

# Human Machine Interfaces



**For enhanced information processing**

Programmable Touch screen terminals

Programmable Function key terminals

PC based HMI

Advanced Industrial Automation

**OMRON**



HMI terminals for enhanced information processing

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## OPERATING TERMINALS FOR PROCESS AND SYSTEM CONTROL

In today's manufacturing processes increasing demands for larger product variation, supply chain collaboration and bottom-line improvements mean that more information is being required by the operator to handle increasingly complex tasks. With industrial automation following generic trends in information technology, HMI solutions with more powerful information processing and display capabilities are becoming available on the factory floor. These HMIs are designed primarily to interact with the operator, but are being used

increasingly as information-processing devices with enhanced communication capabilities to support manufacturing-related decision processes.

With its new NS series of HMIs, Omron is well placed to provide controllable and manageable industrial IT solutions. Models range from very simple character displays to touch-screen terminals with advanced communication and information processing capabilities. Programming even complex functions is a quick and easy



operation, thanks to Omron's use of proven touch-screen technology and Windows-style user-interfaces. Reliable and robust, Omron's NS operating terminals offer the perfect solution for all your industrial HMI needs.

#### 4 ▶ Intelligent touch-screen operating terminals

NS7, NS10, NS12 Industrial IT at your fingertips

#### 6 ▶ Programmable Touch screen and Function key terminals

NT2S, NT4S, NT21, NT31 & NT631 for local machine control

#### 8 ▶ PC based HMI

CX-automation suite software

#### 10 ▶ Smart & Seamless Technology

Omron platform for seamless communication and smart devices

#### 11 ▶ Overview of touch-screen technology

# INTELLIGENT TOUCH-SCREEN OPERATING TERMINALS

NS7, NS10 & NS12 • Industrial IT at your fingertips

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Omron's new NS series of advanced programmable terminals feature exceptionally high built-in processing power and enhanced communication capabilities. With a choice of three screen sizes to choose from – 7-inch, 10-inch and 12-inch – the NS series offers the perfect solution for all your industrial HMI needs.

The liquid crystal monitors feature 256 colors, high illumination and a large reading angle. Fonts are saved in Unicode for fast multi-lingual operation and for displaying various fonts on one screen page. Image animations, automatic data transfer and other processes can be controlled with macro programs.

User programs and operating data can be transferred to a PC over a network or with the help of memory cards. The built-in memory 1:n, NT-Link n:n and FINS protocols capacity is 4 MB, expandable with chipset or memory card.

Omron's new NS series includes features like built-in information processing power and an easy, intuitive programming interface, which allows sophisticated operator interfaces to be set up that previously could be accomplished only with a powerful, personal computer. Full network compatibility ensures fast, efficient communication throughout all levels of a factory automation system.



- TFT (NS10/12) or STN-technology (NS7)
- 256 colours, high illumination, wide viewing angle
- Unicode character set
- Local communication over RS-232C
- Network communication over Ethernet or Controller Link
- Memory card for programming and data transfer
- Data storage in file formats such as RTF, CSV, TXT, BMP, JPEG
- Macros for animation and sequencing
- Lightweight, flat design with IP65-class protection
- Video camera input
- Password protection
- Programming with NS designer



◀ 256 color display.



▲ **Enhanced networking**

**Programmable terminals placed everywhere when there is a connection to the network.**

- One PLC can be connected to multiple terminals (1:1 and 1:N), and multiple PLCs can be connected to 1 or more NS terminals (1:2 and M:N).
- NS terminal can connect to two different network types at the same time.
- NS terminals can be placed anywhere in the network.
- When Ethernet is already in the production area it can be used for the NS terminals.
- PCs can be connected in an Ethernet/ControllerLink network.
- Application updates and new recipes can be downloaded from every PC in the Ethernet network.
- PLCs that don't support Ethernet but do support ControllerLink can be programmed over Ethernet using the NS terminal as a bridge from Ethernet to ControllerLink. What's more, a PLC with no Compact Flash option can be used.

