

PowerStation

Model P1 Pentium User Guide

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Product Warranty Information

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

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

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

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Manual Overview and Support Services

Thank you for purchasing the P1 Pentium PowerStation. The P1 Pentium PowerStation is a rugged, compact PC that is designed to be used as an industrial operator interface.

The P1 Pentium PowerStation is available in two display configurations—a durable 6.4” full view touchscreen display in TFT color and a 5.7” 1/4 view touchscreen display in STN color. It also has an all-in-one PC board with a Parallel port, two Serial ports, and an Ethernet port. The P1 Pentium PowerStation’s PC architecture allows you to run CTC Parker’s MachineShop software.

Please take time to review this manual and the other documentation included with the P1 Pentium PowerStation before operating the unit.

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Using this Manual

This manual is designed to help you set up and use your P1 Pentium PowerStation. The manual lists the PowerStation's specifications and describes its replacement and optional components. It also explains how to install the unit, how to maintain the unit in good condition, and how to solve common problems that may occur in operation.

This manual is divided into the following chapters:

Chapter 1 — Manual Overview and Support Services: Presents an overview of this manual, the other documentation and software provided with the P1 Pentium PowerStation, and the steps necessary to get your P1 Pentium up and running. This chapter also describes CTC's customer support services.

Chapter 2 — Introducing the P1 Pentium PowerStation: Describes the P1 Pentium's specifications and the ports available to connect the P1 Pentium to other devices and to a power source. This chapter also describes the PowerStation's drive definitions, the memory map and the unit's replacement and optional components.

Chapter 3 — Installing the PowerStation: Explains how to install the P1 Pentium in a control enclosure and how to start up the unit.

Chapter 4 — Maintaining and Troubleshooting the PowerStation: Explains how to install replacement parts, how to maintain the P1 Pentium, and how to solve problems that may occur during operation.

Appendices—Reference Materials: Illustrates the dimensions and components of the P1 Pentium PowerStation. This section also includes a complete listing of the CONFIG.SYS and AUTOEXEC.BAT files.

Documentation Components

The P1 Pentium PowerStation documentation set contains all the information you need to configure, install, and use the P1 Pentium PowerStation. The P1 Pentium PowerStation documentation set is described below.

Release Notes - This document is provided whenever there is important information about the P1 Pentium PowerStation that does not appear in this manual. Be sure to read any available release notes before installing or operating the unit.

PowerStation Model P1 Pentium User Guide - This is the document you are reading. It provides detailed information about the P1 Pentium PowerStation and describes how to configure, install, and use the unit. Please read this manual in its entirety before operating the unit.

P1 Pentium PowerStation Template - This document is a full-size template of the P1 Pentium PowerStation that you can use to prepare the location where you want to install the unit.

Software Components

CTC Parker pre-loads each P1 Pentium PowerStation with the MS-DOS® 6.22 operating system, the MachineShop Shell, and necessary utilities so that you can run the PowerStation immediately upon its arrival at your facility. CTC Parker also provides backup copies of PowerStation and MachineShop software on the MachineShop Installation CD shipped with the PowerStation.

Getting Started

Now that you have opened the PowerStation package, you are ready to unpack the unit, develop an application, and install the P1 Pentium in a permanent location. This section provides an overview of these activities. Additional information is available in the remaining chapters of this manual.

Before You Begin

Before you begin operating the PowerStation, please complete the following steps:

1. Unpack the PowerStation, and verify that you have received all the components you ordered.
2. Fill out the product registration card, and return it to CTC Parker. When you register your unit, you will receive a trial membership in CTC Parker's Product Support Program, which provides complimentary telephone technical support, information on product updates, and service bulletins.

3. Backup the CTC software that was pre-installed on your unit using the Windows® File Manager/Explorer or the MS-DOS Diskcopy command.

Installing the PowerStation

When you finish unpacking the PowerStation and developing an application, you are ready to install the unit in a permanent location. See *Installing the PowerStation* on page 29 for complete installation instructions.

Downloading Applications and Projects

The P1 Pentium PowerStation is a runtime-only system, which means that you must develop your applications and projects on a development PC and download the application to the PowerStation.

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

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

Documentation Standards

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

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

ISO Symbols

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



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

Customer Support Services

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

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

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

- Customer Technical Support
- Technical Support Products
- Product Support Program

Product Technical Support

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

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

1. Check any release notes shipped with the unit. These notes provide important information about the PowerStation.
2. Consult the PowerStation documentation and other printed materials included with the PowerStation.

3. Review Chapter 4 of this manual, *Maintaining and Troubleshooting the P1 Pentium* on page 37.

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

Technical Support Products

Our Technical Support Products department provides service in two areas: training and consulting. CTC Parker offers training on all of our products at the CTC Parker state-of-the-art training center or if you prefer, at your site. Learn how to write custom interfaces, develop specialized applications, and implement your complete operator interface application. Call the Training Coordinator at 1-800-233-3329 or send an email to training@ctcusa.com.

CTC Parker offers consulting services through our Professional Consulting Services (PCS) group. Our PCS group can build your application from the ground up by writing custom communications drivers or by designing special modules to perform functions unique to your application. Our team of specialists is flexible, so they can create a project development schedule that meets your needs. You can contact the PCS Coordinator by phone at 1-800-233-3329 or by email at pcs@ctcusa.com.

Product Support Program

Our Product Support Program (PSP) is designed to keep you up-to-date with the current versions of CTC Parker software. The PSP consists of a renewable, one-year membership that provides you with free upgrades, utilities, automatic notification of software updates, and other valuable tools for MachineShop, Interact, and MachineLogic.

CTC provides three different license agreements through PSP: single-user, site, and corporate licenses. The PSP is an easy, cost-effective way to automatically receive the most recent CTC Parker software and associated utilities. To join, contact the PSP Coordinator by phone at 1-800-233-3329 or by email at psp@ctcusa.com.

Introducing the P1 Pentium PowerStation

The P1 Pentium PowerStation is designed to give you an operator interface solution that is powerful, cost-effective, and very easy to use.

In this chapter, you will learn about the PowerStation's specifications and available connectors, its drive definitions and memory map, and its PC/104 adapter. The chapter also describes the PowerStation's replacement and optional components.

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Specifications

This section describes important specifications for the P1 Pentium PowerStation. Please familiarize yourself with these specifications before operating the unit.

Physical Specifications

Physical specifications include the PowerStation's CPU, memory specifications, display types, storage capacity, and other physical characteristics. These specifications are shown in *Table 2-1: Physical Specifications*.

Category	Specifications
CPU	Pentium® MMX 166 MHz Processor Intel 82430TX chipset
Memory	144 Pin S0-DIMM for SDRAM <ul style="list-style-type: none"> • Min. 16 MB • Max 64 MB
L2 Cache	512 KB SRAM cache
Displays	<ul style="list-style-type: none"> • Color TFT, 640x480 Full VGA, 256 colors • Color STN, 320x240 1/4 VGA, 256 colors*
BIOS	AMI 256KB Flash memory
Storage	8, 10, 20, 40MB solid state flash drive (field expandable and replaceable). Actual storage volumes may be higher depending on manufacturer availability.
I/O Ports	<ul style="list-style-type: none"> • 2 9-pin serial ports (16550 compatible) <ul style="list-style-type: none"> • 1 9-pin RS232 • 1 9-pin RS232/422/485 • 1 25-pin IBM parallel port • 1 Microsoft® PS/2 keyboard/mouse • 1 RJ45 Ethernet connector; Intel SB82559 10/100 Base-T controller
PC/104 Bus Extension	Supports a 16-bit PC/104 subset <ul style="list-style-type: none"> • +5V @ 1.25 A • +12V @ 100 MA <p>Note: -5V and -12V are not supplied.</p>

Table 2-1: Physical Specifications

Category	Specifications
PC/104 Cover Dimensions	<ul style="list-style-type: none"> • Single: 4.1" (104mm) x 4.4" (112mm) x 1.25" (32mm) • Double: 4.1" (104mm) x 4.4" (112mm) x 1.65" (42 mm) • Triple: 4.1" (104mm) x 4.4" (112mm) x 2.25" (57mm)
Dimensions H x W x D	8.7" (221 mm) x 6.3" (160mm) x 3.25" (82.5 mm)
Weight	3.26 lbs. (1.48 Kg)

Table 2-1: Physical Specifications

* For the Color STN display, set the Display Color to Color on the Run Mode Display tab in the Interact Settings dialog box.

Environmental Specifications

Even though the P1 Pentium 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 PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure.

The P1 Pentium PowerStation conforms to the environmental specifications listed in *Table 2-2: Environmental Specifications Chart*.

Category	Specifications
Operating Temperature	32 to 122°F (0 to 50°C) ambient (air temp. at case)
Storage Temperature	-4 to 140°F (-20 to 60°C)
Relative Humidity	0% to 95% non-condensing
Shock Rating	<ul style="list-style-type: none"> • 10g peak; 11ms (operating) • 30g peak; 11ms (non-operating)
Operating Vibration	• 5-500Hz: .5G RMS random
Faceplate Design	NEMA 4/4X Environment Warning: The PowerStation is rated NEMA 4 only if it is installed in a NEMA 4-rated enclosure.

Table 2-2: Environmental Specifications Chart

Electrical Specifications

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.

If possible, locate 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.

The PowerStation's electrical specifications appear in *Table 2-3: Electrical Specifications Chart*.

Category	Specifications
Output rating	30W
Input voltage	18-28 VDC
Output voltage	+5V@4A +12V@0.5A Note: -5V and -12V are not supplied.

Table 2-3: Electrical Specifications Chart

Testing Specifications

The PowerStation conforms to the testing specifications listed in *Table 2-4: Testing Specifications Chart*.

Test	Specification
Showering arc	NEMA showering arc
Surge withstanding capacitance	IEEE 472-1974
ESD requirements	IEC 801-2
Operating temperature	IEC 68-2-1
Electrical fast transient	IEC 801-4
Operating vibration	IEC 68-2-6
Mechanical shock	IEC 68-2-27
Random vibration	MIL-STD-8100

Table 2-4: Testing Specifications Chart

Faceplate Chemical Resistance

The touchscreen of the PowerStation is resistant to the chemicals listed in *Table 2-5: Chemical Resistance Chart*.

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

Table 2-5: Chemical Resistance Chart

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

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

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

Available Connectors

The P1 Pentium PowerStation includes many of the same ports found on most PCs. All P1 Pentium PowerStations have two serial ports, a parallel port, a PS/2 keyboard/mouse port, an Ethernet port, and a Compact Flash connector. See *Appendix B: P1 Pentium Components* on page 71 for dimensional drawings and a diagram to locate the components.

Serial Ports

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

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

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

Note If you are 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).

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

Settings and Pinouts for COM1 and COM2

If you need to make a cable for communicating with COM1, *Table 2-6: COM1 Pinouts* shows the pinouts and signal information for this port.

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

Table 2-6: COM1 Pinouts

If you need to make a cable for communicating with COM2, *Table 2-7: COM2 Pinouts* shows the pinouts and signal information for this port.

