

General

The NS7 is equipped with an STN colour screen of 7.7" screen diagonal. A 640x480 resolution and 256 colours produce images of very good graphics quality. The touch fields are based on a close-meshgrid that provides generous scope for the design of buttons and spaces..

The use of Memory Cards not only enables user programs to be exchanged between the Control Terminal and a PC, but also buffered alarm lists, operating data and process parameters for the creation of reports can be transferred to the Memory Card.

Excellent communication with PLCs across serial interfaces or networks.

- 256 colours, high luminosity, wide viewing angle
- Graphic character display for use worldwide
- Local communication via 2x RS-232C ports
- Network communication by Ethernet
- Memory card for program and data transfer
- Data transfer from/to data formats: RTF, CSV, TXT, BMP, JPEG
- Macros for expansion of functionality
- Flat and lightweight construction, protection class IP65(F)
- Password protection
- Programming with NS Designer
- NT user programs are easily convertible



Performance Data (Max. Values)

	NS7-SV00_	NS7-SV01_
TFT display (256 colours)	-	-
STN display (256 colours)	Yes	Yes
Terminal size	232x177x49 mm	232x177x49 mm
Display size	160.42x121.06 mm (7.7 inches)	160.42x121.06 mm (7.7 inches)
Number of screen pixels	640x480 pixel	640x480 pixel
Number of lines/characters	60/80	60/80
Number of touch fields	768 (32x24)	768 (32x24)
Memory	6 MB	6 MB
Max. screen pages	4000	4000
Pop-up windows	Yes	Yes
Numerical entry	Yes	Yes
Text entry	Yes	Yes
Bar graph/analogue meter	Yes	Yes
Trend/line diagram	Yes	Yes
Alarm handling	Yes	Yes
Data block management	Yes	Yes
Arithmetic	Yes	Yes
Real-time clock/date	Yes	Yes
PLC programming/monitoring	With NS-EXT01. Ladder monitor software	With NS-EXT01. Ladder monitor software
Serial port	2x RS-232C, port A and B	2x RS-232C, port A and B
Ethernet	-	10BaseT
Controller Link	-	-
Macro programming	Yes	Yes
Multilingual user program	Yes	Yes
Password	5 levels	5 levels

Communication

	NS7-SV00_	NS7-SV01_
DeviceNet	-	-
Host Link	-	-
1:1 NT Link	Port A and B, with RS-232C	Port A and B, with RS-232C
1:n NT Link	Port A or B	Port A or B
FINS	-	Ethernet, 10BaseT
PLC driver	OMRON	OMRON

System Configuration

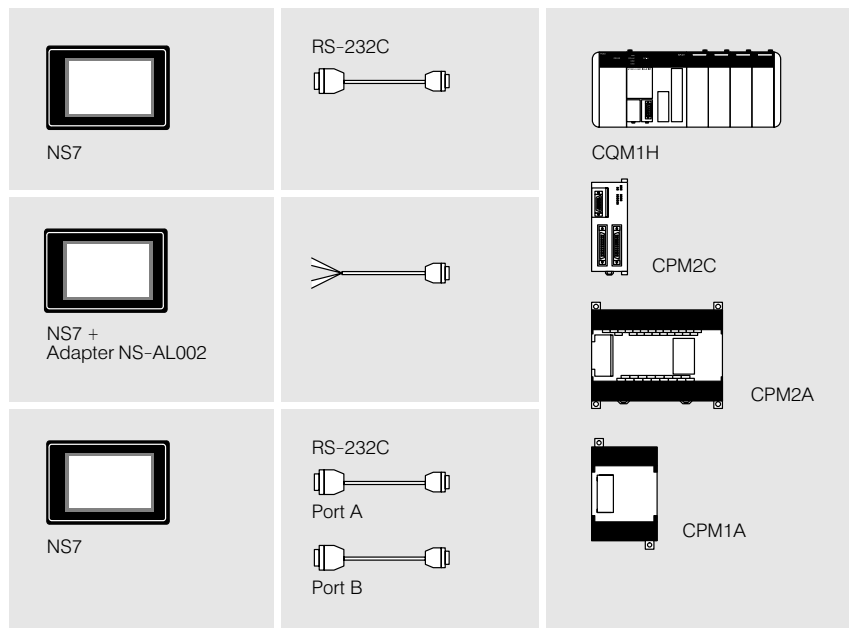
1:1 NT Link

High speed data exchange between the HMI Terminal and an OMRON PLC with the aid of the 1:1 NT Link communication protocol.

Both serial ports, port A and port B, can use the 1:1NT Link protocol simultaneously.

The following OMRON PLC systems feature a 1:1NT Link:

- CPM1A
- CPM2A
- CPM2C
- CQM1H

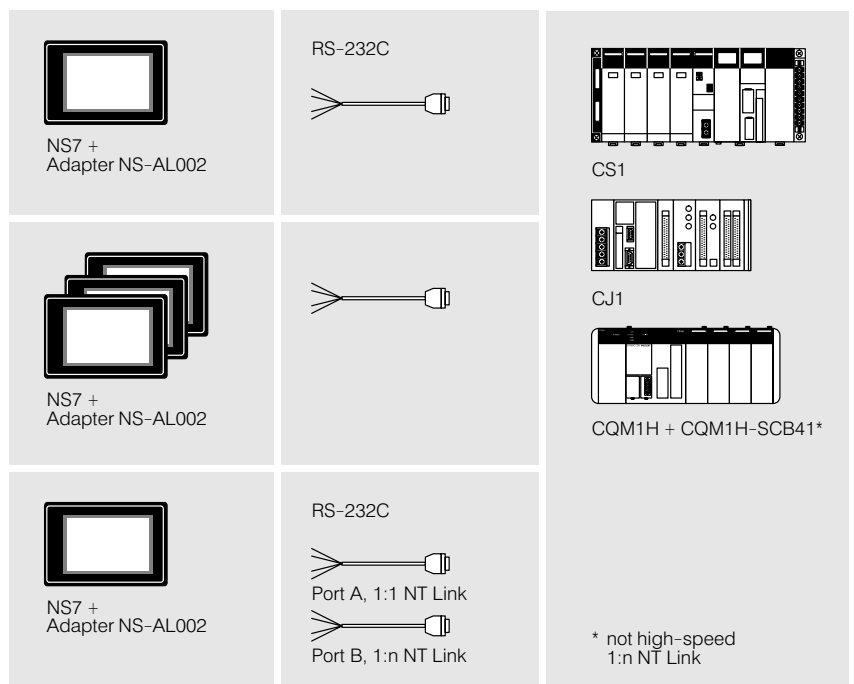


1:n NT Link and high speed 1:n NT Link

1:n NT Link can be used on port A or port B. The other port can use 1:1 NT Link at the same time.

The following OMRON PLC systems feature a 1:nNT Link:

- CQM1H with CQM1H-SCU41
max. 8 Terminals
- CJ1 with NS-AL002 or CJ1W-SCU41
max. 8 Terminals
- CS1 with CS1W-SCB41
max. 8 Terminals



System Configuration (Continued)

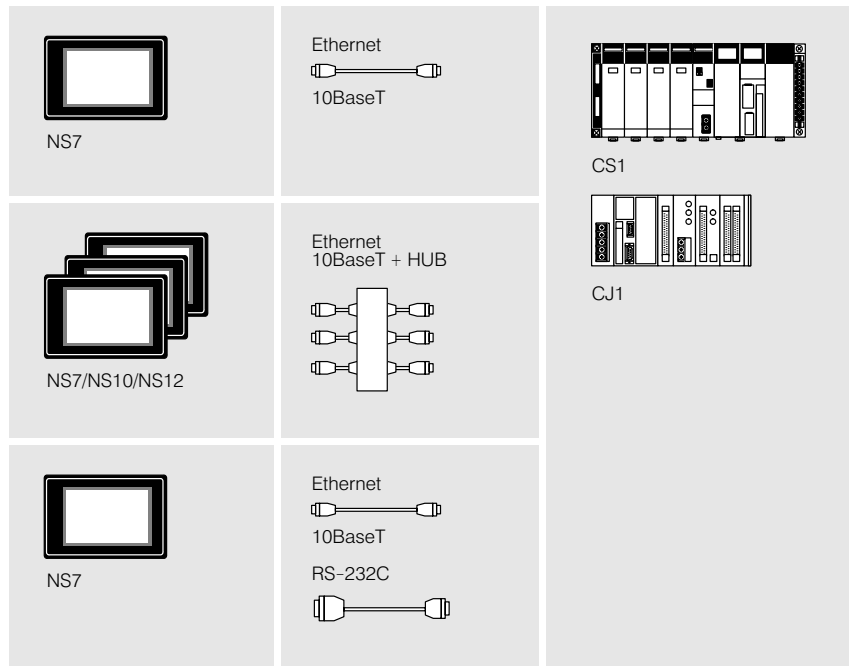
Ethernet

Use of Ethernet allows N:M connection, i.e. multiple NS terminals can communicate with multiple PLC's simultaneously.

On a serial interface 1:n NT Link can be used at the same time.

The following OMRON PLC systems feature FINS or Ethernet:

- CS1 with CS1W-ETN11
- CJ1 with CJ1W-ETN11



Product Overview



NS Control Terminal

- Touch-screen
- STN colour display, 256 colours
- Communication:
1:1 NT Link
1:n NT Link

Model code

- Housing in beige
- Housing in black

NS7-SV00 NS7-SV00B

Display size	160.42x121.06 mm (7.7 inches)
Number of screen pixels	640x480 pixel
Number of lines/characters	60/80
Number of touch fields	768 (32x24)
Memory	6 MB
Ports	2x RS-232C Expansion port
Operating voltage	24 VDC (20.4..27.6 V), 20 W
Degree of protection	IP65 (front side)

NS Control Terminal

- Touch-screen
- STN colour display, 256 colours
- Communication:
1:1 NT Link
1:n NT Link
Ethernet

Model code

- Housing in beige
- Housing in black

NS7-SV01 NS7-SV01B

Display size	160.42x121.06 mm (7.7 inches)
Number of screen pixels	640x480 pixel
Number of lines/characters	60/80
Number of touch fields	768 (32x24)
Memory	6 MB
Ports	2x RS-232C Expansion port
Network	Ethernet, 10BaseT
Operating voltage	24 VDC (20.4..27.6 V), 20 W
Degree of protection	IP65 (front side)

