

# PowerStation HPC/HPX Series User Guide



*April 2007*

***Parker-CTC Automation  
50 W. TechneCenter Drive, Milford, Ohio 45150***

***Part #: A3-06702-101***



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## Product Warranty Information

Parker-CTC Automation provides top quality products through rigid testing and the highest quality control standards. However, should a problem occur with your hardware, CTC's standard product warranty covers these items for 24 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 Parker-CTC Automation'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 1-5 for more information about support products and services.

## Supported Monitor Models

This manual is for use with the following PowerStations:

- Model HPC 10/15/17" TFT PowerStations
- Model HPX 10/15/17" PowerStations
- Model HPC/HPX with no display

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# INTRODUCTION

Thank you for purchasing an 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. You can also use the HPC/HPX PowerStation without a display. The HPC/HPX PowerStation features an embedded motherboard design based on the emerging EmbATX Low-Profile form factor specification sponsored by Intel.

## Using this Manual

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This manual is for use with the HPC/HPX PowerStations and is designed to help you set up and use your unit. This manual is divided into the following chapters:

**Chapter 1 - Introduction:** Presents an overview of the HPC/HPX PowerStation, as well as any other documentation and software provided with the PowerStation. It also provides the steps necessary to get your unit up and running. Lastly, you can find information on Parker's customer service.

**Chapter 2 - Installing the PowerStation:** Explains how to select an appropriate location for the PowerStation, create a cutout for the unit, and how to install the PowerStation.

**Chapter 3 - Starting Your PowerStation:** Discusses the available connectors, starting your PowerStation, the drive definition, changing the BIOS settings, and installing a driver.

**Chapter 4 - Maintaining the PowerStation:** Explains how to maintain the PowerStation, including adding expansion cards, replacing the DRAM, replacing the compact flash, maintaining the touchscreen, and accessing the HPC/HPX PowerStation utilities.

**Appendix A - PowerStation Specifications:** Describes the PowerStation's specifications.

## Introducing the HPC/HPX PowerStation

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The HPC/HPX 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 HPX PowerStation has a number of configurable options:

- Select from three flat-panel display sizes: 10", 15", and 17".
- You can also select the HPC/HPX PowerStation without a display, which can be stand-alone or an external Parker monitor such as the PHM.
- Install PCI cards by using optional Expansion Slots. Choose from two options: 3/4 Length cards or no expansion option for maximum depth space savings.
- Select either Windows 2000 or Windows XP Professional.
- Select up to 500 GB hard drive or up to 8.0 GB Flash, a CD-ROM drive with optional R/W capability, or DVD-ROM.
- Two input power options:
  - 24 VDC input (new)
  - 120/240 VAC input

The HPX is also available in two pre-configured options:

- 512 MB memory, 2.0 GHz Celeron processor
- 1.0 GB memory, 2.8 GHz Pentium IV processor

### Expansion Slots

The Expansion Slot option lets you install up to two 3/4-length PCI cards into the HPC/HPX PowerStation.

- Optional, 3/4 Length, 3 PCI Riser Slots for PCI Adapter Cards
  - Two slots support 3/4 length PCI Adapter cards
  - A mechanical hold-down bracket is provided to keep the cards from unseating during shock and vibration of the system

For more information, see *Adding Expansion Cards* on page 4-4.

### Remote Configuration

The Remote Configuration is an option that lets you panel-mount the PowerStation computer inside an enclosure and connect to a remote display such as the Parker PHM Monitor. 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.

## Software Components

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There are two types of PowerStations in this series:

- The HPX comes bundled with Parker-CTC's InteractX software.

The HPX PowerStation is a runtime-only system, therefore you must use another computer to develop your applications. After developing your application, you can download it to the HPX and use InteractX to run the program.

- The HPC is intended for use as a high performance industrial PC and does not include the InteractX software.

The HPC PowerStation has a Windows operating system installed. You can use the Windows program of your choice to develop and run your applications. See the documentation that came with your development software for details on developing your applications and downloading them to the PowerStation.

Each PowerStation arrives preloaded with the necessary utilities, allowing you to run your unit immediately. It is also shipped with a utilities CD containing drivers and installation drawings.

## Documentation Library

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The documentation set for this PowerStation contains:

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

**PowerStation HPC/HPX Series User Guide** - This document contains all the information you need to configure, install and use the PowerStation.

You can download Parker-CTC product documentation from our web site at [www.ctcusa.com](http://www.ctcusa.com). Click on the *Support* link then select *Product Manuals* to find the appropriate manual.

## Documentation Standards



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

### Text Conventions

Style	Type of Text
<b>Bold</b>	Names of buttons, tabs, menus, menu items, commands, files, keyboard keys, dialog boxes and other important terms.
<i>Italic</i>	Titles of User Guides, chapters, or sections and cross-references.
Courier font	Text to be entered from a keyboard.
+	Indicates two or more keyboard keys that must be pressed simultaneously. For example, <b>Ctrl+Alt+Delete</b> .
<b>Note</b>	Alternative approaches or issues you should be aware of while using a particular function.
<b>Important</b>	Information that will save time and minimize problems.
<b>Warning</b>	Information that will prevent equipment damage or personal injury.

### ISO Symbols

Symbol	Meaning
	This symbol is the International Standards Organization (ISO) symbol for <b>Caution</b> (ISO 3864 No. B.3.1). This symbol denotes information that could affect operation of the monitor if the information is not properly followed.
	This symbol is the ISO symbol for <b>Caution - risk of electrical shock</b> (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

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

Customer Support	
Main Telephone	513-831-2340
Technical Support	513-248-1714
Fax	513-831-5042
E-mail	<b>Sales:</b> emn_sales_ctc@parker.com
	<b>Support:</b> emn_support_ctc@parker.com
	<b>Training:</b> emn_training_ctc@parker.com
World Wide Web	<a href="http://www.ctcusa.com">http://www.ctcusa.com</a>

CTC recognizes that every customer and every application has different support needs, as a result 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 questions 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 PowerStation, be sure to complete the following steps:

- Check any release notes that may have shipped with the unit. These notes provide important information about the PowerStation.
- Consult the documentation and other printed materials included with the PowerStation.
- Review *Chapter 4, Maintaining the PowerStation*.
- Visit the Parker-CTC Web site and register for the support forum. You can find the support forum by clicking on the *Support* tab from the Web site's home page: <http://www.ctcusa.com>.

If you cannot find a solution using one of the above sources, contact our Product Technical Support department at 513.248.1714, 8:00am to 5:00pm Eastern Standard time.

## Technical Training

Parker-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 CTC Training: [emn\\_training\\_ctc@parker.com](mailto:emn_training_ctc@parker.com)

You can view a current training schedule on our web site at [www.ctcusa.com](http://www.ctcusa.com).

## Getting Started

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Now that you have opened the PowerStation, you are ready to unpack the unit, install it in a permanent location, and develop an application for it. Follow the steps below to get started.

- 1 Unpack the PowerStation and verify that you have received all of the components you ordered.
- 2 Install the PowerStation in a permanent location. See *Chapter 2, Installing the PowerStation*, for complete installation instructions.
- 3 Review the available connectors for the PowerStation, see *The PowerStation Connectors* on page 3-2, for details.
- 4 Start up your PowerStation. See *Starting the PowerStation* on page 3-7, for more information.
- 5 Develop your application and download it to the PowerStation.
  - If you are using the HPX PowerStation, after developing an application, you can download it to the HPX and use InteractX to run your project.
  - If you are using the HPC PowerStation, you can use the Windows program of your choice to develop and run your 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.

# INSTALLING THE POWERSTATION

Once you have unpacked the PowerStation and verified that you have received all of the components you ordered, you are ready to install the PowerStation in a permanent location.

This chapter covers the following topics:

- Selecting a Location
- Preparing for Installation
- Installing the PowerStation

## Selecting a Location

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The first step when installing the 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 affects the unit's performance, ease of use and life-expectancy. This section provides guidelines to follow when selecting a location.

## Underwriters Laboratories Approval

In order to obtain Underwriters Laboratories (UL) approval for your PowerStation installation, the installation must meet the following criteria:

- 1 The PowerStation must be mounted in a standard industrial enclosure that provides fire protection.
- 2 The PowerStation must be mounted in an enclosure that meets a NEMA Type 4 rating.

## Environmental Guidelines

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

### Touchscreen Considerations

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

The PowerStation's touchscreen is resistant to a variety of chemicals. It can resist the chemicals listed below with no visible effect.

Screen 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		

Make sure that the touchscreen is not exposed to chemicals other than those listed in the table above.

All PowerStation surfaces exposed outside of an enclosure are resistive to the following chemicals:

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

**Important** Sustained exposure to brake fluid or Gunk<sup>®</sup> brand degreaser can cause damage to the monitor materials.

## Electrical Guidelines

To minimize unwanted electrical interference, select a location away from machinery that produces intense electrical noise (arc welders, for example). If you cannot avoid electrical noise, isolate input power to the unit and separate all data communication cables from AC power lines.

**Important** Use the PowerStation ground stud to connect the unit to a suitable ground reference, such as earth ground or building steel. This ensures the unit is in compliance with immunity and emissions requirements necessary for proper operation.

AC Powered HPC/HPX PowerStations come 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.

The HPC/HPX PowerStation also has a new DC power supply option available as well. CTC recommends that the DC unit use an 18 gauge wire; be sure to keep the wire runs short. For longer runs (greater than 10 feet), use a 15 or 14 gauge wire. Refer to Table 2-1, for proper DC input requirements.

The electrical specifications for the PowerStation are shown in the table below.

**Table 2-1: Electrical Specifications**

Category	Specifications
System total design power	For a board with a P4 2.8 GHz & 2GB DDR266, no add-in PCI cards or peripherals: TDP = 200W max.
Total available PCI expansion card power	Total available PCI expansion card power (total for all cards): <ul style="list-style-type: none"> <li>• 3.3v <math>\pm</math> 5% @ 4A</li> <li>• 5.0v <math>\pm</math> 5% @ 4A</li> <li>• 12v <math>\pm</math> 10% @ 0.5A</li> <li>• -12v <math>\pm</math> 10% @ 0.1A</li> </ul>
<b>AC Supplied PowerStations</b>	
AC Input voltage	90 - 264 VAC (47 - 63 Hz)
AC Power requirements	1.3A (8A surge for 5mS) @ 120 VAC
<b>DC Supplied PowerStations</b>	
DC Input voltage	18V - 36V
DC Power requirements	6A (9A surge for 5mS) @ 24 VDC

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 and Humidity Guidelines

You can safely operate the monitor within the temperature range specified in the table below. The temperature range is specified inside the 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.

**Table 2-2: Environmental Specifications**

Category	Specifications
Ambient operating temperature	0° to 122°F (0° to 50°C) ambient (air temperature outside of backshell)
Faceplate Design	Tested for NEMA 4/4X, IP65 Sealing  <b>Warning:</b> The PowerStation is rated NEMA 4/4x only if it is installed in a NEMA 4/4x rated enclosure.
Operating vibration	Operating — 0.5 grms 5-500Hz grms Non-operating — MIL-STD-810D 1 grms
Relative humidity	5 - 95% non-condensing
Shock rating	Operating — 10g @ 11ms pulse Non-operating — 30g @ 11ms pulse
Storage temperature	-4° to 149°F (-20° to 65°C)

Limit the PowerStation's exposure to adverse conditions, such as dust, oil, moisture, and corrosive vapors in order to minimize maintenance and repair costs.

