

# **PowerStation**

## **HPC/HPX Series User Guide**

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## Product Warranty Information

CTC Parker Automation provides top quality products through rigid testing and the highest quality control standards. However, should a problem occur with your hardware or with the software protection key, CTC's standard product warranty covers these items for 15 months from the date of shipment from CTC. Exceptions appear below:

- PowerStation backlight bulbs have a 90-day warranty.
- Third-party products, such as bus cards, carry the manufacturer's specified warranty.
- For all displays, image retention (burn-in) is not covered by warranty.
- Software revisions that occur within 60 days after purchase are available under warranty upon request. Please review the Interact License Agreement for additional software warranty information.

Should you have any questions about your application or need technical assistance, please call CTC's Product Technical Support department at 513-248-1714, 8:00 a.m. to 5:00 p.m., Eastern Time. You may call this same number after hours for emergency assistance. See *Customer Support Services* on page 6 of this manual for more information about CTC's support products and services.

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# Manual Overview and Support Services

Thank you for purchasing a HPC/HPX PowerStation. The HPC/HPX PowerStation is a rugged, compact PC that is designed to be used as an industrial operator interface.

The HPC/HPX PowerStation is available in three display configurations: 10", 15", and 17", each of which can be further configured with an array of expansion options. Also the HPC/HPX PowerStation features an embedded motherboard design based on the emerging EmbATX Low-Profile form factor specification sponsored by Intel.

Please take time to review this manual and the other documentation included with the HPC/HPX PowerStation before operating the unit.

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## Using this Manual

This manual is designed to help you set up and use your HPC/HPX PowerStation. The manual lists the PowerStation's specifications and describes its replacement and optional components. It also explains how to install the unit, how to maintain the unit in good condition, and how to solve common problems that may occur in operation.

This manual is divided into the following chapters:

**Chapter 1 — Manual Overview and Support Services:** Presents an overview of this manual, the other documentation and software provided with the HPC/HPX PowerStation, and the steps necessary to get your PowerStation up and running. This chapter also describes CTC's customer support services.

**Chapter 2 — Introducing the HPC/HPX PowerStation:** Describes the HPC/HPX PowerStation's specifications and the ports available to connect the PowerStation to other devices and to a power source. This chapter also describes the PowerStation's drive definitions and the unit's replacement and optional components.

**Chapter 3 — Installing the HPC/HPX PowerStation:** Explains how to install the HPC/HPX PowerStation in a control enclosure and how to start up the unit.

**Chapter 4 — Maintaining and Troubleshooting the HPC/HPX PowerStation:** Explains how to install replacement parts, how to maintain the HPC/HPX PowerStation, and how to solve problems that may occur during operation.



## Documentation Components

The HPC/HPX PowerStation documentation set contains all the information you need to configure, install, and use the HPC/HPX PowerStation. The HPC/HPX PowerStation documentation set is described below.

**Release Notes** - This document is provided whenever there is important information about the HPC/HPX PowerStation that does not appear in this manual. Be sure to read any available release notes before installing or operating the unit.

**PowerStation HP Series User Guide** - This is the document you are reading. It provides detailed information about the HPC/HPX PowerStation and describes how to configure, install, and use the unit. Please read this manual in its entirety before operating the unit.

## Software Components

There are two types of HPC/HPX PowerStations: the HPX and the HPC. The HPX comes bundled with CTC's InteractX HMI software. The HPC does not come with InteractX and is intended for use as a high performance industrial PC.

CTC pre-loads each HPC/HPX PowerStation with the MachineShop Shell and necessary utilities so that you can run the PowerStation immediately upon its arrival at your facility. CTC also provides backup copies of PowerStation and MachineShop software on the MachineShop Installation CD shipped with the PowerStation.

## Getting Started

Now that you have opened the HPC/HPX PowerStation package, you are ready to unpack the unit, develop an application, and install the PowerStation in a permanent location. This section provides an overview of these activities. Additional information is available in the remaining chapters of this manual.

### Before You Begin

Before you begin operating the HPC/HPX PowerStation, please unpack the PowerStation and verify that you have received all the components you ordered.

### Installing the PowerStation

When you finish unpacking the PowerStation and developing an application, you are ready to install the unit in a permanent location. See *Chapter 3 Installing the HPC/HPX PowerStation* on page 31 for complete installation instructions.

### Downloading Applications and Projects

The HPX PowerStation comes bundled with InteractX Runtime. It is a runtime-only system so you must use another system to develop your applications. You can then download the applications to the HPX and then use InteractX to run them.

The HPC PowerStation has a Windows operating system installed. You can install and use the Windows program of your choice to develop and run your applications.

**Note** Throughout this manual, all references to “development PC” or “development system” refer to the computer you use to develop applications.

See the documentation that came with your development software for information about how to develop your applications or projects and download them to the PowerStation.

## Documentation Standards

As you read this manual, you will notice that it uses the following documentation standards:

1. Important terms are shown in **bold**.
2. Text to be entered from the keyboard is shown in `Courier` font.
3. Buttons, menu titles, and keyboard keys are shown in Initial Caps.
4. Indented paragraphs denote one of the following:
  - **Note** - Describes alternative approaches or issues you should be aware of while using a particular function.
  - **Important** - Contains information that you need to pay particular attention to while reading. Follow this information to save development time and minimize problems.
  - **Warning** - Contains information on safety issues. Follow this information to prevent equipment damage or personal injury.

### ISO Symbols



This symbol is the International Standards Organization (ISO) symbol for Caution (ISO 3864 No. B.3.1). This symbol denotes information that could affect operation of the PowerStation if the information is not properly followed.



This symbol is the ISO symbol for Caution—risk of electrical shock (ISO 3864 No B.3.6). This symbol denotes information that could cause personal injury from electrical shock or damage to equipment if the information is not properly followed.

## Customer Support Services

CTC welcomes your thoughts and suggestions on our products and services. You can contact CTC by telephone, email, or fax. You can also visit CTC on the World Wide Web to learn the latest about our hardware, software, and customer support services.

- Telephone: 513-831-2340
- Fax: 513-831-5042
- E-mail: sales@ctcusa.com or support@ctcusa.com
- World Wide Web: <http://www.ctcusa.com>

CTC recognizes that every customer and every application has different support needs, so CTC offers a variety of support services designed to meet these needs. CTC offers two types of customer support services:

- Product Technical Support
- Technical Training

## Product Technical Support

The Product Technical Support department welcomes any question that might arise as you develop or run your applications. We offer complimentary support for all customers, including end users, original equipment manufacturers (OEM), system integrators, or distributors.

If you have a question about the HPC/HPX PowerStation, be sure to complete the following steps:

1. Check any release notes shipped with the unit. These notes provide important information about the PowerStation.
2. Consult the PowerStation documentation and other printed materials included with the PowerStation.
3. Review Chapter 4 of this manual, *Maintaining and Troubleshooting the HPC/HPX PowerStation* on page 39.

If you cannot find a solution using one of the above sources, contact our Product Technical Support department at 513-248-1714, 8:00 a.m. to 5:00 p.m., Eastern Time. You can call this same number after hours for emergency assistance.

## Technical Training

CTC offers training on all of our products, either at CTC in our state-of-the-art training facility, or at your site.

