EPX2 PowerStation Series
Hardware User Guide

Parker

ENGINEERING YOUR SUCCESS.

VICPAS
HMI Parts Center

TABLE OF CONTENTS

Copyright and Trademark Notice

Copyright © 2011 by Parker Hannifin. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, or stored in a retrieval system, in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written consent of Parker Hannifin Corporation.

While every precaution has been taken in the preparation of this manual, Parker Hannifin Corporation and the author assume no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. All product and company names are trademarks of their respective companies and licenses.

Product Warranty Information

Parker Hannifin provides top quality products through rigid testing and the highest quality control standards. Should a problem occur with your hardware, Parker's standard product warranty covers these items for 24 months from the date of shipment from the factory. Exceptions appear below:

- PowerStation CCFL backlight bulbs have a 90-day 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 Parker's Software License Agreement for additional software warranty information.

Technical Assistance

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.

Or, for direct technical assistance contact Parker using the following information:

Parker Hannifin
EMN Division
5500 Business Park Drive
Rohnert Park, CA 94928

Telephone: (800) 358-9070 or (707) 584-7558
Fax: (707) 584-3793
Email: emn_support@parker.com
Internet: http://www.parkermotion.com

INTRODUCTION

Thank you for purchasing an EPX2 PowerStation. This is family of robust embedded PC's, along with InteractX HMI software that are designed to be used as dedicated industrial operator interface products.

The EPX2 PowerStation is available in five display configurations: no display, 6", 8", 10", and 15". They contain an all-in-one PC board with Serial, Ethernet, and USB ports that is specifically designed to support Parker's InteractX HMI software.

Mechanically, the EPX2 PowerStation is designed to fit previous generation EPX PowerStation mounting cutouts and can be used as a direct, drop-in replacement while maintaining the same touchscreen functionality and NEMA Type 4X or Type 12 sealing.

Using this Manual

This manual is designed to help you set up and use the EPX2 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:

Introduction: Presents an overview of this manual, the other documentation and software provided with the EPX2 PowerStation, and the steps necessary to get the PowerStation up and running. This chapter also describes Parker's customer support services.

Installation: Explains how to select an installation location, prepare for installation, and finally install the EPX2 PowerStation.

Startup: Describes the ports available to connect the unit to other devices and to a power source. Also described are steps to startup the PowerStation and methods to recover the operating system and the InteractX HMI software to the CompactFlash memory card.

Maintenance: Explains how to maintain the EPX2 PowerStation, including the touchscreen, replacing the CompactFlash, and performing internal maintenance.

Appendix A — PowerStation Specifications: Describes the EPX2 PowerStation's specifications.

ISO Symbols

Symbol	Meaning
	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.

Hardware Versions

The EPX2 PowerStation ships with a Microsoft Windows Embedded Standard 2009 operating system and InteractX HMI software.

There are three display native resolutions available:

- EPX200N, no display, 1024x768 (XGA) analog output

- EPX206T, TFT, 640x480 (VGA)

- EPX208T, TFT, 640x480 (VGA)

- EPX210T, TFT, 640x480 (VGA)

- EPX215X, TFT, 1024x768 (XGA)

Each PowerStation is also shipped with a utilities CD containing this manual, drawings and CAD models of each size unit, applicable drivers and links to backup copies of available software.

Downloading InteractX Projects

The EPX2 PowerStation with InteractX HMI is intended as a runtime-only system, which means that applications and projects are created on a development PC and the InteractX HMI application is downloaded to the PowerStation. Refer to the InteractX Help documentation within InteractX for information about how to develop projects and download them to the EPX2 PowerStation.

INSTALLATION

Selecting a Location

The first step when installing the EPX2 PowerStation is to select an appropriate location. This is the most important aspect of the installation process because the location affects unit performance, ease of use and life-expectancy. This section provides guidelines to follow when selecting a location.

Underwriters Laboratories UL508 Approval

In order to obtain Underwriters Laboratories (UL508) certification for the PowerStation installation, the installation must meet the following criteria:

- The PowerStation is suitable for mounting on the flat surface of a Type 4X Indoor Use Only or Type 12 enclosure.
- Power to the device must be provided by a Class 2 power source. For convenience, Parker has an AC input, model P1X-PWRAC Class 2, 24Vdc power supply available for purchase to provide power to any of the EPX2 PowerStation models.

Environmental Guidelines

In general, select a location that limits the PowerStation's exposure to adverse conditions such as dust, oil, moisture, condensation, and corrosive vapors.

The EPX2 PowerStation's touchscreen/faceplate assembly is designed to meet the NEMA Type 4X Indoor Use Only or Type 12 rating. Mount the PowerStation in an enclosure that also supports this rating if it is a requirement for the installation.

The touchscreen/faceplate is resistant to a variety of chemicals. Please refer to **Appendix A**, Touchscreen Chemical Resistance for a complete list.

Electrical Grounding 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 chassis ground stud located on the rear of the enclosure to connect the unit to a suitable ground reference, such as earth ground or building steel. A short (less than 8"), heavy copper braid or <10awg copper wire from the ground stud to chassis earth ground will provide a good EMI path to ground. This ensures the unit is in compliance with immunity and emissions requirements necessary for proper operation.

Temperature and Humidity Guidelines

You can safely operate the EPX2 PowerStation within the temperature range specified in Environmental Specifications in **Appendix A**. However, when using a protective enclosure, remember that the temperature within an enclosure is generally higher than the external temperature. Read the following guidelines to fully understand temperature implications.

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

- Choose an area for the PowerStation that is free from moisture or condensing humidity.

The EPX2 PowerStation models will thermally dissipate no more than the following:

- EPX200, dissipates approximately 5.0 watts

- EPX206, dissipates approximately 5.8 watts

- EPX208, dissipates approximately 7.8 watts

- EPX210, dissipates approximately 8.0 watts

- EPX215, dissipates approximately 15.0 watts

Heat builds up rapidly in enclosed environments, compromising the performance and life span of electrical equipment. If the PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure.

EPX2 PowerStation's have been tested for use in 50°C ambient, still air locations. This means that when installed, the ambient air surrounding the backside of the PowerStation is not expected to exceed 50°C. An example of this type of installation would be a PowerStation mounted in a small, sealed industrial enclosure.

The most commonly overlooked aspect of this type of installation is that heat generated by the device becomes trapped inside the enclosure and increases the ambient temperature surrounding the PowerStation. This increase in temperature can sometimes exceed an additional 10°C or more.

Although the thermal dynamics are not always linear, a temperature rise of 105°F would imply that the environment outside the sealed enclosure could not exceed 40°C (104°F), or the PowerStation would surpass its maximum operating temperature.

Do not mount a PowerStation into a sealed enclosure and ignore the fact that with the 50°C rating of the product, the sealed enclosure can operate in a 50°C ambient environment without considering the affects of the internal heat buildup.

Since elevated operating temperatures can have an adverse affect on the life of electronics, it is wise to consider the internal thermal rise. Passive venting for thermal convection, internal air circulation fans, filtered exhaust fans with filtered inlets, air conditioners, and other products are available in the market to assist in reducing the heat buildup in the industrial enclosure.

There are many attractive NEMA Type 12, dust-tight fan/filter assemblies available today which allow the filter to be inexpensively replaced or cleaned as part of a periodic maintenance schedule. Or in some cases, simply increasing the size of the enclosure, and thus the outside surface area for example can have a significant, positive effect on the installation's thermal response.

Points to consider when performing a site review are:

1. What is the expected maximum outside ambient temperature that the industrial enclosure will experience?
2. Are there additional heat-generating components inside the enclosure?
3. What is the size of the enclosure? Larger enclosures dissipate more thermal energy than smaller ones.
4. In what kind of environment will the enclosure be installed - clean, water-tight, or dust-tight? Can the enclosure be convection cooled or is active cooling required?

In summary, it is a wise investment to thermally plan the installation by anticipating, and eliminating, the heat build up inside a sealed enclosure. Not only will this extend the life of the electronics, but it will also reduce costly equipment downtime.

Enclosure Guidelines

Select an enclosure that is large enough to allow free airflow in and around the EPX2 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 PowerStation is mounted is flat and free of raised or depressed areas.

Refer to the EPX2 Utilities, Drivers & Documentation CD (Part Number KA-026525-xx) that came with the PowerStation for dimensional drawings.

Important — The EPX2 PowerStation's touchscreen/faceplate assembly is designed to meet the Type 4X Indoor Use Only or Type 12 rating. If required, mount the PowerStation in an enclosure that supports this rating.

Radiated Emissions Guidelines

This PowerStation has been tested to comply with international electromagnetic susceptibility and emission standards. To reduce the adverse affects of EMI, ensure that there is a good earth connection to the PowerStation, which can be accomplished by utilizing the grounding stud located on the rear chassis of the product. This connection must be made with the shortest possible (<8" in length), heavy gage copper wire (<10awg) or braided cable. Although EMI grounding cannot be easily measured directly in the field, low-resistance (<0.5 ohms) DC continuity should, at a minimum, be verified with an ohmmeter for proper safety grounding. In addition, all communication cables should be fully shielded and grounded on only one end.

UL Hazardous Location Class I, Division 2 Guidelines

If you purchased a UL Class I, Division 2 compliant EPX2 PowerStation, you must comply with these statements in order to maintain a safe operating environment:

- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or Non-Hazardous Locations Only. Temperature rating T4A.

- The input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods and in accordance with the authority having jurisdiction.

- Make sure that the EPX2 PowerStation's "ON/OFF" switch is secured in the "ON" position using the supplied bracket.

- All field wiring terminals must be marked to indicate to use copper wire with 60°C or 60/75°C wire insulation and the terminal tightening torque of 7.0 lb-in. (0.79 N-m).

⚠ **Warning – Explosion Hazard**

- Substitution of components may impair suitability for Class I, Division 2.
- Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not connect or disconnect cables unless the power has been switched off, or the area is known to be non-hazardous.
- Class I, Division 2 approval requires nonincendive field wiring for Class I, Groups A, B, C, and D hazardous locations only.
- Class I, Division 2 approval requires power switch restraints in hazardous environments.

Setting Up the PowerStation for Use in a Hazardous Environment

PowerStations ordered with the Class 1, Division 2 Hazardous Location option ship with a bracket for locking the power switch in the "On" position. This bracket must be installed in order to be compliant with Class 1, Division 2 guidelines in a hazardous environment since it prevents unintentional or accidental switching of power to the unit. Affix the bracket to power switch using the screw provided.

Power Switch bracket clamps switch to the "ON" power position.

Preparing for Installation

Once a suitable mounting location has been selected, a mounting cutout must be created for all models except the remote configuration, which uses four built-in flanges or a DIN rail mounting clamp for direct attachment to a mounting surface.