Pin#	RS-232 Signal	RS-422 Signal	RS-485 Signal
1	DCD, data carrier detect	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	DTR, data terminal ready	RXD-, received data -	RXD-, received data -
5	Signal ground	Signal ground	Signal ground

Table 2-7: COM2 Pinouts

6	DSR, data set ready	DSR, data set ready	DSR, data set ready
7	RTS, request to send	RTS, request to send	RTS, request to send
8	CTS, clear to send	CTS, clear to send	CTS, clear to send
9	RI	RI	RI

Table 2-7: COM2 Pinouts

If you need to make a cable for communicating with COM2, you may need to set the DIP switch settings.

COM2 is set to the RS-485 protocol by default. To change COM2 to the RS-232 or RS-422 protocol, you must change the COM2 DIP switch settings.

The DIP switch for COM2 is located on the back of the PowerStation Unit, as shown in *Figure 2-1*.

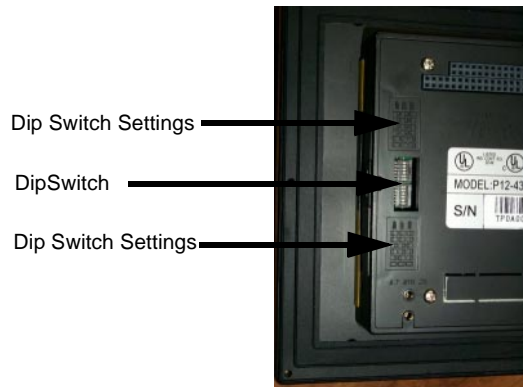


Figure 2-1 COM2 Dip Switch Cutout and Settings

Figure 2-2 displays the settings for the COM2 port. A similar diagram is located on the back of the PowerStation next to the DIP switch cutout.

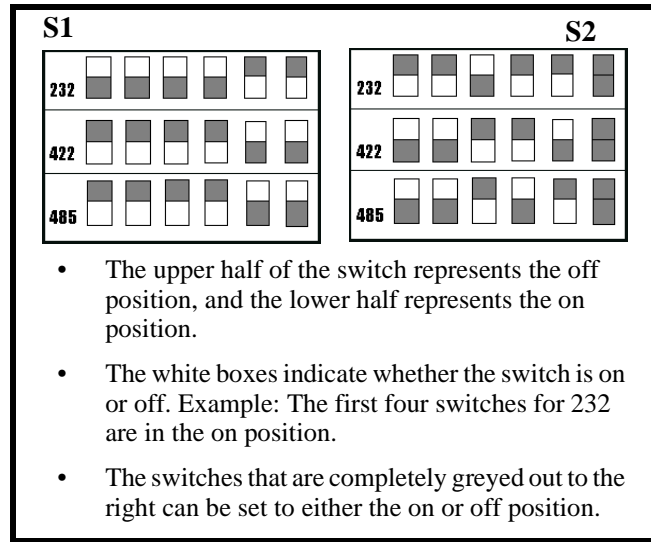


Figure 2-2 Dip Switch Settings

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

1. Choose the appropriate DIP switch settings from the diagram displayed on the back of the PowerStation or from *Figure 2-2*.
2. Using a pointed instrument such as a pen or pencil, flip the switches to the appropriate settings through the viewing window.

Figure 2-3 displays the pinouts and cable settings required for communicating with COM1 or COM2 using the RS-232, RS-422 or the RS-485 protocol.

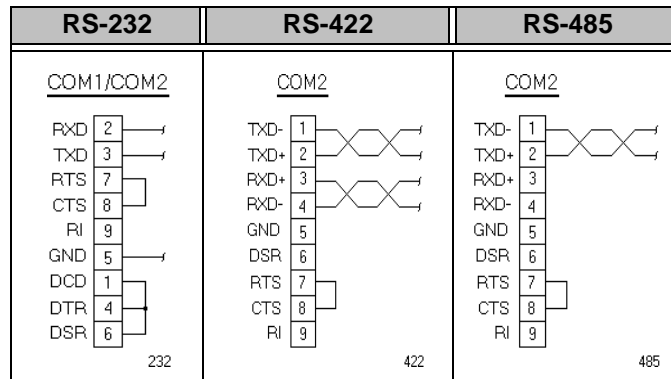


Figure 2-3 Pinouts and Cable Settings

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

Transferring Files from a PC to the PowerStation

You can transfer files from a PC to the PowerStation in one of three ways—through the Ethernet, the Compact Flash, or a Serial Transfer. If you plan to use a Serial Transfer, you will need a null modem. To construct your own cables, refer to Figure 2-4 for the appropriate settings. Then continue with step 1 below:

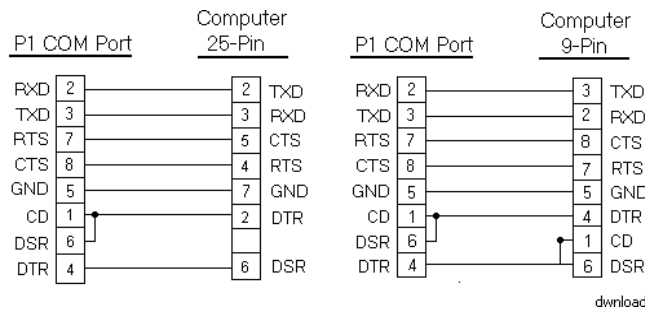


Figure 2-4 Serial Transfer Cable Diagram

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

Connecting a Serial Mouse

If you need to connect a serial mouse to the PowerStation, you must check the TCP/IP settings to ensure that TCP/IP is not already using the port. If TCP/IP is already using the COM port that you would like to use for the mouse, complete the following steps:

1. Select Settings from the MachineShop Shell Main Menu.
2. Select TCP/IP from the Settings menu to configure the TCP/IP settings.
3. Select NET SETUP from the TCP/IP Setup menu to configure the network interface.
4. Select the Net button that is configured to use the COM port from the TCP/IP Network Setup menu.
5. Select PORT ADDRESS from the Net submenu.
6. Define the COM port as appropriate.
COM1=3F8, COM2=2F8
7. Select the IRQ button from the Net submenu.
8. Enter the hardware IRQ for the COM port as appropriate.
COM1=4, COM2=3
9. Exit the NetSetup menu.
10. Exit the TCP/IP Setup menu.
11. If the Serial Mouse is not already connected to the PowerStation, connect it now.
12. Reboot the workstation.

Connecting to a Serial Printer

When connecting a serial printer to the PowerStation, you will need to prepare the serial port for the printer. First you will need to adjust the mode settings to the settings on the printer. See *To Adjust the Mode Settings* below.

If you plan to print to a serial port that was configured for downloading, you will need to reconfigure the serial port. See *To Print to a Port Configured for Downloading* on page 20.

To Adjust the Mode Settings

To connect a serial printer to the PowerStation, you must change the mode settings for one of the serial ports to match those of your printer. The easiest way to change these settings is to use MODE.COM. MODE.COM can modify the following options:

baud: 110, 150, 300, 600, 1200, 2400, 4800, 9600

parity: N - none, O - odd, E - even

databits: either 7 or 8

stopbits: either 1 or 2

CTC Parker includes MODE.COM on the PowerStation's Compact Flash card and the MS-DOS installation CD shipped with your PowerStation.

Figure 2-5 illustrates the appropriate settings for the P1 Pentium COM Port and the Serial Printer Connector with hardware handshaking and without hardware handshaking.

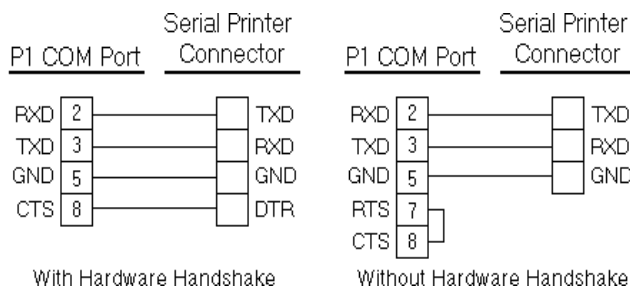


Figure 2-5 Serial Printer Cable Diagram

Use Figure 2-5 as a reference when connecting a serial printer to the PowerStation. Then complete the following steps:

1. From the Windows desktop, open the Startup directory within Interact project:

```
C:\Machshop\Projects\Interact\*Project Name*\Startup\
```

Important Be sure to replace the pound sign with the appropriate port number when completing the next step.

2. Within the Startup folder, create a new AUTOEXEC.BAT file with the following line.

```
MODE COM#:baud,parity,databits,stopbits
```

Example If you are communicating at 9600, NONE, 8, and 1, use:

```
MODE COM1: 9600,N,8,1
```

3. Launch the MachineShop Toolbar.

Note When you download the project containing AUTOEXEC.BAT and MODE.COM from your development system to the PowerStation, MachineShop transfers the AUTOEXEC.BAT file you created in step 2 and MODE.COM into the \STARTUP directory specified by the INTERACT_STARTUP environment variable. This environment variable resides in the PowerStation's AUTOEXEC.BAT file.

4. Download the project.

Note When MachineShop finishes the download, a prompt will display asking whether you want to restart the computer.

When you restart, MODE.COM will configure the COM port to the required baud rate.

5. Restart the PowerStation.

To Print to a Port Configured for Downloading

If you plan to print to a port that is configured for downloading, you will need to reconfigure the port before you can print to it. To reconfigure the port, complete the following steps:

1. Disable downloading for that port.

2. Restart the PowerStation.

Note Restarting the PowerStation allows MODE.COM to reset the communication settings for that port.

3. Select Settings from the Main Menu.
4. Choose TCP/IP from the selections displayed.
5. Select Net Setup from the menu.

Important The configuration may already be set to Download Only. If not, continue with step 6. Otherwise, skip to step 8.

6. Depending on how your PowerStation is configured, select the appropriate Net (Net 1, Net 2, or Net 3).
7. Choose Download Only from the options displayed.
8. Continue to Back out until you reach a prompt that indicates the TCP/IP configuration has changed and asks whether you want to Reboot.
9. Choose Yes to reboot the PowerStation. This will save your changes.

Parallel Port

The PowerStation parallel port (LPT1) pinout is identical to the standard IBM parallel printer port. The LPT1 connector pinout is shown in *Table 2-8: Parallel Port Pinout*.

Pin #	Signal Name
1	- STROBE
2	DATA 0
3	DATA 1
4	DATA 2
5	DATA 3
6	DATA 4
7	DATA 5
8	DATA 6
9	DATA 7
10	- ACKNOWLEDGE

Table 2-8: Parallel Port Pinout

Pin #	Signal Name
11	BUSY
12	PAPER EMPTY
13	SELECT
14	- AUTO FEED
15	- ERROR
16	- INIT. PRINTER
17	- SELECT INPUT
18-25	- GROUND

Table 2-8: Parallel Port Pinout

Connecting to a Parallel Printer

The PowerStation can interface with any parallel printer designed for use with IBM PC-compatible computers. Connect a printer to the port marked LPT using a standard IBM-PC parallel cable.

Keyboard/Mouse Port

The 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. Connect the keyboard to the PowerStation using the supplied keyboard adapter cable.

Important PC/XT keyboards will not function with the P1 Pentium PowerStation.

Connecting a PS/2 Mouse

If you prefer to use a mouse instead of the touchscreen, CTC Parker recommends that you only use a Microsoft PS/2-style mouse with the supplied keyboard adapter cable. This adapter cable allows you to connect a PS/2 mouse and a keyboard to the PowerStation simultaneously.

