Button pressed
Delay: 0.5 to 15 s   ON!
Relay status

Double-press   Turns ON when the button is pressed twice within the specified time.

Button pressed
Acceptance time: 0.5 to 30 s   ON!
Relay status

Simultaneous pressing prohibited   Does not turn ON when the button is pressed at the same time as another button.

OFF delay   Turns OFF after a specified time lapses after the button is released.

Button pressed   ON!
Delay: 0.5 to 15 s
Relay status

Time the button is pressed.

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.

The log data files in the Memory Card appear as shown below when the read file button is pressed.

Show the current logging graph
Trd00004.csv 04/06/23 21:18
Trd00003.csv 04/06/23 21:15
Trd00002.csv 04/06/23 21:14
Trd00001.csv 04/06/23 21:13

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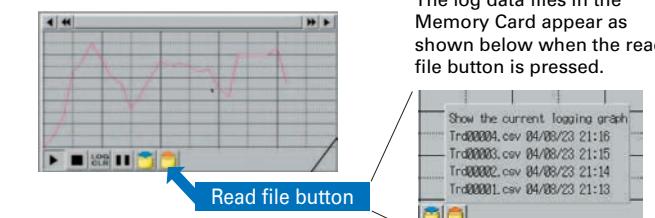
A log can be saved automatically, without any programming, just by selecting the Save the data periodically Option in the Data Log Setting Window.

Auto-matically saved

Memory Card

LOG001.CSV 04/06/04 10:00
LOG002.CSV 04/06/05 10:00
LOG003.CSV 04/06/06 10:00
LOG004.CSV 04/06/07 10:00
LOG005.CSV 04/06/08 10:00
LOG006.CSV 04/06/09 10:00
LOG007.CSV 04/06/10 10:00

It is possible to make a one-week log by automatically saving the data seven times.

Logging data for each day (43,200 points) is saved in the Memory Card in CSV format.

Suffixes are automatically added to file names set in the CX-Designer.

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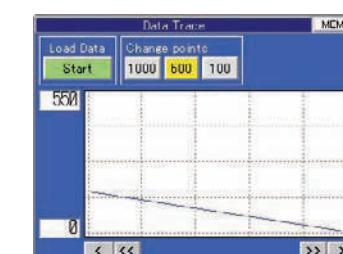
● **Any position from the host (PLC) can be plotted as a graph.**

[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.

Information in the PLC's format can be plotted moment-by-moment.

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

Plenty of Basic Functions
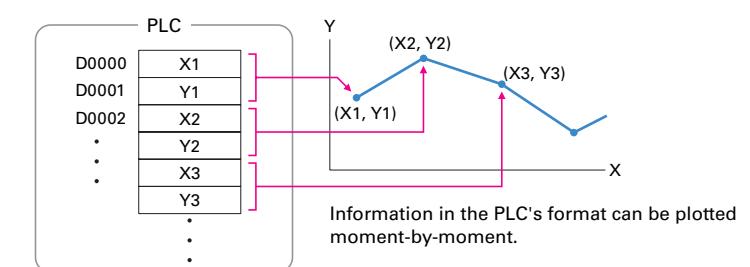
Screen Data Security Functions

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.

Download

Upload

Download

Upload

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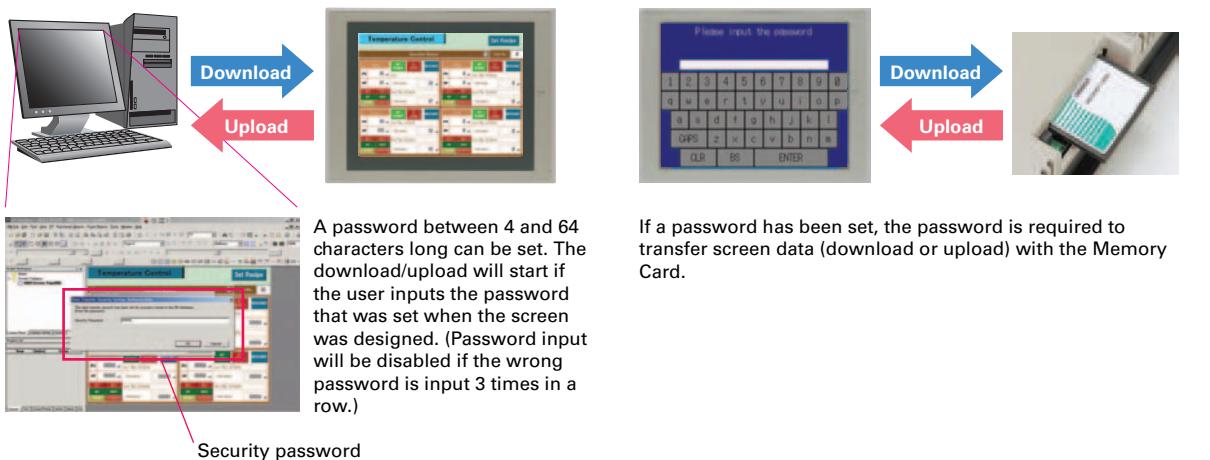
Security password

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

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.

High

Level 5
Level 4
Level 3
Level 2
Level 1

Low

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

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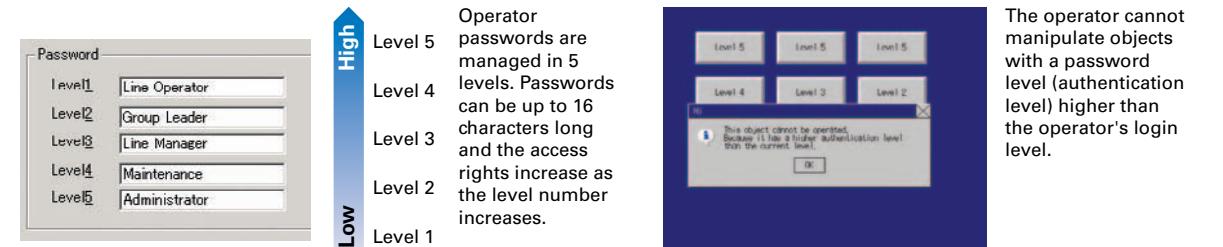
FTP Function

You can partially replace text and pictures from your computer.

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

Screens, bitmaps, text, recipe data

MEMO.

Plenty of Basic Functions
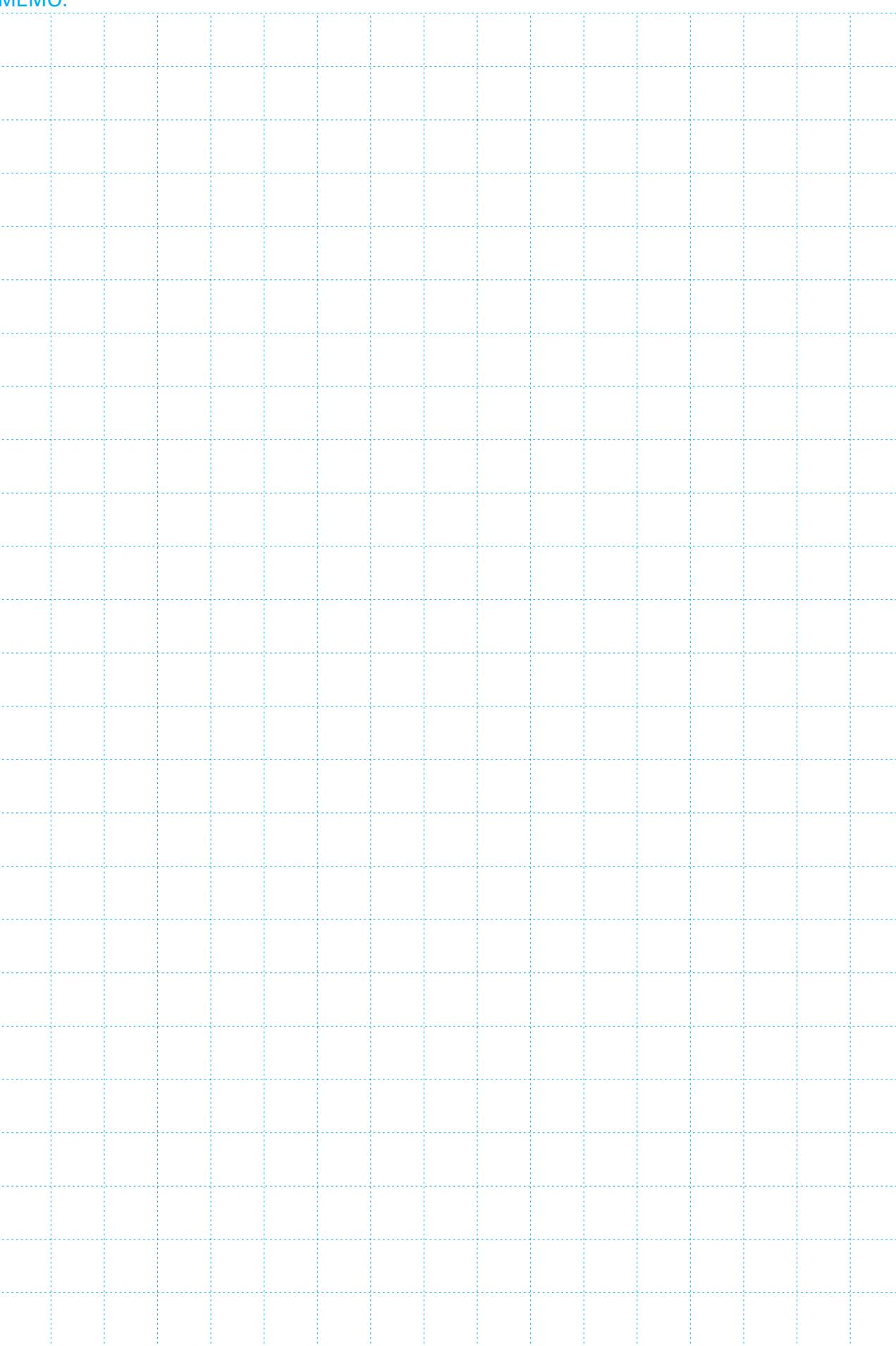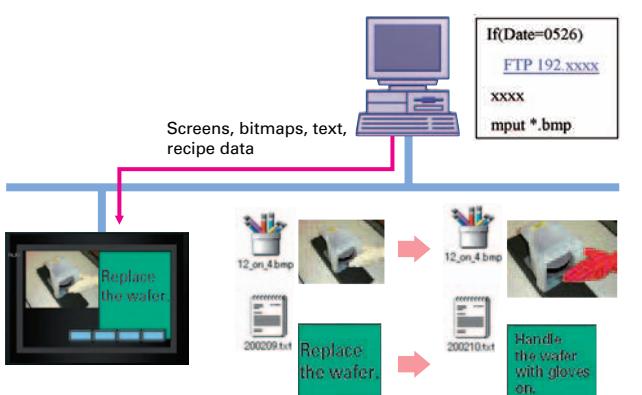
Connect! Expand! Feel the NS Series, the power of networking.

