

Industrial Monitor User Guide

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Parker Automation - CTC 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, our standard product warranty covers these items for 15 months from the date of shipment. Exceptions appear below:

- 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 Software License Agreement for additional software warranty information.

If you have any questions about your application or need technical assistance, please check the Support page on the CTC website www.ctcusa.com or call Technical Support 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 for more information about our support products and services.

Product Usage Notice

The SOFTWARE and/or HARDWARE comprised as a PowerStation is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapon systems, in which the failure of this technology could lead directly to death, personal injury, or severe physical or environmental damage.

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Overview and Support Services

Thank you for purchasing an Industrial Monitor. The Industrial Monitor is a flat-panel monitor that can be mounted in a control enclosure or on an adjustable arm. It can be used with the RS, RX, RC PowerStation or with other computers that run MS-DOS[®] or Windows[®] 98, NT 4.0, Embedded NT 4.0, 2000, and XP Pro operating systems.

This manual describes the Industrial Monitor's features and technical specifications. It also explains procedures for installing, maintaining, and troubleshooting the monitor. Please take time to review the manual and all related documentation before operating the unit.

Throughout the rest of this manual the RS PowerStation, RX PowerStation, and RC PowerStation will be referred to as a non-display PowerStation.

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What's in this User Guide?

The purpose of this Guide is to help you set up and use your Industrial Monitor. It lists the monitor's specifications, explains how to install the monitor and connect it to a computer, how to maintain the monitor in good condition, and how to solve common operating problems.

In the Guide, you will find the following chapters:

| Chp | Title | Contents | Pg |
|-----|--|---|----|
| 1 | Overview and Support Services | Presents an overview of this Guide, the other documentation provided with the Industrial Monitor, and CTC Parker's customer support services. | 1 |
| 2 | Introducing the Industrial Monitor | Describes the monitor's specifications and the ports available to connect the monitor to a computer and a power source. | 9 |
| 3 | Installing the Industrial Monitor | Explains how to mount the monitor in an enclosure. | 19 |
| 4 | Connecting to a Computer | Explains how to connect the monitor to a computer and how to set up the monitor so that it will work properly with the computer. | 29 |
| 5 | Maintaining and Troubleshooting the Industrial Monitor | Explains how to maintain the monitor and how to solve problems that may occur in operation. | 51 |

Getting Started

Now that you have opened the Industrial Monitor package, you are ready to unpack the monitor and install it 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 install or operate the Industrial Monitor, please unpack the monitor and verify that you have received all the components that you ordered.

Install the Industrial Monitor

Once you have unpacked the monitor and completed the steps listed above, you are ready to install the Industrial Monitor. Detailed instructions on how to select a location for the monitor, create a cutout, and install the monitor in an enclosure are presented in Chapter 3, *Installing the Industrial Monitor*.

Connect the Monitor to a Computer

When you have installed the Industrial Monitor, you are ready to connect the monitor to a computer—either to a non-display PowerStation or another computer. Then you will start up your system and set up the monitor (if you are using it with a generic computer). Detailed instructions for completing these activities are included in Chapter 4, *Connecting to a Computer*.



Documentation Standards

This Guide uses the following standards.

Text Conventions

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

ISO Symbols

| Symbol | Meaning |
|---|---|
|  | International Standards Organization (ISO) symbol for Caution (ISO 3864 No. B.3.1). Denotes activity that could affect operation of the Industrial Monitor if instructions are not followed. |
|  | ISO symbol for Caution - risk of electrical shock (ISO 3864 No. B.3.6). Denotes activity that could cause personal injury from electrical shock or damage to equipment if instructions are not followed. |

Customer Support Services

We welcome your thoughts and suggestions on our products and services. You can contact us 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.

| Customer Support | |
|-------------------|------------------------|
| Telephone | 513-831-2340 |
| Technical Support | 513-248-1714 |
| Fax | 513-831-5042 |
| E-mail | sales@ctcusa.com |
| | support@ctcusa.com |
| | DocComments@ctcusa.com |
| World Wide Web | www.ctcusa.com |

We recognize that every customer and every application have different support needs, so we offer four types of customer support services:

- Technical Support
- Training and New Business Development
- Documentation

Technical Support

The Technical Support department welcomes any questions as you develop or run your applications. We offer complimentary support for any customer, whether you are an end-user, original equipment manufacturer (OEM), system integrator, or distributor.