If the EPX2 PowerStation is intended to be connected to AC power, and a Parker optional AC Power Supply P1X-PWRAC was purchased, a mounting location for the Power Supply must also be considered. Procedures for preparing a location for installing and mounting the Parker P1X-PWRAC Power Supply are included with the unit. Note that mounting holes are provided on the rear chassis of the 10" and 15" EPX2 to mount the P1X-PWRAC power supply directly on the PowerStation if using the Parker power supply mounting kit BKT-1000.

Note that the EPX2 PowerStation will fit into the existing cutouts created for older EPX2 PowerStations and they can use the existing DC power source.

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. The dimensional and mounting cutout drawings can be found on the EPX2 Utilities, Drivers & Documentation CD (Part Number KA-026525-xx) shipped with the unit.

1) To ensure a proper mounting seal, maintain proper surface flatness and cutout edge quality.

   The cutout dimensions for the EPX2 PowerStation are shown in the following table:

EPX2 Model	Cutout Height	Cutout Width
EPX200	N/A	N/A
EPX206	4.50"	6.20"
EPX208	6.08"	8.67"
EPX210	9.95"	12.60"
EPX215	12.40"	15.90"

2) Debur the edges of the cutout area, removing dirt and debris that might come in contact with the unit and compromise the water-tight seal.
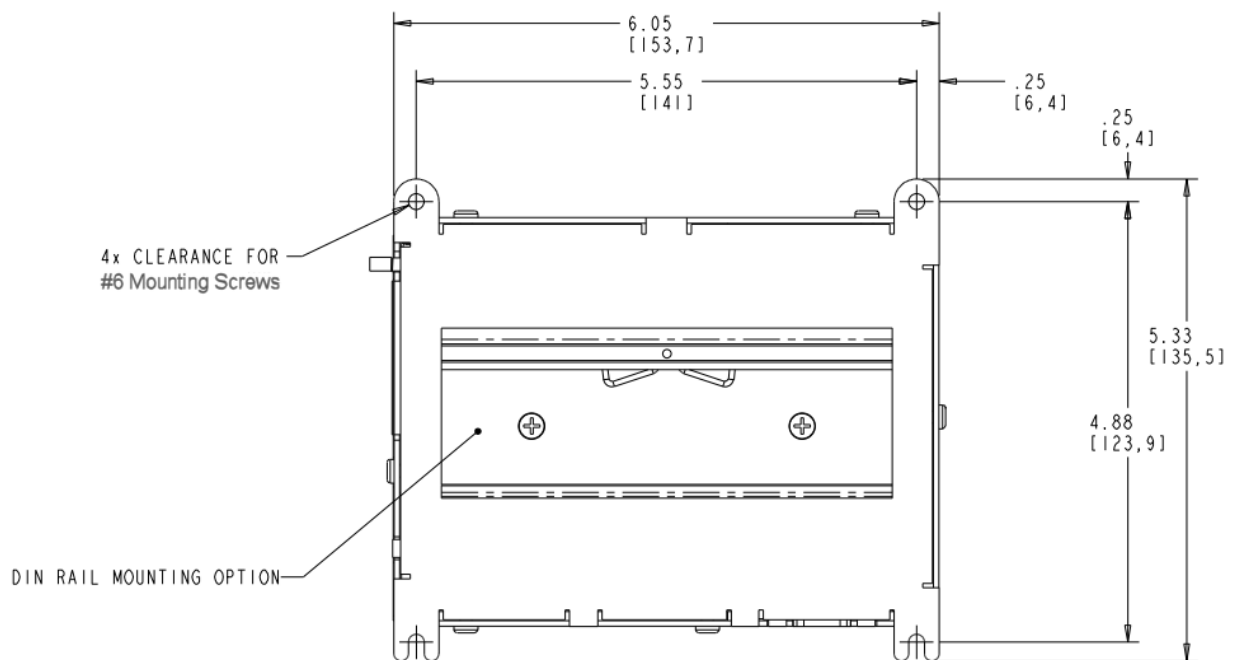
Installing the PowerStation

Once the location for the EPX2 PowerStation has been prepared, you are ready to install the unit. To do so, mount the PowerStation to the enclosure using the supplied mounting clamps. The mounting clamps secure to the PowerStation using a sliding mechanism where the "feet" of the clamp slide into slots in the PowerStation's chassis and screws provide pressure to compress the seal gasket around the perimeter of the PowerStation.

There are three styles of clamps used to mount the PowerStation to the enclosure depending on the display size; 6", 8", 10" or 15". To mount the PowerStation properly, refer to the instructions below that correspond with the proper display size.

Non-Display EPX200 PowerStation Mounting Procedures

To install an EPX200 non display PowerStation, there are two options: mounting to a panel via the four mounting ears provided or via the DIN rail adapter provided in the accessory ship kit included with the unit. To mount the unit using the four mounting ears, complete the instructions below:

1) Drill four 5/32" (0.156") mounting holes according to the EPX2 mounting drawing supplied on the EPX2 Utilities, Drivers & Documentation CD supplied with unit and shown here for reference:

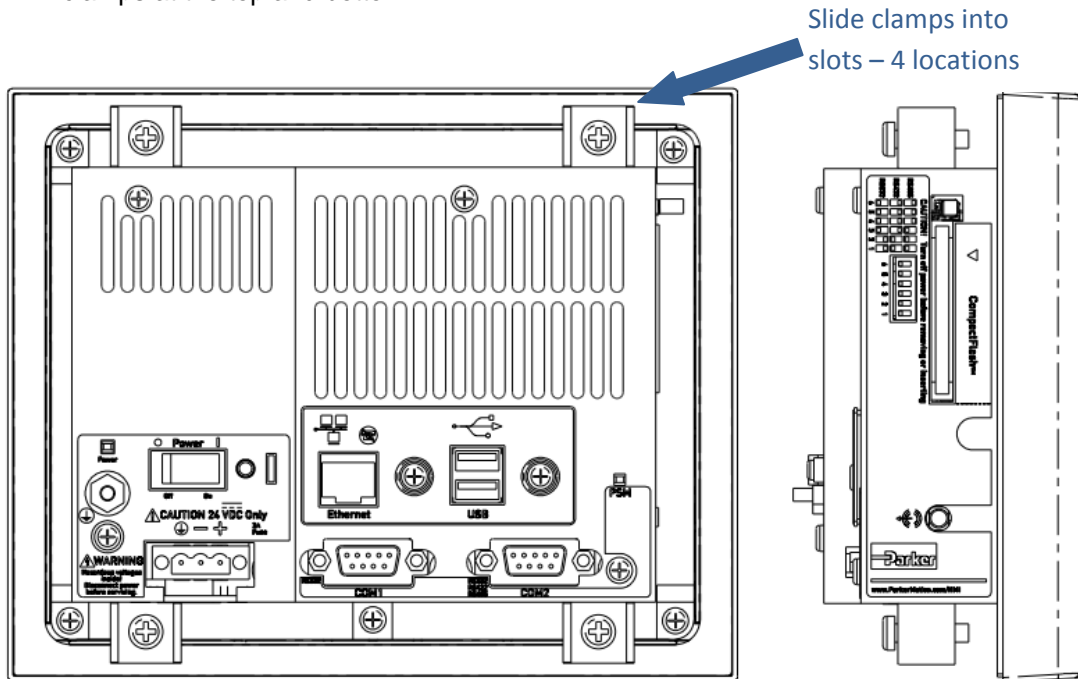2) Mount the non display unit using the four mounting ears and four supplied #6-32 screws and #6-32 nuts.

EPX206 PowerStation Mounting Procedures

To install a 6" PowerStation, complete the instructions below:

1) Create a rectangular cutout in the user's enclosure according to the 6" EPX2 mounting drawing located on the EPX2 Utilities, Drivers & Documentation CD supplied with unit.

2) Slide the PowerStation into the cutout from the front side of the enclosure.

3) Assemble the 4 mounting clamps with their screws as shown:

4) Attach the 4 mounting clamps, with their screws, to the back of the unit in the slots provided. Place 2 clamps at the top and bottom:

Slide clamps into slots – 4 locations

5) Insert the clamp into the wide end of the slot and slide it to the thin end.

6) Tighten each of the mounting screws against the front of the enclosure.

7) Torque the screws until the gasket is compressed by 50%.

> ⚠️ **Caution** — Do not over-tighten the screw/clamp assembly or you may damage the PowerStation. However, under-tightening may not guarantee a Type 4X Indoor Use Only or Type 12 rating.

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

Note that properly tightening the clamps may not result in a gasket seal that is totally depressed by the bezel and flush with the enclosure. Since a proper Type 4X Indoor Use Only or Type 12 rating requires a 50% compression of the gasket, you may see a small gap between the bezel and the front side of the enclosure.

EPX208 PowerStation Mounting Procedures

To install an 8" PowerStation, complete the instructions below:

1) Create a rectangular cutout in the user's enclosure according to the 8" EPX2 mounting drawing located on the EPX2 Utilities, Drivers & Documentation CD supplied with unit.

2) Slide the PowerStation into the cutout from the front side of the enclosure.

3) Assemble the 4 mounting clamps with their screws as shown:

4) Attach the 4 mounting clamps, with their screws, to the back of the unit in the slots provided. Place 2 clamps at the top and bottom:

Slide clamps into slots – 4 locations

5) Insert the clamp into the wide end of the slot and slide it to the thin end.

6) Tighten each of the mounting screws against the front of the enclosure.

7) Torque the screws until the gasket is compressed by 50%.

> ⚠️ **Caution** — Do not over-tighten the screw/clamp assembly or you may damage the PowerStation. However, under-tightening may not guarantee a Type 4X Indoor Use Only or Type 12 rating.

