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Control StationCEIIx/View Station CEIIx Hardware

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Control StationCEIIx/View Station CEIIx Hardware

Hardware User's Guide

ControlStation CE IIx
ViewStation CE IIx

GE FANUC

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doc@gefedmonton.ge.com

Contents

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Welcome

Congratulations on your purchase of the Control Station / ViewStation CE IIx, the next generation compact control computer from GE Fanuc. The ControlStation / ViewStation CE IIx is intended for use as a dedicated controller for local and distributed control applications. Specifically, the CE IIx is a run-time target for CIMPLICITY Machine Edition™ projects. At home in a networked environment or as a stand-alone unit, the ControlStation / ViewStation CE IIx provides the ideal solution for your factory floor control needs.

Powered by Microsoft Windows CE, an industry standard embedded control operating system, the ControlStation / ViewStation CE IIx provides a fast track for application program developments. A benefit of Windows CE is the commonality with other versions of Windows which simplifies porting your existing program code. Another advantage of Windows CE is the familiarity of the user interface, increasing usability for operators and developers alike. The availability of third party application software makes this operating system even more attractive.

The CE IIx is an all-in-one microcomputer designed for maximum flexibility. The design, based on a popular RISC microprocessor, brings together a high resolution operator interface with a variety of I/O options. With an abundance of standard ports and expansion busses to choose from, chances are you can connect to the industrial equipment of your choice with the CE IIx.

The CE IIx is equipped with several memory types to satisfy even the most demanding applications. A 32 MB section of DRAM is split between operating system, program memory and an object store. A full 16 MB of non-volatile FLASH, functioning as a virtual hard drive, is available for application programs and the operating system: five megabytes is available to the user. Additional Flash memory can be added with CompactFlash cards.

The many features of the ControlStation / ViewStation CE IIx make it an obvious choice for a world of applications. Your smart choice will provide reliable operation for years to come.

GETTING STARTED

Basic Setup

Your ControlStation / ViewStation CE IIx is shipped in ready-to-use condition. All you must do is connect a DC power supply to start. Depending on your application, you may also want to connect and configure optional input devices (see page 26), communications ports (see page 31), and expansion adapters (see page 40).

Optional Ethernet Connection

Optional Expansion I/O

Power Supply

Optional Keyboard
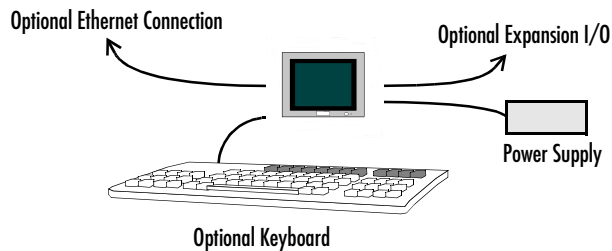
Caution: Disconnect the AC supply from your 24VDC power supply before connecting to your CE IIx. Connecting a "live" power supply may result in damage to equipment and personnel. Ensure that the **Frame Ground** terminal is connected to a safety ground such as a conducting chassis or equipment rack.

To connect a DC power supply

For your safety, the ControlStation / ViewStation CE IIx comes equipped with a transparent guard that covers the DC power outlet. Also included with your unit is a DC power connection cord, a cord with three color-coded wires (red, black and green) extending from the end.

1. Remove transparent plastic safety guard from the terminal block.

2. Attach the red wire to the **+** terminal block

3. Attach the black wire to the **-** terminal block.

4. Attach the green wire to the FG (frame ground) terminal.

Bottom

Frame Ground

+ -
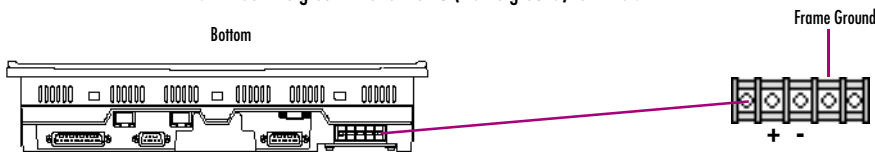
5. Reattach the transparent plastic guard

Machine Edition™ Development Setup

While working in CIMPLICITY Machine Edition™ development mode, it is necessary to provide a data link between your development workstation and the ControlStation / ViewStation CE IIx. The ViewStation CE/ControlStation CE development tools support an Ethernet network connection between an NT workstation and a CE IIx.

Ethernet   Ethernet

CE IIx

Power Supply

CIMPLICITY Development Workstation
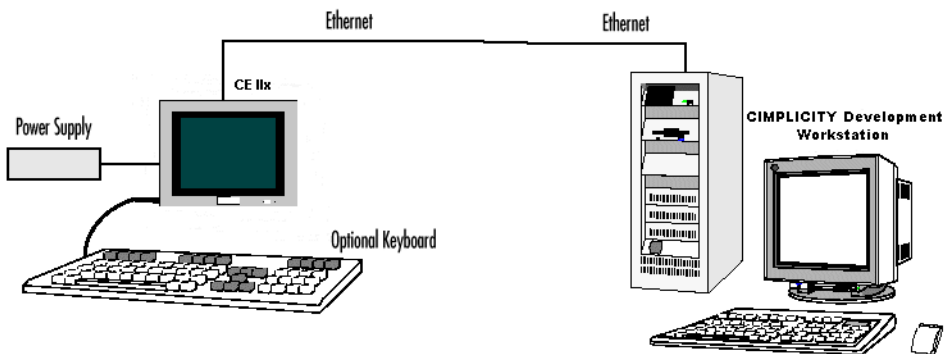
Optional Keyboard

To set up for development

1. Attach the CE IIx to your Ethernet network (see page 41).
2. (Optional) Connect a keyboard to your CE IIx.
3. Connect a 24VDC, 50w power supply (see page 2).
4. Obtain an IP address. (see page 42)

To start up the CE IIx

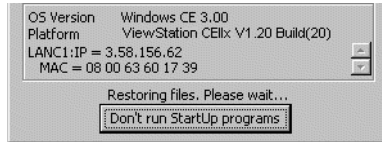- Apply AC power to the 24VDC supply.

The system will automatically boot.

The CE IIx issues a beep prior to beginning initialization. After initialization, the first thing to appear on the display is the splash screen.

You can configure the CE IIx to force the startup applications (see page 50).

1. To skip running any programs included in the StartUp folder, tap **Don't run StartUp programs**.

The splash screen disappears automatically after about 5 seconds. The Windows CE desktop is then visible.
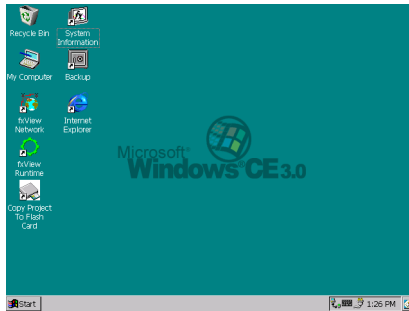
2. Tap **Start**, point to **Settings**, then tap **Control Panel**.

3. In the Control Panel, double-tap **Stylus** to configure the touch screen (see page 23).

4. In the Control Panel, double-tap **Date and Time** to configure the system clock (see page 48).

5. On the desktop, double-tap **Backup** to save any new settings through a power cycle (see page 15).

Shutdown

There are no specific dangers associated with a power failure or other unplanned shutdown of the ControlStation / ViewStation CE IIx. In general, programs are retained in FLASH memory. Some operating system settings are retained only with
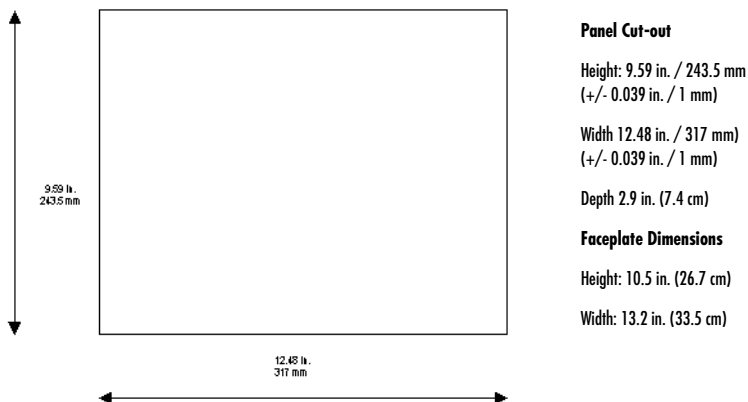
user-intervention. In order to carry out a graceful shutdown of the unit, it is recommended that you perform the following procedure.

To shut down the CE IIx

1. Shut down all running programs.

2. On the desktop, double-tap 🔲 **Backup** to save any operating system settings through a power cycle (see page 15).

3. Remove AC power from the 24VDC supply.

Panel Cutout

If you install the CE IIx into a panel, you must cut out a section of the panel according to certain specifications.