You can contact the Training Coordinator by telephone or e-mail:

- Telephone: 1-800-233-3329

- E-mail: [training@ctcusa.com](mailto:training@ctcusa.com)

You can view a current technical training schedule at our website, <http://www.ctcusa.com>



# Introducing the HPC/HPX PowerStation

The HPC/HPX PowerStation is designed to give you an operator interface solution that is powerful, cost-effective, and easy to use.

In this chapter, you will learn about the HPC/HPX PowerStation's specifications, available connectors, types of configurations, and memory. The chapter also describes the PowerStation's replacement and optional components.

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## Overview

The HPC/HPX Series PowerStation runs on the Windows operating system and comes in two versions: the HPX (with CTC's InteractX HMI Runtime software bundled on the machine) and the HPC (without InteractX).

The HPC PowerStation is fully configurable with a number of options.

- Select from three display sizes: 10", 15", and 17". You can also choose no display at all, in what is known as the remote configuration (HPC00/HPX00).
- Install PCI cards by using optional Expansion Slots. Choose from three options: 3/4 Length cards, Full Length cards, or no expansion option for maximum depth space savings.
- Select from two processors: 2.0 GHz Celeron or 2.8 GHz Pentium IV.
- Select either Windows 2000 or Windows XP Professional.
- Select up to 2.0 GB of system memory, up to 80 GB of hard drive capability or up to 2.0 GB of Compact Flash, and a CD-ROM drive with optional R/W.

The HPX PowerStation has a number of configurable options as well.

- Select from three flat-panel display sizes: 10", 15", and 17".
- Install PCI cards by using optional Expansion Slots. Choose from three options: 3/4 Length cards, Full Length cards, or no expansion option for maximum depth space savings.
- Select either Windows 2000 or Windows XP Professional.
- Select up to 80 GB hard drive or up to 2.0 GB Flash, and a CD-ROM drive with optional R/W capability.

The HPX also has three pre-configured options: Good, Better, and Best.

- Good: 512 MB memory, 2.0 GHz Celeron processor
- Better: 1.0 GB memory, 2.8 GHz Pentium IV processor
- Best: 1.0 GB memory, 3.06 GHz Pentium IV processor

## Expansion Slots

The optional Expansion Slot option lets you install up to two full-length PCI cards or two 3/4-length PCI cards into the HPC/HPX PowerStation. For more information, see **Installing Expansion Cards in Chapter 4**.



**Remote Configuration**

The Remote Configuration is an option that lets you wall-mount the PowerStation computer itself and connect to a remote display. This option may be convenient for customers who want to place a display in one area of the floor and the computer that controls it up to 50 feet away.

You can use optional Expansion Slots with the Remote Configuration.

## Specifications

This section describes important specifications for the HPC/HPX PowerStation. Please familiarize yourself with these specifications before operating the unit.

### Display Specifications

Display specifications include the type of monitor, size, resolution, and other display properties. These specifications are shown in the following tables. There is one table for each display size: 10", 15", and 17".

#### 10" Color

Property	Description
Types	<ul style="list-style-type: none"> <li>VGA Standard Bright: TFT</li> <li>VGA High Bright: TFT</li> <li>SVGA: TFT</li> </ul>
Display Diagonal Size	10.4"
Resolution	<ul style="list-style-type: none"> <li>VGA (640 x 480)</li> <li>SVGA (800 x 600)</li> </ul>
Brightness	<ul style="list-style-type: none"> <li>Standard: 200 NITS</li> <li>High Bright: 350 NITS</li> <li>SVGA: 350 NITS</li> </ul>
Viewing Angle	U/D = 40/70 deg L/R = 40/40 deg
Bulb Life	50,000 hours

**Table 2-1: 10" Color Display**

#### 15" Color

Property	Description
Type	TFT
Display Diagonal Size	15.0"
Resolution	XGA (1024 x 768)
Brightness	260 NITS

**Table 2-2: 15" Color Display**

Property	Description
Viewing Angle	U/D = 55/80 deg L/R = 80/80 deg
Bulb Life	50,000 hours

**Table 2-2: 15" Color Display****17" Color**

Property	Description
Type	TFT
Display Diagonal Size	17.0"
Resolution	SXGA (1280 x 1024)
Brightness	300 NITS
Viewing Angle	U/D = 65/85 deg L/R = 80/80 deg
Bulb Life	50,000 hours

**Table 2-3: 17" Color Display****Physical Specifications**

Physical specifications include the PowerStation's CPU, memory specifications, display types, storage capacity, and other physical characteristics. The HPC/HPX PowerStation features a new universal, embedded ATX computer assembly. These specifications are shown in Physical Specifications.

Category	Specifications
Operating System	<ul style="list-style-type: none"> <li>Microsoft Windows 2000, XP Professional</li> </ul>
CPU	EmbATX Motherboard with the following features: <ul style="list-style-type: none"> <li>Socket 478 for Pentium 4 Desktop (400/533MHz FSB) Processors:               <ul style="list-style-type: none"> <li>2.0GHz Celeron minimum</li> <li>3.06GHz Pentium 4 maximum</li> </ul> </li> <li>Intel 845GV Chipset</li> </ul>

**Table 2-4: Physical Specifications**

Category	Specifications
Memory	<p>Two 2.5v DDR DIMM sockets for up to 2GB of DDR200/DDR266 memory</p> <ul style="list-style-type: none"> <li>• Up to 2GB of DDR SDRAM, DDR200/266, unbuffered non-ECC</li> <li>• Two 184-pin DDR DIMM sockets</li> <li>• Serial Presense Detect Interface</li> </ul>
BIOS	<p>Phoenix BIOS is located in the 256K boot-block FLASH EPROM. Standard features include:</p> <ul style="list-style-type: none"> <li>• FLASH/EPROM-based setup utility</li> <li>• Power-On Self-Test (POST)</li> <li>• Password protection</li> <li>• Advanced Power Management</li> <li>• System plug and play support</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• 2.0 GB Type II CompactFlash socket (not hot swappable)</li> <li>• Optional 40GB (minimum) or 80 GB 3.5" Desktop Hard Drive</li> <li>• Optional Slim Mobile CD-ROM, CD-RW, or DVD-ROM Drive</li> </ul>
I/O Ports	<ul style="list-style-type: none"> <li>• One 16C550 Serial Port as standard 9-pin male DSUB Connector</li> </ul> <p><b>Note:</b> The remote configuration HPC00/HPX00 comes with two serial ports</p> <ul style="list-style-type: none"> <li>• 1 RJ45 Ethernet connector; Realtek 8100C 10/100 Base-T controller</li> <li>• 4 USB 2.0 ports</li> <li>• One Parallel Port supporting SPP/EPP/ECP mode <ul style="list-style-type: none"> <li>• Standard 25-pin female DSUB connector</li> </ul> </li> <li>• Keyboard: 1 PS/2 miniDIN</li> <li>• Mouse: 1 PS/2 miniDIN</li> </ul>
Peripheral Interfaces	<ul style="list-style-type: none"> <li>• Dual IDE controllers supporting DMA/100 devices</li> <li>• IDE Connectors: two standard 40pin and one 2mm mobile</li> </ul>

