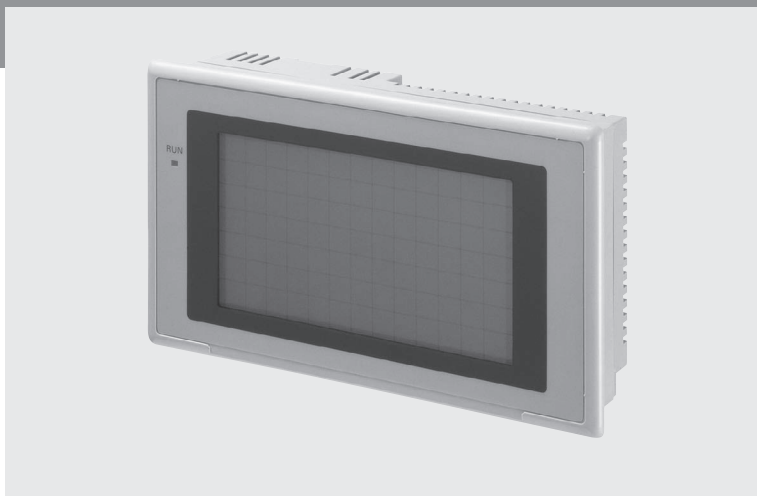


NT21

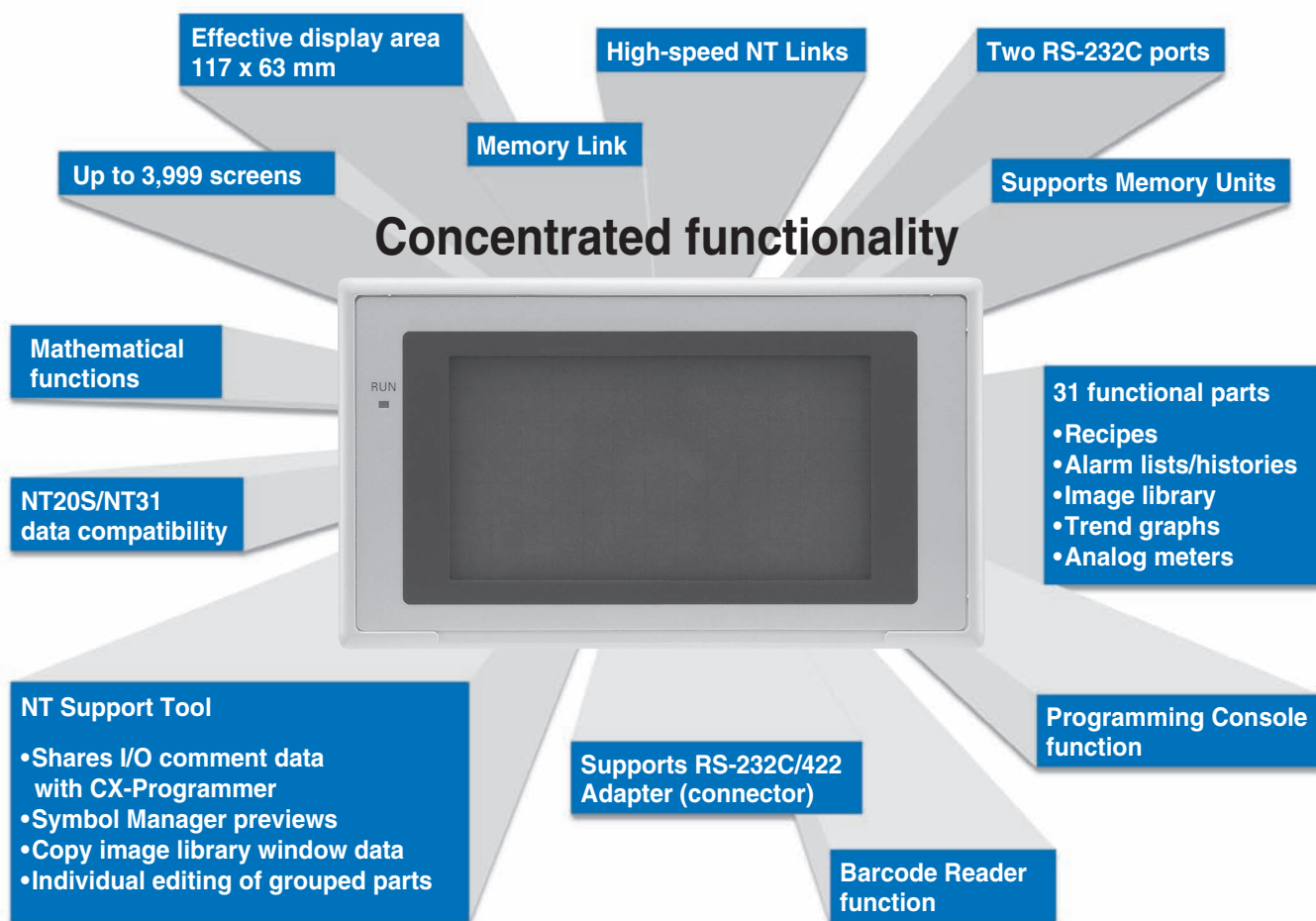
# NT series Touch Screen

Cost effective touch screen terminals to replace function key units and increase the flexibility and operation.



## Features

Human Machine Interfaces



**Connectable PLCs for Direct Access**

Communications method	C200H	C200HS	C200HX/HG/HE(-Z)	C1000H/C2000H	CS1/CJ1	CV/CVM1 V1	CQM1H	CPM1(A)	SRM1	Computer/SBC
Host link (RS-232C)	CU	CU/CPU (Note 1)	CU/CPU (Note 4)	CU	CU/CPU	CU/CPU	CPU (Note 2)	CPU (Note 5)	CPU	---
1:1 NT Link	---	CPU (Note 1)	CPU (Note 4)	---	---	CPU	CPU (Note 3)	CPU (Note 5)	CPU	---
Memory Link (NTH protocol)	---	---	---	---	---	---	---	---	---	CPU

CPU: Connected to built-in CPU Unit port, CU: Connected to Communications Unit.

- Note:**
1. The built-in port can be used on the following CPU Unit: C200HS-CPU2□/3□.
  2. The built-in port can be used on the following CPU Unit: CQM1H-CPU21/4□.
  3. The built-in port can be used on the following CPU Unit: CQM1H-CPU4□.
  4. Connection is also possible to a Communications Board. Refer to the communications methods for individual models for details.
  5. A CPM1-CIF01 RS-232C Adapter must be purchased separately

**Specifications**

**General Specifications**

Item	Specification
Power supply voltage	24 V DC ±15%
Power consumption	7 W max
Noise resistance	Conforms to IEC61000-4-4, Power supply line 2 kV
Vibration resistance	10 to 57 Hz with 0.075 mm single amplitude, 57 to 150 Hz with 9.8 m/s <sup>2</sup> acceleration, for a total of 60 min. in X, Y, and Z directions.
Shock resistance	Peak acceleration 15 G 3 times each in X, Y, and Z directions
Ambient operating temperature	0 to 50° C (with no icing)
Storage temperature	-20 to 70° C (with no icing)
Ambient operating humidity	35% to 85% (with no condensation)(0 to 40° C) 35% to 55% (with no condensation)(40 to 50° C)
Dimensions	190 x 110 x 53.5 mm (W x H x D) (thickness inside panel: 49.0 mm)
Enclosure ratings	Front panel operating section: Equivalent to IP65F, NEMA 4.*
Weight	0.6 kg max.

\* Usage may not be possible in places where the unit would be exposed to oil for long periods.