9.59 in. 243.5 mm

12.48 in. 317 mm

Panel Cut-out

Height: 9.59 in. / 243.5 mm (+/- 0.039 in. / 1 mm)

Width 12.48 in. / 317 mm) (+/- 0.039 in. / 1 mm)

Depth 2.9 in. (7.4 cm)

Faceplate Dimensions

Height: 10.5 in. (26.7 cm)

Width: 13.2 in. (33.5 cm)

Eight mounting brackets are included with the CE IIx to install the unit within an enclosure. Mounting brackets attach to mounting fixtures located on the sides of the unit. The unit can be installed using any three of the mounting fixtures on the sides of the unit. However, the manufacturer's recommended installation is two brackets on the top and bottom of the unit and one on each side

Mounting
Bracket

Metallic
Fixtures
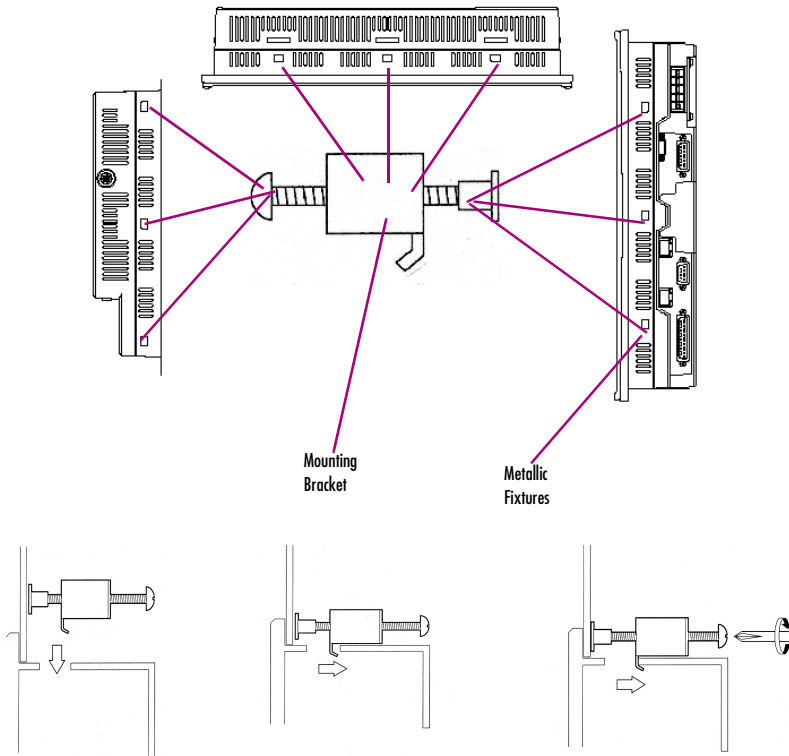
To mount the CE IIx in a panel

1. Insert the hook of the metal fittings into the mounting fixtures shown above.
2. Slide the metal fittings into the back side.
3. Firmly tighten screw until unit is mounted into place.

   Note: Torque tolerance is 0.5 to 0.6 Nm.

   Mounting brackets hold the CE IIx in place by tension. No holes have to be drilled in the panel.

   Also included with the CE IIx is a rubber gasket that surrounds the perimeter of the unit. After installation, the gasket acts as a seal preventing water and other liquid substances from spilling into the electronic area of the unit preventing dangerous shock hazards. Ensure that the gasket is attached to the unit prior to installation.

TECHNICAL SUPPORT

If you have technical problems that cannot be resolved with the information in this guide, you can contact us by:

Telephone: 1-800-GE-FANUC (1-800-433-2682)

Internet: www.gefanuc.com

E-mail: support@gefanuc.com

Comments about our manuals or help: doc@gefanuc.com

2

Overview

This chapter provides introductory information on the ControlStation / ViewStation CE IIx hardware and software with descriptive procedures for completing some of the most common tasks you will encounter.

In this chapter:
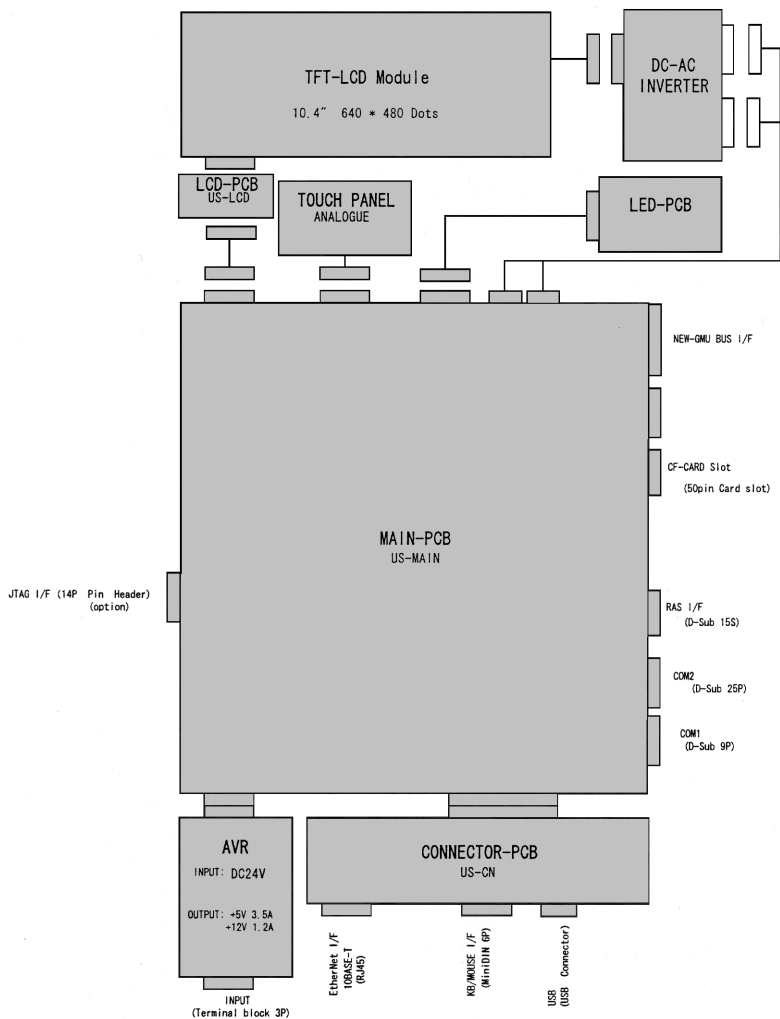
HARDWARE

Layout Diagram

In addition to the primary touch screen interface, the supports a variety of communication ports and expansion busses to allow greater flexibility in application. The following pictures show the physical layout of the and the locations of ports and connections.

Touch screen LCD display.
See page 22

Programmable
tri-color status LED.

Expansion Bus.
See page 45

PS/2 Port.
See page 26

Maintenance Hatch.
See page 32

Power Supply Terminal.
See page 2

CompactFlash Card Hatch.
See page 37

USB port. See page 40

Serial Port (COM 2). See page 31

RAS Port. See page 49

Primary Ethernet Port. See page 41

Secondary Ethernet Port. See page 41

.Serial Port (COM 1). See page 31

Block Diagram

The is based on a Hitachi HD7750 RISC microprocessor (SH4) and employs a large scale integration to provide high performance with a small footprint. The following block diagram illustrates the major functional areas of the CE IIx .

```
TFT-LCD Module
10.4" 640 * 480 Dots

DC-AC INVERTER

LCD-PCB
US-LCD

TOUCH PANEL
ANALOGUE

LED-PCB

MAIN-PCB
US-MAIN

NEW-GMU BUS I/F

CF-CARD Slot
(50pin Card slot)

JTAG I/F (14P Pin Header)
(option)

RAS I/F
(D-Sub 15S)

COM2
(D-Sub 25P)

COM1
(D-Sub 9P)

AVR
INPUT: DC24V
OUTPUT: +5V 3.5A
        +12V 1.2A
INPUT
(Terminal block 3P)

CONNECTOR-PCB
US-CN

EtherNet I/F
10BASE-T
(RJ45)

KB/MOUSE I/F
(MiniDIN 6P)

USB
(USB Connector)
```

CE IIX SOFTWARE

Windows CE v3.0

The ControlStation / ViewStation CE IIx uses Microsoft Windows CE as the operating system. It is a full 32 bit O/S with a graphical user interface (GUI). This popular operating system is finding widespread application in hand-held PCs (H/PCs) and embedded controllers, such as the ControlStation / ViewStation CE IIx.

The user interface of Windows CE is similar to that of Windows 95/98/NT. The familiar look and feel of Windows CE shortens the learning curve for those having experience with Windows 95/98/NT. From the software developer's perspective, the CE environment is a subset of the WIN32 application programming interface, simplifying the porting of existing software from other versions of Windows.

In the CE IIx , the operating system is stored in a 10 MB block of FLASH memory and copied to an 12 MB block of DRAM for execution. The operating system starts automatically following a power-up or reset of the unit.

Working with Windows CE

Although the main user input device when working with Windows CE is the touch screen, it can often be convenient to use keyboard shortcuts, such as described in the following table.

Keyboard Shortcut	Action
CTRL+ESC or	Opens the Windows CE **Start** menu. Use arrow keys to select a program and ENTER to run it.
ALT+TAB	Starts the Task Manager. Use it to quit unresponsive programs.
CTRL+ALT+=	Starts the touch screen calibration.
SPACEBAR	Equivalent to single-tap.
ENTER	Equivalent to double-tap. In a dialog box, equivalent to **OK**.
TAB	In a dialog box, select next control.
SHIFT+TAB	In a dialog box, select previous control.
CTRL+TAB	In a tabbed dialog box, open the next tab.
ESC	Close dialog box, discarding changes.
ARROW KEYS	In a dialog box, select controls or items from a list box.

To place a program in the 🪟 Start menu

1. Start Windows CE Explorer.

2. Navigate to the program you want to place in the 🪟 **Start** menu.

3. Tap the program's icon to select it.

4. From the **Edit** menu, choose **Copy**.

5. Navigate to the '\Windows\Programs\' folder.

6. From the **Edit** menu, choose **Paste Shortcut**.

7. Run the 🖥️ **Backup** program to retain the change through a power cycle (see page 15).

For more on Windows CE visit **www.microsoft.com/windows/embedded/CE/**.

Pocket Internet Explorer

Microsoft's Pocket Internet Explorer is a full featured browser that is fully integrated with the Windows CE operating system. This browser allows you to connect with an internet service provider, view web pages and download from FTP sites.

A connection can be established over an Ethernet network (default) or using a dial-up connection. The Ethernet or dial-up connection must be properly configured.