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]

Software for Machine Monitoring and Data Logging
NS-Runtime (sold separately)
For details, refer to page 36.

Personal computer

3 Ethernet

NS-series PT

CS/CJ-series PLC

1 Serial connection

2 Controller Link

4 Connections across network levels

NS-series PT

CS/CJ-series PLC

NS-series PT

NS-series PT

1 Serial connection

CS/CJ-series PLC

CS/CJ-series PLC

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-series PT

PLC

●NS:PLC = 1:2

NS-series PT

PLC

PLC

■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.

NS-series PT

NS-series PT

NS-series PT

PLC

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

NS-series PT

NS-series PT

NS-series PT
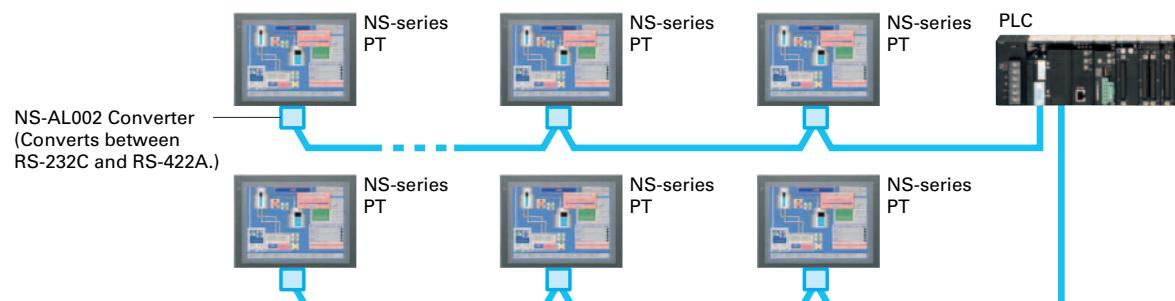
2 Controller Link Connection

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

NS-CLK21

NS Series

PLC

PLC

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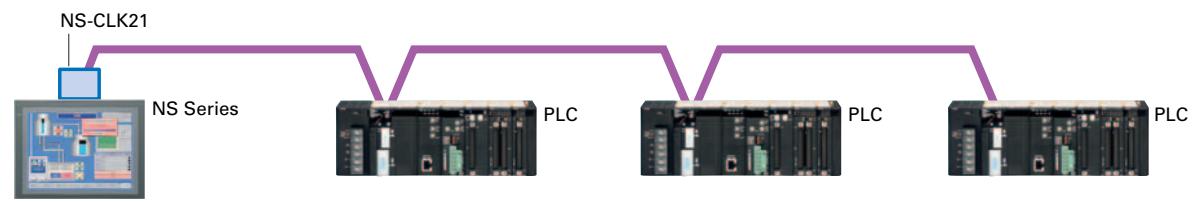
If a Controller Link connection is used, data links can be set between PLCs and multiple PLCs can be monitored/set from the NS-series PT's screen.

●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.

NS Series

Personal computer

NS Series

PLC

PLC

PLC
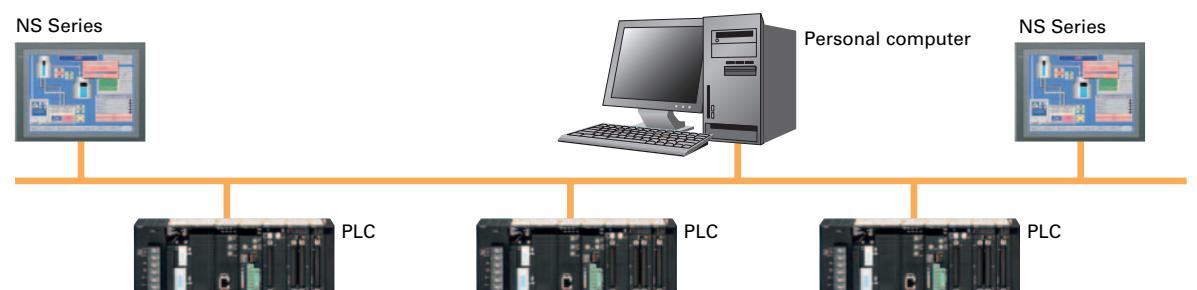
4 Connections Over Network Levels

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 Series

NS Series

Ethernet

PLC

Seamless and Program-less

Seamless and Program-less

Controller Link

Seamless and Program-less

PLC

PLC

DeviceNet

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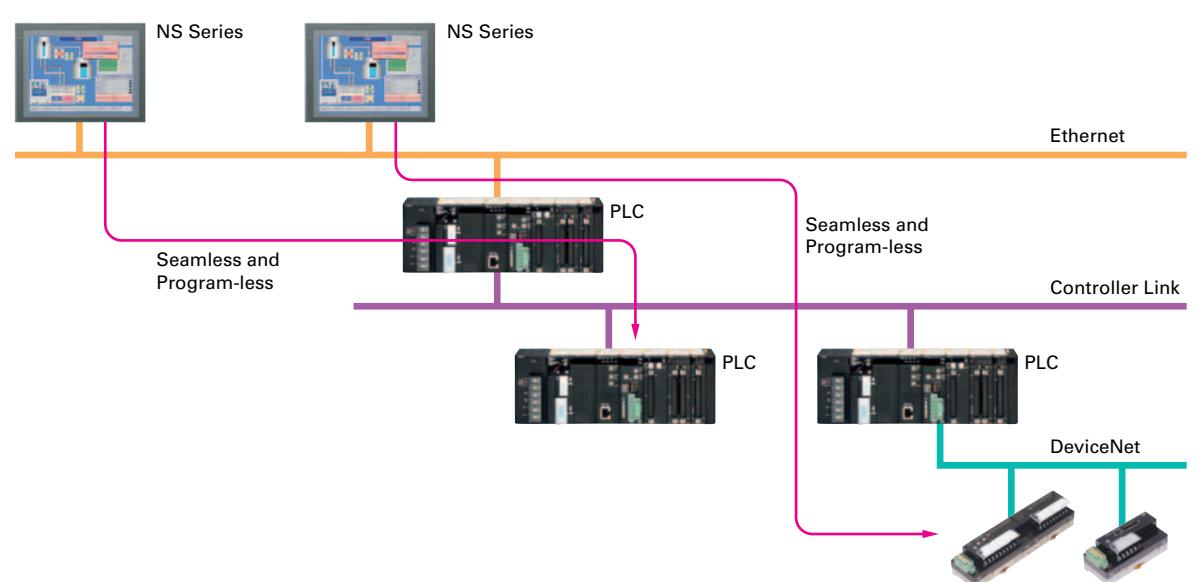
NS-Runtime

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.