Specifications

System data

		NS7-SV00	NS7-SV01
Display specification	Display	<ul style="list-style-type: none"> - High-resolution SNT colour display - 256 colours - 640x480 pixels - Active area: 160.42x121.06 mm - Screen diagonal: 7.7 inch 	
	Viewing angle	Horizontal: $\pm 50^\circ$, Vertical: $+40..-30^\circ$	
	Backlighting	<ul style="list-style-type: none"> - 40.000 hours to 50% brightness - Brightness: adjustable on 3 levels - Fault message 	
	Function displays (LED)	Green, continuous Green, flashing Orange, continuous Orange, flashing Red, flashing	Normal operation Data transfer with Memory Card completed normally Fault in backlighting detected after power-on System check Battery discharged Offline mode Data transfer with Memory Card active Data transfer with Memory Card failed
Touch-screen	Touch type	Max. 1900 touch fields per screen page, 50 (horizontal) x 38 (vertical), pressure sensitive	
	Min. pressure force	100 g	
	Life expectancy	100,000,000 operations	
Ports	Expansion Memory Board	-	
	Memory Card	<ul style="list-style-type: none"> - 1 slot for ATA Compact Flash 8..48 MB - Storage and transfer of user programs, such as alarm and operating data 	
	Expansion port	For future function expansions	
	Serial port	2x RS-232C (9-pin D-sub female), convertible to RS-485 with NS-AL002 (screw terminals)	
	Ethernet	Standard Medium Connector Distance	<ul style="list-style-type: none"> - IEEE 802.3, 10BaseT - Twisted line, 2-core - RJ45 - 100 m, node <-> hub, hub <-> hub
1:1 NT Link	Communication process	RS-232C, RS-485	
	Connection	Serial port A: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485 Serial port B: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485	
	Number of devices	1	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
1:n NT Link	Communication process	RS-485 or RS-232C (n=1)	
	Connection	2-wire (RS-485), serial port A or B via NS-AL002 (screw terminals)	
	Number of devices	1..8	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
M:N Network communication	Networks	Ethernet	
Barcode reader	Communication process	RS-232C	
	Communication settings	Start/stop synchronisation Communication speed: Data length: Stop bits: Parity: Data flow control:	4800, 9600, 19200 baud 7 or 8 bit 1 or 7 bits none, even, uneven RTS/CTS
	Connection	Serial port A or B: 9-pin D-sub female, RS-232C	
	Number of devices	1	
	Transmission distance	Max. 15 m	
	Communication protocol	"No-protocol" mode	
	Data Format	<STX> <0..40 byte> <ETX>	
	Power supply	Internal on pin 6, 5 V $\pm 5\%$, max. 250 mA	

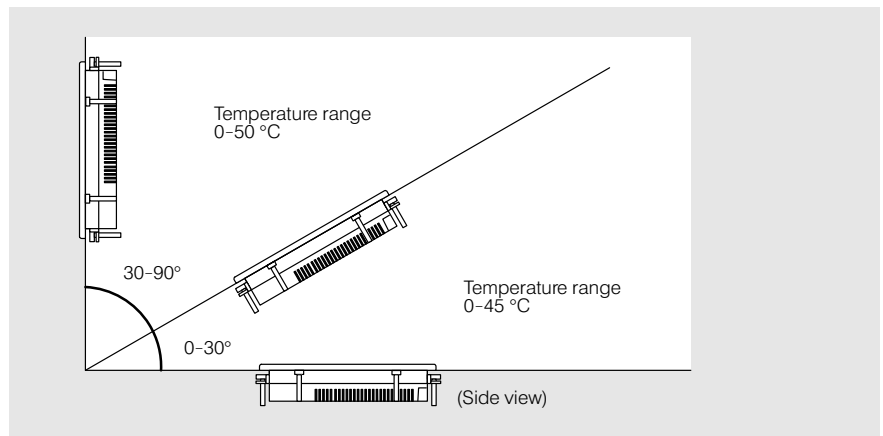
Specifications (Continued)

General data

Operating voltage	24 VDC (20.4..27.6 VDC), ±15%	
Power consumption	20 W max.	
Battery life	5 years at 25°C - SRAM and real-time clock buffering 5 days after "Battery low" display - 5 minutes after removing the old batteries during battery replacement - Display, RUN - LED, orange	
Noise immunity	According to IEC 61000-4-4, 2 kV	
Vibration resistance	10..57 Hz with 0.075 mm amplitude 57..150 Hz with IG acceleration (9.81 m/s ²) for 30 min on X, Y and Z axes	
Shock resistance	147 m/s ² , 3 times on X, Y and Z axes	
Ambient temperature	Operation Storage	0..50 °C (see graphic "Reduced Temperature Range" and "Operating Conditions") -20..+60 °C
Ambient humidity	0..40 °C 40..50 °C	35%..85% (without condensation) 35%..60% (without condensation)
Operating environment	No corrosive gases	
Degree of protection	Front plate: IP65F	
Approvals	CE, UL	
Dimensions	232x177x48.5 mm	
Panel cut-out	220.5x165.5 mm, sheet thickness 1.6..4.8 mm	
Weight	Max. 2.0 kg	

Reduced Temperature Range

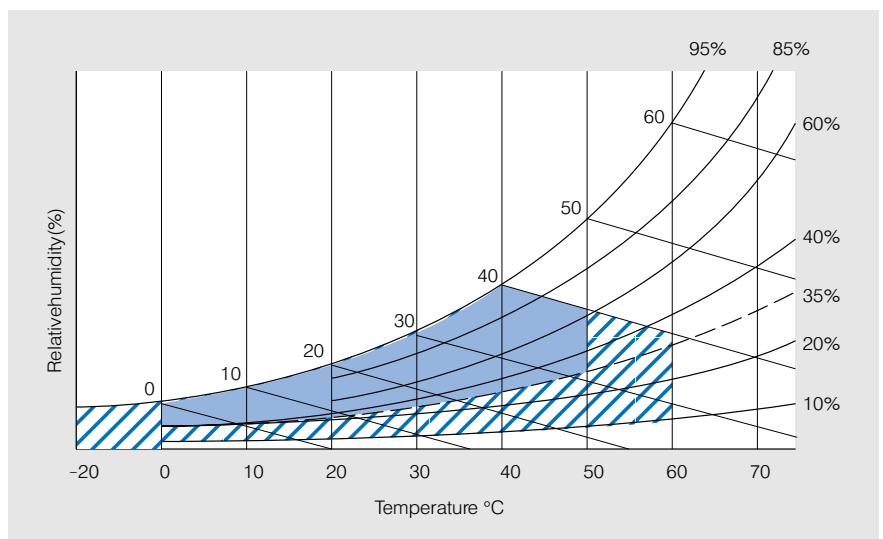
For an installation angle between 0..30° the temperature range is reduced to 0..45°.



Operating Conditions

Operation and storage depend on ambient temperature and humidity.

- Operation
- Storage



Specifications (Continued)

Software-dependent system data

Display specification, function objects	Number	1024 function objects per screen can be assigned in windows and tables
	Touch fields for bit control	Format: Rectangle, circle, 2-colour rectangle, style selectable Mode: Scanning, On/Off, On, Off
	Touch fields for word control	Format: Rectangle, style selectable Mode: Numerical entry, increment, decrement, popup menu display Value range: Word, double word, floating point number
	Touch fields for command function	Mode: Screen changeover, keyboard switch, popup window control, system menu display, buzzer off, Return
	Lamps with bit control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable
	Lamps with word control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable Colours: Up to 10 colours can be triggered
	Numeric display and input	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: Keyboard or command keys
	Graphic character display and input	Format: Multibyte code (Shift+JIS), unicode up to 256 characters Input: Keyboard, command keys or barcode reader
	Text objects	Fixed text display or indirectly controlled, 256 characters File name: 8 characters + .TXT
	Pick list objects	File name: 8 characters + .LST Function by selection, display/hide Store selected number of lines of numbers under spec. address Store selected number of lines of text characters under spec. address Format: Multibyte code (Shift+JIS), unicode up to 256 characters Max. number of displayed lines 1024
	Thumbwheel	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: + and - switch
	Analogue display	Orientation: Up, down, left, right Tendency: Rising clockwise/counter-clockwise Format: Quarter circle, semicircle, circle Format: Coloured area, display pointer
	Bar graph	Orientation: Bottom up, top down, Right to left, left to right
	Line diagram	- Max. number of points per line diagram: 256 - Max. number of graphs per diagram: 256
	Bit maps	- Supported data formats: BMP, JPEG (no RLE and progressive JPEG) - Max. data quantity: 1 MB
	Alarm/event display	- Fixed text display or continuous text - Max. number of displayed objects: 500
	Alarm/event history	Display: Current alarm/events Alarm/event history: 2048 entries
	Date display	Date display (year, month, day), 27 display formats
	Time display	Time display (hours, minutes, seconds), 8 display formats
	Data logging diagrams	- Number of measurement points: 1..100 - Data log per project: 32 groups - Max. number of addresses for 1 log group: 16 - Max. number of addresses for 1 standard log: 50
	Fixed graphic	Rectangles, circles, ellipses, quadrants, polygons, lines, polygonal lines
	Window	- Max. 10 per screen page - Max. 256 functional objects per window (the total number of functional objects must not exceed 1024 screen page)
	Tables	Horizontal: 30 columns Vertical: 40 lines Function objects per table: max. 256 Number of tables: arbitrary (provided that the number of function objects does not exceed 1024 screen page)
	Libraries	Up to 4096 libraries can be stored

Specifications (Continued)		
Display specification, function objects	Screen pages of user program	- Max. 4000 screens (including pop-up screens) per project. - Up to 3 popup screens can be superimposed
	Tables	- Max. 10 tables per project - Max. 10 tables per screen - Max. 1024 function and fixed objects per table
	Title block for touch switch	Up to 16 per touch switch
	Background graphics	- Supported data formats: BMP, JPEG (no RLE or progressive JPEG) - Max. data quantity: 1 MB
	Background colours	256
	User program	Created with NS Designer and transferred to the terminal with Data Transfer function
Specification for display elements	Text characters	Fixed and proportional fonts
	Fixed fonts	Course resolution Latin, Katakana 8x8 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Standard resolution Latin, Katakana 8x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 16x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Fine resolution Latin, Katakana 16x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 32x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
	Proportional fonts (only for text objects)	All fonts, attributes and sizes that can be displayed by the NS Designer
	Text attributes	Colours
Font style		Bold, italic
Vertical position		Top, centre and bottom
Horizontal position		Left, centre, right
Flashing	Function objects	- Function objects and fixed objects of 10 different flash sequences can be selected - Flashing speed and range adjustable
	Fixed objects	- 3 different flash sequences can be selected - Flashing speed and range adjustable
Unit/scaling settings	Up to 1000	
Alarm/event settings	500	
Display colours	256	
Numeric display and memory formats	Decimal	Can be stored as BCD or real number
		1 word with sign: -32 768..32 767 Without sign: 0..65 535 Double word with sign: -2 147 483 648...2 147 483 647 Without sign: 0..42 949 667 295
	Hexadecimal	Cannot be stored as BCD or real number
		1 word: 0..FFFF Double word: 0..FFFF FFFF
	Binary	Cannot be stored as BCD or real number
1 word: 0..1111 1111 1111 1111 Double word: 0..1111 1111 1111 1111 1111 1111 1111 1111		
Octal	Cannot be stored as BCD or real number	
1 word: 0..177 777 Double word: 0..37 777 777 777		
Date display	27 different formats	
Time display	8 different formats	
Special functions	<ul style="list-style-type: none"> - 3 buzzer types: Continuous, short interval, long interval - Control via memory addresses: \$SB12..\$SB14 - Buzzer "OFF" with "Buzzer Stop" command key or by deleting \$SB12..\$SB14 - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Buzzer in fault condition or if \$SB12..\$SB14 set - OFF: No buzzer - ERR ON: Buzzer only in fault condition 	
Input buzzer	<ul style="list-style-type: none"> - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Short interval buzzer when touch key is pressed - OFF: No buzzer when touch key is pressed 	