Be sure to choose an area for the PowerStation that is free from moisture or condensing humidity.

## Enclosure Guidelines

Select an enclosure that is large enough to allow free airflow in and around the PowerStation.

You should allow a minimum of 2 inches between the inside of the enclosure and the top, bottom, sides, and back of the PowerStation. 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.

Refer to the CD that came with your PowerStation for dimensional drawings.

## Class I, Division 2 Guidelines

If you purchased a Class I, Division 2-compliant PowerStation, it is suitable for use in Groups A, B, C, and D hazardous locations *only*. You must follow these guidelines in order to maintain a safe operating environment.

- Make sure that the HPC/HPX PowerStation's on/off switch is secured in the ON position using the supplied bracket.
- When performing field wiring, always use copper wire with 60C or 60/75C insulation and a tightening torque of 7.0lbs/in (0.79 N-m).
- Substitution of components can impair suitability for Class I, Division 2.



**WARNING!**

### Explosion Hazard!

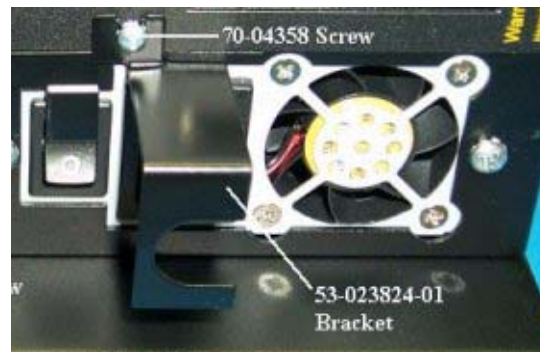
- Do not connect or disconnect cables unless the power has been switched off, or the area is known to be safe. Keyboard and mouse ports are for system setup and diagnostics *only* and are not intended for permanent connection.
- Class I, Division 2 approval requires power switch restraints in hazardous environments as shown in Figure 2-4. Nonincendive for Class I, Groups A, B, C, and D hazardous locations. With a temperature code of T5.

### Setting Up the PowerStation for Use in a Hazardous Environment

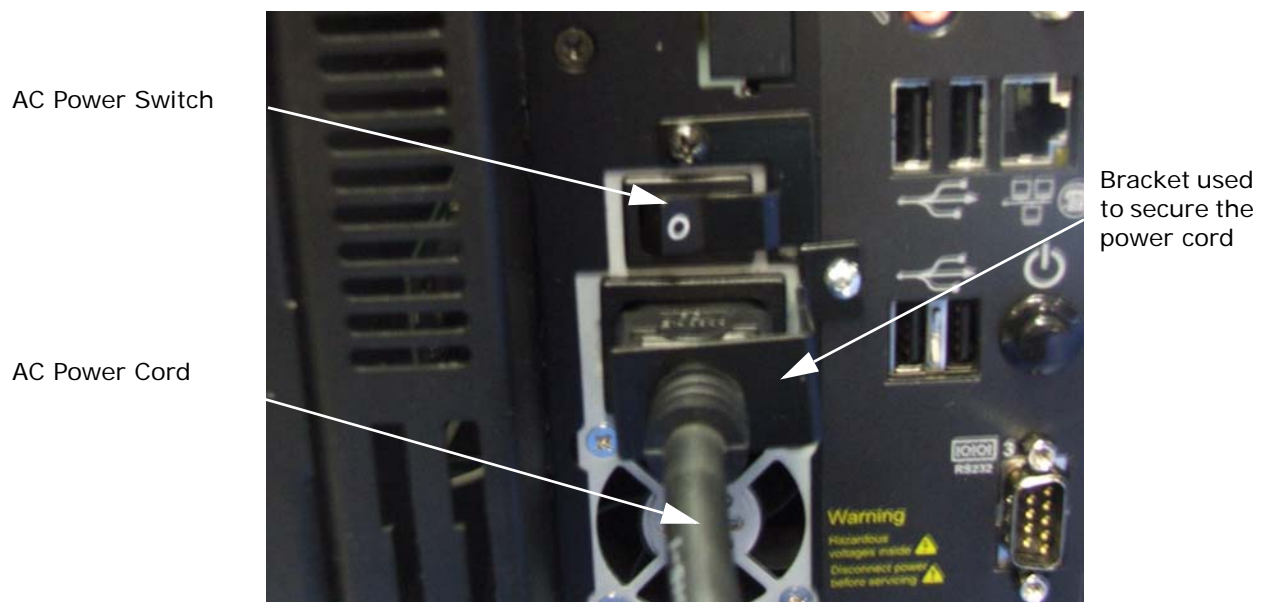
The PowerStation ships with a bracket for use with AC units. You must have this bracket installed in order to be compliant with Class 1, Division 2 guidelines in a hazardous environment. This prevents the power switch from accidentally being turned off or the cord being pulled out.

If you intend to use the PowerStation in a hazardous environment and need to be compliant with Class 1, Division 2 requirements, follow the instructions below.

- 1     Unpack the PowerStation.
- 2     Install the PowerStation, refer to *Installing the PowerStation* on page 2-7. A PowerStation with an AC unit is shipped from Parker as shown in Figure 2-3.

**Figure 2-3: The HPC/HPX PowerStation with an AC Power Switch**

- 3 Remove the screw and bracket covering the power cord connector.
- 4 Plug the power cord into the connector.
- 5 Place the bracket over the power cord and reattach the bracket and screw to secure it to the PowerStation as shown in Figure 2-4.

**Figure 2-4: Class 1, Division 2 Hazardous Environment Setup**

- 6 Reattach the screw next to the power switch.
- 7 Plug the power cord into the main power supply.

## Preparing for Installation

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Once you select a location for the PowerStation, you need to create a cutout for the unit for all models except the remote configuration.

### Creating a Cutout

Be sure to follow the cutout diagrams in the dimensional drawings precisely. This ensures that the PowerStation is properly sealed in its enclosure. You can find the dimensional drawings on the HPC/HPX PowerStation CD shipped with your unit.

- 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 ensure the flatness of the mounting surface, when punching out the mounting hole, 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.

## Installing the PowerStation

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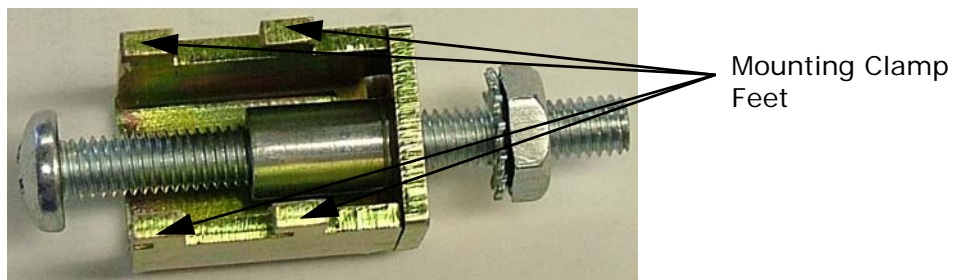
Once you have prepared the location for your PowerStation, you are ready to install the unit. To do so, you need to mount the PowerStation to your enclosure using screws and metal clamps in what is called a **bracket assembly**, as shown below.

**Figure 2-5: Bracket Assembly**



The bracket assembly contains a mounting clamp with “feet” as shown in Figure 2-6. The mounting clamps secure to the PowerStation using a sliding mechanism. You must slide the feet of the mounting clamp into the appropriate slot, refer to the instructions for mounting the PowerStation for details.

**Figure 2-6: Mounting Clamp**



There are three styles of clamps used to mount the PowerStation to your enclosure depending on the display size. To mount the PowerStation properly, refer to the instructions below that corresponds with the display size you are using.

For your convenience, CTC includes all necessary mounting hardware with the unit.

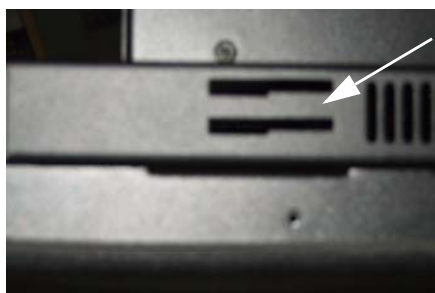
### Mounting a PowerStation With a 10” Display

If you are mounting a PowerStation with a 10” display, complete the instructions below:

- 1 Slide the PowerStation into the cutout from the front.
- 2 Attach the 6 mounting clamps, with their screws, to the back of the unit in the spaces provided. Place 2 clamps at the top and bottom of the monitor and 1 on each side.

The clamps secure to the unit using the sliding mechanism shown in Figure 2-7.

**Figure 2-7: Sliding Mechanism for 10” PowerStations**

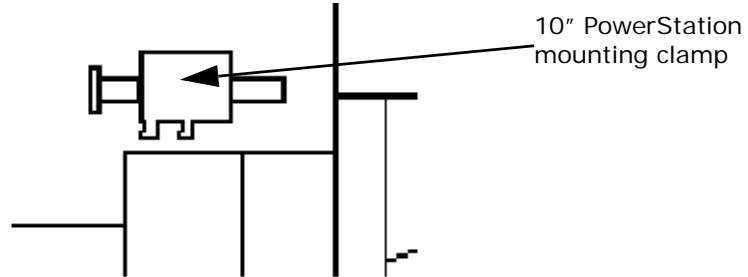


Insert the mounting clamp into these slots.

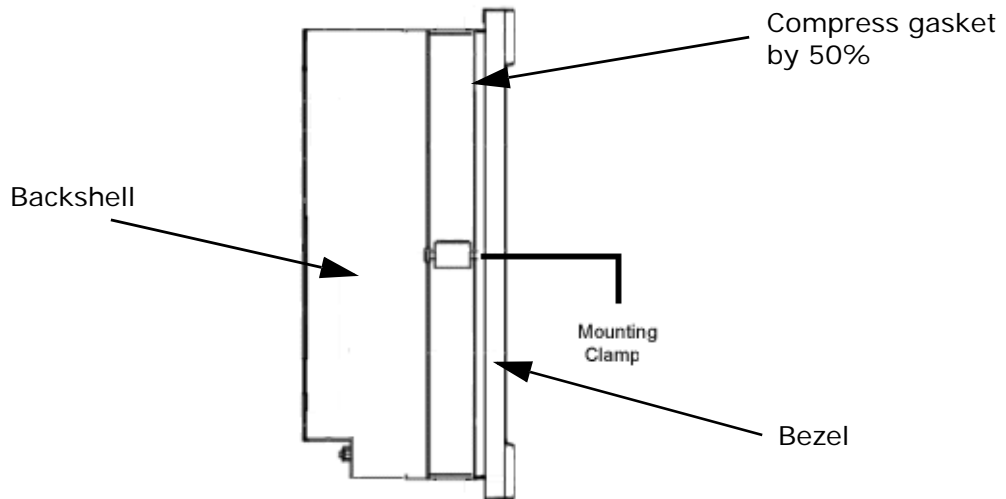
- 3 Insert the clamp into the wide end of the slot and slide it to the thin end, refer to *Figure 2-10*, on page 2-11.

