

Programmable Terminal NT Series

CSM_NT_series_DS_E_2_2

Better Compatibility and Easier-to-use Support Software

- Device monitoring and I/O comment loading functions facilitate system construction.
- Greatly enhanced NT Support Software with reusable screen data and powerful simulation on editing screens.
- Transfer the system program and screen data to ensure smooth on-site system maintenance and improve the efficiency of onsite work.
- Wide Range of Communications Interfaces.



NT31/C

NT20

NT631C

Note: NT31 and NT31C in this catalog have been discontinued at the end of March 2014.

Lineup

| Model | NT631C-ST153(B)-EV3 | NT31C-ST143(B)-EV3 | NT31-ST123(B)-EV3 | NT20-ST121(B) |
|------------------------------------|--|--|--|---|
| Display | TFT color display | STN color display | STN monochrome display | STN monochrome display |
| Effective display area | 211 × 158 mm | 118 × 89 mm | | 111.5 × 57.6 mm |
| Number of dots (resolution) | 640 × 480 dots | 320 × 240 dots | | 256 × 128 dots |
| Max. number of touch switches | 32 × 24 switches | 16 × 12 switches | | 12 × 6 switches |
| External interface | RS-232C, RS-422A, RS-485, and printer port | | | 2 RS-232C ports |
| Applicable standards | cULus standards, EC Directives, and C-Tick | | | |
| Connectable hosts (See note 1.) | From OMRON (See note 2.) | 1-to-1 NT Link | C200HX(-Z), C200HG(-Z), C200HE(-Z), C200HS-CPU2□, and C200HS-CPU3□ CQM1-CPU4□, CPM1A, CPM2A/C, SRM1, CVM1/CV Series (EV1 or EV2), and C200HX/HG/HE Communications Boards | |
| | | 1-to-N NT Link | CJ1□, CS1H, CS1G, C200HX(-Z), C200HG(-Z), C200HE(-Z), and SRM1-EV2 CS1 Communications Unit and CQM1H Communications Board | |
| | | High-speed NT Link | CJ1□, CS1H and CS1G | |
| | | Host Link | CJ1□(-H), CS1□(-H), C200HX(-Z), C200HG(-Z), C200HE(-Z), C200HS-CPU2□, C200HS-CPU3□ and CS1 Communications Units CQM1-CPU4□, CQM1-CPU2□, CPM1A, CPM2A, CPM1C, SRM1, CVM1, CVseries (EV1 or EV2), C-series/CV-series/ CVM1 Host Link Unit | |
| | | Memory Link | Personal Computer, SBC, and Programmable Controller | Personal computer, SBC, or PLC (RS-232C) (See note 5.) |
| | From Mitsubishi | Mitsubishi FX Series | MELSEC FX1, FX2, FX2C, FXO, and FXON | |
| | | Mitsubishi A-Series (Computer Link Unit) | AOJ2-C214S1, A1SJ71UC24-R2, A1SJ71UC24-R4, and AJ71UC24 | |
| | | Allen Bradley (DE1) | SLC 5/02, 03, 04, and 05 (See note 3.) | |
| | GE-Fanuc (SNP-X) | 90-20 and 90-30 Series (See note 3.) | | - |
| | Siemens (Via HMI Adapter) | S7-300 and S7-400 Series (See note 3.) | | - |
| Language | Japanese | | ○ | |
| | English | | ○ | |
| | Simplified Chinese (See notes 4, 5, and 6.) | | ○ | |
| | Traditional Chinese (See note 4.) | ○ | | - |

Note: 1. Including models whose production were discontinued.

2. There are some limitations on hosts that can be connected. Refer to the PT manual for details. C200H direct connections can be used with the NT20-ST121 (using the NT20-IF001).
3. The English version of the NT Support Tool must be used.
4. Simplified Chinese is mostly used in mainland China and uses simplified characters. Traditional Chinese is mostly used in Hong Kong and Taiwan and uses traditional characters.
5. Purchase the NT20-ST121(B)-EC to display simplified Chinese on the NT20.
6. A separate system program must be installed in the NT20 to use RS-232C memory links with the NT20. Simplified Chinese is not supported.

Ordering Information

International Standards

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

Programmable Terminals

| Item | Specification | | Model | Standards |
|------------|----------------|--------------------|--------------------|-----------|
| NT631C | TFT color | Frame color: beige | NT631C-ST153-EV3 | CU, CE |
| | | Frame color: black | NT631C-ST153B-EV3 | |
| NT31/NT31C | STN color | Frame color: beige | NT31C-ST143-EV3 * | |
| | | Frame color: black | NT31C-ST143B-EV3 * | |
| | STN monochrome | Frame color: beige | NT31-ST123-EV3 * | |
| | | Frame color: black | NT31-ST123B-EV3 * | |
| NT20 | STN monochrome | Frame color: beige | NT20-ST121-E | |
| | | Frame color: black | NT20-ST121B-E | |

* Production was discontinued.