Ethernet

Monitoring Device Alarms

Displaying Maintenance Information (PDF File)

Wide Screen

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

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

Monitor output

Note: The resolution that can be displayed depends on the computer. An input function for displaying the computer screen is required at the display monitor.
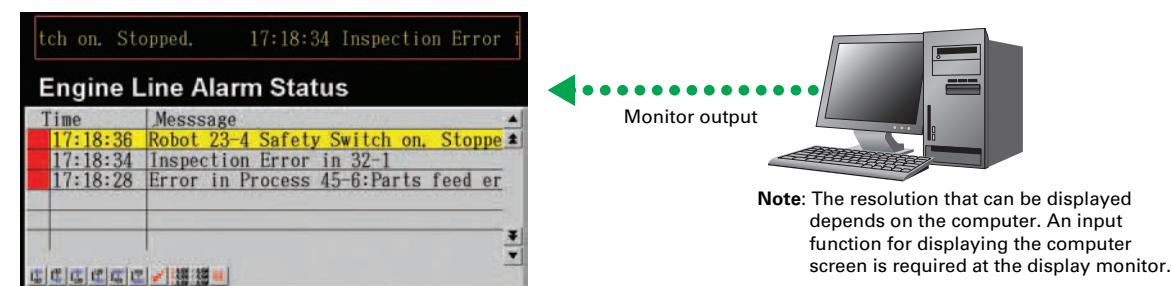
Data Logger

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.
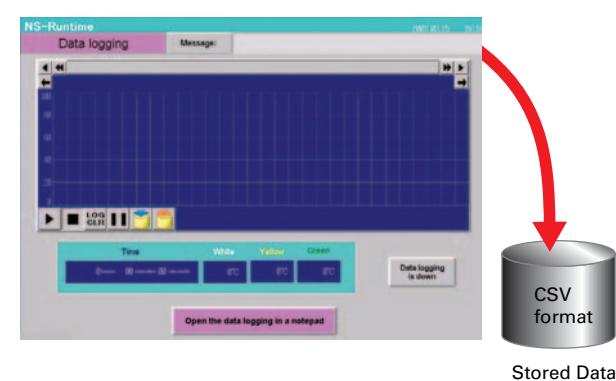
CSV format

Stored Data

Recipe Handling

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

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

	A	B	C	D	E
1	001	CJ1G	666	666	666
2	002	CPM2A	55	18	100
3	003	D4JL	2	20	200
4	004	E5CN	3	30	300
5	005	F3SJ	4	40	400

CSV format

Recipe data
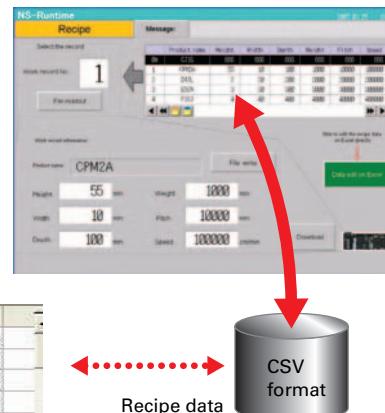
Easy Installation

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.

NS-Runtime

Screen Data

To PLC

Screen designer: CX-Designer (CX-One)

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.
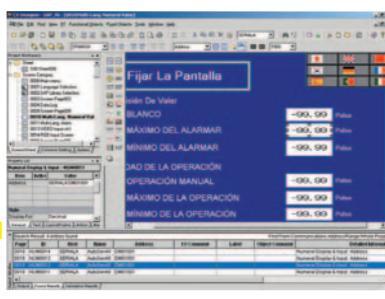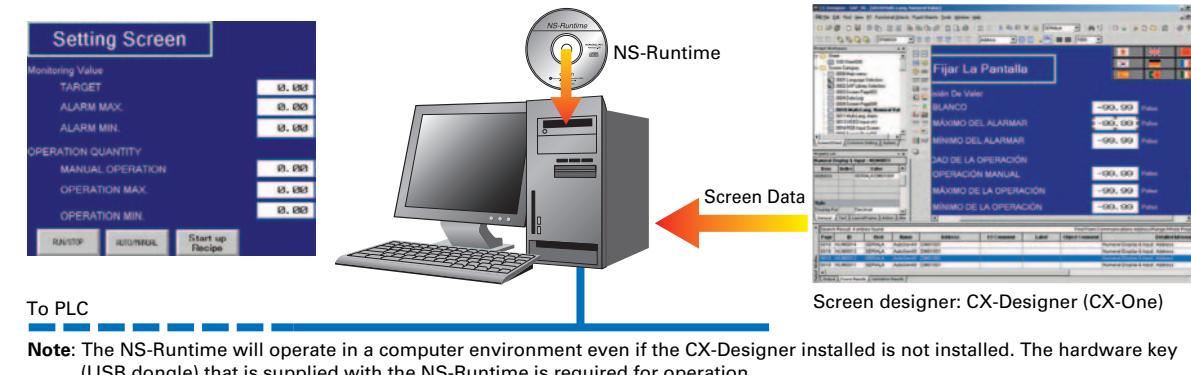
Application Startup Function

User applications can be started from NS-Runtime.

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

NS-Runtime

User application

	A	Parameter	Pressure	Oil	W
1	Setting Item				
2	Common parameter	1	600	600	
3	Production unit	2	700	700	
4	Frequency of occurrence of alarm	3	800	800	
5		4	900	900	
6	Read from PLC	Write to PLC	Print		
7					

Started

Start up Recipe

For example, to start an application by pressing a button...
Use the EXEC( ) macro.

Example: EXEC("C:ProgramFiles\Micros..\EXCEL.EXEC:\..\TEST2.xls.....);

Note: As much as possible, keep applications closed that are not required for operation.

- 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

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

System Configuration Diagram

Memory Card Interface
OMRON Memory Card

Ethernet port | USB Slave | USB Master | RS-232C port | RS-232C port

RS-422A Conversion Unit
CJ1W-CIF11
NS-AL002
Note: A Conversion Unit is not required to connect to the RS-422A/485 serial interface of the NS15.

PT-to-PLC Connecting Cable
XW2Z-200T (Length: 2 m)
XW2Z-500T (Length: 5 m)
RS-232C
OMRON PLC

Bar Code Reader
Recommended: OMRON V520-RH21-6

Screen transfer cable
XW2Z-S002 (Length: 2 m)
RS-232C
Personal computer

Screen transfer cable
XW2Z-S002 (Length: 2 m)
USB Serial Conversion Cable
CS1W-CIF31
USB
Micro-computer board, personal computer, etc.

Memory link connection

CompoWay/F connection
Temperature Controller

Modbus (MEMOBUS)-RTU connection
Inverter

RS-422A
OMRON PLC

USB Host Cable for printer
NS-US22 (Length: 2 m)
NS-US52 (Length: 5 m)
USB

Standard USB cable Commercially available.
USB
PictBridge
PictBridge-compatible printer

Standard USB cable Commercially available.
USB
Personal computer

Wireless
WE70   WE70
Ethernet
OMRON PLC

Ethernet
OMRON PLC
Personal computer

Ethernet

System Configuration Diagram (Expansion Bus Interface)

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

Expansion bus interface

Controller Link Interface Unit
NS-CLK21
Controller Link
PLC

Video Input Unit
NS-CA001
NTSC/PAL
Vision Sensor

RGB/Video Input Unit
NS-CA002
NTSC/PAL

RGB output
Personal computer

Note: Video Input Units and RGB Video Input Units cannot be used with some models. For details, refer to page 20.

System Configuration Diagram (Multi-vendor)

RS-232C port | RS-232C port

RS-422A Conversion Unit
CJ1W-CIF11
NS-AL002
Note: A Conversion Unit is not required to connect to the RS-422A/485 serial interface of the NS15.

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

RS-232C

Computer Link Unit
Mitsubishi A-series PLC

Function Extension Board or Mitsubishi FX-series PLC Communications Adapter
Mitsubishi FX-series PLC

Serial Communications Unit
Mitsubishi QnA-series PLC

Serial Communications Unit
Mitsubishi Q-series PLC

Computer Link Module
Yokogawa's FA-M3(R) Series

SIMATIC S7 HMI Adapter
Siemens S7-300-series PLC

Serial Communications Module
Yaskawa MP-series PLC

Rockwell (Allen-Bradley)
SLC500/Micrologix/ControlLogix/CompactLogix/ PLC-5-series PLC

Modbus device (RTU mode)

RS-422A/485 (See note.)

Computer Link Unit
Mitsubishi A-series PLC

Function Extension Board or Mitsubishi FX-series PLC Communications Adapter
Mitsubishi FX-series PLC

Serial Communications Unit
Mitsubishi QnA-series PLC

Serial Communications Unit
Mitsubishi Q-series PLC

Computer Link Module
Yokogawa's FA-M3(R) Series

Serial Communications Module
Yaskawa MP-series PLC

Rockwell (Allen-Bradley)
PLC-5-series PLC

Modbus device (RTU mode)

Note: Whether an RS-422A or RS-485 connection is supported depends on the device that you are connecting to. For details, refer to the list of connectable devices on page 52 and the NS-series Host Connection Manual: Multi-vendor (Cat. No. V085)

Component Names and Options

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

Super-thin 48.5-mm Body for a Slimmer Control Panel
This thin-profile model has few protrusions so it can be incorporated easily into a panel or machine.
The PT can help save space when space is at a premium.

