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ViewStation CE II ControlStation CE II Hardware

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Hardware User's Guide

ControlStation CE II
ViewStation CE II

April 2002
GFK-1885B

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The CE II has been tested and found to meet or exceed the requirements of U.S. (47 CFR 15), Canadian (ICES-003), Australian (AS/NZS 3548) and European (EN55022) regulations for Class A digital devices when installed in accordance with guidelines noted in this manual.

Note:

This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with this instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits of a Class A digital device pursuant to Part 15 of the FCC rules, which are designed to provide reasonable protection against harmful interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note:

This Class A digital apparatus complies with Canadian ICES-003.

The following statements are required to appear for Class I Div 2 Hazardous Locations.

1. EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C, and D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY.
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We want to hear from you. If you have any comments, questions, or suggestions about our documentation, send them to the following email address:
doc@gefanuc.com.

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1

Welcome

Congratulations on your purchase of the ControlStation / ViewStation CE II (CE II), the latest and greatest compact control computer from GE Fanuc Automation. The CE II is intended for use as a dedicated controller for local and distributed control applications. Equally at home in a networked environment or as a stand-alone unit, the CE II provides the ideal solution for your factory floor control needs.

Powered by Microsoft Windows CE, today's embedded control operating system of choice, the CE II provides a fast track for application program development. The commonality with other versions of Windows simplifies porting your existing program code. Another benefit of Windows CE is the familiarity of the user interface, shortening the learning curve for operators and developers alike. The availability of third party application software makes this operating system even more attractive.

The ControlStation / ViewStation CE II 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 several different standard ports and expansion busses to choose from, chances are you can connect to the industrial equipment of your choice.

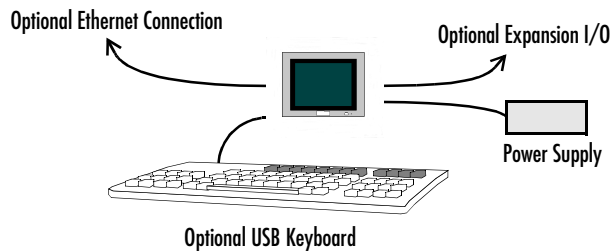
The CE II is equipped with several memory types to satisfy even the most demanding applications. A 16 MB section of DRAM is split between operating system, an object store, and program memory. A 16 MB section of non-volatile FLASH, functioning as a virtual hard drive, is split between operating system and persistent storage for application programs. The retentive memory is supplemented by 128 KB of battery-backed SRAM for data storage, ensuring your valuable data will never be lost, even during a power failure.

The many features of the CE II 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

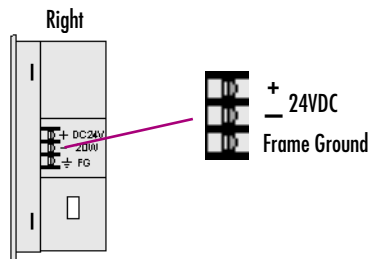
Your ControlStation / ViewStation CE II is shipped in a ready-to-use condition. All you must do is connect a DC power supply to start. Depending on your application, you may also want to connect and configure optional input devices (see page 26), communications ports (see page 30) and expansion adapters (see page 42).



Caution: Disconnect the AC supply from your 24VDC power supply before connecting to your CE II. 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

- Attach a 24VDC, 20W power supply (a 50W power supply is optional with the unit, part #SPS-50W) to the power supply screw terminals on the CE II as shown in the following diagram.



CIMPLICITY Machine Edition Development Setup

While working in a development mode it is necessary to provide a data link between your development workstation and the CE II. For more information on downloading a CIM ME project to the unit, refer to the online help files in CIMPLICITY Machine Edition.

To set up for development

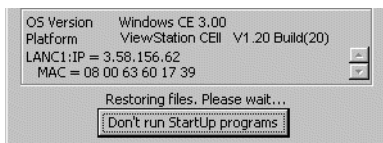
Startup

When you first start up the CE II, there are a few configuration steps to perform to ensure your unit is operating at peak performance.

To start up the CE II








1. Apply AC power to the 24VDC supply.

Once power is applied, the CE II beeps and then begins initializing. A few seconds later, the unit beeps again. The first thing to appear on the display is the splash screen.



2. 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 then becomes visible.

3. Tap  **Start**, point to  **Settings**, then tap  **Control Panel**.
4. In the Control Panel, double-tap  **Display** to configure the LCD display (see page 22).
5. In the Control Panel, double-tap  **Stylus** to configure the touch screen (see page 23).
6. In the Control Panel, double-tap  **Date and Time** to configure the system clock (see page 49).
7. On the desktop, double-tap  **Backup** to save any new settings through a power cycle (see page 15).

Shutdown

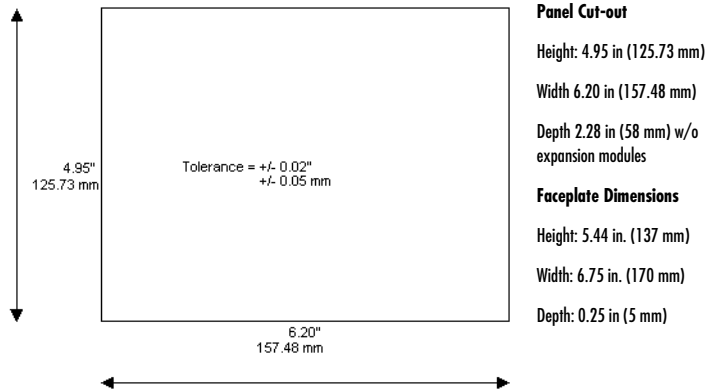
There are no specific dangers associated with a power failure or other unplanned shutdown of the CE II. In general, programs are retained in FLASH memory and user data can be retained in battery-backed SRAM. Some operating system settings are kept only with user-intervention. In order to carry out a graceful shutdown of the CE II, it is recommended that you perform the following procedure.

To shut down the CE II

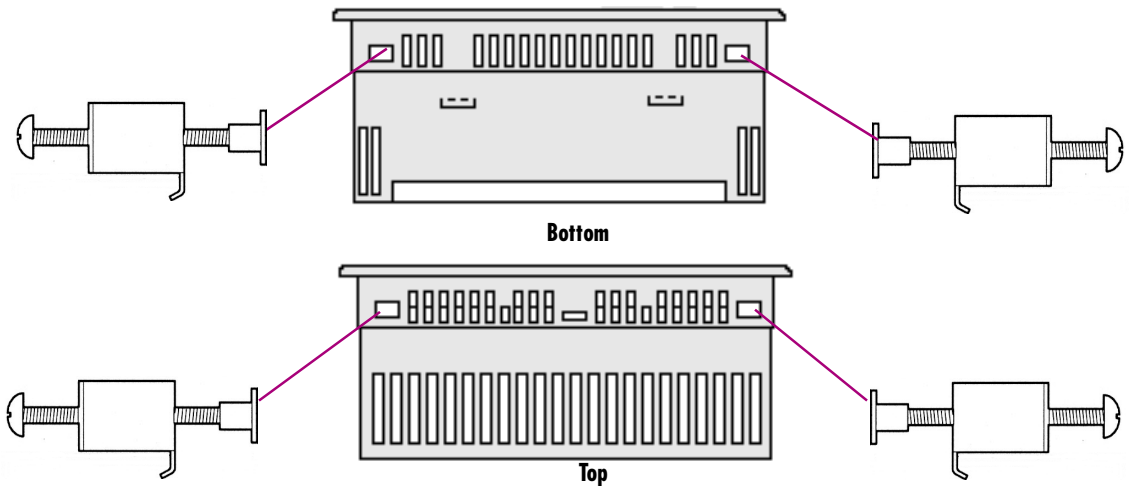
1. Quit any programs that are running and wait for all file operations to complete.
2. On the desktop, double-tap  **Backup** to save any operating system settings through a power cycle (see page 15) and wait for it to complete. Tap **OK**.
3. Remove AC power from the 24VDC supply.

