

# 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

NS8, 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

NS8, 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 32,000 colours, 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 (NS8)
- 32.000 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



◀ 32.000 colour 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 terminal 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



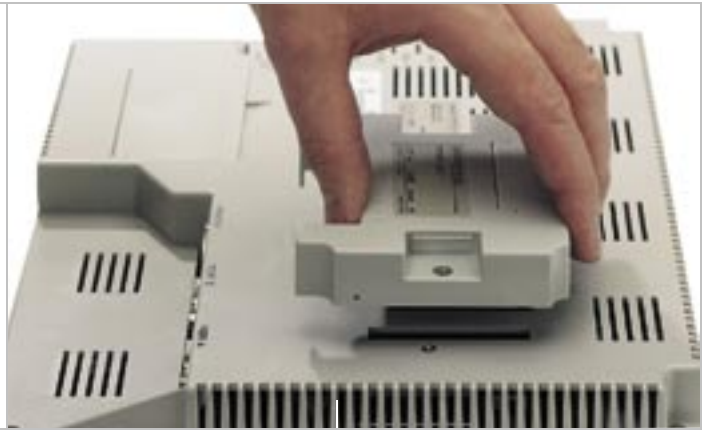
The NT touch-screen HMI family features a complete range of screen sizes including monochrome and colour STN, TFT and EL. NT touch terminals are designed to provide a highly reliable and robust solution. At the same time they are easy to program and

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, colour 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 6 function keys, and one with a numeral keypad for easy data entry.

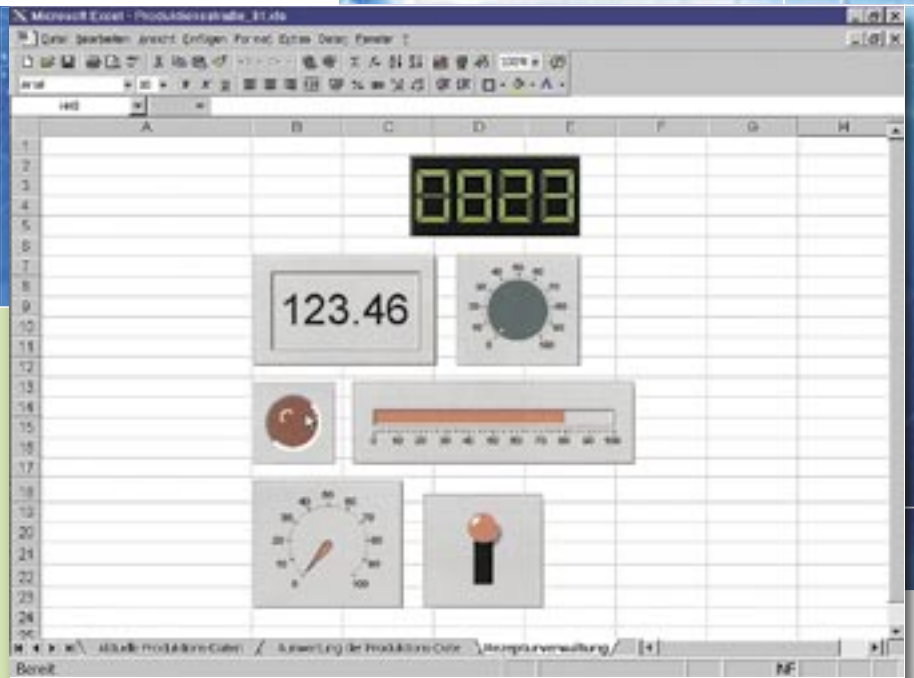


- ▶ NT4S is a highly robust HMI terminal with a character display. Two models are available, one with and one without a numeral keypad. NT4S provides complete functionality making it an economic solution for demanding applications.



# PC BASED HMI

## CX-Automation suite products



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

included with CX-Server lite are being used, production data can 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 visualisation application with standard Microsoft software and use OPC to connect to the control system