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

Note that properly tightening the clamps may not result in a gasket seal that is totally depressed by the bezel and flush with the enclosure. Since a proper Type 4X Indoor Use Only or Type 12 rating requires a 50% compression of the gasket, you may see a small gap between the bezel and the front side of the enclosure.
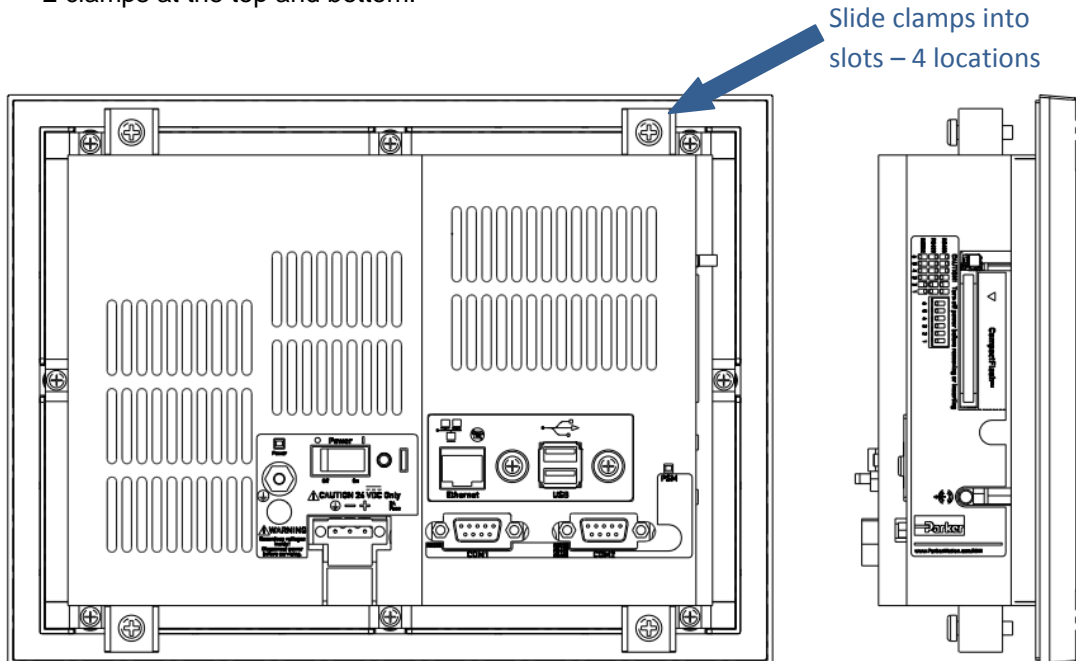
EPX210 PowerStation Mounting Procedures

To install a 10" PowerStation, complete the instructions below:

1) Create a rectangular cutout in the user's enclosure according to the 10" EPX2 mounting drawing supplied on the EPX2 Utilities, Drivers & Documentation CD supplied with unit.

2) Slide the PowerStation into the cutout from the front side of the enclosure.

3) Assemble the 6 mounting clamps with their screws as shown:

4) Attach the 6 mounting clamps, with their screws, to the back of the unit in the slots provided. Place 2 clamps at the top and bottom, and 1 on each side:

Slide clamps into slots – 6 locations

5) Insert the clamp into the wide end of the slot and slide it to the thin end.

6) Tighten each of the mounting screws against the front of the enclosure.

7) Torque the screws until the gasket is compressed by 50%.

⚠️ **Caution** — Do not over-tighten the screw/clamp assembly or you may damage the PowerStation. However, under-tightening may not guarantee a Type 4X Indoor Use Only or Type 12 rating.

---

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

Note that properly tightening the clamps may not result in a gasket seal that is totally depressed by the bezel and flush with the enclosure. Since a proper Type 4X Indoor Use Only or Type 12 rating requires a 50% compression of the gasket, you may see a small gap between the bezel and the front side of the enclosure.
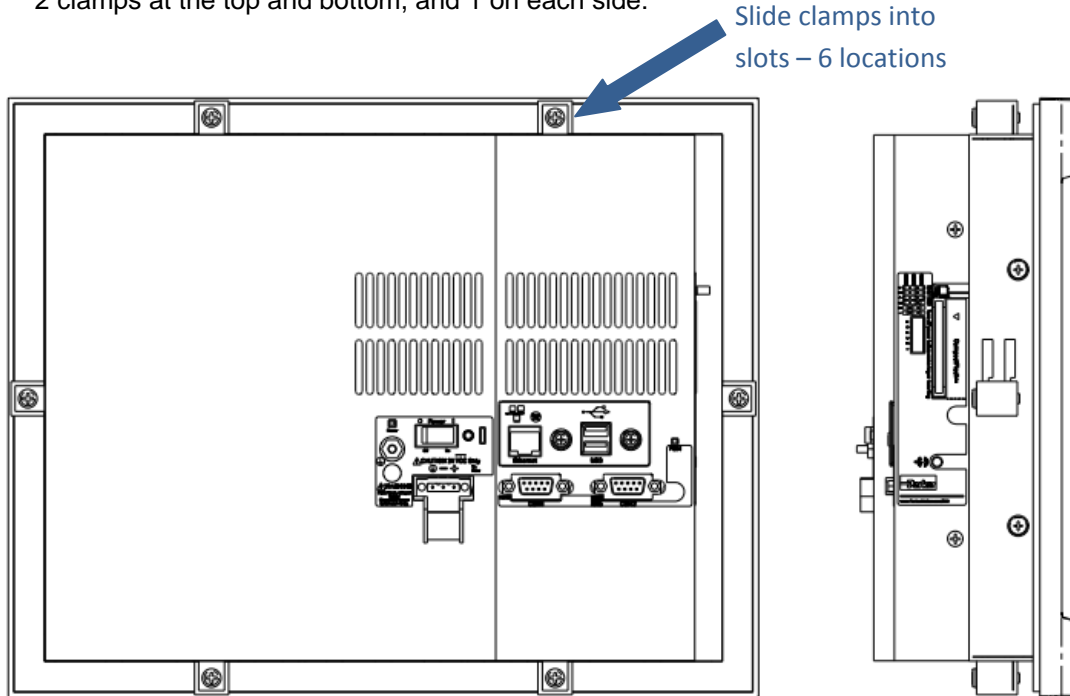
EPX215 PowerStation Mounting Procedures

To install a 15" PowerStation, complete the instructions below:

1) Create a rectangular cutout in the user's enclosure according to the 15" EPX2 mounting drawing located on the EPX2 Utilities, Drivers & Documentation CD supplied with unit.

2) Slide the PowerStation into the cutout from the front side of the enclosure.

3) Assemble the 8 mounting clamps with their screws and locking nuts as shown (do not tighten the locking nut until Step 7. Place 2 clamps at the top and bottom, and 2 on each side:

Locking Nut Location

4) Insert the clamp into the wide end of the slot and slide it to the thin end as shown in the following figure:

Slide clamps into slots – 8 locations

5) Tighten each of the mounting screws against the front of the enclosure.

6) Torque the screws to **7 in/lbs** in a crosswise sequence to ensure a good seal and prevent damage.
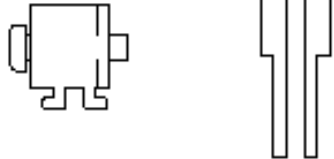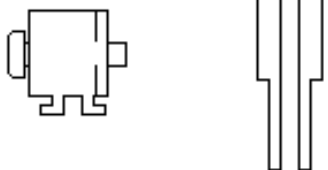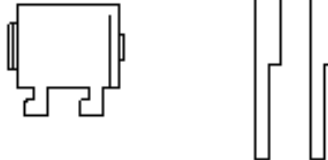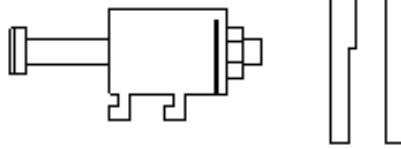
> ⚠️ **Caution** — Do not over-tighten the screw/clamp assembly or you may damage the PowerStation. However, under-tightening may not guarantee a NEMA Type 4X Indoor Use Only or Type 12 rating.
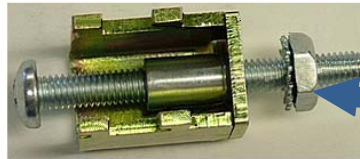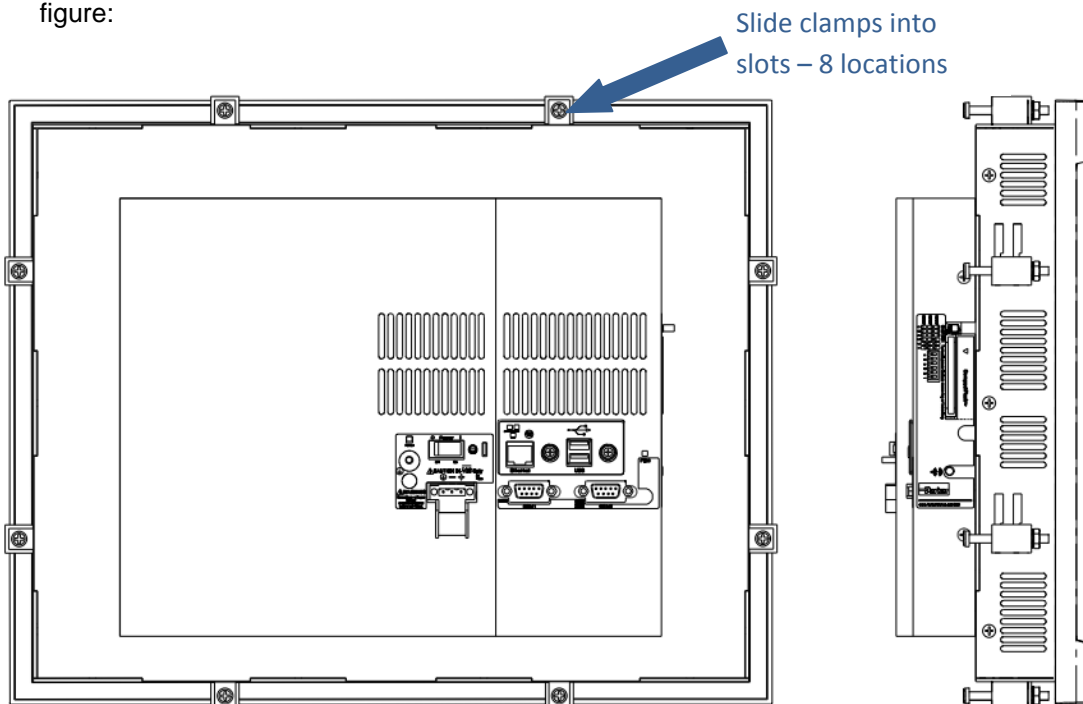
7) Adjust the locking nut so that it is firmly against the surface of the clamp to prevent loosening.

Note that properly tightening the clamps may not result in a gasket seal that 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 front side of the enclosure.

The following chart summarizes the various clamp quantities, styles and tightness torques require for mounting each unit size.

display size	# of clamps	clamp style	torque/ compression
6"	4		6 in/lbs.
8"	4		7 in/lbs.
10"	6		50% compression
15"	8		7 in/lbs.

Installing an Optional AC Power Supply

All EPX2 PowerStation models support 24 volt input DC power. The EPX200 and EPX206 PowerStation models can support either 12 or 24 Vdc input power. In either case, you can operate any EPX2 PowerStation with AC power by using an optional PX1-PWRAC Power Supply available from Parker. Use this section only if you intend to operate the EPX2 PowerStation using AC power.

> ⚠️ **Caution** — Do not apply AC line input power directly to the unit or damage may occur.

Preparing a Location for the AC Power Supply

Be sure to select a location that provides protection from dust, oil, moisture, and corrosive vapors. If your enclosure is large enough, you can mount the Power Supply in the enclosure with the unit.