Panel Cutout

If you install the ControlStation / ViewStation CE II into a panel, you must cut out a section of the panel according to certain specifications.



Four mounting brackets are included with the CE II to install the unit within an enclosure. Mounting brackets attach to mounting fixtures located on the top and bottom of the unit.

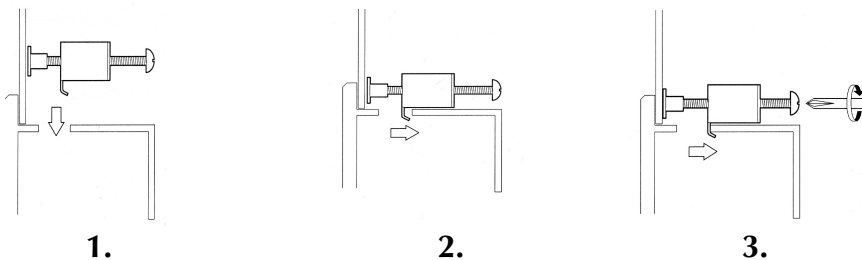


To mount the CE II in a panel

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 II in place by tension. No holes have to be drilled into the panel.



Also included with the CE II 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 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, fax, or email:

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

Internet: www.gefanuc.com

Email: support@gefanuc.com

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

2

Overview

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

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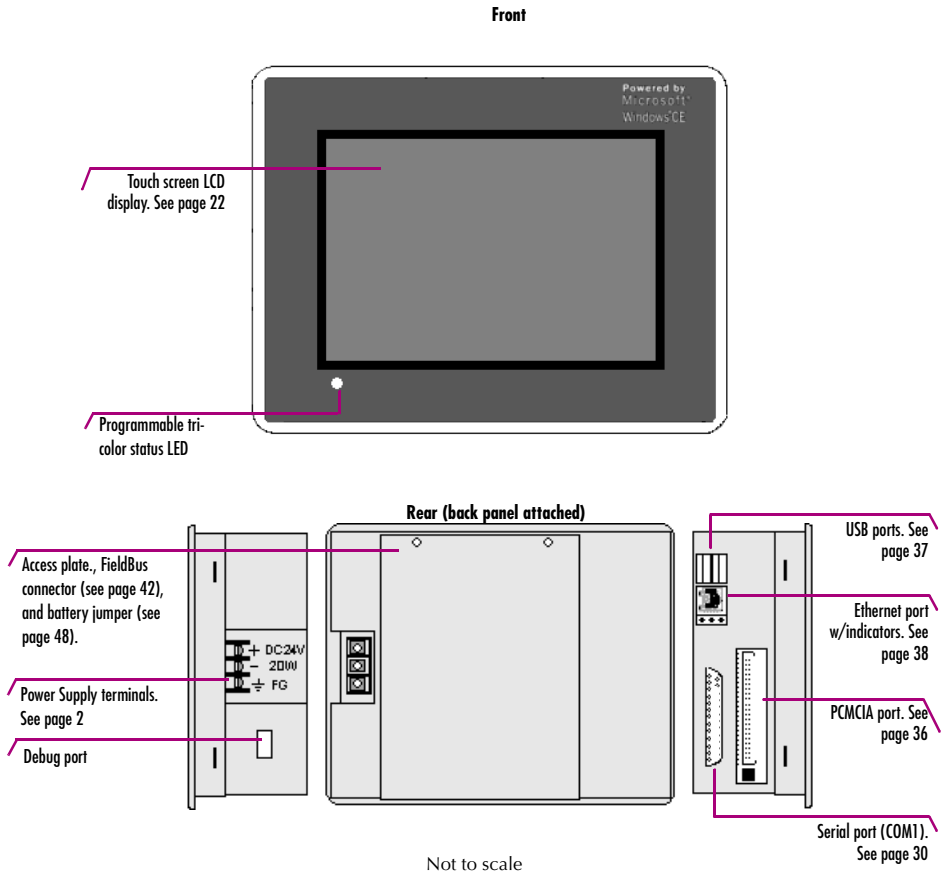
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CE II HARDWARE