■ NS12, NS10

- Memory Card interface
- Memory Card
  Note: Colors shown in photographs and product names may differ from actual colors and names.
- Expansion interface
- Battery
- RS-232C serial port A
- RS-232C serial port B
  ● A bar code reader can be connected to the serial port.
  Recommended bar code reader: V520-RH21-6
- Power Supply (24 VDC)
- Ethernet (10Base-T or 100Base-TX)
- USB slave (for transferring screens and connecting a PictBridge-compatible printer)
- USB HOST (for printer)

■ NS8

- Memory Card interface
- Memory Card
  Note: Colors shown in photographs and product names may differ from actual colors and names.
- Expansion interface
- Battery
- RS-232C serial port A ● A bar code reader can be connected to the serial port.
- RS-232C serial port B   Recommended bar code reader: V520-RH21-6
- Ethernet (10Base-T or 100Base-TX)
- Power Supply (24 VDC)
- USB SLAVE (For screen data transfer)
- USB HOST (for printer)

● **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

- Memory Card interface
- Memory Card
  Note: Colors shown in photographs and product names may differ from actual colors and names.
- Expansion interface
- Ethernet (10Base-T or 100Base-TX)
- USB SLAVE (For screen data transfer)
- RS-232C serial port A
- RS-232C serial port B
  ● A bar code reader can be connected to the serial port.
  Recommended bar code reader: V520-RH21-6
- Battery
- Power Supply (24 VDC)

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

Optional Products

Video Input Unit NS-CA001(with Cover)	RGB/Video Input Unit NS-CA002 (with Cover)	Controller Link Interface Unit NS-CLK21 (with Cover)	RS-422A Adapter CJ1W-CIF11
RS-232C/RS-422A Conversion Unit NS-AL002	Communications Cable XW2Z-S002	Protective Cover/Anti-reflection Sheet for NS-series PT NS□-KBA0□(N) NT30/NT31C-KBA05(N)	USB Serial Conversion Cable CS1W-CIF31
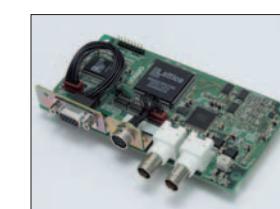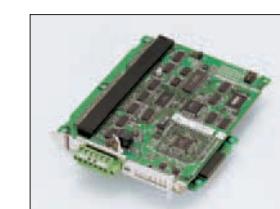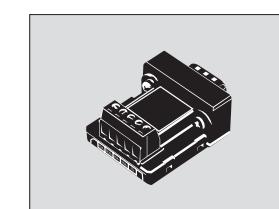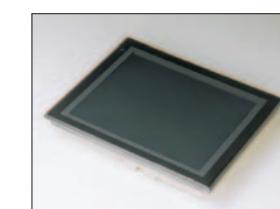
Note: Colors shown in photographs and product names may differ from actual colors and names.

NSH5 Series

A hand-held version of the NS5 is now available to perform operations at the production site. The NS-series PT's have a complete set of functions that can be used at the production site, such as the SAP Library, multi-language support, and Programming Console functions.

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

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

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

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

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

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

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

● **Options**

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

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

■ **Mounting Bracket**
Use to attach the NSH5 to a control panel.

System Configuration Diagram (NSH5 Hand-held PT)

Commercially available USB cable. USB

USB Slave / Memory Card interface

NSH5 PT

OMRON Memory Card / Personal computer

RS-232C cable — RS-232C Connecting Cable for the NSH5 NSH5-232CW-3M (Length: 3 m) / RS-232C Connecting Cable for the NSH5 NSH5-232CW-10M (Length: 10 m) — RS-232C — PLC

RS-422A cable — RS-422A Connecting Cable for the NSH5 NSH5-422CW-10M (Length: 10 m) — RS-422A — PLC

UL-listed Cables

RS-232C cable — RS-232C Connecting Cable for the NSH5 NSH5-232UL-3M (Length: 3 m) / RS-232C Connecting Cable for the NSH5 NSH5-232UL-10M (Length: 10 m) — RS-232C — PLC

RS-422A cable — RS-422A Connecting Cable for the NSH5 NSH5-422UL-10M (Length: 10 m) — RS-422A — PLC

Commercially available USB cable. USB

USB Slave / Memory Card interface

NSH5 PT

OMRON Memory Card / Personal computer

Removable Box Connected

Removable Box

RS-232C cable — RS-232C Connecting Cable for the NSH5 NSH5-232CN-3M (Length: 3 m) / RS-232C Connecting Cable for the NSH5 NSH5-232CN-10M (Length: 10 m) — RS-422A — PLC

● **System Configuration**
(Removable Box Connected)

PLC

Control panel

Removable Box

NSH5 (See note.)
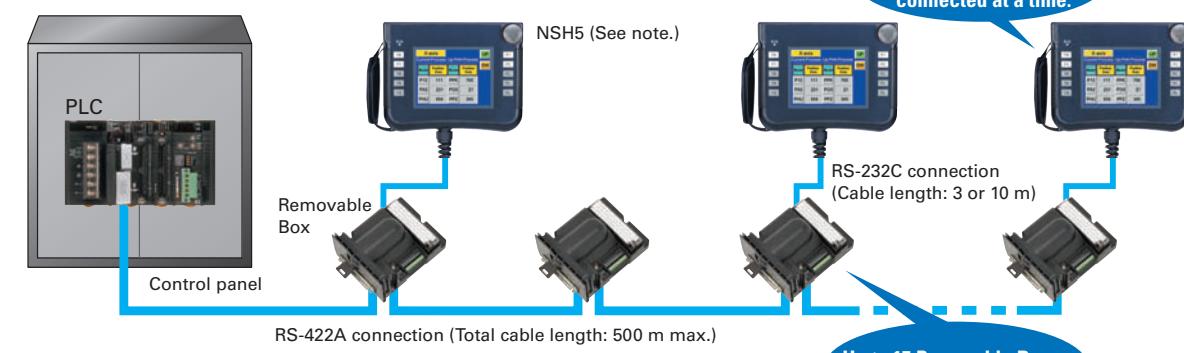
Up to eight NSH5s can be connected at a time.

RS-232C connection (Cable length: 3 or 10 m)

RS-422A connection (Total cable length: 500 m max.)

Up to 15 Removable Boxes can be connected.

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

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

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 TFT color		No	Ivory	NS5-SQ10-V2	
				Black	NS5-SQ10B-V2	
			Yes	Ivory	NS5-SQ11-V2	
				Black	NS5-SQ11B-V2	
	5.7-inch High-luminance TFT color		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	UC1, CE, N, L, UL Type4
				Black	NS10-TV00B-V2	
			Yes	Ivory	NS10-TV01-V2	
				Black	NS10-TV01B-V2	
NS12-V2	12.1-inch TFT	800 × 600 dots	No	Ivory	NS12-TS00-V2	
				Black	NS12-TS00B-V2	
			Yes	Ivory	NS12-TS01-V2	
				Black	NS12-TS01B-V2	
NS15-V2	15-inch TFT	1,024 × 768 dots	Yes	Silver	NS15-TX01S-V2	
				Black	NS15-TX01B-V2	
NSH5-V2 (See note.) Hand-held	5.7-inch TFT	320 × 240 dots	No	Black (Emergency stop button: Red)	NSH5-SQR10B-V2	UC, CE
				Black (Stop button: Gray)	NSH5-SQG10B-V2	

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

■ NS-Runtime

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

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

● System Requirements

Item	Specifications
OS	Windows XP (Service Pack 3 or higher), Vista, or 7 (Support 64-bit version for only Windows 7.)
CPU	Celeron, 1.3 GHz or higher (Recommended)
Memory size	HDD: 50 MB min., RAM: 512 MB min. (Windows 7: 1 GB min.). 50 MB is required for the Runtime alone. (An additional 280 MB is required if CX-Server is not already installed.)