### Figure 2-8: Mounting the Clamp

#### Figure 2-6a: Side View of a 10" PowerStation Mounting Clamp



#### Figure 2-6b: Side View of a 10" PowerStation Mounted in an Enclosure



- 4 Tighten each of the mounting screws against the front of the enclosure.
- 5 Torque the screws until the gasket is compressed by 50%.

**Caution:** Do not over-tighten the screw/clamp assembly or you may damage the monitor. However, under-tightening may not guarantee a NEMA 4/4x seal.

- 6 Tighten the screws in a crosswise sequence to ensure a good seal and prevent damage.

Note that tightening the bracket assembly may not ensure that the gasket seal is totally depressed by the bezel and flush with the enclosure. Since a proper NEMA 4/4x seal requires a 50% compression of the gasket, you may see a small gap between the bezel and the enclosure.



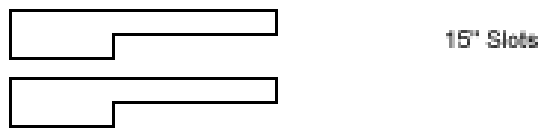
## Mounting a PowerStation With a 15" Display

If you are mounting a PowerStation with a 15" display, complete the instructions below:

- 1 Slide the PowerStation into the cutout from the front.
- 2 Attach the 8 mounting clamps, with their screws and nuts, to the back of the unit in the spaces provided. Place 2 clamps at the top and bottom of the monitor, and 2 on each side.

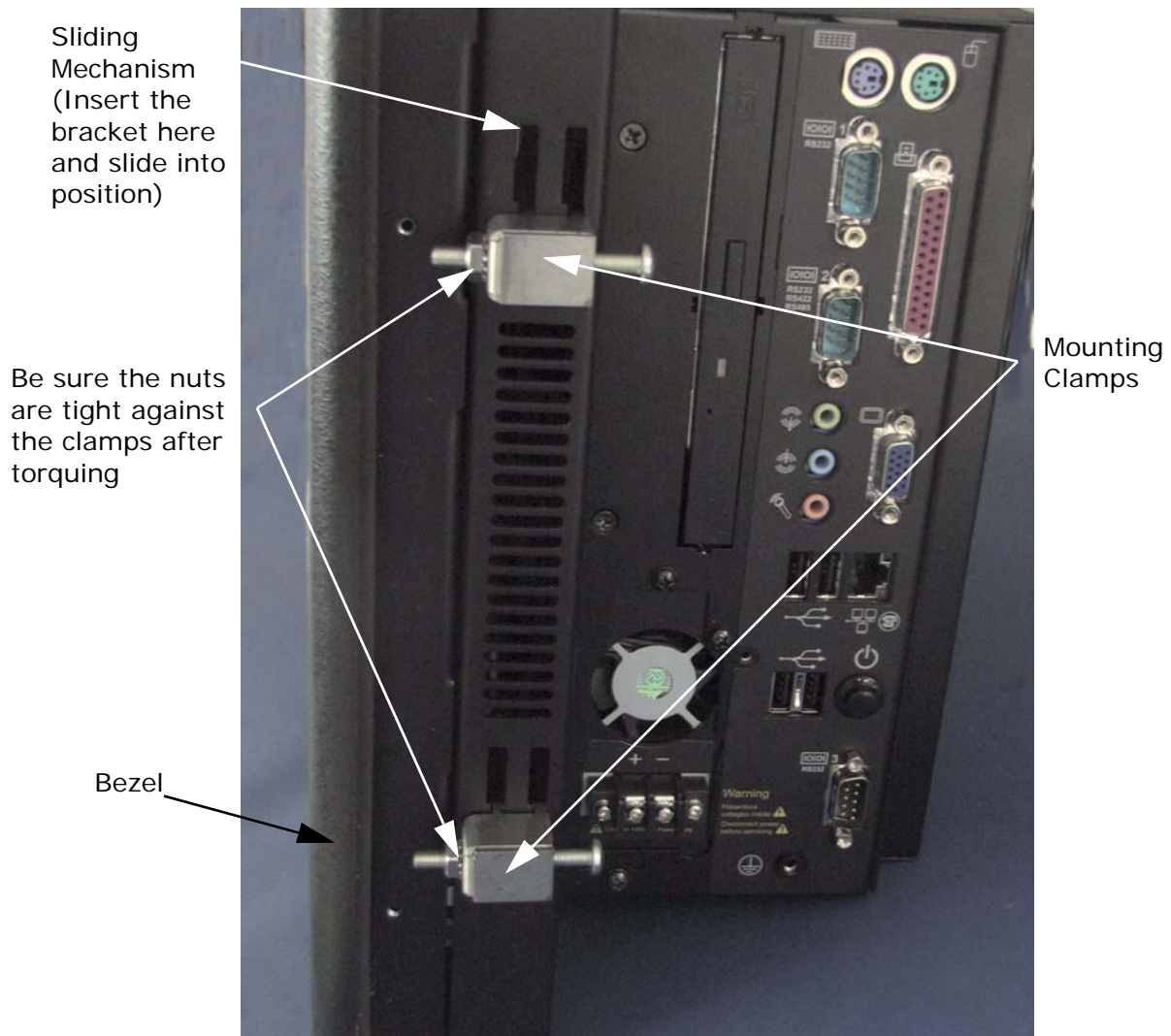
The clamps secure to the unit using CTC's sliding mechanism shown in Figure 2-9.

**Figure 2-9: Sliding Mechanism for 15" PowerStations**



- 3 Insert the clamp into the wide end of the slot and slide it to the thin end as shown in Figure 2-12: *Side View of a Mounted 17" PowerStation*.

Figure 2-10: Side View of a 15" Unit with the Mounting Clamps



4 Tighten each of the mounting screws against the front of the enclosure.

5 Torque them down to **7 in/lbs.**

**Caution:** Do not over-tighten the screw/clamp assemblies or you may damage the monitor. However, under-tightening may not guarantee a NEMA 4/4x seal.



6 Tighten the screws in a crosswise sequence to ensure a good seal and prevent damage.

7 Adjust the nut so that it is firmly against the surface of the clamp to prevent loosening.

Note that tightening the bracket assembly may not ensure that the gasket seal is totally depressed by the bezel. You may see a small gap between the bezel and the enclosure.

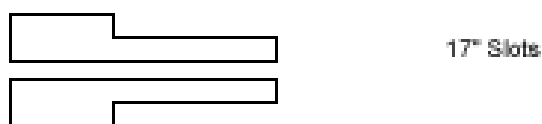
## Mounting a PowerStation With a 17" Display

If you are mounting a PowerStation with a 17" display, complete the instructions below:

- 1 Slide the PowerStation into the cutout from the front.
- 2 Attach the 12 mounting clamps, with their screws and nuts, to the back of the unit in the spaces provided. Place 3 clamps at the top and bottom of the monitor and 3 on each side.

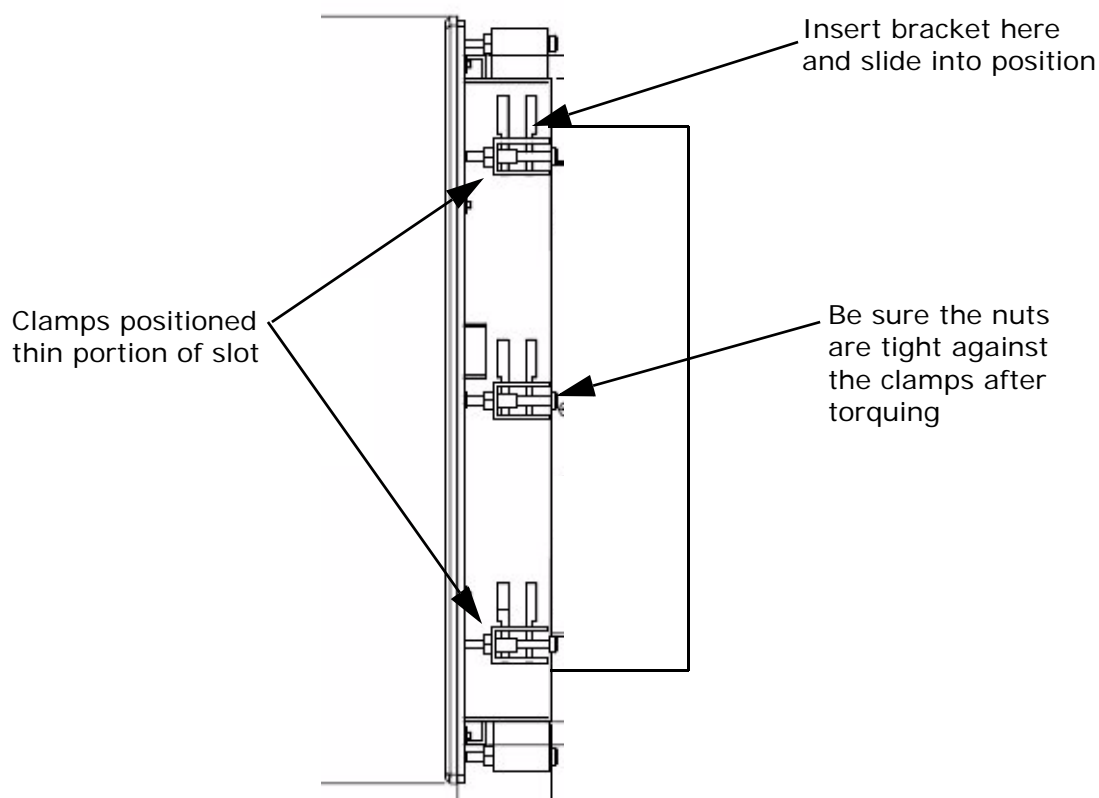
The clamps secure to the unit using CTC's sliding mechanism shown in Figure 2-11.

**Figure 2-11: Sliding Mechanism for 17" PowerStations**



- 3 Insert the clamp into the wide end of the slot and slide it to the thin end as shown in Figure 2-12.

**Figure 2-12: Side View of a Mounted 17" PowerStation**





- 4 Tighten each of the mounting screws against the front of the enclosure.
- 5 Torque them down to **7 in/lbs.**

**Caution:** Do not over-tighten the screw/clamp assemblies or you may damage the monitor. However, under-tightening may not guarantee a NEMA 4/4x seal.

- 6 Tighten the screws in a crosswise sequence to ensure a good seal and prevent damage.
- 7 Adjust the nut so that it is firmly against the surface of the clamp to prevent loosening.

Note that tightening the bracket assembly may not ensure that the gasket seal is totally depressed by the bezel. You may see a small gap between the bezel and the enclosure.