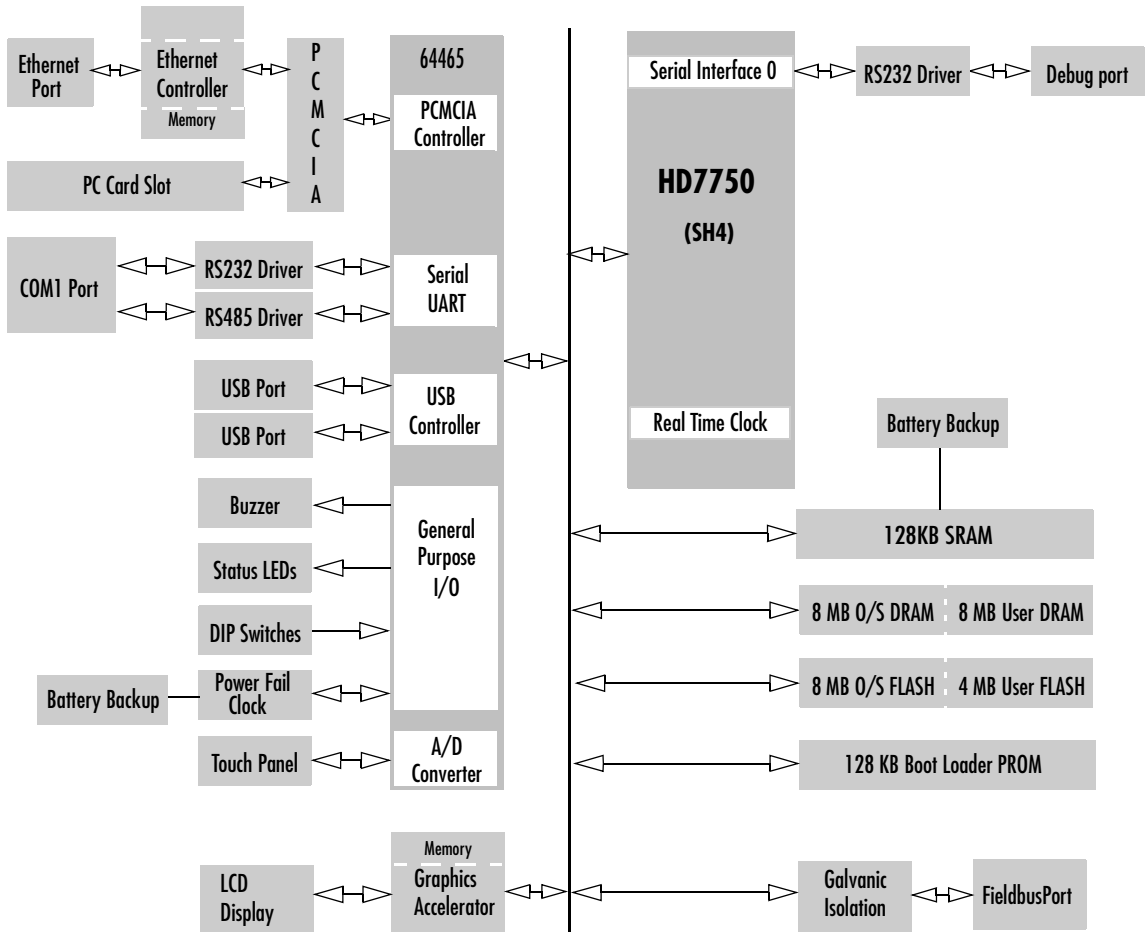
Layout Diagram

In addition to the primary touch screen interface, the ControlStation / ViewStation CE II supports a variety of communication ports including an expansion bus to allow great flexibility in application. The following diagram shows the physical layout of the CE II and the locations of ports and connections.



Block Diagram

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



CE II SOFTWARE

Windows CE v3.0


Microsoft Windows CE is the operating system software for the CE II. 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 CE II. From the user's point of view, 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.

The CE II operating system is stored in an 8 MB block of FLASH memory and copied to an 8 MB block of DRAM for execution. The operating system starts automatically following a power-up or reset of the CE II.




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

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).

Pocket Internet Explorer

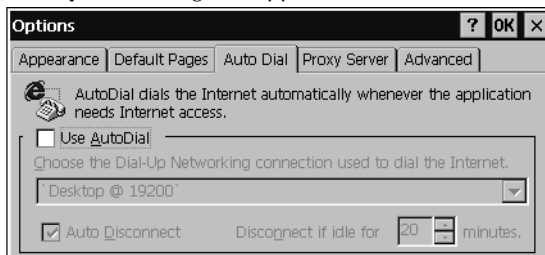
Microsoft's Pocket Internet Explorer is a full featured browser that is fully integrated with the Windows CE operating system. This browser allows you to connect with an internet service provider, view web pages and download from FTP sites.


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.



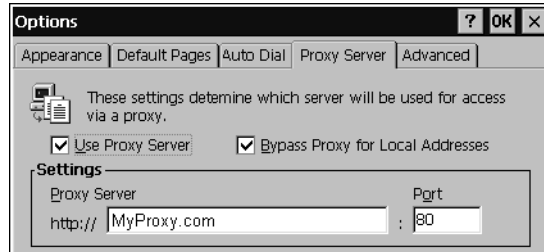
3. On the **Auto Dial** tab, select the **Use AutoDial** check box.
4. Choose either the default or a user-defined connection from the list.
5. Tap **OK**.
6. Run the  **Backup** program to save the settings through a power cycle (see page 15).


To configure a Proxy server

1. Start  Pocket Internet Explorer.

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

The **Options** dialog box appears.



- On the **Proxy Server** tab, select the **Use Proxy Server** check box.
- In the **Proxy Server** box, type the URL of your proxy server (see your ISP or network administrator).
- In the **Port** box, type the server's port number for HTTP access.
- Select the **Bypass Proxy for Local Addresses** check box to connect directly to sites like your intranet.
- Tap **OK**.
- Run the  **Backup** program to retain the new settings through a power cycle (see page 15).

Web Server

An integrated web server 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 II web server through an Ethernet connection.

To connect the CE II peer-to-peer

- Configure the CE II Ethernet port you are using with a static IP address and subnet mask.
- Configure the computer communicating with the CE II box with the same subnet mask.
- If the communicating computer uses proxy settings in its IE Explorer, ensure the CE II's static IP address is ignored in the proxy settings.

To add the IP address of the CE II box to the ignore list of the 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 II 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 utility that saves any changes made to the Windows Registry or Desktop. This utility is required because unlike typical hand held Windows CE platforms, the CE II is not battery powered. Specifically the Backup command stores the following information in battery-backed SRAM:

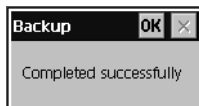
- Windows CE registry (this includes any control panel settings)
- Any changes (additions) made to the 'Windows' subtree of the file system are stored in the user block of FLASH memory.

The **Backup** program should be run prior to shutting down the CE II.

To run the Backup program





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

The **Backup** dialog box appears.

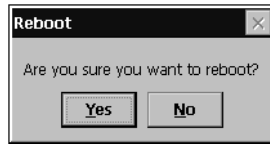


2. Tap **OK**.

To reboot the system

1. Run the  **Backup** program to retain any changes.
2. Tap  **Start**, point to **Programs**, then the  **System** folder, and tap  **Reboot**.

A confirmation dialog box appears.



3. Choose "Yes"

The operating system restarts.

FixDisk





The CE II uses mounted volumes of FLASH memory (see page 45) for persistent storage. Equivalent to hard disk partitions on a standard PC, mounted volumes appear in the Windows CE file system as a folder located in the root directory.

Mounted volumes in all CE devices can occasionally lose data and become corrupt. To combat the problem of volume corruption in the CE II's persistent storage system, the FixDisk utility is available to repair or format lost or corrupted data volumes.

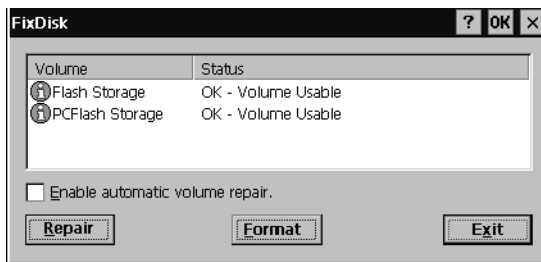
The FixDisk utility automatically repairs volumes at startup or can be run manually at any time to format or repair volumes. If errors are detected in one or more of the mounted volumes, FixDisk automatically repairs them and displays a dialog reporting the results of the repair. If no errors are found, no dialog 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" check box is cleared, you are prompted as errors are discovered. By following the instructions on these dialog boxes, 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.







2. Select a volume from the list of mounted volumes.
3. Tap the **Repair** button.

FixDisk repairs the selected volume.

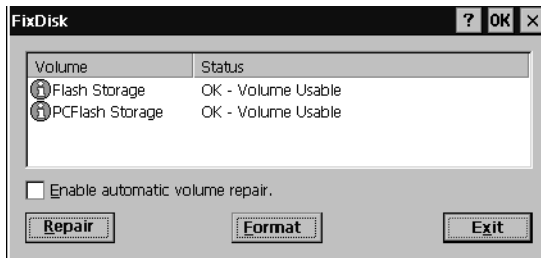
To manually format a volume

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.