**Table 2-4: Physical Specifications**

Category	Specifications
Expansion Slots	<ul style="list-style-type: none"> <li>• Optional, 3/4 Length, 3 PCI Riser Slots for PCI Adapter Cards               <ul style="list-style-type: none"> <li>• Two slots support 3/4 length PCI Adapter cards</li> <li>• One slot supports a low profile, specialized small form-factor PCI Adapter card</li> <li>• A mechanical hold-down is provided to keep the cards from unseating during shock and vibration of the system</li> </ul> </li> <li>• Optional, Full Length, 3 PCI Riser Slots for PCI Adapter Cards               <ul style="list-style-type: none"> <li>• Two slots support Full length PCI Adapter cards</li> <li>• One slot supports a low profile, specialized small form-factor PCI Adapter card</li> <li>• A mechanical hold-down is provided to keep the cards from unseating during shock and vibration of the system</li> </ul> </li> </ul>
Dimensions H x W x D	<p>For the 10":</p> <ul style="list-style-type: none"> <li>• 11.0"H x 13.8"W x 5.8"D</li> </ul> <p>For the 15":</p> <ul style="list-style-type: none"> <li>• 13.3"H x 16.8"W x 6.6"D</li> </ul> <p>For the 17":</p> <ul style="list-style-type: none"> <li>• 15.7"H x 18.0"W x 6.0"D</li> </ul> <p>For the remote configuration:</p> <ul style="list-style-type: none"> <li>• 10.9"H x 11.3"W x 3.9"D</li> </ul>
Weight	<p>For the 10" (HPC 10T-27-WHA-BD3):</p> <ul style="list-style-type: none"> <li>• 20 lbs</li> </ul> <p>For the 15" (HPC 15T-27-WHA-BD3):</p> <ul style="list-style-type: none"> <li>• 27.4 lbs</li> </ul> <p>For the 17" (HPC 18T-27-WHA-BD3):</p> <ul style="list-style-type: none"> <li>• 27.3 lbs.</li> </ul> <p>For the remote configuration:</p> <ul style="list-style-type: none"> <li>• 12.4 lbs.</li> </ul>
Touchscreen	Analog Resistive

**Table 2-4: Physical Specifications**

Category	Specifications
Audio	<ul style="list-style-type: none"> <li>AC97 Sound with amplified output, microphone input, line input, and CD-input (internal)</li> <li>Internal Piezoelectric Beeper</li> </ul>

**Table 2-4: Physical Specifications**

**Environmental Specifications**

Even though the HPC/HPX PowerStation is built to withstand harsh environments, limit the PowerStation’s exposure to adverse conditions such as dust, oil, moisture, and corrosive vapors to minimize maintenance and repair costs.

Remember that the temperature within a protective enclosure is generally higher than the external temperature. Thus, if the HPC/HPX PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure. The PowerStation conforms to the environmental specifications listed in Environmental Specifications Chart.

Category	Specifications
Ambient Operating Temperature	0° to 50° C
Storage Temperature	-40° to 90° C
Relative Humidity	5 - 95%, non-condensing
Shock Rating	<ul style="list-style-type: none"> <li>10G @ 11msec operating</li> <li>30G @ 11msec non-operating</li> </ul>
Operating Vibration	<ul style="list-style-type: none"> <li>MIL-STD-810D 1.5G RMS Random non-operating</li> <li>0.5 GRMS 5-500Hz Random operating</li> </ul>
Faceplate Design	Faceplates designed and tested for NEMA 4/4X, IP65 Sealing <b>Warning:</b> The PowerStation is rated NEMA 4 only if it is installed in a NEMA 4-rated enclosure.

**Table 2-5: Environmental Specifications Chart**

**Electrical Specifications**

The HPC/HPX PowerStation comes with a built-in A/C power supply along with a power cable. Its power supply automatically detects the input voltage level and adjusts accordingly. However, always use reliable sources of power, and isolate all communication cables from



AC power lines to enhance noise immunity.

If possible, locate the HPC/HPX PowerStation away from machinery that produces intense electrical noise (arc welders, etc.). Otherwise, isolate the input power to the PowerStation from the equipment generating electrical noise.

The HPC/HPX PowerStation’s electrical specifications appear in the Electrical Specifications Chart.

Category	Specifications
System Total Design Power	For board with P4 3.06GHz/533MHz & 2GB DDR266, no PCI add-in cards or add-in peripherals: <ul style="list-style-type: none"> <li>• TDP = 100W Max</li> </ul>
Total Available PCI Power	Total Available PCI Expansion Card power (total for all cards): <ul style="list-style-type: none"> <li>• 3.3v ± 5% @ 3.5A</li> <li>• 5.0v ± 5% @ 3.5A</li> <li>• 12v ± 10% @ 1.5A</li> <li>• -12v ± 10% @ 0.3A</li> </ul>

**Table 2-6: Electrical Specifications Chart**

**Testing Specifications**

The HPC/HPX PowerStation conforms to the testing specifications listed in Testing Specifications Chart.

Test	Specification
EMC Testing, Emissions	<ul style="list-style-type: none"> <li>• EN55011 CISPR 11 Radiated Emissions Group 1 Class A</li> <li>• EN55011 CISPR 11 Conducted Emissions Group 1 Equipment</li> </ul>

**Table 2-7: Testing Specifications Chart**

Test	Specification
EMC Testing, Immunity	<ul style="list-style-type: none"> <li>• IEC 1000-4-3 Radiated Immunity</li> <li>• IEC 1000-4-2 Electrostatic Discharge</li> <li>• IEC 1000-4-4 Fast Transient/Burst Susceptibility</li> <li>• IEC 1000-4-5 Surge Immunity</li> <li>• IEC 1000-4-11 Voltage Dips Interruptions and Variation</li> <li>• Conducted Immunity</li> <li>• IEEE 472 Surge Withstand Capability</li> </ul>
Agencies	<ul style="list-style-type: none"> <li>• UL 60950, UL 1604 Hazardous Location</li> <li>• CE</li> </ul>

**Table 2-7: Testing Specifications Chart**



### Faceplate Chemical Resistance

The touchscreen of the HPC/HPX PowerStation is resistant to the chemicals listed in Chemical Resistance Chart.

Touchscreen Chemical Resistance		
Acetone	Sulfuric Acid 10%	Motor oil
MEK	Hydrochloric Acid 10%	Gasoline
Toluene	Acetic Acid 10%	Machine oil
Methylene Chloride	Phosphoric Acid	Salad oil
Isopropyl Alcohol	Sodium Hydroxide 10%	Silicone
Xylene	Carbon Tetrachloride	Silicone grease G31
Hexane	Potassium Hydroxide	Kerosene
Butyl Cellosolve	Ammonia Water 10%	Gas oil
Cyclohexanone	Sodium Chloride 26%	Silicone oil
Trichloroethylene	Zinc Chloride 81%	Engine oil
Ethanol	Cottonseed Oil	Cleanser
Methanol	Glycerin	
Nitric Acid 10%	Grease	

**Table 2-8: Chemical Resistance Chart**

**Important** Sustained exposure to brake fluid or Gunk® brand degreaser can cause damage to monitor materials.

All HPC/HPX PowerStation surfaces exposed outside your enclosure are resistive to the following chemicals:

- Commercial glass cleaners
- Motor oil
- Ammonia (10% dilute solution)
- Diesel fuel
- Gasoline (leaded, unleaded)
- Silicone based lubricant
- Alcohol (ethyl, methyl)
- Automatic transmission fluid
- Hydraulic fluid

## Available Connectors

All HPC/HPX PowerStations have one serial port, two PS/2 keyboard/mouse ports, an Ethernet port, a parallel port, four USB ports, and a Compact Flash connector. See the HPC/HPX PowerStation CD for dimensional drawings and a diagram to locate the components.