▲ **Simplified data logging**

**Collecting process information**

- No ladder programming necessary, the NS terminals needs only to be configured.
- The input from the NS terminal can be logged directly in the NS.
- An Ethernet connection is available as standard on the NS terminal and a transfer tool is supplied with the programming software.
- A serial connection can also be used to transfer the data log from the NS terminal to the PC.
- The data is stored in CSV format that can be directly imported into Excel. What's more, a PLC with no Compact Flash option can be used.



◀ Easy data transfer via 30 MB data FLASH memory card.

# PROGRAMMABLE TOUCH SCREEN AND FUNCTION KEY TERMINALS

NT21, NT31 & NT631 • User interface for local machine control



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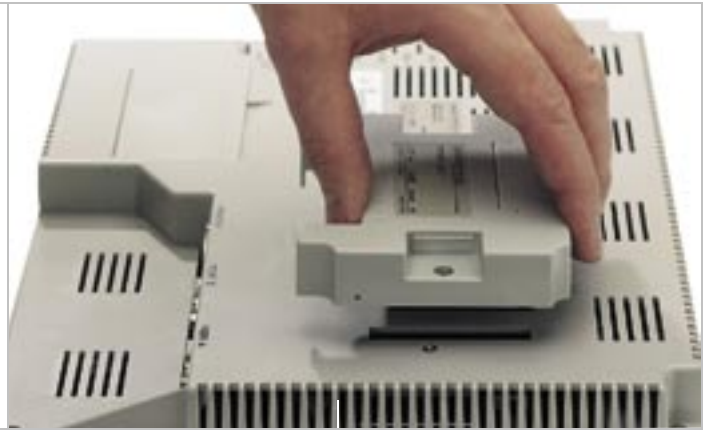
The NT touch-screen HMI family features a complete range of screen sizes including monochrome and color STN, TFT and EL. NT touch terminals are designed to provide a highly reliable and robust solution. At the same time they are easy to program and

to integrate in any industrial automation application. Its cost-effectiveness makes the NT family attractive alternatives in applications where before only character-based terminals with keypads were being used.

Features NT21, NT31 & NT631

- TFT, color LCD or EL display
- PLC connection for Siemens, Allen Bradley, GE Fanuc, Mitsubishi and Omron
- Flexible design and modified user interface
- Program upload function
- Replaceable backlighting
- Connection of up to 8 NT operating terminals to one PLC
- Eight-language user navigation
- Cost effective

- ▶ NT-Terminals: Programs are upgraded in 30 seconds by simply unplugging the programming device - no service technician is required.



- ▶ NT2S provides a full-functional HMI for even the smallest applications. Two variations are available, one very compact one with 5 function keys, and one with a numeral keypad for easy data entry.