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.

System Information

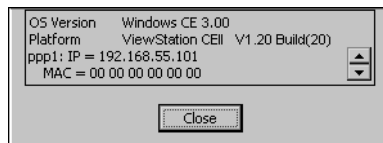
System Information is a custom utility that causes a splash screen to appear with the following information displayed:

- **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  **System Information**.

The **System Information** splash screen appears.




2. Tap **Close** to continue.

Copy Project to Flash Card

Restore PCCard is a custom utility for transferring Machine Edition Projects between CE II units via Flash PC cards.

To copy a Machine Edition project from the CE II onto a PC card

1. Ensure there is a blank PC card in the in the PCMCIA port.
2. Double tap the  **Copy Project to Flash Card** icon on the desktop.
3. Tap **Yes** when the **Proceed with Copy to PC Card** confirmation dialog box appears.

The system copies the project onto the blank PC Card.

To update a Machine Edition project on the CE II

You can update a Machine Edition project currently stored on the CE II with a revision stored on a PC Card.

1. Insert the PC Card containing an upgraded version of the Machine Edition project in the PCMCIA port.
2. Reboot the machine (see page 15).

The CE II automatically loads the new project from the PC Card, overwriting the old project on the machine.

3. Remove the PC Card from the PCMCIA slot by gently pressing the eject button beside the PCMCIA slot.

HTTP File Transfer Utility

The HTTP File Transfer Utility (HFTU) is a small, stand-alone command line program that allows you to 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 Logic Developer - PC. If in doubt, check the documentation for your web server.

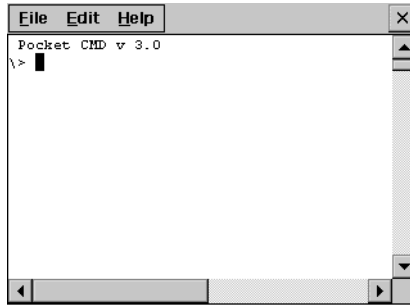
Run the HTTP utility from a command line prompt, from a batch file (.BAT) or as an application call in a script. The HTTP utility is an executable (.EXE) file included in the ControlStation / ViewStation CE II's operating system.

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 http://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.

Note: You must use an external keyboard to use the HTTP File Transfer Utility as the soft input panel (see page 26) does not have a colon (:) key.

3

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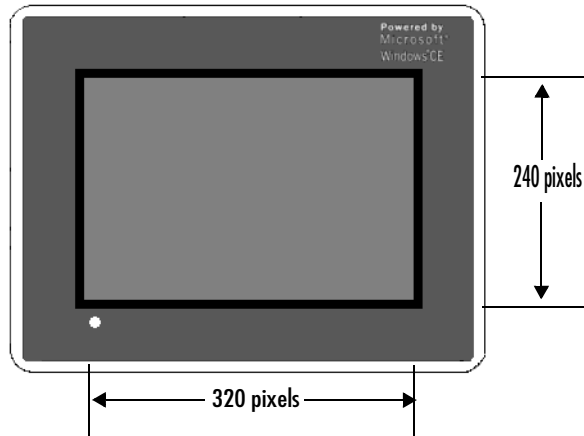
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TOUCH SCREEN DISPLAY

The CE II has an integrated 256 color flat panel display. The six inch diagonal, back-lit panel employs TFT technology to provide a bright operator interface. The display supports a resolution of 320 by 240 pixels (1/4 of a VGA display).

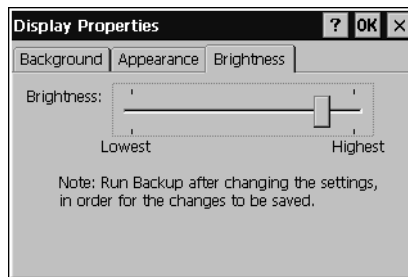



The CE II video subsystem employs the MediaQ MQ200 graphics accelerator with 2 MB of video RAM.

To adjust the display contrast and brightness

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

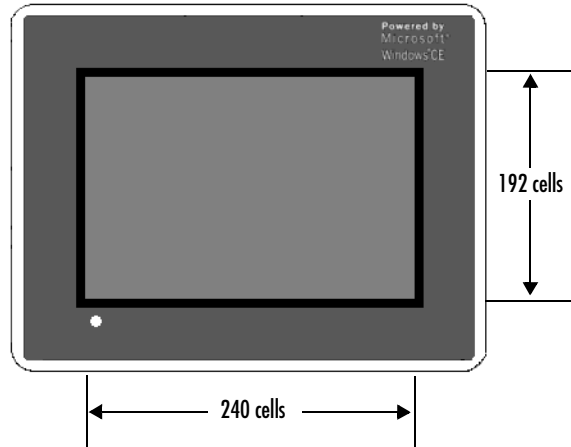
The **Brightness** dialog box appears.




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

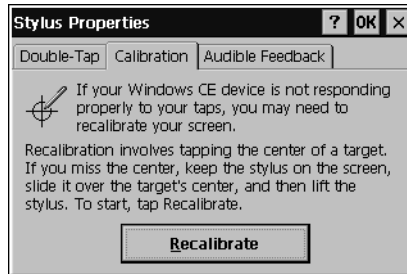
The CE II display is coupled to a resistive touch panel with 10 bit resolution. When the CE II is properly calibrated, this translates into a 240 by 192 grid of touch cells on the face of the display. Although you can use your finger to actuate the touch screen, use of a blunt stylus is recommended.



To calibrate the touch screen

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

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.

Detailed Operation

Touch Screen Display


Press and briefly hold stylus on the center of the target.
Repeat as the target moves around the screen.




4. Tap the center of the target and repeat as the target moves around the display (four more times).
5. Tap inside the centre square to preserve the new setting or outside the square to revert to previous settings.

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.

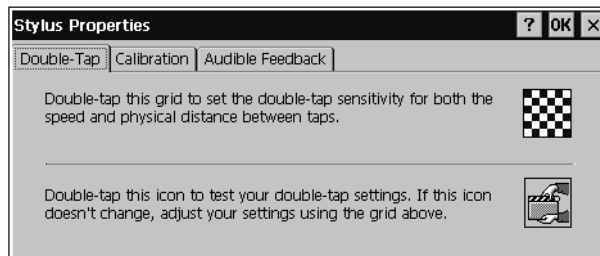



6. Run the  **Backup** program to save the settings through a power cycle (see page 15).

To set the double-tap sensitivity


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

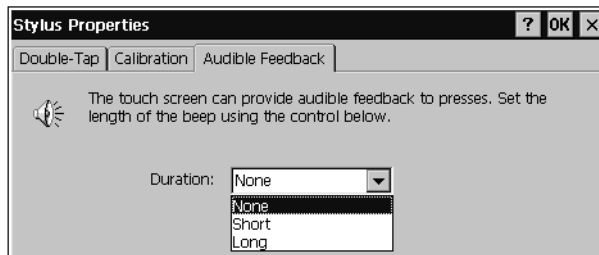
The **Stylus Properties** dialog box appears.