Specifications (Continued)

Setting and monitor functions	Monitoring of system settings: The status of the system settings can be displayed in the system menu
	Communication test: With simple data transfer
	Initialise data: The user program stored in the Control Terminal can be deleted from the system menu
	Operating messages / fault messages / alarm/event list / data logging: Settings for logging and logged data can be displayed
	Display function for user program / screen pages: The user program / screen pages can be displayed in the system menu
Battery-backed data	Hardware test: Hardware functions can be tested
	Operating messages / fault messages / alarm/event list / data logging: Calendar, clock, settings
Calendar clock	Current date and time display: Display and setting: Control Terminal system menu or NSDesigner
PLC monitoring	Max. monthly deviation: -39..+65 s at 25°C ambient temperature
	CPM2A, CPM2C, CQM1, CQM1H, C200HS/HE/HG/HX, CS1G/H and CJ1G/H
Data transfer	System software: Upload or download in Memory Cards
History storage	User software: Upload or download in Memory Cards or NS Designer
	Operating messages / fault messages / alarm/event list / data logging: Can be stored in Memory Cards

Programming, Accessories and Documentation

Programming

Description	Cable length	Model code
NS Designer. Programming software for NS Control Terminals. - see page 452	-	NS-NSDC1
Programming cable, Control Terminal <-> PC, RS-232C	-	XW2Z-S002*



Memory Card	Description	Size	Model code
	Flash Memory Card	15 MB	HMC-EF172
		30 MB	HMC-EF372
		64 MB	HMC-EF672
	PC adapter	PCMCIA	HMC-AP001

Accessories, cables etc.

Anti-glare hood reduces reflected glare to less than 3%	-	NS7-KBA04
Protective cover against chemical substances	-	NS7-KBA05
Backup battery	-	CPM2A-BAT01
Converter Unit, RS-232C	-	NS-AL002
Replacement set of mounting clamps	-	NT20S-ATT01
Connecting cable, Control Terminal <-> SYSMAC PLC, RS-232C	2 m	XW2Z-200T*
	5 m	XW2Z-500T*

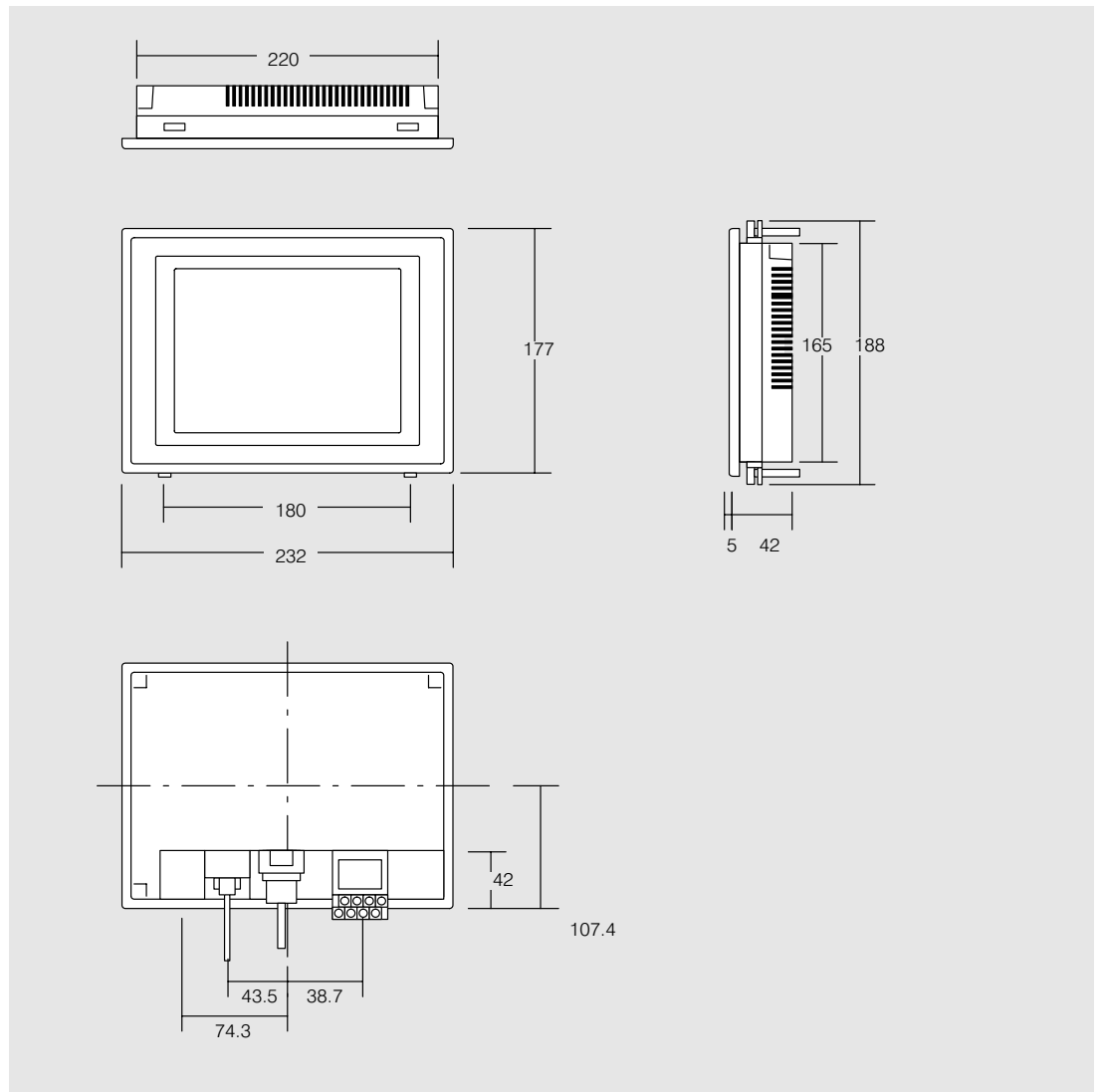
Technical Documentation

English Documentation	Product	Title	Model code
	Programmable Terminal NS7/10/12	Quick Start Manual	V081-E1
		Setup Manual	V072-E1
		Programming Manual	V073-E1
		Operation Manual	V074-E1

* Please compare these articles with the selection available in your country.

Dimensions (mm)

NS7



General

The NS10 has the same panel cut as the NS12 but has a 10.4 inch screen diagonal. The 640x480 pixel TFT colour screen provides a highly luminous, contrast-rich image that is easy to read even from extreme viewing angles. The touch fields are based on a close-mesh grid that provides generous scope for the design of buttons and spaces. The use of memory cards not only enables user programs to be exchanged between the control terminal and a PC, but also buffered alarm lists, operating data and process parameters for the creation of reports can be transferred to the Memory Card.

Excellent communication with PLCs across serial interfaces or networks with FINS commands. Control via serial ports or via networks.

- 256 colours, high luminosity, wide viewing angle
- Graphic character display for use worldwide
- Local communication via 2x RS-232C ports
- Network communication via Ethernet or CLK
- Memory card for program and data transfer
- Data transfer from/to data formats: RTF, CSV, TXT, BMP, JPEG
- Macros for expansion of functionality
- Flat and lightweight construction, protection class IP65(F)
- Video camera input (optional)
- Password protection
- Programming with NS Designer
- NT user programs are easily convertible



Performance Data (max. values)

	NS10-TV00_	NS10-TV01_
TFT display (256 colours)	Yes	Yes
STN display (256 colours)	-	-
Terminal size	315x241x49 mm	315x241x49 mm
Display size	211.2x185.4 mm (10.4 inch)	211.2x185.4 mm (10.4 inch)
Number of screen pixels	640x480 pixel	640x480 pixel
Number of lines/characters	60/80	60/80
Number of touch fields	1200 (40x30)	1200 (40x30)
Memory	4 MB (expandable up to 20 MB)	4 MB (expandable up to 20 MB)
Max. screen pages	4000	4000
Pop-up windows	Yes	Yes
Numerical entry	Yes	Yes
Text entry	Yes	Yes
Bar graph/analogue meter	Yes	Yes
Trend/line diagram	Yes	Yes
Alarm handling	Yes	Yes
Data block management	Yes	Yes
Arithmetic	Yes	Yes
Real-time clock/date	Yes	Yes
PLC programming/monitoring	With NS-EXT0. Ladder Monitoring software	With NS-EXT0. Ladder Monitoring software
Serial port	2x RS-232C, port A and B	2x RS-232C, port A and B
Ethernet	-	10BaseT
Controller Link	With NS-CLK21 Module	With NS-CLK21 Module
Printer interface	-	-
Macro programming	Yes	Yes
Multilingual user program	Yes	Yes
Password	5 levels	5 levels
Video camera input	With NS-CA001 Module	With NS-CA001 Module

Communication

	NS10-TV00_	NS10-TVS01_
DeviceNet	-	-
Host Link	-	-
1:1 NT Link	Port A and B, with RS-232C	Port A and B, with RS-232C
1:n NT Link	Port A or B, with RS-232C n=1	Port A or B, with RS-232C n=1
FINS	NS-CLK21 (via optional module)	Ethernet, 10BaseT, NS-CLK21 (via optional module)
ASCII protocol	-	-
PLC driver	OMRON	OMRON

System Configuration

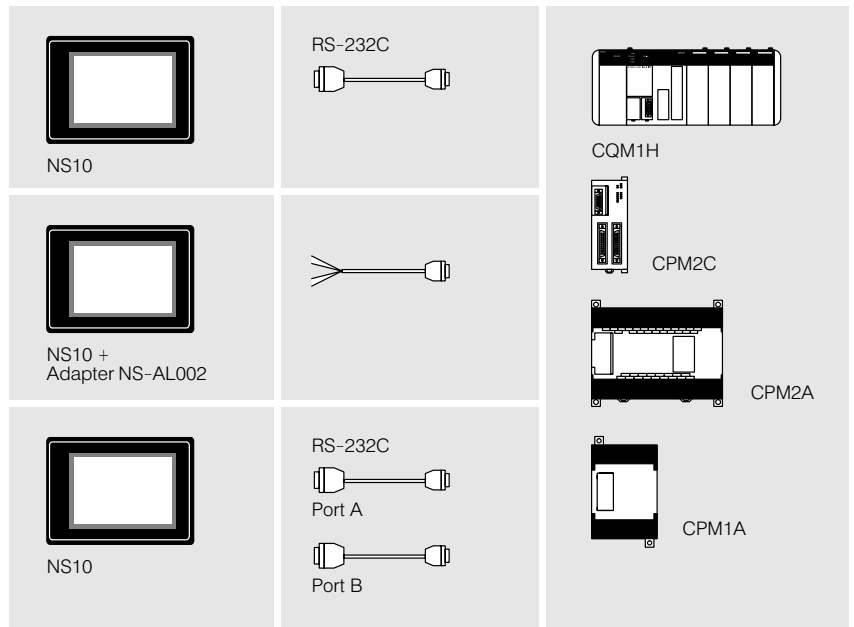
1:1 NT Link

High speed data exchange between the HMI Terminal and an OMRON PLC with the aid of the 1:1 NT Link communication protocol.