# STARTING YOUR POWERSTATION

# 3

This chapter discusses the following topics:

- The PowerStation Connectors
- Starting the PowerStation
- Drive Definition and Memory
- Using the BIOS Utility
- Installing a Driver

The HPC/HPX PowerStation is shipped with the HPC/HPX PowerStation Documentation and Utilities CD. This CD contains all of the dimensional drawings, software, and drivers needed for the HPC/HPX PowerStation.

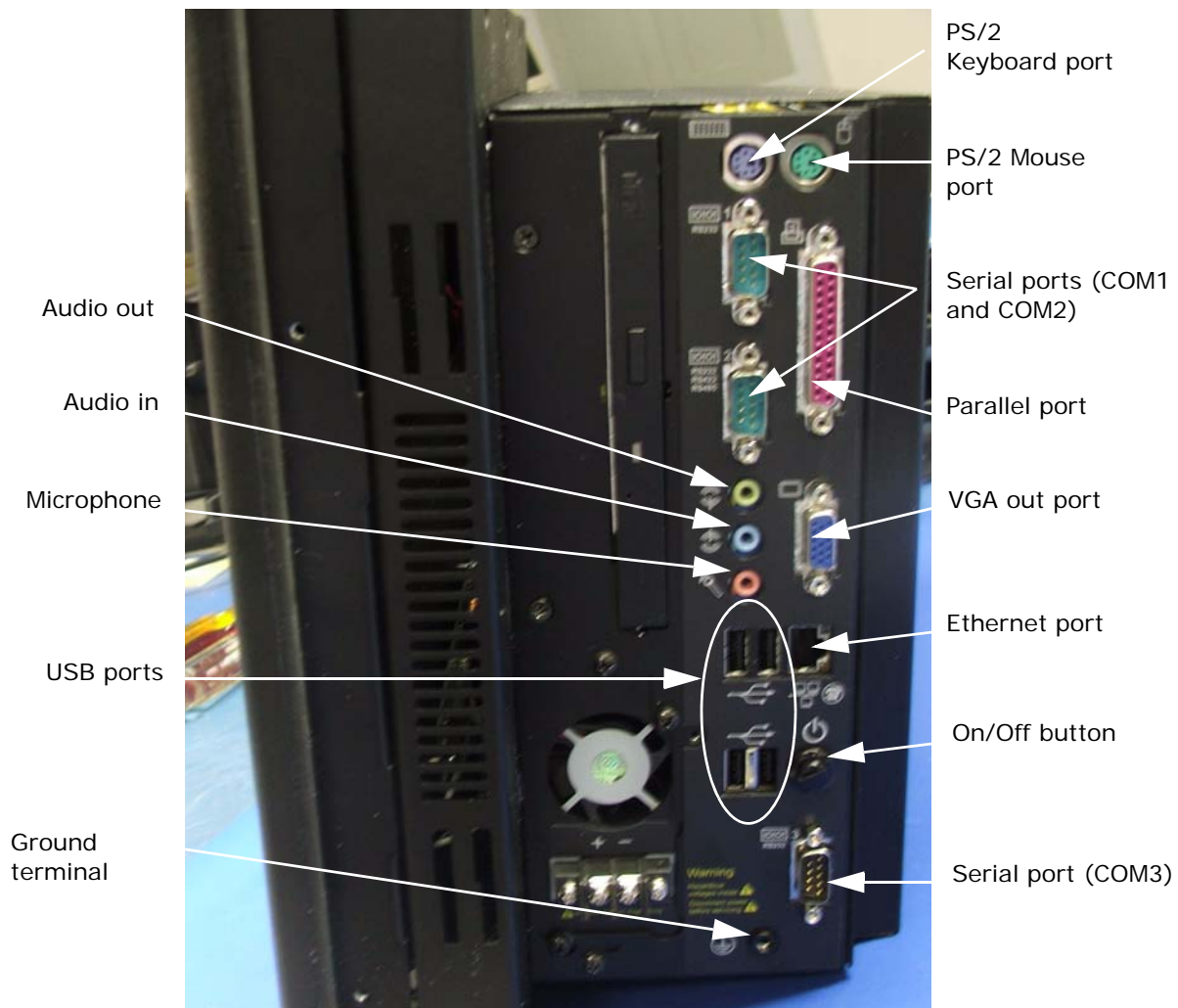
If any of the software on your system becomes lost or corrupted, you can reinstall it from this distribution disk.

## The PowerStation Connectors

All HPC/HPX PowerStations have the following connectors:

- 3 serial ports
- 2 PS/2 ports for the keyboard and mouse
- 1 Ethernet port
- 1 parallel port
- 4 USB ports
- 1 VGA port
- 3 Audio ports (out, in, and microphone)
- Power switch/power button
- 1 ground plug
- 1 Compact Flash connector (on the bottom of the unit)

**Figure 3-1: The HPC/HPX PowerStation Connectors (Side View of a DC Unit)**



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.

The COM1 and COM3 ports support the RS-232 communication standards. The length of the serial cable should not exceed 50 feet (15 meters) for RS-232. The COM2 port supports RS-232, RS-422, and RS-485.

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

Table 3-2, shows the JP2 and JP4 settings for configuring the COM2 port for RS-232, RS-422, or RS-485 communication.

**Table 3-2: Configuring COM2**

JP2	JP4	COM
1-2, 4-5, 7-8, 10-11	1-2	RS-232 (default)
2-3, 5-6, 8-9, 11-12	3-4	RS-422
2-3, 5-6, 8-9, 11-12	5-6	RS-485

## Keyboard and Mouse Ports



### Connecting a Keyboard

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.

- USB-compatible keyboard, or a
- Microsoft mini-din PS/2 style keyboard.

### Connecting a Mouse

If you prefer to use a mouse instead of the touchscreen, only use a:

- USB-compatible mouse, or a
- Microsoft mini-din PS/2-style mouse, specifically an 802.3 Microsoft-compatible mouse.

## Ethernet Port



The HPC/HPX PowerStation has an Ethernet RJ45 port with an Intel 82562ET 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.

**DO NOT** connect this port to a telephone line, this is not a modem port.

## Parallel Port



The HPC/HPX PowerStation parallel port:

- Has one DB25 female connector
- Supports SFP/EPP/ECP modes

## USB Ports



The HPC/HPX PowerStation has 4 USB ports:

- Four USB 2.0 hose ports
- Type-A connectors
- Legacy USB keyboard support

## VGA Port



The HPC/HPX PowerStation VGA port:

- VESA standard SVGA female DB15 output connector
- Supports simultaneous LCD and SVGA output
- Intel interlaced graphics with 3D acceleration

## Audio Ports



The HPC/HPX PowerStation has three audio ports: out, in, and microphone.

- Mic-In: 3.5mm phono jack input
- Line-In: 3.5m external stereo jack
- Line-out: 3.5m external stereo jack
- Onboard CODEC performs ADC and DAC for sound

## AC and DC Power

Depending on whether you are using an AC unit or a DC unit, the HPC/HPX PowerStation has a power switch or a push button to turn the power on and off.

### Power Switch (AC units only)



The power switch turns power OFF/ON to the main power supply.

If the system is shutdown through the Windows operating system, press this switch to the OFF position, wait 3 seconds, and turn it back to the ON position to restart the PowerStation.

**Important:** The main power supply has internal protection, but no servicable fuse.

DC units do not have this power switch.

For information on using the power switch in a hazardous environment, refer to *Setting Up the PowerStation for Use in a Hazardous Environment* on page 2-5.

**On/Off Button  
(DC units)**

For DC units, press this power button to turn ON the PowerStation. To turn off the PowerStation, hold this button for 8 seconds. It is not recommended to turn off a Windows system without using the proper shutdown procedures (refer to your operating system manual for details).

**Note:** On AC units, this push button is a reset switch.

## Compact Flash

A Compact Flash (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 vibrate or shake. You can use the CF card to hold the:

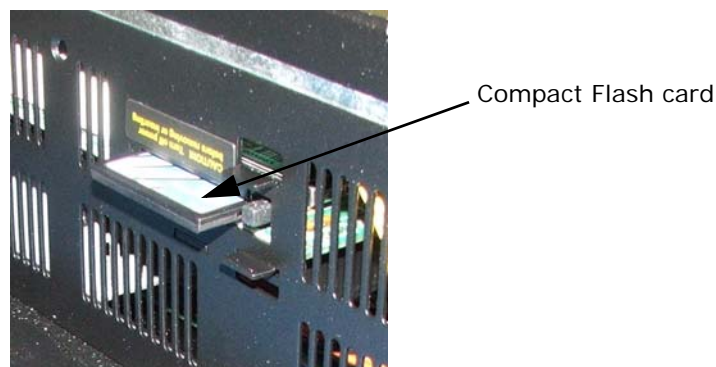
- Operating system
- Development and runtime software
- Different projects

If you opt to use a CF card, you can remove the card, update the application files from a PC, and then reinstall the CF card in the PowerStation.

Be sure to purchase at least one additional CF card to serve as a backup for your primary CF card. These can be purchased from CTC, call customer service for details.

The HPC/HPX PowerStation supports both Type 1 and Type 2 cards and is located on the bottom of the unit as shown in Figure 3-3.

**Figure 3-3: Compact Flash Drive**



The CF is the secondary slave drive whether a CD-ROM drive is installed or not.

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



**Important:** Do not remove or insert the CF card when the PowerStation is powered on or data on the card can be corrupted.

For information on replacing the CF card, refer to *Replacing the CompactFlash* on page 4-8.

## Starting the PowerStation

Before connecting power to your unit, make sure that you have read and understood the electrical and testing specifications described in Appendix A, *PowerStation Specifications*. Also, make sure that you follow the guidelines listed below:

- **For permanently connected equipment**, a readily accessible disconnect device must be incorporated in the fixed wiring.
- **For pluggable equipment**, the socket-outlet must be installed near the equipment and should be easily accessible.

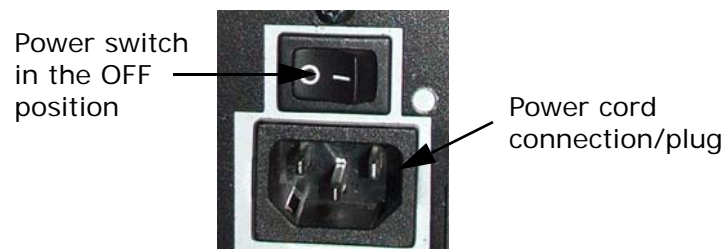


**Important** Proper installation of the PowerStation for use in European Union countries requires the use of a harmonized power cord. (The power cord must be identified with the <HAR> symbol.) Make sure that the PowerStation is only connected to the main supply with a harmonized power cord.

## Starting Your System

- 1 If using an AC powered unit, make sure the power on/off switch is in the OFF position as shown in Figure 3-4, below.

**Figure 3-4: AC Power Switch and Plug**



- 2 Connect the power cord to the voltage source. Voltage input to the unit should be within the range specified in Appendix A, *PowerStation Specifications*.
- 3 Connect the power cord to the PowerStation as shown in Figure 3-4.
- 4 If using an AC power supply, turn on the PowerStation using the on/off switch.