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 save the settings through a power cycle (see page 15).

To set audible feedback

1. In the Control Panel, double-tap  **Stylus**.
2. Choose the **Audible Feedback** tab.



3. From the Duration list choose None, Short or Long.
4. Tap **OK**.
5. Run  **Backup** program to save the settings through a power cycle (see page 15).

KEYBOARD

The CE II can be configured to use either or both an external hardware keyboard and a software emulation keyboard as an operator data input device. Typically an external hardware keyboard is used when in a development mode while the included Soft Input Panel is more applicable in a operational environment.

External Keyboard (optional)

Any USB keyboard (see page 37) compatible with the CE II can be used as an input device for the unit. The USB driver for the keyboard is included with the operating system and no setup is required. To use an external keyboard, simply plug and play.

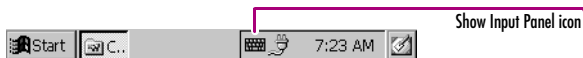
For a list of keyboards that have been tested and are compatible, go to:

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

Soft Input Panel

The Soft Input Panel (SIP) 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. An icon is located in the system tray which allows you to activate/deactivate the soft input panel.



To show/hide the Soft Input Panel

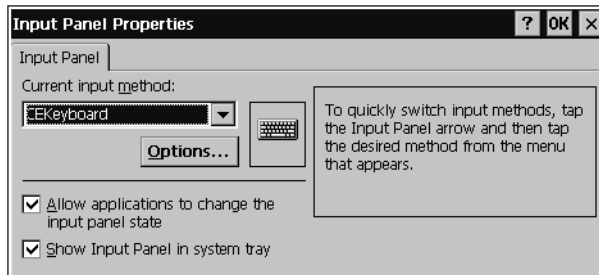
- On the system tray of the task bar, double-tap the  icon. The Soft Input Panel appears/disappears.


Note: When the SIP is visible, it can be dragged around the screen by its title bar to reveal different parts of the screen that would be obstructed from view by the SIP.

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.



2. Select the **Allow applications to change the input panel state** check box.
3. Select or clear the **Show Input Panel in system tray** check box.
4. Tap **OK**.
5. Run the  **Backup** program to retain the new setting 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.



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

Detailed Operation

Keyboard

Input Panel														
Esc	!	@	#	\$	%	^	&	*	()	-	+ Del		
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	<	>	?	←	→		
Ctrl	Alt	↩									↓	↑	←	→

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.

Input Panel														
Esc	q	w	e	r	t	y	u	i	o	p	←	→		
Tab	a	s	d	f	g	h	j	k	l	*	'	←		
Shift	z	x	c	v	b	n	m	;	'	←	→	↩		
123	Ctrl	Alt	@	&							,	.	/	?

Large key: lower case

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

Input Panel														
Esc	Q	W	E	R	T	Y	U	I	O	P	Del			
Tab	A	S	D	F	G	H	J	K	L	*	'	←		
Shift	Z	X	C	V	B	N	M	;	'	←	→	↩		
123	Ctrl	Alt	@	&							,	.	/	?

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

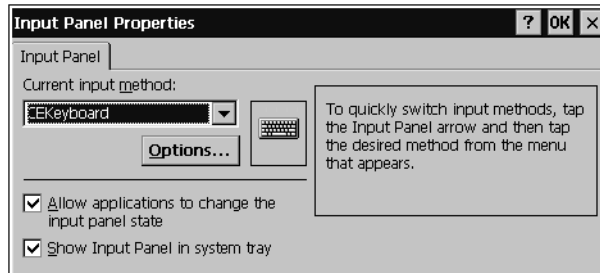
Input Panel														
↩	1	2	3	4	5	6	7	8	9	0	←	→		
Tab	!	~	#	\$	%	^	-	()	£				
←	→		-	+	=	\	:	"	[]	←	→		
123	Ctrl	Alt	<	>							,	.	{	}

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

COMMUNICATION PORTS

The CE II has two serial data communication ports; one is user-configurable (COM1) and another is used only during program operating system development (Debug).

COM1- Serial

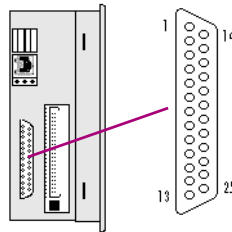
The COM1 port is a general purpose bidirectional serial data channel that supports the EIA232C and EIA485 electrical standards. The COM1 port can be accessed and configured:

- 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.

A DB25S connector, mounted on the side of the enclosure, provides standard signals as described in the following table.





Left



1	GND - Frame Ground	14	VCC - 5VDC, 0.5A
2	TX - (EIA232C)	15	TXB (EIA485)
3	RX - (EIA232C)	16	RXB (EIA485)
4	RTS - (EIA232C)	17	n/c
5	CTS - (EIA232C)	18	CSB (EIA485)
6	n/c	19	ERB (EIA485)
7	SG - Signal Ground	20	DTR (EIA232C)
8	DSR (EIA232C)	21	CSA (EIA485)
9	TRMRXB (EIA485)	22	ERA (EIA485)
10	RXA (EIA485)	23	n/c
11	TXA (EIA485)	24	n/c
12	n/c	25	n/c
13	n/c		

Working with COM ports

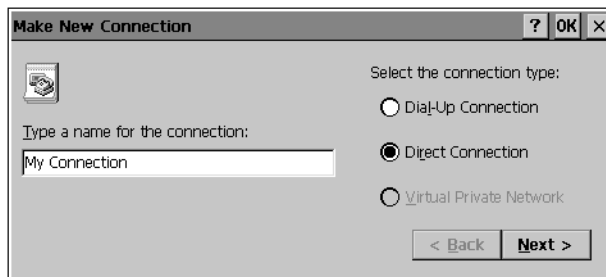
To add a new remote networking connection

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

The **Connection** window appears.

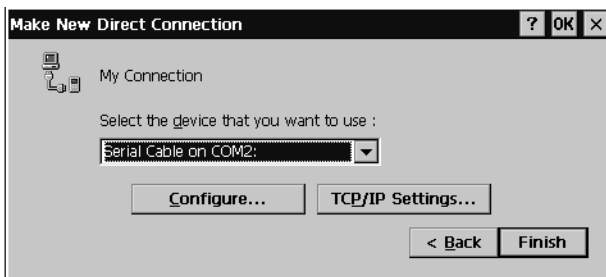
2. Double-tap  **Make New Connection**.

The **Make New Connection** wizard appears.



3. Type a name for the new connection.
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. (If a PCMCIA serial I/O card or modem is installed, it is available in the appropriate device list.)

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.

Detailed Operation

Communication Ports

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 remote networking connection

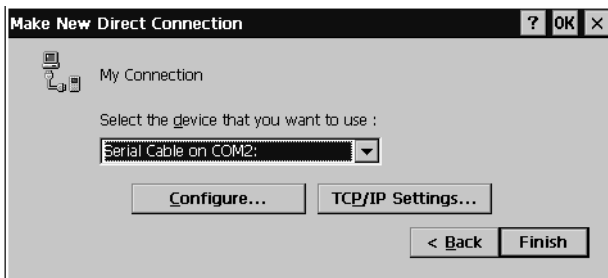
1. From the **Start** menu, choose **Programs**, then **Communication**, and tap **Remote Networking**.