Both serial ports, port A and port B, can use the 1:1NT Link protocol simultaneously.

The following OMRON PLC systems feature a 1:1NT Link:

- CPM1A
- CPM2A
- CPM2C
- CQM1H

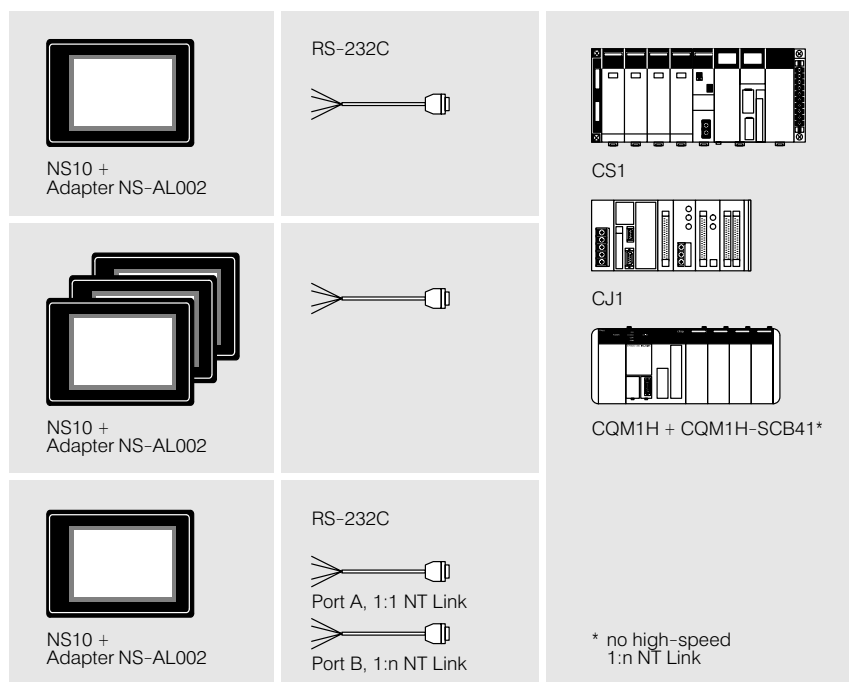


1:n NT Link and high-speed 1:n NT Link

1:n-NT Link can be used on port A or port B. The other port can use 1:1 NT Link at the same time.

The following OMRON PLC systems feature 1:nNTLink:

- CQM1H with CQM1H-SCU41
max. 8 Control Terminals
- CJ1 with NS-AL002 or CJ1W-SCU41
max. 8 Control Terminals
- CS1 with CS1W-SCB41
max. 8 Control Terminals



System Configuration (Continued)

Network configuration

Ethernet or Controller Link

Use of Ethernet allows N:M connection, i.e. multiple NS terminals can communicate with multiple PLC's simultaneously.

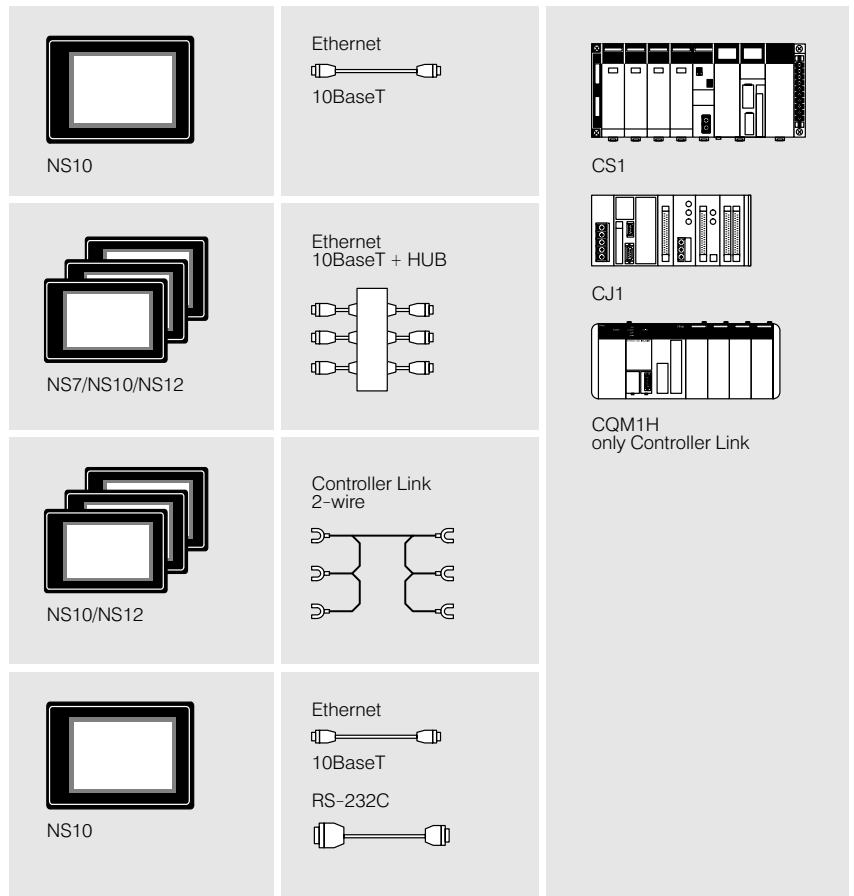
On a serial interface 1:n NT Link can be used at the same time.

The following OMRON PLC systems feature FINS or Ethernet:

- CS1 with CS1W-ETN11
- CJ1 with CJ1W-ETN11

The following OMRON PLC systems feature FINS with Controller Link:

- CS1 with CS1W-CLK21
- CJ1 with CJ1W-CLK21
- CQM1H with CQM1H-CLK21



Product Overview



NS Control Terminal

- Touch-screen
- TFT colour display, 256 colours
- Communication:
1:1 NT Link
1:n NT Link

Model code

- Housing in beige
- Housing in black

NS10-TV00 NS10-TV00B

Display size	211.2x158.4 mm (10.4 inch)
Number of screen pixels	640x480 pixel
Number of lines/characters	60/80
Number of touch fields	1200 (40x30)
Memory	4 MB (expandable with 8/16 MB)
Ports	2x RS-232C Expansion port
Operating voltage	24 VDC (20.4..27.6 V), 20 W
Degree of protection	IP65 (front side)

NS Control Terminal

- Touch-screen
- TFT colour display, 256 colours
- Communication:
1:1 NT Link
1:n NT Link
Ethernet

Model code

- Housing in beige
- Housing in black

NS10-TV01 NS10-TV01B

Display size	211.2x158.4 mm (10.4 inch)
Number of screen pixels	640x480 pixel
Number of lines/characters	60/80
Number of touch fields	1200 (40x30)
Memory	4 MB (expandable with 8/16 MB)
Ports	2x RS-232C Expansion port
Network	Ethernet, 10BaseT
Operating voltage	24 VDC (20.4..27.6 V), 20 W
Degree of protection	IP65 (front side)

Specifications

System data

		NS10-TV00	NS10-TV01
Display specification	Display	<ul style="list-style-type: none"> - High-resolution TFT colour display - 256 colours - 640x480 pixels - Active area: 215.2x162.4 mm - Screen diagonal: 10.4 inch 	
	Viewing angle	Horizontal: ±60°, Vertical: +35..-65°	
	Backlighting	<ul style="list-style-type: none"> - 50,000 hours until 50% brightness - Brightness: adjustable on 3 levels - Fault message 	
	Function displays (LED)	Green, continuous Green, flashing Orange, continuous Orange, flashing Red, flashing	Normal operation Data transfer with Memory Card completed normally Fault in backlighting detected after power-on System check Battery discharged Offline mode Data transfer with Memory Card active Data transfer with Memory Card failed
Touch-screen	Touch type	Max. 1200 touch fields per screen page, 40 (horizontal) x 30 (vertical), pressure sensitive	
	Min. pressure force	100 g	
	Life expectancy	100,000,000 operations	

Specifications (Continued)

		NS10-TV00	NS10-TV01
Ports	Expansion Memory Board	<ul style="list-style-type: none"> - 1 slot for Memory Expansion Cards - User data storage can be expanded by 8 or 16 MB 	
	Memory Card	<ul style="list-style-type: none"> - 1 slot for ATA Compact Flash 8..48 MB - Storage and transfer of user programs, such as alarm and operating data 	
	Expansion port	For future function expansions (Video, CLK)	
	Serial port	2x RS-232C (9-pin D-sub female) with NS-AL002 in 2x RS-485 (screw terminals) convertible	
	Ethernet	Standard Medium Connector Distance	-
1:1 NT Link	Communication process	RS-232C, RS-485	
	Connection	Serial port A: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485 Serial port B: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485	
	Number of devices	1	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
1:n NT Link	Communication process	RS-485 (n=1..8) RS-485 or RS-232C (n=1)	
	Connection	2-wire (RS-485), serial port A or B via NS-AL002 (screw terminals)	
	Number of devices	1..8	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
N:M Network communication	Networks	-	Ethernet, Controller Link with additional module
Barcode reader	Communication process	RS-232C	
	Communication settings	Start/stop synchronisation Communication speed: 4800, 9600, 19200 baud Data length: 7 or 8 bits Stop bits: 1 or 7 bits Parity: none, even, uneven Data flow control: RTS/CTS	
	Connection	Serial port A or B: 9-pin D-sub female, RS-232C	
	Number of devices	1	
	Transmission distance	Max. 15 m	
	Communication protocol	"No-protocol" mode	
	Data Format	<STX> <0..40 byte> <ETX>	
	Power supply	Internal on pin 6, 5 V ±5%, max. 250 mA, max. cable length 2 m External depending on barcode reader specification	