CTC has found that some Microsoft-compatible PS/2 mice do not work correctly with the PowerStation. In addition, connecting any mouse directly to the keyboard port will cause the mouse to malfunction.

Ethernet Port

The PowerStation has an Ethernet RJ45 port with an Intel SB82559 10/100 Mbps base-T controller that allows you to connect the PowerStation to a Local Area Network.

This port supports all major network operating systems. See *Table 2-9: Ethernet Pinouts*. Consult the manual that came with your network software for setup options.

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

Table 2-9: Ethernet Pinouts

Compact Flash

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

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

PC/104 Bus Expansion

The PowerStation comes equipped with a PC/104 bus expansion, which allows you to connect PC/104 I/O cards to the back of the unit for communicating with the ISA bus. See *Installing a PC/104 Card* on page 40 for complete instructions on how to install one of these cards on your PowerStation.

Drive Definitions and Memory Map

Table 2-10: *Compact Flash Definitions* provides information about the P1 Pentium PowerStation's drive definitions.

Drive Letter	Type	Size	Use
C	Compact Flash (CF) Card (Read/Write)	8, 16, 32, 48, 96, 128MB*	System start drive and Project disk. Stores the project, system files, MachineShop, and applications. Download files to this drive.

Table 2-10: Compact Flash Definitions

* Actual storage volumes may be higher depending on manufacturer availability.

P1 Pentium PowerStation Memory Map

Figure 2-6 illustrates how the P1 Pentium PowerStation allocates conventional memory and extended memory. The range of address references is listed next to each device with the exception of the extended memory. The way the extended memory stacks depends on the amount of memory ordered.

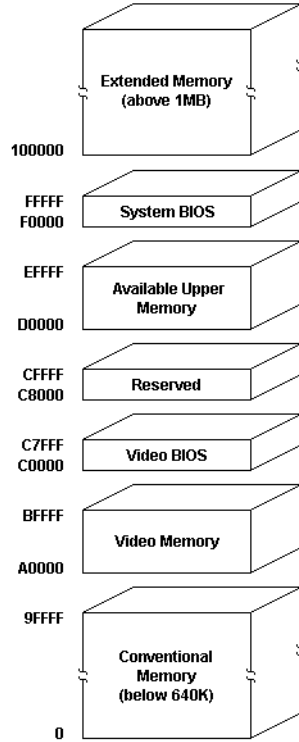


Figure 2-6 Memory Map

Memory Guidelines

If you are using MachineShop to develop your HMI applications, refer to the memory guidelines listed below when you develop projects.

Table 2-11: Storage Capacity lists guidelines concerning the capacity and use of memory for runtime and development systems.

Storage Type	Capacity and Use
System SDRAM	16MB standard; upgradable to 64MB.
Compact Flash	8MB flash memory can store APM, PTM, AMM, plus four additional runtime modules, two drivers, and approximately thirty screens. Extra modules require more storage (four modules/MB). Up to 1MB is needed to store MachineLogic applications.

Table 2-11: Storage Capacity

Replacement Components

The P1 Pentium PowerStation is designed to be a simple yet reliable unit to maintain. However, if you need to purchase replacement components for the PowerStation, CTC Parker carries a complete line of replacement components.

Compact Flash Card

If you need additional storage capacity for the P1 Pentium PowerStation, you can purchase additional Compact Flash cards from CTC Parker. CTC Parker recommends that you purchase at least one additional flash card to serve as a backup for your primary CF. See *Using the Compact Flash Card* on page 50 for instructions on how to replace and reformat CF cards.

SDRAM

If you need to upgrade or replace the P1 Pentium PowerStation's SDRAM, CTC Parker carries replacement SDRAM (S0-DIMM). The P1 Pentium PowerStation comes with a 16MB 144-pin S0-DIMM for SDRAM, but you can replace that module with either a 32MB, 64MB or 128MB 144-pin SDRAM for greater capacity. To replace the SDRAM, you will need to send the PowerStation to CTC Parker Automation's repair center. See *Customer Support Services* on page 5.

Touchscreen

Occasionally, you may find that you need to replace the PowerStation's touchscreen, depending upon the environment in which you are operating the P1 Pentium PowerStation. Replacement kits are available through CTC Parker Automation. See *Customer Support Services* on page 5 to order the kit.

Backlight Bulb

The PowerStation's backlight bulb has an average life expectancy of 10,000 hours. If you need to replace the backlight bulb, you will need to send the PowerStation to CTC Parker Automation's repair center. See *Customer Support Services* on page 5.

Display Unit

The display unit houses the VGA display, the backlight bulb, all circuitry for the VGA display and the connecting cables. Should you ever need to replace this assembly, a replacement kit is available through CTC Parker Automation. See *Customer Support Services* on page 5 to order the kit.

Replaceable Fuse

The P1 Pentium PowerStation has a protective fuse. You can easily install a new one without removing the back cover from the PowerStation. See *Replacing the Fuse* on page 39 for complete instructions.

Optional Components

CTC Parker carries two optional components that you may wish to purchase for the PowerStation—an AC Power Supply and PC/104 cards.

AC Power Supply

The P1 Pentium PowerStation uses DC power to save space and limit the amount of heat generated by the unit. However, if you require the PowerStation to use AC power, you can purchase an AC Power Supply kit that includes an AC Power Supply and a power cord.

You can also purchase mounting brackets for the Power Supply. *Preparing a Location for the AC Power Supply* on page 33 for instructions on how to mount the AC Power Supply.

PC/104 Cards

The P1 Pentium PowerStation is outfitted with a 16 bit PC/104 expansion bus for communicating with an 8 bit or a 16-bit PC/104 card. Additional cards are available through CTC Parker. See *Installing a PC/104 Card* on page 40 for instructions on how to install one of these cards on your PowerStation.

Installing the PowerStation

You are now ready to install the P1 Pentium PowerStation in a permanent location. This chapter will help you select an appropriate location for the unit. It also provides instructions for creating a cutout for the unit, and describes how to install and start up the unit.

Chapter Contents

<i>Selecting a Location</i>	30
<i>Preparing for Installation</i>	32
<i>Installing the PowerStation</i>	34
<i>Starting Up the PowerStation</i>	35

Selecting a Location

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 can affect the PowerStation's performance, ease-of-use, and life-expectancy. This section provides some guidelines that you should follow when selecting a location for the PowerStation.

Class I, Division 2 Guidelines

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

1. Suitable for use in Class I, Division 2, Groups A, B, C, and D hazardous locations only.
2. **Warning: Explosion Hazard**—Do not disconnect equipment, or replace or insert cards unless power has been switched off, or the area is known to be non-hazardous.
3. **Warning: Explosion Hazard**—Substitution of components may impair suitability for Class 1, Division 2.
4. Make sure that the PowerStation's power cord is always secured to the unit using the supplied L-bracket.
5. When performing field wiring, always use copper wire with 60C or 60/75C insulation and a tightening torque of 7.0 lb/in. (0.79 N-m).

Environmental Guidelines

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

Touchscreen Considerations

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

The PowerStation's touchscreen is resistant to a variety of chemicals. See *Faceplate Chemical Resistance on page 12* for a list of these chemicals. Make sure that the touchscreen is not exposed to chemicals other than those listed in *Faceplate Chemical Resistance on page 12*.

Electrical Guidelines

To minimize unwanted electrical interference, select a location away from machinery that produces intense electrical noise. If you cannot do

this, isolate input power to the unit and separate all data communication cables used with the unit from AC power lines.

Important 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.

See *Electrical Specifications* on page 10 for a list of the PowerStation's electrical specifications. Make sure that your power source is compatible with the PowerStation before starting the unit.

Field Terminal Wiring Requirements

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

Temperature Guidelines

You can safely operate the PowerStation within the temperature range specified in *Environmental Specifications* on page 9. However, if you are using a protective enclosure, remember that the temperature within an enclosure is generally higher than the external temperature. If the PowerStation is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure.

Enclosure Guidelines

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

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

Backlight and Touchscreen Accessibility Guidelines

Occasionally, you may need to replace the PowerStation's backlight bulb or touchscreen. The PowerStation is designed to allow you to replace both of these parts while the unit is mounted. However, to do so, you will have to mount the unit so that the area surrounding the PowerStation's faceplate is completely unobstructed.

AC Power Guidelines

You will need to read the AC Power Guidelines only if you intend to operate the PowerStation using AC power. If you intend to operate the PowerStation using DC power, skip to *Preparing for Installation* on page 32.

The P1 Pentium PowerStation ordinarily uses DC power. However, you can operate the PowerStation with AC power by using an optional AC Power Supply available from CTC. If you purchased the optional AC Power Supply, you must 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.

Preparing for Installation

Once you select a location for the P1 Pentium, you will need to create a cutout for the unit.

If you plan to operate the P1 Pentium using AC power, and you purchased CTC's optional AC Power Supply, you will need to prepare a location for the Power Supply also.

Procedures for creating the cutout and preparing a location for the AC Power Supply are described below. If you already have an appropriate cutout and are using DC power, continue with *Installing the PowerStation* on page 34.

Creating the Cutout

The PowerStation comes with a template that is designed to simplify the task of creating a cutout for the unit. Be sure to follow the cutout dimensions on the template precisely so that the PowerStation will properly seal in its enclosure.

Create a Cutout

To create the cutout, complete the following steps:

1. Attach the template securely to the mounting surface.
2. Cut out the shaded area on the template referred to as the "Panel Cutout Area." To maintain the flatness of the mounting surface, CTC recommends that you **cut** the Cutout Area rather than punch it out.
3. Debur the edges of the cutout area, removing dirt and debris that might come in contact with the unit.
4. Ensure that the mounting surface remains flat and the panel surface is clean and free of foreign materials.
5. See *Appendix A: Dimensional Drawings on page 68* for the depth and port dimensions of your PowerStation. Use these dimensions to customize the mounting of your unit.

**Preparing a Location
for the AC Power
Supply**

You will need to read *Preparing a Location for the AC Power Supply* only if you intend to operate the PowerStation using AC power. If you plan to use DC power, proceed to *Installing the PowerStation* on page 34.

If you plan to operate the PowerStation with AC power, and you purchased CTC's optional AC Power Supply and the mounting kit, use the template that came with the mounting kit to prepare a location for the power supply. You can prepare a location for the power supply inside or outside the enclosure where the PowerStation is installed.

Note If you decide to mount the Power Supply in an enclosure, mount it on the bottom or the side of the enclosure to provide the best convection cooling.

Prepare the Power Supply Mounting Surface

To prepare the mounting surface, complete the following steps:

1. Securely attach the template to the mounting surface.
2. Drill and debur four 0.17" (4.3mm) holes.

Installing the PowerStation

Once you prepared the location for the PowerStation, you can install the unit. Installation will involve mounting the PowerStation and if you are using CTC's optional AC Power Supply, mounting the power supply. Both procedures are described below.

Mounting the PowerStation

The PowerStation is designed to be mounted using 6 screws. These screws are secured to the unit with metal clips. For your convenience, CTC Parker includes all necessary mounting hardware with the unit.

Mount the PowerStation

To mount the unit, complete the following steps:

1. Prepare the power source for the unit by sliding the positive and negative wires into the appropriate slots on the power connector. See *Figure 3-1*.