**Display Capacity**

Item	Specification		
Display elements	Fixed displays	A total of 65,535 per screen With overlapping screens, the total is 524,280 per screen	
	Fixed character strings	(Graphics: Continuous straight lines, rectangles, circles, polygons, arcs, sectors)	
	Graphics		
	Marks		
	Numeral displays	256 positions per screen, max. 10-digit display (2 words)	
	Character string displays	256 positions per screen max. 1,024 display elements for overlapping screens	
	Graph displays	50 positions per screen, capable of displaying signs and percentages	
	Analog meters	50 positions per screen, capable of displaying signs and percentages	
	Trend graphs	One frame per screen, 50 items per frame (8 items max. for data logging)	
	Broken line graphs	One frame per screen, 256 items per frame, 260 points per item	
	Lamps	256 positions per screen	
	Image library images	256 positions per screen	
	Touch switches	256 positions per screen, max. 256 meshes	
	Screen types	Numeral settings	256 positions per screen (numerical keypad) Total of 256 positions for both numerical and thumb-wheel settings
		Thumbwheel settings	26 positions per screen
Character string settings		256 positions per screen	
Temporary inputs		One position per screen	
Alarm lists/histories		Four groups per screen	
Recipes		One position per screen	
Normal screens		Display screens registered as normal	
Overlapping screens		A maximum of eight screens can be displayed overlapping each other	
Windows		Up to three window screens can be displayed	
Display history screens		Order of occurrence (1,024 screens max.), order of frequency (255 times max.)	
System startup screen		Displayed when powering ON (or resetting) the PT, and when switching to RUN mode	
Programming console screen		Emulates PLC programming Console functions, capable of being called from RUN mode.	
Screen attributes		Buzzer, display history, normal background colors, backlight mode, local windows	
Number of screens		Max. number of registered screens	3,999
		Screen number	0: No display 1 to 3999: User registered screens (normal, overlapping, windows) 9000: System startup screen 9001: Display history screens, order of occurrence 9002: Display history screens, order of frequency 9020: Programming console screen 9021 to 9023, 9030: Reserved 9999: Return to previous screen designation
Screen registration method	By transferring screen data from the NT Support Tool to the PT via serial communications By mounting the Memory Unit and downloading (automatic/manual transfer) data to the PT		
Saving screen data	Flash memory (PT internal image memory)		

### Display Specifications

Item	Specification	
Display Panel	Display device	Monochrome STN LCD
	Number of dots (resolution)	260 dots horizontally x 140 dots vertically
	Effective display area	117 mm horizontally x 63 mm vertically
	Viewing angle	Left/right direction: 30°, up/down: 30°
	Display color	Black & white (with blue mode)
	Service life	50,000 hours min. (until contrast reduced to 50%)
Backlight (white cold cathode tube)	Automatic turn-OFF	Can be set to turn OFF in 1 to 255 min or to remain ON with screen saver
	Service life	50,000 hours min. (at room temperature, until brightness is reduced to 50%)
	Replacement	Non-replaceable

### Panel Specifications

Item	Specification	
Touch panel	Number of switches	91 (13 horizontally x 7 vertically)
	Input	Pressure-sensitive
	Threshold force for operation	1 N max.
	Life expectancy	1 million operations min.

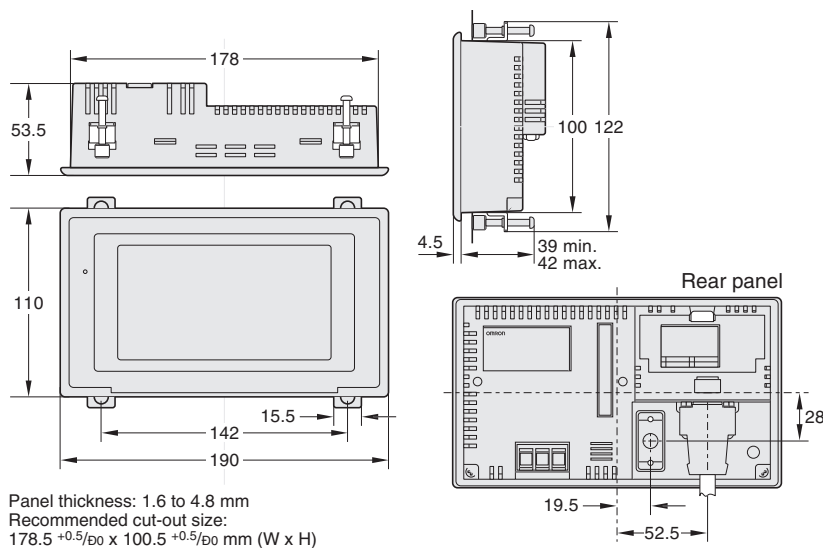
### External Interface Specifications

Communication method	Serial port A	Serial port B
NT support Tool	Supported	Not Supported
PLC	Host Link	Supported
	1:1 NT Link	Supported
	1:N NT Links	Supported
	NT Link, PT Programming Console function	Supported
SBC/personal computer	Memory Links	Supported
Barcode Reader	Supported	Not Supported