Programming Devices

| Item | Specification | | Model | Standards |
|------------------|---------------------------------|---|---------------|-----------|
| Support Software | English | Windows 98, NT, 2000, Me, XP, Vista, or 7. Note: Except for Windows XP 64-bit version. (provided on CD-ROM) | NT-ZJCAT1-EV4 | - |
| | Memory Unit for Screen Transfer | NT631C/NT31□/NT20 (common) | NT-MF261 | |
| Cable | For screen transfer | For IBM PC/AT or compatible (2 m) | XW2Z-S002 | |
| | Printer | For hardcopies of screens | NT-CNT121 | |

Options

| Item | Specification | | Model | Standards |
|----------------------|---|-----------------------------------|---------------|-----------|
| Option | DeviceNet Interface Unit | | NT-DRT21 | U, C |
| | Anti-reflection Sheets (surface only) | NT631C (5 sheets) | NT610C-KBA04 | - |
| | | NT31/31C (5 sheets) | NT30-KBA04 | |
| | | NT20 (5 sheets) | NT20-KBA04 | |
| | Protective Cover | NT631C (5 sheets) glare | NT631C-KBA05 | |
| | | NT631C (5 sheets) non-glare | NT631C-KBA05N | |
| | Chemical resistant cover (silicon cover) | NT631C | NT625-KBA01 | |
| | | NT31/NT31C | NT30-KBA01 | |
| | | NT20 | NT20-KBA01 | |
| | Battery | NT631C/NT31□/NT20 (common) | C500-BAT08 | |
| | Bar-code Reader | Refer to the Catalog for details. | V520-RH21-6 | |
| RS-422A Converter | For NT20 ports A and B | CJ1W-CIF11 | UC1, N, L, CE | |
| Interface Attachment | For NT20 | NT20-IF001 | - | |

Communications Cable between PT and PLC

| | PT end | PLC end | Cable length | Cable model | Standards |
|---------------------------|---|------------------------|--------------|-------------|-----------|
| D-sub 9-pin connector | NT631C port A or B NT31/NT31C port A NT20 port A or B | D-sub 9-pin connector | 2 m | XW2Z-200T | - |
| | | | 5 m | XW2Z-500T | |
| | | D-sub 25-pin connector | 2 m | XW2Z-200S | |
| | | | 5 m | XW2Z-500S | |
| D-sub 25-pin connector | NT31/NT31C port B | D-sub 9-pin connector | 2 m | XW2Z-200S | |
| | | | 5 m | XW2Z-500S | |
| | | D-sub 25-pin connector | 2 m | XW2Z-200P | |
| | | | 5 m | XW2Z-500P | |

Specifications NT631C

General Specifications

| Item | Model | NT631C-ST153(B)-EV3 |
|---|-------|--|
| Rated power supply voltage | | 24 VDC |
| Allowable power supply voltage range | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) |
| Power consumption | | 18 W max. |
| Ambient operating temperature | | 0 to 50 °C |
| Storage temperature | | -20 to 60 °C |
| Ambient operating humidity | | 35% to 85% (with no condensation) |
| Ambient operating environment | | No corrosive gases |
| Noise immunity | | Conforms to IEC 61000-4-4 at 2 kV (power supply line). |
| Vibration resistance (during operation) | | 5 to 9 Hz, single amplitude: 3.5 mm 9 to 150 Hz, 9.8 m/s ² 10 times (1 octave/min) each in X, Y, and Z directions |
| Shock resistance (during operation) | | 147 m/s ² , 3 times each in X, Y, and Z directions |
| Weight | | 2.5 kg max. |
| Degree of protection (front panel) | | Equivalent to IP65 oil-proof type and NEMA4 (See note.) |

Note: The equipment cannot be used for long periods of time in locations which expose the panel to spills of oil.

Display/Panel Specifications

| Item | Model | NT631C-ST153(B)-EV3 | |
|-----------|---|--|--|
| Display | Display device | Color TFT LCD | |
| | Number of dots (resolution) | 640 dots (horizontal) × 480 dots (vertical) | |
| | Effective display area | 211 × 158 mm (10.4 inches) | |
| | Display color | 8 colors (intermediate colors can be displayed in tiling patterns) | |
| | Service life | 50,000 hours (until contrast is reduced by 50%) | |
| Backlight | Automatic turn-OFF | 1 to 255 minutes/None | |
| | Service life when brightness is set to high | 50,000 hours min. (See note.) | |
| LED | POWER | Green | Lit while power is being supplied. |
| | | Green | Lit during operation |
| | | Orange | Lit when the battery voltage is low (when operating) |
| | | Red | Lit when the battery voltage is low (when stopped) |

Note: The time until brightness is reduced by half, under normal temperature and normal humidity.