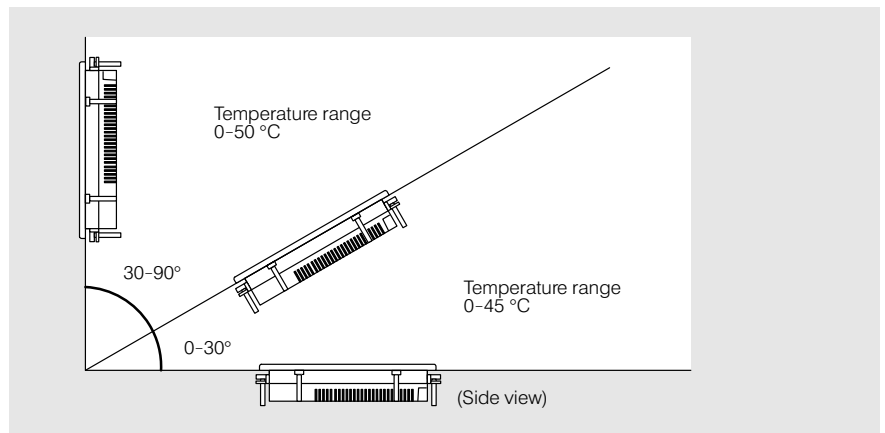
Specifications (Continued)

General data

Operating voltage	24 VDC (20.4..27.6 VDC), ±15%	
Power consumption	20 W max.	
Battery life	5 years at 25°C - SRAM and real-time clock buffering 5 days after "Battery low" display - 5 minutes after removing the old batteries during battery replacement - Display, RUN - LED, orange	
Noise immunity	According to IEC 61000-4-4, 2 kV	
Vibration resistance	10..57 Hz with 0.075 mm amplitude 57..150 Hz with IG acceleration (9.81 m/s ²) for 30 min on X, Y and Z axes	
Shock resistance	147 m/s ² , 3 times on X, Y and Z axes	
Ambient temperature	Operation Storage	0..50 °C (see graphic "Reduced Temperature Range" and "Operating Conditions") -20..+60 °C
Ambient humidity	0..40 °C 40..50 °C	35%..85% (without condensation) 35%..60% (without condensation)
Operating environment	No corrosive gases	
Degree of protection	Front plate: IP65F	
Approvals	CE, UL	
Dimensions	315x241x48.5 mm	
Panel cut-out	302x228 mm, sheet thickness 1.6..4.8 mm	
Weight	Max. 2.5 kg	

Reduced Temperature Range

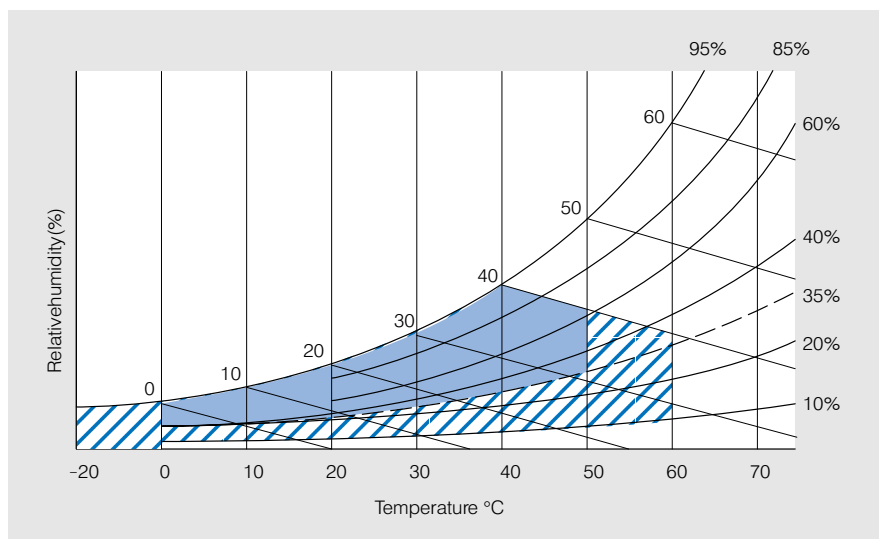
For an installation angle between 0..30° the temperature range is reduced to 0..45°.



Operating Conditions

Operation and storage depend on ambient temperature and humidity.

- Operation
- Storage



Specifications (Continued)

Software-dependent system data

Display specification, function objects	Number	1024 function objects per screen can be assigned in windows and tables
	Touch fields for bit control	Format: Rectangle, circle, 2-colour rectangle, style selectable Mode: Scanning, On/Off, On, Off
	Touch fields for word control	Format: Rectangle, style selectable Mode: Numerical entry, increment, decrement, popup menu display Value range: Word, double word, floating point number
	Touch fields for command functions	Mode: Screen changeover, keyboard switch, popup window control, system menu display, buzzer off, Return
	Lamps with bit control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable
	Lamps with word control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable Colours: Up to 10 colours can be triggered
	Numeric display and input	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: Keyboard or command keys
	Graphic character display and input	Format: Multibyte code (Shift+JIS), unicode up to 256 characters Input: Keyboard, command keys or barcode reader
	Text objects	Fixed text display or indirectly controlled, 256 characters File name: 8 characters + .TXT
	Pick list objects	File name: 8 characters + .LST Function by selection, display/hide Store selected number of lines of numbers under spec. address Store selected number of lines of text characters under spec. address Format: Multibyte code (Shift+JIS), unicode up to 256 characters Max. number of displayed lines 1024
	Thumbwheel	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: + and - Switch
	Analogue display	Orientation: Up, down, left, right Tendency: Rising clockwise/counter-clockwise Format: Quarter circle, semicircle, circle Format: Coloured area, display pointer
	Bar graph	Orientation: Bottom up, top down, Left to right, right to left
	Line diagram	- Max. number of points per line diagram: 256 - Max. number of graphs per diagram: 256
	Bit maps	- Supported data formats: BMP, JPEG (no RLE or progressive JPEG) - Max. data quantity: 1 MB
	Alarm/event display	- Fixed text display or continuous text - Max. number of displayed objects: 500
	Alarm/event history	Display: Current alarm/events Alarm/event history: 2048 entries
	Date display	Date display (year, month, day), 27 display formats
	Time display	Time display (hours, minutes, seconds), 8 display formats
	Data logging diagrams	- Number of measurement points: 1..100 - Data log per project: 32 groups - Max. number of addresses for 1 log group: 16 - Max. number of addresses for 1 standard log: 50
	Fixed graphic	Rectangles, circles, ellipses, quadrants, polygons, lines, polygonal lines (display in every position)
	Window	- Max. 10 per screen page - Max. 256 functional objects per window (the total number of functional objects must not exceed 1024 screen page)
	Tables	Horizontal: 30 columns Vertical: 40 lines Function objects per table: max. 256 Number of tables: arbitrary (provided that the number of function objects does not exceed 1024 screen page)
	Libraries	Up to 4096 libraries can be stored

Specifications (Continued)		
Display specification, Function objects	Screen pages of user program	- Max. 4000 screens (including pop-up screens) per project - Up to 3 popup screens can be superimposed
	Tables	- Max. 10 tables per project - Max. 10 tables per screen - Max. 1024 function and fixed objects per table
	Title block for touch switch	Up to 16 per touch switch
	Background graphics	- Supported data formats: BMP, JPEG (no RLE or progressive JPEG) - Max. data quantity: 1 MB
	Background colours	256
	User program	Created with NS Designer and transferred to the terminal with Data Transfer function
Specification for display elements	Text characters	Fixed and proportional fonts
	Fixed fonts	Course resolution Latin, Katakana 8x8 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Standard resolution Latin, Katakana 8x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 16x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Fine resolution Latin, Katakana 16x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 32x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
	Proportional fonts (only for text objects)	All fonts, attributes and sizes that can be displayed by the NS Designer
	Text attributes	Colours
Font style		Bold, italic
Vertical position		Top, centre and bottom
Horizontal position		Left, centre, right
Flashing	Function objects	- Function objects and fixed objects of 10 different flash sequences can be selected - Flashing speed and range adjustable
	Fixed objects	- 3 different flash sequences can be selected - Flashing speed and range adjustable
Unit/scaling settings	Up to 1000	
Alarm/event settings	500	
Display colours	256	
Numeric display and memory formats	Decimal	Can be stored as BCD or real number
		1 word with sign: -32 768..32 767 Without sign: 0..65 535 Double word with sign: -2 147 483 648..2 147 483 647 Without sign: 0..42 949 667 295
	Hexadecimal	Cannot be stored as BCD or real number
		1 word: 0..FFFF Double word: 0..FFFF FFFF
	Binary	Cannot be stored as BCD or real number
1 word: 0..1111 1111 1111 1111 Double word: 0..1111 1111 1111 1111 1111 1111 1111 1111		
Octal	Cannot be stored as BCD or real number	
Date display	27 different formats	
Time display	8 different formats	
Special functions	<ul style="list-style-type: none"> - 3 buzzer types: Continuous, short interval, long interval - Control via memory addresses: \$SB12..\$SB14 - Buzzer "OFF" with "Buzzer Stop" command key or by deleting \$SB12..\$SB14 - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Buzzer in fault condition or if \$SB12..\$SB14 set - OFF: No buzzer - ERR ON: Buzzer only in fault condition 	
Input buzzer	<ul style="list-style-type: none"> - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Short interval buzzer when touch key is pressed - OFF: No buzzer when touch key is pressed 	

Specifications (Continued)

Setting and monitor functions	Monitoring of system settings: The status of the system settings can be displayed in the system menu
	Communication test: With simple data transfer
	Initialise data: The user program stored in the Control Terminal can be deleted from the system menu
	Operating messages / fault messages / alarm/event list / data logging: Settings for logging and logged data can be displayed
	Display function for user program / screen pages: The user program / screen pages can be displayed in the system menu
	Hardware test: Hardware functions can be tested
Battery-backed data	Operating messages / fault messages / alarm/event list / data logging: Calendar, clock, settings
Calendar clock	Current date and time display: Display and setting: Control Terminal system menu or NS Designer
	Max. monthly deviation: -39..+65 s at 25°C ambient temperature
PLC monitoring	CPM2A, CPM2C, CQM1, CQM1H, C200HS/HE/HG/HX, CS1G/H and CJ1G/H
Data transfer	System software: Upload or download in Memory Cards
	User software: Upload or download in Memory Cards or NS Designer
History storage	Operating messages / fault messages / alarm/event list / data logging: Can be stored in Memory Cards

Programming, Accessories and Documentation

Programming

Description	Cable length	Model code
NS Designer. Programming software for NS Control Terminals - see page 452	-	NS-NSDC1
Programming cable, Control Terminal <-> PC, RS-232C	2 m	XW2Z-S002*



Memory Card	Description	Size	Model code
	Flash Memory Card	30 MB	HMC-EF372
		64 MB	HMC-EF672
	PC adapter	PCMCIA	HMC-AP001
Expansion Memory Board	User program	8 MB	NS-MF081
	Expansion Memory Board	16 MB	NS-MF161
Expansion Module	Controller Link interface	-	NS-CLK21
	Video camera input	-	NS-CA001
	Cable for F150 Vision Mate Controller	2 m 5 m	F150-VKP

Accessories, cables etc.

