OMRON

NS Series

The HMI you can rely on

» Proven Reliability

» Best Match

» Machine Management

realizing

Machine Control at your fingertips

Expanding markets in emerging countries, short product cycles, and diversifying customer needs are just some of the factors that create drastic changes for the production industry. To win in severe global market competition, you have to continue to grasp industry changes quickly, understand user needs accurately, and provide diverse forms of added value. Omron will help you handle ever-changing customer needs with the three keywords of the NS Series.

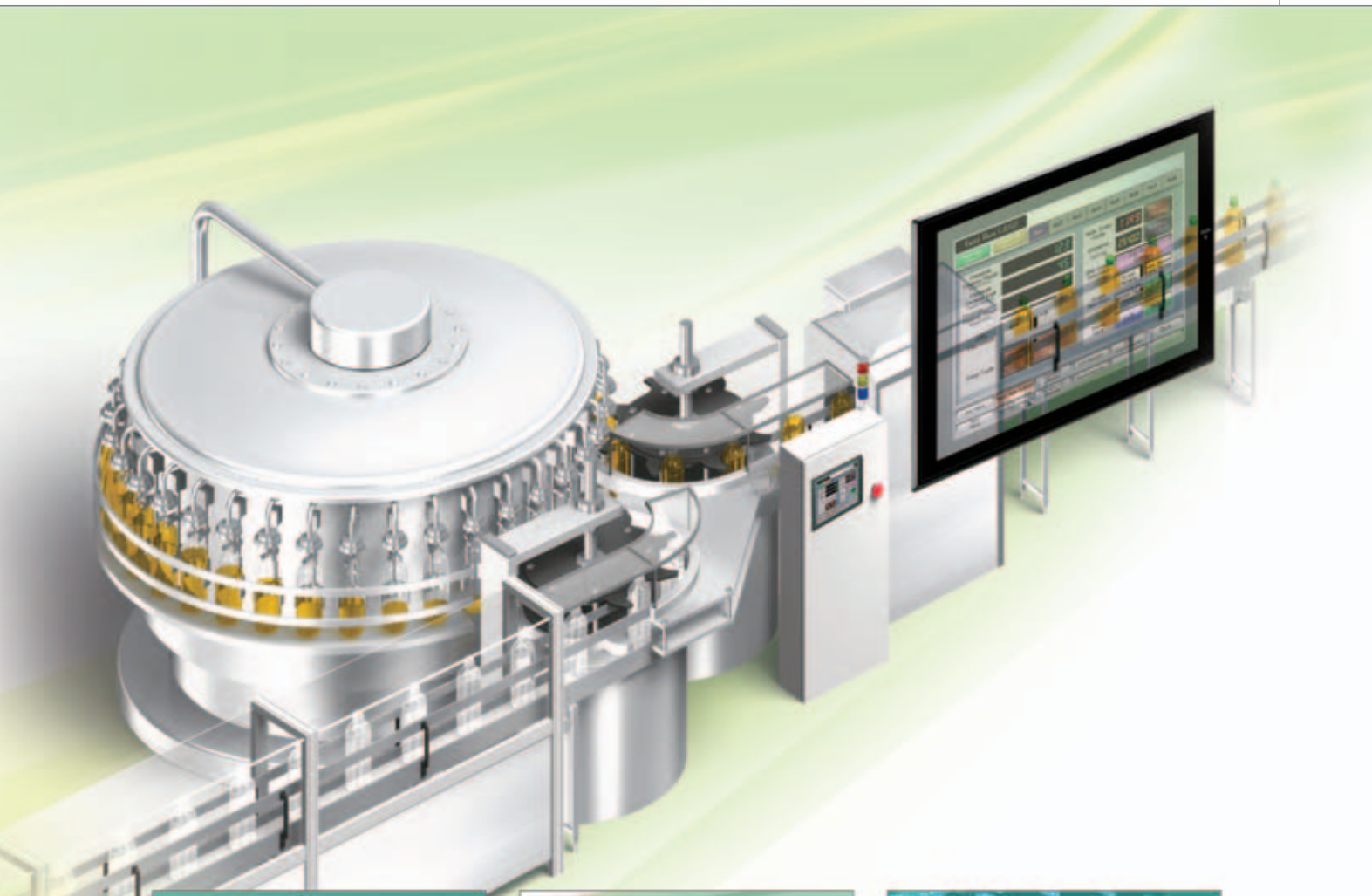
Let your machines evolve

Best match
Omron has provided even greater compatibility with Omron PLCs and components to provide an advanced design process that lets you achieve appealing machines.

Machine management
The NS Series transforms machine HMIs from simple operation panels and turns them into machine management tools.

Proven reliability
The NS-series HMIs have a proven track record that will take your machines to a higher level of reliability.

NS Series



The best match possible
The amount of work and cost of connecting to Omron PLCs and components have been greatly reduced. The results is an incredible range of features that is possible only when unifying to one manufacturer. Connecting to the NJ-series Machine Automation Controller allows the machine designer to quickly achieve the features required by the user through support for improved troubleshooting and structured programming with structures and other new data types.

Machine management tool
The machine designer can easily implement PLC troubleshooting, machine troubleshooting, settings for servo drives, temperature controllers, and other control components, status monitoring of connected devices, and uploading/downloading of parameters.

Proven reliability
In the ten years since initial marketing, Omron has globally supplied numerous HMI solutions with the highly reliable NS Series at over 200 sales and service centers around the world.

NS Series Line-up

Standard Models

15 inches	Colour TFT	
	NS15-TX	
	32,768 colours	
	XGA 1024 x 768 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Video (RGB input only)
	USB Master	RGB output
	RS-232C x 2	Ladder Monitor
	RS-422A/485	Memory Card

12.1 inches	Colour TFT LED	
	NS12-TS	
	32,768 colours	
	SVGA 800 x 600 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Video
	USB Master	Ladder Monitor
	RS-232C x 2	Memory Card

10.4 inches	Colour TFT LED	
	NS10-TV	
	32,768 colours	
	VGA 640 x 480 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Video
	USB Master	Ladder Monitor
	RS-232C x 2	Memory Card

8.4 inches	Colour TFT LED	
	NS8-TV	
	32,768 colours	
	VGA 640 x 480 pixels	
	Screen memory size: 60 MB	
	USB Slave	Video
	Ethernet	Ladder Monitor
	USB Master	Memory Card
	RS-232C x 2	

5.7 inches	Colour High-luminance TFT LED
	NS5-TQ
	32,768 colours
	QVGA 320 x 240 pixels
	Screen memory size: 60 MB
	USB Slave
	Ethernet
	RS-232C x 2
	Memory Card

5.7 inches	Colour TFT LED
	NS5-SQ
	32,768 colours
	QVGA 320 x 240 pixels
	Screen memory size: 60 MB
	USB Slave
	Ethernet
	RS-232C x 2
	Memory Card

5.7 inches	Monochrome STN
	NS5 MQ
	16 monochrome gradations
	QVGA 320 x 240 pixels
	Screen memory size: 60 MB
	USB Slave
	Ethernet
	RS-232C x 2
	Memory Card

NSH Series

Hand-held Models - A hand-held version of the NS5 is now available to perform operations at the production site.

5.7inches	Colour TFT LED
	NSH5-SQR
	32,768 colours
	QVGA 320 x 240 pixels
	USB Slave
	RS-232C/422A
	Memory Card
Equipped with a red switch for an emergency stop input.	
Emergency stop (3 inputs)	

5.7 inches	Colour TFT LED
	NSH5-SQG
	32,768 colours
	QVGA 320 x 240 pixels
	USB Slave
	RS-232C/422A
	Memory Card
Equipped with a gray switch for a stop input.	
Emergency stop (3 inputs)	

Hand-held HMI Cable	
RS-232C	RS-422A

NSJ Series **Integrated Controller Models -** HMI is unified with the Controller into one package to greatly help standardize equipment and reduce size.

12.1inches	Colour TFT LED	
	NSJ12-TS01_-G5D	
	32,768 colours	
	SVGA 800 x 600 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Ladder Monitor
	USB Master	Memory Card
	RS-232C x 3	DeviceNet
	(Controller Section)	
	I/O points: 1,280	Program capacity: 60K steps
	Data Memory: 128K words	

10.4 inches	Colour TFT LED	
	NSJ10-TV01_-G5D	
	32,768 colours	
	VGA 640 x 480 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Ladder Monitor
	USB Master	Memory Card
	RS-232C x 3	DeviceNet
	(Controller Section)	
	I/O points: 1,280	Program capacity: 60K steps
	Data Memory: 128K words	

8.4 inches	Colour TFT LED	
	NSJ8-TV01_-G5D	
	32,768 colours	
	VGA 640 x 480 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Ladder Monitor
	USB Master	Memory Card
	RS-232C x 3	DeviceNet
	(Controller Section)	
	I/O points: 1,280	Program capacity: 60K steps
	Data Memory: 128K words	

5.7 inches	Colour TFT LED	
	NSJ5-TQ11_-G5D	
	32,768 colours	
	QVGA 320 x 240 pixels	
	Screen memory size: 60 MB	
	USB Slave	Controller Link
	Ethernet	Memory Card
	RS-232C x 3	DeviceNet
	(Controller Section)	
	I/O points: 1,280	Program capacity: 60K steps
	Data Memory: 128K words	

Software

CX-Designer

The software for project creation on the NS series, the CX-Designer Screen Design Software is so easy-to-use that anyone can master it. CX-Designer is included in CX-One and Sysmac Studio.

NS-Runtime

This software enables PLC communications to a personal computer by HMI created screens using CX-Designer.

THE BEST MATCH EVER

The NS-series HMIs provide the highest possible compatibility with the road-proven CS/CJ-series the highest new NJ-series Controllers to achieve even greater added value in user machines.

The NJ-series Machine Automation Controllers

You can create a flexible, high-speed, high-precision system based on the NJ-series Machine Automation Controllers. Use tags to access any memory areas, or troubleshoot machines and systems by using the NS-series HMIs to make the most of the strengths of the NJ-series Controllers and to manage machines.

The CS/CJ-series PLCs for the reliability of a proven track record

Features are provided to easily connect to CS/CJ-series PLCs to take advantage of their proven track record. Many features that do not require screen creation or programming support everything from design through maintenance to take advantage of the compatibility of Omron PLCs and HMI and to serve as the face of your machines.

POWERFUL SUPPORT FOR ALL USER NEEDS

Design

From conceptual designs through commissioning, operation, and maintenance, the NS Series supports every user need.

Reduced work

Troubleshooter PAGE 10-11

- NJ Troubleshooter
- PLC Troubleshooter
- Machine Troubleshooter

Best Match PAGE 12-16

- Smart Active Parts (SAP)
- With EtherNet/IP
- Direct Connection to temperature controllers

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Device Data Transfer PAGE 18

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Good looking Screens and Objects PAGE 21

CX-Designer Screen Design Software PAGE 22-25

Start-up/operations

Attractive, convenient features for easier operation

×4 CAMERA — 260,000-colour Video Display — PAGE 26

analog RGB — Analog RGB Output — PAGE 26

FTP Function and Web Interface — PAGE 27

Level:01 Level:02 Level:03 Level:04 Level:05 — User Security Functions — PAGE 27

Features for reliability and complete maintenance

SPMA — Single Port Multi Access — PAGE 28

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Troubleshooter

A Troubleshooter is provided for the connected Omron controller or PLC. This greatly reduces work requirements.

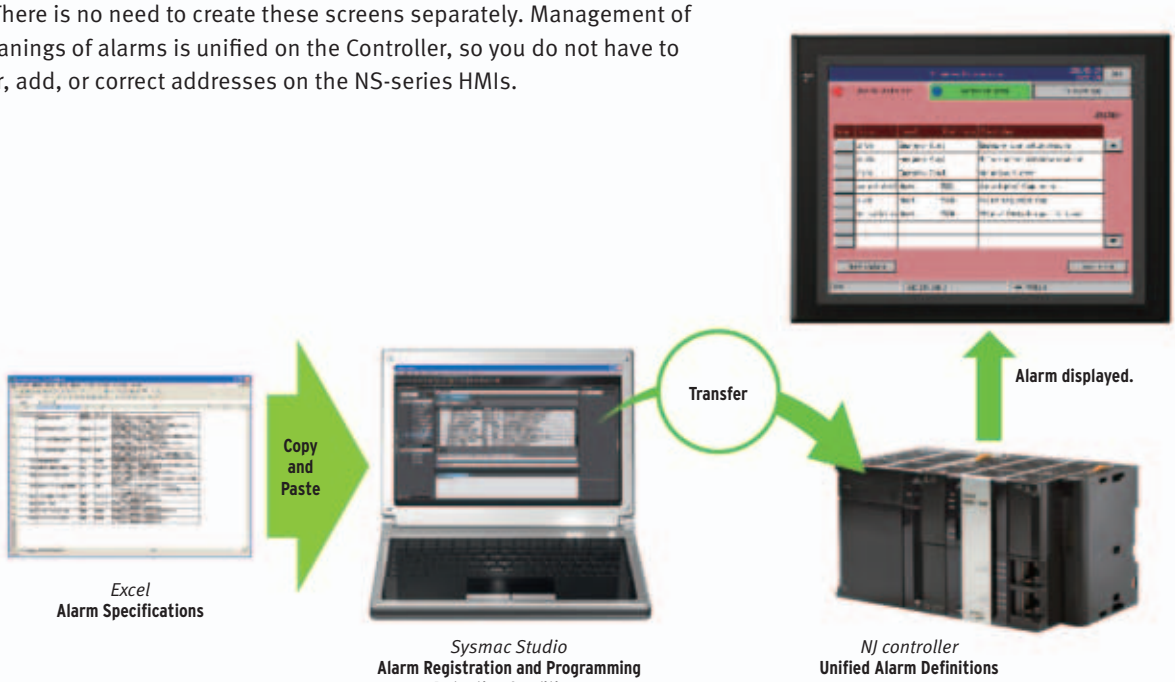
NJ Troubleshooter

Controller errors

Standard feature for NJ-series controllers
Errors are automatically detected and displayed on-screen along with corrective actions for the CPU unit function modules, EtherCAT slaves, and CJ-series units that are connected in the NJ-series controller. Whenever an error might occur, you can recover normal operation quickly to reduce downtime without using user manuals, or support software on a computer.