- 5 If using a DC power supply, press the on/off push button.  
If you are using an HPC/HPX with InteractX software, you are ready to download a project to the HPC/HPX PowerStation.

## Drive Definition and Memory

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When you purchase the HPX PowerStation, you can specify the size of the hard drive or the Compact Flash which is the system start drive and project disk. It stores the project, system files, and applications. Be sure to download your application files to this drive.

There are two memory storage types: DRAM and Compact Flash. The capacity and use of the DRAM is up to 2.0 GB. The capacity and use of the Compact Flash is up to 8.0 GB flash memory.

## Using the BIOS Utility

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This section discusses how to use the Phoenix - Award BIOS utility on the HPC/HPX PowerStation. There are three instances in which you will need to use the BIOS utility program:

- 1 You are starting your system for the first time.
- 2 You have changed the hardware attached to your system.
- 3 The CMOS memory has lost power and the configuration information has been erased.

Every computer with a motherboard includes a special chip referred to as the BIOS or ROM BIOS (*Read Only Memory Basic Input/Output System*). The BIOS includes instructions to interact with the computer hardware. It also includes a test which ensures that the computer meets requirements to boot up properly. If the computer encounters an error during the test, you either hear a combination of beeps or see an error message on the screen.

Error messages can be fatal or non-fatal. Generally, the system can continue the boot up sequence with a non-fatal error. These are usually displayed on the screen along with the following instructions:

Press <F1> to RESUME

Write down the error message and press the F1 key to continue booting the system.

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

- Basic system configuration (date, time, IDE, etc.)
- Change the values in the chipset registers

- Specify settings for integrated peripherals, power management, and frequency and voltage control
- Set the shutdown temperature and load values for minimal operating performance
- Optimize and load default BIOS settings

## Navigating the BIOS Utility

Each section of the BIOS utility is broken into multiple pages to offer more available options and make it easier to locate information.

Navigating the BIOS program is fairly straight forward, see the table below for details.

**Table 3-5: Navigation Keys in the Phoenix-Award BIOS Utility**

Key	Action
arrow keys	Moves between the available options on the screen.
+, -, Page Up, Page Down, or Enter	Changes a value in the BIOS utility.
Esc	Exits from a menu in the BIOS utility.
F10	Saves the changed value and exits the CMOS setup.

## Entering Setup

Before changing any of the BIOS settings, shut down the system and connect a keyboard to the PowerStation.

- 1 Turn on the PowerStation.
- 2 Press <Del> immediately to allow you to enter the BIOS setup utility. The Phoenix - Award BIOS main menu is displayed as shown in Figure 3-6.

**Figure 3-6:** The Phoenix - Award CMOS Setup Utility Main Menu

The main menu allows you to access each of the other submenus in the BIOS utility. Table 3-7, briefly describes each menu option.

**Table 3-7: BIOS Menu Options**

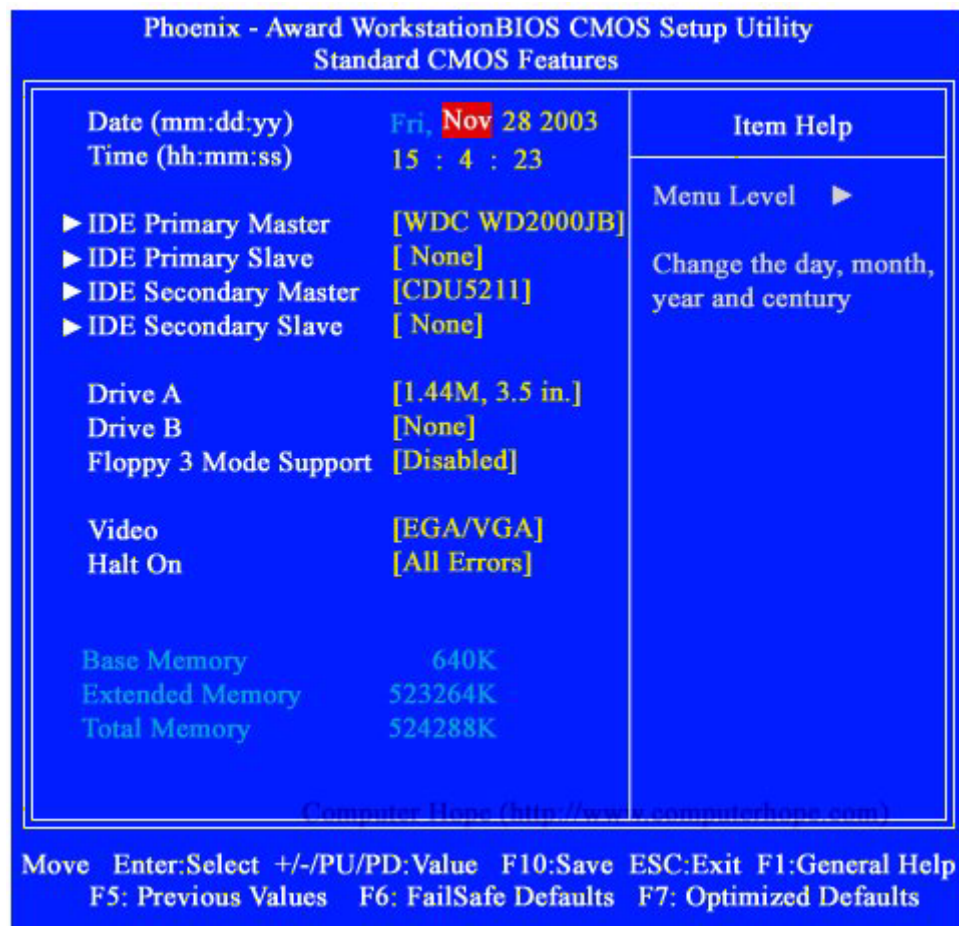
Menu Option	Description
Standard CMOS Features	Use this menu for basic system configuration such as setting the date, time, IDE, etc.
Advanced BIOS Features	Use this menu to set advanced features available on your system such as virus warnings.
Advanced chipset Features	Use this menu to change the values in the chipset registers and optimize your system performance.
Integrated Peripherals	Use this menu to specify your settings for integrated peripherals (primary slave, secondary slave, keyboard, mouse, etc.).

Menu Option	Description
Power Management Setup	Use this menu to specify your settings for power management (HDD power down, power on by ring, KB wake up, etc.).
PnP/PCI Configurations	This menu is available only if your system supports PnP/PCI.
PC Health Status	Use this menu to set the shutdown temperature for your system.
Frequency/Voltage Control	Use this menu to specify your settings for frequency/voltage control.
Load Fail-safe Defaults	Use this menu to load the BIOS default values for the minimal/stable operational performance for your system.
Load Optimized Defaults	Use this menu to load the BIOS default values that are factory settings for optimal performance. You can customize the BIOS to maximize performance.
Set Supervisor Password	Use these menus to set supervisor and user passwords.
Set User Password	
Save & Exit Setup	Use this option to save CMOS value changes and exit the setup utility.
Exit without Saving	Use this option to exit the setup utility without saving value changes.

## Standard CMOS Features

The Standard CMOS features is the most commonly used menu of the BIOS utility and allows you to set the time, date, disk drive settings, and other common values. The Standard CMOS Features menu is shown in Figure 3-8 below.

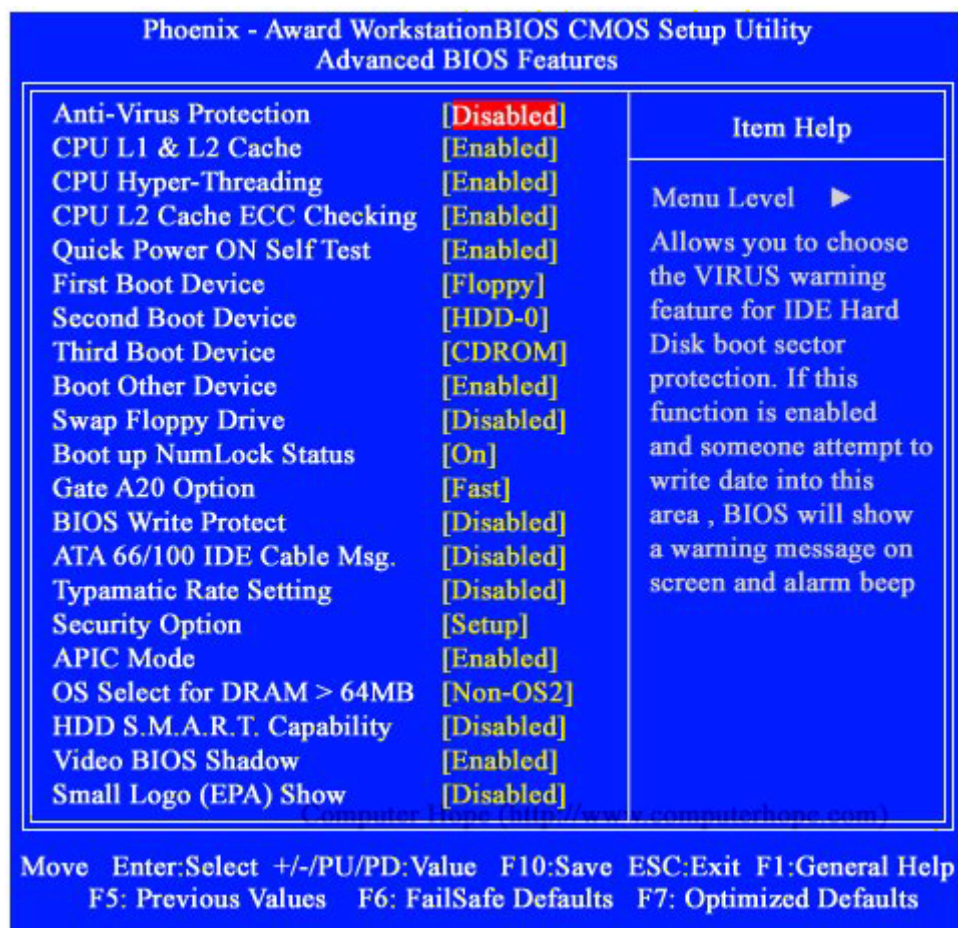
Figure 3-8: Standard CMOS Features Menu



## Advanced BIOS Features

Another commonly accessed area of the BIOS is the Advanced BIOS Features menu which enables you to change numerous settings in your computer's BIOS. The Advanced BIOS Features menu is displayed in Figure 3-9.

Figure 3-9: Advanced BIOS Features Menu



## Installing a Driver

To install or reinstall a driver, simply locate the driver you want on the utility CD that came with your PowerStation and double-click on it. The driver utility guides you through the installation. If you need help, see the readme files.

**Important** Before you install any drivers, you MUST install the chipset driver first. Refer to the utility CD that shipped with the PowerStation.

As a reminder, the 10", 15", and 17" units use the Hampshire touchscreen driver.

# MAINTAINING THE POWERSTATION

The PowerStation has been designed to provide years of trouble-free operation even in the harshest environments. However, occasionally you need to perform routine maintenance on some of the monitor's components.