If you purchased Parker's optional AC Power Supply, P1X-PWRAC and mounting kit BKT-1000, follow the mounting instructions that came with the mounting kit to prepare your location for the power supply. Optionally, the BKT-1000 can be used to mount the P1X-PWRAC to the back of the EPX210 and EPX215 models.

STARTUP

This chapter discusses the following topics:

- PowerStation Connectors
- Starting the EPX2 PowerStation
- Using the CompactFlash Card
- Using the BIOS Utility

The EPX2 PowerStation is shipped with the Utilities, Drivers & Documentation CD (Part Number KA-026525-xx). This CD contains all of the dimensional drawings, CAD models and available device drivers.

PowerStation Connectors

All EPX2 PowerStations have the following connectors located on the rear of the enclosure:

- 1 RS-232 serial port
- 1 configurable RS-232, RS-422, RS-485 serial port
- 2 USB ports for the keyboard and mouse
- 1 Ethernet port
- 1 Audio Output connector
- 1 Compact Flash connector
- Power switch
- 1 ground stud

Serial Ports

The EPX2 PowerStation has two serial ports that you can use to communicate with external devices at baud rates of up to 115K baud.

The COM1 port supports RS-232, while COM2 supports configurable RS-232, RS-422, and RS-485 communication standards.

The communication standard you select for COM2 depends upon the distance between the EPX2 PowerStation and the controller, as well as the communication standards that the controller supports. Use a standard DB9 connector for attaching to this port.

Note — When using RS-232 communications, the length of the serial cable should not exceed 50 feet (15 meters).

RS-422 and RS-485 communications offer greater noise immunity than RS-232. These standards increase the maximum cable length to 4,000 feet (1,200 meters).

RS-422 communications are full-duplex (send and receive simultaneously), while RS-485 communications are half-duplex (send or receive independently).

For either configuration, be careful not to connect any wires to unused connector pins. Information on the specific connection required for the InteractX drivers you will use is located in the Help file associated with the driver.

Pinouts for COM1

The following Table shows the pinouts and signal information for COM1.

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

Pinouts for COM2

The following table shows the pinouts and signal information for COM2 depending on the communication configuration selected:

Pin #	RS-232 Communication	RS-422 Communication	RS-485 Communication
1	N/C	TXD-, transmitted data -	TXD-, transmitted data -
2	RXD, received data	TXD+, transmitted data +	TXD+, transmitted data +
3	TXD, transmitted data	RXD+, received data +	RXD+, received data +
4	N/C	RXD-, received data -	RXD-, received data -
5	Signal ground	Signal ground	Signal ground
6	N/C	N/C	N/C
7	RTS, request to send	N/C	N/C
8	CTS, clear to send	N/C	N/C
9	N/C	N/C	N/C

Note — RTS and CTS signals are not active in RS-422 and RS-425 configurations.

COM2 is set to RS-485 configuration by default from the factory. To change COM2 to RS-232 or RS-422 protocol, you must change the COM2 DIP switch settings. The DIP switch for COM2 is located on the side of the EPX2 PowerStation, as shown in the following figure:
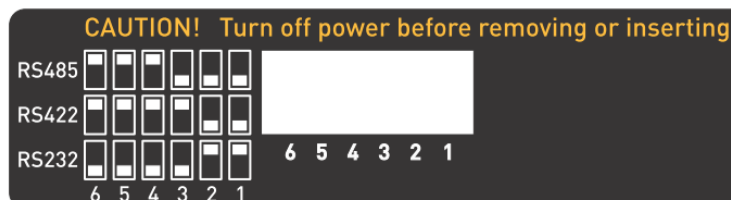
The white boxes represent the tip of the switch.

To change the DIP switch settings, complete the following steps:

1. With the power to the unit off, choose the appropriate DIP switch settings from the diagram displayed on the side of the EPX2 PowerStation and the chart above.

2. Using a pointed instrument such as a pen or pencil, flip the switches to the appropriate settings through the viewing window.

The following figure illustrates the connector pinouts and cable wiring required for communicating with COM1 or COM2 using RS-232, RS-422 or RS-485 protocols.

COM Connector Pinouts and Cable Wiring

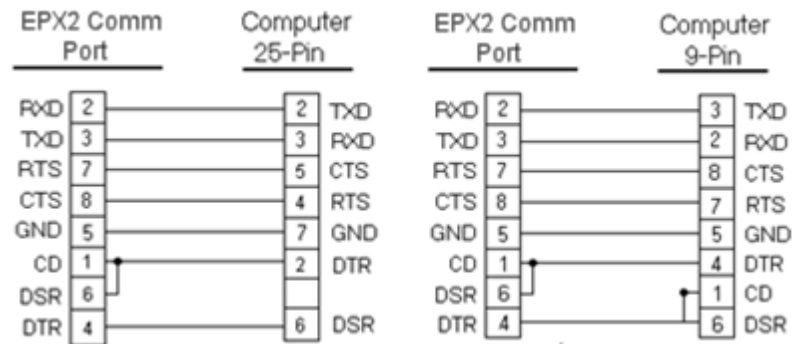| RS-232	RS-422	RS-485

Caution — Do not connect any signals to unused pins. Uncertain operation may result.

RS-485 Directional Control
Many third party communication drivers use the RTS signal to switch between transceiver receive and transmit mode. Conversely, some drivers expect the line directional control to be automatic. The EPX2 PowerStation has an RS-485 transceiver circuit with an automatic direction control feature that will automatically switch between receive and transmit modes. Normally the transceiver is waiting to receive data, but it will switch to transmit mode as soon as it senses data on the TxD pin of the UART and switch back to receive mode when data transmission is complete. This feature is optimized for baud rates of 9600 and greater.

Transferring Files from a PC to the EPX2 PowerStation
You can transfer files from a PC to the EPX2 PowerStation in one of three ways—via an Ethernet connection, directly to the CompactFlash card using a PC or laptop, or by Serial Transfer. For Serial Transfer, you will need a null modem cable. To construct a null modem cable, refer to the following diagram:

EPX2 Comm Port		Computer 25-Pin		EPX2 Comm Port		Computer 9-Pin	
RXD	2	2	TXD	RXD	2	3	TXD
TXD	3	3	RXD	TXD	3	2	RXD
RTS	7	5	CTS	RTS	7	8	CTS
CTS	8	4	RTS	CTS	8	7	RTS
GND	5	7	GND	GND	5	5	GND
CD	1	2	DTR	CD	1	4	DTR
DSR	6			DSR	6	1	CD
DTR	4	6	DSR	DTR	4	6	DSR

Keyboard and Mouse
The EPX2 PowerStation allows you to use a USB keyboard and USB mouse in addition to the touchscreen.

Ethernet Port
The EPX2 PowerStation has an Ethernet RJ45 port with an Intel 82551ER 10/100 Mbps base-T controller that allows you to connect the PowerStation to a Local Area Network.

CompactFlash
The EPX2 PowerStation comes with a CompactFlash (CF) card. This card is used as a removable drive that is recognized as drive C: and provides non-volatile memory storage. CompactFlash cards are well-suited for rugged environments where the PowerStation may have significant levels of vibration. Although the card is removable, it is used as an IDE drive, which means you cannot remove it while the PowerStation is powered on.

Note that the EPX2 PowerStation supports Type 1 or Type 2 CompactFlash cards.

We recommend that you purchase at least one additional card to serve as a backup for your primary CompactFlash card. It is also useful to own several cards to store different projects. You can purchase additional CompactFlash cards through Parker.

⚠️ **Caution** — Do not remove or insert the CompactFlash card while power is applied to the unit or data on the card could be corrupted.

Starting the PowerStation

Once the EPX2 PowerStation has been mounted, connect power to the unit. It is important that you have previously reviewed the installation guidelines and Agency requirements described in this manual.

Caution — Do not apply AC input power directly to the unit or damage may occur.

1. Ensure the power ON/OFF switch is in the OFF position.
2. Connect the PowerStation input power connector to a DC voltage source. Input voltage to the unit should be within the range specified in the Electrical Specifications located in **Appendix A** of this manual.
3. Turn the EPX2 PowerStation ON.
4. As the PowerStation boots, the Windows Embedded Standard desktop will appear briefly and then InteractX will automatically launch

EPX2 PowerStations contain Windows Embedded Standard 2009, a componentized version of Windows XP Professional, and Parker InteractX HMI software. As the system is shipped from the factory, it is ready to download a custom InteractX project. Please refer to the Help files within InteractX for information regarding:

- **Panel Tools** - Includes pre-configured panel tools for buttons, indicators, gauges, readouts, etc. Includes advanced tools such as the Input List for recipes, the Browser Display for web access and online documentation, and more.

- **Graphics** - Includes CAD like graphic elements, free form animation, and high quality graphics import. Also includes color, roundness, gradients, materials, and transparency.

- **Alarms** - Monitors and acknowledges real time and historical alarms with advanced features for user access, filtering, grouping, logging, printing, etc.

- **ActiveX** - Hosts standard off the shelf third party tools like Medial Player, vision tools, trending, etc.

- **Visual Basic for Applications (VBA)** - Includes fully integrated VBA with access to tools, graphics, alarms, application properties, and tags.

- **User Security Levels** - Includes multiple user access levels with unlimited number of users. Includes OS independent 21CFR11 compliant features such as user lockout, adding unique users, password aging, inactivity timeout, etc.

- **OPC Tag Server** - Any Runtime tags can be accessed by OPC Client applications such as SCADA systems, DCS, MIS applications, etc.

- **OPC Client Interface** - The OPC Client interface provides connectivity to any third party OPC Server. Runtimes can communicate with any OPC Servers for motion controllers, temperature controls, etc.

- **Bundled Communications Drivers** – The integrated COMM Server includes communications drivers including serial and Ethernet drivers for the major controller brands.

- **ActiveX Automation** - Microsoft applications such as Excel, Access, VB or C++ programs can access data values, alarms, panels, and more via InteractX's Data Object Model using ActiveX Automation.

- **Multi-Language Support** – The Designer and Runtime can allow a single application to incorporate any number of languages. During Runtime the operators can change languages with the push of a button or as part of their user log on properties.

- **Integrated Tag Editor** - The Tag Editor shows all tags in an application with their controller address.

The following section provides the procedures to recover factory images to new CompactFlash cards or in the event that a CompactFlash becomes corrupted.

Recovering InteractX Images on EPX2 PowerStations

This section describes the steps required to recover a preconfigured Microsoft Windows Embedded Standard operating system and InteractX image created to specifically run on an EPX2 PowerStation, onto a CompactFlash card. Use this procedure when:

1) The user wishes to create a bootable InteractX image on a new CompactFlash card as a backup
2) The factory supplied CompactFlash card becomes corrupted or unusable

The method of restoring the Windows operating system with InteractX to a CompactFlash card involves using Acronis True Image OEM to copy the recovery image from a Parker USB Recovery flash drive to the CompactFlash card. The process begins with downloading the Acronis recovery image from the Parker website to a Parker USB Recovery flash drive and then using the included Acronis software to restore the image to a target CompactFlash card located within the PowerStation.