■ Programming Devices

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

Note 1. CX-Designer version 3.008 or higher is required to use the NS15. Users who purchase CX-One version 3.□ can use the auto-update to update the version.
   2. Multi licenses are available for the CX-One (3, 10, 30, or 50 licenses).
   3. The CX-One is also available on CD (CXONE-AL□□-V4).
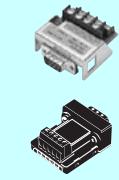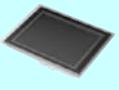
Standard Models

Model name	Specifications		Model number	Standards
Cable (See note.)	Screen transfer cable for DOS/V (CX-Designer ↔ PT)	Length: 2 m	XW2Z-S002	---
	USB Host Cable (For a printer)	Length: 5 m	NS-US52	
	USB Host Cable (For a printer)	Length: 2 m	NS-US22	
	USB-Serial Conversion Cable	Length: 0.5 m	CS1W-CIF31	N
	USB relay cable	Length: 1 m	NS-USBEXT-1M	
NSH5 Cables	RS-422A cable (loose wires + D-Sub 9-pin)	Length: 10 m	NSH5-422CW-10M	---
	RS-232C cable (loose wires + D-Sub 9-pin)	Length: 3 m	NSH5-232CW-3M	
	RS-232C cable (loose wires + D-Sub 9-pin)	Length: 10 m	NSH5-232CW-10M	
UL-compliant NSH5 Cable	RS-422A cable (loose wires)	Length: 10 m	NSH5-422UL-10M	CU
	RS-232C cable (loose wires + relay cable)	Length: 3 m	NSH5-232UL-3M	
	RS-232C cable (loose wires + relay cable)	Length: 10 m	NSH5-232UL-10M	
PT-to-PLC Connecting Cable	PT connection: 9 pins PLC connection: 9 pins	Length: 2 m	XW2Z-200T	---
		Length: 5 m	XW2Z-500T	
	PT connection: 9 pins PLC peripheral port	Length: 2 m	XW2Z-200T-2	
		Length: 5 m	XW2Z-500T-2	
NSH5 Removable Box Cable	RS-232C Cable (connectors)	Length: 3 m	NSH5-232CN-3M	
		Length: 10 m	NSH5-232CN-10M	
NSH5 Removable Box	---		NSH5-AL001	
NSH5 Wall-mounting Bracket	---		NSH5-ATT02	
NSH5 Visor	---		NSH5-ATT01	

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
Video Input Unit	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	
Special Cable for the Console	Cable length: 2 m		F150-VKP (2 m)	---
	Cable length: 5 m		F150-VKP (5 m)	
Controller Link Interface Unit	For Controller Link Communications		NS-CLK21	UC1, CE
RS-422A Adapter	Transmission distance: 500 m total length **Note:** Use this model when connecting PT models without a V□ suffix. **Note:** PT models with the V□ suffix can also be connected.		NS-AL002	---
	Transmission distance: 50 m total length **Note:** Only PT models with a suffix of V□ are connectable. Use the NS-AL002 to connect models without a V□ suffix.		CJ1W-CIF11	UC1, N, L, CE
Sheet/Cover (See note 2.)	Anti-reflection Sheets (5 surface sheets)	NS15	NS15-KBA04	---
		NS12/10	NS12-KBA04	
		NS8	NS7-KBA04	
		NS5	NT30-KBA04	
	Protective Covers (5 pack) (anti-reflection coating)	NS12/10	NS12-KBA05	
		NS8	NS7-KBA05	
		NS5	NT31C-KBA05	
	Protective Covers (1 cover included) (Transparent)	NS15	NS15-KBA05N	
	Protective Covers (5 covers included) (Transparent)	NS12/10	NS12-KBA05N	
		NS8	NS7-KBA05N	
		NS5	NT31C-KBA05N	
Attachment	NT625C/631/631C Series to NS12/10 Series		NS12-ATT01	
	NT625C/631/631C Series to NS12/NS10 Series (Black)		NS12-ATT01B	
	NT610C Series to NS12/10 Series		NS12-ATT02	
	NT620S/620C/600S Series to NS8 Series		NS8-ATT01	
	NT600M/600G/610G/612G Series to NS8 Series		NS8-ATT02	
Memory Card	128MB		HMC-EF183	L, N, CE
	256 MB		HMC-EF283	CE
	512 MB		HMC-EF583	
Memory Card Adapter	---		HMC-AP001	
Replacement Battery	Battery life: 5 years (at 25°C)		CJ1W-BAT01	
Bar Code Reader	CCD 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.

Performance/Specifications

Series	NS5-V2				NS8-V2	
Type	5.7-inch Monochrome STN	5.7-inch Color	5.7-inch Color (High-luminance)		8.4-inch Color	
Appearance						
Display device	STN Monochrome LCD	TFT color LCD	Color High-luminance TFT (See note 1.)		High-definition TFT color LCD	
Effective display area	Width 117.2 × height 88.4 mm (5.7 inches)				Width 170.9 × height 128.2 mm (8.4 inches)	
Case color	Ivory / Black	Ivory / Black	Ivory / Black		Ivory / Black	
Built-in Ethernet port	No / Yes / No / Yes	No / Yes / No / Yes	No / Yes / No / Yes		No / Yes / No / Yes	
Model number	NS5-MQ10-V2 / NS5-MQ11-V2 / NS5-MQ10B-V2 / NS5-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: 80°, Top: 80°, Bottom: 60°	Left/right: 80°, Top: 80°, Bottom: 60°		Left/right: 65°, Top: 50°, Bottom: 60°	
Screen data capacity	60 Mbytes				60 Mbytes	
Image data (BMP or JPG images)	16 gradations	32,768 colors	32,768 colors		32,768 colors	
Memory Card	Supported				Supported	
Ladder Monitor function	Not supported				Supported	
Video Input Unit support	Not supported				Supported	
Image displayed via video input	---				260,000 colors	
Controller Link Interface Unit (Wired) support	Not supported				Not supported	

Backlight Note: Contact your nearest OMRON representative to replace the backlight.	**Service life**	50,000 hours min.	75,000 hours min.	50,000 hours min.
	Note: This is the estimated time before brightness is reduced by half at room temperature and humidity. It is not a guaranteed value. The service life will be dramatically shortened if PT is used at low temperatures. For example, using the PT at temperatures of 0°C will reduce the service life to approximately 10,000 hours (reference value).			
	Brightness adjustment	There are 3 levels that can be set with the touch panel. Note: The brightness cannot be adjusted much.	Three-level or 32-level brightness adjustment from the touch panel screen. Note: 32-level adjustment is supported from the LotNo.15Z0.	There are 3 levels that can be set with the touch panel. Note: The brightness cannot be adjusted much.
	Backlight error detection	Error is detected automatically, and the RUN indicator flashes green as notification. Note: This function does not indicate that the service life has been reached. It detects when the backlight is not lit due to a disconnection or other errors. Backlight error detection indicates that all backlights (2) are OFF.		

Touch panel (matrix type)	**Method**	Matrix resistive membrane	
	Number of switches/ resolution	300 (20 horizontal × 15 vertical) 16 × 16 dots for each switch	768 (32 horizontal × 24 vertical) 20 × 20 dots for each switch
	Input	Pressure-sensitive	
	Service life	1,000,000 touch operations.	

Display text	**Labels**	Can be specified in CX-Designer. Font, style, and size can be specified.
	Numerals, alarms, and character strings	Scalable Gothic: Magnification: 6 to 255 points
		Rough: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8
		Standard: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8
		Fine: Magnification: 1 × 1, 1 × 2, 2 × 1, 2 × 2, 3 × 3, 4 × 4, 8 × 8
		7-segment display: Can display only numerals, dates, and times.
	Supported languages (42 languages)	Scalable Gothic, rough, standard, and fine can be used for 42 languages. Japanese, simplified Chinese, traditional Chinese, Korean, English, French, German, Italian, Portuguese, Spain, Swedish, Dutch, Finnish, Norwegian, Basque, Catalan, Danish, Albanian, Croatian, Czech, Hungarian, Polish, Romanian, Slovak, Slovenian, Bulgarian, Belarusian, Russian, Serbian, Macedonian, 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.

Note 1. NS5-TQ series (high luminance TFT) luminance is better than that of NS5-SQ series by about 110cd/m².

	NS10-V2				NS12-V2				NS15-V2	
	10.4-inch Color				**12.1-inch Color**				**15-inch Color**	
	High-definition TFT color LCD				High-definition TFT color LCD				High-definition TFT color LCD	
	Width 215.2 × height 162.4 mm (10.4 inches)				Width 246.0 × height 184.5 mm (12.1 inches)				Width 304.1 × height 228.1 mm (15 inches)	
	Ivory		Black		Ivory		Black		Silver	Black
	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
	NS10-TV00-V2	NS10-TV01-V2	NS10-TV00B-V2	NS10-TV01B-V2	NS12-TS00-V2	NS12-TS01-V2	NS12-TS00B-V2	NS12-TS01B-V2	NS15-TX01S-V2	NS15-TX01B-V2
	256 colors				256 colors				256 colors	
	640 dot horizontal × 480 dot vertical				800 dot horizontal × 600 dot vertical				1,024 dot horizontal × 768 dot vertical	
	Left/right: 60°, Top: 35°, Bottom: 65°				Left/right: 60°, Top: 45°, Bottom: 75°				Left/right: 80°, Top: 70°, Bottom: 60°	
	60 Mbytes				60 Mbytes				60 Mbytes	
	32,768 colors				32,768 colors				32,768 colors	
	Supported				Supported				Supported	
	Supported				Supported				Supported	
	Supported				Supported				(Only RGB input is enabled.)	
	260,000 colors				260,000 colors				---	
	Supported				Supported				Supported	
	50,000 hours min.				50,000 hours min.				50,000 hours min.	
									Adjustable in steps using touch panel operation or stepless adjustment is possible using external variable resistor (minimum brightness: 15 cd/m^2).	
									Analog resistive membrane (See note 2.)	
	1,200 (40 horizontal × 30 vertical) 16 × 16 dots for each switch				1,900 (50 horizontal × 38 vertical) 16 × 16 dots for each switch				Resolution: 1,024 (horizontal) x 1,024 (vertical)	

2. An analog touch panel is used with the NS15. Do not press the touch panel in two or more places simultaneously. If the touch panel is pressed in two or more places simultaneously, it may activate a switch between the points that are pressed.