To configure a dial-up connection in Pocket Internet Explorer

1. Start Pocket Internet Explorer.

2. From the **View** menu, choose **Options**.

The **Options** dialog box appears.
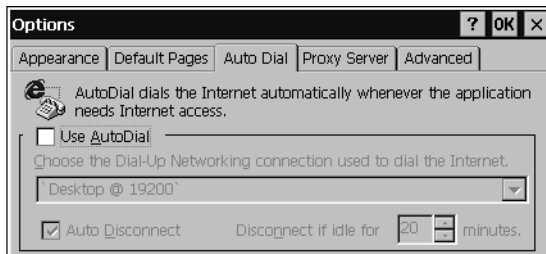
3. On the **Auto Dial** tab, select the **Use AutoDial** check box.

4. Choose either the default or a user-defined connection from the list.

5. Tap **OK**.

6. Run the 🖥️ **Backup** program to save the settings through a power cycle (see page 15).

To configure a Proxy Server

1. Start Pocket Internet Explorer.

2. From the **View** menu, choose **Options**.

   The **Options** dialog box appears.
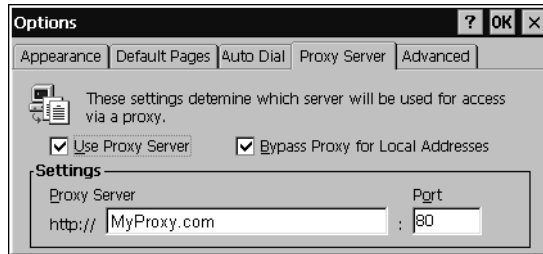
3. On the **Proxy Server** tab, select the **Use Proxy Server** chec kbox.

4. In the **Proxy Server** box, type the URL of your proxy server (see your ISP or network administrator).

5. In the **Port** box, type the server's port number for HTTP access.

6. Select the **Bypass Proxy for Local Addresses** check box to connect directly to sites like your intranet.

7. Tap **OK**.

8. Run the [⊡] **Backup** program to retain the new settings through a power cycle (see page 15).

Web Server

An integrated Web Sever is installed with the operating system to support CIMPLICITY Machine Edition web functionality and other web based facilities. The web server is pre-configured. No user intervention is required.

Connecting Peer-to-Peer

It is possible to connect peer-to-peer to the CE IIx web server through an Ethernet connection.

To connect the CE IIx peer-to-peer

1. Configure the CE IIx Ethernet port you are using with a static IP address and subnet mask.

2. Configure the computer communicating with the CE IIx box with the same subnet mask.

3. If the communicating computer uses proxy settings in its IE Explorer, ensure the CE IIx 's static IP address is ignored in the proxy settings.

To add the IP address of the CE IIx box to the ignore list of proxy settings

1. Open Internet Explorer.

2. In the Tools pull-down menu, choose **Internet Options**, then click the **Connections** tab.

   The **Connections** dialog box appears.

3. Choose LAN settings.

4. Click the **Advanced** button.

5. Add the CE IIx static IP to the list of addresses.

   Note: You can use wild cards in the list; i.e., if you want the proxy to ignore any addresses starting with 192.0, enter 192.0.*.

Backup

Backup is a custom utility that saves any changes made to the Windows Registry or Desktop. This utility is required because unlike typical Windows CE platforms, the ControlStation / ViewStation CE IIx is not battery powered. Specifically, the Backup command stores in Flash memory Windows CE registry information and other data including:
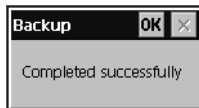
- Touch screen calibration settings.
- IP address.
- Any changes (additions) made to the 'Windows' subtree of the file system.

The **Backup** program should be run prior to shutting down the ControlStation / ViewStation CE IIx.

To run the Backup program

1. On the desktop, double-tap 🖳 **Backup**.

   The **Backup** dialog box appears.

Backup	**OK**	✕
Completed successfully		

2. Tap **OK**.

Reboot the System

The reboot function is a custom utility, installed with the operating system, which allows users to reboot the system at any time during operation.

To reboot the system

1. Run the [icon] **Backup** program to retain any changes.

2. Tap **Start** [icon], point to **Programs** then the **System** folder, and tap [icon] **Reboot** .

   A confirmation dialog box appears.

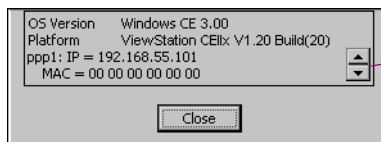3. Choose **Yes**.

   The operating system restarts.

System Information

System Information is a custom utility that causes a splash screen to appear with the following information displayed:

- **Operating System version.** For example, 'Windows CE 3.0'.
- **Platform.** Identifies the host hardware, its version and build number.
- **NIC Information.** A scrollable box containing the NIC name, IP address and MAC address of all active ports.
  - **NIC Name.** An identifier for the Ethernet port (e.g. "LAN91C961").
- **IP Address.** The unique address assigned to each node on a given TCP/IP network.
- **MAC Address.** The unique address, factory assigned to each device that will operate on an Ethernet network.

To run the System Information program

1. On the desktop, double-tap [icon] **System Information**.

   The **System Information** splash screen appears.

   ```
   OS Version    Windows CE 3.00
   Platform      ViewStation CEIIx V1.20 Build(20)
   ppp1: IP = 192.168.55.101
        MAC = 00 00 00 00 00 00
                                    [Close]
   ```

   Scroll through the list to view the other ports.

2. Tap **Close** to continue.

FixDisk

The CE IIx uses mounted volumes of FLASH memory (see page 46) for persistent storage. Equivalent to hard disk partitions on a standard PC, mounted volumes appear in the Windows CE file system as folders located in the root directory.

Mounted volumes on CE devices can occasionally lose data and become corrupt. To combat the problem of volume corruption in the CE IIx 's persistent storage system, the FixDisk utility is available to repair or format lost or corrupted data volumes.
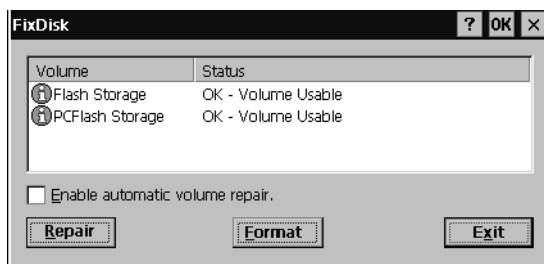
The FixDisk utility automatically repairs volumes at startup or can be run manually at any time to format or repair volumes. If errors are detected in one or more of the mounted volumes, FixDisk automatically repairs them and displays a message reporting the results of the repair. If no errors are found, no message appears and normal operation continues.

The automatic repair feature allows you to non-interactively repair a volume. When automatic repair is enabled, FixDisk automatically repairs any damage to the selected volumes without prompting you. When the "Enable Automatic Volume Repair" is cleared, you are prompted as errors are discovered. By following the instructions displayed, you can manually repair damaged volumes.

To manually repair a volume

1. Tap ▓ **Start** menu, tap ▦ **Programs**, tap ▢ **System**, and then tap ⚲ **FixDisk**.

   The **FixDisk** dialog box appears.

FixDisk		? OK ×
Volume	Status	
ⓘ Flash Storage	OK - Volume Usable	
ⓘ PCFlash Storage	OK - Volume Usable	

   ☐ Enable automatic volume repair.

   [Repair]   [Format]   [Exit]

2. Select a volume from the list of mounted volumes.

3. Tap the **Repair** button.

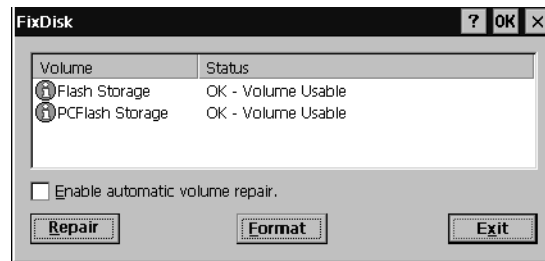   FixDisk repairs the selected volume.

To manually format a volume

If a volume cannot be repaired, then it must be formatted.

Caution: After formatting a volume, all data in that volume is lost.

1. Tap 🏁 **Start** menu, tap 📑 **Programs**, tap 📁 **System**, and then tap 🔧 **FixDisk**.

   The **FixDisk** dialog box appears.

FixDisk		? OK ×
Volume	**Status**	
ⓘ Flash Storage	OK - Volume Usable	
ⓘ PCFlash Storage	OK - Volume Usable	
☐ Enable automatic volume repair.		
[Repair]	[Format]	[Exit]

2. Select a volume from the list of mounted volumes.

3. Tap the **Format** button.

   The selected volume is formatted and you are prompted to restart the operating system.

Restore PC Card

Restore PCCard is a custom utility for transferring Machine Edition Projects between CE IIx units via CompactFlash cards.

To copy a Machine Edition project from the CE IIx onto a CF card

1. Ensure there is a blank CF card in the in the CF port.
2. Stop the runtime (View or Logic Developer).
3. Double tap the **Copy Project to Flash Card** icon located on the desktop.

   Be patient as the system takes several seconds to locate the card.
4. Tap **Yes** when the **Proceed with Copy to PC Card** confirmation dialog box appears.

   The system will copy the project onto the blank CF card.

To update a Machine Edition project on the CE IIx

You can update a Machine Edition project currently stored on the CE IIx with a revision stored on a CF card.

1. Insert the CF card containing an upgraded version of the Machine Edition project in the CompactFlash port.
2. Reboot CE IIx .

The CE IIx automatically upgrades the project as it boots.

HTTP File Transfer Utility

The HTTP File Transfer Utility (HFTU) is a small, stand-alone command line program that allows you send and delete files to and from computers over a network. The HFTU uses the HTTP protocol so you can even send files to computers over the Internet.

The HTTP File Transfer utility requires both computers to have a web server (see page 14) that supports PUT functionality. Most web servers support PUT, including the CIMPLICITY Machine Edition web server installed with the runtimes for View and Control. If in doubt, check the documentation for your web server.