The downloaded recovery image is a large, single file named *91-026521-01 RevX.tib* where X is the current revision. The Parker USB flash drive contains the licensed Acronis True Image OEM software preinstalled and can be used to accept one or multiple downloaded *91-xxxxx-xx RevX.tib* recovery images configured specifically for the target hardware. Parker has adopted this technique to recover Microsoft Windows operating system images such as Windows XP, Windows Embedded Standard, Windows 7 and future operating systems to PowerStation embedded flash storage.

The following items are required to recover the Windows Embedded Standard operating system with InteractX preinstalled:

- A PC or laptop with a USB port and an active internet connection to obtain the *91-026521-01 RevX.tib* recovery image.
- A Parker USB Flash drive factory preconfigured with Acronis recovery software (Parker Model Number USB-08RCV, USB 8GB Recovery drive or larger).
- An EPX2 PowerStation with a valid Microsoft Windows Embedded Standard License label containing the 25 character Product Key affixed to the enclosure.
- A Parker 8GB CompactFlash card (Parker Model Number FLH-8192) supplied with the EPX2 unit.
- The EPX2 display driver for the particular model being recovered.   Note that the display drivers can be found on the recovered image in the C:\Parker\Drivers\Display directory.
- A USB mouse and keyboard

Complete the following steps:

1) Insert the Parker USB Flash drive containing the factory configured Acronis recovery software into a PC or laptop computer.

2) Using the web link on the EPX2 Utilities, Drivers & Documentation CD, download the preconfigured InteractX *91-026521-01 RevX.tib* file to the Parker USB Flash drive. The *91-026521-01 RevX.tib* file is a compressed image of the complete Microsoft Windows Embedded Standard operating system with InteractX HMI specifically configured to run on EPX2 PowerStations.

3) When the download is complete, remove the Parker USB drive from the PC or laptop. While the target EPX2 is unpowered, insert the USB drive into one of the two USB ports.

4) Connect a USB mouse to the remaining USB port.

5) Insert a blank or corrupted CompactFlash card into the EPX2 PowerStation.

6) Apply power to the EPX2.

7) Acronis True Image OEM recovery software will begin to load and requires **approximately 3 minutes to fully boot** from the USB Flash drive. Initially, the message *"Starting Acronis loader…"* will be displayed at the beginning of boot process. Be patient while Acronis installs and the screen flashes a couple times while the software loads. Recovering the operating system image to the target Compact Flash card will require the following steps:

   a. Once the Acronis True Image OEM environment is loaded and running, the following "Home" screen will be displayed. Click on the *"Manage and Restore"* selection as shown:
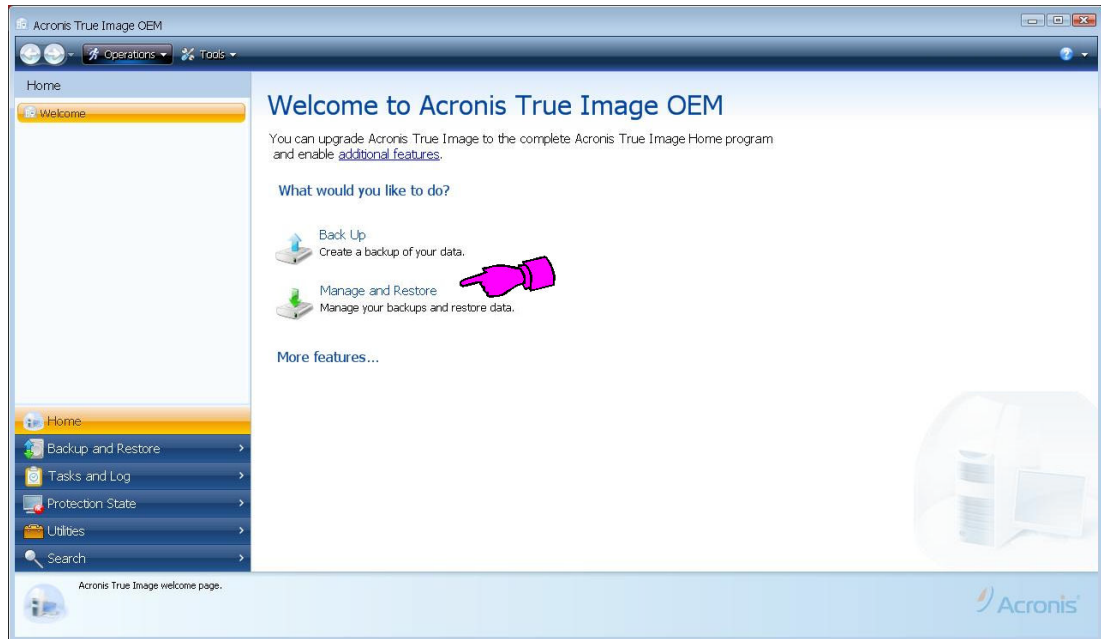
   b. To load the *91-026521-01 RevX.tib* file recovery image, click the *"Browse for backup..."* button. <u>There may a delay before the browser window appears.</u>
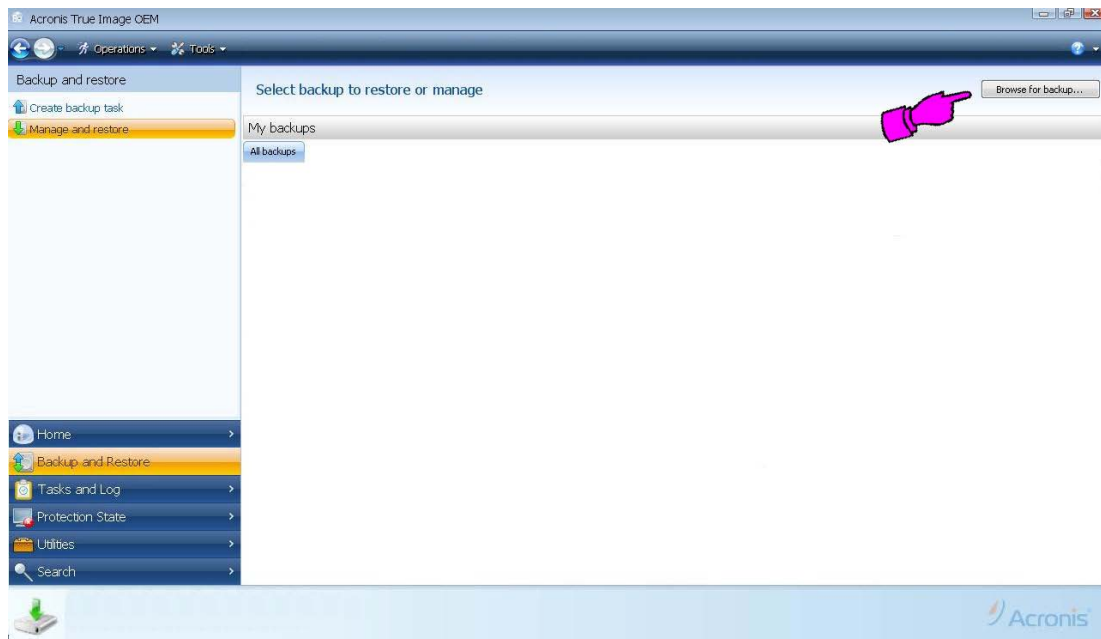
c. In the "Browse for Location" window, locate and select the *91-026521-01 RevX.tib* recovery image file that was downloaded and copied to the Parker USB drive in Step 2 above. Note that this image file will be located on the "Removable Drive". After selecting the file, click the **"OK"** button.