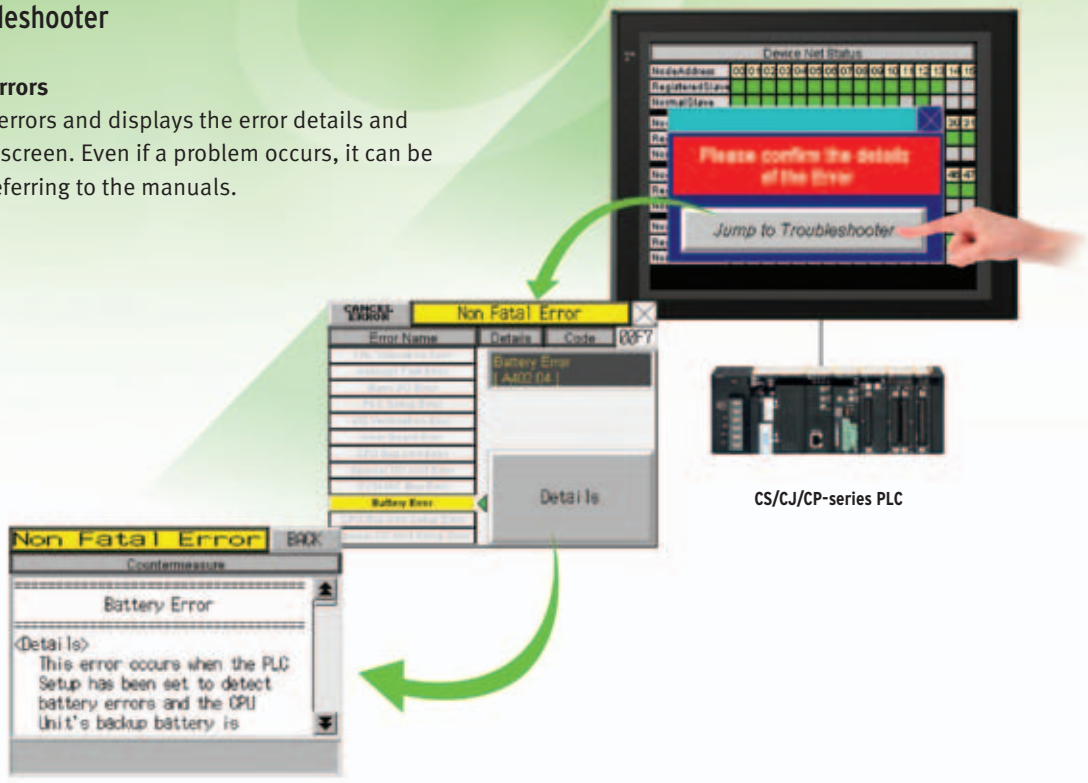
User-defined errors

No Work Is Required to Create Alarm Screens.
Frames for alarm screens are provided as standard features in the NS-series HMIs. There is no need to create these screens separately. Management of the meanings of alarms is unified on the Controller, so you do not have to register, add, or correct addresses on the NS-series HMIs.



CS/CJ-series PLC Troubleshooter

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.

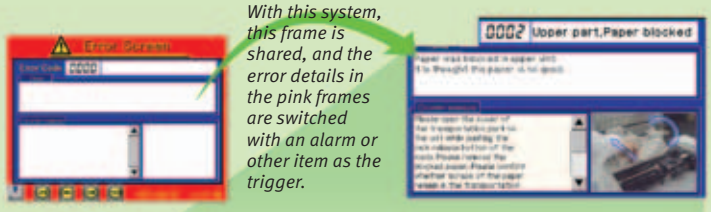


CS/CJ/CP-series PLC

Machine Troubleshooter

Easier design of machine 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.

Specific example

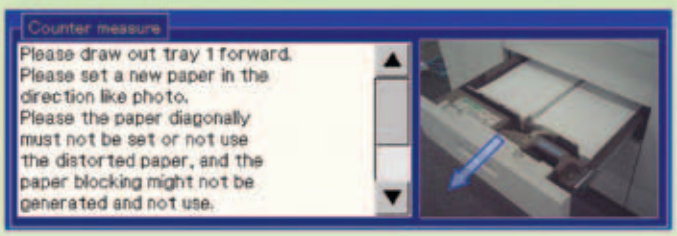


With this system, this frame is shared, and the error details in the pink frames are switched with an alarm or other item as the trigger.

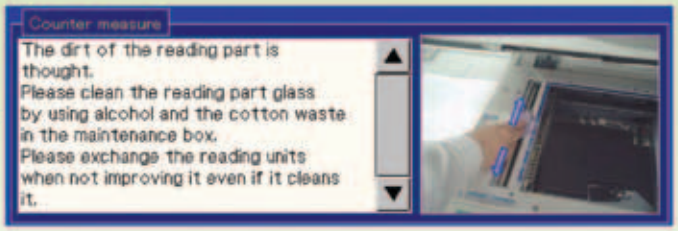
in conjunction with an alarm bit

Text selection **Image selection**

Alarm bit 10.01 ON (no paper)



Alarm bit 10.02 ON (printing error)

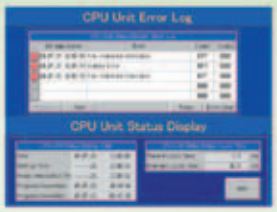


Best Match

NS Series is the most suitable HMI for the system that comprises Omron components. The advantage is the compatibility (reducing programming and screen data creation work), which will reduce the amount of designing work.

No Screen Designing / No Programming

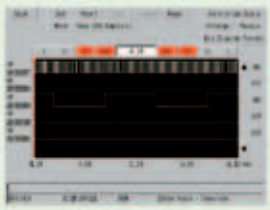
NS



PLC CPU Unit monitoring screen

Device monitor

PLC Data Trace



Temperature controllers

PLC

CPU Bus units an Special I/O units
- *SAP Library*
- *Troubleshooting*

Remote I/O

Inverter

Vision Sensor
- *260,000-colour video input*

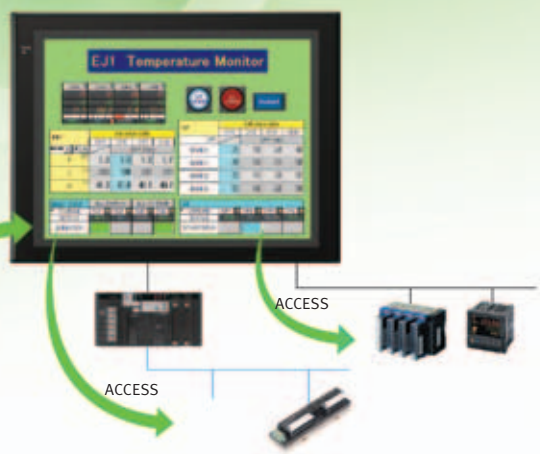
Temperature Controllers

Servomotor Servo Driver

Smart Active Parts (SAP Library)

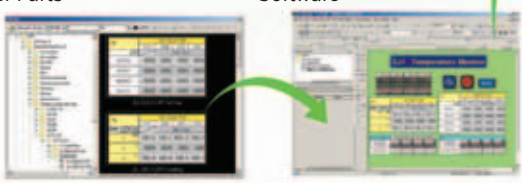
Significantly reduces the effort required to create ladder programming and screens. More than 3,000 library parts (Smart Active Parts) are available, which can directly access Omron PLCs and components. The objects can just be pasted from the Smart Active Parts (SAP Library) to the screen; it is completely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

The temperature controller's setting and monitor screens are completed in no time.



SAP Library, Temperature Controller Parts

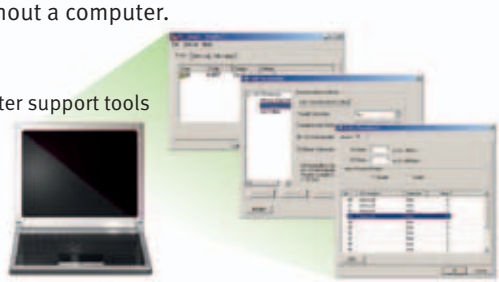
CX-Designer Screen Design Software



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

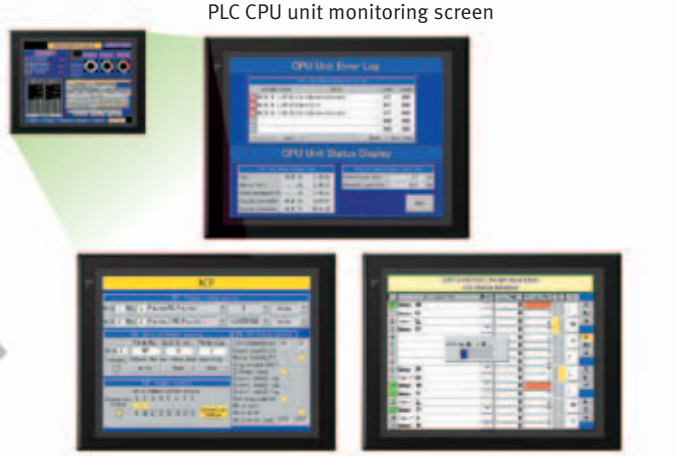
Support tool objects can be incorporated to check for errors and make settings, even without a computer.
Plenty of support tool objects (the Tool Function SAP Library) are available, which can easily be incorporated into support tool functions in the NS-series HMI. Just paste the support tool objects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

Computer support tools



FROM

PLC CPU unit monitoring screen



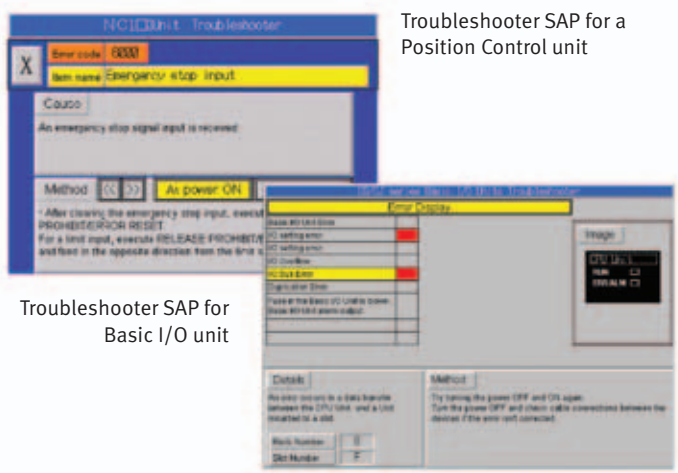
NCF unit setting screen

DeviceNet monitoring screen

TO

CPU Bus unit and special I/O unit troubleshooting can also be performed with the SAP Library.
A Troubleshooter SAP Library is available to troubleshoot each Unit in the PLC. When an error occurs in a Unit, the Troubleshooter SAP Library provides an easy-to-understand explanation of the cause of the error as well as the countermeasures.

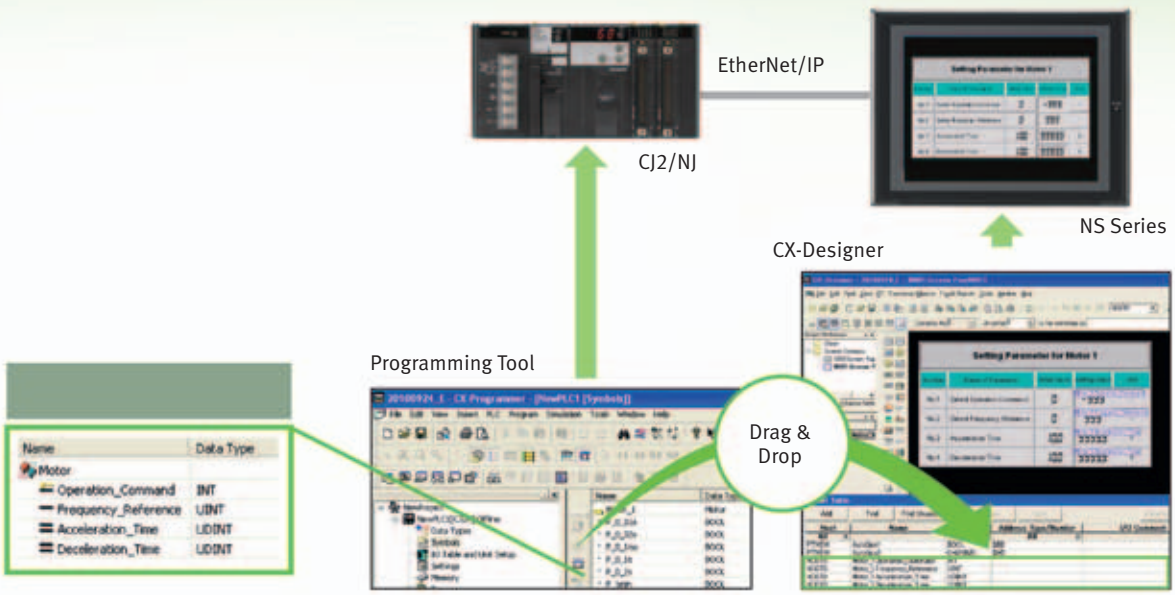
Troubleshooter SAP for a Position Control unit