Operation Specifications

| Item | Model | NT631C-ST153(B)-EV3 |
|-------------|--------------------|---------------------------|
| Touch panel | Number of switches | 768 (32 × 24) |
| | Input | Pressure sensitive |
| | Operating force | 1 N max. |
| | Service life | 1,000,000 operations min. |

External I/F Specifications

| Item | Model | NT631C-ST153(B)-EV3 |
|-----------------------|---------------|--|
| Serial communications | Serial port A | Conforms to EIA RS-232C. D-sub 9-pin connector (female) +5 V (250 mA max.) output at pin No. 6 |
| | Serial port B | EIA RS-232C, (RS-422A/485 selectable by memory switch setting) RS-232C: D-sub 9-pin connector (female) RS-422A/485: Terminal block (6 terminals) |
| Parallel I/F | | Conforms to Centronics specifications, 20-pin half-pitch connector |
| Expansion I/F | | Dedicated connector |

Display Specifications

| Item | Model | NT631C-ST153(B)-EV3 |
|----------------------------|------------------------------------|--|
| Display elements | Character displays (fixed display) | 65,535 per screen (including marks) |
| | Graphic displays | |
| | Character string displays | Up to 256 per screen (40 bytes (40 characters) per string) |
| | Numerical displays | 256 per screen, max. 10-digit display (2 words) |
| | Bar graph displays | Up to 50 per screen, percentage display and sign display are possible. |
| | Analogue meter | Up to 50 per screen, percentage display and sign display are possible. |
| | Trend graphs | One frame per screen, 50 graphs per frame (only 8 graphs per frame with data logging) |
| | Broken line graphs | One frame per screen, 256 graphs per frame, 512 points per graph |
| | Lamps | Up to 256 per screen |
| | Image library displays | Up to 256 per screen |
| | Touch switches | Up to 256 per screen, Max. overlap: 256 mesh |
| | Numeral inputs | Up to 256 per screen |
| | Thumbwheel switches | |
| | Character string inputs | Up to 256 per screen |
| Screen types | Alarm lists | |
| | Alarm histories | Up to 4 groups per screen |
| | Normal screen | The normal screen display |
| | Overlapping screens | A maximum of 8 registered screens can be displayed overlapped with each other. |
| Screen attributes | Window screens | Up to 3 screens (2 local windows and 1 global window) can be displayed at the same time. |
| | Display history screens | Order of occurrence (max. 1,024 screens), order of frequency (max. 255 times) |
| Screen attributes | | Buzzer, display history, background color, backlight, keyboard screen number |
| Number of screens | Max. number of registered screens | 3,999 screens |
| | Screen No. | 0: No display 1 to 3999: User-registered screens 9000: "Initializing system" screen 9001: Display history (occurrence order) screen 9002: Display history (frequency order) screen 9020: Programming Console function screen 9999: Return to the previous screen 9021 to 9023: Device monitor |
| Screen registration method | | By transmitting screen data created using the Support Tool to the NT631C By transmitting screen data stored in a memory unit to the NT631C |
| Screen saving method | | Flash memory (screen data memory in the PT) |

Display Element Specifications

| Item | Model | NT631C-ST153(B)-EV3 |
|-----------------------------|-------|--|
| Display characters | | Half-size characters (8 × 8 dots): Alphanumerics and symbols Normal-size characters (8 × 16 dots): Alphanumerics and symbols Mark data (16 × 16 dots): User defined picture characters |
| Enlargement function | | Normal size, double width, double height, and magnifications of 4X, 9X, 16X, 64X |
| Smoothing processing | | Available for enlarged characters with magnification of 4X or greater (excluding marks) |
| Character display attribute | | Normal, reverse, flashing, reverse and flashing, transparent |
| Image data | | Variable-size pictograph Size: Min. 8 × 8 dots, Max. 640 × 480 dots The size can be set in 8-dot units. It is not possible to set enlarged display, smoothing processing, or display attributes such as reverse/flashing. |
| Library data | | Combination of any characters and graphics Size: Min. 1 × 1 dots, Max. 640 × 480 dots Any size can be set. Enlarged display, smoothing processing, and display attributes such as reverse/flashing are displayed according to the setting registered. |
| Graphics | | Polyline, circle, arc, fan, square, polygon |
| Line type | | Solid line, dotted line, alternate long and short dash, long and two short dashes (only polylines for other than solid lines) |
| Tilling | | 10 types |
| Graphic display attribute | | Normal, flashing, reverse, reverse flashing |
| Display colors | | 8 colors (black/blue/red/purple/green/light blue/yellow/white) |

Data Capacities

| Item | Model | NT631C-ST153(B)-EV3 |
|-------------------------------|-------|---|
| Screen data capacity | | 1 MB |
| Numeric memory table | | 2 words x up to 2,000 (1,000 tables can be backed up with battery) |
| Character string memory table | | 40 normal-size characters x up to 2,000 (Data can be written to and read from 500 tables) |
| Bit memory table | | 1 bit × 1,000 |
| Mark data | | 224 (16-by-16-dot basis) |
| Image data | | 4,095 items |
| Library data | | 12,288 items |