### Serial Ports

The HPC/HPX PowerStation has a serial port that you can use to communicate with external devices at baud rates of up to 115 Kbaud.

**Note** The Remote Configuration HPC00/HPX00 option comes with two serial ports.

The COM1 port supports the RS-232 communication standards.

**Note** The length of the serial cable should not exceed 50 feet (15 meters) for RS-232.

Be careful not to connect any wires to unused connector pins. If you are using CTC's MachineShop software, information on the specific connection required for the Interact drivers you will use is located in the Help file associated with the driver.

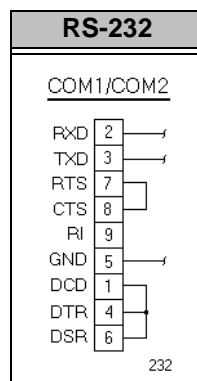
## Settings and Pinouts for COM1 and COM2

If you need to make a cable for communicating with COM1, COM1 and COM2 Pinouts shows the pinouts and signal information for this port.

Pin#	Signal
1	DCD, data carrier detect
2	RXD, received data
3	TXD, transmitted data
4	DTR, data terminal ready
5	Signal ground
6	DSR
7	RTS, request to send
8	CTS, clear to send
9	RI

**Table 2-9: COM1 and COM2 Pinouts**

Figure 3-1 displays the pinouts and cable settings required for communicating with COM1 or COM2 using the RS-232 protocol. On remote systems the second COM port, COM2, has the same pinouts.



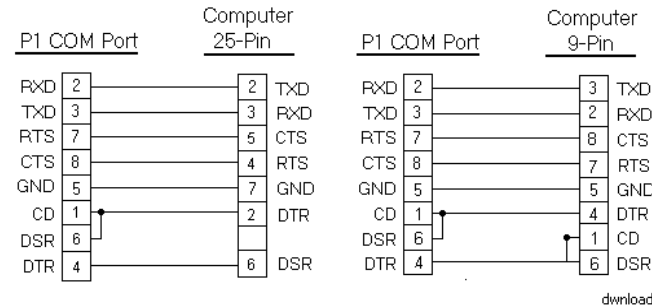
**Figure 3-1 Pinouts and Cable Settings**

**Important** Be careful not to connect any wires to unused connector pins.

## Transferring Files from a PC to the HPC/HPX PowerStation

You can transfer files from a PC to the HPC/HPX PowerStation in one

of three ways—through the Ethernet, the Compact Flash, or a Serial Transfer. If you plan to use a Serial Transfer, you will need a null modem cable. To construct your own cables, refer to *Figure 3-2* for the appropriate settings. Then continue with step 1 below:



**Figure 3-2** Serial Transfer Cable Diagram

1. Connect a null modem serial cable to an available serial port on the IBM-PC.
2. Connect the other end of the cable to the serial port on the HPC/HPX PowerStation.

### Connecting a Serial Mouse

If you need to connect a serial mouse to the serial port on the HPC/HPX PowerStation, you must check the settings to ensure that a COM port is not already configured as a Download only port. If the COM port that you want to use for the mouse is already assigned for Download, complete the following steps:

1. Select Settings from the MachineShop Shell Main Menu.
2. Select Direct Serial from the Settings menu.
3. Select Port.
4. Select the COM port that you want to use as the Download port. Or, you can select Disable to prevent any COM port from being used as a COM port.
5. If the Serial Mouse is not already connected to the HPC/HPX PowerStation, connect it now.
6. Reboot the workstation.

**Keyboard/Mouse Port** The HPC/HPX PowerStation's CPU board includes a keyboard port that accepts any IBM AT-compatible keyboard, including 84-key standard keyboards and 101-key enhanced keyboards.

### Connecting a PS/2 Mouse

If you prefer to use a mouse instead of the touchscreen, CTC recommends that you only use a Microsoft PS/2-style mouse, specifically an 802.3 Microsoft-compatible mouse.

**Ethernet Port** The HPC/HPX PowerStation has an Ethernet RJ45 port with a Realtek 8100C 10/100 base-T controller that allows you to connect the PowerStation to a Local Area Network. The system ships with the driver pre-installed.

See Ethernet Pinouts.

Pin#	Signal
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

**Table 2-10: Ethernet Pinouts**

**CompactFlash** The HPC/HPX PowerStation comes with a Compact Flash (CF) card. The CF card is used as a removable hard drive that is recognized as drive C and provides non-volatile memory storage. A CF card is frequently used to supplement or replace a hard drive because of its durability. The CF card is well-suited for rugged environments where the PowerStation may vibrate or shake. Although the CF card is removable, it is used as an IDE drive, which means you cannot remove it while the PowerStation is switched on.

CTC recommends that you purchase at least one additional CF card to serve as a backup for your primary CF card. You may decide to own several cards to store different projects. You can purchase additional

CF cards through CTC.



**Caution** Do not remove or insert the CF card when the unit is powered on or data on the card could be corrupted.

## **Drive Definition and Memory**

When you purchase the HPX PowerStation, you can specify whether you want a 40 GB hard drive, 80 GB hard drive, or 2.0 GB Compact Flash. Whichever you choose, this drive is the system start drive and Project disk. It stores the project, system files, MachineShop, and applications. Download files to this drive.

## **Memory Guidelines**

If you are using MachineShop to develop your HMI applications, refer to these memory guidelines when you develop projects. Same goes for InteractX. There are two memory storage types, System SDRAM and Compact Flash.

The capacity and use of the System SDRAM is up to 2.0 GB. The capacity and use of the Compact Flash is also up to 2.0 GB flash memory.

## Replacement Components

The HPC/HPX PowerStation is designed to be a simple yet reliable unit to maintain. However, if you need to purchase replacement components for the PowerStation, CTC carries a complete line of replacement components.

### CompactFlash Card

If you need additional storage capacity for the HPC/HPX PowerStation, you can purchase additional Compact Flash cards from CTC. CTC recommends that you purchase at least one additional flash card to serve as a backup for your primary CF. See *Using the CompactFlash Card* on page 46 for instructions on how to replace and reformat CF cards.

### SDRAM

If you need to upgrade or replace the HPC/HPX PowerStation's SDRAM, CTC carries replacement SDRAM (DDR DIMM). The HPC/HPX PowerStation comes with a minimum of 256MB 184-pin DDR DIMM for SDRAM, but you can replace that module with up to two 1.0 GB 184-pin SDRAMs for greater capacity. To replace the SDRAM, see *Replacing the SDRAM* on page 51.

### Backlight Bulb

You may replace the backlight bulb only on the 10" HPC/HPX PowerStations.