This chapter provides instructions on maintaining your PowerStation:

- Performing Internal Maintenance
- Maintaining the Touchscreen
- Accessing the PowerStation Utilities
- Ordering Replacement Components

## Performing Internal Maintenance

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Before doing any internal maintenance, be sure to read and understand the procedures in this section to prevent injury to yourself and/or damage to the monitor.

The following topics are discussed:

- Electrostatic Discharge (ESD) Precautions
- Opening and Closing the PowerStation
- Adding Expansion Cards
- Replacing the DRAM
- Replacing the CompactFlash

## Electrostatic Discharge (ESD) Precautions



Modern integrated electronic devices, including the PowerStation, are extremely sensitive to electrostatic discharges (ESD) and fields. Before you open the system, be sure to follow these simple precautions to protect you and the PowerStation from harm resulting from ESD.

- Always disconnect power from the PowerStation before opening. **Do not** touch any components of the PowerStation while the system is on.
- Disconnect power before performing any internal maintenance or troubleshooting.

- Only handle internal components of the PowerStation in an ESD-safe location, using appropriate grounding methods.
- Wear a grounding wrist strap for continuous protection.
- Be particularly careful not to touch the components on the printed circuit boards.
- Keep any PowerStation part in its anti-static packaging when it is not installed in the unit and place it on a static dissipative mat when you are working on it.

## Opening and Closing the PowerStation

In order to perform internal maintenance, you have to open and close the backshell of the unit. Be sure to follow the ESD guidelines discussed on page 4-1.



**Important:** For safety reasons, the PowerStation should be opened only by qualified service personnel.

### Removing the PowerStation from an Enclosure

To remove the PowerStation from its enclosure, follow the steps below.

- 1 Turn off the power to the unit.
- 2 Disconnect the following cables:
  - Power Input cable
  - Ground cable
- 3 Take off the clamps.
- 4 Place the unit face down on a static dissipative mat in a location free from dirt and moisture and protected against static discharge.

### Opening the PowerStation

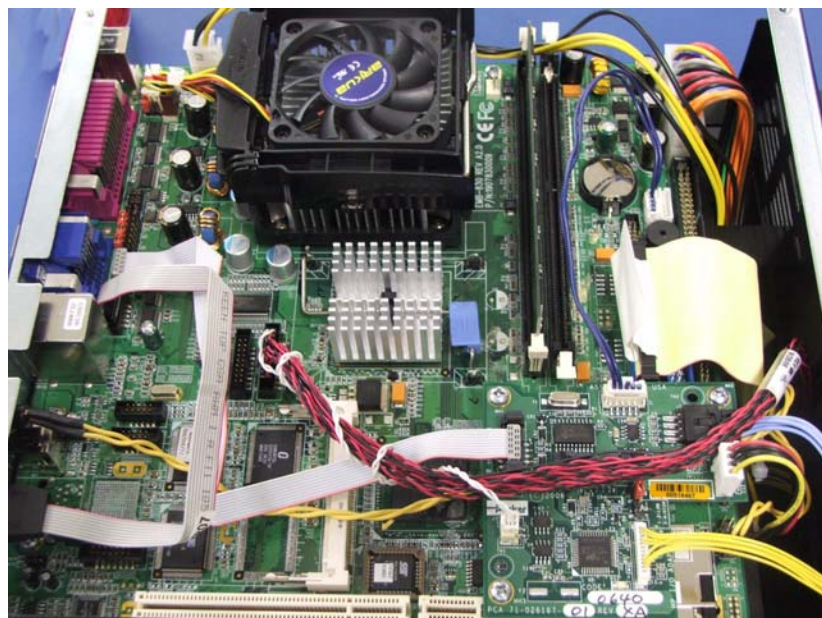
Once you have removed the PowerStation from its enclosure, you can open it up.

- 1 Remove the screws on the PowerStation as shown below. If you are working with a 15" or 17" PowerStation, there are 10 screws to remove.

Remove these screws from the back of the PowerStation.



- 2 Lift the backshell off of the PowerStation to expose the board as shown below.



- 3 From here you can add an expansion card or replace the DRAM as necessary, refer to *Adding Expansion Cards* on page 4-4, and *Replacing the DRAM* on page 4-7.

### Closing the PowerStation

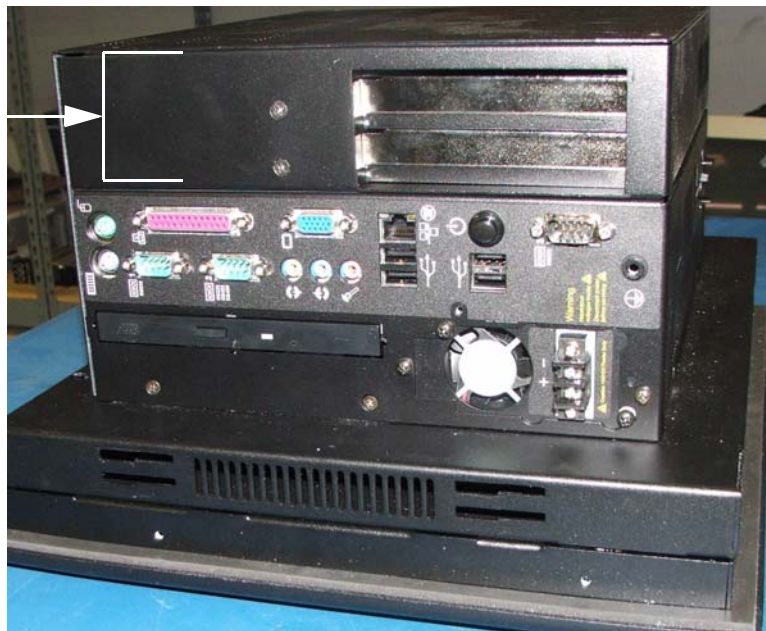
- 1 Replace the backshell on the PowerStation, refer to steps 1 and 2 on page 4-3.
- 2 Remount the PowerStation in the enclosure, refer to *Installing the PowerStation* on page 2-7.
- 3 Reconnect the following cables:
  - Power Input cable
  - Ground cable
- 4 Turn on the PowerStation.

### Adding Expansion Cards

The HPC/HPX supports 3/4 length PCI cards. Although there are three slots, only two expansion slots are available for use. If you intend to add a PCI card, you must specify the corresponding backshell option (or expanded housing unit) when ordering your HPC/HPX PowerStation, see Figure 4-1. The appropriate backshell is installed at the factory.

**Figure 4-1: Expanded Housing Unit**

Expanded backshell or housing unit for 3/4 length PCI cards.



The maximum length for expansion slots in the 3/4 length backshell is 10.25 inches.

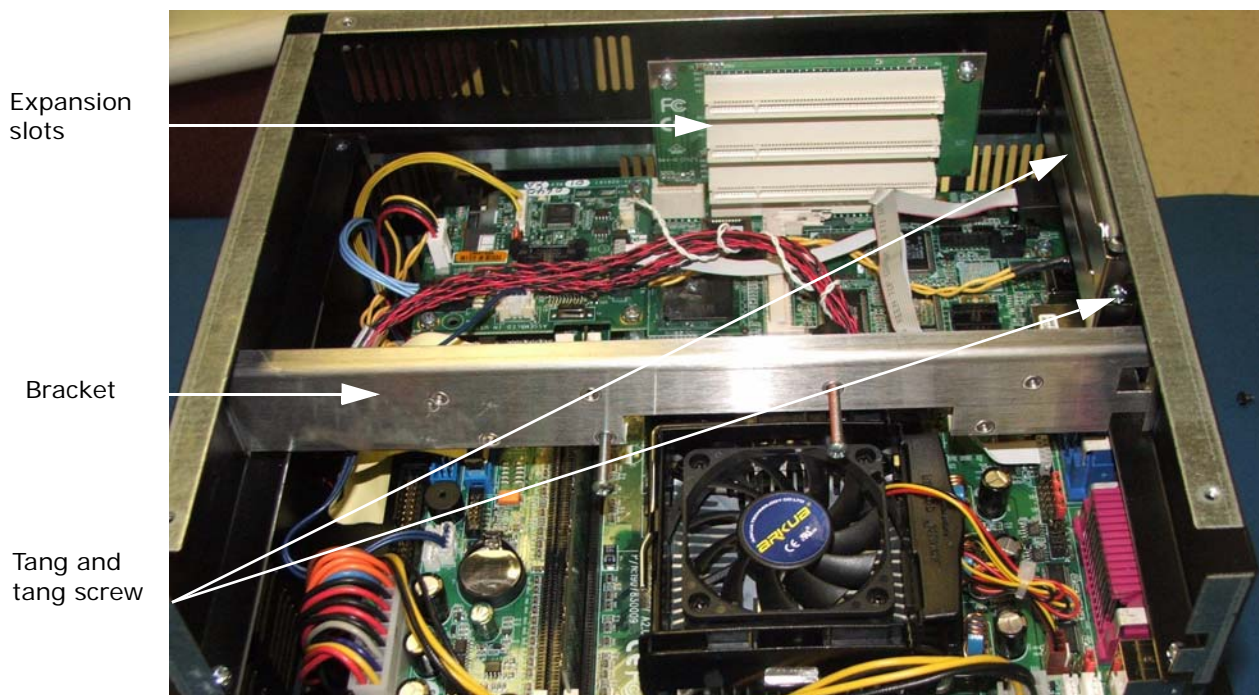
**Note** The PCI riser card supports either 5V or universal-type expansion cards. They do not support 3.3V cards.

### To Add an Expansion Card

Be sure to observe the standard ESD safety precautions before opening the back of the PowerStation. Refer to *Electrostatic Discharge (ESD) Precautions* on page 4-1, for details.

- 1 Open the back of the PowerStation, refer to *Opening and Closing the PowerStation* on page 4-2, for details.
- 2 Remove the bracket from inside the housing unit, refer to Figure 4-2.

**Figure 4-2: Bracket Inside an Expanded Backshell**



- 3 Remove the tang that corresponds with the PCI connector you want to insert the PCI card into. It has one screw as shown in Figure 4-2.

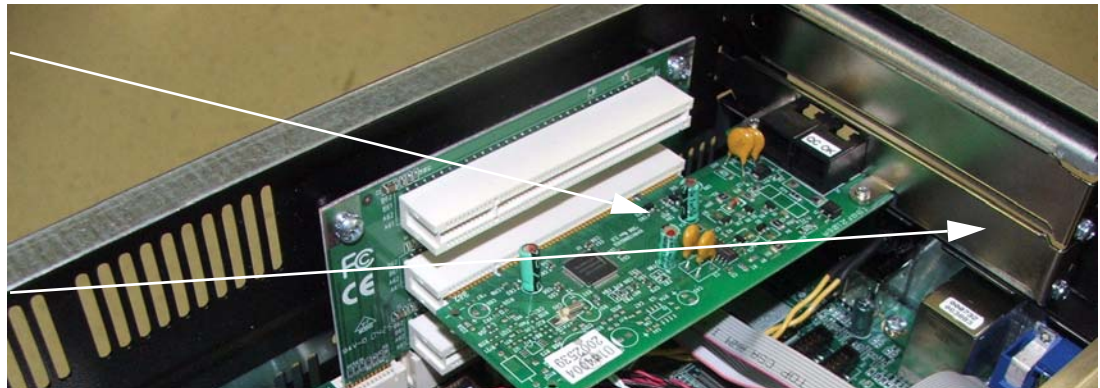
**Note** The top two PCI connectors interface with the outside of the PowerStation. The bottom connector can not be used.