Specifications NT31/NT31C

General Specifications

| Item | Model | NT31-ST123(B)-EV3/NT31C-ST143(B)-EV3 |
|---|-------|--|
| Rated power supply voltage | | 24 VDC |
| Allowable power supply voltage range | | 20.4 to 26.4 VDC (24 VDC -15%/+10%) |
| Power consumption | | 15 W max. |
| Ambient operating temperature | | 0 to 50 °C |
| Storage temperature | | -20 to 60 °C |
| Ambient operating humidity | | 35% to 85% (with no condensation) |
| Ambient operating environment | | No corrosive gases |
| Noise immunity | | Conforms to IEC 61000-4-4 at 2 kV (power supply line). |
| Vibration resistance (during operation) | | 5 to 9 Hz, single amplitude: 3.5 mm 9 to 150 Hz, 9.8 m/s ² 10 times (1 octave/min) each in X, Y, and Z directions |
| Shock resistance (during operation) | | 147 m/s ² , 3 times each in X, Y, and Z directions |
| Weight | | 1 kg max. |
| Degree of protection (front panel) | | Equivalent to IP65 oil-proof type and NEMA4 (See note.) |

Note: The equipment cannot be used for long periods of time in locations which expose the panel to spills of oil.

Display/Panel Specifications

| Item | Model | NT31-ST123(B)-EV3 | NT31C-ST143(B)-EV3 |
|-----------|---|---|--|
| Display | Display device | Monochrome STN LCD | Color STN LCD |
| | Number of dots (resolution) | 320 dots (horizontal) × 240 dots (vertical) | |
| | Effective display area | 118.2 × 89.4 mm (5.7 inches) | |
| | Display color | Black/White (2 colors) | 8 colors (intermediate colors can be displayed in tiling patterns) |
| | Service life | 50,000 hours (until contrast is reduced by 50%) | |
| | Automatic turn-OFF | 1 to 255 minutes/None | |
| | Contrast adjustment | 100 levels of adjustment possible using the front touch panel | |
| Backlight | Service life (when brightness is set to high) | 50,000 hours min. (See note.) | |
| | Brightness adjustment | 3 levels of adjustment possible using the front touch panel | |
| LED | POWER | Green | Lit while power is being supplied |
| | | Green | Lit during operation |
| | RUN | Orange | Lit when the battery voltage is low (when operating) |
| | | Red | Lit when the battery voltage is low (when stopped) |

Note: The time until brightness is reduced by half, under normal temperature and normal humidity.

Operation Specifications

| Item | Model | NT31-ST123(B)-EV3/NT31C-ST143(B)-EV3 |
|-------------|--------------------|--------------------------------------|
| Touch panel | Number of switches | 192 (16 × 12) |
| | Input | Pressure sensitive |
| | Operating force | 1 N max. |
| | Service life | 1,000,000 operations min. |

External I/F Specifications

| Item | Model | NT31-ST123(B)-EV3/NT31C-ST143(B)-EV3 |
|-----------------------|---------------|---|
| Serial communications | Serial port A | Conforms to EIA RS-232C D-sub 9-pin connector (female) +5 V (250 mA max.) output at pin No. 6 |
| | Serial port B | EIA RS-232C (RS-422A/485 selectable by memory switch setting) D-sub 25-pin connector (female) |
| Parallel I/F | | Conforms to Centronics specifications, 20-pin half-pitch connector |
| Expansion I/F | | Dedicated connector |

Display Specifications

| Item | Model | NT31-ST123(B)-EV3/NT31C-ST143(B)-EV3 |
|----------------------------|---|--|
| Display elements | Character displays (fixed display) | 65,535 per screen (including marks) |
| | Graphic displays | |
| | Character string displays | Up to 256 per screen (40 bytes (40 characters) per string) |
| | Numerical displays | 256 per screen, max. 10-digit display (2 words) |
| | Bar graph displays | Up to 50 per screen, percentage display and sign display are possible. |
| | Analogue meter | Up to 50 per screen, percentage display and sign display are possible. |
| | Trend graphs | One frame per screen, 50 graphs per frame (only 8 graphs per frame with data logging) |
| | Broken line graphs | One frame per screen, 256 graphs per frame, 320 points per graph |
| | Lamps | Up to 256 per screen |
| | Image library displays | Up to 256 per screen |
| | Touch switches | Up to 256 per screen, Max. overlap: 256 mesh |
| | Numeral inputs | Up to 256 per screen |
| | Thumbwheel switches | |
| | Character string inputs | Up to 256 per screen |
| Screen types | Alarm lists | |
| | Alarm histories | Up to 4 groups per screen |
| | Normal screen | The normal screen display |
| | Overlapping screens | A maximum of 8 registered screens can be displayed overlapped with each other. |
| | Window screens | Up to 3 screens (2 local windows and 1 global window) can be displayed at the same time. |
| Display history screens | Order of occurrence (max. 1,024 screens), order of frequency (max. 255 times) | |
| Screen attributes | | Buzzer, display history, background color, backlight, keyboard screen number |
| Number of screens | Max. number of registered screens | 3,999 screens |
| | Screen No. | 0: No display 1 to 3999: User-registered screens 9000: "Initializing system" screen 9001: Display history (occurrence order) screen 9002: Display history (frequency order) screen 9020: Programming Console function screen 9999: Return to the previous screen 9021 to 9023: Device monitor |
| Screen registration method | | By transmitting screen data created using the Support Tool to the NT31/NT31C By transmitting screen data stored in a memory unit to the NT31/NT31C (automatic/manual) |
| Screen saving method | | Flash memory (screen data memory in the PT) |