Run the HTTP utility from a command line prompt, from a batch file (.BAT) or as an application call in a script. The HTTP utility is an executable (.EXE) file included in the ControlStation / ViewStation CE IIx's operating system.

The HTTP utility currently supports two file transfer commands: COPY and DELETE.

To use the HTTP utility

1. From Programs in the ▦ **Start** menu, choose ▦ **Command Prompt.**

   The **Command Line** editor appears.

2. Type commands as required.

3. Use the following syntax:

   HTTPUTIL COPY [source] [destination]

   Where [source} is the URL of the source file, and {destination} is the URL of the destination file. For example:

   ```
   HTTPUTIL COPY \MyFile.txt htttp://MyServer/webfiles/MyFileBACKUP.txt
   ```

   Copies a file called MyFile.txt on drive C: of the local computer to the webfiles folder under the web server at //MyServer. Note that you can rename a file as you copy it.

   HTTPUTIL DELETE [url]

   Where [url] is the remote URL of the file you want to delete. This URL must use the "//" or "HTTP://" syntax. For example:

   ```
   HTTPUTIL DELETE http: //MyServer/webfiles/MyFileBACKUP.txt
   ```

   Deletes a file called MyFileBACKUP.txt from the webfiles directory under the web server at HTTP://MyServer.

3

Detailed Operation

TOUCH SCREEN DISPLAY

10 inch LCD Display

The ControlStation / ViewStation CE IIx has an integrated 65536 color flat panel display. The ten inch back-lit panel employs TFT technology to provide a bright operator interface supporting a resolution of 640 by 480 pixels.
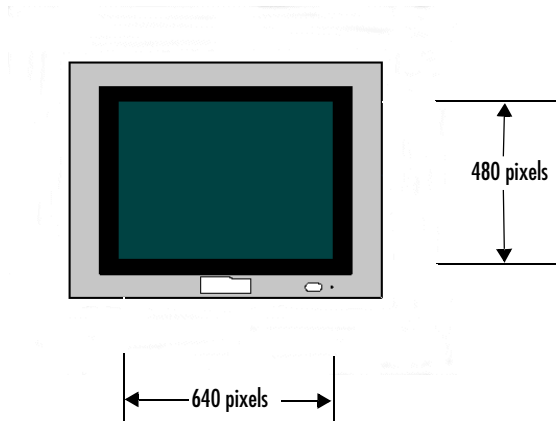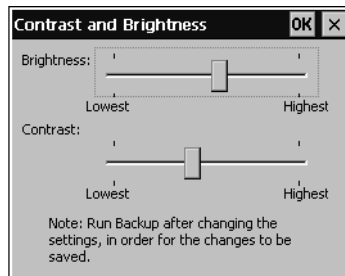

The CE IIx video subsystem employs the MediaQ MQ200 graphics accelerator supported with 1 MB of video RAM.

To adjust the display brightness

1. In the Control Panel double tap **Display** and choose the **Brightness** tab.

    The **Brightness** dialog box appears.

2. Drag the **Brightness** slider between Lowest and Highest.

3. Tap **OK** to apply the new setting.

4. Run the 🔲 **Backup** program to save settings through a power cycle (see page 15).
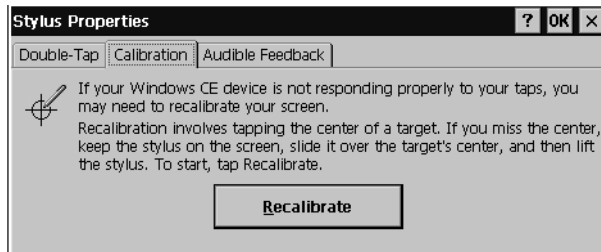
Touch Screen

The ControlStation / ViewStation CE IIx display is coupled to a resistive touch panel. Although you can use your finger to operate the touch screen, use of a blunt stylus is recommended.
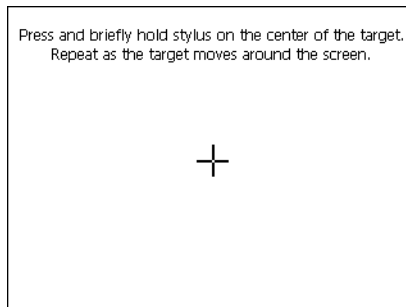
To calibrate the touch screen

1. In the Control Panel, double-tap ✏️ **Stylus** or press CTRL + ALT + =.

   The **Stylus Properties** dialog box appears.

2. Choose the **Calibration** tab
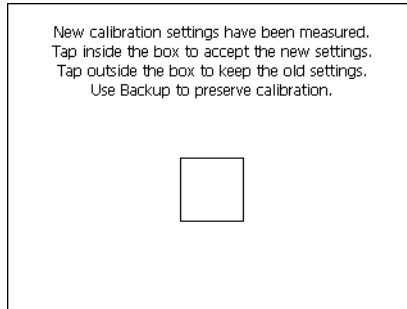
3. Tap the **Recalibrate** button.

   A cross hair target is displayed on a blank background.

4. Tap the target center and hold until the cursor moves, then repeat four more times.

```
New calibration settings have been measured.
 Tap inside the box to accept the new settings.
 Tap outside the box to keep the old settings.
      Use Backup to preserve calibration.
```
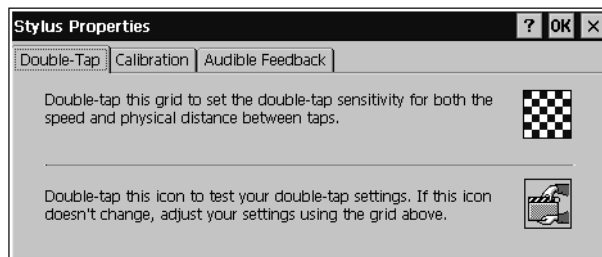
5. Tap inside the centre square to keep the new calibration settings or outside the square to discard the settings.
6. Run the 🔘 **Backup** program to retain the new settings through a power cycle (see page 15).

To set the double-tap sensitivity

1. In the Control Panel, double-tap ✐ **Stylus**.

   The **Stylus Properties** dialog box appears.

   Stylus Properties　　　　　　　　　　　? OK ×

   Double-Tap | Calibration | Audible Feedback |

   Double-tap this grid to set the double-tap sensitivity for both the
   speed and physical distance between taps.

   Double-tap this icon to test your double-tap settings. If this icon
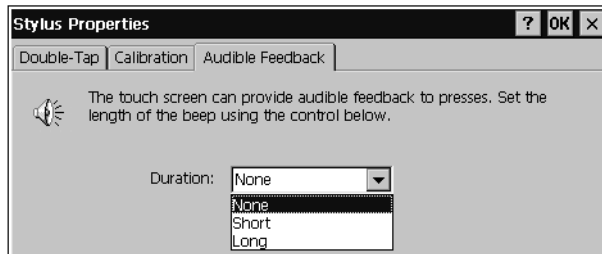   doesn't change, adjust your settings using the grid above.

2. Choose the **Double-Tap** tab.
3. Double-tap the grid to enter a setting.
4. Double-tap the test icon to check the setting.

   If the test icon doesn't change when you double-tap it, double-tap the grid again.

5. Tap **OK** to finish.
6. Run the 🔘 **Backup** program to retain the new settings through a power cycle (see page 15).

To set audible feedback

1. In the Control Panel, double-tap ✐ **Stylus**.

2. The **Stylus Properties** dialog box appears.

```
┌─────────────────────────────────────────────────────────────┐
│ Stylus Properties                                  ? OK ✕    │
├─────────────────────────────────────────────────────────────┤
│ Double-Tap │ Calibration │ Audible Feedback │                │
│                                                               │
│   ◁⟨⟨   The touch screen can provide audible feedback to     │
│         presses. Set the length of the beep using the        │
│         control below.                                        │
│                                                               │
│             Duration:  │None              ▼│                  │
│                        │None              │                   │
│                        │Short             │                   │
│                        │Long              │                   │
└─────────────────────────────────────────────────────────────┘
```

3. Choose the **Audible Feedback** tab.

4. From the **Duration** pull-down menu choose None, Short or Long.

5. Tap **OK** to finish.

6. Run the 🔳 **Backup** program to save the new settings through a power cycle (see page 15).

KEYBOARD

The ControlStation / ViewStation CE IIx can be configured to use either or both an external hardware keyboard and a software emulation keyboard as an operator data input device. Typically, use an external hardware keyboard when in development mode; the Soft Input Panel is more applicable in an operational environment.

External Keyboard (optional)

There are two methods in which an external keyboard can be attached to the unit.

Any standard PC keyboard that connects with a PS/2 interface can be used with the CE IIx. The following diagram shows the location, orientation and pinout of the optional keyboard port.

Side

1	KBDAT (data)
2	n/c
3	GND
4	VCC (+5VDC)
5	KBCLK (clock)
6	n/c
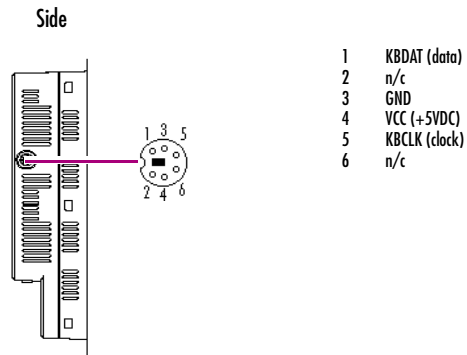
To configure an external hardware keyboard

1. In the Control Panel, double-tap ⌨ **Keyboard**.

   The **Keyboard Properties** dialog box appears.