### NT21 Standard Models

Product	Specification		Model number	
NT21 Programmable Terminal	Monochrome STN	Frame color: beige	NT21-ST121E	
		Frame color: black	NT21-ST121B-E	
Support Tool	Windows 95, 98, ME, NT, 2000 and XP (Pro)	CD-ROM	NT-ZJCAT1-EV4	
Cables	For screen transfer		XW2Z-S002	
	For PLC connection	PT: 9-pin PLC: 9-pin	Cable length: 2 m	XW2Z-200T
				Cable length: 5 m
	PT: 9-pin PLC: Mini-peripheral	Cable length: 2 m	NT-CN221	
Options	Reflection Protective Sheets	Display area only (5 sheets)	NT20M-KBA04	
	Chemical-resistive Cover	Silicon cover	NT20S-KBA01	
	Battery	For alarm lists/histories	C500-BAT08	
	Memory Unit	For screen and system data transfer	NT-MF161	
	RS-232C/422A Adapter		NS-AL002	
Connector Kit		XM2S-0911-S003		

### Dimensions



NT11

# NT series Function Key screens

**The NT11, the Slim, Low Cost Operation Terminal that Stands Up Well to Harsh Environments.**

- Long-lived Backlight
- Simplified Ladder Programming
- Password Screens
- Conforms to NEMA4 and IP65



## Main features

### Withstands Water and Oil

- Use in many demanding areas even with oil and water
- The front panel of the terminal withstands water to NEMA4 and IP65 standards, which means that it can be used even in locations where it may be splashed with water or oil.

### Large Keys

- For easy operation by all users
- The numeric keys and function keys have been made a generous size for your convenience. They can be operated even when wearing working gloves.

### Entry of Numerical Values

The numeric key pad integrated with the display allows the entry of numerical values such as temperatures and production quantities.

### Printout of Production Status

Data such as the production status and production results can be printed out, leaving a record on paper which can be used as a daily report. (The NT11S has a printer port. One screen only is printed.)

### “Direct Connection” Communication

- Simplifies Ladder Programming
- The NT11S supports two communication methods: the “NT link” (high/low speed), which substantially reduces the size of the program at the host side, and the “Host Link” direct connection method. The “NT link” method features a particularly high response speed.

### Integral Numeric Key Pad

The display, numeric keys, and function keys are all integrated into the front panel, which is convenient for designers. The key layout is ergonomically designed for ease of use.

### Password Screens for Security

- To limit access to authorized persons only
- Password screens cannot be accessed unless the correct password is entered. This means that the operations that can be performed can be restricted according to the operator.

### Key Titles can be Marked on the Function Key Sheet

Key titles can be marked on the function key sheet in accordance with the applications of the keys: the sheet can be taken out from the side face of the terminal. The front panel of the terminal has a water-withstanding construction.

### Bar Graphs can be Displayed

Bar graph displays allow the progress of processes to be checked at a glance. (The bars are oriented horizontally.)

### Display History Record Helps in Analysis of Machine Faults

When the display history record function is set as a screen attribute, the time, the screen number, and a comment are recorded in the terminal’s memory every time the relevant screen is displayed. This display history can be printed by issuing a print instruction from the host, and is useful for machine fault analysis.

### Screen Operations are Easy

Using the support software, screens to be displayed by the terminal can be created as easily as if using a word processing program. This software can be run on an IBM PC/AT or compatible. It contains the system program transfer tool that downloads the system program to the flash ROM.

Main functions

- Fixed displays, numeral display, character display
- Character inversion, flashing, double-width. Character copy, move, delete.
- 8 x 16 dot mark registration (max. 64 marks can be registered)
- Horizontal bar graphs
- Numeral setting
- Password

**Easy to Order**

Since the communication interface, image memory, and flash ROM that downloads the system program are incorporated in the NT11 body, placing orders is a simple matter.

**The front panel is available in beige or black**

**Long-life Backlight**

Since LEDs are used for the backlight, it is very long-lived and rarely needs to be changed.

**Specifications**

**General Specifications**

Power supply voltage	24 V DC ±15%
Allowable power supply voltage range	20.4 to 27.8 V DC (24 V DC -15 %, +10 %)
Power consumption	15 W max.
Noise resistance	Common mode (between power supply and panel): 1000 Vp-p Normal mode: 300 Vp-p Pulse width: 100 ns to 1 ms Pulse rise time: 1 ns
Vibration resistance	10 to 57 Hz with 0.75 mm double amplitude and 57 to 150 Hz with 1G acceleration for a total of 30min. in X, Y, and Z directions.
Shock resistance	Peak acceleration 15 G 3 times each in X, Y, and Z directions
Ambient operating temperature	0 to + 50 °C
Ambient operating humidity	35 to 85 % RH (with no condensation)
Operating environment	No corrosive gases.
Storage temperature	-20 to +70 °C (with no freezing)
Enclosure ratings	Front panel: Equivalent to IP65, NEMA4
Weight	1.0 kg max.