d. Now, carefully highlight the *91-026521-01 RevX.tib* file image to be restored by clicking on the image file. There may be multiple images if the USB drive has been used previously to restore other images.
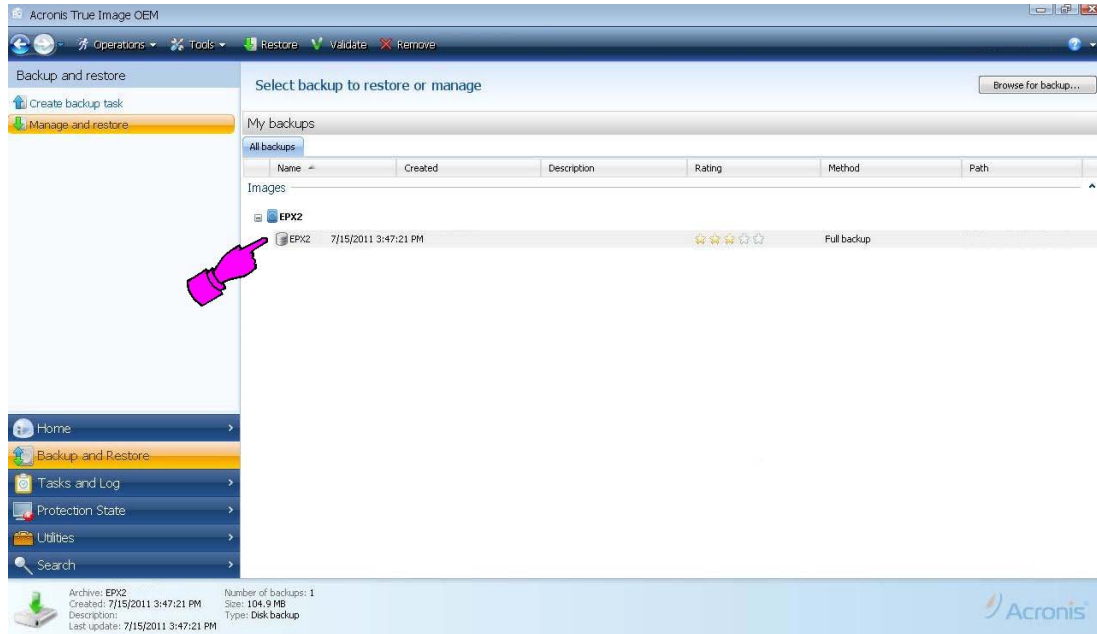
e. Next, click the **"Restore"** button located on the menu bar:
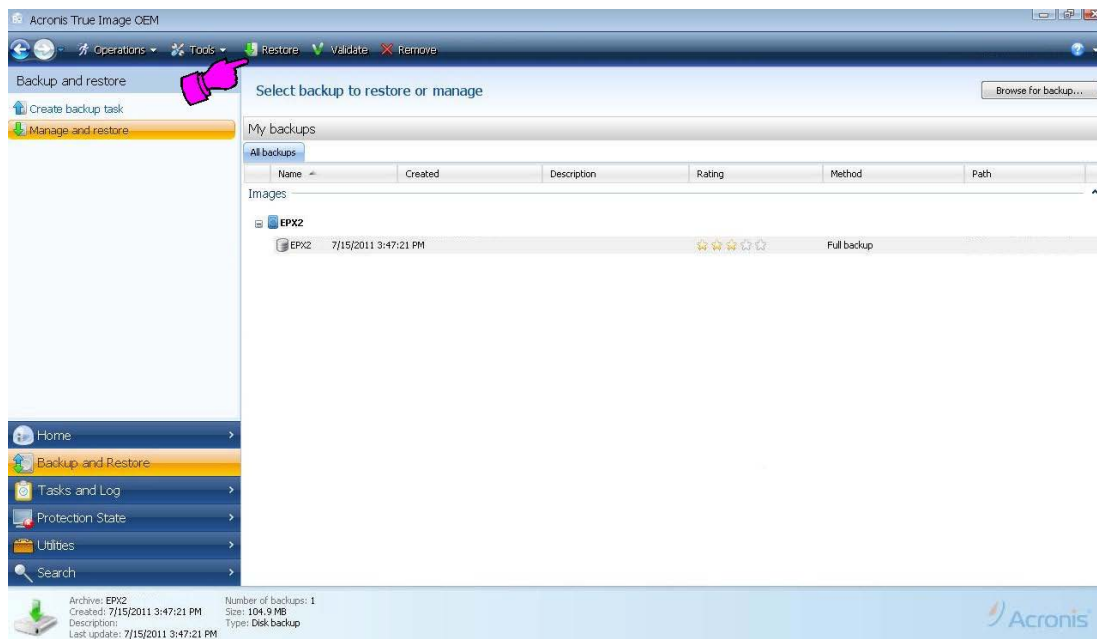
f. Select the Restoration Method, *"Restore whole disks and partitions"* and then click the *"Next"* button:
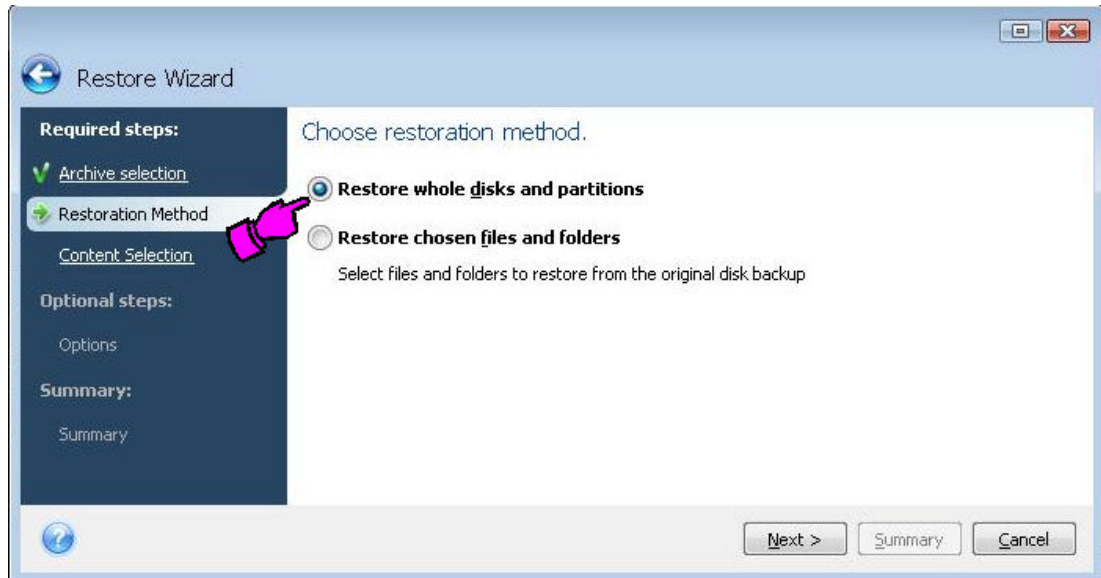
g. Now, select the items to be restored (be sure to select all items) and then click *"Next"*:
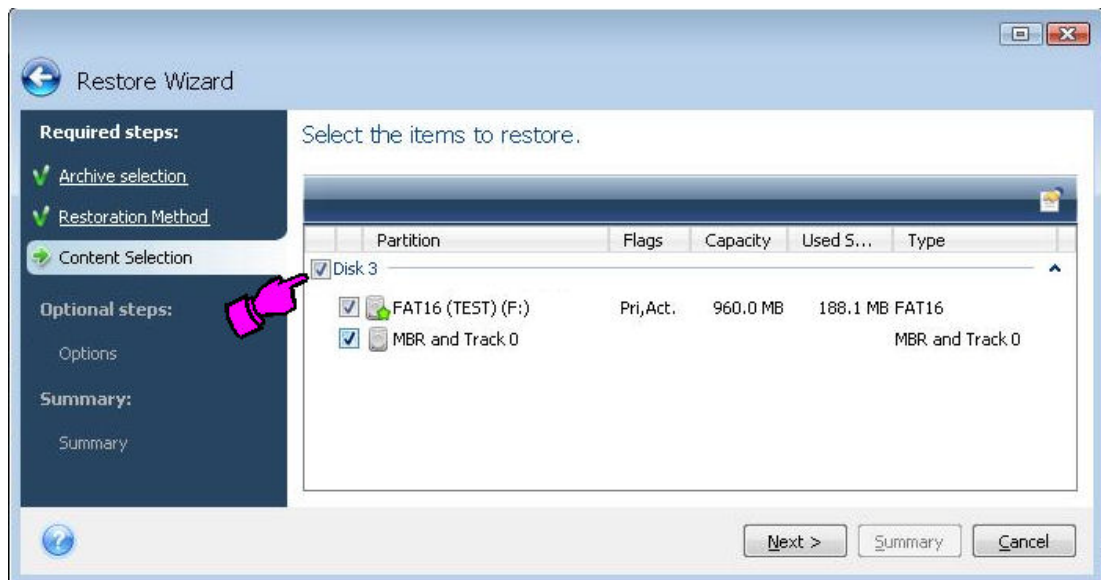
h. Select the target drive to be restored to, and then click *"Next":*
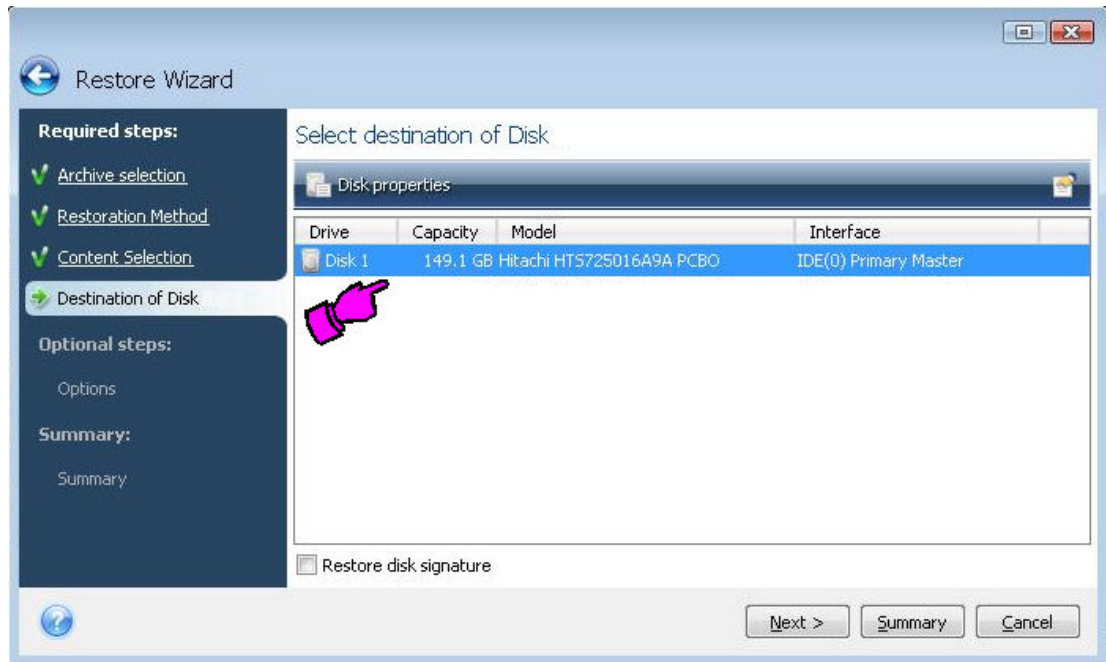
i. If the target drive is not blank and has any prior data on it, then the following message will appear. Click *"OK"*.

j. On the "Options" screen, no Additional settings are required, click *"Next"*.

k. On the "Summary" screen, click **"Proceed"** to recover the selected image to the target drive.

> ⚠️ **Important!** — After this point in the process, any data residing on the target recovery drive will be overwritten.
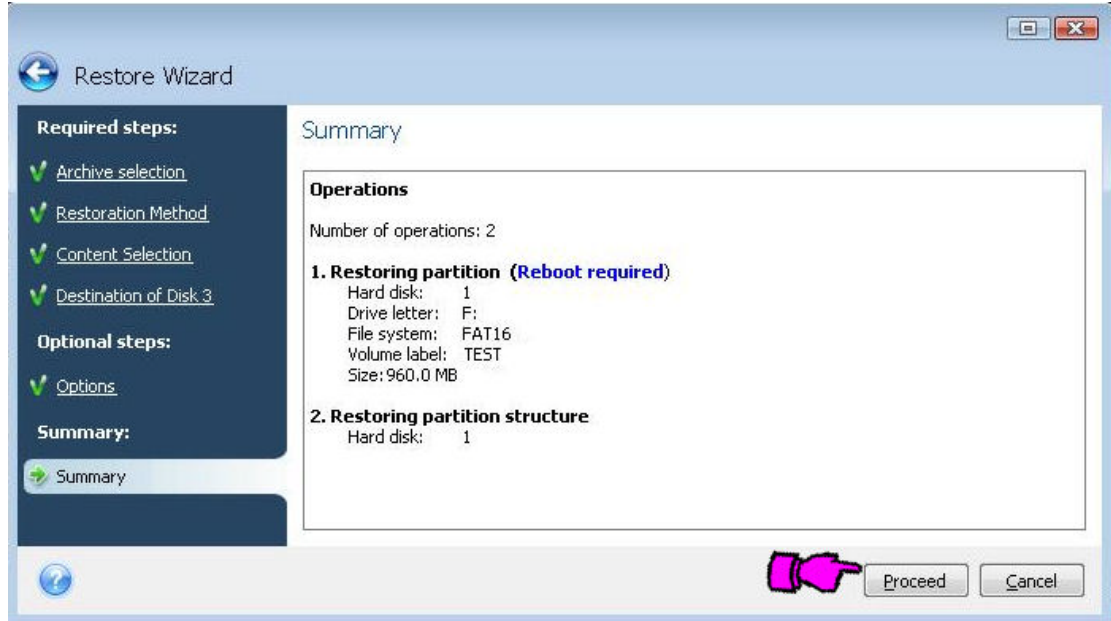
l. Progress bars will appear as the recovery image is copied to the target drive. This process will require 5-6 minutes to complete depending on the size of recovery image to be restored.

m. Once the *"Restore operation succeeded."* message appears, click **"OK"**.

n. Click the red **"X"** button in the extreme upper right corner of the screen to close Acronis. The PowerStation will automatically reboot. Ignore any error or warning messages that may appear.