Troubleshooter SAP for Basic I/O unit

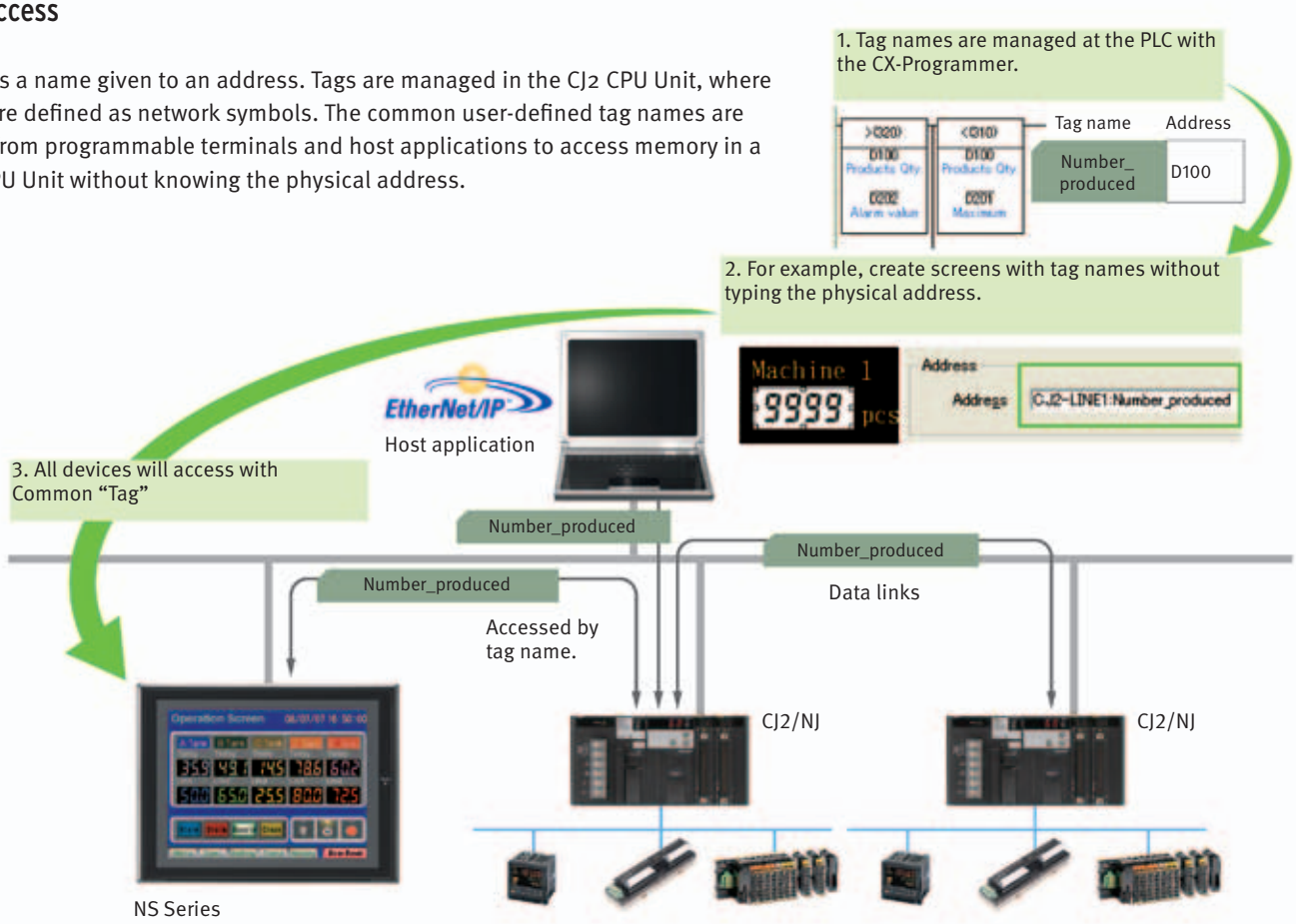
EtherNet/IP

Support for data structures This special feature is made possible by combining an Omron CJ2 PLC with an NS-series HMI. The data structures that you define on the Programming Tool can be used on the CX-Designer simply by dragging and dropping them.



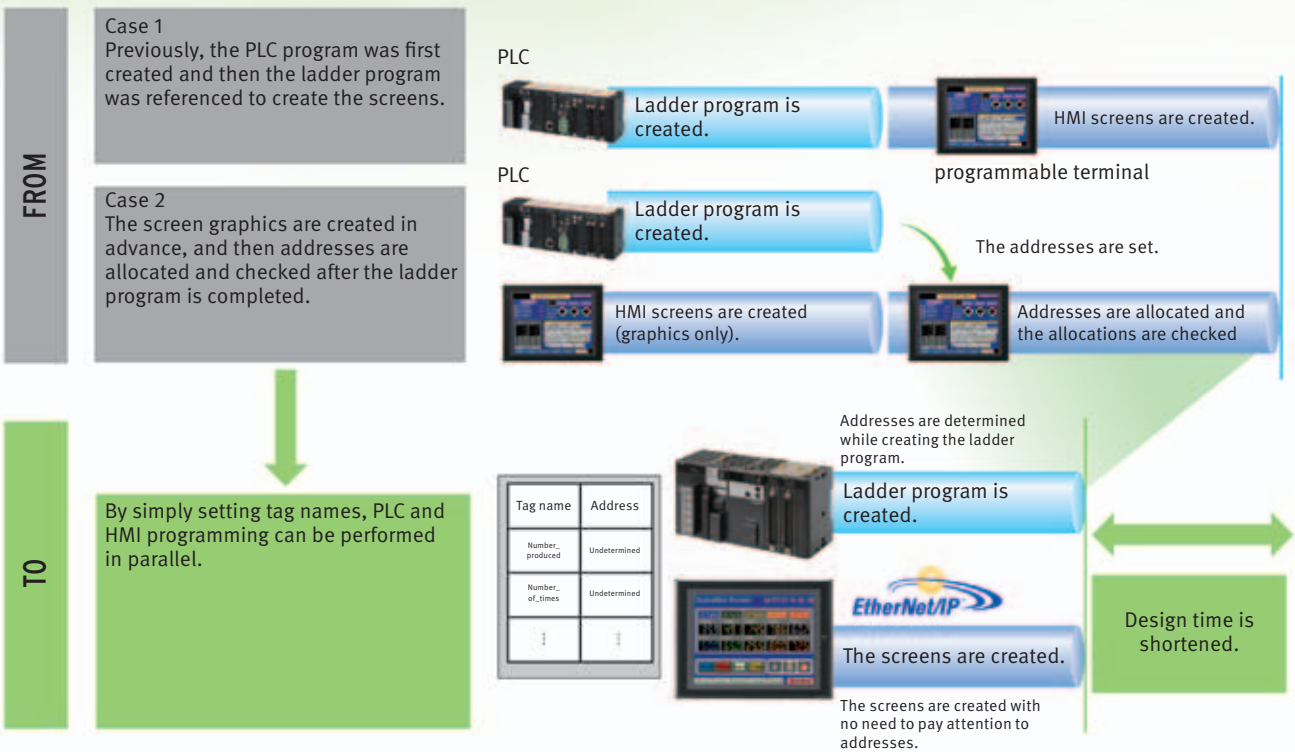
Tag access

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.



Simultaneous and parallel engineering

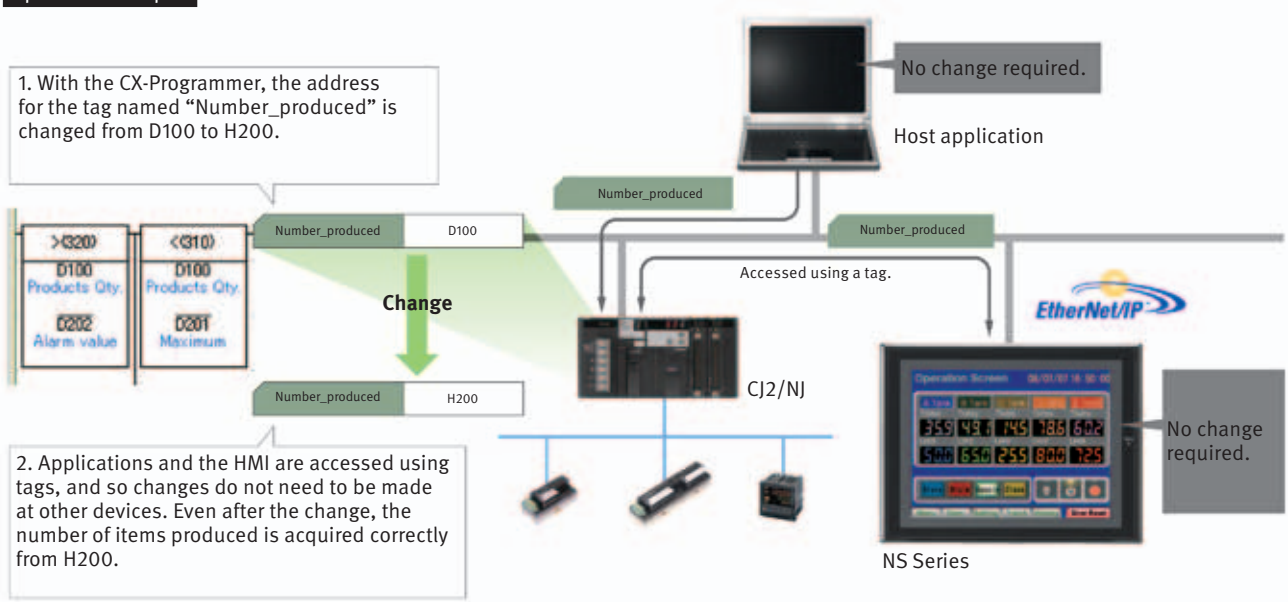
The host applications can be designed using the tag names of the PLC and HMI. Parallel development will shorten the design time.



Minimize side effect of address changes

It is possible to access memory with tags, so the HMI and host application are not affected even if the address of data in the PLC is changed.

Specific example



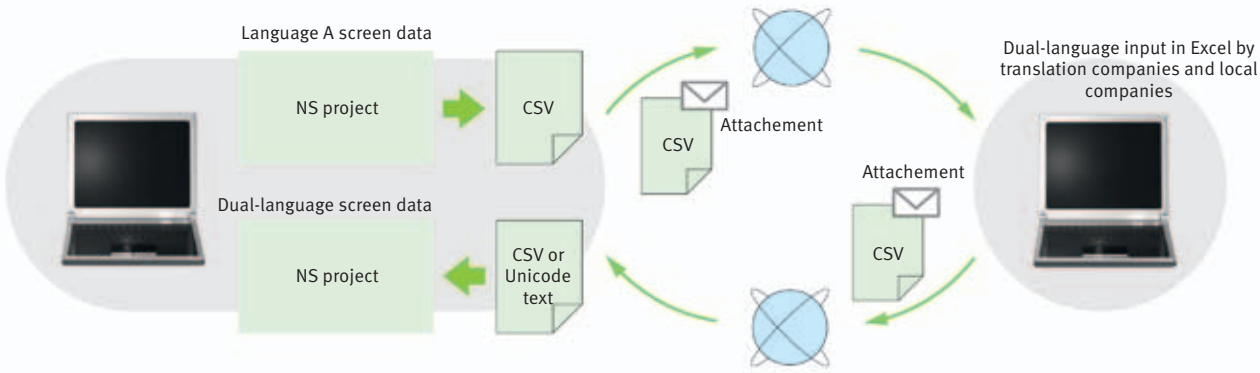
Direct Connection to temperature controllers

Connect Omron temperature controllers directly to the NS-series HMI.
Omron Temperature Controllers can be connected directly to the NS-series HMI's RS-422A. 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.

Multi-language Support

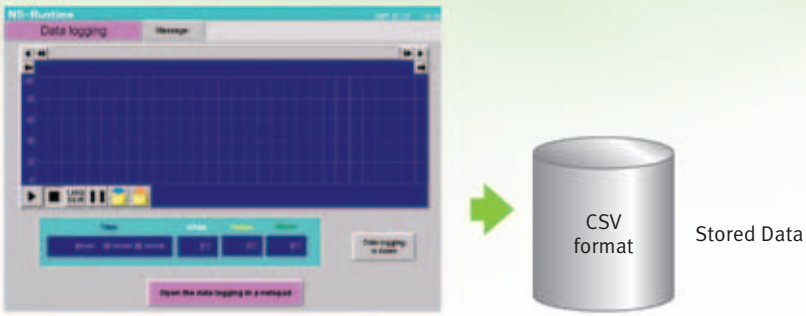
Support 42 languages and switch the language of the labels among up to 16 languages.
Unicode is supported and 42 Asian and European languages can be combined in screens. Also, it is possible to switch between up to 16 labels using the label switching function, so it is possible to support up to 16 languages in a single screen just by specifying the language to be displayed in each label.

Multi-language conversion is easy.
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.



Data logger

Log large amounts of data using a personal computer. Data can be logged through background processing, with up to 160,000 points stored in one file. The logged data is stored in CSV format, and data can be displayed on data log graphs.

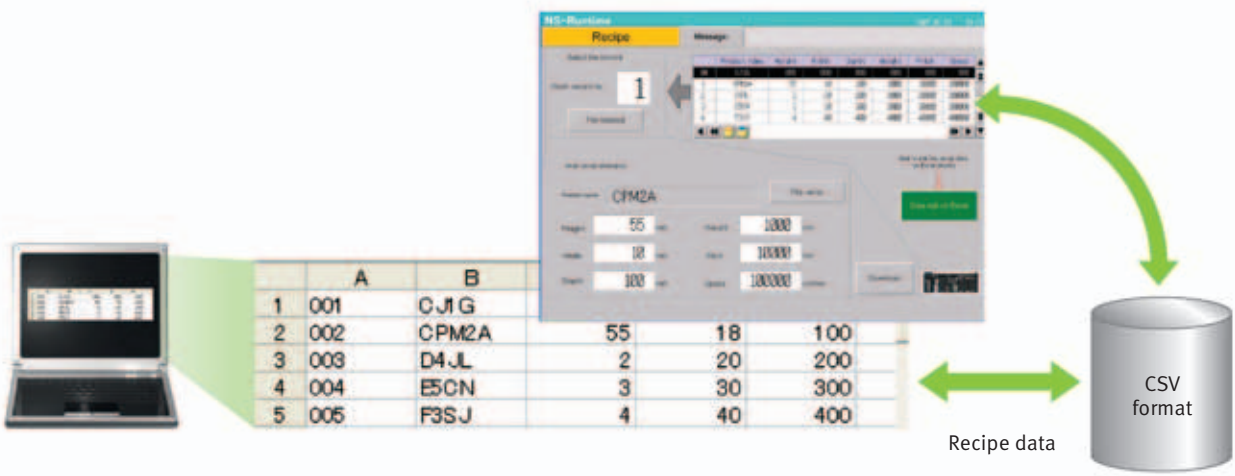


Example: 160,000 Points

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

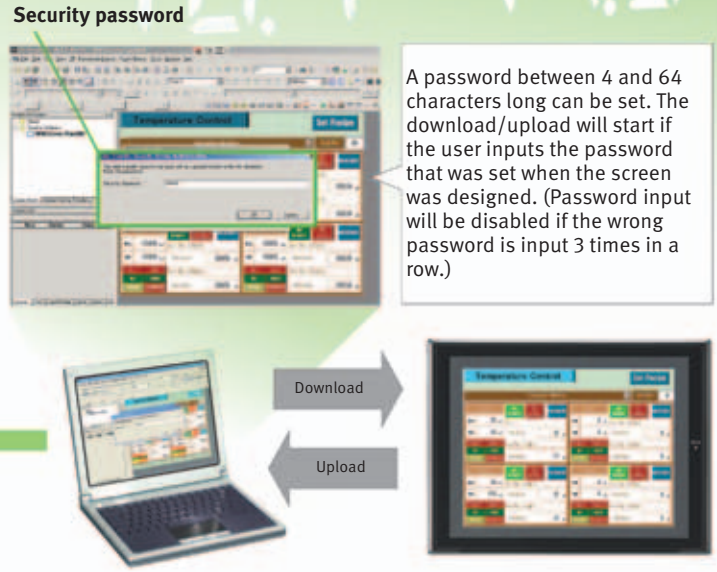
Recipe handling

Checking machine data or switching processes from a host computer is easy. Parameter groups in the PLC can be transferred together to a computer, and the transferred data can be checked and edited in CSV format, e.g., using Excel. The edited data can then be transferred together back to the PLC.