You can also send the PowerStation to CTC's repair center. See *Customer Support Services* on page 6.

### Replaceable Fuse

There is no user-replaceable fuse in the HPC/HPX PowerStation.



# Installing the HPC/HPX PowerStation

You are now ready to install the HPC/HPX PowerStation in a permanent location. This chapter will help you select an appropriate location for the unit. It also provides instructions for creating a cutout for the unit, and describes how to install and start up the unit.

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<i>Preparing for Installation</i>	30
<i>Installing the HPC/HPX PowerStation</i>	31
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## Selecting a Location

The first step when installing the HPC/HPX PowerStation is to select an appropriate location for the unit. This is the most important aspect of the installation process because the location you select can affect the PowerStation's performance, ease-of-use, and life-expectancy. This section provides some guidelines that you should follow when selecting a location for the PowerStation.

### Class I, Division 2 Guidelines

If you purchased a Class I, Division 2-compliant HPC/HPX PowerStation, you must always follow these guidelines to maintain a safe operating environment:



1. Suitable for use in Class I, Division 2, Groups A, B, C, and D hazardous locations only.
2. **Warning: Explosion Hazard**—DO NOT connect or disconnect cables while power is applied unless area is known to be nonhazardous. Keyboard and Mouse Ports are for system set-up and diagnostics and are NOT intended for permanent connection.
3. **Warning: Explosion Hazard**—CLASS 1 DIV 2 approval requires Power Switch restraints in hazardous environments. Nonincendive for CLASS 1, GROUPS A, B, C, and D hazardous locations. Temperature code: T5.
4. Make sure that the HPC/HPX PowerStation's on/off switch is secured in the on position using the supplied bracket.
5. When performing field wiring, always use copper wire with 60C or 60/75C insulation and a tightening torque of 7.0 lb./in. (0.79 N-m).

### Environmental Guidelines

The environment is the area where the HPC/HPX PowerStation will be located. In general, you should select a place that limits the unit's exposure to adverse conditions such as dust, oil, moisture, and corrosive vapors.

### Touchscreen Considerations

The HPC/HPX PowerStation's touchscreen is designed to meet the NEMA 4 rating. You should mount the PowerStation in an enclosure that supports this rating in order to provide further protection.

The HPC/HPX PowerStation's touchscreen is resistant to a variety of chemicals. See *Faceplate Chemical Resistance on page 19* for a list of these chemicals. Make sure that the touchscreen is not exposed to

chemicals other than those listed in *Faceplate Chemical Resistance* on page 19.

**Electrical Guidelines**

To minimize unwanted electrical interference, select a location away from machinery that produces intense electrical noise. If you cannot do this, isolate input power to the unit and separate all data communication cables used with the unit from AC power lines.

See *Electrical Specifications* on page 16 for a list of the HPC/HPX PowerStation's electrical specifications. Make sure that your power source is compatible with the PowerStation before starting the unit.

**Field Terminal Wiring Requirements**

In order to comply with UL 508 and 1604 requirements, use copper wire with 60C or 60/75C insulation and a tightening torque of 7.0 lb/in. (0.79 N-m) when connecting field terminal wiring to the PowerStation.

**Temperature Guidelines**

You can safely operate the HPC/HPX PowerStation within the temperature range specified in *Environmental Specifications* on page 16. However, if you are using a protective enclosure, remember that the temperature within an enclosure is generally higher than the external temperature. If the PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure.

**Enclosure Guidelines**

Select an enclosure that is large enough to allow free airflow in and around the unit. You should allow a minimum of 2 inches between the enclosure and the top, bottom, and sides of the HPC/HPX PowerStation.

Also, make sure that the surface of the enclosure on which the HPC/HPX PowerStation is mounted is flat and free of raised or depressed areas.

## Preparing for Installation

Once you select a location for the HPC/HPX PowerStation, you will need to create a cutout for the unit for all models except for the remote configuration HPC00/HPX00.

Procedures for creating the cutout are described below.

### Creating the Cutout

Be sure to follow precisely the cutout diagrams in the dimensional drawings on the HPC/HPX PowerStation CD. This will ensure that the PowerStation will properly seal in its enclosure.

#### Create a Cutout

To create the cutout, complete the following steps:

1. Attach the template securely to the mounting surface.
2. Cut out the shaded area on the template referred to as the "Panel Cutout Area." To maintain the flatness of the mounting surface, CTC recommends that if you punch out the mounting hole, you should maintain proper surface flatness and edge quality.

The cutout dimensions for the HPC/HPX PowerStation are shown in the following table:

Model	Cutout Height	Cutout Width
00N	n/a	n/a
10T/10S	9.95"	12.6"
15T	12.4"	15.9"
17T	14.26"	17.06"

3. Debur the edges of the cutout area, removing dirt and debris that might come in contact with the unit.
4. More information is available on the CD that comes with the HPC/HPX PowerStation. Be sure to refer to the dimensional drawings found on the CD when creating your cutout.

## Installing the HPC/HPX PowerStation

Once you prepared the location for the HPC/HPX PowerStation, you can install the unit. Installation will involve mounting the PowerStation. Both procedures are described below.

### Mounting the HPC/HPX PowerStation

The HPC/HPX PowerStation is designed to be mounted using screws. These screws are secured to the unit with metal clamps. The exception is the remote unit, where clamps are not used. For your convenience, CTC includes all necessary mounting hardware with the unit.

#### Mount the PowerStation

**Note** Necessary mounting clamps and screws are shipped with your system.

To mount the unit, complete the following steps:

1. Gently insert the HPC/HPX PowerStation into the cutout from the front.
2. Attach the mounting clamps, with their screws, to the back of the unit in the spaces provided.

**Note** The number of clamps depends on the model. The shape of the prongs at the bottom of each clamp also depends on the model. The 17" models uses an opposite-pointing L-shape clamp, and the 10" and 15" models use a same-direction L-shape clamp. See the diagrams below.

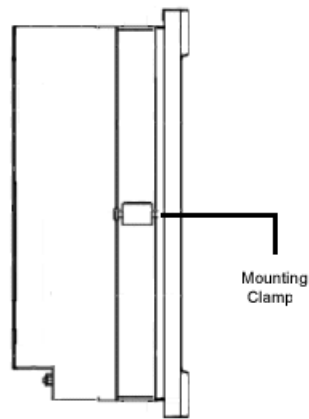
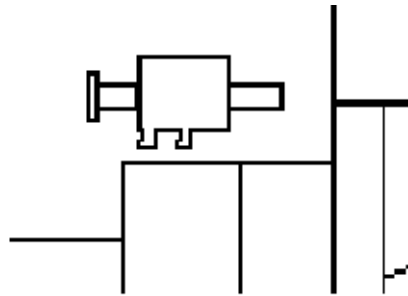
**Note** The clamps secure to the unit using CTC's sliding mechanism. Insert the clamp in the wide end of the slot and slide it to the thin end. See the diagrams below.