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.

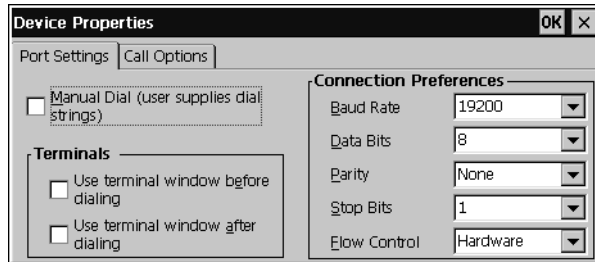


or



3. **Tap Configure.**

The **Device Properties** dialog box appears.



4. In the **Port Settings** tab, choose settings for all **Connection Preferences**.

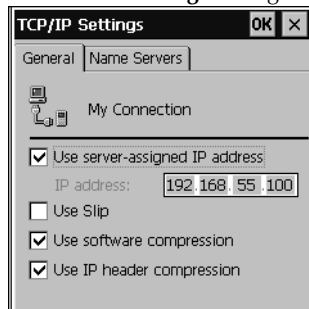
5. If the connection is for terminal emulation, select or clear the **Terminal** check boxes.

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

To change the default TCP/IP settings





1. Obtain correct TCP/IP settings from your internet provider.
2. From either the **Make new Direct Connection** or the **Make New Dial-up Connection** dialog box, tap **TCP/IP Settings**.

The **TCP/IP Settings** dialog box appears.

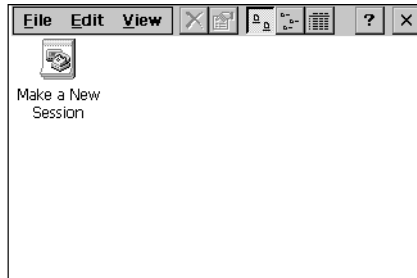


3. Use the TCP/IP settings from your internet provider.

To add a terminal session

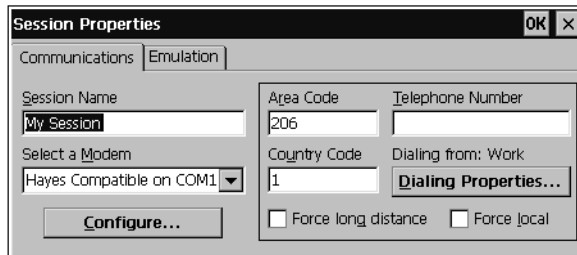
1. From the  **Start** menu, tap  **Programs**, then  **Communication**, and choose  **Terminal**.

The **Terminal** window appears.

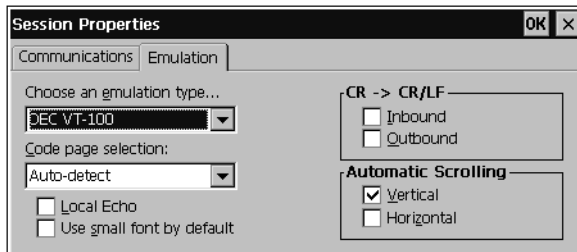


2. Double-tap  **Make a New Session**.


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)).

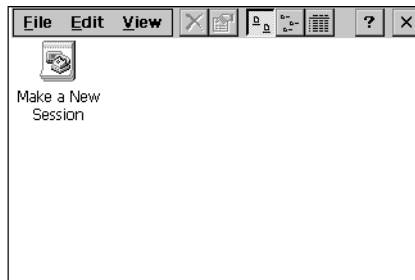


6. From the **Code page selection** box, select the coding type to employ.
7. Select the **Inbound** and /or **Outbound** check boxes to add LF characters to each CR.

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

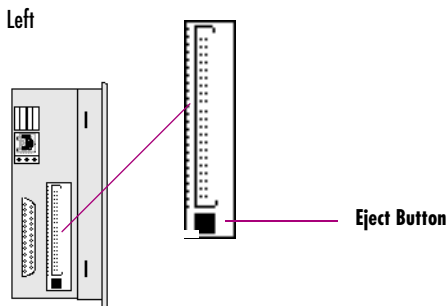
1. From the  **Start** menu, tap  **Programs**, then  **Communication**, and choose  **Terminal**.
The **Terminal** window appears.



2. Double-tap the  session you want to start.

PCMCIA PORT

The ControlStation / ViewStation CE II is equipped with a PCMCIA type 3 port located on the side of the unit. The port provides a means to enhance the functionality of the CE II via the addition of Flash, Serial, or Ethernet cards.



PC Cards can be installed in the port to provide additional Flash storage to the CE II's flash memory. The Copy Project to Flash Card utility (see page 18) is provided with the unit to transfer Machine Edition projects between CE II units via PCCards. For a list of compatible PC Flash Cards, refer to:

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

To insert a PC card into the PCMCIA port

1. Grasp the PC card between thumb and forefinger.
2. Slide the PC card gently into the PCMCIA port until the eject button clicks.

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

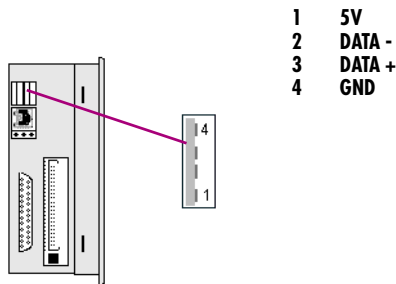
3. To eject the PC card, gently press the eject button.

UNIVERSAL SERIAL BUS (USB)

The CE II provides two standard USB Version 1.1 ports. USB is a high speed serial bus with multi-drop capability. A variety of third party USB peripheral devices are available.

Each device connected via USB requires a specific device driver. The only driver supplied with the CE II is for support of an optional keyboard. Any other devices will require custom driver software to be installed.

Left

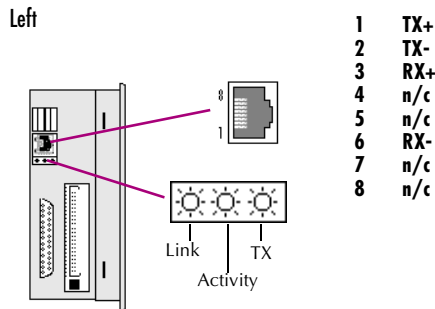


For a list of compatible keyboard types, refer to:

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

ETHERNET

A 10BaseT Ethernet network (shielded twisted pair) can be connected to the CE II via the RJ45F connector on the side of the enclosure. LED indicators beside the connector indicate channel status. Access to the Ethernet port is possible by Windows CE network communications or your custom application. The following diagram shows the location, orientation and pin out of the Ethernet port.



There are two methods for setting an IP address on the CE II:


- **DHCP (Dynamic Host Configuration Protocol).** This is the default method that is carried out automatically.

Note: There must be a DHCP server on the connected network for a valid IP to be assigned.