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

47

Performance/Specifications

Series	NS5-V2			
Type	5.7-inch Monochrome STN	5.7-inch Color	5.7-inch Color (High-luminance)	
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.) **Note:** The 5-V outputs of serial ports A and B cannot be used at the same time.		
	Port A — 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. **Note:** The 5-V outputs of serial ports A and B cannot be used at the same time.		
	Port B — Functions	Host (PLC) access: 1:N NT Links (connections with CS/CJ/CP-series PLCs and C200HX/HG/HE(-Z) PLCs) or 1:1 NT Links (connections with C Series or CVM1/CV-series PLCs) Direct access to Temperature Controllers using Smart Active Parts: CompoWay/F and bar code reader connections (Read directly from display.)		
USB SLAVE Specifications	USB rating	USB1.1		
	Connector	TYPE-B (Slave)		
	Functions	Connection with the CX-Designer (for screen data transfers) Connecting to a PictBridge-compatible Printer Recommended printers: EPSON: PM-G4500, PX-G5300, PX-5600, EP-901F Canon: PIXUS MX7600, PIXUS iP100, PIXUS iX5000		
USB HOST Specifications	USB rating	None		
	Connector			
	Functions			
Built-in Ethernet Specifications (NS□-□□□1-V2 only)	Conformance standards	Conforms to IEEE 802.3/Ethernet (10Base-T/100Base-TX).		
	Function	Host (PLC) access and connection with the CX-Designer (for screen data transfers)		
Controller Link (Wired-type) Specifications	Baud rate	---		
	Transmission path	---		
	Functions	---		
Video Input Specifications	Resolution	---		
	Input signal	---		
	Number of video inputs	---		

● General Specifications

Series	NS5-V2			
Type	5.7-inch Monochrome STN	5.7-inch Color	5.7-inch Color (High-luminance)	
Rated power supply voltage	24 VDC			
Allowable voltage range	20.4 to 27.6 VDC (24 VDC ±15%)			
Power consumption	25 W max. (15 W max. for the NS5)			
Ambient operating temperature	0 to 50°C (See note on the next page.) **Note:** The ambient operating temperature is subject to the following restrictions according to the mounting angle. Mounting angle of 0 to 30° to the horizontal: •When no Expansion Units are mounted, the operating temperature range is 0 to 45°C. •When a Video Input Unit or a Controller Link Interface Unit is mounted, the ambient operating temperature is 0 to 35°C. Mounting angle of 30 to 90° to the horizontal: Operating temperature range of 0 to 50°C			
Storage temperature	−20 to 60°C (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/s² 30 min each in X, Y, and Z directions			
Shock resistance (during operation)	147 m/s² 3 times each in direction of X, Y, and Z			
Weight	1.0 kg max.			
Degree of protection	Front operating panel: Equivalent to IP65 oil-proof type and NEMA4 UL type 4. (Only to NS5) **Note:** May not be applicable in locations with long-term exposure to oil.			
Ground	Ground to 100 Ω or less.			
Battery life	5 years (at 25°C): Replace battery within 5 days after the battery runs low (indicator lights orange).			
Applicable standards	Certified for conformance to UL 508, UL 1604, EMC Directive, NK, and LR Standards.			
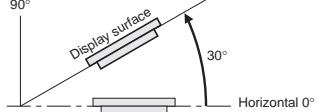
Note: Operate the PT within the temperature and humidity ranges shown in the right diagram.
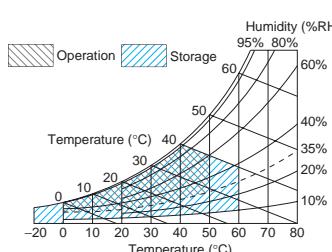
	NS8-V2	NS10-V2	NS12-V2	NS15-V2
	8.4-inch Color	10.4-inch Color	12.1-inch Color	15-inch Color
	USB1.1			
	TYPE-A (Host)			
	Connection with a printer (for hard copies) Recommended printers: EPSON: PX-G930			
	---	2 M/1 M/500 K		
	---	Shielded twisted-pair cable (special cable)		
	---	Host (PLC) access and data links		
	NS-CA001: 320 × 240, 640 × 480, 800 × 600 dots	NS-CA002: User-defined size		---
	NS-CA001: NTSC composite video or PAL	NS-CA002: NTSC composite video or PAL		---
	NS-CA001: Number of cameras: 4 max.	NS-CA002: 2 cameras + RGB		NS-CA002: RGB only

	NS8-V2	NS10-V2	NS12-V2	NS15-V2
	8.4-inch Color	10.4-inch Color	12.1-inch Color	15-inch Color
				45 W max.
				5 to 8.4 Hz, 3.5 mm single amplitude, 8.4 to 150 Hz, 9.8 m/s^2 10 min times each in X, Y, and Z directions
	2.0 kg max.	2.3 kg max.	2.5 kg max.	4.2 kg max.

Performance/Specifications

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

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

Note 1. NS-Runtime is supported for only the CS/CJ/CP/CV-series PLCs (Peripheral Bus (toolbus), Host Link, and Ethernet) and the CJ2 (Peripheral Bus (toolbus) and Ethernet).
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.)	
	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)	
	CJ2M	CJ2M-CPU1□	
		CJ2M-CPU3□	
CP series	CP1H	CP1H-□□	Mount CP1W-CIF01/CIF11/CIF12 Serial Option Board.
	CP1L	CP1L-M□□/L□□	
	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.

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

Connectable Devices
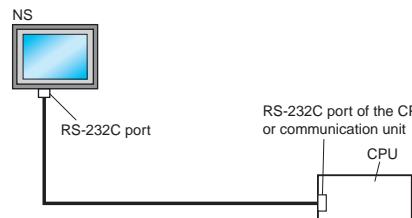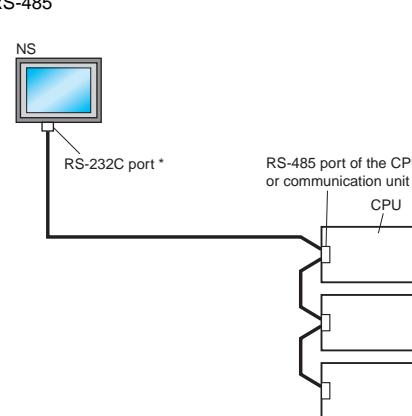
Manufacturer	Series	CPU	Communication Unit/Adapter/Board	Connection diagram	
Mitsubishi Electric	A Series	A1SHCPU A2USCPU A2USHCPU-S1	Computer Link Unit A1SJ71UC24-R☐ A1SJ71UC24-PRF	NS / RS-232C port (To connect using RS-422A/485, a converter is required.) / CPU Unit / Computer Link Unit	1:1
		A2ACPU	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	NS / RS-232C port (To connect using RS-485, a converter is required.) / Communication special adapter Communication expansion board / Base unit	1:1
	Q/QnA Series	Q00CPU Q01CPU	RS-232C port on the CPU Module	NS / RS-232C port / Conversion cable / CPU / QC30R2 / Serial port on CPU (round 6-pin)	1:1
		Q00CPU Q01CPU Q00JCPU Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	Serial Communications Module QJ71C24N-R2 QJ71C24N-R4 QJ71C24N	NS / RS-232C port * / CPU / Serial Communications Module * 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.	1:N
		Q2ASCPU Q2ASCPU-S1 Q2ASHCPU Q2ASHCPU-S1	Serial Communications Module A1SJ71QC24N		
Yokogawa Electric	FA-M3(R) Series	F3SC23-1F F3SP21-0N F3SP28-3S F3SP58-6S F3SP67-6S	CPU built-in RS-232C port	RS-232C	1:1
			Personal Computer Link Module F3LC11-1F F3LC12-1F F3LC11-2F	RS-232C, RS-422A/485	
Siemens	S7-300 Series	CPU313 CPU315-2DP CPU317-2PN/DP	SIMATIC S7 HMI Adapter 6ES7 972-0CA1☐-0XA0	NS / RS-232C port / SIMATIC S7 HMI Adapter / CPU / RS-232C	1:1
Rockwell (Allen-Bradley)	SLC500	SLC5/03 SLC5/04 SLC5/05	RS-232C port on the CPU Module	RS-232C	1:1
	MicroLogix	MicroLogix 1500	RS-232C port on the CPU Module	RS-232C	1:1
	ControlLogix	Logix5555	RS-232C port on the CPU Module	RS-232C	1:1
	CompactLogix	1769-L31	RS-232C port on the CPU Module	RS-232C	1:1
	PLC-5	PLC-5/20	RS-232C port or RS-485 port on the CPU Module	RS-232C/RS-485 (4-wire)	1:1

■ 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)	RS-232C 	1:1
	MP2000 Series	MP2200	Serial Communication Module 217IF-01	RS-485 * To connect using RS-485, a converter (e.g. NS-AL002) is required. Up to 32 controllers can be connected when using RS-485.	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	
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	SAP screens are available.
		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.