**Display/Panel Specifications**

**Note:** In order to improve the performance of displays, liquid crystal devices may be changed without notice.

Display screen	Dot matrix of STN liquid crystal display panel - Number of dots: 160x64 - Effective display area: 100 x 40 mm - Life expectancy: 50,000 hours minimum - View angle (left/right direction): ±20°	Backlight - LED - Life expectancy: 50,000 hours minimum - Automatic turn-off: can be set to turn off in 10 minutes or 1 hour, or to remain on.
Indicators	- POWER indicator (Green LED): Lit while power is being supplied. - RUN indicator (Green LED): Lit during operation	
Switch	- 22 switches - Life expectancy: 1 million operations minimum	

**Display Capacity**

**Note:** Note: In order to improve the performance of displays, liquid crystal devices may be changed without notice.

Display characters	Normal characters (8 16 dots): Alphanumerics and symbols Marks (8 16 dots): User-defined, 64 max.	
Number of characters	displayed Normal-size: 20 horizontally 4 lines vertically max.	
Enlargement function	Double width	
Display elements	Character string displays	8 positions per screen
	Numeral displays	8 positions per screen
	Graph displays	4 positions per screen
	Numeral settings	8 positions per screen
Screen attributes	Display history	Order of frequency, 256 screens
	Password screen	Ensures security: screens for which this attribute is set can only be displayed if the correct password is input.
	Menu screen	Four items per screen
Screen types	Normal screen: Displays screen registered as normal.	
Max. number of registered screens	250	
Screen registration method	Transfer screen data created using an IBM PC/AT personal computer to the PT.	
Screen saving method	Saved to flash memory: 32KB (downloading method)	

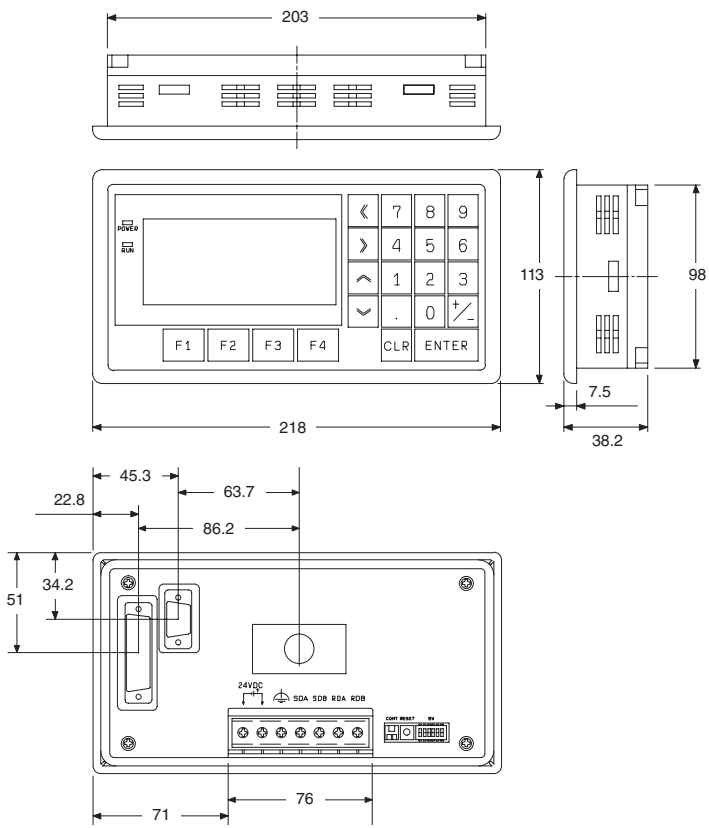
**Special Features**

Printing function	Printing of display history data Printing of daily reports (printing format registered by the users)
Maintenance functions	Self-test for memory, switches, etc. Status setting confirmation for communications and other conditions. Simple communications confirmation