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.



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

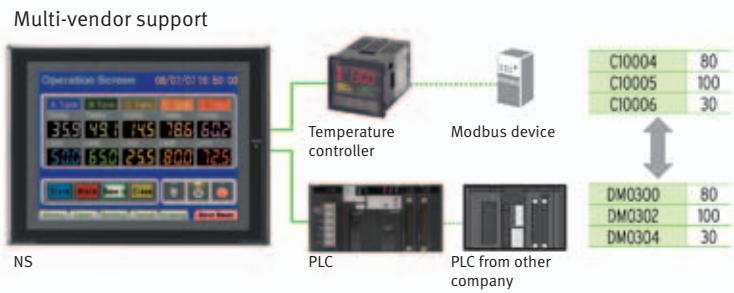
Device data transfer

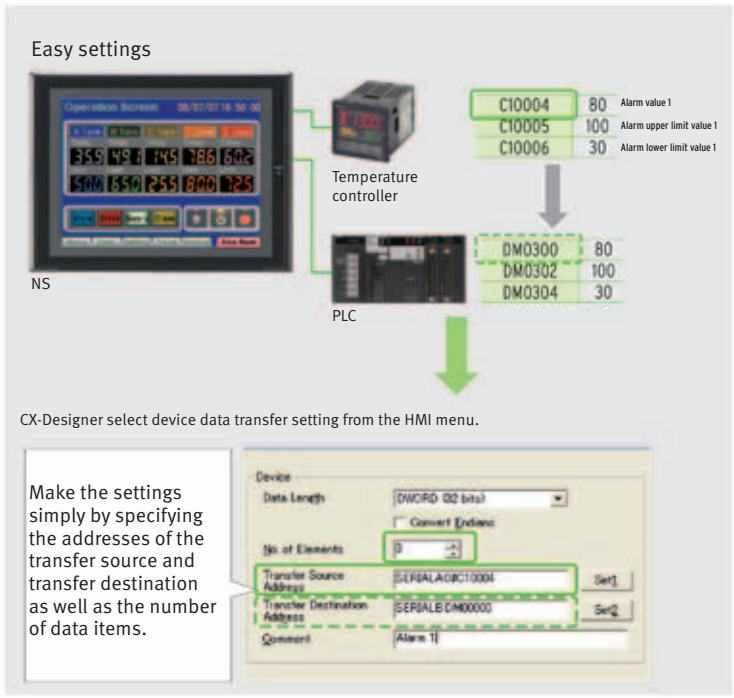
Easy Data Exchange between the PLC and Components
For example, temperature controller alarm values can be transferred to the DM Area of the PLC's CPU unit. No communications programming or macros are required.

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

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

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

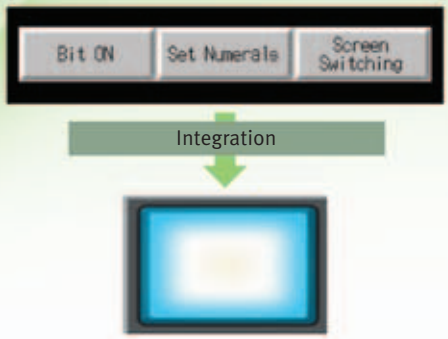




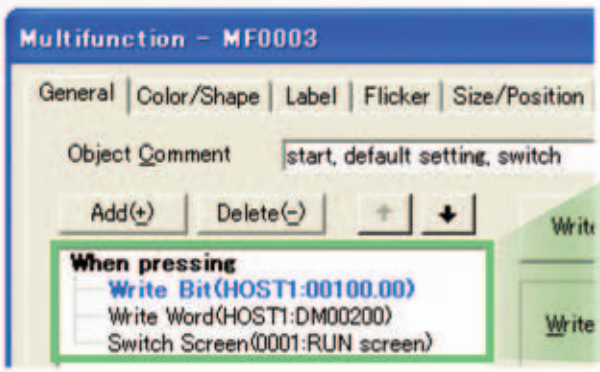
Multi function

Execute up to 32 functions with one multifunction object.
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.

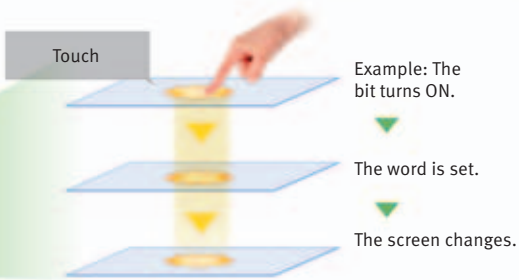
Multifunction execution with one object



Easy On-screen Setup with Support Software!

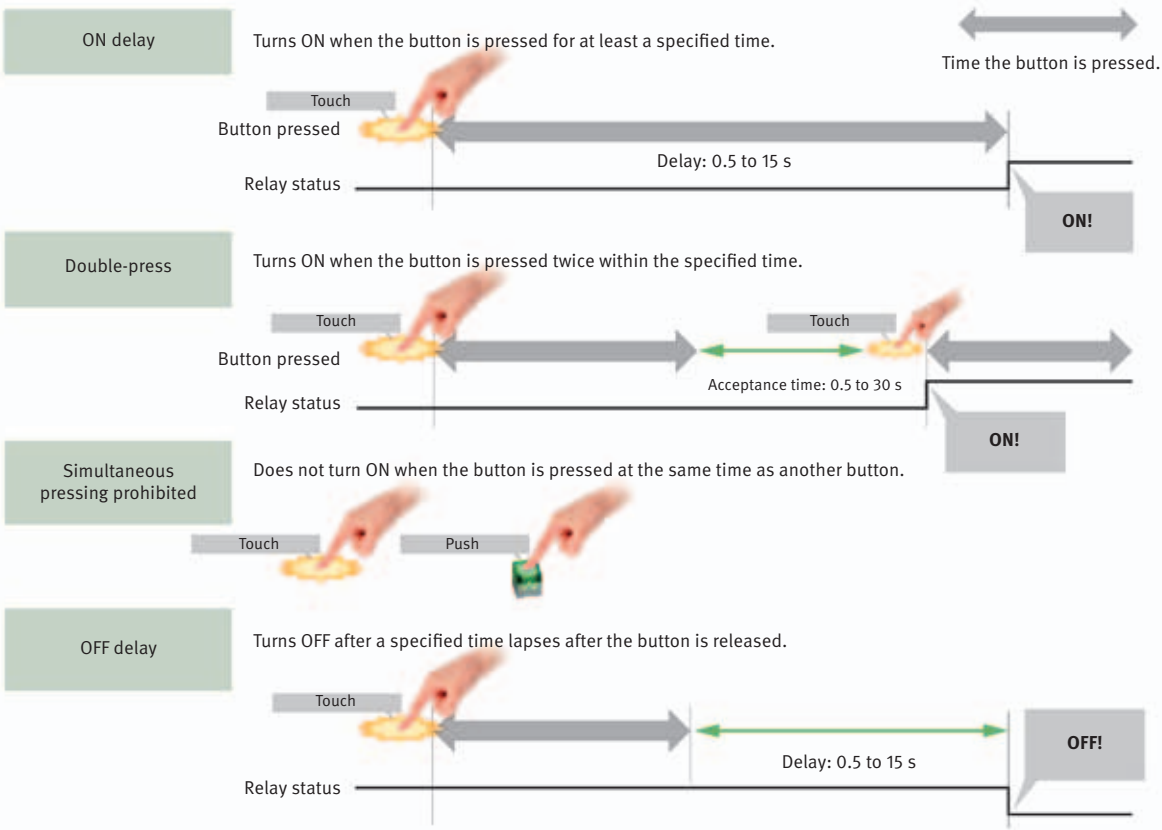


Execute multiple functions with one button.



Multifunction objects support four useful functions

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

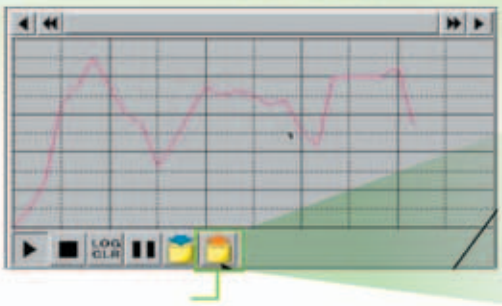


Versatile Graphs

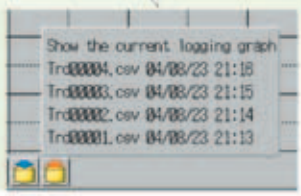
Data Log Graph (Trend Graph)

Up to 128 data can be collected in the cycle of 500ms. Logging data is stored as a CSV file in the memory card inserted in the NS-series HMI.

Logging data is stored as a CSV file in the Memory Card mounted in the NS-series HMI. 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.



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

A log can be saved automatically, without any programming, just by s electing the Save the data periodically option in the data log setting window.

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

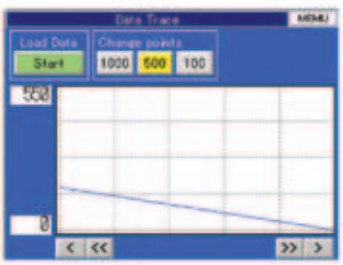
LOG001.CSV	04/06/04	10:00
LOG002.CSV	04/06/05	10:00
LOG003.CSV	04/06/06	10:00
LOG004.CSV	04/06/07	10:00
LOG005.CSV	04/06/08	10:00
LOG006.CSV	04/06/09	10:00
LOG007.CSV	04/06/10	10:00

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

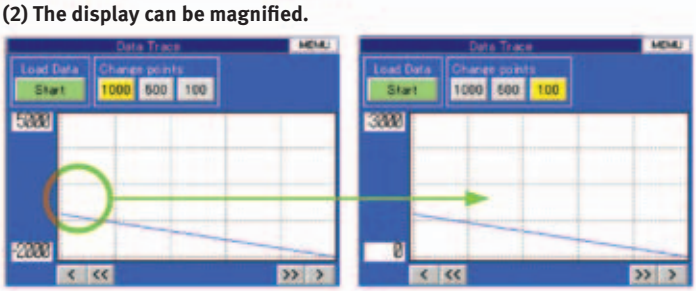
Line graph function

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.

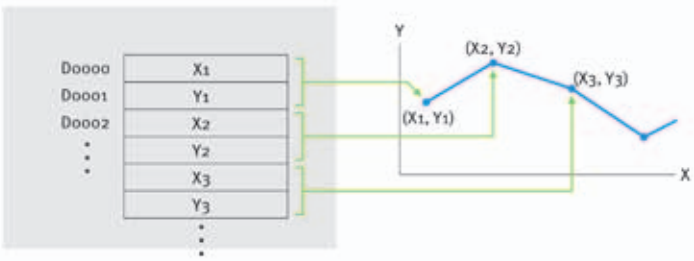


(2) The display can be magnified.



Continuous line function

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

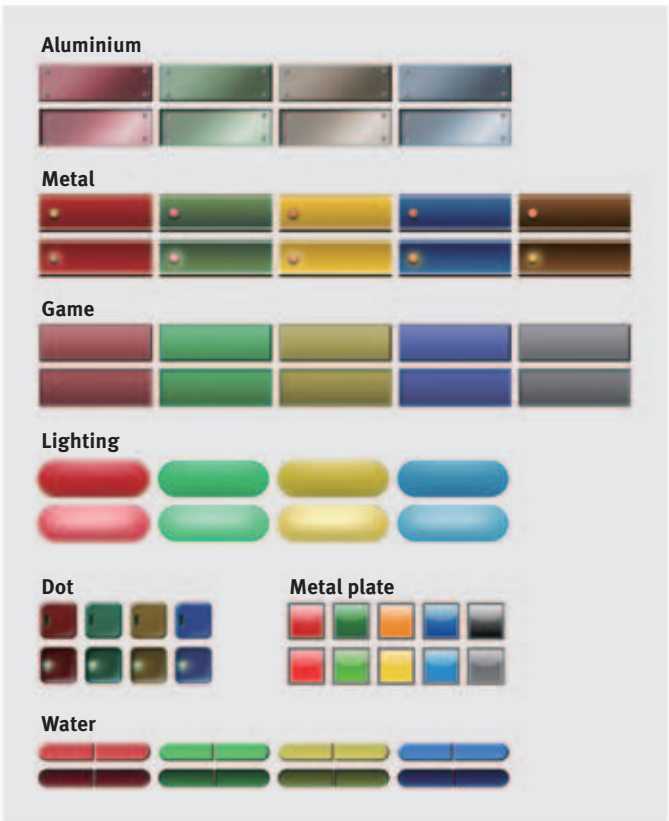


Good looking screens and objects

“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” objects

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



Screen Designer for NS Series, CX-Designer

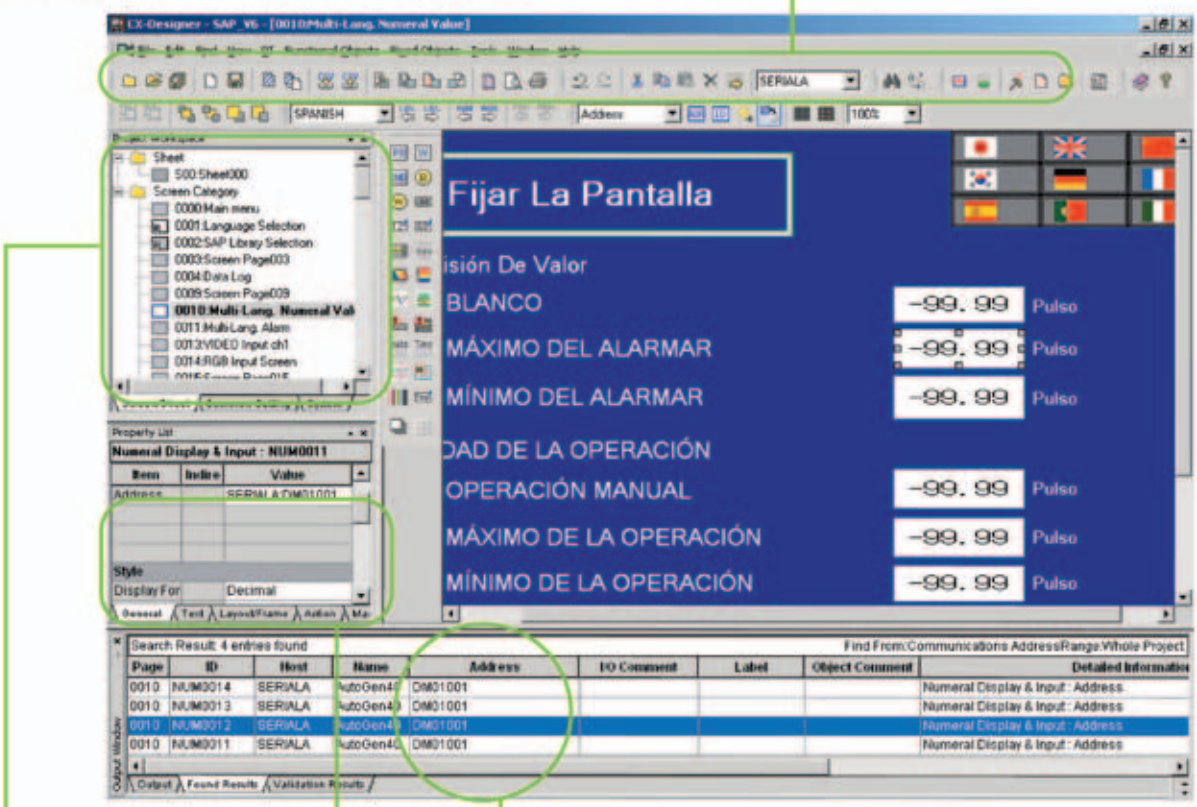
User-friendly screen creation

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.