Anti-glare hood reduces reflected glare to less than 3%	-	NS12-KBA04
Protective cover against chemical substances	-	NS12-KBA05
Backup battery	-	C500-BAT08
Converter Unit, RS-232C	-	NS-AL002
Replacement set of mounting clamps	-	NT20S-ATT01
Connecting cable, Control Terminal <-> SYSMAC PLC, RS-232C	2 m	XW2Z-200T*
	5 m	XW2Z-500T*

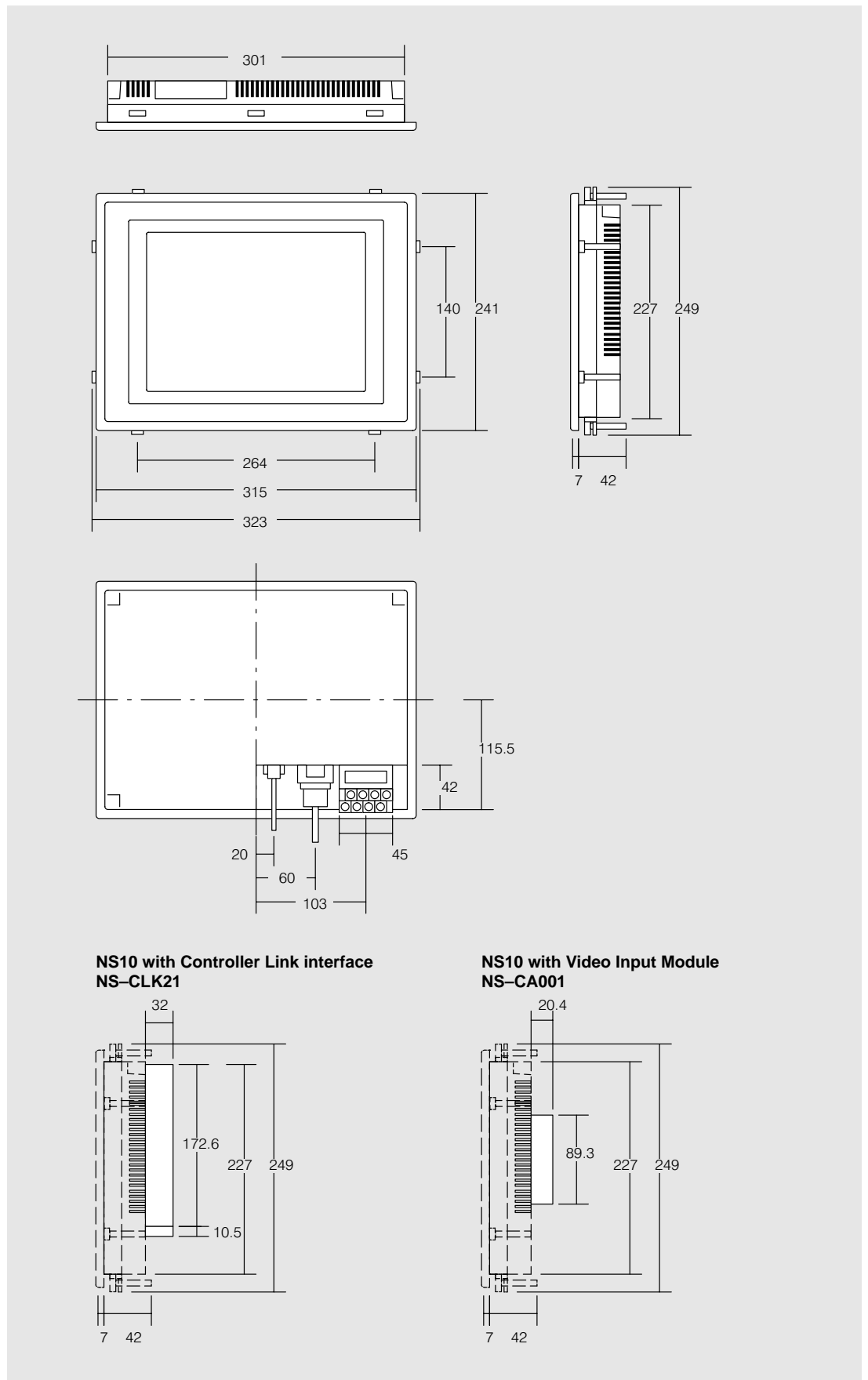
Technical Documentation

English Documentation	Product	Title	Model code
	Programmable Terminal NS7/10/12	Quick Start Manual	V081-E1
		Setup Manual	V072-E1
		Programming Manual	V073-E1
		Operation Manual	V074-E1

* Please compare these articles with the selection available in your country.

Dimensions (mm)

NS10



General

The NS12 with its 12 inch screen diagonal is the largest in the NSAdvancedHMI Terminal family. The 800x600 pixel TFT colour screen provides a highly luminous, contrast-rich image that is easy to read even from extreme viewing angles. The touch fields are based on a close-mesh grid that provides generous scope for the design of buttons and spaces.

The use of memory cards not only enables user programs to be exchanged between the control terminal and a PC, but also buffered alarm lists, operating data and process parameters for the creation of reports can be transferred to the Memory Card.

Excellent communication with PLCs across serial interfaces or networks with FINS commands. Control via serial ports or via networks.

- 256 colours, high luminosity, wide viewing angle
- Graphic character display for use worldwide
- Local communication via 2x RS-232C ports
- Network communication via Ethernet or CLK
- Memory card for program and data transfer
- Data transfer from/to data formats: RTF, CSV, TXT, BMP, JPEG
- Macros for expansion of functionality
- Flat and lightweight construction, protection class IP65(F)
- Video camera input (optional)
- Password protection
- Programming with NS Designer
- NT user programs are easily convertible



Performance Data (max. values)

	NS12-TS00_	NS12-TS01_
TFT display (256 colours)	Yes	Yes
STN display (256 colours)	-	-
Terminal size	315x241x49 mm	315x241x49 mm
Display size	246.0x184.5 mm (12.1 inches)	246.0x184.5 mm (12.1 inches)
Number of screen pixels	800x600 pixel	800x600 pixel
Number of lines/characters	75/100	75/100
Number of touch fields	1900 (50x38)	1900 (50x38)
Memory	4 MB (expandable up to 20 MB)	4 MB (expandable up to 20 MB)
Max. screen pages	4000	4000
Pop-up windows	Yes	Yes
Numerical entry	Yes	Yes
Text entry	Yes	Yes
Bar graph/analogue meter	Yes	Yes
Trend/line diagram	Yes	Yes
Alarm handling	Yes	Yes
Data block management	Yes	Yes
Arithmetic	Yes	Yes
Full graphics capabilities	Yes	Yes
Real-time clock/date	Yes	Yes
PLC programming/monitoring	With NS-EXT01, Ladder Monitoring software	With NS-EXT01, Ladder Monitoring software
Serial port	2x RS-232C, port A and B	2x RS-232C, port A and B
Ethernet	-	10BaseT
Controller Link	With NS-CLK21 Module	With NS-CLK21 Module
Macro programming	Yes	Yes
Multilingual user program	Yes	Yes
Password	5 levels	5 levels
Video camera input	With NS-CA001 Module	With NS-CA001 Module

Communication

	NS12-TS00_	NS12-TS01_
DeviceNet	-	-
Host Link	-	-
1:1 NT Link	Port A and B, with RS-232C	Port A and B, with RS-232C
1:n NT Link	Port A or B, with RS-232C n=1	Port A or B, with RS-232C n=1
FINS	NS-CLK21 (via optional module)	Ethernet, 10BaseT, NS-CLK21 (via optional module)
PLC driver	OMRON	OMRON

System Configuration

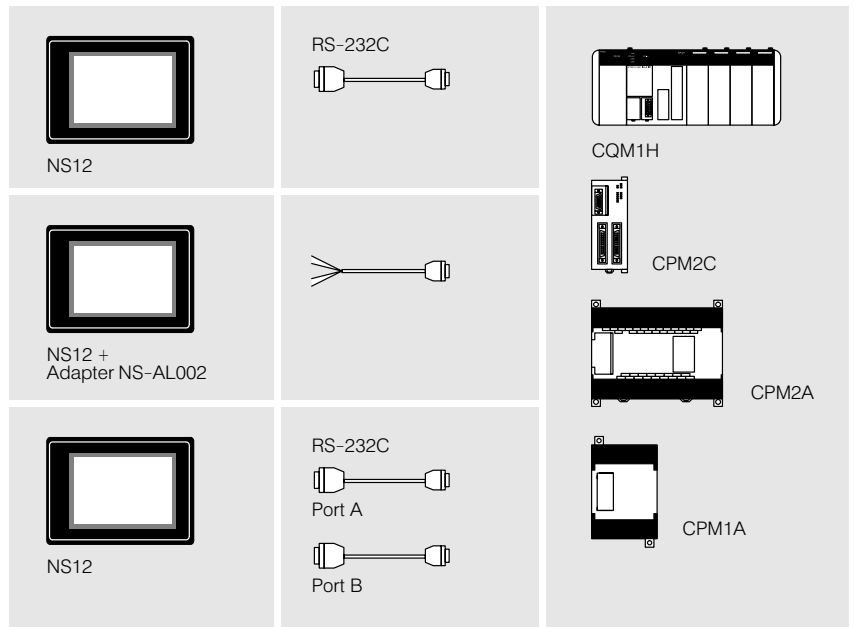
1:1 NT Link

High speed data exchange between the HMIT terminal and an OMRON PLC with the aid of the 1:1 NT Link communication protocol.

Both serial ports, port A and port B, can use the 1:1NT Link protocol simultaneously.