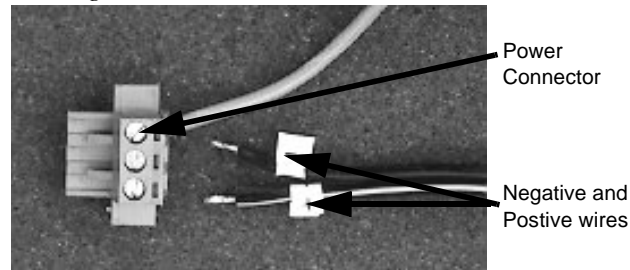


Figure 3-1 Power Connector and Positive/Negative wires

2. Connect the ground cable from the power connector to an earth ground.
3. Gently insert the PowerStation into the cutout.
4. Thread each of the supplied metal clips with a screw to prepare the mounting hardware.
5. Snap each of the clips onto the outside of the unit.
6. Attach the power connector that you prepared in steps 1 and 2 to the back of the unit.
7. Tighten each of the mounting screws using a torque of 6 in/lbs.

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

Starting Up the PowerStation



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

Before connecting a power cord to your unit, make sure that you have read and understood *Environmental Specifications* on page 9 and the *Testing Specifications* on page 11 of this manual. Also, be sure to follow the guidelines listed below:

- For **permanently connected equipment**, incorporate a readily accessible disconnect device in the fixed wiring.
- For **pluggable equipment**, install the socket-outlet near the equipment and in an accessible location.

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

1. Turn off the PowerStation if it is on.
2. Connect the power cord to your voltage source. Voltage input to the unit should be within the range specified in the *Environmental Specifications* on page 9.

Note If you are using an AC Power Supply, you must first connect the Power Supply to the power connector on the back of the PowerStation.

3. Connect the power cord plug to the PowerStation.
4. Turn the PowerStation on.

The PowerStation will automatically load the MachineShop Shell.

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

Maintaining and Troubleshooting the P1 Pentium

The P1 Pentium PowerStation is designed to provide years of trouble-free operation even in the harshest environments. However, you may occasionally need to perform routine maintenance on some of the PowerStation's components.

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

Chapter Contents

<i>Installing and Replacing Parts</i>	38
<i>Maintaining the Touchscreen</i>	43
<i>Using the Compact Flash Card</i>	50
<i>Modifying the AUTOEXEC.BAT File</i>	56
<i>Configuring the Ethernet Interface</i>	58
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Installing and Replacing Parts

This section includes instructions for performing internal maintenance on the P1 Pentium PowerStation. To prevent injury to yourself or damage to the PowerStation, you will need to carefully read and understand the procedures described in this section. This section will show you how to perform the following operations:

- *Replacing the Fuse* on page 39
- *Installing a PC/104 Card* on page 40

Before you begin, this section describes electrostatic discharge (ESD) precautions that you should take whenever you work inside the PowerStation.



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

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

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

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

Replacing the Fuse

The P1 Pentium PowerStation has a protective fuse that you can easily replace without ever removing the unit from its protective cover.

To replace the fuse, complete the following steps:

1. Turn off the PowerStation.
2. Disconnect the PowerStation from its power source.
3. Locate the fuse on the side of the unit as shown in *Figure 4-1*.



Figure 4-1 Replaceable Fuse

4. Loosen the fuse with a flathead screwdriver.
 - a. Using the screwdriver, push down on the screw.
 - b. Turn counterclockwise to unscrew the fuse.
5. Using a tweezers or needle nose pliers, remove the fuse from the slot.
6. Insert a new fuse in the slot.

Important The fuse should recede into the unit.

7. Tighten the fuse with the screwdriver.
 - a. Push down on the screw using the screwdriver.
 - b. Screw the fuse clockwise until it is firmly seated.

Installing a PC/104 Card

The PowerStation comes equipped with a PC/104 bus expansion. The bus expansion allows you to connect PC/104 I/O cards to the back of the unit for communication with the ISA bus.

You can install up to three modules, one on top of the other, provided that the modules do not exceed the electrical requirements of the PowerStation as indicated in the *Electrical Specifications* on page 10 of this manual.

To install a PC/104 card, complete the following steps:

1. Turn off the power to the unit.
2. Disconnect the unit from the power source.
3. Remove the unit from its enclosure, if installed.

Caution You must wear an ESD wrist strap connected to a good, known, earth ground to avoid damaging the unit.

4. Place the unit face down, on a static dissipative mat, in a location free from dirt and moisture and protected against static discharge.
5. Copy the PowerStation serial number from the label on the back of the unit or cover to the label on the back of the new PC/104 card cover if you purchased one.
6. Choose one of the following from *Table 4-1*:

Quantity of PC/104 Cards to be Installed	Action
one PC/104 module	remove the 4 screws from the back of the unit.
two or three PC/104 modules	remove the 4 screws from the previously installed PC/104 card or the card cover.

Table 4-1: Screws to be Removed

7. Choose one of the following from *Table 4-2*:

Quantity of PC/104 Cards to be Installed	Action
one PC/104 card	<p>Note: The short standoffs are in the accessory kit that came with the P1 Pentium PowerStation.</p> <p>Insert the short standoffs in the 4 screw holes on the back of the unit. See <i>Figure 4-2</i>.</p>
two or three PC/104 cards	<p>Insert the long standoffs in the previously installed PC/104 card. See <i>Figure 4-2</i>.</p>

Table 4-2: Standoffs to be Inserted

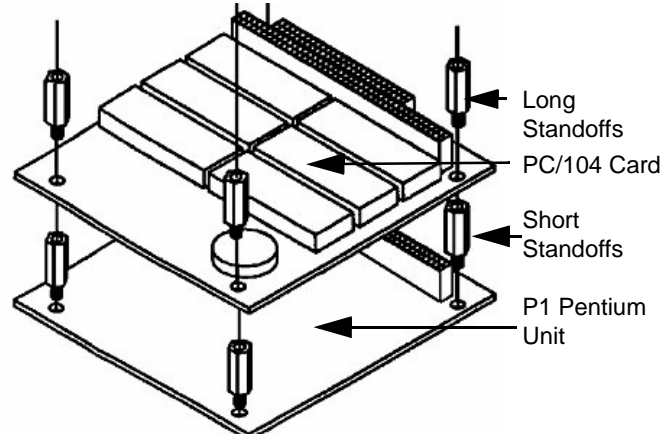


Figure 4-2 One PC/ 104 Card Installed

Important Do not bend the pins on the PC/104 module as you complete the following step.

8. Carefully align the pins on the PC/104 card with the bus expansion.

Note: The screw holes on the PC104 card should align with the installed standoffs.

9. Firmly press down on the PC/104 module until the module is completely seated in the bus expansion.

10. Choose one of the following:

- If you are installing an additional PC/104 module, repeat steps 5 through 9 for each additional card.
- If you are not installing a card cover, fasten the PC/104 card to the standoffs using the screws that were originally installed on the back of the PowerStation.
- If you are installing a PC/104 card cover, continue with step 11.

11. Complete one of the following from *Table 4-3*:

Installing a PC/104 Card Cover	Action
Install a card cover for one PC/104 card	<ol style="list-style-type: none"> 1 Knock out one of the sides of the card cover to allow for cables. 2. Fasten the PC/104 card cover to the PC/104 card using the 4 screws provided in the cover adapter kit.
Install a card cover for two or three PC/104 cards	<ol style="list-style-type: none"> 1 Knock out one of the sides of the card cover to allow for cables. 2. Fasten the 4 long standoffs provided with the cover kit to the installed PC/104 card. 3. Fasten the PC/104 cover to the standoffs using the four metric 3x5 (M3x5) screws provided.

Table 4-3: Installing the Card Cover

You've completed the steps for installing a PC/104 card. You are now ready to install the unit in its enclosure and restore power.

Maintaining the Touchscreen

The touchscreen for the P1 Pentium Powerstation is durable and able to operate smoothly in harsh environments where strong chemicals exist.

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

- *Cleaning the Touchscreen* on page 43
- *Calibrating the Touchscreen* on page 43
- *Adjusting the Contrast* on page 48

Cleaning the Touchscreen

Occasionally, you may wish to clean the PowerStation's touchscreen. Clean the touchscreen using warm, soapy water and a cloth. You may also use a **non-abrasive** cleaner. See *Faceplate Chemical Resistance* on page 12 for a list of substances the screen can resist with no visible effect.

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

Warning **Do not** clean the touchscreen while Interact is in Run mode. Clean the unit when it is unplugged to avoid inadvertently activating an Interact device (button, slide, etc.).

Calibrating the Touchscreen

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

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

Using the MachineShop Shell Calibration Utility

The MachineShop Shell comes with a calibration utility that allows you to calibrate the touchscreen in DOS mode. The calibration utility requires a keyboard and involves calibrating the touchscreen for text and for graphics.

Enter the Calibration Mode

In the following steps, you will enter the calibration utility in MachineShop Shell. To enter the calibration utility, complete the following steps:

1. On the MachineShop Shell Main Menu, press the Settings button. See *Figure 4-3*.

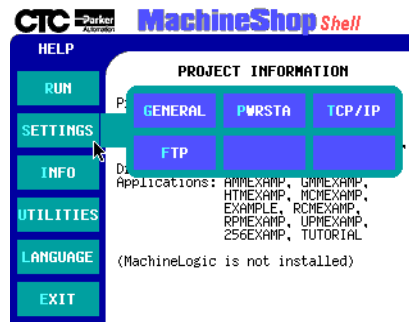


Figure 4-3 Settings Submenu

2. On the Settings submenu, press the PWRSTA button. The PowerStation Settings menu will appear as shown in *Figure 4-4*.

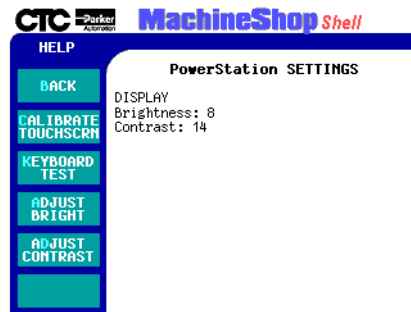


Figure 4-4 PowerStation Settings Menu

3. Press Calibrate Touchscreen.

Important A prompt will display indicating that you will need a keyboard to continue. If you need to install a keyboard on the PowerStation, see *Keyboard/Mouse Port* on page 22. If not, continue with the next step.

4. Press Yes to continue the calibration.
The calibration Main Menu will appear.
5. Select one of the following procedures:
 - *Calibrate an STN Touchscreen* below
 - *Calibrate a TFT Touchscreen* on page 46

Calibrate an STN Touchscreen

After you complete the steps under *Enter the Calibration Mode* (above), you are ready to calibrate the STN touchscreen. In this section, you will calibrate the STN touchscreen in three different modes—03, 12, and 101:

1. Verify that the button mode is set to Drag drop.
 - a. Press Button Mode.
 - b. Select Drag drop using the arrow keys.
2. Press Calibration.
A list of calibration modes will display.
3. Select the VGA#03,720x400(80x25) option using the arrow keys.
4. Tab down to Start.
 - Press Enter.The calibration screen will appear.

Note You may need to use an object with a blunt tip to complete the following step.

5. Touch the intersection indicated on the screen. See *Figure 4-5*.
The PowerStation will beep when you touch the correct point and

automatically advance the cursor to the next corner.