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

Improved Icons and Help



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

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

Drastically reduce the number of clicks in the project.

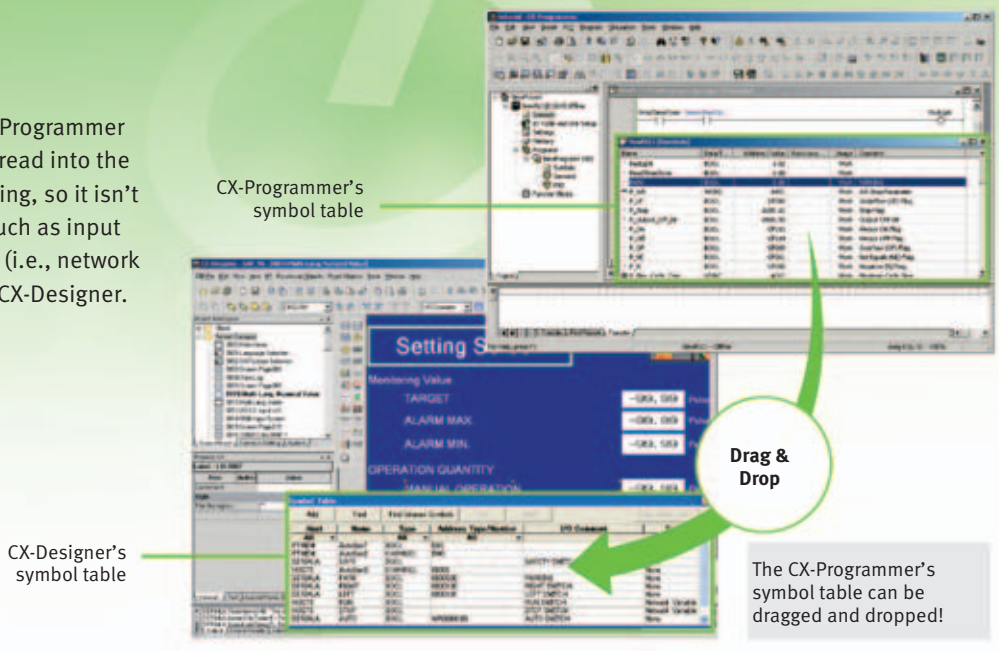
Just click on the object once to display or change properties. Multiple objects can be selected to display and change shared properties all at once.

The Output Window shows search results.

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

Reading the symbol table

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 enter data such as input addresses and I/O comments. Tags (i.e., network symbols) can also be read into the CX-Designer.



Example of Reading the Symbol Table

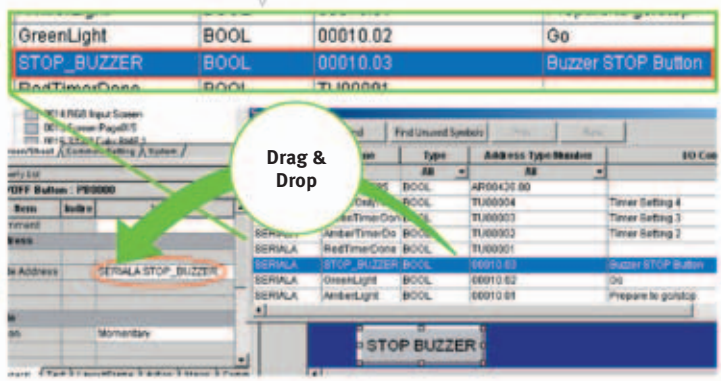
The symbol table read from the CX-Programmer can be directly dragged and dropped to the touch switch and lamp.

(1) Create a switch on the screen.

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

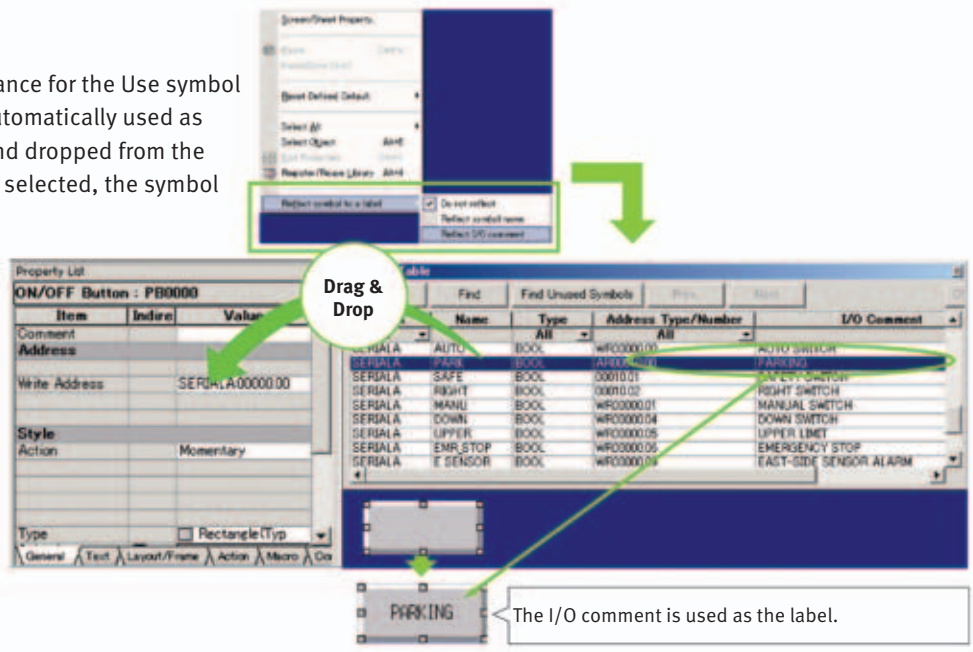
Example of easy address allocation

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



Example of reading I/O comments

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

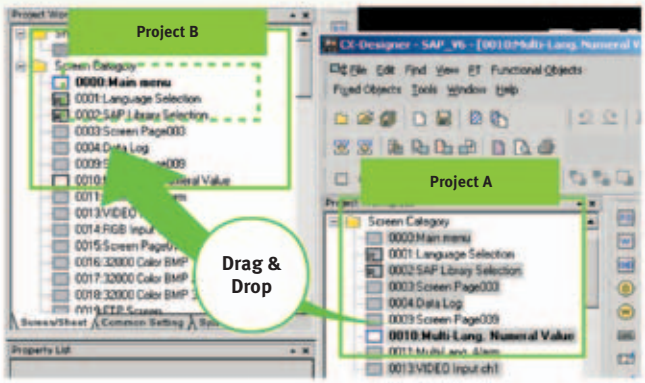


Reading another project's screens and objects

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

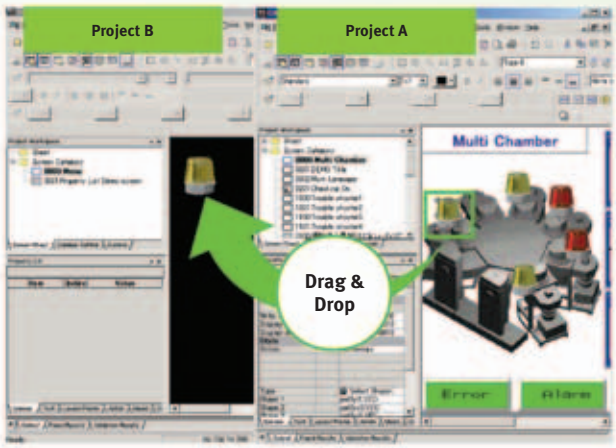
Example screen 1

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



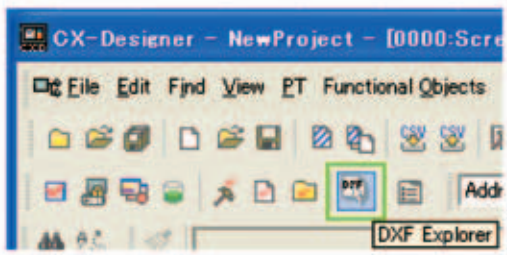
Example screen 2

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



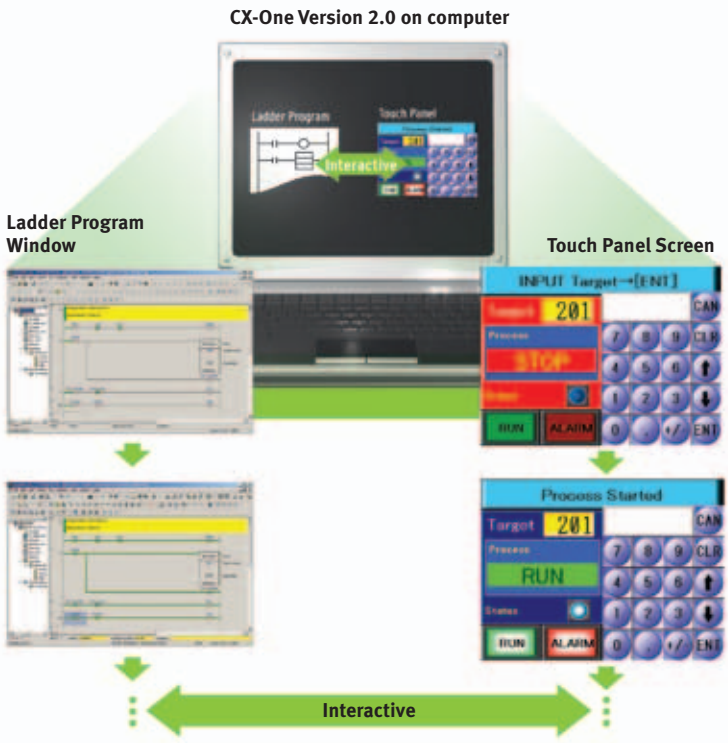
Reading CAD Files

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



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

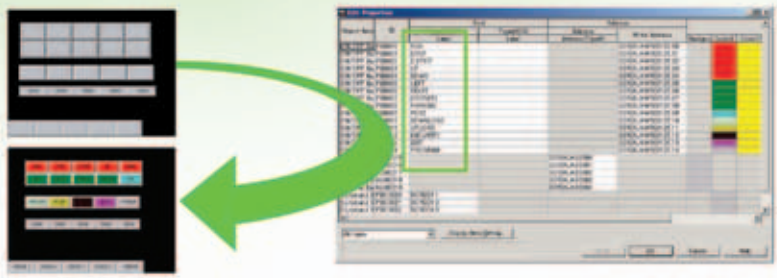
The CX-Designer and CX-Programmer interconnects the test functions in the computer through the CX-Simulator. The screens and ladder program checks are performed simultaneously, which significantly increases debugging efficiency. The CX-Programmer also has a new button for integrated simulation. And,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



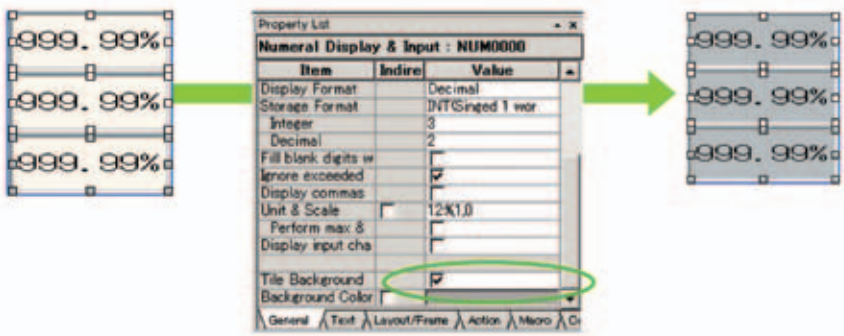
Editing of multiple objects

Addresses and other settings, such as labels and colours, can be set together in a list, making editing operations much more efficient. When the common attributes (such as background colour and text colour) 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.

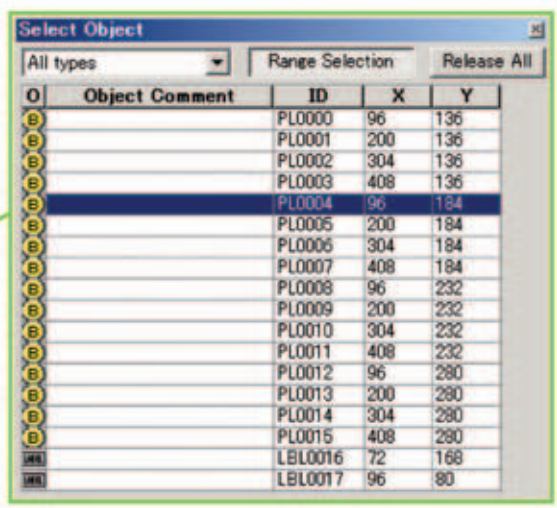


Example screen 2 If the background colour is changed from white to grey in the property list, the background colour is changed for all of the selected objects.