Display Element Specifications

| Item | Model | NT31-ST123(B)-EV3 | NT31C-ST143(B)-EV3 |
|-----------------------------|-------|--|--|
| Display characters | | Half-size characters (8 × 8 dots): Alphanumerics and symbols Normal-size characters (8 × 16 dots): Alphanumerics and symbols Mark data (16 × 16 dots): User defined picture characters | |
| Enlargement function | | Normal size, double width, double height, and magnifications of 4X, 9X, 16X, 64X | |
| Smoothing processing | | Available for enlarged characters with magnification of 4X or greater (excluding marks) | |
| Character display attribute | | Normal, reverse, flashing, reverse and flashing, transparent | |
| Image data | | Variable-size pictograph Size: Min. 8 × 8 dots, Max. 320 × 240 dots The size can be set in 8-dot units. It is not possible to set enlarged display, smoothing processing, or display attributes such as reverse/flashing. | |
| Library data | | Combination of any characters and graphics Size: Min. 1 × 1 dots, Max. 320 × 240 dots Any size can be set. Enlarged display, smoothing processing, and display attributes such as reverse/flashing are displayed according to the setting registered. | |
| Graphics | | Polyline, circle, arc, fan, square, polygon | |
| Line type | | Solid line, dotted line, alternate long and short dash, long and two short dashes (only polylines for other than solid lines) | |
| Tilling | | 10 types | |
| Graphic display attribute | | Normal, flashing, reverse, reverse flashing | |
| Display colors | | 2 colors (black/white) | 8 colors (black/blue/red/purple/green/light blue/yellow/white) |

Data Capacities

| Item | Model | NT31-ST123(B)-EV3/NT31C-ST143(B)-EV3 |
|-------------------------------|-------|---|
| Screen data capacity | | 1 MB |
| Numeric memory table | | 2 words x up to 2,000 (1,000 tables can be backed up with battery) |
| Character string memory table | | 40 normal-size characters x up to 2,000 (Data can be written to and read from 500 tables) |
| Bit memory table | | 1 bit × 1,000 |
| Mark data | | 224 (16-by-16-dot basis) |
| Image data | | 4,095 items |
| Library data | | 12,288 items |

Specifications NT20

General Specifications

| Item | Model | NT20-ST121(B)/128(B) |
|---|-------|--|
| Rated power supply voltage | | 24 VDC |
| Allowable power supply voltage range | | 20.4 to 27.6 VDC (24 VDC -15%/+10%) |
| Allowable power interruption time | | Not specified |
| Power consumption | | 10 W max. |
| Ambient operating temperature | | 0 to 50 °C (See note 1.) (with no condensation) |
| Storage temperature | | -20 to 70 °C |
| Ambient operating humidity | | 35% to 85 % (0 to 40 °C) 35% to 50 % (40 to 50 °C) (with no condensation) |
| Ambient storage humidity | | 35% to 85 % (-20 to 40 °C) 35% to 50 % (40 to 50 °C) 35% to 45 % (50 to 70 °C) (with no condensation) |
| Ambient operating environment | | No corrosive gases |
| Noise immunity | | Conforms to IEC 61000-4-4 at 2 kV (power supply line). |
| Vibration resistance (during operation) | | 5 to 9 Hz, single amplitude: 3.5 mm 9 to 150 Hz, 9.8 m/s ² 10 times (1 octave/min) each in X, Y, and Z directions |
| Shock resistance (during operation) | | 147 m/s ² , 3 times each in X, Y, and Z directions |
| Dimensions | | 190 × 108 × 53.5 mm (W × H × D) |
| Panel cutout dimensions | | 178.5 + 0.50 × 98.5 + 0.50 mm (horizontal × vertical) Panel thickness: 1.6 to 4.8 mm |
| Weight | | 0.7 kg max. |
| Degree of protection | | Front panel operating section: Equivalent to IP65 oil-proof type and NEMA 4. (See note 2.) |
| Applicable standards | | UL 1604 Class 1 Division 2, EC Directives |

- Note 1:** The display quality (e.g., contrast) will deteriorate at temperatures above 40°C. At low temperatures, the response speed will be reduced due to the characteristics of liquid crystal.
- Note 2:** The NT631/NT31/NT20 may not be able to be used in locations subject to long-term oil exposure.