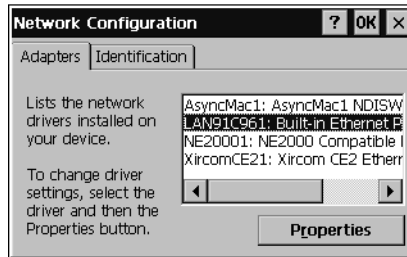
- **Manual method.** The user uniquely specifies the numeric addresses for the CE II, the Subnet Mask (if applicable), and the Default Gateway.

Note: Use a cross over cable to connect the CE II to a PC; when connecting to a LAN HUB, use a straight through cable. Contact your network administrator if you require further information.

To set an IP address

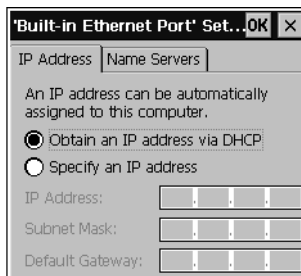
1. In the **Control Panel**, double-tap  **Network**.

The **Network Configuration** dialog box appears.



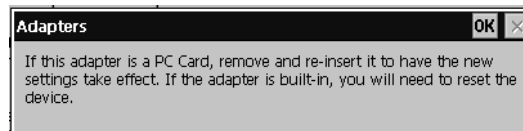
2. On the **Adapters** tab, select **LAN91C961: Built-in Ethernet Port Settings** then tap the **Properties** button.


The **Built-in Ethernet Port Settings** 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  **Backup** program to retain the new settings through a power cycle (see page 15).
8. Restart the CE II.

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

After setting an IP address for the CE II, 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  **Communications**.

The **Communications Properties** dialog box appears.

Communications Properties ? OK X

Device Name: PC Connection

These settings are used to identify your Windows CE device to other computers. Please type a name (without any spaces) and a short description.

Device name: myUniqueName

Device description: Win CE IIX Device

2. On the **Device Name** tab, in the **Device name** box, type a unique name for your CE II.
3. Tap **OK**.
4. In the Control Panel, double-tap  **Network**.

The **Network Configuration** dialog box appears.

Network Configuration ? OK X


Adapters Identification

Windows CE uses this information to gain access to network resources. Enter the user name, password, and domain provided by your network administrator.

User name: guest

Password: *****

Domain:

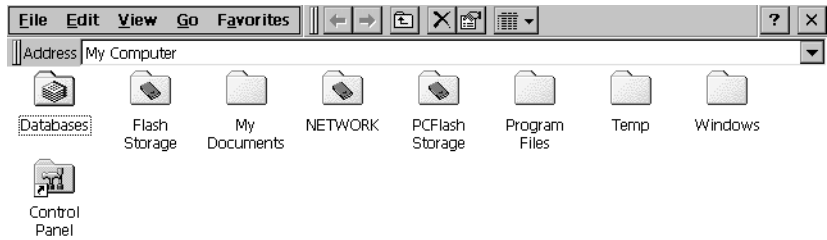
5. On the **Identification** tab, type your assigned **User name**, **Password** and **Domain**.
6. Tap **OK**.
7. Run the  **Backup** program to retain the settings through a power cycle (see page 15).

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.

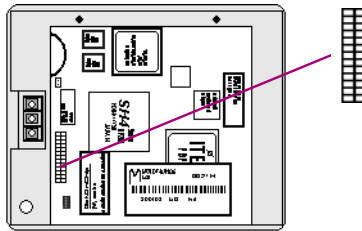
EXPANSION BUS

FieldBus Port

The FieldBus port is an expansion port included with the CE II. Optional expansion modules are available that plug directly into the FieldBus port. For more information on FieldBus expansion modules, contact your distributor.

The FieldBus port is located on the back of the unit underneath the rear panel.

Rear (open)



Note: To gain access to the FieldBus port, the rear panel of the unit must be removed.



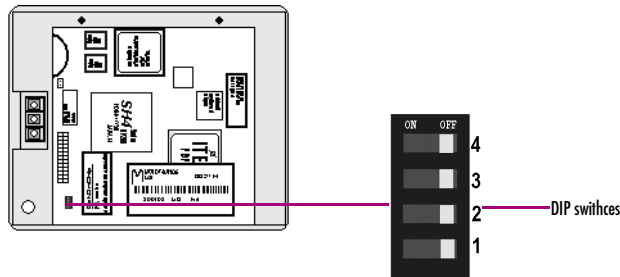
Caution: Disconnect the AC power from your 24VDC power supply before opening the CE II. Working on a “live” unit may result in damage to equipment and personnel. Always use anti-static precautions (i.e. grounded wrist strap) when accessing the interior of the unit.

DIP SWITCHES

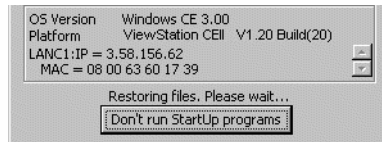
The CE II is equipped with four DIP switches that control a separate function.

DIP switches are set to “OFF” by default in the factory. DIP switch 2 is the Force Startup switch. Turning this switch on forces the startup applications to run when the operating system is started.

Rear (open)



When the switch is set to “OFF”, the CE II operates normally, displaying the startup splash screen. You can skip running the startup applications by tapping 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.

Note: Do not adjust the other switches. They are reserved for factory functions.

To configure the startup behavior of the CE II



Caution: Disconnect the AC power from your 24VDC power supply before opening the CE II. Working on a “live” unit may result in damage to equipment and personnel. Always use anti-static precautions (i.e. grounded wrist strap) when accessing the interior of the unit.

1. Remove the back cover of the CE II.
2. Locate the DIP switches and set DIP switch 2 to “ON”.


The startup applications are now forced.




Note: Do not adjust the other switches. They are reserved for factory functions.

MEMORY


The CE II 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

This 16 MB block of non-volatile memory is the main long term program storage for the CE II, operating like a virtual hard drive from the point of view of Windows CE. It is partitioned into two sections of which only one is accessible from Windows CE Explorer. The  **Flash Storage** folder represents an 8 MB block available for long term storage of user application programs. Another 8 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** utility 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.

Flash memory can optionally be added with a PC Card, which will appear as the  **PC Flash Storage** folder.


To add Flash memory with a PC Card

- Insert a flash PC card into PCMCIA Port (see page 36).

The unit immediately reads the new secondary storage. If the disk requires formatting, you will be prompted to do so.

New memory appears in Windows CE Explorer as  **PC Flash Storage**.

SRAM Memory

This 128 KB block of static RAM is battery-backed to provide data retention through a power cycle. This memory block is shared by the operating system and user applications. A portion of the SRAM memory operates as a virtual hard drive and is accessible from the Windows CE Explorer. It is represented as the  **SRAM**

Detailed Operation

Memory


Storage folder. A typical application program would create a file in this folder and store any critical program data in that file.