The following OMRON PLC systems feature a 1:1NT Link:

- CPM1A
- CPM2A
- CPM2C
- CQM1H

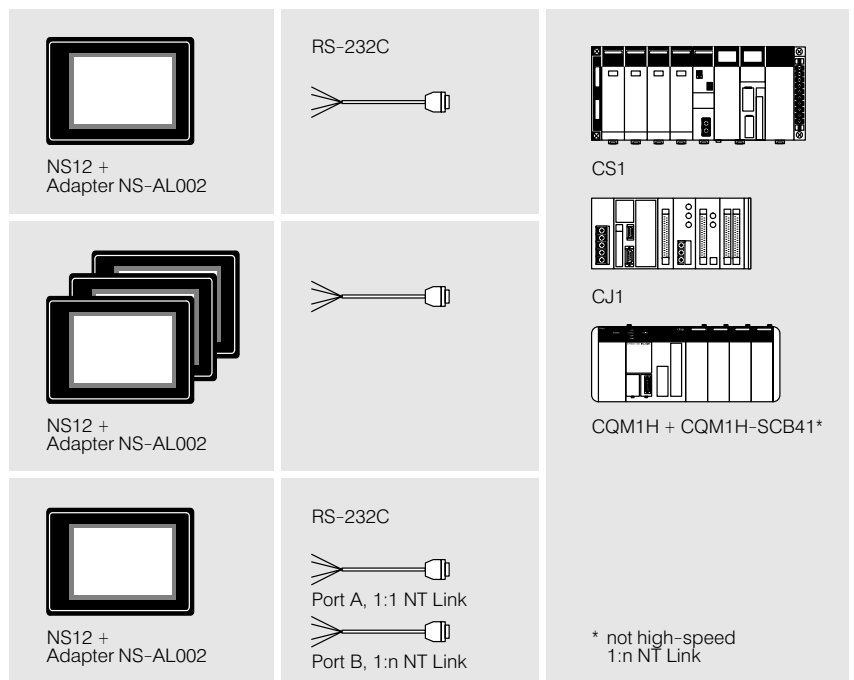


1:n NT Link and high-speed 1:n NT Link

1:n-NT Link can be used on port A or port B. The other port can use 1:1 NT Link at the same time.

The following OMRON PLC systems feature a 1:n NT Link:

- CQM1H with CQM1H-SCU41
max. 8 Control Terminals
- CJ1 with NS-AL002 or CJ1W-SCU41
max. 8 Control Terminals
- CS1 with CS1W-SCB41
max. 8 Control Terminals



System Configuration (Continued)

Network configuration

Ethernet or Controller Link

Use of Ethernet allows N:M connection, i.e. multiple NS terminals can communicate with multiple PLC's simultaneously.

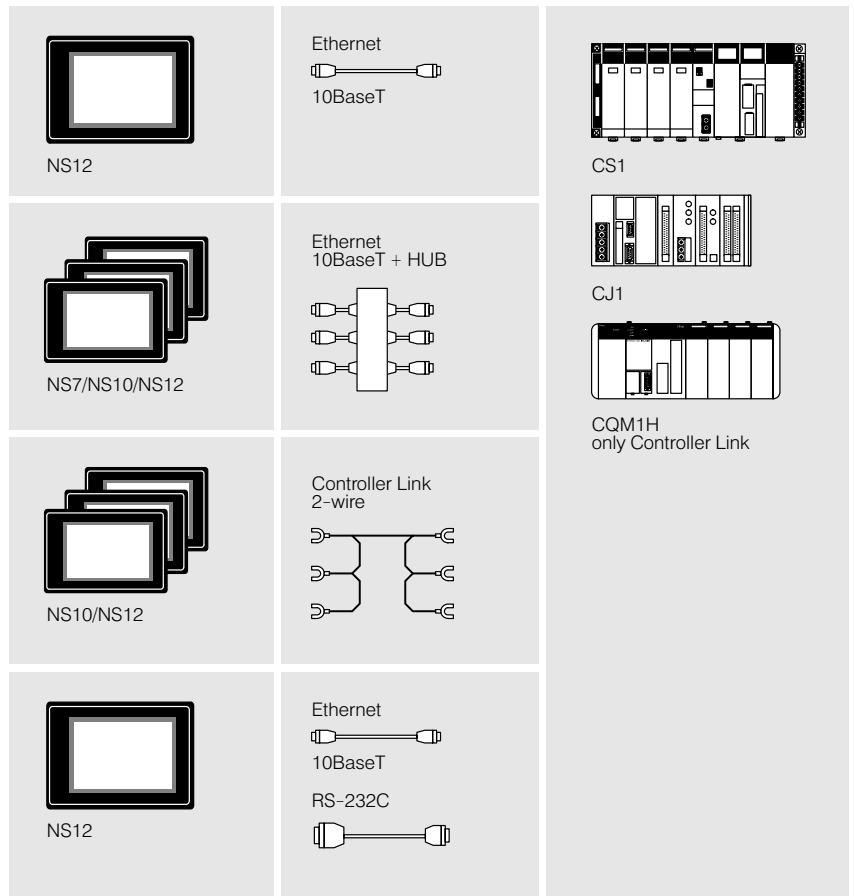
On a serial interface 1:n NT Link can be used at the same time.

The following OMRON PLC systems feature FINS or Ethernet:

- CS1 with CS1W-ETN11
- CJ1 with CJ1W-ETN11

The following OMRON PLC systems feature FINS with Controller Link:

- CS1 with CS1W-CLK21
- CJ1 with CJ1W-CLK21
- CQM1H with CQM1H-CLK21



Product Overview



NS Control Terminal - Touch-screen - TFT colour display, 256 colours - Communication: 1:1 NT Link 1:n NT Link	Model code - Housing in beige - Housing in black	NS12-TS00 NS12-TS00B
	Display size	246.0x184.5 mm (12.1 inch)
	Number of screen pixels	800x600 pixel
	Number of lines/characters	75/100
	Number of touch fields	1900 (50x38)
	Memory	4 MB (expandable with 8/16 MB)
	Ports	2x RS-232C Expansion port
	Operating voltage	24 VDC (20.4..27.6 V), 20 W
	Degree of protection	IP65 (front side)
	NS Control Terminal - Touch-screen - TFT colour display, 256 colours - Communication: 1:1 NT Link 1:n NT Link Ethernet	Model code - Housing in beige - Housing in black
Display size		246.0x184.5 mm (12.1 inch)
Number of screen pixels		800x600 pixel
Number of lines/characters		75/100
Number of touch fields		1900 (50x38)
Memory		4 MB (expandable with 8/16 MB)
Ports		2x RS-232C Expansion port
Network		Ethernet, 10BaseT
Operating voltage		24 VDC (20.4..27.6 V), 20 W
Degree of protection		IP65 (front side)

Specifications

System data

		NS12-TS00	NS12-TS01
Display specification	Display	- High-resolution TFT colour display - 256 colours - 800x600 pixels - Active area: 246.0x184.4 mm - Screen diagonal: 12.1 inch	
	Viewing angle	Horizontal: ±60°, Vertical: +45...-55°	
	Backlighting	- Life min. 50,000 h - Brightness: adjustable on 3 levels - Fault message	
	Function displays (LED)	Green, continuous Green, flashing Orange, continuous Orange, flashing Red, flashing	Normal operation Data transfer with Memory Card completed normally Fault in backlighting detected after power-on System check Battery discharged Offline mode Data transfer with Memory Card active Data transfer with Memory Card failed
Touch-screen	Touch type	Max. 1900 touch fields per screen page, 50 (horizontal) x 38 (vertical), pressure sensitive	
	Min. pressure force	100 g	
	Life expectancy	100,000,000 operations	

Specifications (Continued)

System data

		NS12-TS00	NS12-TS01
Ports	Expansion Memory Board	<ul style="list-style-type: none"> - 1 slot for Expansion Memory Boards - User data storage can be expanded by 8 or 16 MB 	
	Memory Card	<ul style="list-style-type: none"> - 1 slot for ATA Compact Flash 8..48 MB - Storage and transfer of user programs, such as alarm and operating data 	
	Expansion port	for future function expansions (Video, CLK)	
	Serial port	2x RS-232C (9-pin D-sub female) with NS-AL002 in 2x RS-485 (screw terminals) convertible	
	Ethernet Standard Medium Connector Distance	<ul style="list-style-type: none"> - IEEE 802.3, 10BaseT - Twisted line, 2-core - RJ45 - 100 m, node <-> hub, hub <-> hub 	
1:1 NT Link	Communication process	RS-232C, RS-485	
	Connection	Serial port A: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485 serial port B: 9-pin D-sub female, RS-232C; with NS-AL002 RS-485	
	Number of devices	1	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
1:n NT Link	Communication process	RS-485 or RS-232C (n=1)	
	Connection	2-wire (RS-485), serial port A or B via NS-AL002 (screw terminals)	
	Number of devices	1..8	
	Transmission distance	Max. 15 m (RS-232C), max. 500 m (RS-485)	
M:N Network communication	Networks	<ul style="list-style-type: none"> - FINS - Ethernet, Controller Link with additional module 	
Barcode reader	Communication process	RS-232C	
	Communication settings	Start/stop synchronisation Communication speed: 4800, 9600, 19200 baud Data length: 7 or 8 bit Stop bits: 1 or 7 bits Parity: none, even, uneven Data flow control: RTS/CTS	
	Connection	Serial port A or B: 9-pin D-sub female, RS-232C	
	Number of devices	1	
	Transmission distance	Max. 15 m	
	Communication protocol	"No-protocol" mode	
	Data Format	<STX> <0..40 byte> <ETX>	
	Power supply	Internal on pin 6, 5 V ±5%, max. 250 mA	

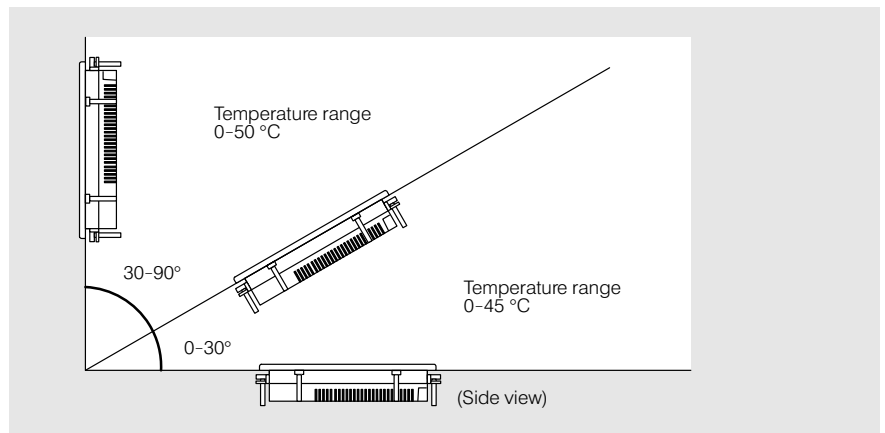
Specifications (Continued)