   ```
   Keyboard Properties                                OK  ×
   ┌─────────────────────────────────────────────────────┐
   │ Repeat │                                             │
   │  ☑ Enable character repeat                           │
   │                                                      │
   │  🅰  Repeat delay:              🅰🅰 Repeat rate:       │
   │     Long            Short         Slow          Fast │
   │     ◄ ·········──── ►           ◄ ────·········── ►  │
   │                                                      │
   │  Tap here and hold down a key to test: [           ] │
   └─────────────────────────────────────────────────────┘
   ```
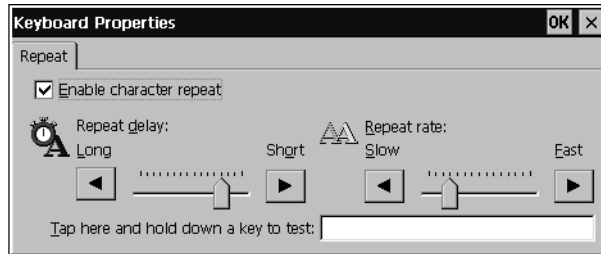
2. Select or clear the **Enable character repeat** check box.

3. If character repeat is enabled, drag the **Repeat delay** slider to set the minimum time a key must be pressed before the first repetition occurs.

4. If character repeat is enabled, drag the **Repeat rate** slider to set the time between repetitions while a key is pressed.

5. Tap the test box then press and hold a key to check keyboard performance.

6. Tap **OK** to finish.

7. Run the 🔲 **Backup** program to retain the new settings through a power cycle (see page 15).

Soft Input Panel

The Soft Input Panel is a touch screen emulation of a standard keyboard. It can be used in place of a standard hardware keyboard.

If the soft input panel is the selected input method you will require a way to display or hide the panel. A utility program is included with the ControlStation / ViewStation CE IIx that places an icon in the system tray for this purpose.
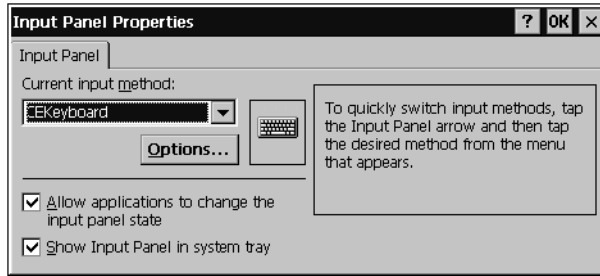
Show Input Panel icon

```
🏁Start  🖥C..            ⌨ 🔧  7:23 AM  🗒
```

To display/hide the Soft Input Panel

- On the system tray of the task bar, double-tap the ⌨ icon. The Soft Input Panel appears/disappears.

To show/hide the ▦ Soft Input Panel icon in the system tray

1. In the Control Panel, double-tap 🄳🄵🄶🄲🅅🄱 **Input Panel**.

   The **Input Panel Properties** dialog box appears.

Input Panel Properties	? OK ×

   Input Panel

   Current input method:

   CEKeyboard ▼   ▦

   Options...

   To quickly switch input methods, tap the Input Panel arrow and then tap the desired method from the menu that appears.

   ☑ Allow applications to change the input panel state

   ☑ Show Input Panel in system tray

2. Select the **Allow applications to change the input panel state** check box.

3. Tap **OK**.

4. Select or clear the **Show Input Panel in system tray** check box.

5. Tap **OK**.

6. Run the 🄸🄾 **Backup** program to retain the new settings through a power cycle (see page 15).

   The Soft Input Panel has two basic configurations: **Small key** and **Large key**.

   Small Key configuration: Provides a standard QWERTY key layout with numeric keys at the top row as illustrated in the following picture.

   Input Panel

   Esc 1 2 3 4 5 6 7 8 9 0 - = ◆
   Tab q w e r t y u i o p [ ]
   CAP a s d f g h j k l ; '
   Shift z x c v b n m , . / ↵
   Ctl Alt ` \   ↓ ↑ ← →

   Small key: lower case

   Uppercase characters are accessed by pressing the SHIFT key once. This is equivalent to holding down the SHIFT key on a conventional keyboard. The SHIFT key is active while the next key is pressed then reverts back to its unselected state. The CAP key does the same thing as SHIFT but does not revert to lower case after another key is pressed. Rather, the Soft Input Panel remains in the Uppercase mode until the CAP key is pressed again. The CTRL and ALT keys behave the same as the SHIFT key

Small key: upper case

Large Key configuration: Provides alphabetic or numeric keys alone. No numeric keys are displayed at the top of the alpha panel; alpha keys are not displayed on the numeric panel.

Large key: lower case

As with the small key configuration, upper or lower case alpha keys can be displayed by using the SHIFT key.

Large key: upper case

Pressing the **123** key once changes the keys to numeric. The numeric keys are displayed until another key is pressed then the Soft Input Panel reverts to the alpha mode.

Double-tapping the **123** key locks the panel in numeric mode, until the **123** key is pressed again.

Large key: numeric

To change key configurations

1. In the Control Panel, double-tap ▦ **Input Panel**.

   The **Input Panel Properties** dialog box appears.

2. From the **Current input method** list, choose 'CE Keyboard'.

3. Tap **Options**.

   The **Soft Keyboard Options** dialog box appears.

4. Select **Large Buttons** or **Small Keys**.

   A preview of the key size is displayed on the dialog box.

5. Tap **OK** to finish.

6. Run the Backup program to save the settings through a power cycle (see page 15).

COMMUNICATION PORTS

The ControlStation / ViewStation CE IIxhas two serial data communication ports, both of which are configured COM1 and COM2.

COM1 - Serial

The COM1 port is a general purpose RS 232C.

1	N/C
2	RXD - Receiving Data
3	TXD - Transmitting Data
4	N/C
5	SG - GND
6	NC
7	RTS - request to send
8	CTS - clear to send
9	5V - DC5V 200 mA
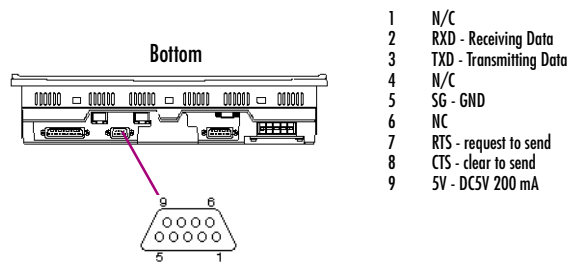
COM2 - Serial

The COM2 port is a general purpose bidirectional serial data channel that supports the RS232C and RS485 electrical standards. The COM1 port can be accessed and configured:

- as a direct or dial-up remote networking connection.
- as the port used by a terminal session (modem link only).
- from a user created application program.

A connection can be configured to reside on a network supporting a TCP/IP protocol.
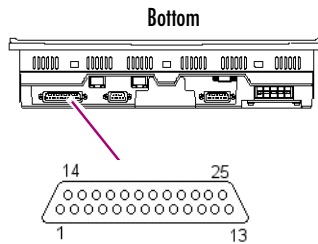
Bottom			
1	Frame Ground - GND	14	RXD (RS485) (+)
2	TXD (RS232)	15	RXD (RS485) (+)
3	RXD (RS232)	16	RXB (RS485) (-)
4	RTS (RS232)	17	RXD (RS485) (-)
5	CTS (RS232)	18	n/c
6	DSR (RS232)	19	n/c
7	SG (RS232)	20	DTR (RS232)
8	CD (RS232)	21	n/c
9	n/c	22	RI (RS232)
10	TXD (RS485) (+)	23	n/c
11	TXD (RS485) (+)	24	n/c
12	TXD (RS485) (-)	25	n/c
13	TXD (RS485) (-)		

Working with COM ports

To add a new connection

1. From the **Start** menu, tap **Programs**, then **Communication**, and choose **Remote Networking**.
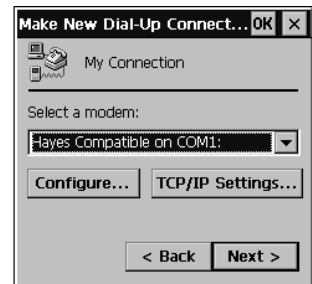
   The **Connection** window appears.

2. Double-tap **Make New Connection**.

   The **Make New Connection** wizard appears.
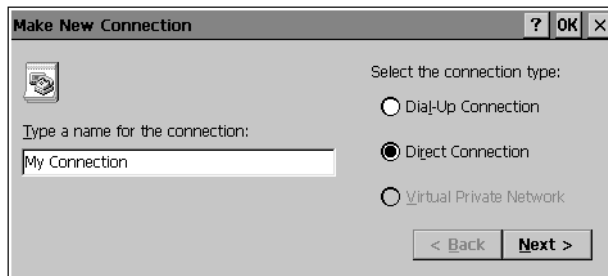
3. Type a name for the new connection then press ENTER

   You will need to use either an external keyboard or the soft keyboard.

4. Choose a connection type.

5. Tap **Next**.

The **Make New Direct Connection** or **Make New Dial-up Connection** dialog box appears.
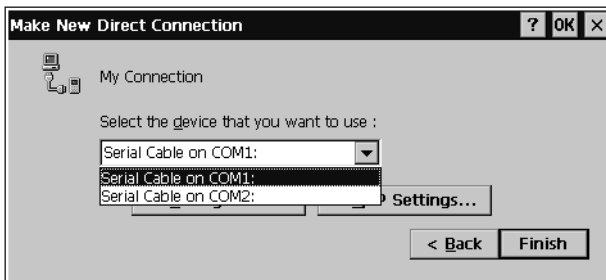
**or**

6. From the list, choose the device you want to use (COM1, COM2).

   You can **Configure** your device or **TCP/IP Settings** at this time if you wish.

7. Tap **Finish** for direct connect or **Next** for dial-up.

   If you are adding a dial-up connection the following dialog box appears.
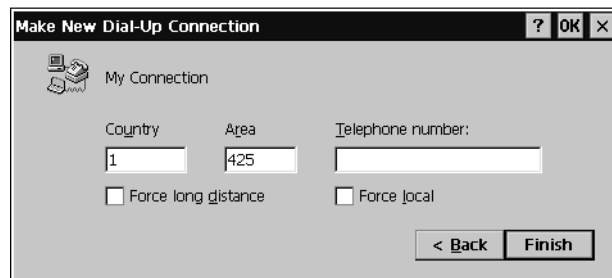
8. Type the destination **Country code**, **Area code**, and **Phone number** in the appropriate boxes.