- If you have a system with a 10" display, attach 6 mounting clamps, with their screws, to the back of the unit in the spaces provided. You will place 2 clamps at the top and bottom of the unit and 1 on each side. You must slide the feet of the mounting clip into the slot, then slide the clip over to properly mount the unit.
- If you have a system with a 15" display, attach 8 mounting clamps, with their screws, to the back of the unit in the spaces provided. You will place 2 clamps at the top and bottom of the unit and 2 on each side. You must slide the feet of the mounting clip into the slot, then slide the clip over to properly mount

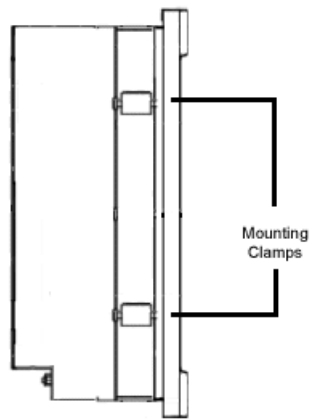
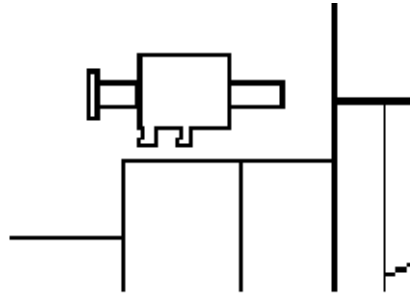
the unit.

- If you have a system with a 17" display, attach 12 mounting clamps, with their screws, to the back of the unit in the spaces provided. You will place 3 clamps at the top and bottom of the unit and 3 on each side. You must slide the feet of the mounting clip into the slot, then slide the clip over to properly mount the unit.

**Clamp shape and location on the 10" unit:**

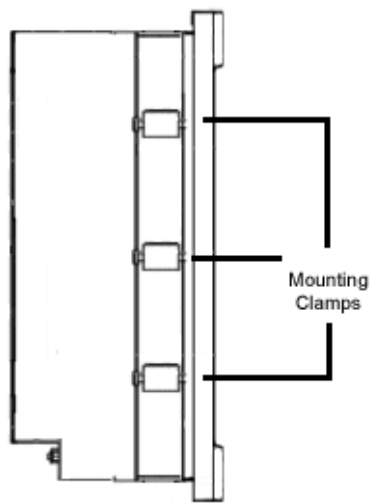
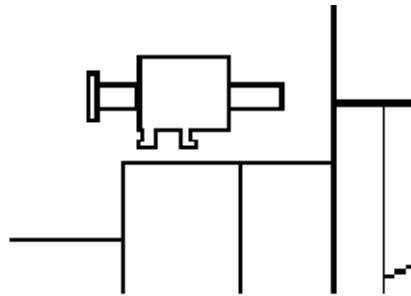


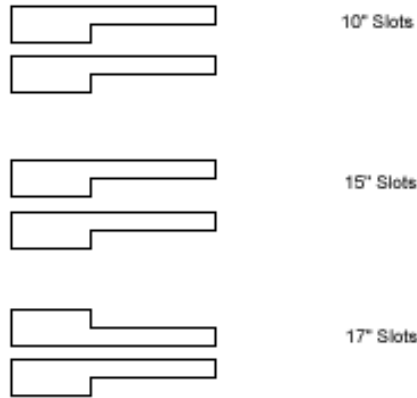
**Clamp shape and location on the 15" units:**





**Clamp shape and location on the 17" units:**



**Sliding mechanism for all HPC/HPX models:**

3. Insert the clamps into the larger portion of the slots, and then slide them toward the outside of the unit.
4. Tighten each of the mounting screws against the front of the enclosure. Torque them down to 50% compression of the gasket.

**Important** Tighten the nuts in a crosswise sequence to ensure a good seal and to prevent damage to the unit.

5. Plug in the AC cord.



**Caution** Over-tightening the screw/clamp assemblies may damage the HPC/HPX PowerStation. Under-tightening may not guarantee a NEMA 4 seal.

**Note** Tightening the screw/clamp assemblies may not ensure that the gasket seal is totally depressed by the bezel. It may be possible to see a small edge of the gasket between the bezel and the enclosure.

## Starting Up the HPC/HPX PowerStation



Once the HPC/HPX PowerStation has been mounted, you are ready to start up the unit. This procedure is described below.

Before connecting a power cord to your unit, make sure that you have read and understood *Environmental Specifications* on page 16 and the *Testing Specifications* on page 17 of this manual. Also, be sure to follow the guidelines listed below:

- For **permanently connected equipment**, incorporate a readily accessible disconnect device in the fixed wiring.

**Important** Proper installation of this PowerStation model for use in European Union countries requires the use of a harmonized power cord (the power cord must be identified with the <HAR> symbol). Make sure that the PowerStation is connected to the main supply only with a harmonized power cord.

1. Ensure the power on/off switch is in the off position.
2. Connect the power cord to your voltage source. Voltage input to the unit should be within the range specified in the *Environmental Specifications* on page 16.
3. Connect the power cord plug to the HPC/HPX PowerStation.
4. Turn the HPC/HPX PowerStation on.

### **For HPX PowerStations only:**

The PowerStation will automatically load the MachineShop Shell or an Interact application, if the Shell is configured to start Interact automatically.

You are now ready to download a project to the HPC/HPX PowerStation. If you're using MachineShop software, refer to the *MachineShop Getting Started Guide* for information about downloading projects.



# Maintaining and Troubleshooting the HPC/HPX PowerStation

The HPC/HPX PowerStation is designed to provide years of trouble-free operation even in the harshest environments. However, you may occasionally need to perform routine maintenance on some of the PowerStation's components.

This chapter provides instructions on HPC/HPX PowerStation maintenance, as well as steps for troubleshooting problems that may occur in operation.

## Chapter Contents

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## Installing and Replacing Parts

This section includes cautions to observe when performing internal maintenance on the HPC/HPX PowerStation. To prevent injury to yourself or damage to the PowerStation, you will need to carefully read and understand what is described in this section.

Before you begin, please read and follow the electrostatic discharge (ESD) precautions that you should take whenever you work inside the HPC/HPX PowerStation.



### Electrostatic Discharge Precautions

**Warning** For safety reasons, only qualified service personnel should open the PowerStation.

Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to electrostatic discharges (ESD) and fields. Before you disassemble the HPC/HPX PowerStation, follow these simple precautions to protect you and the PowerStation from harmful ESD.



- To avoid electric shock, always disconnect power from the PowerStation before opening or disassembling the unit. **Do not** touch any components on the CPU card or other cards while the PowerStation is on.
- Disconnect power before making any hardware configuration changes. A sudden static discharge as you connect a jumper or touch any internal parts may damage sensitive electronic components.
- Only handle internal components in an ESD-safe location, using appropriate grounding methods.
- Wear a grounding wrist strap for continuous protection.
- Always ground yourself to remove any static charge before you touch the CPU card.
- Be particularly careful not to touch the chip connectors.
- Keep any card or SDRAM module in its anti-static packaging when it is not installed in the PowerStation. Place it on a static dissipative mat when you are working on it.

Once you have read and understand the ESD safety precautions, you are ready to continue with the appropriate instructions.

## BIOS Setup

This section describes various BIOS settings you may modify.

If you want to change any of the BIOS settings, shut down the system and connect a keyboard to the PowerStation. Reboot the system and press the F2 key while the system splash screen appears to display the BIOS utility.