Figure 4-5 Calibration Intersections

6. Repeat step 5 for each corner of the screen.
A confirmation test screen will appear to verify the calibration.
7. When you are finished, press the Esc key to return to the calibration mode menu.
8. Display the VGA#12,640x480(80x30) option using the arrow keys.
9. Repeat steps 4-7.
10. Display the VGA#101,640x480,256c option using the arrow keys.
11. Repeat steps 4-7.
12. Select Save & Exit using the arrow keys.
13. Press Enter to save the calibration settings and return to the Shell Main Menu.
The calibration utility will save the calibration settings in a file called ATSMOUSE.INI.

Important If you calibrated the touchscreen and the cursor moves vertically when your finger moves horizontally on the screen or vice versa, the touchscreen cable may not be connected to the motherboard properly. Call a CTC customer service representative. See *Customer Support Services* on page 5.

Calibrate a TFT Touchscreen

Once you complete the steps under *Enter the Calibration Mode* on page 44, you are ready to calibrate the touchscreen. You will calibrate

the TFT touchscreen in three different modes—03, 12, and 101. Continue with the following steps:

1. Press any key to continue with the calibration procedure.
2. Verify that the button mode is set to Drag drop.
 - a. Press Button Mode.
 - b. Select Drag drop using the arrow keys.
3. Touch Calibration.
4. Arrow to mode 03 to select it.
5. Touch Start.
6. Press the intersection displayed in the upper left corner of the screen. See *Figure 4-6*.

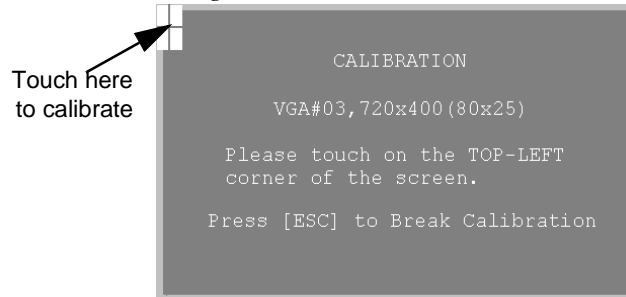


Figure 4-6 Calibration Intersections

The cursor will automatically advance to the next corner when you touch it.

7. Press the cross hair in each of the three subsequent corners.

A confirmation test screen will display that allows you to test the calibration with your finger.
8. Test the calibration.

Important If the touchscreen does not appear calibrated, and the cursor moves vertically when your finger moves horizontally on the screen or vice versa, the touchscreen cable may not be connected to the motherboard properly. Call a CTC customer service representative. See *Customer Support Services* on page 5.

9. Press the Esc key to return to the calibration mode menu.
10. Arrow to mode 12.
11. Repeat steps 5-9.
12. Arrow to mode 101.
13. Repeat steps 5-9. Then continue with step 14.
14. Touch Exit to exit the calibration mode menu.
15. Touch Save & Exit to return to the Shell main menu.

Adjusting the Contrast

You may find that you need to adjust the contrast on the P1 Pentium display. The contrast is a property of the LCD. This property can be adjusted on the STN display only. Adjust the contrast on the STN display from the back of the unit.

Before you begin, you will need to determine whether you own an STN or a TFT display. Looking on the back of the unit is not a reliable way to distinguish between the STN and the TFT display since both the STN and the TFT show the contrast adjustment on the back of the unit.

To distinguish between the two types of displays, locate the model number on the back of the P1 Pentium unit and compare the third digit in the model number with the third digit in *Table 4-4: Display Type* to determine the type of display you own.

Model No.	View Size
P12-3 #####	STN Display - Quarter VGA
P12-4 #####	TFT Display - Full VGA

Table 4-4: Display Type

- If your P1 Pentium has an STN display, continue with *Adjusting the Contrast (For STN Units Only)* on page 49.
- If you have a TFT display, you cannot adjust the contrast and the brightness is fixed.

Adjusting the Contrast (For STN Units Only)

To adjust the contrast on an STN display, complete the following steps:

1. Find the contrast adjustment marked 5.7 STN CR on the back of the PowerStation. See *Figure 4-7*.

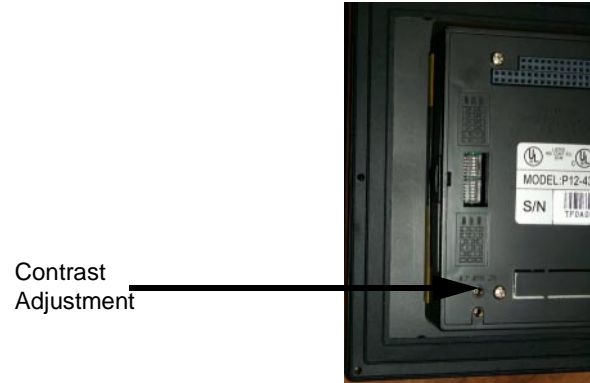


Figure 4-7 Contrast Adjustment

2. Using a flathead screwdriver, turn the screw several turns to adjust the contrast to the desired level.

Using the Compact Flash Card

The P1 Pentium PowerStation uses a removable Compact Flash (CF) card for storage purposes. You can remove the CF card, update the application files on the CF card from a PC, and then reinstall the CF card in the PowerStation.

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

This section explains how to perform the following tasks:

- *Replacing the Compact Flash* on page 50
- *Creating a Bootable Compact Flash* on page 51

Replacing the Compact Flash

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

1. Turn off the PowerStation.

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

2. Open the door to the PowerStation Flash socket.
3. Locate the ejector in the CF socket.

Note The ejector has a fold down release button on the end. See *Figure 4-8*.



Figure 4-8 Compact Flash Ejector

4. Unfold the release button on the ejector to extend it.

5. Push the ejector button to pop the CF card out.
6. Remove the CF card.
7. Carefully insert the new card with the connector on the card aligning with the pins inside the socket.
8. Push the CF into the slot until the card is securely seated in the socket.
9. Fold the release button down.
10. Close the door.

Creating a Bootable Compact Flash

This section explains the procedure to create a bootable Compact Flash card for the PowerStation from a “blank” CF card. This procedure may also be necessary to replace deleted or corrupted critical files on the card or to prepare a new card for use.

Note This procedure will work correctly under only MS-DOS 6.22, Windows 95, or Windows 98. **Do not** run this utility under Windows NT or an NT based product such as Windows 2000.

To create a bootable disc, complete the following procedures:

- *Reformatting the CF Card* on page 52
- *Installing the MS-DOS 6.22 and Utilities Disk* on page 53
- *Installing the PowerStation Start Utilities* on page 53
- *Installing MachineShop Shell* on page 55

Before you begin, you will need the following items:

- PC with a Type II PCMCIA slot and 3.5" floppy drive, or a CF card reader. The PC should be running MS-DOS 6.22, Windows 95, or Windows 98
- CF-to-PCMCIA adapter (for use with PCMCIA slot only)
- MS-DOS 6.22 and Utilities Installation Disk (KA-72953)
- Powerstation Start Disk, Revision 104 (KA83109-104)
- MachineShop Shell Installation disk.

Note The PowerStation Start Disk and MachineShop Shell Installation Disk make up the Runtime Workstation Disk Set, which you can create from the MachineShop Installation CD shipped with your PowerStation. See the *MachineShop Installation Booklet* for instructions on how to create these disks.

Reformatting the CF Card

If the files on your CF card are corrupted or if you need to prepare a new one, complete the following steps:

1. Turn off the PowerStation.

Important Make sure that the PowerStation is turned off when inserting or removing the CF card.

2. Remove the CF card from the PowerStation's flash card slot. For instructions on how to remove the CF card, complete steps 1 to 4 under *Replacing the Compact Flash* on page 50.
3. Insert the CF card into the PC's PCMCIA slot, using the CF-to-PCMCIA adapter as shown in *Figure 4-9*, or into a CF card reader.

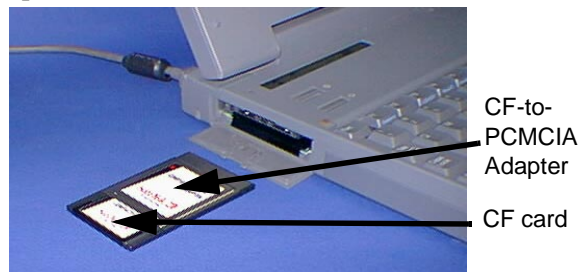


Figure 4-9 CF-to-PCMCIA Adapter

The computer will configure the card as an ATA card and assign an additional drive letter (e.g., D).

Note In this example, drive D represents the PCMCIA card or card reader; however, your system may assign a different drive letter to either of these devices.

4. Enter MS-DOS mode.
5. At the DOS prompt, type `FORMAT D:`
 - Press Enter to execute the command.

Installing the MS-DOS 6.22 and Utilities Disk

MS-DOS 6.22 and the utilities come pre-installed on your PowerStation's Compact Flash card. But if you need to reinstall MS-DOS and the utilities, complete the following steps:

1. Insert the MS-DOS 6.22 and Utilities disk into the PC's floppy drive.

Important If you are performing the install procedure in a DOS window under Windows 95 or 98, you must execute the command `LOCK D:` before entering the `INSTALL` command shown below. After MS-DOS installation is complete, execute the `UNLOCK D:` command.

2. At the DOS prompt, type `A: Install A: D:`

- Press Enter to execute this command.

This will install the MS-DOS 6.22 system files, utilities, and necessary drivers onto drive D (or the drive assigned to the CF card).

Note You will have two choices when installing DOS—a small installation or a large one. A small installation will install approximately 5 files in the DOS directory. A large installation will install approximately 1MB of files in the DOS directory.

3. Eject the MS-DOS 6.22 Disk from the PowerStation's floppy drive.

Installing the PowerStation Start Utilities

The PowerStation Start disk comes pre-installed on your PowerStation's Compact Flash card. If you need to reinstall the Start disk utilities, complete the following steps:

Important Before you begin, insert the CF card in the PC using a CF-to-PCMCIA adapter or a CF card reader, and enter MS-DOS mode. If the PC is not in MS-DOS mode, follow the steps under *Installing the MS-DOS 6.22 and Utilities Disk* on page 53.

1. Insert the Powerstation Start Disk into the PC's floppy drive.
2. At the DOS prompt, type `A: INSTALL A: D:`
3. Press Enter to install the MS-DOS 6.22 system files, utilities, and

necessary drivers onto the CF card.

A prompt will display asking whether you wish to install the standard CTC AUTOEXEC.BAT and CONFIG.SYS files as part of the installation.

Important CTC Parker includes backup copies of the CONFIG.SYS and AUTOEXEC.BAT files on the PowerStation Start disk. These files are called AUTOEXEC.CTC and CONFIG.CTC.

4. At the Prompt, CTC recommends that you type Y for Yes.

If you answer Yes, the existing AUTOEXEC.BAT and CONFIG.SYS files will be renamed as AUTOEXEC.OLD and CONFIG.OLD.

If you answer No, the factory-default files will be copied as AUTOEXEC.CTC and CONFIG.CTC in the root directory of drive D, and you will need to manually update your existing AUTOEXEC.BAT and CONFIG.SYS files later.

5. After the AUTOEXEC.BAT and CONFIG.SYS files have been copied onto your system, press any key to continue.
6. Type Y for Yes to confirm that the installation is for a model P1 Pentium PowerStation.

The PowerStation Start installation is complete.

Important Always make sure that the PowerStation is turned off when inserting or removing the CF card.