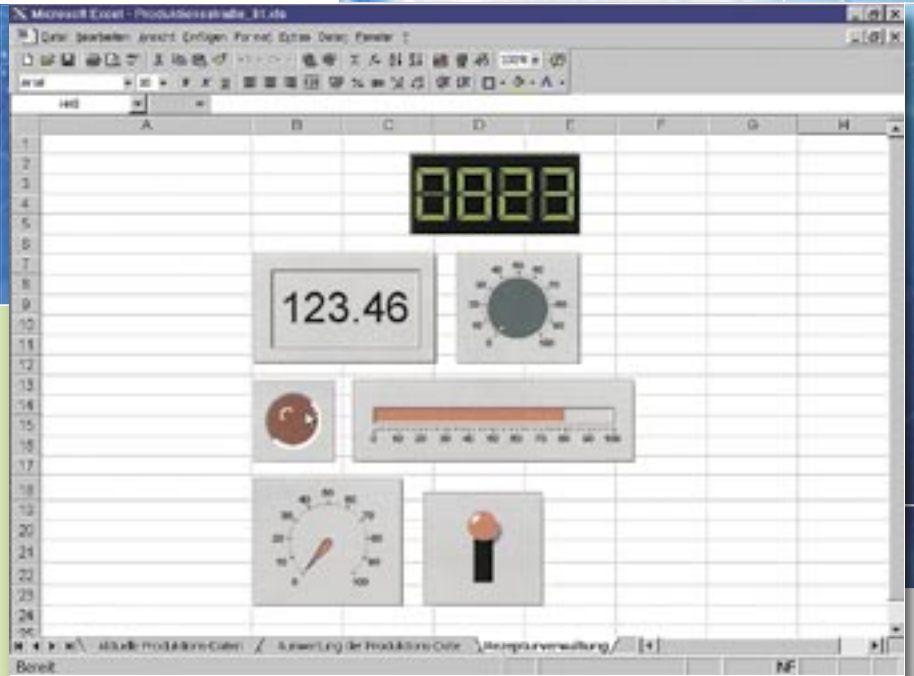


- ▶ NT4S is a highly robust HMI terminal with a character display. Two models are available, one with and one without a numeral keypad. NT4S provides complete functionality making it an economic solution for demanding applications.



# PC BASED HMI

## CX-Automation suite products



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With CX-Automation suite visualization products Omron offers you a choice of tools that allow you to visualize your machine, process or production. The key Omron benefit, regardless of the complexity of the control, ease of use in product selection, programming and deployment into the field. CX-Server lite offers connection between Omron control systems and Microsoft Office products and when using the standard templates included

with CX-Server lite allow production data to be read and displayed in Microsoft Excel without any programming. CX-Server OPC uses industry standard Object Linking and Embedding for Process Control (OPC) communications that allow easy communication with Omron control systems. CX-Supervisor is the final product in the family and offers real ease of use combined with a powerful range of functions and features.



### Features CX-Supervisor

- Supervisory Control and Data Access
- Recipe handling
- Alarm and error displays and logging
- Microsoft based scripting language
- Easy connectivity to Enterprise level databases
- Easy operation
- Multi language application development and operation

### Features CX-Server Lite OPC

- Increase visibility of production information into standard office software
- Easy access to all PLC variables and therefore all of your machine, process or production information
- Programming needs only Microsoft skills to reduce training costs and remove the need for specialists
- Automate time-consuming production or manufacturing reports
- Create one machine HMI visualization application with standard Microsoft software and use OPC to connect to the control system