> ⚠️ **Note** — During the reboot and at the moment of the reset beep, remove the USB drive from the system to prevent the Acronis Recovery software from executing again.

8) The removed Parker USB Flash drive can be used to restore additional XPC's or retained for future PowerStation CompactFlash card or hard drive recoveries. Attach a USB keyboard to the remaining USB port.

9) After the reboot, Microsoft Windows Embedded Standard will require several minutes to load for the first time. The first time the system is booted with this image, *"Please wait while Windows prepares to start"* message and then the message *"Resealing in progress…"* will appear as the Windows FBReseal utility assigns a unique computer name and security ID. The Resealing will take several minutes and afterwards, the system will settle onto the Windows desktop.

10) Depending on the particular display resolution incorporated into the target EPX2, the system must next be updated with the proper display driver. These drivers have been specially optimized to work with the variety of EPX2 displays. Refer to the following table to select the correct Display Driver Install File:

EPX2 Model	Display Resolution	Display Driver Install File
EPX200	1024 x768	Install Display Driver – Headless (00) .bat
EPX206	640 x 480	Install Display Driver – VGA (6, 8, 10 inch).bat
EPX208	640 x 480	Install Display Driver – VGA (6, 8, 10 inch).bat
EPX210	640 x 480	Install Display Driver – VGA (6, 8, 10 inch).bat
EPX215	1024 x768	Install Display Driver - XGA (15 inch).bat

To install the driver:

    a. Using the Windows File Explorer, locate the C:\Parker\Drivers\Display directory. Here, you will find the three *"Install Display Driver – xxxxxx.bat"* installation programs. Based on the chart above, double-click on the appropriate installation program based on the display resolution of the target EPX2.

    b. Allow the system a couple of minutes to install the driver (the Windows system command prompt will briefly appear during this step). Select *"Continue Anyway"* if prompted regarding the Windows Logo testing. The display may also flash a few times during the installation process.

Once the proper display driver has been installed, it may be necessary to adjust the display resolution and color depth to match the product display size by right clicking on the Windows desktop and then selecting *"Properties"* and then *"Settings"*.

11) Finally, it is important to recalibrate the touchscreen after restoring the operating system image by double-clicking on the "small finger on screen" icon in the tool tray next to the system time on the Windows desktop. This will invoke the Microchip TSHARC Control Panel. Next, select the *"Calibration"* tab and then press the *"Begin Calibration"* button to start the calibration procedure.

The user can now install third party applications and custom configure the unit for specific use.

Using the BIOS Utility

This section discusses how to use the BIOS utility on the EPX2 PowerStation. There are three instances in which you may need to use the BIOS utility program:

1. You wish to configure the serial port IRQ and base addresses.
2. You have an external device attached to the USB port such as an external USB drive, floppy drive, CD drive or hard drive and you wish to configure the boot order.
3. You would like to change the operation of the splash screen during boot.

Using the BIOS Utility

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 the *"F1"* key while the system splash screen displays to enter the BIOS setup utility.

When the BIOS utility is displayed, press a corresponding letter key or use the arrow keys to navigate through the menu. The following options are available:

- *Motherboard Device Configuration*
  Allows configuration of serial port IRQ and addresses.

- *Miscellaneous Configuration*
  Allows you to display a splash screen and/or a summary screen. The timeout field sets the time for how long the screen is displayed. The time is in milliseconds and goes from 0 to 65535. Enter a timeout interval and press the Enter/Return key.

- *Boot Order*
  Identifies the order in which devices are sequentially checked for a bootable image. The options are: Floppy Disk, Hard Drive, CD-ROM Drive and USB Floppy Disk. Use the arrow keys to select the order number and then press *"Enter"* to cycle through the options.

- *Load Defaults*
  Loads the default BIOS settings.

- *Save Values Without Exit*
  Saves the current BIOS settings without exiting the utility.

- *Exit Without Save*
  Exits the BIOS utility without saving any changes made.

- *Save Values and Exit*
  Exits the BIOS utility after saving any changes made.

MAINTENANCE

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 PowerStation's components.

Maintaining the Touchscreen

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. Refer to **Appendix A**, *Touchscreen Chemical Resistance*, for a list of substances the front surface of the PowerStation 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.

> **Caution** — Do **not** clean the unit while it is powered on and InteractX Runtime is active. Turn off the unit before cleaning it in order to avoid inadvertently activating the touchscreen.

Calibrating the Touchscreen

Calibrating the touchscreen ensures that finger touch inputs are aligned controls located on the display. The monitor's touchscreen is calibrated before leaving Parker however, you may need to recalibrate the touchscreen in certain circumstances, such as:

- Moving a CompactFlash card between EPX2 PowerStations
- After re-imaging the CompactFlash card
- When you replace the touchscreen
- Whenever the cursor does not follow the location where you touch the screen

Calibrating the Touchscreen on an EPX2 PowerStation

To calibrate the Microchip touchscreen controller on a Windows XP Professional operating system, complete the following steps:

1. Double-click on the "small finger on screen" icon in the tool tray next to the system time on the Windows desktop. This will invoke the Microchip TSHARC Control Panel.

2. Select the **"Calibration"** tab.

3. Press the **"Begin Calibration"** button to start the calibration procedure.

4. Press the center of the target area where the arrows are pointing and hold your finger there until prompted to release. The process guides you through the Touch - Hold - Release process.

5. Repeat this sequence three more times as directed.

6. When finished, a touch verification screen will appear. Move your finger across the screen and the target cursor should follow. If so, the calibration was successful.

7. Select **"Accept"**.

8. On the control panel, click the **"Apply"** button and then **"OK"** to complete the process.

Replacing the CompactFlash

At some point, you will probably need to remove the CompactFlash card from the EPX2 PowerStation flash socket for one reason or another. To do so, complete the following steps:

1. Turn off the EPX2 PowerStation.

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

2. Locate the ejector next to the CompactFlash socket as shown in the following figure:

Ejector Button

3. Push the ejector button two times, once to extend the button, then again to pop out the CompactFlash card.

4. Remove the CompactFlash card.

5. Carefully insert the new card, align the arrow on the card with the arrow on the EPX2 label.

6. Push the CompactFlash card into the slot until the card is securely seated in the socket. Do not force!

⚠ **Caution** — The CompactFlash card has an arrow near one edge that aligns with a matching arrow on the label of the EPX2 PowerStation. Insert the CompactFlash card so that the arrows line up and the card seats properly. **Do not** force the CompactFlash card while inserting it into the unit.

Internal Maintenance

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 PowerStation.

Electrostatic Discharge (ESD) Precautions

The PowerStation contains internal components that are sensitive to damaging electrostatic discharges (ESD). Before you open the system, be sure to follow these simple precautions to protect the PowerStation from ESD damage.

- Always turn off power to the PowerStation before opening. **Do not** touch any internal components while the system is on.

- Disconnect power before performing any internal maintenance or troubleshooting.

- Only handle PowerStation internal components 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 component in its anti-static packaging when it is not installed in the unit.

> **Warning** — Dangerous voltages may exist inside the EPX2 enclosure. Do not attempt to service the unit when power is applied.

Removing the PowerStation from an Enclosure

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

> **Warning – Explosion Hazard!** — In UL Hazardous Location environments and installations, DO NOT connect or disconnect cables unless the power has been switched off and the area is known to be safe.

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

Once the PowerStation has been removed from its enclosure, it can be opened. Follow the steps below.

1. Remove the CompactFlash card from its slot by pressing the eject button on the side of the PowerStation once to extend the button, and then again to eject the card.

2. Press in the eject button to return it to its retracted position.

3. Remove the backshell screws on the EPX2 PowerStation, similar to the figure shown below.
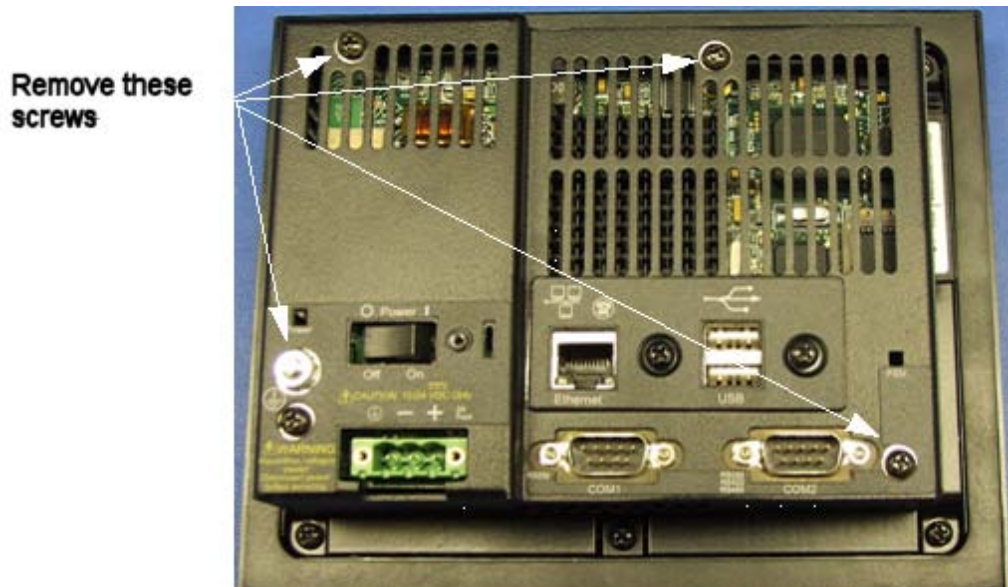
4. Carefully lift the backshell straight off to expose the unit internals.

You are now ready to perform any internal maintenance necessary.