Display/Panel Specifications

| Item | Specifications | |
|---------------------------|-----------------------------|---|
| Display (See note 1.) | Display device | Monochrome STN LCD |
| | Number of dots (resolution) | 140 (128) × 260 (256) dots (horizontal × vertical) Dot size: 0.42 mm The number of dots that can be used in NT20 system programs is indicated in parentheses. |
| | Effective display area | 66 (57.6) × 120 (115.2) mm (horizontal × vertical) The effective display area that can be used with NT20 system programs is indicated in parentheses. |
| | Display mode | Blue mode |
| | Service life | 50,000 hours min. |
| | Contrast adjustment | The contrast can be adjusted from the back of the PT. |
| Backlight | Service life | 50,000 hours min. (See note 2.) |
| | Replacement | Cannot be replaced. |
| | Brightness adjustment | Cannot be set. |
| | Automatic turn-OFF | Can be set to either 10 minutes, 1 hour, or lit. |
| Front-panel indicator LED | RUN | Lit green: Normal operation with Memory Unit automatic transfer completed. Flashing green: Executing Memory Unit automatic transfer or automatic transfer error. |

- Note 1:** There are sometimes faulty in the touch panel, but this does not indicate an error as long as the number of bright or dark pixels does not exceed the following limits.
4 total bright or dark defects maximum of the following size with no more than one per 20-mm square: 0.2 mm < (short dia. + long dia.)/2 < 0.55 mm
- Note 2:** This time is only a guide to the half-life of luminescence at room temperature and standard humidity.
The service life will be dramatically reduced in low-temperature environments. For example, the service life at 0°C or less is approximately 10,000 hours (reference value).

Operation Specifications

| Item | Specifications |
|-------------|---|
| Touch panel | Number of switches: Up to 72 registered per screen (12 × 6 (horizontal × vertical)) |
| | Switch size: 9.14 × 9.18 mm (horizontal × vertical) |
| | Input: Pressure sensitive |
| | Operating force: 1 N max. |
| | Service life: 1,000,000 operations min. |

External I/F Specifications

| Item | Model | NT20-ST121(B) |
|-----------------------|---------------|---|
| Serial communications | Serial port A | Conforms to EIA RS-232C. D-sub 9-pin connector (female) +5 V (150 mA max.) output at pin No. 6 The +5 V output, however, cannot be used simultaneously at ports A and B. |
| | Serial port B | EIA RS-232C D-sub 9-pin connector (female) +5 V (150 mA max.) output at pin No. 6 The +5 V output, however, cannot be used simultaneously at ports A and B. |
| Expansion I/F | | Dedicated connector |

Display Specifications

| Item | Specifications | |
|--|--|--|
| | Host Link, NT Link, or C200H Direct Communications | Memory Link (RS-232C) Communications |
| Display elements | Display characters | Fixed displays (character strings registered for each screen) |
| | Character string displays | 32 per screen |
| | Numeric displays (See note.) | 50 per screen max., 8-digit display |
| | Bar graph displays (See note.) | 50 per screen |
| | Graphic displays | Any position |
| | Lamps | 128 per screen |
| Screen types | Touch switches | 72 per screen |
| | Numeral settings | Numeral setting display (8 digits), 50 per screen |
| | Normal screen | The normal screen display |
| | Overlapping screens | A maximum of 8 registered screens can be displayed overlapped with each other. |
| | Continuous screens | Switch among up to 8 screens (Use ↑ and ↓ touch switch keys to switch screens.) |
| | Screen attributes | Buzzer, numeral settings, backlight |
| Number of screens | 495 screens max. | |
| Screen registration method | By transmitting screen data created using the Support Tool to the NT20 By transmitting screen data stored in a Memory Unit to the NT20 (automatic/manual) | |
| Screen saving method (image data memory) | Flash memory (specific NT20 format) | |

- Note:** No. of numeral table entries that can be used (No. of numeral displays used + No. of graphs used + No. of numeral settings) ≤ 128

Display Element Specifications

| Item | Specifications |
|-----------------------------|---|
| Display characters | Half-size characters (8 × 8 dots): Alphanumerics and symbols |
| | Normal-size characters (8 × 16 dots): Alphanumerics and symbols |
| | Mark data (16 × 16 dots): User defined picture characters |
| Enlargement function | Double width, double height, and magnifications 4X, 9X, 16X |
| Smoothing processing | Available for enlarged characters with magnification of 4X or greater |
| Character display attribute | Normal, reverse, flashing, reverse and flashing |
| Graphics | Polylines, circles |

Data Capacities

| Item | Specifications | |
|-------------------|--|--------------------------------------|
| | Host Link, NT Link, or C200H Direct Communications | Memory Link (RS-232C) Communications |
| Character strings | 32 characters × 128 | |
| Numeral data | 8 digits × 128 | |
| Mark data | 64 | |
| Touch switches | No limit | 256 per file max. |
| Lamps | No limit | 256 per file max. |