If you have a question about the Industrial Monitor, be sure to first:

- Check any release notes shipped with the unit.
- Consult the documentation and other printed materials shipped with your unit.
- Review Chapter 5 of this Guide, *Maintaining and Troubleshooting the Industrial Monitor*.

If you cannot find a solution by using one of the preceding sources:

- Call your CTC products distributor for support.

- View the Technical Support web page at www.ctcusa.com which contains answers to Frequently Asked Questions, application notes, product user guides, and software downloads that may be helpful.
- Call CTC Technical Support at 513-248-1714, 8:00 a.m. to 5:00 p.m., Eastern Time.

You can call CTC Technical Support after hours for emergency assistance.

Training and Application Engineering Services

Our Training and New Business Development department provides service in two areas: training and consulting.

Training

We offer training on all our products, either at CTC Parker in our state-of-the-art training center, or at your site. You can learn how to:

- Write custom interfaces
- Develop specialized applications
- Implement your complete operator interface application

To contact the Training Coordinator:

| Training | |
|-----------|--|
| Telephone | 513-831-2340 |
| E-mail | training@ctcusa.com |

Application Engineering Services

We offer consulting services through our Application Engineering Services group. Our Application Engineering group can build your application from the ground up:

- Write custom communications drivers
- Design special modules to perform functions unique to your application

Our specialists are flexible, so they can create a project development schedule that meets your needs. You can contact Application Engineering Services in one of the following ways:

| Application Engineering | |
|--------------------------------|-------------------|
| Telephone | 1-800-233-3329 |
| E-mail | appeng@ctcusa.com |

Documentation

You can download CTC product documentation from our web site at www.ctcusa.com click the Support link under Product Manuals.

We also welcome your comments on this User Guide or any of our other documentation. Please email your comments to: DocComments@ctcusa.com

Introducing the Industrial Monitor

The Industrial Monitor is a flat-panel monitor that can be used with non-display PowerStations or with another computer running MS-DOS or Windows 98, NT 4.0, Embedded NT 4.0, 2000, or XP Pro. It comes in 10.4" (SVGA), 12.1" (SVGA), 15.1" (XGA), and 18.1" (SXGA) display sizes. This chapter outlines the monitor's specifications and describes its available connectors.

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Specifications

This section describes important specifications for the Industrial Monitor. Please familiarize yourself with these specifications before operating the monitor.

Physical Specifications

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

| Category | Specifications |
|------------------------|---|
| Dimensions (H x W x D) | <ul style="list-style-type: none"> 10.4" Monitor - 11" x 13.8" x 3.6" (279.4mm x 350mm x 93mm) 12.1" Monitor — 12.1" x 15.1" x 3.6" (307.59mm x 382.52mm x 91.44mm) 15.1" Monitor — 13.3" x 16.8" x 4.4" (337.82mm x 426.72mm x 111.76mm) 18.1" Monitor - 15.7" x 18" x 3.6" (398.8mm x 457.2mm x 92mm) |
| I/O Ports | <ul style="list-style-type: none"> Video Input — Analog RGB through a standard 15-pin DSUB connector Touchscreen input — Serial RS232 (DCE) through a standard 9-pin DSUB connector |
| Weight | <ul style="list-style-type: none"> 10.4" Monitor - 9.2 lbs. (4.2Kg) 12.1" Monitor - 14.6 lbs. (6.6Kg) 15.1" Monitor - 17.2 lbs. (7.8Kg) 18.1" Monitor - 20.7 lbs. (9.39Kg) |

Display Specifications

Display specifications for the Industrial Monitor are shown in the table below.