You can use the BIOS utility to perform the following functions on your PowerStation:

- Select the installed operating system
- Configure the serial ports
- Reset the disk boot priority (CompactFlash, Hard Drive, or CD-ROM)
- Load the default BIOS settings

## Installed O/S

In the BIOS utility you can specify which operating system you want to boot into.

### To specify the installed O/S:

1. In the BIOS utility, select the Advanced tab.  
The Installed O/S option should be selected.
2. Use the + and - keys to toggle between the selections.  
For Windows XP, select Other.  
For Windows 2000, select Win2000.
3. Select the Exit tab.
4. Select Exit Saving Changes and then press Enter.
5. Select Yes to confirm your choice. The system reboots.

### Note about shutting down the PowerStation

When you shut down in Windows, the system power supply automatically shuts off. However the power switch remains in the On position. You should manually turn the switch to Off.

If you want to reboot immediately, wait 5 seconds after turning the switch Off before turning it back On.

## Configuring the Serial Ports

On display-based systems one COM port, COM1, is available to the user. The touchscreen controller is connected internally to COM2.

On the headless, remote units (HPC00/HPX00) both COM ports are available to the user.

### To configure the serial ports, complete the following steps:

1. Select the Advanced tab.
2. Select I/O Device Configuration.
3. Press Enter.

A list of Serial Ports displays.

**Important** COM A in the BIOS refers to COM 2 on the label on the outside of the HPC/HPX PowerStation, while COM B in the BIOS refers to COM 1 on the outside label.

4. Toggle the choices for Base I/O Address and Interrupt.

The correct settings for this PowerStation are as follows:

- COM A: Base I/O Address [2F8], Interrupt [IRQ 3]
- COM B: Base I/O Address [3F8], Interrupt [IRQ 4]

5. Press Esc to return to the Advanced tab.
6. Select the Exit tab.
7. Select Exit Saving Changes and press Enter.
8. Select Yes to confirm your choice. The system reboots.

## Resetting Disk Boot Priority

### To reset the disk boot priority, complete the following steps:

1. Select the Boot tab.

The following is the default boot order list. The system will try to boot from the device at the top of the list, and, if that fails, it will try each successive device on down.

- Hard drive
- Removable devices (refers to your CompactFlash drive)
- CD-ROM / DVD-ROM drive
- Network boot



- Realtek boot agent

**Note** The list may include IDE hardware that is not currently installed on the system, but was installed at one time. This feature is called the “Sticky IDE” feature. If your boot order list includes “!Secondary Master” or “!Secondary Slave,” it is a function of the “Sticky IDE” feature. Using this feature, the BIOS can recognize when a CompactFlash is in the unit. This enables the unit to boot from the CompactFlash when the CompactFlash is in the unit, and from the Hard Drive when the CompactFlash has been removed.

2. Press the + or - key to move the selected device up or down in the boot order priority list.
3. Select the Exit tab.
4. Select Exit Saving Changes and press Enter.
5. Select Yes to confirm your choice. The system reboots.

### Loading Default BIOS Settings

**To reload the default BIOS settings, complete the following steps:**

1. Select the Exit tab.
2. Select the Load Setup Defaults option.

When the system restarts, this setting will automatically switch back to No.

3. Select Yes to confirm your choice. The system reboots.

When the system restarts, the default BIOS settings will be re-established. To return to normal operations with the HPC/HPX PowerStation at a later time, you must reconfigure the BIOS settings to match those specified in this section.

## Maintaining the Touchscreen

The touchscreen for the HPC/HPX PowerStation is durable and able to operate smoothly in harsh environments where strong chemicals exist.

However, from time to time you may need to perform general maintenance on the touchscreen. This section provides step by step instructions on how to complete the the following tasks:

### Cleaning the Touchscreen

Occasionally, you may wish to clean the HPC/HPX PowerStation's touchscreen. Clean the touchscreen using warm, soapy water and a cloth. You may also use a **non-abrasive** cleaner. See *Faceplate Chemical Resistance* on page 13 for a list of substances the screen can resist with no visible effect.

**Do not** use any harsh material or powder, such as steel wool or abrasive cleansers, to clean the touchscreen surface. The surface is sensitive to scraping, sharp blows, and punctures. Therefore, keep screwdrivers or other sharp objects away from the touchscreen surface.

**Warning** Clean the unit when it is switched off to avoid inadvertently activating an HMI device (button, slide, etc.).

### Calibrating the Touchscreen

The HPC/HPX PowerStation's touchscreen is calibrated before leaving CTC. However, you may need to calibrate the touchscreen for one of several reasons:

- when you use the PowerStation for the first time
- when you replace the touchscreen
- when the position of the cursor does not match the location where the user touches the screen

### Calibrating the Touchscreen Driver

The 10", 15", and 17" HPC/HPX PowerStations are shipped with the Hampshire TSHARC touchscreen driver installed and configured. The remote units (HPC00/HPX00) are shipped with the UPDD touchscreen driver installed.

**Note** Refer to the CTC PMI-XXX-XXX Industrial Monitor User Guide for instructions on calibrating the UPDD touchscreen.

You may have to calibrate the touchscreen driver if it becomes corrupted, if you reinstall it, or if you wish to change the touchscreen jumper settings in your computer.

This section explains how to calibrate the Hampshire touchscreen driver under Windows 2000 and XP Professional.

**To calibrate the touchscreen driver, complete the following steps:**

1. Select Start - Programs - Hampshire TSHARC Control Panel.  
The control panel appears.
2. Follow the on-screen instructions for selecting which monitor to calibrate. If you just have one monitor, select 1.
3. Select the Calibrate tab.
4. Click the center of where the arrows are pointing.  
The Calibration screen appears.
5. Touch the target where it appears on the screen, hold your finger there momentarily, and then release.  
The screen will guide you through the Touch - Hold - Release process.
6. Repeat the process three more times in the other three corners of the screen.  
A test screen appears.
7. Move your finger across the monitor. The target should move with your finger. If so, the calibration was successful.
8. Select Accept.
9. On the control panel, select Apply and then select OK.

**Note** If the touchscreen still does not appear calibrated, and the cursor moves vertically when your finger moves horizontally on the screen or vice versa, the touchscreen cable may not be connected to the motherboard properly. Call a CTC customer service representative.

## Using the CompactFlash Card

The HPC/HPX PowerStation uses a removable CompactFlash (CF) card for storage purposes. You can remove the CF card, update the application files on the CF card from a PC, and then reinstall the CF card in the PowerStation.

CTC recommends that you purchase at least one additional CF card to serve as a backup for your primary CF card. You may wish to have several cards to store different projects. You can purchase additional CF cards from CTC.

The HPC/HPX PowerStation supports Type 1 or Type 2 CF cards.

The external CF is located at the left side of the unit, as shown in the following illustration. The CF is the secondary master drive when no CD-ROM drive is installed. It is a secondary slave drive when a CD-ROM drive is installed.



CompactFlash drive

### Using CF cards

A CF card is like a removable hard drive and provides non-volatile storage memory. A CF card is often used as a supplement to, or a replacement for, a hard drive because a CF card is well suited to environments in which the unit may be vibrated or shaken.