Differences between the NT20, NT20S, and NT20M

| Function | NT20M-DT131 | NT20S | NT20 |
|---|--|---|---|
| Communications | A host interface unit is needed. | <ul style="list-style-type: none"> • NT20S-ST121-V3: Built-in Host Link/NT Link • NT20S-ST122-V1: Built-in C200H Direct Communications • NT20S-ST128: Built-in Memory Link (RS-232C) (Other host interface units cannot be connected.) | System programs can be downloaded using the System Installer. <ul style="list-style-type: none"> • Host Link, NT Link, C200H Direct, and Mitsubishi Communications pre-installed: NT20-ST121 • Memory Link (RS-232C) is provided with a different system program. |
| Communications connectors | Connector on front panel for connection to Support Software (9-pin) and connector on rear panel for connection to host | <ul style="list-style-type: none"> • NT20S-ST121-V3/ST128: Connector (9 pin) for either Support Software or host • NT20S-ST122-V1: Connectors on rear panel for Support Software (9-pin) and host | Two communications connector ports (9-pin) on rear panel Port A: For either Support Software or host communications Port B: For host communications only |
| Host RUN input terminal/ Alarm output terminal | Yes | No | No |
| System keys | Yes | No | No |
| Contrast adjustment | Front panel | Rear panel | Rear panel |
| Expansion I/O Unit | Possible with DN type | Not possible | Not possible |
| Water resistance | Equivalent to IP54. | Equivalent to IP65. | Equivalent to IP65. |
| Allowable power interruption time | 5 ms | Not specified | Not specified |
| System ROM | A system ROM compatible with the host interface unit is required. | Built in (cannot be replaced) | Built in (cannot be replaced) |
| Resume function | Yes | No | No |
| History holding function | Yes | No | No |
| Screen data compatibility | No | Yes (See note.) | Yes |
| PLC ladder program compatibility | No | Yes | Yes |
| LCD life | 50,000 hours min. | 50,000 hours min. | 50,000 hours min. |
| Backlight life (luminescence half life) | 10,000 hours (replaceable) | 10,000 hours (replaceable) | 50,000 hours (replacement not required) |
| Image data memory | Sold separately (select EPROM, SRAM, or EEPROM) | Built in (flash memory) | Built in (flash memory) |
| Image data memory capacity | 128 KB max. | 96 KB | 512 KB |
| Dimensions | 220 × 110 × 82 mm | 190 × 110 × 58 mm | 190 × 108 × 53.5 mm (with no host interface) |
| Panel cutout | 209 × 98.5 mm | 178.50 × 100.5 mm | 178.5 × 98.5 mm |

Note: If screens require continuous screens, numeral settings, buzzer stop, or other system key functions, touch switches with the system key functions must be set for each screen using the Support Software. For details, refer to the *NT20S Programmable Terminal User's Manual* (Cat. No. V020).

System Program Transfer

By transferring a new system program, functions and performance can be updated without changing hardware.

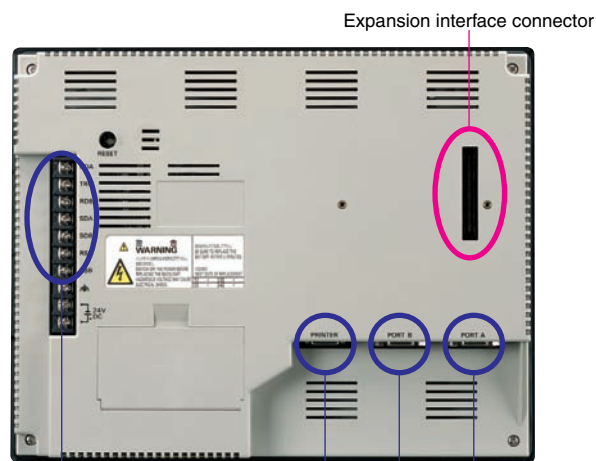
- The compatible combinations of NT31/631 models and system program versions are shown in the table.
 - ⊙: Indicates the preinstalled default combination of versions (recommended).
 - : Indicates combinations of versions that can be transferred for operation.
 - △: Indicates combinations of versions that can be transferred but for which some functions are restricted during operation (e.g., high-quality character display).
 - ×: Indicates combinations of versions that cannot be transferred.
- NT31/631 system program version 4.x can be transferred only with System Installer V2, which is available on the CD for NT Series Support Software version 4.08 or higher. Only system programs up to version 3.x can be transferred with older versions of the System Installer.
- The NT20 system program can be transferred only with System Installer V2.1, which is available on the CD for NT Series Support Software version 4.8 or higher. It cannot be transferred with lower versions of the System Installer.

| System (See note.) \ PT | PT | | | |
|-------------------------|--------|-----|-----|-----|
| | Pre-V1 | -V1 | -V2 | -V3 |
| Ver. 1.x | ⊙ | ○ | ○ | × |
| Ver. 2.x | △ | ⊙ | ○ | × |
| Ver. 3.x | △ | ○ | ⊙ | × |
| Ver. 4.x | × | × | × | ⊙ |

Note: The system version is shown in the System Installer program under "Ver."