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

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.
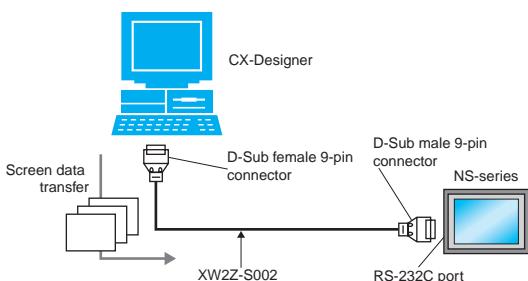
Connecting to the Computer's USB Port
Use a CS1W-CIF31 USB-Serial Conversion Cable and XW2Z-S002 Cable for screen transfers.
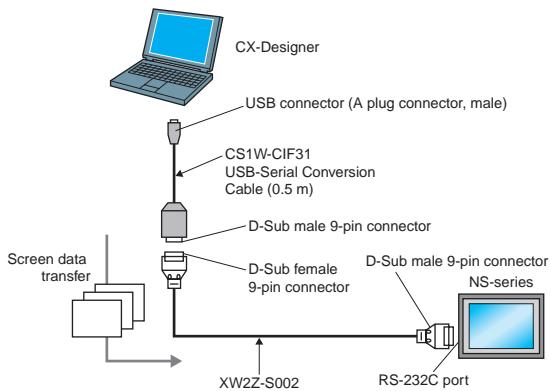
A commercially available USB cable can be used as well. *
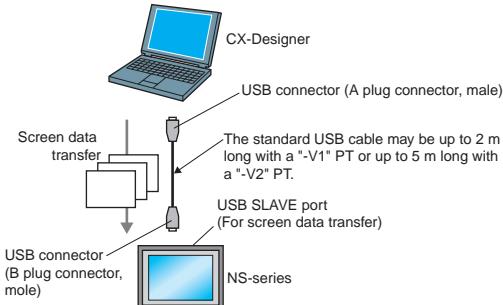
* Commercially available USB cables cannot be used for the NS main units of which the lot. No. is prior to 0325 (made on Feb. 3, 2005).

● Connecting to the Computer's LAN (Ethernet) Port
Connecting Directly (1:1) to the Computer
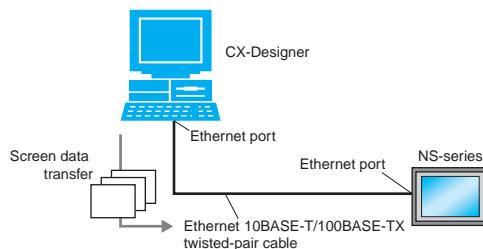
Connecting to the Computer through a Hub
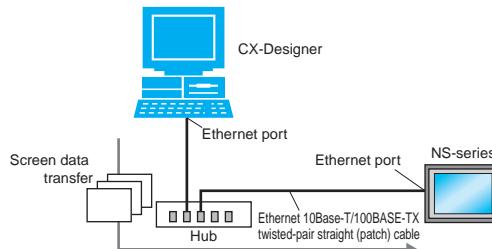
Note: An NS-series PT can also connect to a network configured for 10Base-5 when using a hub and transceiver set for 10Base-5 communications.

● 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
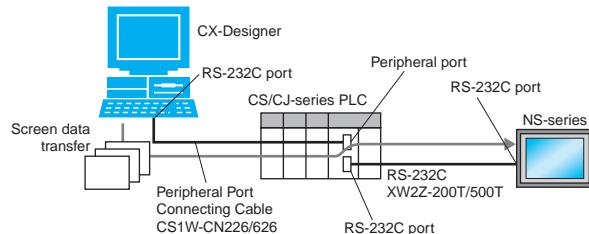
Using an Ethernet → Serial Connection
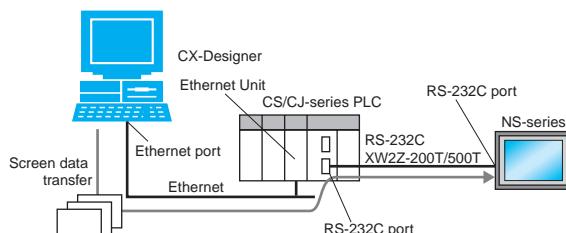
* Not available for the CPU units of which the lot No. is prior to 03020.

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.

NS-series PT

D-Sub male
9-pin connector

D-Sub male
9-pin connector

RS-232C port

CS/CJ-series PLC

RS-232C port
D-Sub female
9-pin connector

Recommended cable:
XW2Z-200T (2 m) or
XW2Z-500T (5 m)
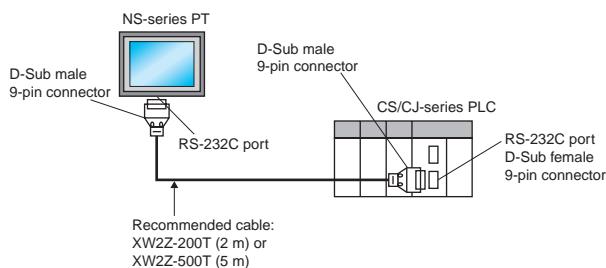
When connecting to a CS/CJ-series PLC's peripheral port

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

NS-series PT

D-Sub male
9-pin connector

RS-232C port

CS/CJ-series PLC

Peripheral port.

Recommended cable
XW2Z-200T-2 (2 m)
or
XW2Z-500T-2 (5 m)

CS/CJ peripheral
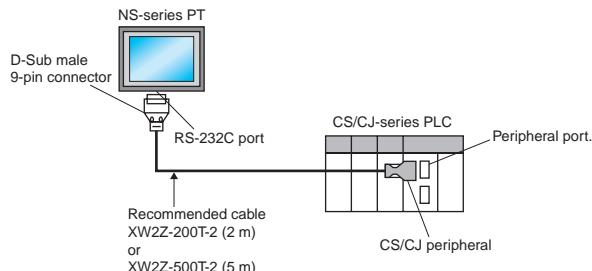
● Using an Ethernet Connection

Connecting Directly (1:1) to the Computer

NS-series PT

Ethernet Unit

CS/CJ-series PLC

Ethernet 10Base-T/100Base-TX
twisted-pair cross (crossover) cable
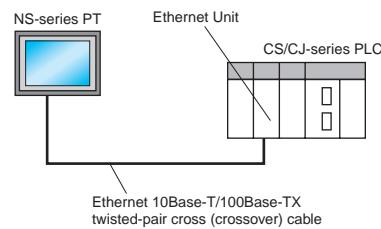
Connecting to the Computer via a Hub
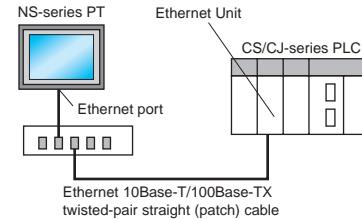
NS-series PT

Ethernet Unit

CS/CJ-series PLC

Ethernet port

Ethernet 10Base-T/100Base-TX
twisted-pair straight (patch) cable

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.

What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

Smart Active Parts (SAP) Library Contents

■ For monitor setting

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

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

● For CS/CJ CPU Unit
Error Log Monitor, Online Battery Change Button, etc.

● For Serial Communications Boards/Units
Communications Status Displays (Error Monitor), Ports Settings, etc.

● For Ethernet Units/CLK Units
Network Status Displays (Error Monitor and Network Node Status), etc.

● For MC/MCH Unit
JOG Running, Search Zero Position, Program Running, Error Displays, I/O Status Monitor, PV Monitor, etc.

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

● For Wireless Terminals for WT30
Monitoring Slave Operating Status in a Wireless Environment

● For Servo (R88D-WT, R7D-AP) (See note 1.)
PV Monitor, Parameter Settings, Error Displays, Driver Information Displays, I/O Status Monitor, etc.

● For Inverters (See note 1.)
Rotation Speed/Monitoring Output Frequency, Other Parameter Settings, etc.

● For DeviceNet DRT2
DRT2 Maintenance/Status Information, IN/OUT Information, etc.

● For Temperature Controllers (E5□R, E5ZN, E5□N, EJ1 and CJ1W-TC) (See note 2.)
Operation Monitor, PID Settings, SP Settings, Alarm Settings, Input Shift Settings, etc.

● For Sensors (E3X-DRT)
Threshold Settings, Monitoring Light Reception Levels, etc.

● For the SmartSlice GRT1 Series
Communications Unit Status, Warning/Alarm Flags, Network Joining/Leaving Status

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

● For Multi-point Power Controllers (G3ZA)
Process Variable Read, Status Read, Heater Current Read, Manipulated Variable Write, etc.

● For NE1A Safety Network Controllers and DST1 Safety I/O Terminals
Maintenance Information, IN/OUT Information Monitor, Error Status Information, etc.