- 4 Insert the PCI card into the PCI connector. Notice that the 3/4 length PCI cards do not reach to the opposite end as shown in Figure 4-3.
- 5 Insert the tab at the end of the tang on the PCI card into the slot in the PowerStation.
- 6 Replace the tang screw.
- 7 Replace the bracket and its screws.

**Figure 4-3: Inserting the Expansion Card**

PCI card  
inserted into  
the expansion  
slot and  
connected to  
the tang.

Tang



- 8 Adjust the bumper screws to secure the PCI card. The bumper screw should press against the edge of the card as shown in Figure 4-4.

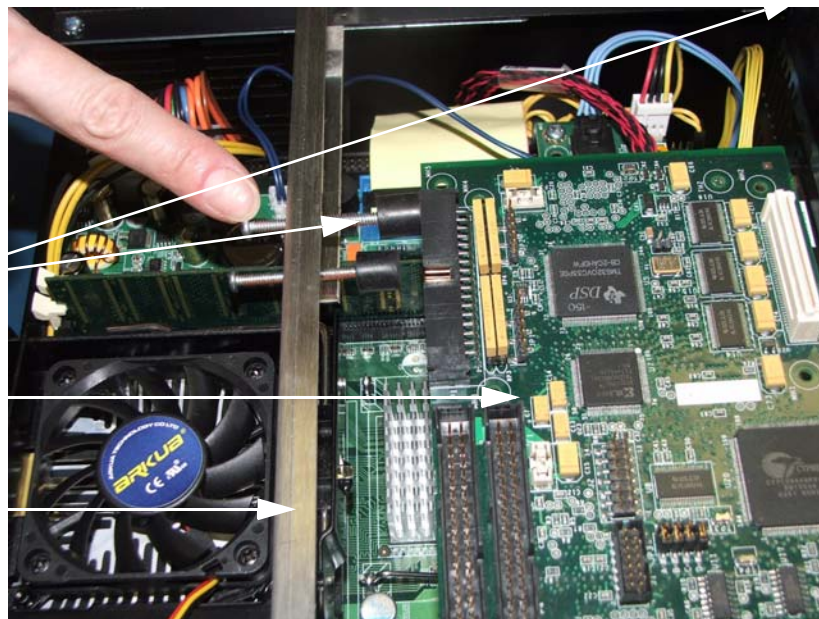
**Note** The bracket has a number of holes where you can vary the location of the bumper screws. To prevent vibration, the rubber tip of the bumper screw should press against the edge of the PCI card farthest from the tang.

**Figure 4-4: Bumper Screw Holding the PCI Card**

Bumper screw  
with rubber tip

PCI card

Bracket



- 9 Replace the back cover of the PowerStation and its screws, see the instructions for *Closing the PowerStation* on page 4-4.
- 10 Be sure all screws are fastened snugly to prevent vibration and to ensure proper grounding.

## Replacing the DRAM

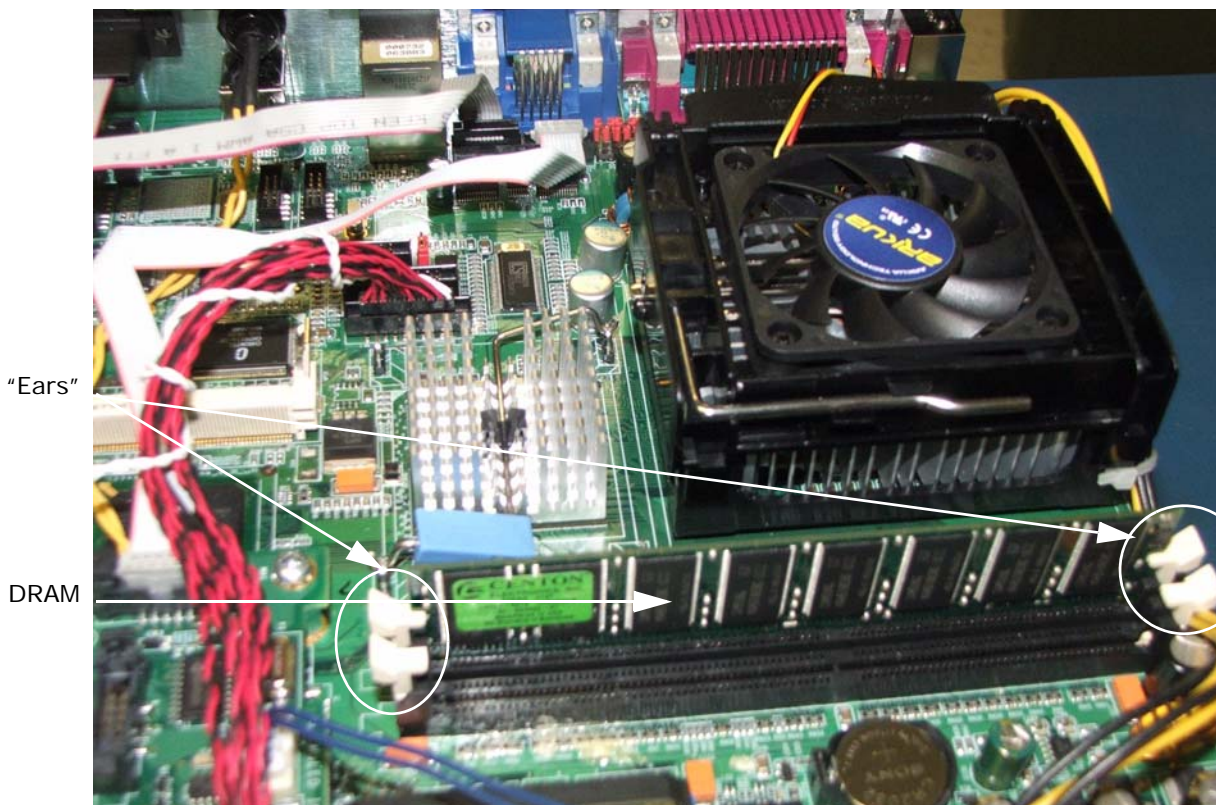
Be sure to observe the standard ESD safety precautions before opening the back of the PowerStation. Refer to *Electrostatic Discharge (ESD) Precautions* on page 4-1, for details.

**Note:** The DRAM must be a PC2100 184-pin DDR up to 2 GB (200/266/333MHz).

To replace the DRAM, complete the following steps:

- 1 Open the back of the PowerStation, refer to *Opening and Closing the PowerStation* on page 4-2, for details.
- 2 Locate the DRAM which is near the fan as shown in Figure 4-5.

**Figure 4-5: DRAM**



- 3 Push the ears out that hold the DRAM in place.
- 4 Lift the DRAM up and out.
- 5 Insert the new DRAM in the correct position, so that the off-center notch matches with the connector on the board.  
**Note** The DRAM can be installed in either (or both) slots. You can mix and match the sizes of the DRAM as well.
- 6 Push the top edge of the DRAM down tightly against the board. The ears will retract completely into position when properly installed.

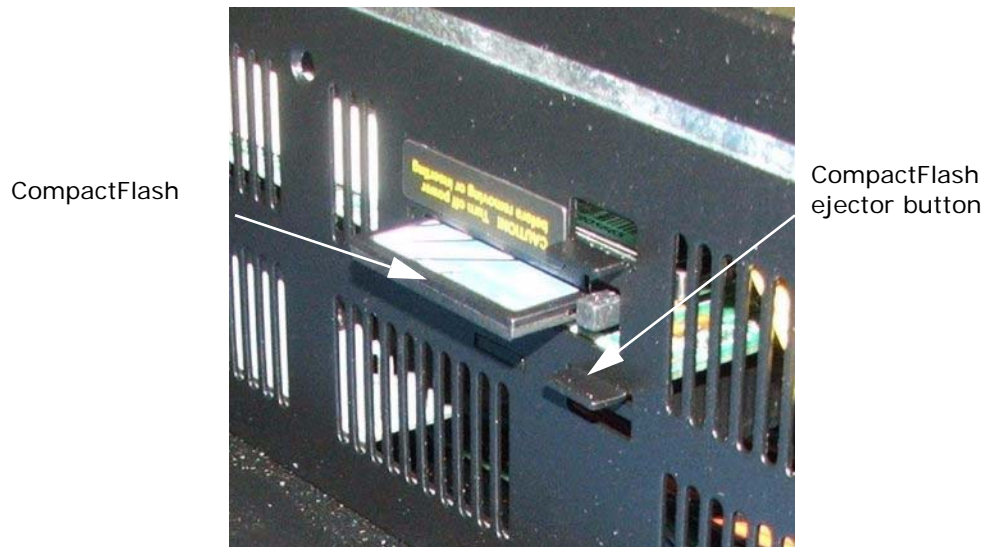
- 7 Snap the ears into position to lock the DRAM into place.
- 8 Replace the back cover, refer to the instructions for *Closing the PowerStation* on page 4-4.
- 9 Power on the unit.

## Replacing the CompactFlash

At some point, you may need to replace the CompactFlash (CF) card. To do so, complete the following steps:

- 1 Turn off the HPC/HPX PowerStation to avoid corrupting data.
- 2 Locate the ejector on the bottom of the unit, next to the CF socket.

**Figure 4-6: Compact Flash**



- 3 Push the ejector button; the CF card will pop 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.

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

## Maintaining the Touchscreen

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This section discusses the basic maintenance of your PowerStation's touchscreen, including:

- Cleaning the Touchscreen
- Calibrating the Touchscreen

### Cleaning the Touchscreen

Occasionally, you may need to clean the monitor's screen. Clean the screen using warm, soapy water and a cloth. You can also use any non-abrasive cleaner. See *PowerStation Touchscreen* on page A-7, 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 screen surface. The surface is sensitive to scraping, sharp blows, or punctures. Therefore, keep screwdrivers or other sharp objects away from the screen surface.



**Warning** Do **not** clean the unit while it is running. Turn off the monitor before cleaning it in order to avoid inadvertently activating the touchscreen.

### Calibrating the Touchscreen

Calibrating the touchscreen ensures that it is aligned with your display. The monitor's touchscreen is calibrated before leaving Parker-CTC. However, you may need to recalibrate the touchscreen when you begin using the PowerStation for the first time, when you connect the PowerStation to a new computer, if you are using a remote, stand-alone configuration, or whenever the cursor does not follow the touches on the screen.

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 or the Calibrate Touchscreen icon on the desktop. The control panel appears.
- 2 Follow the on screen instructions for selecting which monitor to calibrate.
- 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 until prompted to release. The screen guides 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**.