7. Eject the CF-to-PCMCIA adapter, and remove the CF card, or remove the CF card from the card reader.

The CF card is now ready to use in the PowerStation.

Installing MachineShop Shell

The MachineShop Shell comes pre-installed on your PowerStation's Compact Flash card. If you need to reinstall the Shell, use the MachineShop Shell Installation disk and complete the following steps:

Note Before you begin, the CF card should be inserted in the PC using a CF-to-PCMCIA adapter or a CF card reader, and the PC should be in MS-DOS mode. If the PC is not in MS-DOS mode, follow the steps under *Installing the MS-DOS 6.22 and Utilities Disk* on page 53.

1. Insert the MachineShop Shell Installation Disk.
2. At the DOS prompt, type `A: INSTALL A: D:`
A prompt will display asking whether you would like to continue with the installation.
3. Type `Y` for Yes to continue.
The MachineShop Shell installation is complete.
4. Eject the CF-to-PCMCIA adapter.
5. Remove the CF card from the CF card reader.
The CF card is now ready to use in the PowerStation.

Important Always make sure that the PowerStation is turned off when inserting or removing the CF card.

6. Insert the CF card into the PowerStation's flash card slot.
7. Start up the PowerStation.
The PowerStation will automatically load the MachineShop Shell. You may need to calibrate the touchscreen. See *Calibrating the Touchscreen* on page 43 for complete instructions.

Modifying the AUTOEXEC.BAT File

The lines shown in the following table must appear in the PowerStation's AUTOEXEC.BAT file for the unit to operate properly. The AUTOEXEC.BAT file that CTC Parker supplies includes these lines and is located in the \CTC directory on the PowerStation's Compact Flash card in a file called AUTOEXEC.CTC.

Please make sure that the AUTOEXEC.BAT file on your PowerStation's CF card includes the command lines shown in the left-hand column of AUTOEXEC.BAT File.

Command Line Parameters	Description
PATH C: \; C: \DOS; C: \CTC	Sets up the default DOS path.
C:\CTC\IDPWR -T -S IF ERRORLEVEL 3 GOTO ITSAP1 LH C:\CTC\BIOSTSR	Loads special functions if the unit is not a P1.
CD \CTC IF EXIST C: \CTC\MOUSE.INI DEL C: \CTC\MOUSE.INI	Required for the MachineShop Shell to detect a mouse in some situations.
LH C: \CTC\MOUSE :ITSAP1	If a mouse is connected, installs the mouse and creates a new MOUSE.INI file.
C:\CTC\IDPWR -V -S IF NOT ERRORLEVEL 1 GOTO YESVESA YESVESA LH C:\CTC\VESA :YESVESA	Loads VESA TSR video support, if necessary.
IF NOT EXIST C:\MACHLOG\NUL.EXT MD C:\MACHLOG CD \MACHLOG IF NOT EXIST C:\CTC\MLCA.EXE GOTO NOMLCA CD \CTC LH C:\CTC\MLCA :NOMLCA	Loads the MachineLogic Control Adapter driver if it is present.
SET TOUCH_PATH=C: \TOUCH CALL %TOUCH_PATH% \TCH INIT.BAT	Initializes the touchscreen drivers.
*SET INTERACT=C: \INTERACT	Sets the Interact path.
*SET INTERACT_FILES=C: \INTERACT\APPFILS	Sets the application path for Interact.

Table 4-5: AUTOEXEC.BAT File

Command Line Parameters	Description
*SET INTERACT_STARTUP=C:\STARTUP	Sets up Interact startup variables.
**SET MACHINELOGIC=C:\MACHLOG	Sets up MachineLogic environment variables.
CD \NET LH C:\NET\TCPIP	Loads network drivers --Novell and/or TCPIP stack.
**IF NOT EXIST C:\MACHLOG\nul.exe MD C:\MACHLOG CD \MACHLOG IF NOT EXIST C:\MACHLOG\MACHLOG.EXE GO TO NOML C:\CTC\MLDU IF ERRORLEVEL 1 GOTO NOML C:\MACHLOG\RTXDOS C:\MACHLOG\MACHLOG :NOML	Loads MachineLogic if present and set for startup operation. (Determined by MLDU.EXE return value 0 = enabled 1 = disabled)
IF NOT EXIST C:\STARTUP\nul.exe MD C:\STARTUP CD \STARTUP IF EXIST C:\STARTUP\AUTOEXEC.BAT CALL C:\STARTUP\AUTOEXEC.BAT	Calls the second AUTOEXECBAT file if the line is contained within a project file.
CD \CTC PSU	Starts the MachineShop Shell.

Table 4-5: AUTOEXEC.BAT File

- * Denotes a command line that is unnecessary on units without Interact.
- ** Denotes a command line that is unnecessary on units without MachineLogic.

For a complete listing of the AUTOEXEC.BAT file, see *AUTOEXEC.BAT File* on page 73.

Configuring the Ethernet Interface

The \NET directory of the PowerStation's Compact Flash contains a configuration utility and all drivers necessary to configure the Ethernet interface on the PowerStation. Backup copies of these files are included on the MachineShop Shell Installation Disk. A list of the files appears in \NET Directory Files.

Note The MachineShop Shell Installation Disk is part of the Runtime Workstation Disk Set, which you can create from the MachineShop Installation CD shipped with your PowerStation. See the *MachineShop Installation Booklet* for instructions on how to create this disk.

File Name	Description
AT5CFG.EXE	A configuration utility you can use to change the interrupt and address of the Ethernet interface.
NET.BAT	A sample batch file you can use to run NetBIOS.
NET.CFG	Stores the interrupts and memory for the network drivers. The default PowerStation configuration reserves the following interrupts and I/O addresses. You cannot use these for the Ethernet interface. <ul style="list-style-type: none"> • COM1: Int 4, I/O 3F8 • COM2: Int 3, I/O 2F8 • Touchscreen: Int 11, I/O 3E8 CTC Parker recommends that you use the following interrupt and I/O address setting for the Ethernet interface: Int 10, I/O 280.
NETX.EXE	The Novell Netware shell program that makes the final connection with the server.
*LSL.COM	A Novell driver that enables the workstation to communicate with different protocols.
*IPXODI.COM	A Novell driver that supports the IPX protocol and other protocols over the same network.
*NE2000.COM	A Novell driver that supports the NE2000 protocol. It allows the PowerStation to communicate over a local area network.

Table 4-6: \NET Directory Files

File Name	Description
Plug and Play Pro 100	The Plug and Play interface: 82557
E100BODI	Loads the 82557 Ethernet interface
*NETBIOS.EXE	Used by Interact to communicate over a network.
RSET8019.EXE	Configures interrupts and I/O addresses for the network.
TCPIP.EXE	Used by the PowerStation for TCP/IP communications.
TCPIP.INI	Stores settings for TCP/IP communications.

Table 4-6: \NET Directory Files

* Denotes files that can be downloaded from Novell's FTP site.

Interact will also communicate over any network or operating system that supports NetBIOS protocols. Examples include Lantastic, TCP/IP, Microsoft, and IBM.

If you need assistance with NetBIOS and networking, consult your network administrator or a certified network technician.

Resolving Problems

This section provides some basic troubleshooting steps to help you identify and correct problems you may have with the PowerStation. Each problem is described and followed with one or more possible solutions. Begin with the first solution and continue until you have solved the problem or tried all of the solutions.

If the problem persists, look through the other problems listed in this section to determine if additional symptoms exist that might require action. If you cannot solve the problem, or if you encounter a problem that is not documented in this section, contact your CTC Parker equipment supplier or CTC Parker Product Technical Support department at (513) 248-1714.

Use *Table 4-7: Troubleshooting Guide* to find resolutions to basic problems that may occur.

General Problem	Specific Issue	Page
Resolving Problems when Starting Up	The LED Power indicator on the front of the unit does not light	61
	The startup sequence halts with the AMIBIOS screen displayed	62
	The AUTOEXEC.BAT file and/or CONFIG.SYS file does not execute properly	62
Resolving Problems with the Touchscreen	After startup, the touchscreen doesn't work properly, the calibration is incorrect, or the touchscreen makes a chirping noise	62
	After calibrating the touchscreen, either the touchscreen doesn't work properly or the cursor doesn't follow your finger	63
Resolving Problems after Start Up	The screen appears to be blank or very dim	64
	The DOS prompt is displayed instead of the MachineShop Shell Main Menu	64
	A PS/2 mouse doesn't work	64
	A serial mouse doesn't work	65
	A keyboard doesn't work	65
	The Ethernet port doesn't work	65

Table 4-7: Troubleshooting Guide

Resolving Problems when Starting Up

Some of the most common problems that users encounter with PCs occur when they start up their systems. This section describes some problems that may occur in the PowerStation during startup and solutions for these problems.

The LED Power indicator on the front of the unit does not light

1. Check to see whether the power switch is in the On position, and the PowerStation is operating correctly.
 - a. If the PowerStation appears to be operating properly, the LED indicator may be defective. Contact your CTC Parker equipment supplier or CTC's Product Technical Support department for assistance.
 - b. If the PowerStation does not appear to be operating properly, restart the PowerStation.
2. If you are using AC power, check the AC Power Supply. Make sure that all connections are secure.
 - a. Check the AC LED. If the AC LED is not lit, either the AC power line is bad, or the AC is defective.
 - b. Check the AC power line to determine whether the AC voltage is good.
3. If you are using DC power, check the DC power line to determine whether the DC voltage is between 18 and 30VDC. A voltage of 24VDC is ideal.
4. Check the power connector to determine whether the leads are properly connected and not reversed. The positive line should connect to the positive terminal, the negative lead should connect to the negative terminal, and the ground lead should connect to the ground terminal.
5. Check the PC/104 adapter if one is installed.
 - a. Remove the adapter.
 - b. Restart the unit.

If the LED comes on, the PC/104 card is bad and you will need to replace it.

The startup sequence halts with the AMIBIOS screen displayed

1. Check for a loose CF card.

Restart the PowerStation.

The AUTOEXEC.BAT file and/or CONFIG.SYS file does not execute properly

Some startup problems are caused by a corrupted or modified AUTOEXEC.BAT or CONFIG.SYS file. CTC Parker includes backup copies of these files in the \CTC directory on your PowerStation's Compact Flash Disk and on the PowerStation Start Disk. These files are called AUTOEXEC.CTC and CONFIG.CTC.

For a complete listing of the AUTOEXEC.BAT and the CONFIG.SYS files, see *Appendix C: System Configuration Files* on page 72.

If you suspect a problem with either the PowerStation's AUTOEXEC.BAT or CONFIG.SYS files, use the DOS Copy command to create a backup copy of your current file and overwrite the suspect file with the appropriate backup file. For example, if the AUTOEXEC.BAT file becomes suspect, type the following commands at the DOS prompt:

```
copy autoexec.bat autoexec.old
copy \ctc\autoexec.ctc autoexec.bat
```

You cannot edit AUTOEXEC.BAT or CONFIG.SYS on the PowerStation, but you can edit these files on the development PC.

1. Press Exit on the MachineShop Shell menu.
2. Enter the MS-DOS mode.
3. Run MS-DOS Edit.

Important You cannot load the touchscreen driver and a serial mouse driver such as MOUSE.COM simultaneously. The PowerStation will only load the driver that is specified first in the AUTOEXEC.BAT file.