General data

Operating voltage	24 VDC (20.4..26.4 VDC), ±15%	
Power consumption	20 W max.	
Battery life	5 years at 25°C - SRAM and real-time clock buffering 5 days after "Battery low" display - 5 minutes after removing the old batteries during battery replacement - Display, RUN - LED, orange	
Noise immunity	According to IEC 61000-4-4, 2 kV	
Vibration resistance	10..57 Hz with 0.075 mm amplitude 57..150 Hz with IG acceleration (9.8 m/s ²) for 60 min on X, Y and Z axes	
Shock resistance	147 m/s ² , 3 times on X, Y and Z axes	
Ambient temperature	Operation Storage	0..50 °C (see graphic "Reduced Temperature Range" and "Operating Conditions") -20..+60 °C
Ambient humidity	0..40 °C 40..50 °C	35%..85% (without condensation) 35%..60% (without condensation)
Operating environment	No corrosive gases	
Degree of protection	Front plate: IP65F	
Approvals	CE, c-UL	
Dimensions	315x241x48.5 mm	
Panel cut-out	302x228 mm, sheet thickness 1.6..4.8 mm	
Weight	Max. 2.5 kg	

Reduced Temperature Range

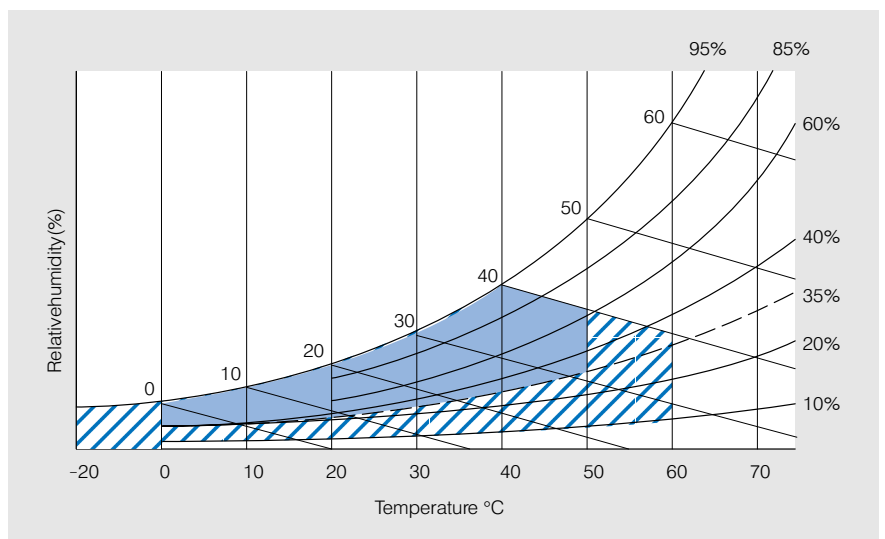
For an installation angle between 0..30° the temperature range is reduced to 0..45°.



Operating Conditions

Operation and storage depend on ambient temperature and humidity.

- Operation
- Storage



Specifications (Continued)

Software-dependent system data

Display specification, function objects	Number	1024 function objects per screen can be assigned in windows and tables
	Touch fields for bit control	Format: Rectangle, circle, 2-colour rectangle, style selectable Mode: Scanning, On/Off, On, Off
	Touch fields for word control	Format: Rectangle, style selectable Mode: Numerical entry, increment, decrement, popup menu display Value range: Word, double word, floating point number
	Touch fields for command function	Mode: Screen changeover, keyboard switch, popup window control, system menu display, buzzer off, Return
	Lamps with bit control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable
	Lamps with word control	Format: Single line rectangle, single line circle Double line rectangle, double line circle, style selectable Colours: Up to 10 colours can be triggered
	Numeric display and input	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: Keyboard or command keys
	Graphic character display and input	Format: Multibyte code (Shift+JIS), unicode up to 256 characters Input: Keyboard, command keys or barcode reader
	Text objects	Fixed text display or indirectly controlled, 256 characters File name: 8 characters + .TXT
	Selection list objects	File name: 8 characters + .LST Function by selection, display/hide Store selected number of lines of numbers under spec. address Store selected number of lines of text characters under spec. address Format: Multibyte code (Shift+JIS), unicode up to 256 characters Maximum number of displayed lines 1024
	Thumbwheel	Format: Up to 25 digits, 15 pre-decimal point and 10 post-decimal point digits (post-decimal point digits only if specified and for floating-point numbers) Input: + and - Switch
	Analogue display	Orientation: Up, down, left, right Tendency: Rising clockwise/counter-clockwise Format: Quarter circle, semicircle, circle Format: Coloured area, display pointer
	Bar graph	Orientation: Bottom up, top down, Right to left, left to right
	Line diagram	- Max. number of points per line diagram: 256 - Max. number of graphs per diagram: 256
	Bit maps	- Supported data formats: BMP, JPEG (no RLE or progressive JPEG) - Max. data quantity: 1MB
	Alarm/event display	- Fixed text display or continuous text - Max. number of displayed objects: 500
	Alarm/event history	Display: Current alarm/events Alarm/event history: 2048 entries
	Date display	Date display (year, month, day), 27 display formats
	Time display	Time display (hours, minutes, seconds), 8 display formats
	Data logging diagrams	- Number of measurement points: 1..100 - Data log per project: 32 groups - Max. number of addresses for 1 log group: 16 - Max. number of addresses for 1 standard log: 50
	Fixed graphic	Rectangles, circles, ellipses, quadrants, polygons, lines, polygonal lines (display in every position)
	Window	- Max. 10 per screen page - Max. 256 functional objects per window (the total number of functional objects must not exceed 1024 screen page)
	Tables	Horizontal: 30 columns Vertical: 40 lines Function objects per table: max. 256 Number of tables: arbitrary (provided that the number of function objects does not exceed 1024 screen page)
	Libraries	Up to 4096 libraries can be stored

Specifications (Continued)		
Display specification, function objects	Screen pages of user program	- Max. 4000 screens (including pop-up screens) per project. - Up to 3 popup screens can be superimposed
	Tables	- Max. 10 tables per project - Max. 10 tables per screen - Max. 1024 function and fixed objects per table
	Title block for touch switch	Up to 16 per touch switch
	Background graphics	- Supported data formats: BMP, JPEG (no RLE or progressive JPEG) - Max. data quantity: 1 MB
	Background colours	256
	User program	Created with NS Designer and transferred to the terminal with Data Transfer function
Specification for display elements	Text characters	Fixed and proportional fonts
	Fixed fonts	Course resolution Latin, Katakana 8x8 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Standard resolution Latin, Katakana 8x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 16x16 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
		Fine resolution Latin, Katakana 16x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8 JIS 1st and 2nd standard 32x32 pixel Zoom: 1x1, 1x2, 2x1, 2x2, 3x3, 4x4, 8x8
	Proportional fonts (only for text objects)	All fonts, attributes and sizes that can be displayed by the NS Designer
	Text attributes	Colours
Font style		Bold, italic
Vertical position		Top, centre and bottom
Horizontal position		Left, centre, right
Flashing	Function objects	- Function objects and fixed objects of 10 different flash sequences can be selected - Flashing speed and range adjustable
	Fixed objects	- 3 different flash sequences can be selected - Flashing speed and range adjustable
Unit/scaling settings	Up to 1000	
Alarm/event settings	500	
Display colours	256	
Numeric display and memory formats	Decimal	Can be stored as BCD or real number
		1 word with sign: -32 768..32 767 Without sign: 0..65 535 Double word with sign: -2 147 483 648..2 147 483 647 Without sign: 0..42 949 667 295
	Hexadecimal	Cannot be stored as BCD or real number
		1 word: 0..FFFF Double word: 0..FFFF FFFF
	Binary	Cannot be stored as BCD or real number
1 word: 0..1111 1111 1111 1111 Double word: 0..1111 1111 1111 1111 1111 1111 1111 1111		
Octal	Cannot be stored as BCD or real number	
1 word: 0..177 777 Double word: 0..37 777 777 777		
Date display	27 different formats	
Time display	8 different formats	
Special functions	<ul style="list-style-type: none"> - 3 buzzer types: Continuous, short interval, long interval - Control via memory addresses: \$SB12..\$SB14 - Buzzer "OFF" with "Buzzer Stop" command key or by deleting \$SB12..\$SB14 - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Buzzer in fault condition or if \$SB12..\$SB14 set - OFF: No buzzer - ERR ON: Buzzer only in fault condition 	
Input buzzer	<ul style="list-style-type: none"> - Settings by system menu: PT Operation Settings or NS Designer System Settings - ON: Short interval buzzer when touch key is pressed - OFF: No buzzer when touch key is pressed 	

Specifications (Continued)

Setting and monitor functions	Monitoring of system settings: The status of the system settings can be displayed in the system menu
	Communication test: With simple data transfer
	Initialise data: The user program stored in the Control Terminal can be deleted from the system menu
	Operating messages / fault messages / alarm/event list / data logging: Settings for logging and logged data can be displayed
	Display function for user program / screen pages: The user program / screen pages can be displayed in the system menu
	Hardware test: Hardware functions can be tested
Battery-backed data	Operating messages / fault messages / alarm/event list / data logging: Calendar, clock, settings
Calendar clock	Current date and time display: Display and setting: Control Terminal system menu or NS Designer
	Max. monthly deviation: -39..+65 s at 25°C ambient temperature
PLC monitoring	CPM2A, CPM2C, CQM1, CQM1H, C200HS/HE/HG/HX, CS1G/H and CJ1G/H
Data transfer	System software: Upload or download in Memory Cards
	User software: Upload or download in Memory Cards or NS Designer
History storage	Operating messages / fault messages / alarm/event list / data logging: Can be stored in Memory Cards

Programming, Accessories and Documentation

Programming

Description	Cable length	Model code
NS Designer. Programming software for NS Control Terminals - see page 452	-	NS-NSDC1
Programming cable, Control Terminal <-> PC, RS-232C	2 m	XW2Z-S002*



Memory Card	Description	Size	Model code
	Flash Memory Card	30 MB	HMC-EF372
		64 MB	HMC-EF672
	PC adapter	PCMCIA	HMC-AP001
Expansion Memory Board	User program	8 MB	NS-MF081
	Expansion Memory Board	16 MB	NS-MF161
Expansion Module	Controller Link interface	-	NS-CLK21
	Video camera input	-	NS-CA001
	Cable for F150 Vision Mate Controller	2 m 5 m	F150-VKP

Accessories, cables etc.

Anti-glare hood reduces reflected glare to less than 3%	-	NS12-KBA04
Protective cover against chemical substances	-	NS12-KBA05
Backup battery	-	C500-BAT08
Replacement set of mounting clamps	-	NT20S-ATT01
Connecting cable, Control Terminal <-> SYSMAC PLC, RS-232C	2 m	XW2Z-200T*
	5 m	XW2Z-500T*

Technical Documentation

English Documentation	Product	Title	Model code
	Programmable Terminal NS7/10/12	Quick Start Manual	V081-E1
		Setup Manual	V072-E1
		Programming Manual	V073-E1
		Operation Manual	V074-E1

* Please compare these articles with the selection available in your country.

Dimensions (mm)

NS12