Editing of overlapping objects

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

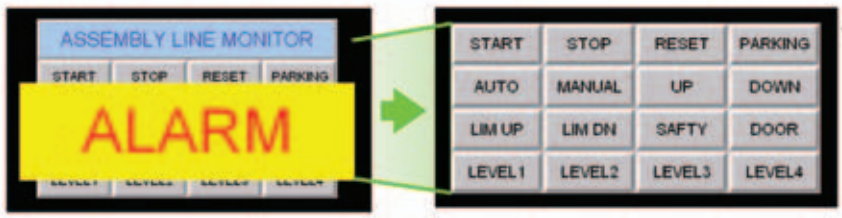


Object Selection Window

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

Filter Function

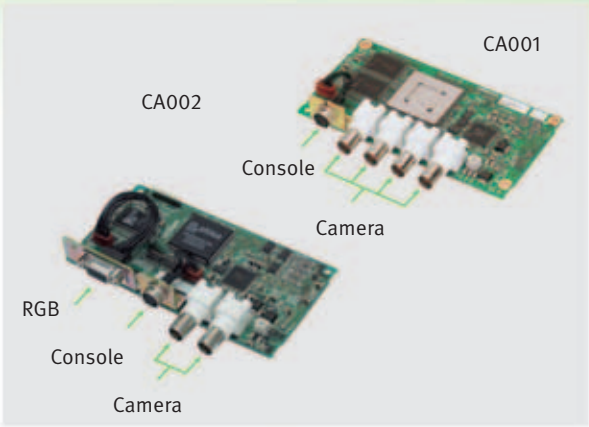
Use the Select Part command's filter function to select the objects (ON/OFF Button) that you want to edit.



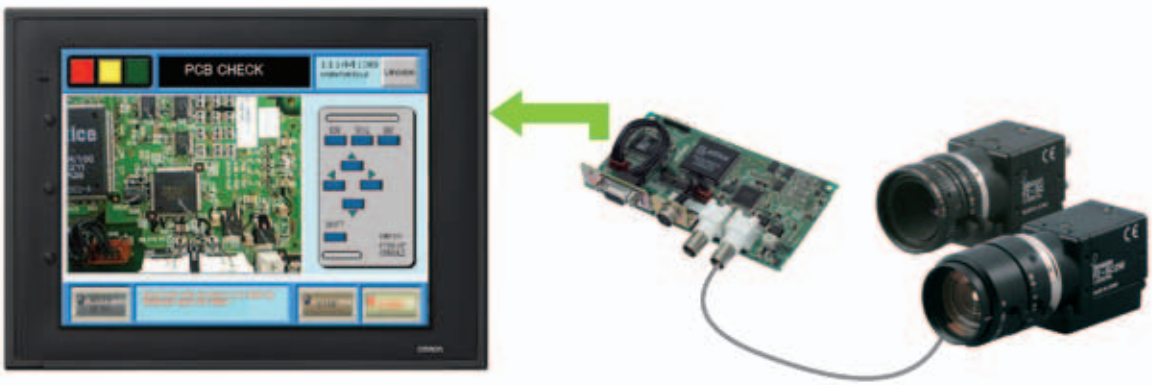
Only the edited object is displayed and it can be edited easily.

260,000-colour Video Display

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 HMI. The NS-CA002 cannot be used with the NS5.



Also compatible with Omron Vision Sensors.



Analog RGB Output

The NS screen viewed on another monitor.
The NS15 screen (XGA) can be displayed on another on-site display that has RGB inputs.

FTP function.

FTP (File Transfer Protocol) allows texts, lists and recipes to be replaced with the put/get command from your computer! You can even replace BMP files.

WEB interface

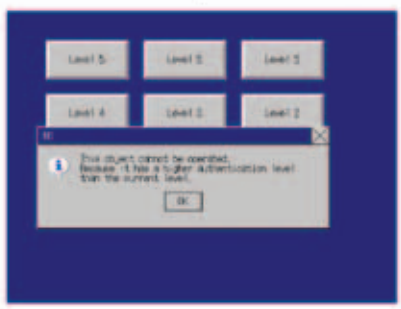
Monitor and operate the full content of any NS screen on a connected web browser. You can control the full application running on the HMI and even retrieve the log files.

User security functions

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

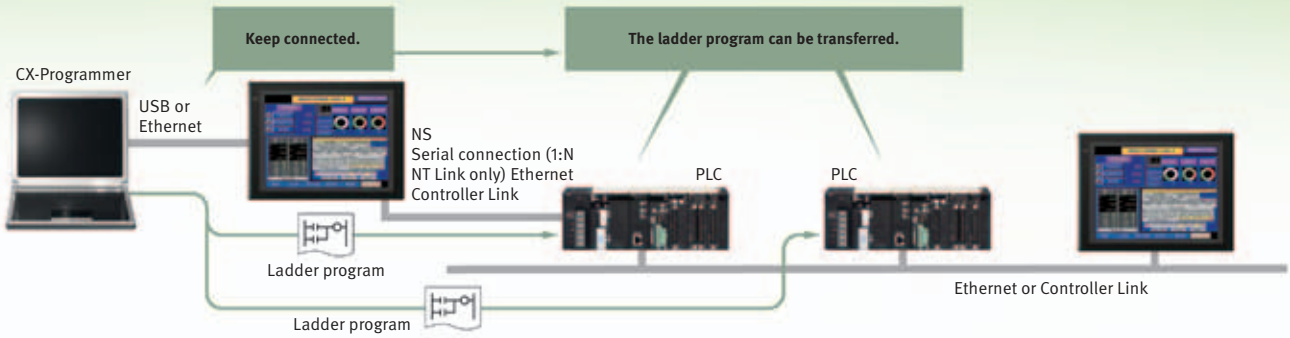
Operator passwords are managed in 5 levels. Passwords can be up to 16 characters long and the access rights increase as the level number increases.

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



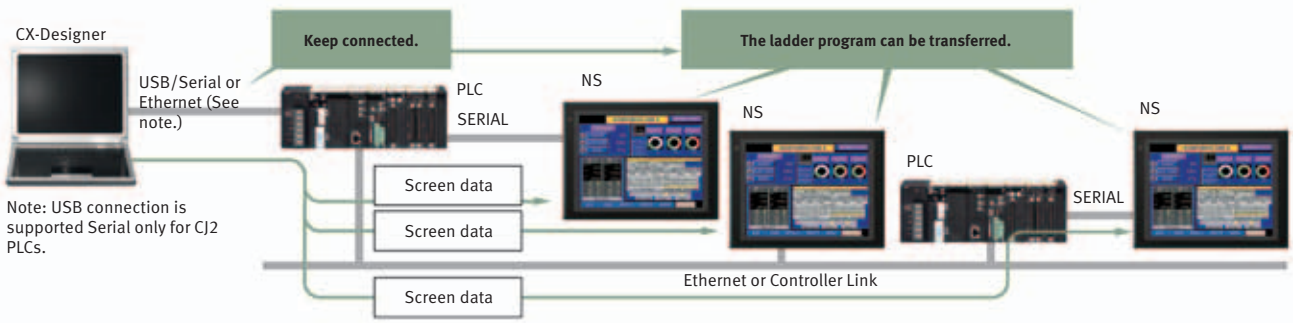
Single Port Multi Access (SPMA)

Transfer ladder program data to the PLC via the HMI. Perform online editing via the HMI.
[Computer (Serial/USB) -› NS-series HMI (Ethernet) -› PLC (Ethernet or Controller Link) -› PLC]



Transfer screen data via the PLC.

[Computer (Serial) -› PLC (Ethernet or Controller Link) -› NS-series HMI]



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 HMI is supported with a CP-series PLC.)

Easy automatic connection

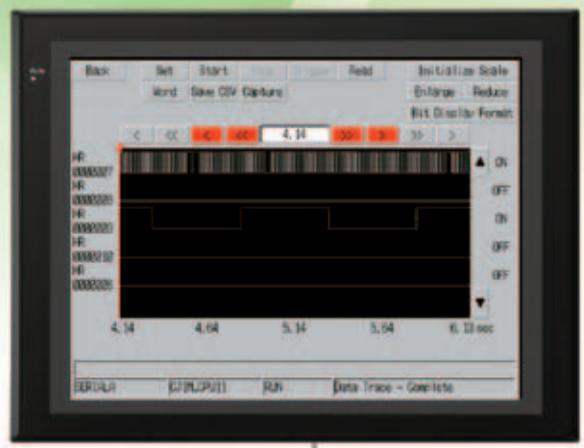
A search is automatically made for the PLCs connected to the HMI and the results are displayed using the automatic online connection function in the CX-Programmer. Just select a PLC from the list to connect. This function is also supported for PLCs over network layers.

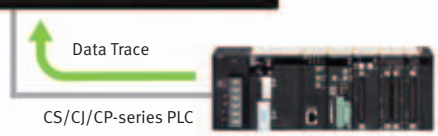
Note 1: SPMA can be used in CS/CJ-series PLCs with lot number 030201 or later.
Note 2: SPMA via a PLC is not supported when a CP-series PLC is connected. (SPMA via an NS-series HMI is supported with a CP-series PLC.)
Note 3: CX-Programmer version 8.2 and higher support automatic online connection via the HMI. NS system version 8.2 or higher is required.

PLC Data Trace

The PLC data trace function can be used without a computer.

The PLC Data Trace function is built into the HMI 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 HMI. It is also now possible to display word data, save data in CSV files, and save time chart screens in BMP files.



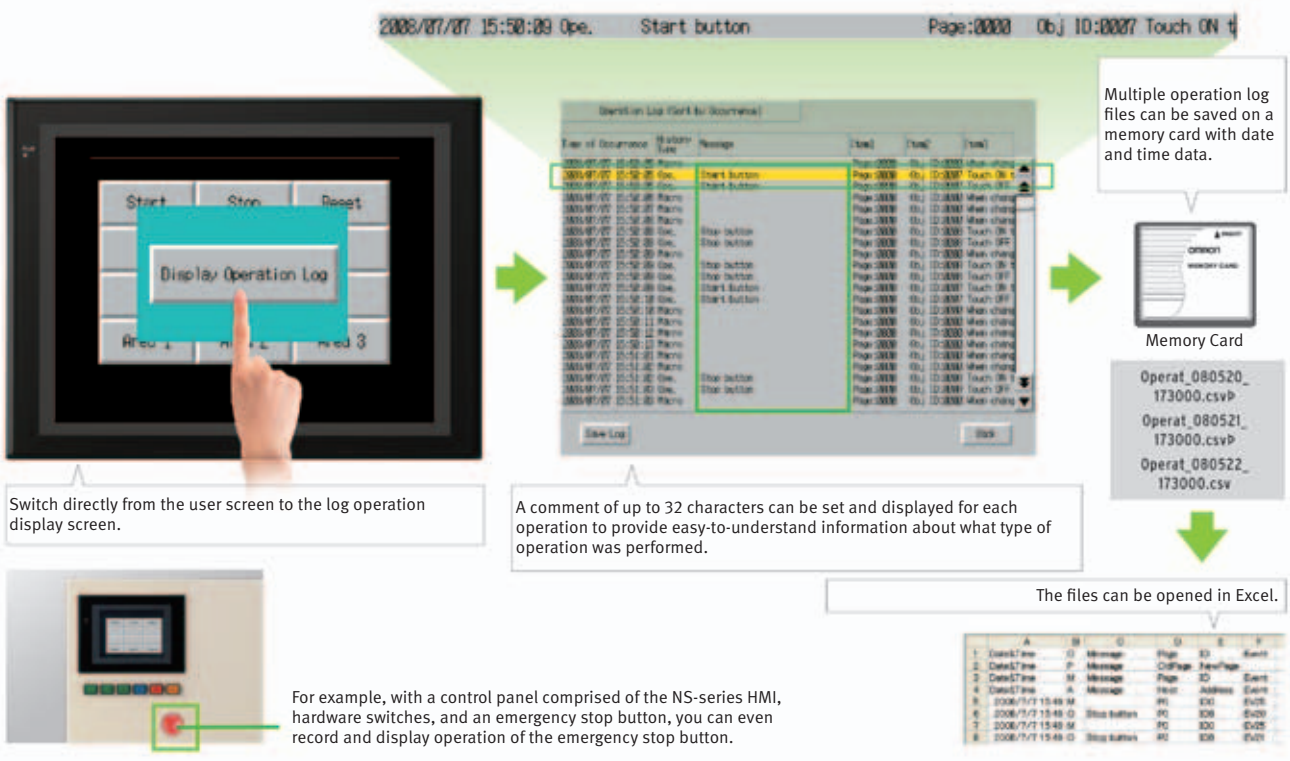


Note 1: There are differences between this Data Trace function and the CX-Programmer's Data Trace function. Refer to the NS-series Programmable Terminal Programming Manual (Cat. No. V073) for details.
Note 2: The PLC data trace function cannot be used with the 5.7-inch model.
Note 3: The PLC data trace function is not supported for connection with a CP1E PLC.

Operating log

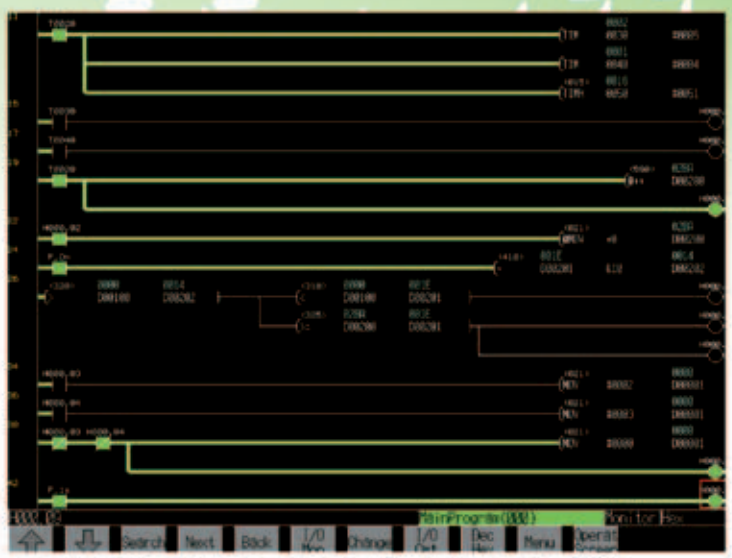
What was touched, when and by whom?