**Resolving Problems
with the
Touchscreen**

This section describes the problems that may occur with the touchscreen and the subsequent solutions to these problems.

After startup, the touchscreen doesn't work properly, the calibration is incorrect, or the touchscreen makes a chirping noise

1. If the PowerStation is operating correctly otherwise, restart the unit.
2. The touchscreen calibration might be in error. See *Calibrating the Touchscreen* on page 43 of this manual for instructions on how to calibrate the touchscreen.
3. Check the AUTOEXEC.BAT file. See *AUTOEXEC.BAT File* on page 73 of this manual for information about the command lines that should appear in the AUTOEXEC.BAT file.
 - a. Verify that the touchscreen drivers are loaded. Look for the following lines in the AUTOEXEC.BAT file:

```
SET TOUCH_PATH=C:\TOUCH
CALL %TOUCH_PATH%\TCHINIT.BAT
```
 - b. Verify that a serial mouse driver such as MOUSE.COM is not loading before the touchscreen driver. Look for the following line in the AUTOEXEC.BAT file:

```
C:\MOUSE.COM
```
 - c. Remove the line if it is found anywhere other than where it is shown in the default AUTOEXEC.CTC listing. See *Appendix C: System Configuration Files* on page 72.

After calibrating the touchscreen, either the touchscreen doesn't work properly or the cursor doesn't follow your finger

1. If using a serial mouse, make sure the serial port (COM2 only) is configured for RS-232.
2. If you are using a Microsoft PS/2 mouse, make sure that you are using the supplied Y adapter cable to connect the mouse to the keyboard port.
3. The touchscreen cable connection may be loose, disconnected, or improperly connected. Call customer service. See *Customer Support Services* on page 5 of this manual.
4. If all of the above remedies do not work, you may need to replace the touchscreen. Replacement Touchscreen kits are available through CTC Parker Automation.

Resolving Problems after Start Up

This section describes problems that may occur after startup and details the solutions to these problems.

The screen appears to be blank or very dim

1. Check to see if the power switch is in the On position, and the LED Power indicator on the front of the PowerStation is lit.
 - a. If you have an STN display and the PowerStation is operating properly, adjust the contrast on the display. See *Adjusting the Contrast* on page 48.
 - b. If the PowerStation is not operating properly, restart the unit.
2. If the screen still appears to be blank or very dim, replace the backlight bulb. Replacement backlight bulb kits are available through CTC Parker Automation.

The DOS prompt is displayed instead of the MachineShop Shell Main Menu

1. If the PowerStation appears to be operating correctly otherwise, restart the unit.
2. Make sure that the MachineShop Shell software is being loaded.
 - a. Verify that the following lines appear in the AUTOEXEC.BAT file.
 - b. Verify that the lines do **not** have the word “REM” in front of them:

```
CD \CTC
PSU
```
3. The AUTOEXEC.BAT file may be corrupted or may have been modified. See *AUTOEXEC.BAT File* on page 73 for information about the command lines that should appear in the AUTOEXEC.BAT file.

A PS/2 mouse doesn't work

1. Make sure that you are using a Microsoft PS/2 mouse. Some PS/2-style mice that claim to be Microsoft compatible will not work correctly with the PowerStation. Do not use a serial mouse with a serial-to-PS/2 port adapter.
2. Make sure that the mouse is plugged into the Y cable attached to the keyboard port. Do not plug the mouse directly into the keyboard port.

A serial mouse doesn't work

See *Connecting a Serial Mouse* on page 18 for instructions on how to configure the PowerStation to accept a serial mouse.

A keyboard doesn't work

1. Check the keyboard. Make sure that you are using an AT or a PS/2 style keyboard, not an XT-style.
2. If you are using a PS/2 style keyboard, the keyboard should be plugged into the keyboard port.
3. If you are using an AT style keyboard, make sure the Y cable is attached to the keyboard port.
4. Try using a new Y adapter cable.
5. Try using a new keyboard.

The Ethernet port doesn't work

1. Make sure the Ethernet cable is plugged in.
2. Make sure that the networking software is loading properly. Verify that the following lines appear in the AUTOEXEC.BAT file and at least one of the two lines do **not** have the word "REM" in front of it as appropriate:

```
CALL C:\NET\NET.BAT  
LH C:\NET\TCPIP.EXE
```

See *AUTOEXEC.BAT File* on page 73 for information about the command lines that should appear in the AUTOEXEC.BAT file.

3. Make sure that you properly configured the networking software. See *Configuring the Ethernet Interface* on page 58 of this manual for a list of the drivers that configure your Ethernet interface.

Appendices

Reference Materials

The appendices includes information about the P1 Pentium PowerStation that you will need when you install the unit, connect the unit, or modify the configuration files.

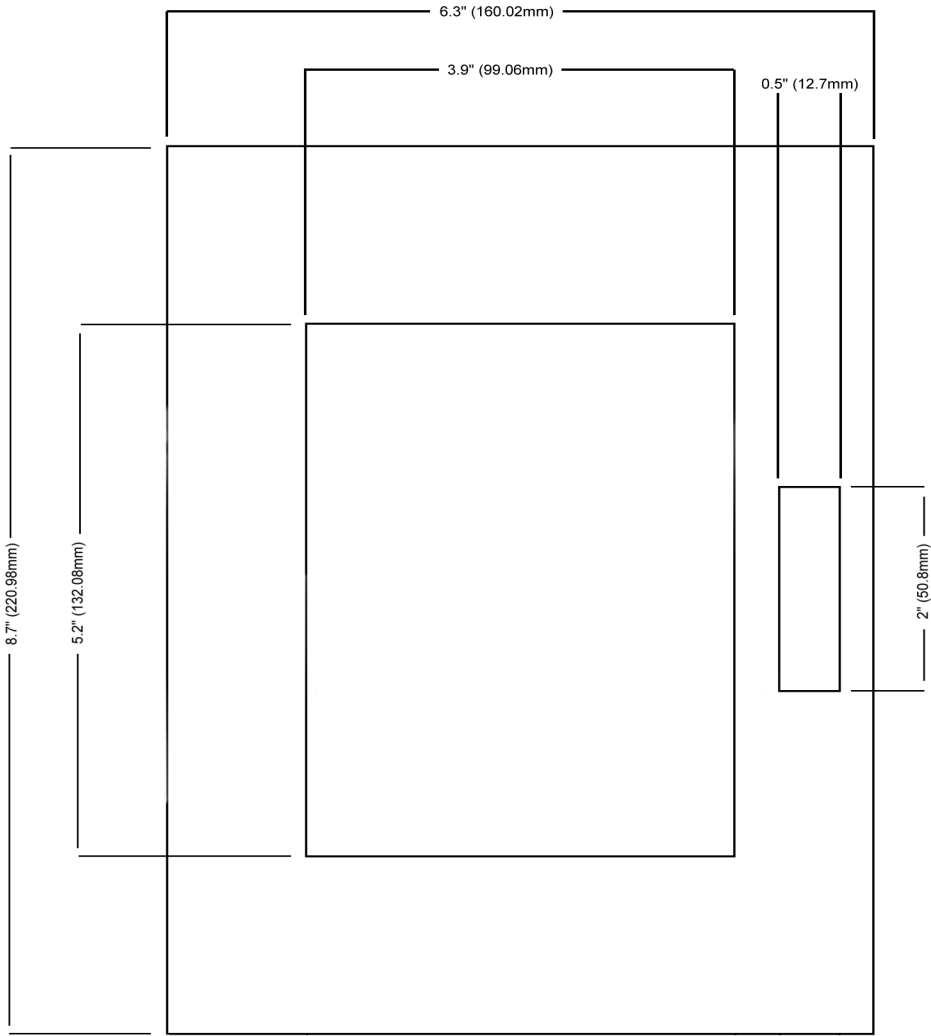
Appendix A includes the dimensional drawings that will assist you when you install the unit; Appendix B is a diagram that identifies all of the components on the P1 Pentium PowerStation; and Appendix C includes the system configuration files for CONFIG.CTC and AUTOEXEC.CTC.

Chapter Contents

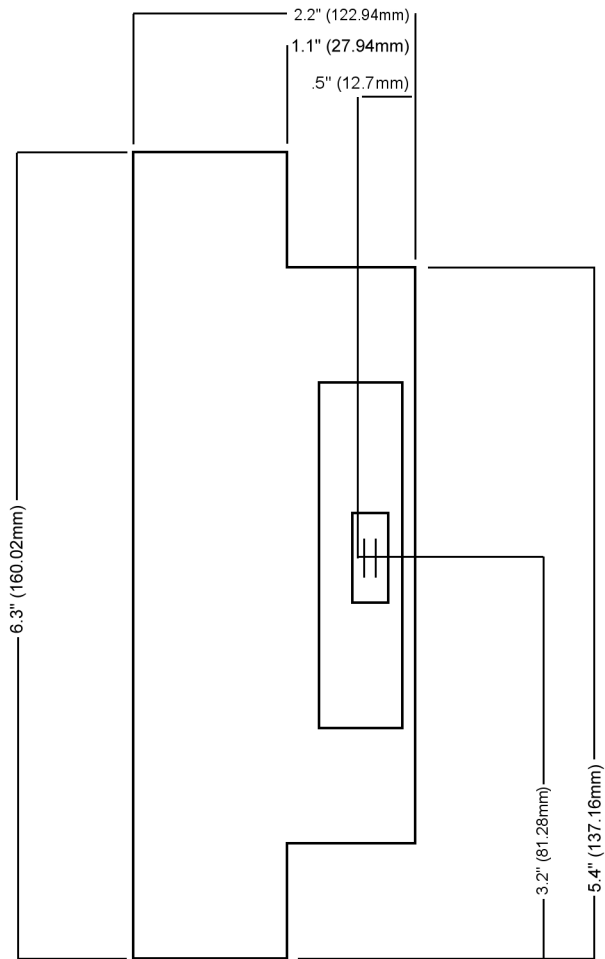
<i>Appendix A: Dimensional Drawings</i>	<i>68</i>
<i>Appendix B: P1 Pentium Components</i>	<i>71</i>
<i>Appendix C: System Configuration Files</i>	<i>72</i>