DRAM Memory

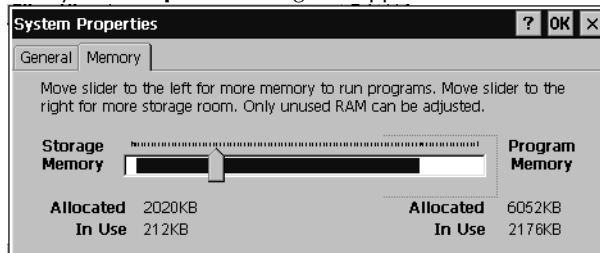
The CE II is equipped with 16 MB of dynamic RAM. Half of the DRAM (8 MB) is reserved for the Windows CE operating system and is not accessible by user applications. The other 8 MB is partitioned into two parts: an object store for temporary file storage and the main program memory for running programs. Space in DRAM is allocated by the operating system on an as-needed basis. Typically, compressed programs stored in FLASH are expanded and moved to DRAM for execution. Temporary storage of program variables or data files is also provided by DRAM.

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).

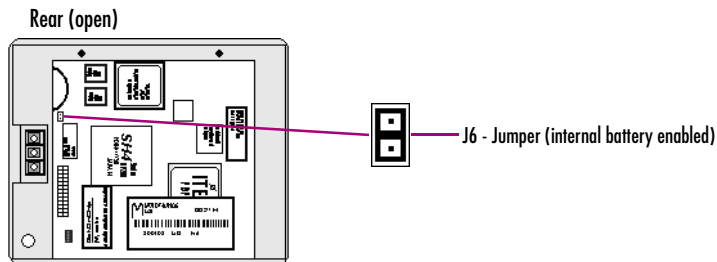
Boot Loader ROM

The Boot Loader ROM provides 128 KB of non-volatile storage for the CE II's initialization program. This program configures the CE II hardware then starts the operating system's execution. This memory is not accessible from the Windows CE Explorer nor should any attempts be made to modify the contents of this ROM.

OTHER SUBSYSTEMS

Battery Backup

The CE II provides an auxiliary battery power supply to the real-time clock and SRAM. This ensures that no loss of data occurs when the main 24VDC supply is removed from the unit. The auxiliary power is provided by an internal, rechargeable lithium battery (+3VDC). The internal battery is enabled/disabled by installing/removing a jumper accessible behind the rear panel of the CE II as shown in the following illustration.



Caution: Disconnect the AC power from your 24VDC power supply before opening the CE II. Working on a “live” unit may result in damage to equipment and personnel. Always use anti-static precautions when accessing the interior of the CE II.



To disable the internal battery

1. Remove AC power from the 24VDC supply.
2. Remove the rear access panel from the CE II.
3. Remove the battery jumper J6.

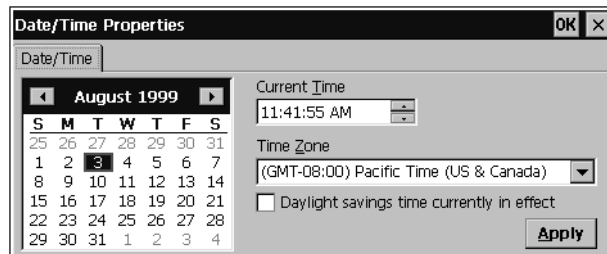
Real-time Clock

The CE II 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 if battery backup is enabled. Daylight savings time is enabled by a check box in the dialog.

To set the real-time clock

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

The **Date/Time Properties** dialog box appears.



Note: Tap apply after making changes in any box.

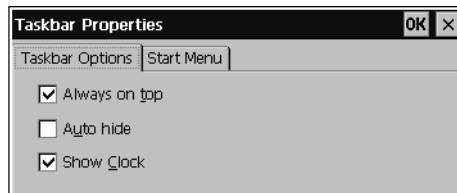
2. Tap the year to choose a new year; tap the month to choose a new month.
3. Tap a date to specify the day of month.
4. From the **Time Zone** box, choose your zone.
5. Select **Daylight savings time currently in effect** if it is true.
6. In the **Current Time** box, adjust the hours, minutes and seconds.
7. Tap **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.



A1

Design Specifications

The specifications listed in this appendix are the design goals for the CE II. In most cases the “as built” or tested specifications are identical. Various agency approvals for environmental service and safety are in the process of application.

Physical

Item	Specification
Enclosure dimensions (use for panel cutout)	Height: 4.95 in (125.73 mm) Width: 6.20 in (157.48 mm) Depth: 2.28 in (58 mm) (w/o expansion module)
Face plate dimensions	Height: 5.44 in (137 mm) Width: 6.75 in (170 mm) Depth: 0.25 in (5 mm)
Weight	2.5lb (1.16 kg)

Environmental

Item	Specification
Operating Temperature	32 to 104°F 0 to 40°C
Operating Humidity	20% to 85% , non-condensing
Storage Temperature	14 to 140°F -10 to 60 °C
Storage Humidity	5% to 85% , non-condensing

DC Power

Item	Specification
Input Voltage	20.4 to 27.4 VDC
Real Power	20 Watts

Display

Item	Specification
Size	5.75" 14.6 cm
Colors	256
Resolution	320 X 240
Fabrication	TFT
Graphics Accelerator	MediaQ MQ200
Graphics Memory	2 MB

Touch Screen

Item	Specification
Type	Resistive
Resolution	10 bit X axis- 240 cells Y axis - 192 cells

CPU

Item	Specification
Processor	Hitachi 7750 SH4
Clock speed	200 Mhz

Memory

Item	Specification
FLASH	16 MB
SRAM	128 KB (Battery Backed)
DRAM	16 MB
ROM	128 KB (Boot loader)
Video	2 MB

Ports

Item	Specification
Universal Serial Bus (USB) (2)	V1.1 compatible

Expansion

Item	Specification
PCMCIA	One slot (type 3)
FieldBus	One slot

Communication

Item	Specification
Ethernet	IEEE 802.3 10BaseT RJ45 connector
Serial COM1	EIA232C/EIA485 1200 bps - 115200 bps
Serial DEBUG	EIA232C

Calendar/Clock

Item	Specification
Resolution	1 second
Retention	Battery Backup for # of days
Accuracy	+/- one minute/month (battery backup) +/- 30 seconds/month (24DVC powered)

Miscellaneous

Item	Specification
LEDs	Front panel programmable tri-color LED Three Ethernet status LEDs
Annunciator	Programmable buzzer

Agency Qualifications

Item	Specification
Safety for Industrial Control Equipment	UL 508
Safety for Hazardous Locations (Class I, Div 2, Groups A, B, C & D)	UL 1604
European EMC and Low Voltage Directives	CE Mark

A2

Troubleshooting

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

Power up

Problem	Suggested remedy
Blank screen.	Check all power connections to the CE II.
Unit beeps a continuous tone upon application of power.	Remove AC power from the 24VDC supply then reapply in 5 to 10 seconds.

Pocket Internet Explorer

Problem	Suggested remedy
Cannot access any URLs when using a dial-up connection to an ISP.	If you have previously set up an IP address on a local Ethernet Network, it must be cleared. You must disable battery backup (see page 48) to clear the contents of SRAM memory. Any user settings will be lost. Disconnect your Ethernet before restarting. Your ISP will assign an IP address when you connect.

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