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 HMI.



Ladder monitor

The ladder program can be monitored without a computer.
Ladder programs with I/O comments can be monitored on the HMI's screen and the ladder program can also be edited with the Programming Console function.



Operation screen

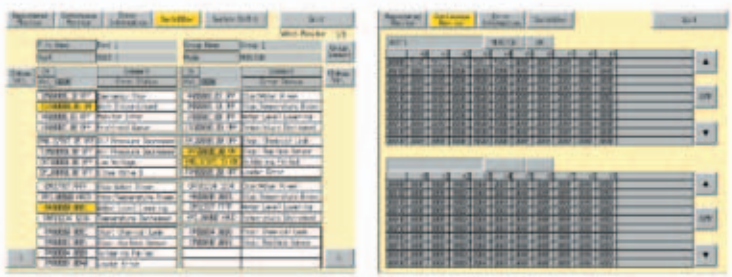
CS/CJ/CP-series PLC

Also meets the requirements of users who need to display devices onsite

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

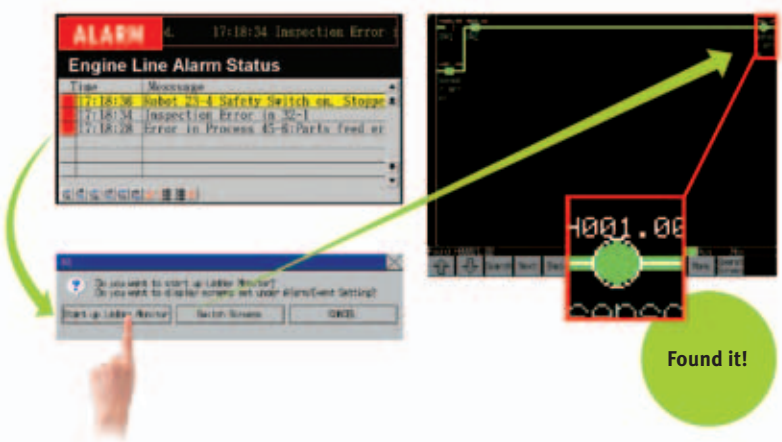
Device Monitor function
Displays the device's contents, allowing settings to be input and checked and making startup operations more efficient.

Switch Box function



Easy checking the alarm bit and shortens searching time.

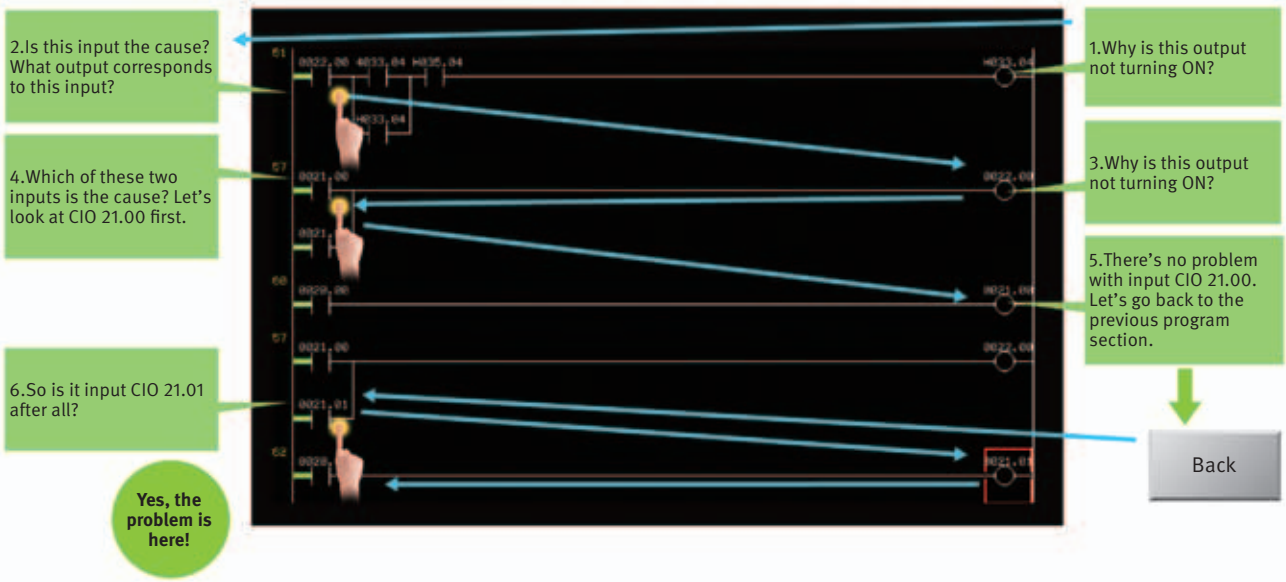
When an alarm occurs, touch the message to automatically search for the alarm bit (output bit) for the alarm. This enables you to quickly check the alarm address and investigate why the bit turned ON.



"Find Back", "Find Next", useful function supported by the NS-series.

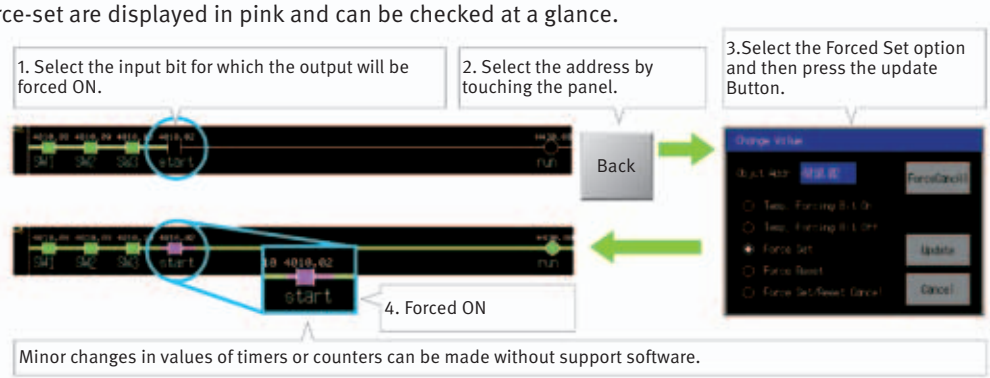
Reduced Time to Investigate Which Output or Input Is Causing the Problem.

Device Monitor function	Operation with NS-series HMI	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.		"B" Key



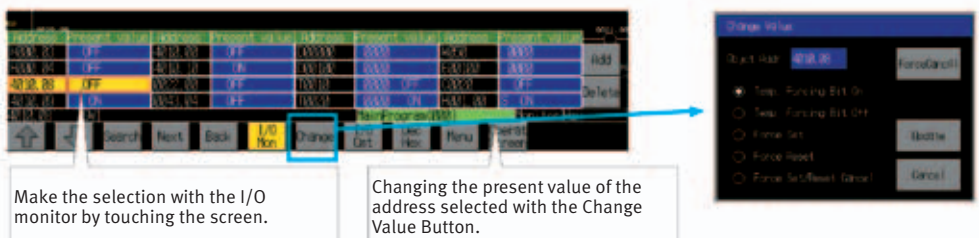
Force-setting and force-resetting are possible

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



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.

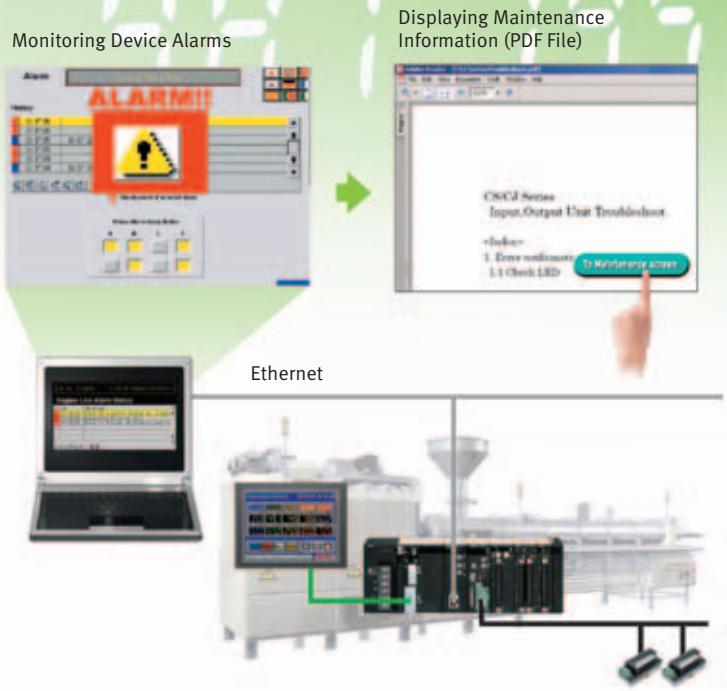


Note: The Ladder Monitor function is not supported by the 5.7-inch models.

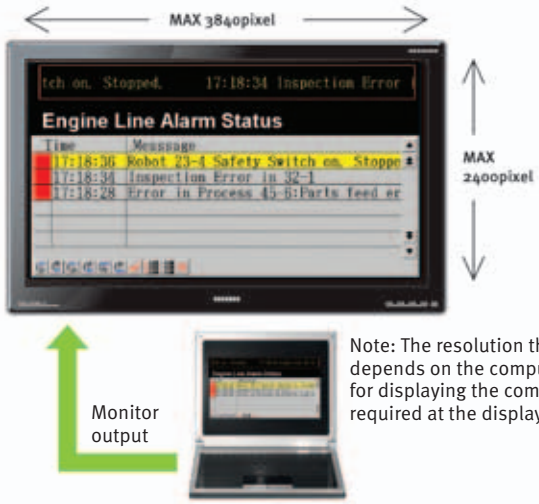
NS-NSRCL (NS-Runtime)

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

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



Wide Screen
Computer output can be displayed on another wide-screen monitor. XGA (1,024 x 768 dots) and up to a a maximum screen size of 3,840 x 2,400 is supported. Alarms occurring in devices or the line can be monitored.



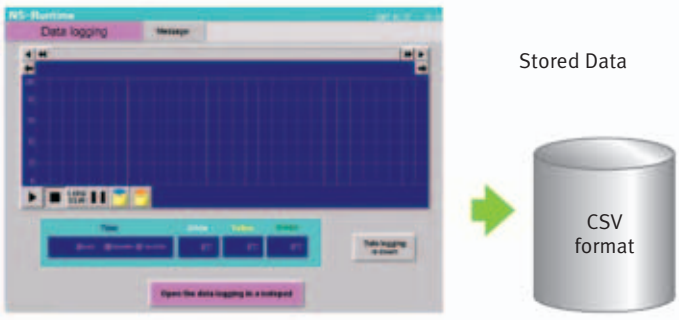
Note: The resolution that can be displayed depends on the computer. An input function for displaying the computer screen is required at the display monitor.

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.

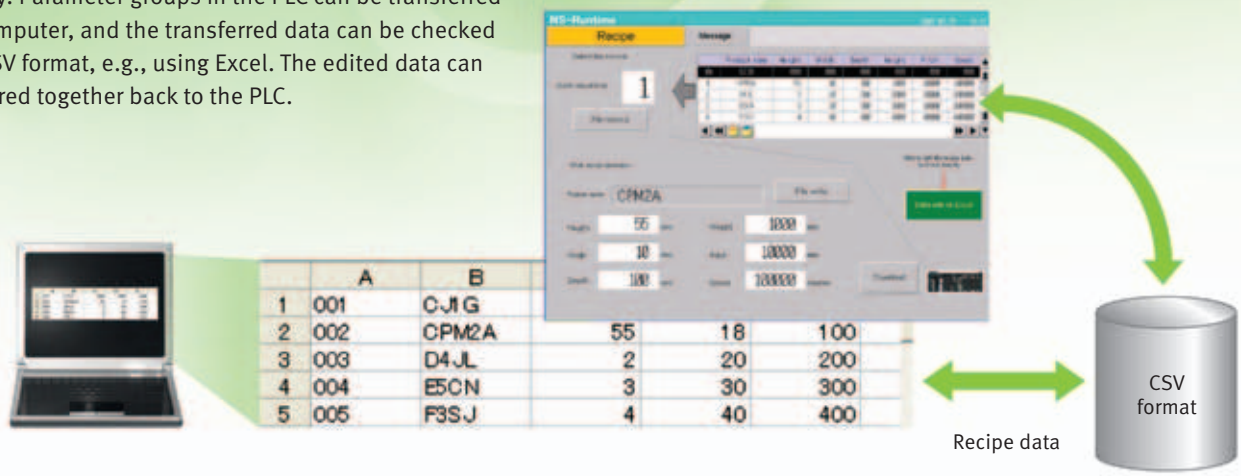
Example: 160,000 Points

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.



Recipe handling

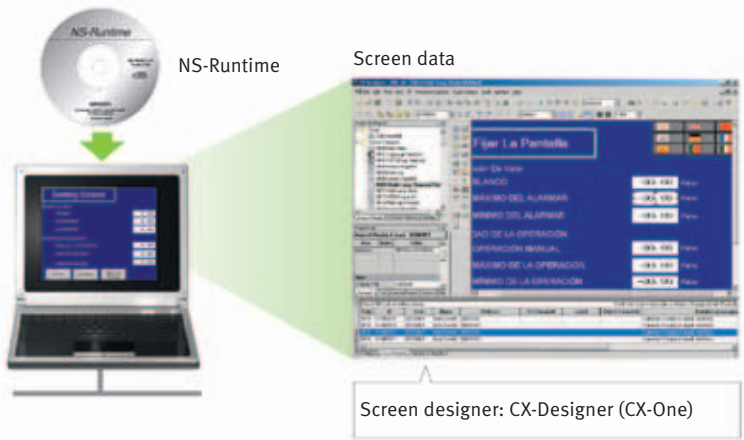
Checking machine data or switching processes from a host computer is easy. Parameter groups in the PLC can be transferred together to a computer, and the transferred data can be checked and edited in CSV format, e.g., using Excel. The edited data can then be transferred together back to the PLC.