Appendix A: Dimensional Drawings

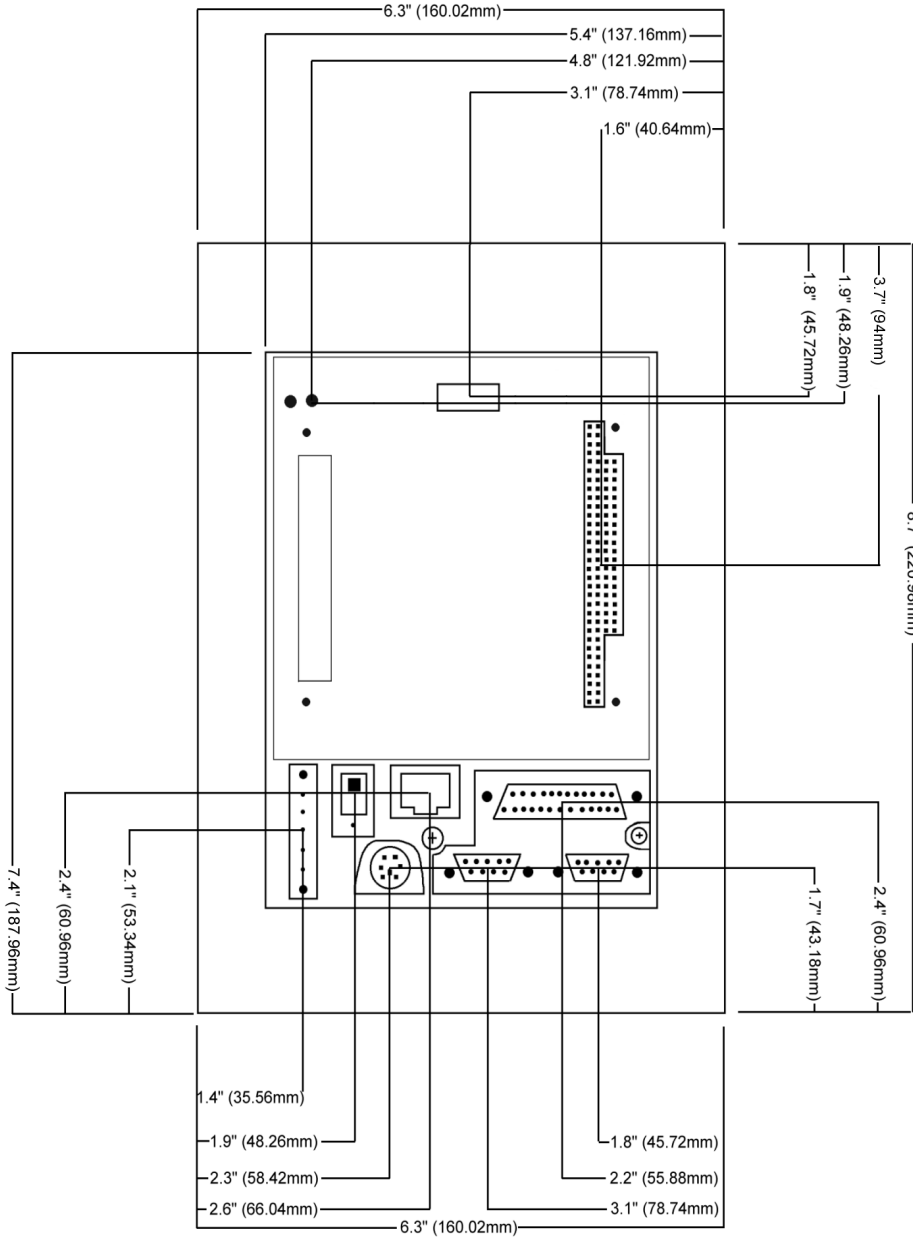
P1 Pentium Front View



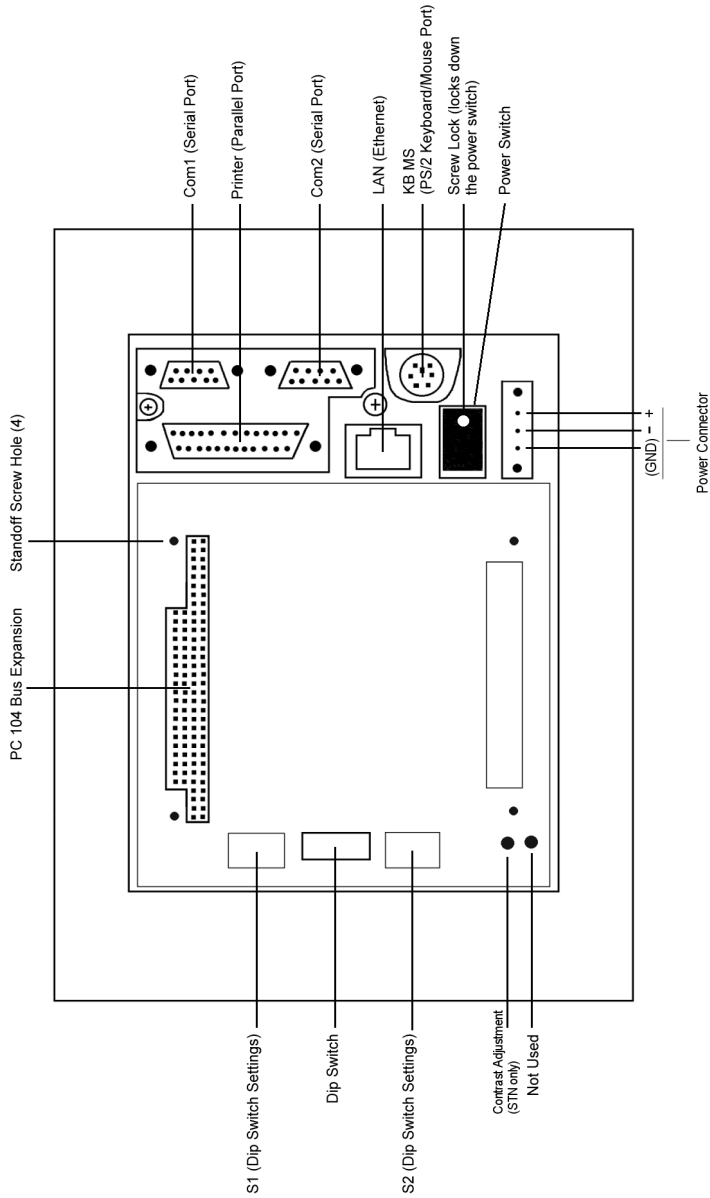
P1 Pentium Side View



P1 Pentium Back View



Appendix B: P1 Pentium Components



Appendix C: System Configuration Files

CTC Parker includes backup copies of the *CONFIG.SYS File* and *AUTOEXEC.BAT File* in the \CTC directory on your PowerStation's Compact Flash disk and on the PowerStation Start disk. These files are called CONFIG.CTC and AUTOEXEC.CTC.

CONFIG.SYS File

```
;MS-DOS V6.22, EMM386.EXE V4.49
SHELL=C:\COMMAND.COM /E:1024 /P
FILES=30
BUFFERS=30
STACKS=9,256
DEVICE=C:\DOS\HIMEM.SYS
REM
REM MachineLogic uses the High Memory Area (HMA) to store all I/O and
REM variable data. Therefore, DOS should be loaded entirely into
REM conventional memory. If MachineLogic is not being used, then DOS
REM should be loaded HIGH into the HMA to conserve conventional memory.
REM To load DOS HIGH use DOS=HIGH,UMB -- otherwise use DOS=LOW,UMB.
REM
REM DOS=HIGH,UMB
DOS=LOW,UMB
REM
REM                                     !!! NOTE !!!
REM EMM386 can be used to free up more conventional memory for use by
REM MachineLogic and Interact, by allowing TSRs to be loaded high.
REM Just remove the word REM in front of the appropriate command, and
REM adjust the parameters as required for your system's configuration.
REM
REM If EMM386 is used, any upper (UMB) memory used by adapter cards
REM must be excluded with the "X=" parameter, as shown in the example
REM below. This example is for a MachineLogic Control Adapter at
REM address D800, configured to use 4KB of NVRAM (the factory default).
REM Please adjust the "X=" parameter to match your system configuration.
REM
REM DEVICE=C:\DOS\EMM386.EXE NOEMS NOVCP1 X=D800-D8FF
REM
REM The following settings can be used on a system using the
REM SST Profibus ISA I/O adapter (D000-D7FF), with the MachineLogic
REM Control Adapter configured to provide 32KB of NVRAM (D800-DFFF).
REM
REM DEVICE=C:\DOS\EMM386.EXE NOEMS NOVCP1 X=D000-DFFF
REM
REM On a P1 PowerStation, the range C800 through CFFF must be excluded and
REM the E000-EFFF range must be explicitly included. Use the following
REM command for loading EMM386 on a P1.
REM
REM DEVICE=C:\DOS\EMM386.EXE NOEMS NOVCP1 X=C800-CFFF X=D800-D8FF I=E000-EFFF
REM
REM IMPORTANT: Always include the NOEMS and NOVCP1 switches when using
REM EMM386 with MachineLogic and Interact.
```

AUTOEXEC.BAT File

```

@ECHO OFF
REM*****
REM PowerStation Autoexec.bat file
REM Copyright (c)1999 CTC Parker Automation
REM*****

PROMPT $p$g
SET TEMP=C:\DOS
SET TOUCH_ADDR=3E8
SET TOUCH_IRQ=11
PATH C:\;C:\DOS;C:\CTC

REM*****
REM Install PowerStation Special Functions if not running on a P1.
REM*****

C:\CTC\IDPWR -T -S
IF ERRORLEVEL 3 GOTO ITSAP1
LH C:\CTC\BIOSTSR

REM*****
REM If an external mouse is connected, MOUSE will install successfully
REM and create a new MOUSE.INI file.
REM*****

CD \CTC
IF EXIST C:\CTC\MOUSE.INI DEL C:\CTC\MOUSE.INI
LH C:\CTC\MOUSE
:ITSAP1

REM*****
REM Load VESA TSR if not already supported by the video system.
REM*****

C:\CTC\IDPWR -V -S
IF NOT ERRORLEVEL 1 GOTO YESVESA
LH C:\CTC\VESA
:YESVESA

REM*****
REM Load the MachineLogic Control Adapter driver if it is present.
REM*****

IF NOT EXIST C:\MACHLOG\NUL.EXT MD C:\MACHLOG
CD \MACHLOG
IF NOT EXIST C:\CTC\MLCA.EXE GOTO NOMLCA
CD \CTC
LH C:\CTC\MLCA
:NOMLCA

REM*****
REM Initialize touchscreen drivers.
REM*****

```

```

SET TOUCH_PATH=C:\TOUCH
CALL %TOUCH_PATH%\TCHINIT.BAT

REM*****
REM Set up Interact and MachineLogic environment variables for MS Shell.
REM*****

SET INTERACT=C:\INTERACT
SET INTERACT_FILES=C:\INTERACT\APPFILS
SET INTERACT_STARTUP=C:\STARTUP
SET MACHINELOGIC=C:\MACHLOG

REM*****
REM Load NETWORK drivers -- NOVELL and/or TCPIP stack.
REM Remove REM on the CALL statement to load NOVELL network batch file.
REM If used, this must be called BEFORE loading the TCPIP stack.
REM*****

CD \NET
REM CALL C:\NET\NET.BAT
LH C:\NET\TCPIP

REM*****
REM Load MachineLogic if ML kernel present, and set for boot operation.
REM (determined by MLDU.EXE return value 0 = ENABLED, 1 = DISABLED)
REM*****

IF NOT EXIST C:\MACHLOG\NUL.EXT MD C:\MACHLOG
CD \MACHLOG
IF NOT EXIST C:\MACHLOG\MACHLOG.EXE GOTO NOML
C:\CTC\MLDU
IF ERRORLEVEL 1 GOTO NOML
C:\MACHLOG\RTXDOS
C:\MACHLOG\MACHLOG
:NOML

REM*****
REM Call AUTOEXEC.BAT file contained in project, if it exists.
REM*****

IF NOT EXIST C:\STARTUP\NUL.EXT MD C:\STARTUP
CD \STARTUP
IF EXIST C:\STARTUP\AUTOEXEC.BAT CALL C:\STARTUP\AUTOEXEC.BAT

REM*****
REM Start the MachineShop Shell.
REM*****

CD \CTC
PSU

```


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