9. Select or clear the **Force Long Distance** or **Force Local** check boxes.

10. Tap **Finish**.

To configure a communications connection

1. From the 🏁 **Start** menu, choose 🗔 **Programs**, then 🗀 **Communication**, and tap 🖳 **Remote Networking**.

The **Connection** window appears.

2. Select a 🖥 connection and tap 🖆 **Properties**.

The **Make New Direct Connection** or **Make New Dial-up Connection** dialog box appears.
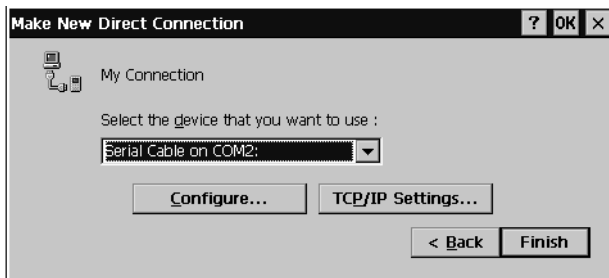
or

3. Tap **Configure**.

The **Device Properties** dialog box appears.
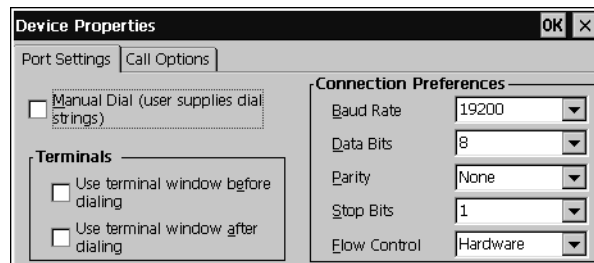
4. In the **Port Settings** tab, choose settings for all **Connection Preferences**.

5. If the connection is for terminal emulation, select or clear the **Terminal** check boxes.

You can use the CE IIx to emulate a terminal attached via a modem link (Hayes compatible) to COM1 or COM2. A terminal emulation definition is added as a unique session.

To add a new session

1. From the ⊞ **Start** menu, tap 📷 **Programs**, then 📁 **Communication**, and choose 📡 **Terminal**.

   The **Terminal** window appears.
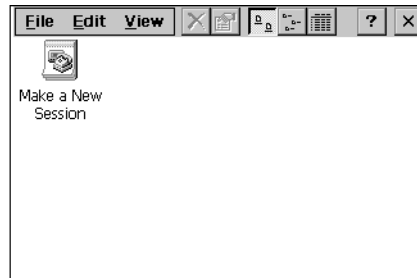
2. Double-tap 📄 **Make a New Session**.

   The **Session Properties** dialog box (**Communications** tab) appears.
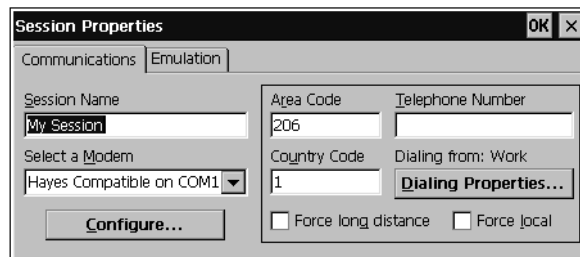
3. In the **Session Name** box, type a name for your session.

4. Enter the **Country Code**, **Area Code** and **Telephone** number of the remote modem you will connect to.

5. Tap the **Emulation** tab and choose an emulation type (DEC-VT-100 or TTY (Generic)).
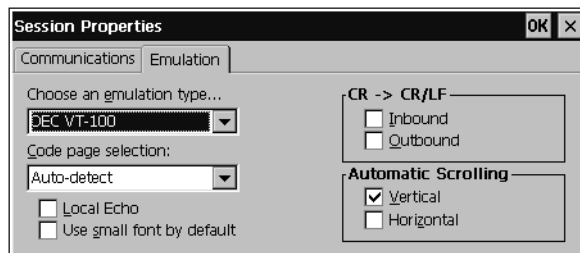
6. From the **Code page selection** box, select the coding type to employ.

7. Select the **Inbound** and /or **Outbound** check boxes to add LF characters to each CR.

8. Select the **Vertical** and/or **Horizontal** check boxes to specify automatic scrolling.

9. Tap **OK**.

10. The new session is added to the **Session** window.

11. Run the ⬚ **Backup** program to retain the new session definition through a power cycle (see page 15).

To start a terminal session

1. From the ⬚ **Start** menu, tap ⬚ **Programs**, then ⬚ **Communication**, and choose ⬚ **Terminal**.
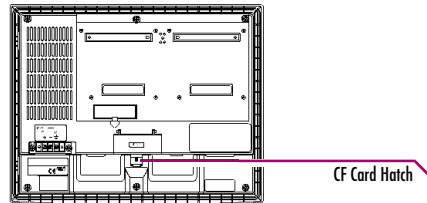
   The **Terminal** window appears.
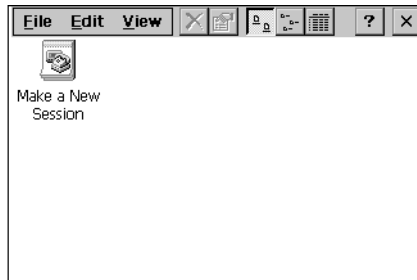
   Double-tap the ⬚ session you want to start.
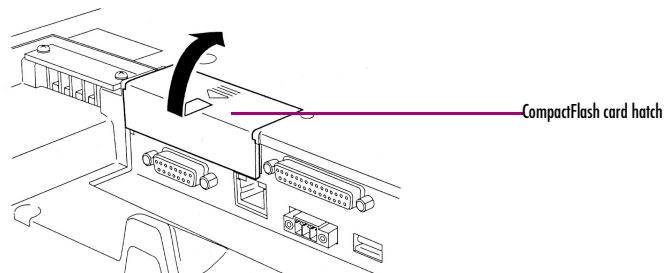
COMPACTFLASH PORT

The ControlStation / ViewStation CE IIx is equipped with a Type I CompactFlash Card port located on the back of the enclosure behind a hinged hatch.

CF Card Hatch

CompactFlash cards can be installed in the port to provide additional flash storage to the CE IIx's Flash memory (see page 46).

The CompactFlash Card Hatch/Port

CompactFlash card hatch

To insert a CompactFlash card into the CF port

CompactFlash card
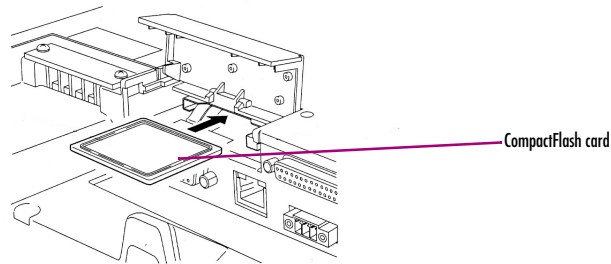
1. Open the CF Hatch on the unit.

   Opening the hatch reveals the CF port.

2. Grasp a CF card between thumb and forefinger.

3. Slide the CF card gently into the CF card port until the eject button clicks.

   The CF card should slide easily into the port. DO NOT FORCE.

To eject the CF card

- Gently press the eject button located on the CF card port.

Eject button
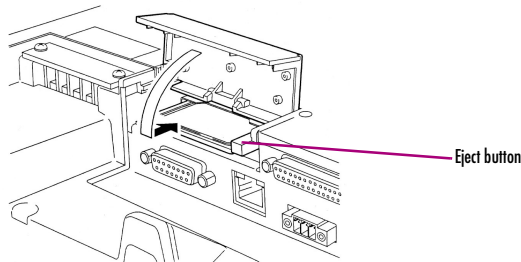
Compatible CF Cards

The following is a list of CompactFlash cards that are recommended by the manufacturer for your ControlStation / ViewStation CE IIx.

Manufacturer	Capacity (MB)	Body
Hitachi	16	HB289016C4
Hitachi	32	HB289032C4
Proface	16	GP077-CF20
Proface	32	GP077-CF30
SanDisk	8	SDCFB-8-299
SanDisk	16	SDCFB-16-505
SanDisk	32	SDCFB-32-505
SanDisk	48	SDCFB-48-485
SanDisk	96	SDCFB-96

For information on other compatible devices go to:

http://www.geindustrial.com/support/gefanuc/devicelisting.html

UNIVERSAL SERIAL BUS (USB)

The ControlStation / ViewStation CE IIx provides one standard USB port. USB is a high speed serial bus with multidrop capability. A variety of third party USB peripheral devices are available. Each device connected via USB requires a specific device driver. For your personal USB driver requirements, please contact your distributor.

1	USB-5V (DC5V300mA)
2	USBD(-) (USB data -)
3	USBD(+) (USB data +)
4	SG (Signal Ground)
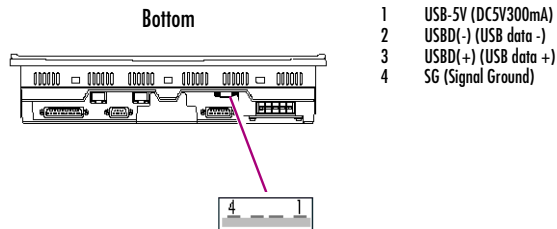
Bottom

ETHERNET PORTS

Two 10BaseT Ethernet networks (shielded twisted pair) can be connected via the RJ45F connectors on the bottom of the unit ControlStation / ViewStation CE IIx. The primary port (port 1) is the primary interface to your ControlStation / ViewStation CE IIx development workstation. The secondary port (port 2) is intended for connection to an I/O network or other process specific equipment. Ethernet ports can be accessed by Windows CE network communications or your custom application. The following diagram shows the location, orientation and pin out of the Ethernet ports.