**Note** You also can use a hard drive with no CF card at all.

You can use a CF card as the startup drive or as a secondary IDE drive.

Uses for the CF card are as follows:

- Operating system
- Development and runtime software

- May use with hard drive

## Replacing the CompactFlash

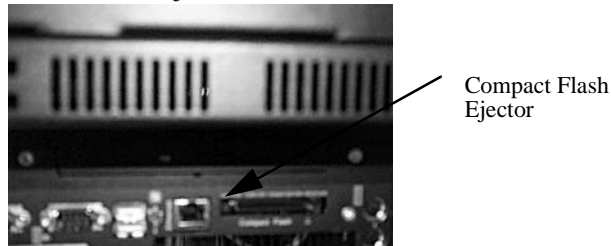


At some point, you will probably need to remove the CF card from the HPC/HPX PowerStation flash socket for one reason or another. To do so, complete the following steps:

1. Turn off the HPC/HPX PowerStation.

**Caution** The PowerStation must be turned off when inserting or removing the CF card to avoid corrupting data.

2. Locate the ejector next to the CF socket.



**Figure 4-1** Compact Flash Ejector

3. Push the ejector button to pop the CF card out.
4. Remove the CF card.
5. Carefully insert the new card with the connector on the card aligning with the pins inside the socket.
6. Push the CF card into the slot until the card is securely seated in the socket. Do not force!

**Important** The CompactFlash has an arrow near one edge that always lines up with a matching arrow on the label of the HPC/HPX PowerStation. Insert the CompactFlash so the arrows line up and the card seats properly. **Do not** force the CompactFlash in the wrong way.

## Reinstalling the PowerStation Utilities

The HPC/HPX PowerStation is shipped with the operating system and software, which is installed on the CompactFlash card that comes with your system.

Backup copies of your software are provided on the HPC/HPX PowerStation CD that ships with your system. If any of the software on your system becomes lost or corrupted, you can reinstall it from this

distribution disk.

### **Writing to the CompactFlash Card**

To write to the CompactFlash card, you will need one of the following:

- A personal computer running Windows with a CD-ROM drive and a SanDisk ImageMate or any CompactFlash card PC reader/writer. A SanDisk ImageMate is a CompactFlash reader/writer that connects to the personal computer through a USB port. You can order a SanDisk ImageMate (model number IMG-2000) from your local Parker distributor.
- A laptop computer running Windows with a CD-ROM drive and a PCMCIA-to-CompactFlash adapter. The PCMCIA-to-CompactFlash adapter lets you read from or write to a CompactFlash card through your laptop's PCMCIA slot. You can order a PCMCIA-to-CompactFlash adapter (model number FLH-ADPT-2000) from your local Parker distributor.

## Adding Expansion Cards

The HPC/HPX models will support up to two PCI expansion cards. These cards may be full-length or 3/4 length PCI cards.

There are two backshell, or expanded housing unit, options that correspond with the two types of PCI cards. The full-length backshell option for the full-length PCI cards, and the 3/4 length backshell option for the 3/4 length cards.

You must specify the correct expanded housing unit at the time you order your HPC/HPX PowerStation. It will be installed for you at the factory.

The maximum length for expansion slots in the full-length backshell is 13.4". The maximum length for expansion slots in the 3/4 length backshell is 10.25".

**Note** The PCI riser card will support either 5V or universal-type expansion cards. They will not support 3.3V cards.

**Note** You can also install a 3/4 length PCI card in the full-length backshell housing.

### Installing Expansion Cards in the Housing Unit

**Important** Observe the standard ESD safety precautions prior to opening the back of the PowerStation.

1. Remove the back of the PowerStation. There are six screws: four on the back and two at the top.
2. Remove the hold-down bracket from inside the housing unit. There are four screws, two on each side.
3. Remove the tang that corresponds with the PCI connector you want to insert the PCI card into. It has one screw.

**Note** The top two PCI connectors will interface with the outside of the PowerStation. The bottom connector can be used for small communication cards.

4. Insert the PCI card into the PCI connector. For full-length PCI cards, make sure the edge of the card lines up into the slot in the opposite end of the housing unit.  
3/4 length PCI cards will not reach to the opposite end.
5. Insert the tab at the end of the tang on the PCI card into the slot in

the PowerStation. Replace the tang screw.

6. Replace the hold-down bracket and its screws.
7. Adjust the bumper screws to press against the edge of the PCI card.

**Note** The hold-down bracket has a number of holes where you can vary the location of the bumper screws. To prevent vibration, the rubber tip of the bumper screw should press against the edge of the PCI card farthest from the tang.

8. Replace the back cover and its screws. Be sure all screws are fastened snugly to guard against vibration and to ensure proper grounding.



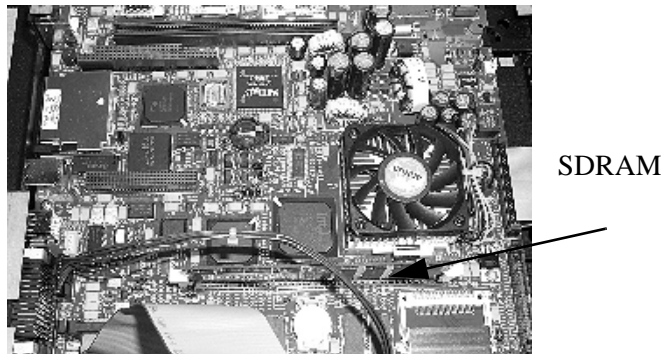
## Replacing the SDRAM

To replace the SDRAM, complete the following steps. This procedure requires opening up the back of the unit as well as removing the circuit board. Be sure to follow the standard Electro-Static Discharge (ESD) precautions.

Before you begin, turn off the power to the unit. Disconnect all cables. Eject the CompactFlash card. Take off the clamps. And finally, place the unit face down on an ESD mat.

Now you are ready to begin disassembling the unit.

1. Remove the 4 Phillips screws from the back of the unit, and then remove the 2 Phillips screws from the top of the unit.
2. The SDRAM is near the fan. See the following picture.



3. Push the ears out that hold the SDRAM in place.
4. Lift the SDRAM up and out.
5. Insert the new SDRAM in the correct position, so that the off-center notch matches with the connector on the board.

**Note** The SDRAM can be installed in either (or both) slots. You can mix and match the sizes of the SDRAM as well.

6. Push the top edge of the SDRAM down tightly against the board. The ears will retract part-way into position.
7. Snap the ears into position to lock the SDRAM into place.
8. Reattach the back of the unit.
9. Power on the unit.

## Drivers

The HPC/HPX PowerStation Documentation and Utilities CD (DCD-1030) contains all the drivers you can install for use with the HPC/HPX PowerStation.

**Important** Before you install any drivers, you **MUST** install the chipset driver first.

To install or reinstall a driver, simply locate the driver you want on the CD and double-click it. It will guide you through the installation. If you need help, see the readme files.

As a reminder, the 10", 15", and 17" units use the Hampshire touchscreen driver. However, the remote configuration (HPC00/HPX00) uses the UPDD touchscreen driver. If you are using the remote configuration connected to a CTC monitor, use the version of the UPDD driver found on the Documentation and Utilities CD.

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