**Ordering Information**

Product	Specification	Model
Programmable Terminal	Host link direct connection, NT link method	Ten-key type (frame color: beige) NT11-SF121-EV1
		Ten-key type (frame color: black) NT11-SF121B-EV1
Support Software	3.5" FD (for IBM PC/AT)	NT-ZJCAT1-EV4

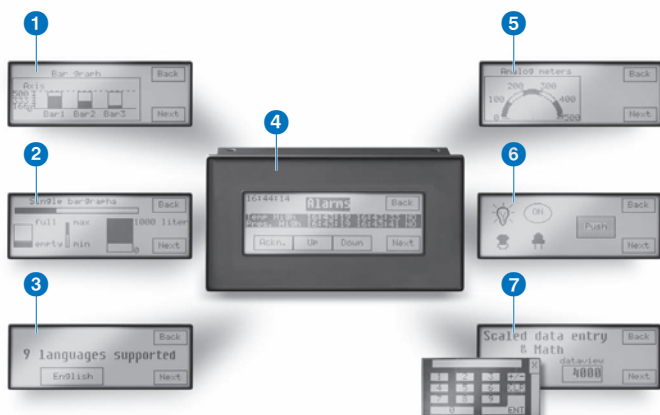
Dimensions



NT3S

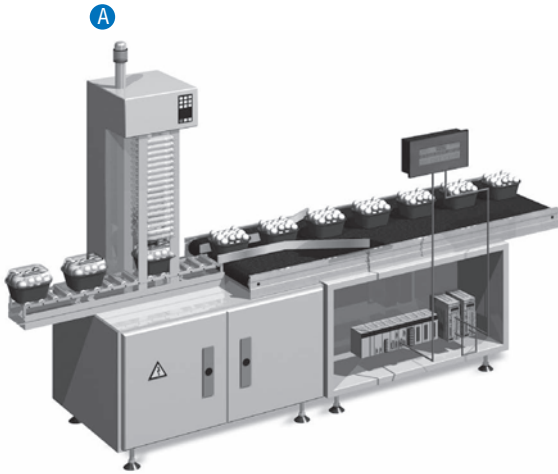
# NT-XS series Touch Screen

- 4.1" monochrome STN LCD with LED backlight (long lifetime)
- Maximum of two universal (RS232/485/422) serial ports to connect multiple devices with different protocols at the same time
- Drivers for most PLCs, Inverters and Servo Controllers
- Multiple data entry objects per screen with individual limit setting and math operations
- Support for floating point data
- Wizards for rapid application development of standard bitmapped objects
- Real-time and historical alarms (historical alarms in RTC models only)
- Trend graph for defined tags (RTC models only)
- Saves recipes data in non-volatile memory
- Windows® based programming software NT-XS for free!
- IP65 design, CE / cULus Class 1Div. 2 certification



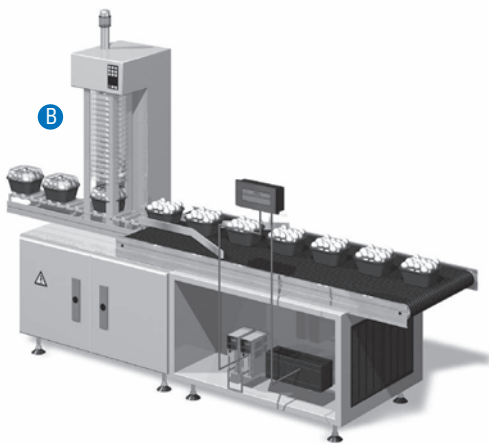
- 1 2 On the NT3S you can show different kind of bar graphs. Single bar graphs can be filled in different directions and multiple bar graphs with legend can easily be created with a simple wizard.
- 3 Up to nine languages can be used in the NT3S. This means you can for instance make the text buttons variable. This way you can design one project with different languages so you can use it in different countries.
- 4 You can monitor up to 256 alarms in 16 different groups with the NT3S. Alarms can be shown with text, time, date and status. Acknowledgement can be prohibited by password.
- 5 Analogue meters can also monitor values of connected devices. You can set the range, angle, and "colours" to your wish.
- 6 You can create your own buttons and lamps by making use of bit-maps or by choosing one from the library. You can set the "colour", filling and label.
- 7 Showing and entering data is easy with the NT3S. Data can be shown in the desired format (HEX, BCD etc.). Entering data is performed with a pop-up keypad.