Bottom

1	TX+
2	TX-
3	RX+
4	n/c
5	n/c
6	RX-
7	n/c
8	n/c

secondary Ethernet port   primary Ethernet port

8   1
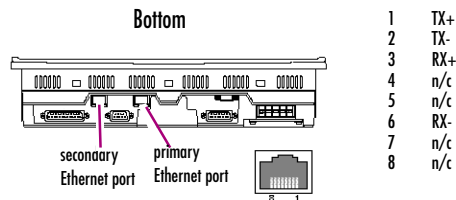
There are two methods for setting an IP address on the CE IIx:

- **DHCP (Dynamic Host Configuration Protocol).** This is the default method that is carried out automatically for primary only.
- **Manual method.** The user uniquely specifies the numeric addresses for the CE IIx, the Subnet Mask and the Default Gateway.
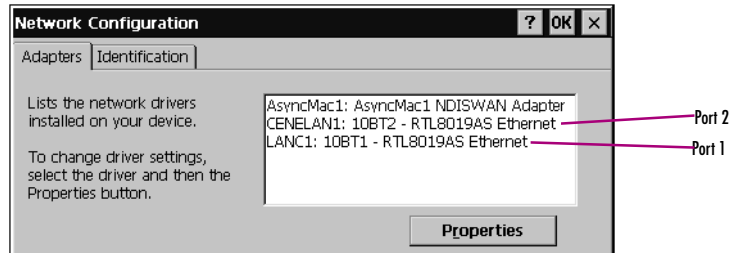
Defaults:

Port	IP
1	DHCP
2	Fixed
	192.0.0.1
	255.255.255.0
	no gateway

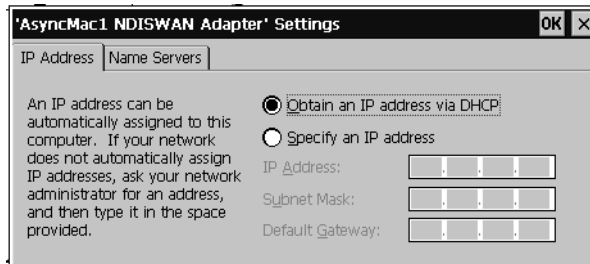**To set an IP address**

1. In the Control Panel, double-tap 🖥️ **Network**.

   The **Network Configuration** dialog box appears.

2. On the **Adapters** tab, select either "CENELAN1: 10BT2 Ethernet" or "LANC1: 10BT1 - RTL80"Compatible Ethernet then tap the **Properties** button.
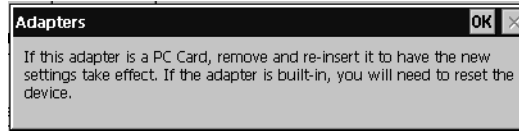
   The **On Board Ethernet Driver** dialog box appears.

3. Select a method:

   ▪ **Obtain an IP address via DHCP** (automatic).

   ▪ **Specify an IP address** (manual).

4. Enter the **IP Address**, **Subnet Mask** and **Default Gateway** numbers obtained from your network administrator (manual method only).

5. Tap **OK**.

The **Adapters** message box appears with a caution.

6. Tap **OK** twice to return to the Control Panel.

7. Run the [icon] **Backup** program to retain the new settings through a power cycle (see page 15).

8. Restart the ControlStation / ViewStation CE IIx.

If the DHCP method was selected, the network server will assign an IP address while the CE IIx is initializing. (You must be connected to the network with the DHCP server.)

After setting an IP address for the CE IIx, you can access any network drives or shared resources for which you have permission.
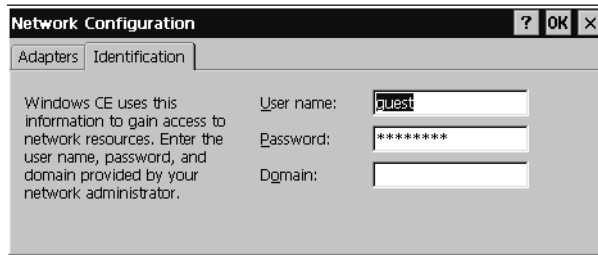
To set up access to a Windows network

1. In the Control Panel, double-tap [icon] **Communications**.

   The **Communications Properties** dialog box appears.
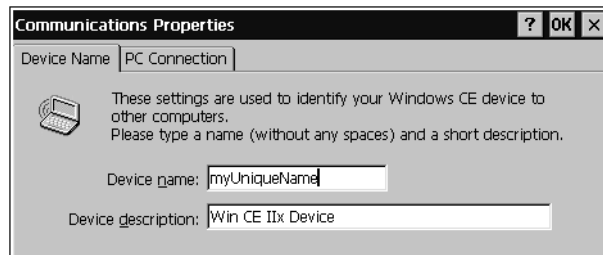
2. On the **Device Name** tab, in the **Device name** box, type a unique name for your CE IIx.

3. Tap **OK**.

4. In the Control Panel, double-tap [icon] **Network**.

The **Network Configuration** dialog box appears.

5. On the **Identification** tab, type your assigned **User Name**, **Password,** and **Domain**.

6. Tap **OK**.

7. Run the 🔲 **Backup** program to retain the settings through a power cycle (see page 15).

Using Windows CE Explorer, you can now access anything on your local network for which you have permission.

To access a remote resource on a Windows network

1. Start 🔍 **Windows Explorer**.

The **Explorer** window appears.
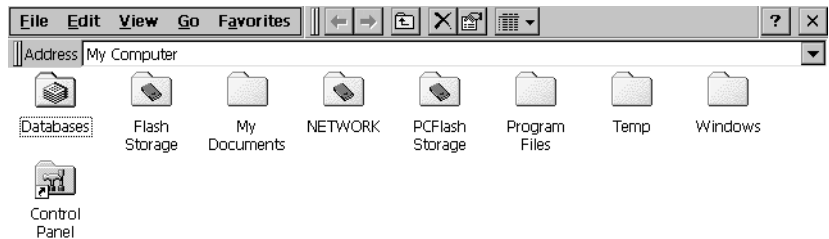
2. In the **Address** box, type or choose from a list, the path to a remote resource.

For example '\\MyRemoteComputer\MyFolder' specifies the folder named 'MyFolder' on a computer with the name 'MyRemoteComputer'.

3. Press ENTER.

The resource specified is displayed as a collection of files and folders. It can take a few moments to retrieve the data from your local network.

EXPANSION BUSSES

The proprietary expansion bus is provided for system expansion. A variety of fieldbus communication modules are available to add an interface to your new or existing I/O network. Each adapter requires a device specific software driver.

Rear   Expansion Bus Connector
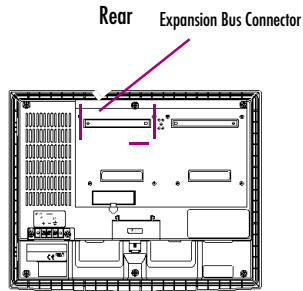
Caution: Disconnect the AC power from your 24VDC power supply before attaching any expansion components to the ControlStation / ViewStation CE IIx. Working on a "live" unit may result in damage to equipment and personnel.

To install a communication adapter

1. Remove AC power from the 24VDC supply.
2. Remove the protective cap from the expansion bus connector.
3. Align module's connector and screws and then fasten.
4. Reapply AC power to the 24VDC supply.

   Refer to the Control I/O Drivers section in the Control online help for more information on Profibus expansion modules. Contact your distributor for other compatible expansion adapters

MEMORY

The ControlStation / ViewStation CE IIx supports a variety of memory subsystems to ensure the requirements of your application are met. All system memory is tied directly to the microprocessor's address and data busses for fastest access.

Flash Memory

Flash memory functions like a virtual hard drive from the point of view of Windows CE**.** A 16 MB block of non-volatile memory is the main long term program storage for the unit. It is partitioned into two sections of which only one is accessible from Windows CE Explorer. The 📁 **Flash Storage** folder represents a 6 MB (5 MB formatted) block available for long term storage of user application programs. Another 10 MB block is used to store the Windows CE operating system and is not directly accessible from Windows CE Explorer.

The operating system and all user application programs are transferred from Flash to DRAM for execution. Any user additions to the 📁 **Windows** folder are retained in 📁 **Flash Storage** when the Backup program is run.

FLASH memory has a limited write-cycle lifetime. That is, the physical memory devices wear out after about 10,000 writes. Also, the write cycle is much slower for FLASH than for other portions of RAM. Thus, FLASH is not recommended for storage of program variables or any data items whose values are dynamic.

To add Flash memory with a CompactFlash card

- Insert a blank CF card into the CF Flash Port (see page 37).

The unit immediately reads the new secondary storage.

New memory appears in Windows CE Explorer as .

DRAM Memory

The CE IIx is equipped with 32 MB of dynamic RAM. 12 MB of the DRAM is reserved for the Windows CE operating system and is not accessible by user applications. The other 20 MB is partitioned into two parts: an object store for temporary file storage and the main program memory for running programs in. The object store is represented in the Windows Explorer as all folders other than 📁 **Flash Storage, PCFlash Storage** and **Network**. Space in program memory is allocated by the operating system on an as-needed basis. Typically, compressed programs stored in FLASH are expanded and moved to program memory for execution. Temporary storage of program variables or data files is also provided by program memory.

Any data stored in DRAM will not be retained through a power cycle.