### CX-Automation Suite

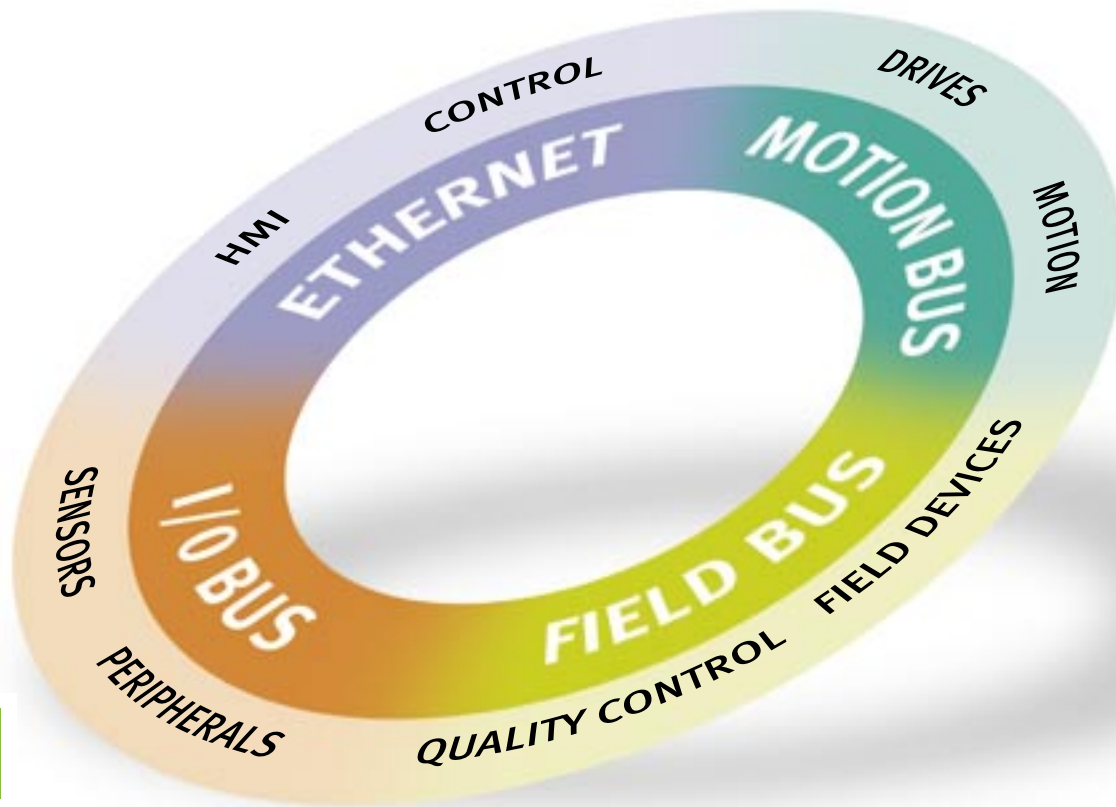
- ▼ CX-Server Lite.
- ▼▼ CX-Server OPC.



- ▼ Production information where it is needed.



# SMART & SEAMLESS TECHNOLOGY



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## Transparency and integration for machine automation

The Smart & Seamless Technology (SST) concept supplies solutions for machine automation with the emphasis on ease-of-use and a high degree of integration between devices. This technology is device-centric, and regards system architecture as an information highway where different field networks feed into each other seamlessly.

SST is the ideal solution for system engineers faced with the challenge of delivering customised machines or installations. SST provides modular control systems for separate machine parts. It offers customised solutions without a significant increase in integration time or complexity. And it enables machines to be built without extended programming. This leads to important cost savings in the creation of tailored solutions that satisfy both the price and performance requirements of the most discerning customer.

# OVERVIEW OF TOUCH SCREEN TECHNOLOGY

Graphical touch-screen						
HMI	NS8	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)
Colours	32.000	32.000	32.000	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	20 MB	20 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	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	-	-
Alarm handling	-	-
Graphs	bargraph	bargraph
Time/date	Only SF121/125	-

**OMRON EUROPE B.V.** Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands. Tel: +31 (0) 23 568 13 00 Fax: +31 (0) 23 568 13 88 [www.europe.omron.com](http://www.europe.omron.com)

**Austria**

Tel: +43 (0) 1 80 19 00  
[www.omron.at](http://www.omron.at)

**Belgium**

Tel: +32 (0) 2 466 24 80  
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Tel: +420 267 31 12 54  
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Tel: +45 43 44 00 11  
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Tel: +358 (0) 9 549 58 00  
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**France**

Tel: +33 (0) 1 49 74 70 00  
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Tel: +49 (0) 2173 680 00  
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**Hungary**

Tel: +36 (0) 1 399 30 50  
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**Italy**

Tel: +39 02 32 681  
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Tel: +31 (0) 23 568 11 00  
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**Norway**

Tel: +47 (0) 22 65 75 00  
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**Poland**

Tel: +48 (0) 22 645 78 60  
[www.omron.com.pl](http://www.omron.com.pl)

**Portugal**

Tel: +351 21 942 94 00  
[www.omron.pt](http://www.omron.pt)

**Russia**

Tel: +7 095 745 26 64  
[www.russia.omron.com](http://www.russia.omron.com)

**Spain**

Tel: +34 913 777 900  
[www.omron.es](http://www.omron.es)

**Sweden**

Tel: +46 (0) 8 632 35 00  
[www.omron.se](http://www.omron.se)

**Switzerland**

Tel: +41 (0) 41 748 13 13  
[www.omron.ch](http://www.omron.ch)

**Turkey**

Tel: +90 (0) 216 474 00 40  
[www.omron.com.tr](http://www.omron.com.tr)

**United Kingdom**

Tel: +44 (0) 870 752 08 61  
[www.omron.co.uk](http://www.omron.co.uk)

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