⚠️ **Important:** When you lift the backshell off of the unit, one or both of the USB ground springs may slide off of the internal backshell tabs. Simply replace one or both by clipping them back onto the tabs, refer to the following figure.
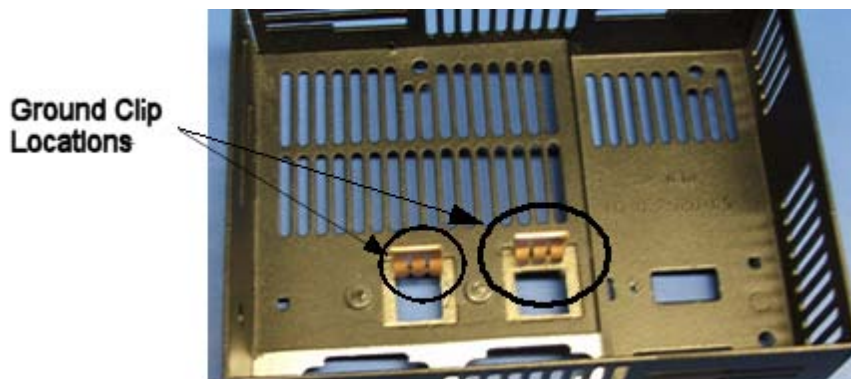
Closing the PowerStation

1. Ensure that the CompactFlash card is not inserted in the motherboard and carefully replace the backshell on the PowerStation.

2. Remount the PowerStation in the enclosure; refer to *Installing the PowerStation*.

3. Reconnect the following cables:

    • Power Input cable
    • Ground cable
    • any communication cables
    • any keyboard and mouse cables

4. Turn on the PowerStation

Replacing the Fuse

The EPX2 PowerStation has a protective fuse that you can replace by opening up the back cover. An ohm meter is required to see whether the fuse is still operational. The required replacement fuse is listed below.

• Use a Littelfuse Nano SMF Slow Blow Type fuse. The part number is R452 002.

⚠️ **Caution**— Using a fuse of a different rating can cause damage to the unit or fire to occur.

To replace the fuse, complete the following steps:

1. Remove the PowerStation from its enclosure discussed in *Removing the PowerStation from the Enclosure*.

2. Remove the back enclosure.

3. Locate the fuse on the board according to the picture below.

Fuse Location
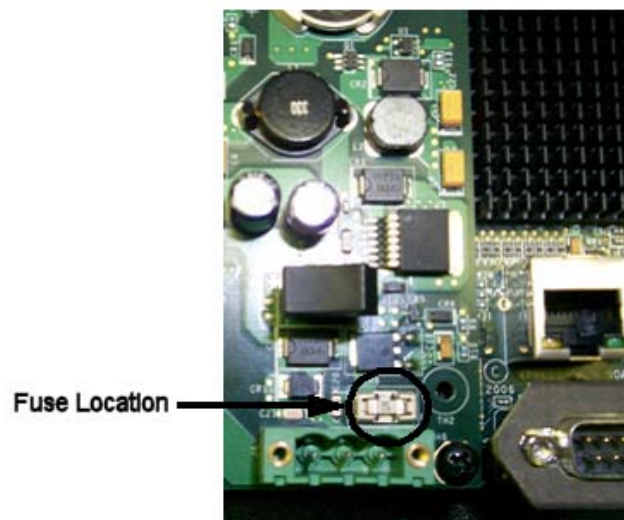
4. Using an ohmmeter, check continuity to see if the fuse is blown.

5. If necessary, insert a new fuse into the fuse holder and reassemble the unit.

APPENDIX A: POWERSTATION SPECIFICATIONS

This appendix outlines important specifications for the EPX2 PowerStation. It is a good idea to familiarize yourself with the specifications before operating the unit.

Physical Specifications

Physical specifications include the EPX2 PowerStation's CPU, memory specifications, display types, storage capacity, and other physical characteristics. These specifications are shown in the following table:

Physical Specifications

Category	Specification
CPU	• AMD LX800 CPU, 500MHz • 256KB L1 & L2 Cache
Memory	• Up to 1 GB DDR SDRAM Maximum • 400 MHz, PC 3200 • 200-pin SODIMM Socket
BIOS	• Insyde XpressROM
Storage	• 256MB - 8G CompactFlash cards supported • Accepts Type 1 and 2 CompactFlash cards

I/O Ports	• Two 9-pin serial ports (16550 compatible)
	    • One RS232
	    • One RS232/422/485 (configurable)
	• One RJ45 Ethernet connector;
	  Intel 82551ER 10/100 Base-T controller
	• Two USB 2.0 ports

Dimensions H x W x D	EPX200: 5.3"H x 6.1"W x 2.5"D EPX206: 6.0"H x 7.4"W x 3.0"D EPX208: 7.6"H x 10.2"W x 2.2"D EPX210: 11.0"H x 13.8"W x 3.2"D EPX215: 13.3"H x 16.8"W x 4.6"D
Weight	EPX200: 1.9 lbs / 0.85 kgs EPX206: 2.6 lbs / 1.16 kgs EPX208: 4.1 lbs / 1.86 kgs EPX210: 8.4 lbs / 3.81kgs EPX215: 13.8 lbs / 6.26 kgs
Keyboard	• USB keyboard only
Mouse	• USB mouse only
Touchscreen	• Analog Resistive
Audio	• Piezoelectric Beeper • AC97 stereo output, 0.125" mini plug

Display Specifications

Display specifications include the type of display, size, resolution, and other display properties. These specifications are shown in the following tables.

EPX206V 6" Display Specifications

Property	EPX206V Description
Type	Active Color TFT
Display Size (Diagonal)	5.7"
Resolution	VGA (640 x 480)
Brightness	350 NITS
Bulb Life (CCFL)	75,000 hours

Viewing Angle:
    Left/Right
    Up/Down
	$80^o/80^o$
	$80^o/70^o$

EPX208T 8" Display Specifications

Property	EPX208T Description	
Type	Active Color TFT	
Display Size (Diagonal)	7.5"	
Resolution	VGA (640 x 480)	
Brightness	400 NITS	
Bulb Life (CCFL & LED)	50,000 hours	

Viewing Angle:
    Left/Right
    Up/Down
	CCFL Backlights
	$70^o/70^o$
	$60^o/65^o$
		LED Backlights
		$80^o/80^o$
		$80^o/80^o$

Note— 8" EPX2 models shipped prior to January 1, 2012 likely contain CCFL backlights. Models after that date will have LED backlights.

EPX210T 10" Display Specifications

Property	EPX210T Description
Type	Active Color TFT
Display Size (Diagonal)	10.4"
Resolution	VGA (640 x 480)
Brightness	200 NITS
Bulb Life	50,000 hours

Viewing Angle:
   Left/Right
   Up/Down
	
	$70^o/70^o$
	$50^o/60^o$

EPX215T 15" Display Specifications

Property	EPX215T Description
Type	Active Color TFT
Display Size (Diagonal)	15.0"
Resolution	XGA (1024 x 768)
Brightness	250 NITS
Bulb Life	40,000 hours

Viewing Angle:
   Left/Right
   Up/Down
	
	$80^o/80^o$
	$80^o/60^o$

Environmental Specifications

Even though the EPX2 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 EPX2 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 the following table:

Environmental Specifications Table

Category	Specifications
Operating Temperature	32 to 122°F (0 to 50°C) Ambient (air temperature outside of backshell)
Storage Temperature	-22 to 176°F (-30 to 80°C)
Relative Humidity	0% to 95% non-condensing
Shock Rating	10g peak; 11ms (operating) 30g peak; 11ms (non-operating)
Operating Vibration	10-500Hz: 2 grms random
Environmental Design	Tested for UL NEMA Type 4X Indoor Use Only or NEMA Type 12 Environment

Note— This family of PowerStations is rated NEMA Type 4X Indoor Use Only or Type 12 only if it is installed in a NEMA 4X or Type 12 rated enclosure.

Electrical Specifications

The EPX2 PowerStation's power supply automatically detects the input voltage level and adjusts accordingly within its range of operation. However, always use reliable sources of power, and isolate all communication cables from AC power lines to enhance noise immunity.

If possible, locate the EPX2 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. Refer to the *Electrical Grounding Guidelines* section for further information.

The EPX2 PowerStation's electrical specifications appear in the following table:

Electrical Specifications Table

Category	Specifications

Input voltage	EPX200:
	EPX206:
	    12/24 Vdc @ 18W
	    (Range: min 11 VDC, 28 VDC max)
	
	EPX208:
	EPX210:
	EPX215:
	    24 Vdc @ 22W
	    (Range: min 18 VDC, 28 VDC max)

Fuse	Littelfuse Nano SMF Slow Blow Type fuse, part number R454 002.
Heat Dissipation	EPX200: 5.0 watts maximum EPX206: 5.8 watts maximum EPX208: 7.8 watts maximum EPX210: 8.0 watts maximum EPX215: 15.0 watts maximum

Caution — Do not apply AC input power, such as 115Vac line voltage, directly to the unit or damage will occur.

EMC Testing Specifications

The EPX2 PowerStation conforms to the testing specifications listed in the following table. The equipment conforms to the protection requirements of Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to Electromagnetic Compatibility when installed, operated and maintained as intended. It also conforms to the requirements of Council Directive 2006/95/EC (Low Voltage Directive) when installed, operated and maintained as intended. An EC Declaration of Conformity is available and can be provided by Parker when requested.

European Community Specifications

Test	Specification
Harmonic Current Limits	EN61000-3-2 (2006)
Fluctuations and Flicker	EN61000-3-3 (1995 including A1:2001 + A2:2005)
Electrostatic Discharge	EN61000-4-2 (1995 including A1:1998 + A2:2001)
Radiated Electromagnetic Field Immunity	EN61000-4-3 (1995 including A1:2002)
Fast Transient/Burst Susceptibility	EN61000-4-4 (2004)
Fast Surge Immunity	EN61000-4-5 (1995 including A1:2001)
Radio Frequency Common Mode Immunity	EN61000-4-6 (1996 including A1:2001)
Power Frequency Magnetic Field Immunity	EN61000-4-8 (1993 including A1:2001)
Voltage Dips and Interrupts Immunity	EN61000-4-11 (1994 including A1:2000)
Radiated & Conducted Emissions Group 1, Class A	EN61000-6-4 (EN55011:2007 including A2:2007)
Information Technology Equipment – Safety – Part 1	EN60950-1 (2001 First Edition)

Mechanical Testing Specifications

Test	Specification
Operating vibration	10-500Hz, 2.0 grms/MIL-STD-810F 514.3
Operating shock	10G, 11 msec /IEC-68-2-27/MIL-STD-810 516.3
Non-operational shock	30G, 11 msec /IEC-68-2-27/MIL-STD-810 516.3

Touchscreen Chemical Resistance

The touchscreen of the EPX2 PowerStation is resistant to the chemicals listed the following table.

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	

Note — Sustained exposure to automotive brake fluid or Gunk® brand degreaser can cause damage to monitor materials.

In addition, all EPX2 PowerStation front panel/bezel surfaces are resistive to the following chemicals:

Faceplate Chemical Resistance

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