## Accessing the PowerStation Utilities

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The HPC/HPX PowerStation is shipped with the HPC/HPX PowerStation Documentation and Utilities CD (DCD-1020). This CD contains all of the dimensional drawings, software, and drivers needed for the HPC/HPX PowerStation.

If any of the software on your system becomes lost or corrupted, you can reinstall it from this distribution disk.

## Recovery Software

The HPC/HPX PowerStations containing hard drives have a disk recovery software already installed: the Acronis True Image OEM. This software solves most backup problems by ensuring the safety of all information on the HPC/HPX unit. You can back up selected files and folders, Windows application settings, Microsoft email settings and messages, or entire disks and partitions.

If a failure occurs that blocks access to information or affects system operation or if files are accidentally deleted, you can easily restore the system and any lost data.

In order to recover the original factory image:

- 1 Reboot the PowerStation
- 2 Press F11 when the option to start the Acronis OEM Zone software is displayed on the screen.

**Note:** You can also find a copy of the recovery CD image in the *recoveryimagexx.iso* file under the C:\ directory.

Refer to the *Acronis User Guide* located on the HPC/HPX Utilities CD for specific operating instructions.

## PowerSmart Software

The HPC/HPX PowerStation utility CD also contains the PowerSmart software. This software allows you to keep track of various system parameters, such as:

- Minimum, maximum, and current CPU temperature
- Minimum, maximum, and current internal ambient temperature
- CPU fan speed
- Total number of power cycles
- Total number of hours of operation

Use the PowerSmart icon on the desktop to display these parameters in real time. The PowerSmart window also has a temperature trend graph for CPU and ambient temperatures, as well as an indicator that lets you know if the monitoring microcontroller is working properly.

## Ordering 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.

Component	
CompactFlash (CF) card	<p>If you need additional storage capacity, you can purchase additional Compact Flash cards from CTC.</p> <p>You should purchase at least one additional compact flash card to serve as a backup for your primary CF.</p> <p>See <i>Replacing the CompactFlash</i> on page 4-8, for instructions on how to replace CF cards.</p>
DRAM	<p>If you need to upgrade or replace the DRAM, CTC carries replacement DRAM (DDR DIMM).</p> <p>Depending on the model ordered, the HPC/HPX PowerStation comes with a minimum of 256MB DDR DRAM, but the unit supports a total of 2.0 GB maximum. To replace the DRAM, see <i>Replacing the DRAM</i> on page 4-7.</p>
Backlight bulb	<p>You can only replace the backlight bulb on the 10" HPC/HPX PowerStations. You can send the PowerStation to CTC's repair center for bulb replacement. See <i>Customer Support Services</i> on page 1-5 for details.</p> <p>The HPC/HPX PowerStation has 50,000 hours of bulb life until half-brightness.</p>
Fuse	There is no replaceable fuse in the HPC/HPX PowerStation.

# PowerStation Specifications



This appendix outlines important specifications for the PowerStation. It is a good idea to familiarize yourself with the specifications before operating your unit.

- Physical Specifications
- Display Specifications
- Environmental Specifications
- Electrical Specifications
- Testing Specifications
- PowerStation Touchscreen

## Physical Specifications

The PowerStation's physical specifications are listed in the table below.

**Table A-1: 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>
BIOS	<ul style="list-style-type: none"> <li>Phoenix-Award BIOS</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>2.8GHz Pentium 4 maximum</li> </ul> </li> <li>Intel 845GV Chipset</li> </ul>
Dimensions (H x W x D) of base configuration	<ul style="list-style-type: none"> <li><b>10" PowerStation</b> — 11.0" x 13.8" x 6.4" (279mm x 351mm x 162mm)</li> <li><b>15" PowerStation</b> — 13.3" x 16.8" x 7.2" (338mm x 427mm x 184mm)</li> <li><b>17" PowerStation</b> — 15.7" x 18" x 6.6" (399mm x 457mm x 168mm)</li> <li><b>Remote configuration</b> — 10.9" x 11.3" x 4.5" (277mm x 287mm x 115mm)</li> </ul>
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> </ul>
I/O Ports	<ul style="list-style-type: none"> <li>Ethernet port — RJ45, Intel 82562 ET</li> <li>COM ports — RS-232, RS-422, RS-485</li> <li>USB port — Four USB 2.0 ports</li> <li>Parallel port — Supports SPP/EPP/ECP mode with a standard 25-pin DSUB connector</li> <li>VGA port — VESA standard SVGA female DB15 output connector</li> <li>Keyboard — PS/2 miniDIN</li> <li>Mouse — PS/2 miniDIN</li> </ul>
Memory	Two 2.5v DDR DIMM sockets for up to 2GB total of DDR200/DDR266 PC2100 memory <ul style="list-style-type: none"> <li>Up to 2GB of DDR DRAM, DDR200/266/133, unbuffered non-ECC</li> <li>Two 184-pin DDR DIMM sockets</li> <li>Serial Presense Detect Interface</li> </ul>

**Table A-1: Physical Specifications**

Category	Specifications
Operating System	Microsoft Windows 2000, XP Professional
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>
Storage	<ul style="list-style-type: none"> <li>• Up to 8.0 GB Type II Compact Flash socket (not hot swappable)</li> <li>• Optional 80GB (minimum) or 160 GB 3.5" Hard Drive</li> <li>• Optional Slim Mobile CD-ROM, CD-RW, or DVD-ROM Drive</li> </ul>
Touchscreen	Analog Resistive
Weight	<ul style="list-style-type: none"> <li>• 10" PowerStation — 19 lbs. (8.6Kg)</li> <li>• 15" PowerStation — 26 lbs. (11.8Kg)</li> <li>• 17" PowerStation — 28 lbs. (12.7Kg)</li> <li>• Remote configuration — 14 lbs. (6.3Kg)</li> </ul>

## Display Specifications

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Display specifications for the PowerStation are shown in the table below.

**Table A-2: Display Specifications**

Category	Specifications
<b>10" VGA TFT PowerStation</b>	
Brightness	450 nits
Bulb life	50,000 hours
Color depth	262,144 colors
Diagonal size	10.4"
Resolution	VGA: 640 x 480
Types	TFT
Viewing angle	U/D = 50/60 degrees L/R = 70/70 degrees
<b>10" SVGA TFT PowerStation</b>	
Brightness	350 nits
Bulb life	50,000 hours
Color depth	262,144 colors
Diagonal size	10.4"
Resolution	VGA: 640 x 480
Types	TFT
Viewing angle	U/D = 40/70 degrees L/R = 70/70 degrees

**Table A-2: Display Specifications**

Category	Specifications
<b>15" XGA TFT PowerStation</b>	
Color depth	16.2 million colors
Brightness	260 NITS
Bulb life	50,000 hours
Diagonal size	15.0
Resolution	XGA 1024 X 768
Type	TFT
Viewing angle	U/D = 55/80 degrees L/R = 80/80 degrees
<b>17" SXGA TFT PowerStation</b>	
Color depth	16.2 million colors
Brightness	250 nits
Backlight lifetime	50,000 hours
Diagonal size	17.0
Resolution	SXGA 1280 x 1024
Type	TFT
Viewing angle	U/D = 75/65 degrees L/R = 70/70 degrees

## Environmental Specifications

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The PowerStation conforms to the environmental specifications listed in the table below.

**Table A-3: Environmental Specifications**

Category	Specifications
Ambient operating temperature	0° to 122°F (0° to 50°C) ambient (air temperature outside of backshell)
Faceplate Design	Tested for UL Type 4/4X environment  <b>Warning:</b> The PowerStation is rated Type 4/4x only if it is installed in a Type 4/4x rated enclosure.
Operating vibration	Operating — 0.5 grms 5-500Hz grms Non-operating — MIL-STD-810D 1 grms
Relative humidity	5 - 95% non-condensing
Shock rating	Operating — 10g 11ms pulse Non-operating — 30g 11ms pulse
Storage temperature	-4° to 149°F (-20° to 65°C)



**Caution:** Remember that the temperature within a protective enclosure is generally higher than the external temperature. Thus, if the PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature (measured at the vents on the unit), you must cool the enclosure.

Limit the PowerStation's exposure to adverse conditions, such as dust, oil, moisture, and corrosive vapors in order to minimize maintenance and repair costs.

## Electrical Specifications

The PowerStation's electrical specifications are shown in the table below.

**Table A-4: Electrical Specifications**

Category	Specifications
System total design power	For a board with P4 2.8GHz & 2GB DDR266, no add-in PCI cards or peripherals: TDP = 100W max
Total available PCI power	Total available PCI expansion card power (total for all cards): <ul style="list-style-type: none"> <li>• 3.3v <math>\pm</math> 5% @ 4A</li> <li>• 5.0v <math>\pm</math> 5% @ 4A</li> <li>• 12v <math>\pm</math> 10% @ 0.5A</li> <li>• -12v <math>\pm</math> 10% @ 0.1A</li> </ul>
AC Input voltage	90 - 264 VAC (47 - 63 Hz)
AC Power requirements	1.3A (8A surge for 5mS) @ 120 VAC
DC Input voltage	18V - 36V
DC Power requirements	6A (9A surge for 5mS) @ 24 VDC

The PowerStation's 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.



**Important** If possible, position the 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.

## Testing Specifications

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The PowerStation conforms to the emission standards for electronic equipment EN61000-6-2 (2001) and EN55011 (A2:2002), shown below.

**Table A-5: European Community Immunity and Emission Standards**

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>
EMC Testing, Immunity	<ul style="list-style-type: none"> <li>• EN 61000-4-3 Radiated Immunity</li> <li>• EN 61000-4-2 Electrostatic Discharge</li> <li>• EN 61000-4-4 Fast Transient/Burst Susceptibility</li> <li>• EN 61000-4-5 Surge Immunity</li> <li>• EN 61000-4-11 Voltage Dips Interruptions and Variation</li> <li>• Conducted Immunity EN 61000-4-6</li> <li>• IEEE 472 Surge Withstand Capability</li> </ul>
Surge withstanding capability	EN61000-4-5
Agencies	<ul style="list-style-type: none"> <li>• UL 60950, UL 1604 Hazardous Location</li> <li>• CE</li> </ul>

**Table A-6: Mechanical Testing Specifications**

Test	Specification
Operating vibration	0.5 grms/MIL-STD-810F 514.3
Mechanical shock	IEC-68-2-27/MIL-STD-810F 514.3
Non-operational vibration	1.0 grms/MIL-STD-810F 514.3

## PowerStation Touchscreen

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

### Touchscreen Considerations

The PowerStation's touchscreen is designed to meet the NEMA 4 rating. Mount the PowerStation in an enclosure that supports this rating in order to provide further protection.

The PowerStation's touchscreen is resistant to a variety of chemicals. It can resist the chemicals listed below with no visible effect.

**Table A-7: Faceplate Chemical Resistance**

Screen 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		

Make sure that the touchscreen is not exposed to chemicals other than those listed in the table above.

All PowerStation surfaces exposed outside of an enclosure are resistive to the following chemicals:

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

**Important** Sustained exposure to brake fluid or Gunk<sup>®</sup> brand degreaser can cause damage to the monitor materials.

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