Easy installation

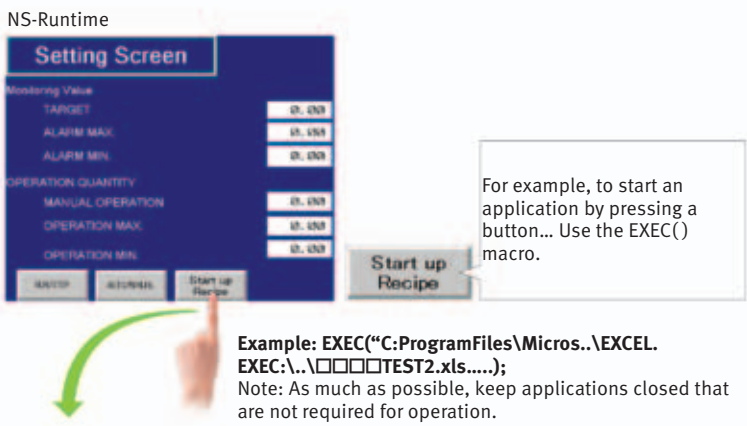
To get started, just install the NS-Runtime in the computer and place the screen data in the applicable folder. NS/NSJ-series screens and NS-Runtime screens can all be managed using one single tool.

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



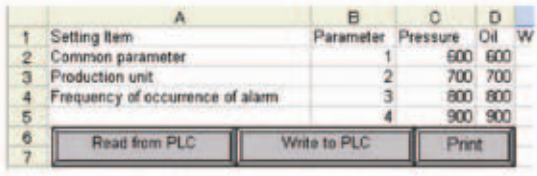
Application startup function

User applications can be started from NS-Runtime. Applications can be started simply by pressing buttons on the screen.



Example: EXEC("C:ProgramFiles\Micros..\EXCEL. EXEC:\..\□□□□TEST2.xls.....);
Note: As much as possible, keep applications closed that are not required for operation.

Note 1: If the screen data is converted from the NS Series, NS-Series HMI system versions must be 8.1 or lower.
Note 2: 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 noise or other causes. Omron shall not be responsible for any problems that may be caused by any applications other than Omron products.



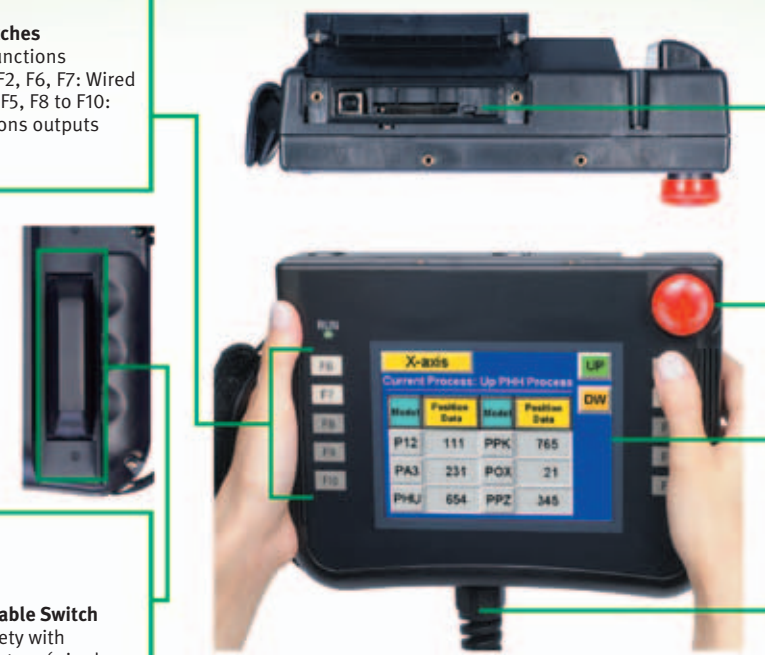
HAND-HELD HMI

NSH5 Series

A hand-held version of the NS5 is now available to perform operations at the production site. The NS-series HMI'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

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



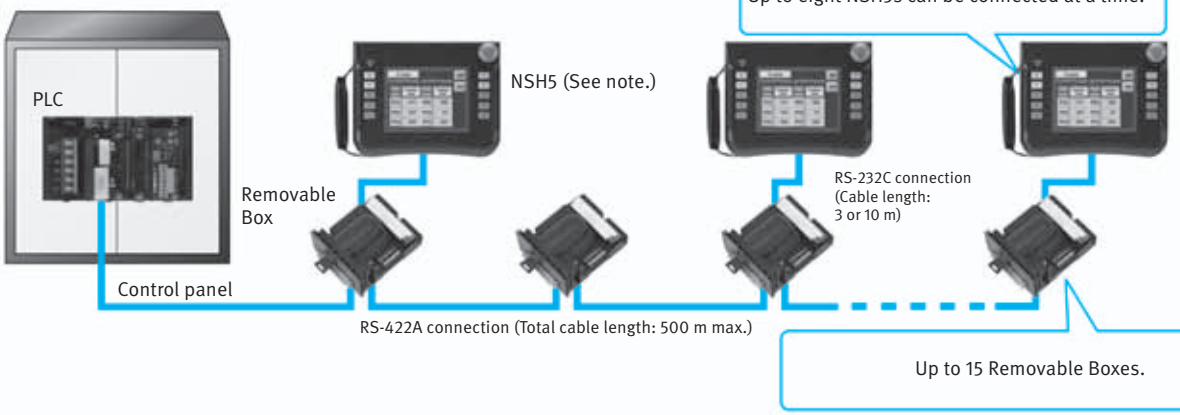
Memory Card Interface and USB Slave Connector.

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. The HMI may not be suitable for use in environments with long-term water exposure.

HMI 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.

System Configuration
(Removable Box Connected)



Ordering Information

International Standards

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

Programmable Terminals

Product name	Specifications				Model	Standards
	Effective display area	Number of dots	Ethernet	Case color		
NS5-V2 *1	5.7-inch 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 LED backlight		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 LED backlight		No	Ivory	**NS5-TQ10-V2**	
				Black	**NS5-TQ10B-V2**	
			Yes	Ivory	**NS5-TQ11-V2**	
				Black	**NS5-TQ11B-V2**	
NS8-V2	8.4-inch TFT LED backlight	640 × 480 dots	No	Ivory	**NS8-TV00-V2**	UC1, CE, N, L
				Black	**NS8-TV00B-V2**	
			Yes	Ivory	**NS8-TV01-V2**	
				Black	**NS8-TV01B-V2**	
NS10-V2	10.4-inch TFT LED backlight	640 × 480 dots	No	Ivory	**NS10-TV00-V2**	
				Black	**NS10-TV00B-V2**	
			Yes	Ivory	**NS10-TV01-V2**	
				Black	**NS10-TV01B-V2**	
NS12-V2	12.1-inch TFT LED backlight	800 × 600 dots	No	Ivory	**NS12-TS00-V2**	UC1, CE, N, L, UL Type4
				Black	**NS12-TS00B-V2**	
			Yes	Ivory	**NS12-TS01-V2**	
				Black	**NS12-TS01B-V2**	
NS15-V2	15-inch TFT	1,024 × 768 dots	Yes	Silver	**NS15-TX01S-V2**	
				Black	**NS15-TX01B-V2**	
NSH5-V2 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**	

NS-Runtime

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

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

●System Requirements

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

Software

●How to select required support software for your controller

The required support software depends on the controller to connect. Please check the following table when purchasing the support software.

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

●FA Integrated Tool Package CX-One

Product name	Specifications	Number of licenses	Media	Model	Standards
FA Integrated Tool Package CX-One Ver.4.□	The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components. CX-One runs on the following OS. Windows XP (Service Pack 3 or higher), Vista or 7 **Note:** Except for Windows XP 64-bit version CX-One Version 4.□ includes CX-Designer Ver.3.□. For details, refer to the CX-One catalog (Cat. No. R134)	license *1	DVD	**CX-ONE-AL01-EV4**	—

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

●Automation Software Sysmac Studio

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

Product name	Specifications	Number of licenses	Media	Model	Standards
Sysmac Studio Standard Edition Ver.1.□	The Sysmac Studio provides an integrated development environment to set up, program, debug, and maintain NJ-series Controllers and other Machine Automation Controllers, as well as EtherCAT slaves. Sysmac Studio runs on the following OS. Windows XP (Service Pack 3 or higher, 32-bit version) /Vista (32-bit version) /7 (32-bit/64-bit version)	- (Media only)	DVD	**SYSMAC-SE200D**	—
	The Sysmac Studio Standard Edition DVD includes support software to set up EtherNet/IP Units, DeviceNet slaves, Serial Communications Units and support software for creating screens on HMIs (CX-Designer). For details, refer to the Sysmac Integrated Catalogue (P072).	1 license*	—	**SYSMAC-SE201L**	—

Note: To connect the NJ-series Controller, NS system version 8.5 or higher is required. CX-Designer version 3.3 or higher is also required.
* Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).

Cable

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

***1.** Use a standard USB Type A male to Type B type male cable to connect the NS series PT to a personal computer (CX-Designer).
Use a standard USB cable to connect the NS series PT to a PictBridge-compatible printer. USB cable type depends on the printer.
***2.** To connect the NS series PT to NJ series controller, using a commercially available 10/100-BASE-TX twisted-pair cable.
For detail, refer to the NS series SETUP MANUAL (Cat. No.V083).

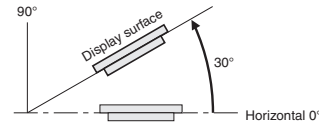
Options

Product name	Specifications		Model	Standards
Video Input Unit	Inputs: 4 channels Signal type: NTSC/PAL		**NS-CA001**	UC1, CE
	Input channels: 2 video channels and 1 RGB channel *1 Signal type: NTSC/PAL		**NS-CA002**	
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 *2	Anti-reflection sheets (5 surface sheets)	NS15	**NS15-KBA04**	–
		NS12/10	**NS12-KBA04**	
		NS8	**NS7-KBA04**	
		NS5	**NT30-KBA04**	
	Protective covers (5 pack) (anti-reflection coating)	NS12/10	**NS12-KBA05**	
		NS8	**NS7-KBA05**	
		NS5	**NT31C-KBA05**	
	Protective covers (1 cover included) (Transparent)	NS15	**NS15-KBA05N**	
	Protective covers (5 covers included) (Transparent)	NS12/10	**NS12-KBA05N**	
		NS8	**NS7-KBA05N**	
		NS5	**NT31C-KBA05N**	
Attachment	NT625C/631/631C Series to NS12/10 Series		**NS12-ATT01**	
	NT625C/631/631C Series to NS12/NS10 Series (Black)		**NS12-ATT01B**	
	NT610C Series to NS12/10 Series		**NS12-ATT02**	
	NT620S/620C/600S Series to NS8 Series		**NS8-ATT01**	
	NT600M/600G/610G/612G Series to NS8 Series		**NS8-ATT02**	
Memory Card	128 MB		**HMC-EF183**	
	256 MB		**HMC-EF283**	
	512 MB		**HMC-EF583**	
Memory Card Adapter	---		**HMC-AP001**	CE
Replacement Battery	Battery life: 5 years (at 25°C)		**CJ1W-BAT01**	–
Bar Code Reader	CCD handheld bar code reader (RS-232C interface)		**V520-RH21-6**	

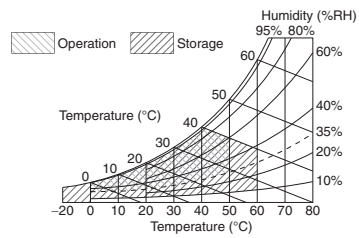
***1.** One screen cannot display two video inputs simultaneously.
***2.** A Chemical-resistant Cover (NT30-KBA01) is available only for the NS5.

General Specifications

NS5/NS8/NS10/NS12/NS15

Series	NS5-V2	NS8-V2	NS10-V2	NS12-V2	NS15-V2
Rated power supply voltage	24 VDC				
Allowable voltage range	20.4 to 27.6 VDC (24 VDC ±15%)				
Power consumption	15 W max.	25 W max.			45 W max.
Ambient operating temperature	0 to 50 °C (See note on the next page.) **Note:** The ambient operating temperature is subject to the following restrictions according to the mounting angle. Mounting angle of 0 to 30° to the horizontal: • When no Expansion Units are mounted, the operating temperature range is 0 to 45°C. • When a Video Input Unit or a Controller Link Interface Unit is mounted, the ambient operating temperature is 0 to 35°C. Mounting angle of 30 to 90° to the horizontal: Operating temperature range of 0 to 50°C 				
Storage temperature	–20 to 60 °C *1				
Ambient operating humidity	35 to 85% (0 to 40 °C), 35 to 60% (40 to 50 °C) (with no condensation)				
Operating environment	No corrosive gases.				
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines).				
Vibration resistance (during operation)	10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/s^2 30 min each in X, Y, and Z directions				5 to 8.4 Hz, 3.5 mm single amplitude, 8.4 to 150 Hz, 9.8 m/s^2 10 min times 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	1.0 kg max.	2.0 kg max.	2.3 kg max.	2.5 kg max.	4.2 kg max.
Degree of protection	Front operating panel: Equivalent to IP65 oil-proof type and NEMA4 UL type 4. *2 **Note:** May not be applicable in locations with long-term exposure to oil.				
Ground	Ground to 100 Ω or less.				
Battery life	5 years (at 25 °C): Replace battery within 5 days after the battery runs low (indicator lights orange).				
Applicable standards	Certified for conformance to UL 508, UL 1604, EMC Directive, NK, and LR Standards.				

***1.** Operate the PT within the temperature and humidity ranges shown in the right diagram.
***2.** Support for NS5, NS10, NS12 and NS15.



NSH5 Hand-held PT

Series	NSH5-V2	
Type	5.7-inch Color TFT (Hand-held Version)	
Case colour	black	
Built-in Ethernet port	No	
Model	NSH5-SQR10B-V2 (Emergency stop button: Red)	NSH5-SQG10B-V2 (Stop button: Gray)
Rated power supply voltage	24 VDC	
Allowable voltage range	20.4 to 27.6 VDC (24 VDC ±15%)	
Power consumption	10 W max.	
Ambient operating temperature	0 to 40°C	
Storage temperature	–20 to 60°C	
Ambient operating humidity	35% to 85% (0 to 40°C) with no condensation	
Operating environment	No corrosive gases.	
Noise immunity	Common mode: 1,000 Vp-p (between power supply terminals and panel) Normal mode: 300 Vp-p Pulse width: 100 ns to 1 μs, Rise time: 1-ns pulse	
Vibration resistance (during operation)	10 to 57 Hz, 0.075 mm amplitude, 57 to 150 Hz, 9.8 m/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.	

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• Safety networks • Safety sensors • Safety units/relay units • Safety door/guard lock switches

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CD_EN-01_KPP_NS_series