To partition the DRAM memory

1. In the Control Panel, double-tap 🖥️ **System**.

   The **System Properties** dialog box appears.
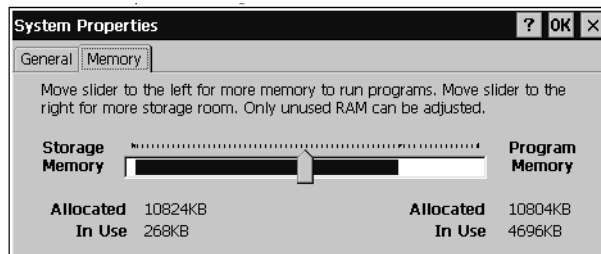
2. On the **Memory** tab, drag the slider to divide the DRAM into Storage and Program memory.

   The amount of memory allocated to and used by each partition is shown on the dialog box.

3. Tap **OK** to apply the new setting.

4. Run the 🔲 **Backup** program to retain the new setting through a power cycle (see page 15).

OTHER SUBSYSTEMS

Real-Time Clock

The ControlStation / ViewStation CE IIx has a programmable real-time clock capable of reporting the current time in Year/Month/Day/Hour /Minute/ Second. The time is set from the Windows CE interface and retained through a power cycle.

To set the real-time clock

1. In the Control Panel, double-tap [1,2] **Date/Time**.

   The **Date/Time Properties** dialog box appears.
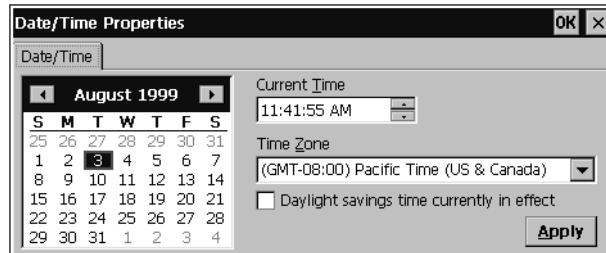
2. Tap the year to choose a new year; tap the month to choose a new month.

3. Tap a date to specify the day of month.

4. From the **Time Zone** box, choose your zone.

5. Select **Daylight savings time currently in effect** if it is true.

6. In the **Current Time** box, adjust the hours, minutes and seconds.

7. Tap **Apply** to apply the setting at any time, or tap **OK** to finish.

   The time can be displayed in the system tray on the task bar.

To display the time on the taskbar

1. From the ⊞ **Start** menu, choose 🗔 **Settings,** then 🖳 **Taskbar**.

   The **Taskbar Properties** dialog box appears.

Taskbar Properties	OK	×

   Taskbar Options | Start Menu

   ☑ Always on <u>t</u>op

   ☐ A<u>u</u>to hide
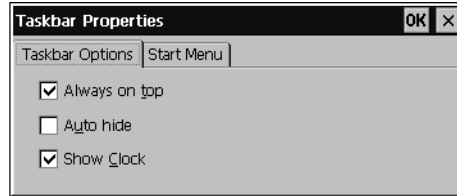
   ☑ Show <u>C</u>lock

2. On the **Taskbar Options** tab, select **Show Clock**.

3. Tap **OK**.

4. Run the 🔲 **Backup** program to save the new settings through a power cycle (see page 15).

   The current time is displayed in the taskbar.

   Clock Display

   ⊞Start | ⊠ C..   ⌨ 🖐 7:23 AM ☑
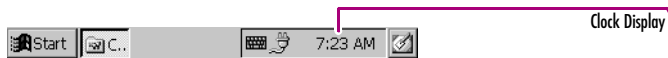
R A S P o r t

Please contact your distributor for your personal driver support needs.

MAINTENANCE HATCH

The maintenance hatch accesses an eight position DIP switch, a serial port and four LEDs used for configuration of the CE IIx. DIP switch 1 is set to "ON" at the factory. The remaining switches are set to "OFF"

Each switch controls a separate function of the CE IIx. DIP switch 6 is the force startup switch. Setting this switch to "ON" forces the startup applications to run when the operating system is started.

Rear
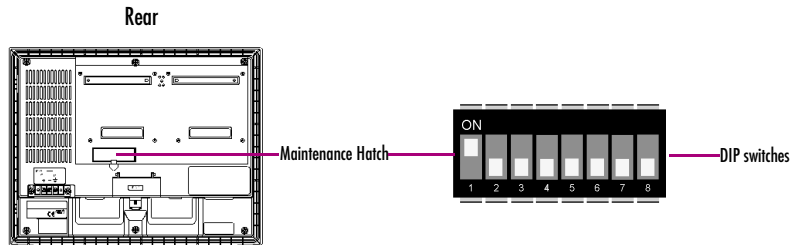
When the switch is set to "OFF", the CE IIx operates normally displaying the startup splash screen. You can skip running the startup applications by clicking the "Don't run StartUp Programs" button on the startup splash screen.
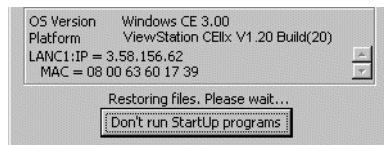
When the switch is set to "ON", the startup programs are forced to run and the "Don't run Startup Programs" button is not available on the startup splash screen.

To configure startup behavior of the CE IIx

Warning: To avoid electric shock, ensure the power is disconnected from the unit prior to opening the maintenance hatch.

1. Open the Maintenance hatch on the back of the unit and locate DIP switch 6.

2. Turn DIP switch 6 to "ON" position.

The startup applications are now forced and will run the next time the system is restarted.
Note: Other than DIP switch 1 and DIP switch 6, all other switches are reserved for factory functions. Do not adjust the settings of these DIP switches.

A1   Design Specifications

Protective Physical

Item	Specification
Enclosure dimensions (use for panel cutout)	Height: 9.59 in./243.5 mm (+/- 0.039 in./1 mm) Width: 12.48 in./317 mm (+/- 0.039 in./1 mm) Depth: 2.9 in (7.4 cm) w/o I/O module
Face plate dimensions	Height: 10.5 in (26.7 cm) Width: 13.2 in (33.5 cm) Depth: 0.47 in (1.2 cm)
Grounding	Functional grounding: D type
Cooling Method	Natural Air Circulation
Protective Structure	NEMA4X/12 or equivalent (Limited to front surface after installation in a panel
Weight	7.7 lbs (3.5 kg)

Environmental

Item	Specification
Ambient Operating Temperature	0 ~ 45 °C
Amibient Operating Humidity	30 ~ 85% (non-condensing)
Ambient Storage Temperature	-10 ~ 60 °C
Ambient Storage Humidity	5% ~ 85% (non-condensing)
Vibration Resistance	10 ~25 Hz 19.6m/s^2 X, Y, Z directions, 30 min. each)
Shock Resistance	98 m/s^2 or equivalent
Noise Immunity (via noise simulator)	Noise Voltage : 1000 V p-p Pulse Width : 1 arise time: 1ns

Item	Specification
Anti-Static Electricity Discharge	+/- 6kV

DC Power Display

Item	Specification
Input Voltage	DC+24V +/- 10%
Power Consumption	Less than 50W
Inrush current	Less than 30A
Voltage Endurance	AC1000V 1 min. 10mA or less (Between DC power source input and FG)
Insulation Resistance	10 MOhm at 500 VDC (Between DC power source input and FG)
Power Up Inrush Current (max)	Less than 30A

Item	Specification
Display Device	TFT Color LCD (10.4 inch)
Effective area on display	211.2(W) x 158.4 (H) mm
Dot Pitch	0.33 x 0.33 mm
Brightness	170 cd. (average value at display center area)
Back Light	Cold Cathode Fluorescent Tube (Estimated life time is about 55,000 hours until its brightness is half)
Size	10 inch diagonal
Colors	65536
Resolution	640 by 480 pixels
Graphics Accelerator	MediaQ MQ200
Graphics Memory	1 MB

Touch Screen

Item	Specification
Type	Analog Resistive Film
Resolution	1024 (Vertical) x 1024 (Horizontal)

CPU

Item	Specification
Processor	Hitachi 7750 SH4
Clock speed	200 Mhz
OS Start Up Time	Approx. 10 seconds to splash screen.
EPROM	128 KB
Flash ROM	16 MB
Flash ROM Write Times	Max. 100,000 erase cycles (all blocks are used before cycling)
Main Memory	32MB SDRAM

Ports

Item	Specification
Serial	COM1: RS-232C (Dsub 9 pin plug)
	5V supply available
	Max. current supply 200 mA, Automatic Recovery Fuse incorporated
	COM2: RS-232C/RS-485(Dsub 25 pin socket)
Ethernet	2 Channel
	Ethernet (IEEE802.3 10BaseT)
	10BaseT Modular Connector RJ45
CF Card	Type I CF Card Connector
RAS	Not currently supported
PS/2	Keyboard
	6 pin small type DIN connector

Item	Specification
Universal Serial Bus (USB)	5v supply available
	Max current supply 300 mA, automatic recovery Fuse incorporated.
	Series A connector

Expansion

Item	Specification
Bus	Expansion connector to attach optional communication modules.

Calendar/Clock

Item	Specification
Resolution	1 second
Retention	Battery Backup
RTC Backup	Maintains 30 days watch. (under normal temperature 25 +/-5 C, normal humidity 65 +/-20%)
Accuracy of Watch	65 sec./month under normal temperature with electricity off.
	Changes to -90sec ~ +380 sec./month depending on operating condition, i.e., difference of temperature and period of use.

Miscellaneous

Item	Specification
LEDs	Front panel programmable tri-state LED
Annunciator	Programmed beep
Rating	UL File Number E210412 for Class 1, Div 2, Groups A, B, C & D (UL 1604)

A2

Troubleshooting

The tables contained in this appendix can be used to identify and remedy problems that can occur with the ControlStation / ViewStation CE IIx.

Power up

Problem	Suggested remedy
Power indicator does not illuminate.	Check all power connections to the unit.

Pocket Internet Explorer

Problem	Suggested remedy
Cannot access any URLs when using a dial-up connection to an ISP.	Check network status and configuration (DHCP requires DHCP server on network).

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