### CX-Automation Suite

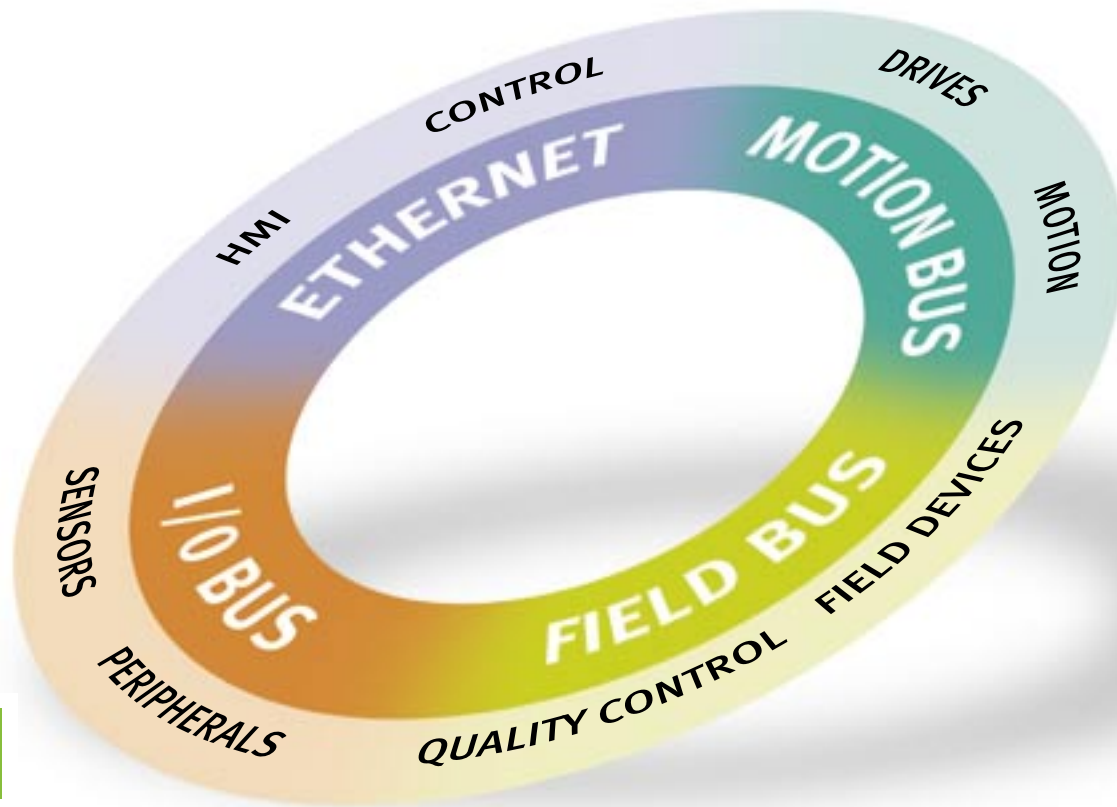
- ▼ CX-Server Lite
- ▼▼ CX-Server OPC



- ▼ Production information where it is needed.



## SMART & SEAMLESS TECHNOLOGY



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### Transparency and integration for machine automation

The Smart & Seamless approach is to look at the system architecture as an information highway, where different field networks are feeding into each other seamlessly. Devices like sensors, vision, drives or motion controllers are plugged effortlessly into the automation architecture. They are recognised and information is automatically routed to and from them.

Smart & Seamless technology will allow engineers to develop their machinery faster, thanks to an integrated platform in terms of software and hardware. Ideally, users can develop their software regardless of the hardware being used. This will cut significantly the development and commissioning time. Smart & Seamless devices will allow field devices to issue maintenance messages, thus ensuring and enforcing preventive maintenance within plants.

# OVERVIEW OF TOUCH SCREEN TECHNOLOGY

Graphical touch-screen						
HMI	NS7	NS10	NS12	NT21	NT31	NT7
Display size (mm)	160.4 x 121.1	215.2 x 162.4	246.0 x 184.5	117 x 63	118 x 90	229 x 172
Number of dots	640 x 480	640 x 480	800 x 600	260 x 140	320 x 240	640 x 480
Lines / character	60 x 80	60 x 80	75 x 100	17 x 32	26 x 35	53 x 80
Touch keys	768 (32 x 24)	1200 (40 x 30)	1900 (50 x 38)	91 (13 x 7)	192 (16 x 12)	768 (32 x 24)
Colors	256	256	256	Monochrome	8 or monochrome	8 or monochrome
Serial ports	2 x RS-232	2 x RS-232	2 x RS-232	2 x RS-232	2 x RS-232 + RS-232/RS-485	2 x RS-232 + RS-232/RS-485
Memory size	6 MB	4 (+16) MB	4 (+16) MB	0,5 MB	1 MB	1 MB
Compact flash card	Yes	Yes	Yes	No	No	No
Recipe management	Yes	Yes	Yes	Yes	Yes	Yes
Alarm handling	Yes	Yes	Yes	Yes	Yes	Yes
Graphs	Yes	Yes	Yes	Yes	Yes	Yes
Macro language	Yes	Yes	Yes	No	No	No
Time / date	Yes	Yes	Yes	Yes	Yes	Yes
Networks	Ethernet	Controller Link, Ethernet	Controller Link, Ethernet	No	No	Yes
Printer port	No	No	No	No	Yes	

Character display		
Function key HMI	NT25	NT45
Display size (mm)	15 x 61	25 x 75
Number of dots	5 x 7 per character	5 x 7 per character
Lines/characters	2 / 16	4 / 20
Keys + function keys	5 / 4 + 16	7 + 4 / 24 + 5
Serial ports	2 x RS-232	RS-232 + RS-232/485/422
Memory size	8 kB	256 kB
Recipe management	-	x
Alarm handling	-	x
Graphs	bargraph	bargraph
Time/date	Only SF121/125	x

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