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

■ For Troubleshooter

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

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

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

Troubleshooter SAP for a Position Control Unit
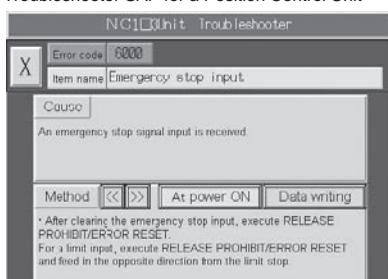


Troubleshooter SAP for Basic I/O Unit

Dimensions

NS15

Mounting Panel
Mounting Bracket
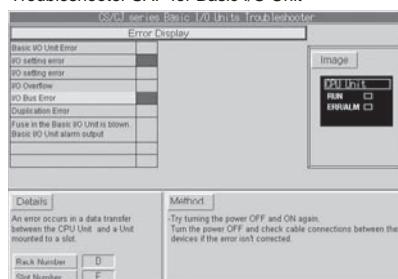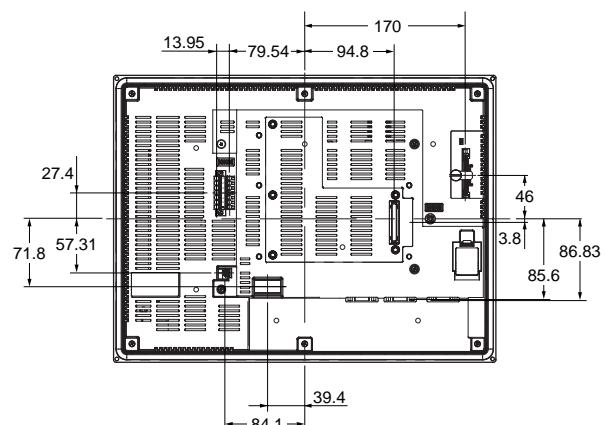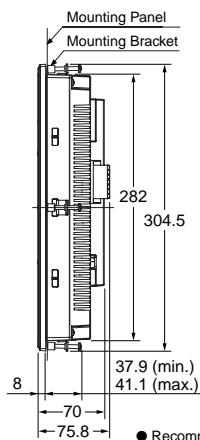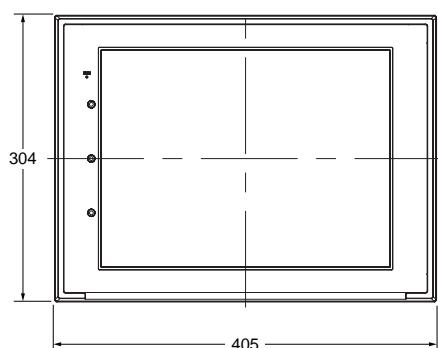
● Recommended Panel Cutout Dimensions
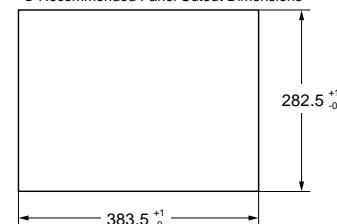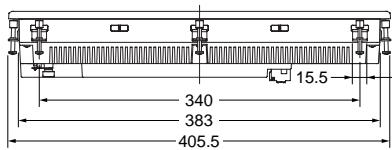
NS12/10
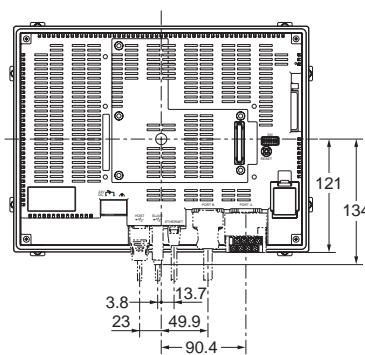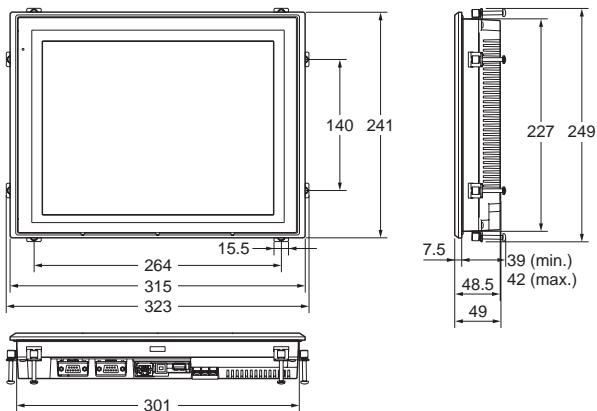
● Recommended Panel Cutout Dimensions
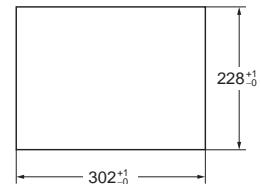
NS8
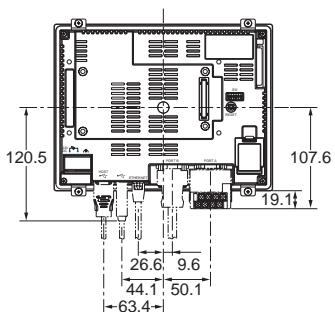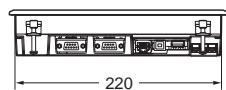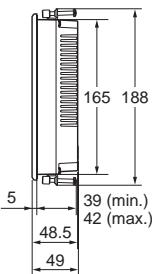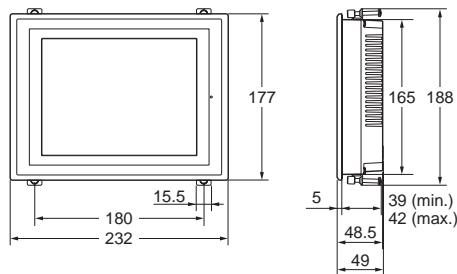
● Recommended Panel Cutout Dimensions
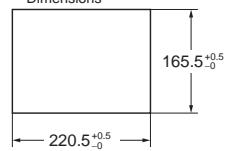
NS5
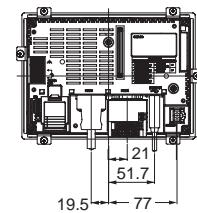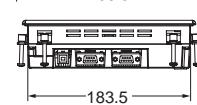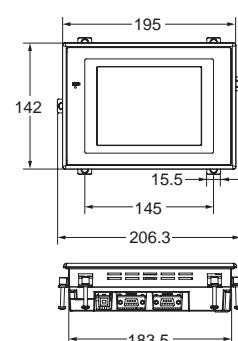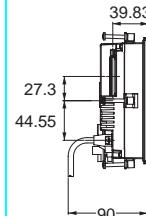
● Recommended Panel Cutout Dimensions
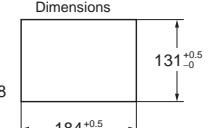
What's New

Compatibility

Screen Design Software

Basic Functions

NS-Runtime

Specifications

57

Dimensions

(Units: mm)

Hand-held NS5
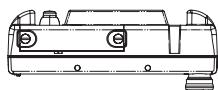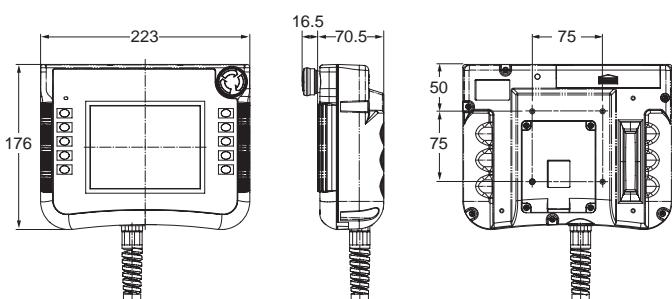
NS-CA001
Video Input Unit
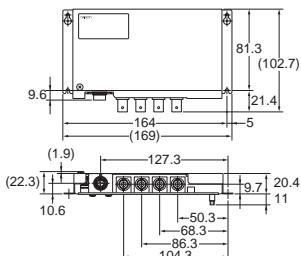
NS-CA002
Video Input Unit
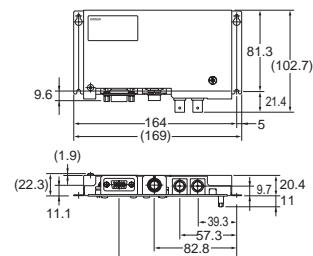
NS-CLK21
Controller Link Interface Unit
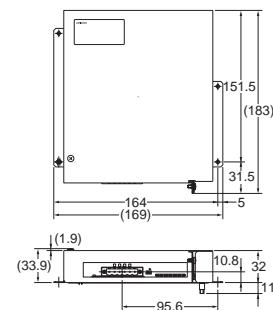
Ordering Information

● International Standards

• The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.

• Contact your OMRON representative for further details and applicable conditions for these standards.

● EC Directives

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

● EMC Directives

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

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

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

The applicable EMS standards depends on the product.

Read and Understand this Catalog

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

Warranty and Limitations of Liability

WARRANTY

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

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

LIMITATIONS OF LIABILITY

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

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

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

Application Considerations

SUITABILITY FOR USE

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

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

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

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

PROGRAMMABLE PRODUCTS

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

Disclaimers

CHANGE IN SPECIFICATIONS

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

DIMENSIONS AND WEIGHTS

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

PERFORMANCE DATA

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

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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Omron:

  NS12-TS01B-V2 NS8-TV01B-V2