A

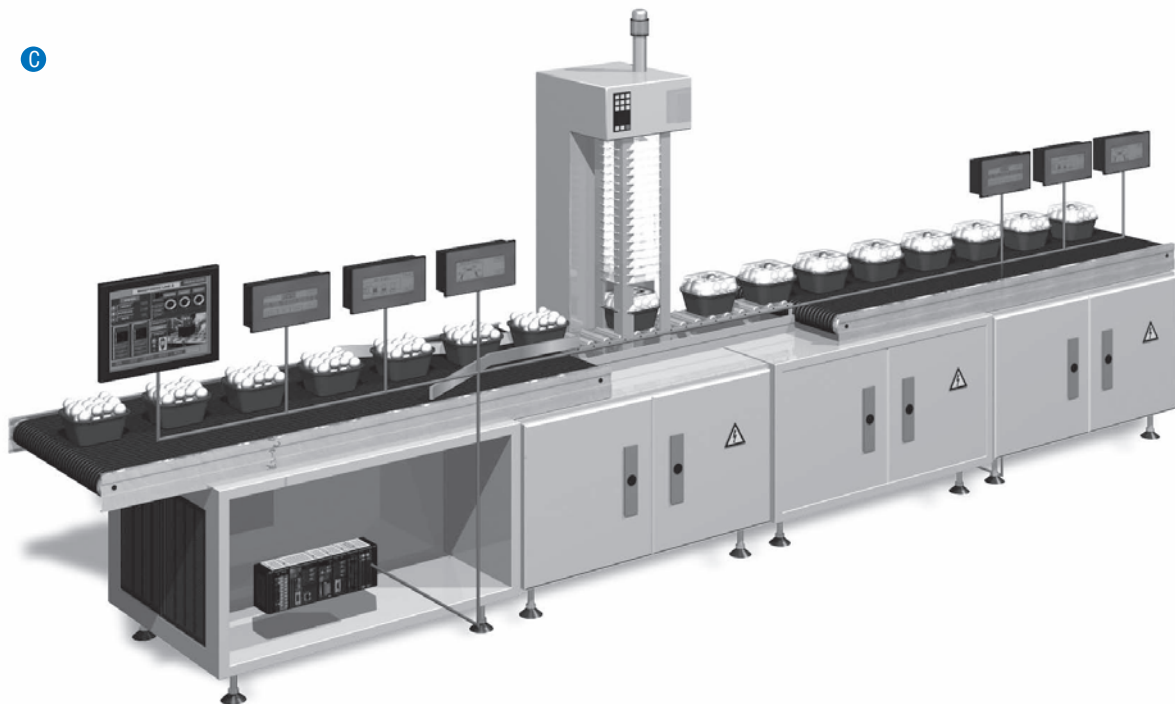
A typical application for the NT3S is a machine where an Omron PLC and Intelligent Servo Drives are used. The NT3S can be used to communicate with both the PLC and the Servo Drives. This means setting parameters, reading and writing variables like speed, torque, distance and actual position. It is also possible to move data from the PLC to the Servo Drive (e.g. to change acceleration times). The NT3S gives you the advantage of being able to communicate with the drives without using a bus-system, so a smaller and less expensive PLC can be used.



B

You can also use the NT3S to connect Omron Inverters to another PLC brand. In this solution the NT3S can communicate with the third party PLC\* and at the same time the NT3S can change data in the Omron Inverters. Inverter settings can be changed directly from the screen but also from the PLC program. The NT3S acts as a gateway between the different protocols. This way you can save a lot of time developing the communication between the PLC and the Omron Drives.

C



C

Connecting multiple NT3S terminals to one Omron PLC is a good solution for long machine lines where local setting or monitoring is needed. You can connect a maximum of 8 screens to one PLC. By using the multiple NT3S terminals next to one more advanced HMI like the Omron NS series, you can have a high functional solution with local operation possibility against few extra costs.