External Interface

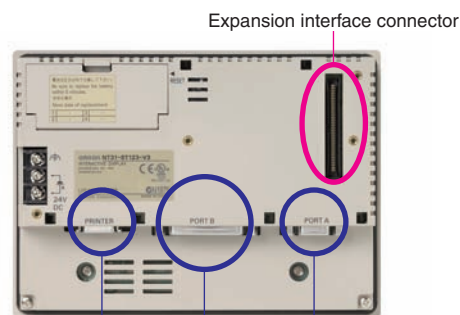
NT631C



RS-422A Port
Ensures 1-to-N RS-422A or RS-485 communications, as well as long-distance communications.

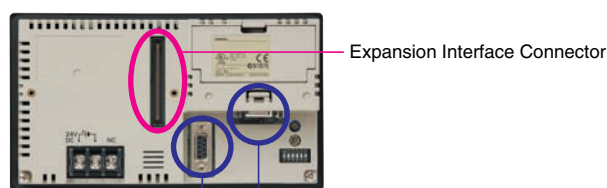
Printer Port
RS-232C Port
The NT631 has two RS-232C ports that can be connected directly to bar-code readers for POP system construction. These two ports can be used simultaneously for the Support Software and host, to greatly improve debugging and maintenance efficiency.

NT31C/NT31



Printer Port
RS-232C Port
RS-232C/RS-422A Port
(RS-232C selectable by memory switch setting.)

NT20



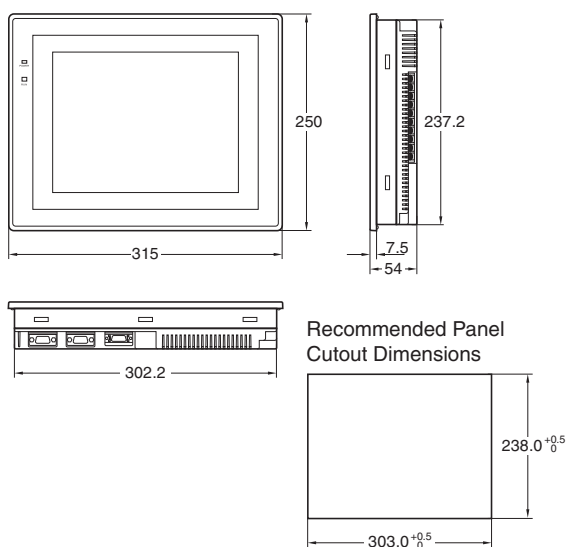
RS-232C port
(used for both Support Software and host)
RS-232C port
(host communications only)

Debugging and maintenance is more efficient using two ports.

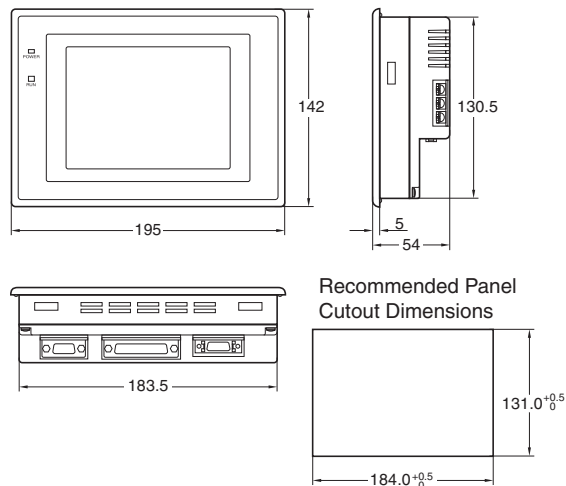
Dimensions

(Unit: mm)

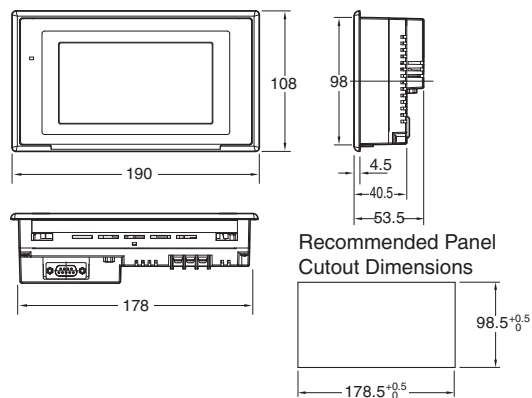
NT631C



NT31C/NT31



NT20



Related Manuals

| Cat. No | Model | Name |
|---------|---------------------|---|
| V062 | NT31, NT31C * | NT31 and NT31C Programmable Terminals Setup Manual |
| V063 | NT631, NT631C | NT631 and NT631C Programmable Terminals Setup Manual |
| V069 | NT21, NT31 *, NT631 | NT21, NT31, and NT631 Series Programmable Terminals Reference Manual |
| V091 | NT20 | NT20 NT-series Programmable Terminal User's Manual |
| V061 | NT-ZJCAT1-EV4 | NT-ZJCAT1-EV4 NT-SERIES SUPPORT TOOL FOR WINDOWS VER.4.□ OPERATION MANUAL |
| V066 | NT-DRT21 | DeviceNet (CompoBus/D) Interface Unit OPERATION MANUAL |

* NT31 and NT31C have been discontinued at the end of March 2014.

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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.