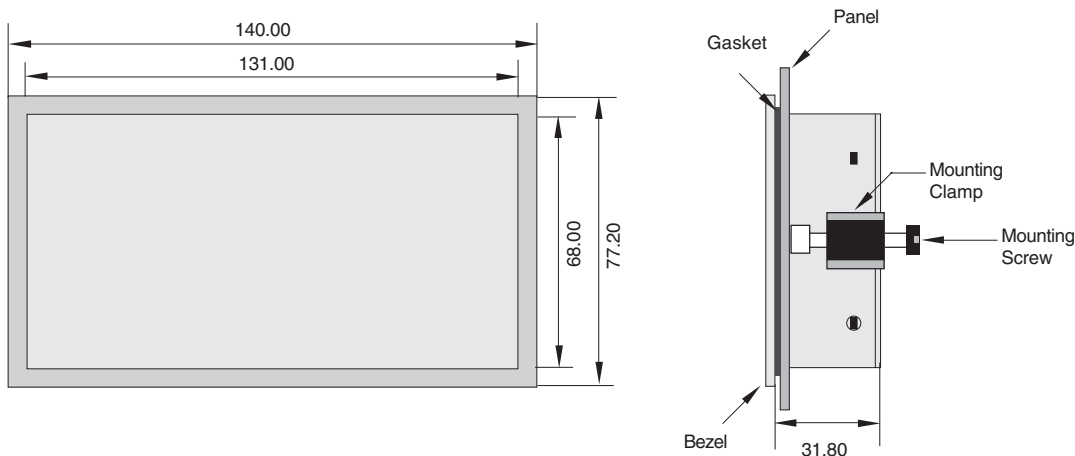
\* Please contact your local Omron representative for a list of available drivers



**Specifications**

<b>Model</b>	<b>NT3S-ST126B-E</b>	<b>NT3S-ST124B-E</b>	<b>NT3S-ST123B-E</b>	<b>NT3S-ST121B-E</b>
<b>Type of display</b>	LCD 4.1 inch, STN, Monochrome display			
<b>Dimensions (W x H x D, mm)</b>	140 X 77 X 35			
<b>Effective display area</b>	98 X 35 mm (4.1 inch)			
<b>Display colour</b>	Green LCD, Monochrome			
<b>Communication</b>	2x RS232	1x RS232/1x RS485/422/232		2x RS485/422/232
<b>RTC</b>	-		Supported	
<b>Power supply</b>	24V DC +/-15%			
<b>Touch panel</b>	Analog Resistive			
<b>Obtained standards</b>	CE, cULus			
<b>Display graphics</b>	Rectangle, Rounded Rectangle, Circle, Oval, Line, Bitmaps			
<b>No. of display characters (standard characters)</b>	32 characters x 8 lines			
<b>No. of registered screens</b>	65000 max. (limited by memory capacity)			
<b>Screen data capacity (standard)</b>	120 Kb			
<b>Internal memory</b>	1 kWords data memory, 1 kWords retentive, 64 words system memory			
<b>Printer connection</b>	Supported			
<b>Backlight life</b>	LED, min 50.000 hours			
<b>Multi-vendor support</b>	Supports most third party PLCs			

**Dimensions (mm)**



**Software**

Name	Specifications	Model
NT2S and NT3S support software for windows	For all models of these NT-XS series	NT-XS (free downloadable from our website)

**Note:** For further information please contact your OMRON representative.

**NTXS accessories**

Cables for	Specification	Model
NT2S-SF121/125 and NT3S	peripheral port CPM series except CPM2C, 2 m	NT2S-CN212-V1
NT2S-SF121/125 and NT3S	peripheral port CPM series except CPM2C, 5 m	NT2S-CN215-V1
NT2S-SF122/SF123/SF126/SF127	peripheral port CPM series except CPM2C, 2 m	NT2S-CN222-V1
NT2S-SF122/SF123/SF126/SF127	peripheral port CPM series except CPM2C, 5 m	NT2S-CN225-V2
NT2S-SF121/125 and NT3S	mini-peripheral port CJ1/CS1 and CPM2C series, 2 m	NT2S-CN223-V2
NT2S-SF122/SF123/SF126/SF127	mini-peripheral port CJ1/CS1 and CPM2C series, 2 m	NT2S-CN224-V1
NT2S-SF121/125 and NT3S	Serial Port PLC and NT2S/NT3S,2M	NT2S-CN232-V1
NT2S-SF121/125 and NT3S	Serial Port PLC and NT2S/NT3S,5M	NT2S-CN235-V1
NT2S-SF122/SF126	Serial Port PLC and NT2S/NT3S,2M	NT2S-CN242-V1

Human Machine Interfaces