| Category | Specifications |
|----------------------|--|
| 10.4" Monitor | |
| Color depth | Up to 262,144 colors (18 bits/pixel, "High Color") |
| Brightness | VGA and SVGA: 350 cd/m ² (nits) |
| Backlight lifetime | 50,000 hours |
| Pixel format | VGA 640 X 480; SVGA 800 X 600 |
| 12.1" Monitor | |
| Color depth | Up to 262,144 colors (18 bits/pixel, "High Color") |
| Brightness | 300 cd/m ² (nits) |
| Backlight lifetime | 50,000 hours |
| Pixel format | SVGA 800 X 600 |
| 15.1" Monitor | |
| Color depth | Up to 262,144 colors (18 bits/pixel, "High Color") |

| Category | Specifications |
|----------------------|--|
| Brightness | 200 cd/m ² (nits) |
| Backlight lifetime | 50,000 hours |
| Pixel format | XGA 1024 X 768 |
| 18.1" Monitor | |
| Color depth | Up to 262,144 colors (18 bits/pixel, "High Color") |
| Brightness | 235 cd/m ² (nits) |
| Backlight lifetime | 50,000 hours |
| Pixel format | SXGA 1280 X 1024 |

Video Modes Supported

The Industrial Monitor supports the video modes shown in the table below.

| Monitor Size | Resolution | Vertical Sync Frequency (Refresh Rate) |
|--|------------|--|
| 10.4" VGA, 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 640 x 480 | 60 Hz |
| 10.4" VGA, 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 640 x 480 | 70 Hz |
| 10.4" VGA, 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 640 x 480 | 72 Hz |
| 10.4" VGA, 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 640 x 350 | 70 Hz |
| 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 640 x 480 | 75 Hz |
| 15.1" XGA | 640 x 480 | 85 Hz |
| 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 720 x 400 | 70 Hz |
| 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 800 x 600 | 56 Hz |

| Monitor Size | Resolution | Vertical Sync Frequency (Refresh Rate) |
|---|-------------|--|
| 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 800 x 600 | 60 Hz |
| 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 800 x 600 | 70 Hz |
| 10.4" SVGA, 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 800 x 600 | 72 Hz |
| 12.1" SVGA, 15.1" XGA, 18.1" SXGA | 800 x 600 | 75 Hz |
| 15.1" XGA | 800 x 600 | 85 Hz |
| 15.1" XGA, 18.1" SXGA | 1024 x 768 | 43 Hz interlaced |
| 15.1" XGA, 18.1" SXGA | 1024 x 768 | 60 Hz |
| 15.1" XGA, 18.1" SXGA | 1024 x 768 | 70 Hz |
| 15.1" XGA | 1024 x 768 | 72 Hz |
| 15.1" XGA, 18.1" SXGA | 1024 x 768 | 75 Hz |
| 15.1" XGA | 1024 x 768 | 85 Hz |
| 18.1" SXGA | 1152 x 864 | 70 Hz |
| 18.1" SXGA | 1152 x 864 | 75 Hz |
| 18.1" SXGA | 1280 x 1024 | 60 Hz |
| 18.1" SXGA | 1280 x 1024 | 75 Hz |

Environmental Specifications

The Industrial Monitor conforms to the environmental specifica-

tions listed in the table below.

| Category | Specifications |
|-----------------------|--|
| Operating temperature | 32°–122°F (0°–50°C) |
| Storage temperature | -13°–140°F (-25°–60°C) |
| Relative humidity | 95% @ Ta < or = 104°F (40°C) non-condensing |
| Altitude | N/A |
| Shock rating | <ul style="list-style-type: none"> • Operating — 10g 11ms pulse • Non-operating — 30g 11ms pulse |
| Operating vibration | 5–500 Hz 1 grms |
| Monitor gasket | Designed for NEMA type 4/4X environment |



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

Important Remember that the temperature within a protective enclosure is generally higher than the external temperature. Thus, if the monitor is operating inside an enclosure at temperature levels above its rated ambient temperature, you must cool the enclosure.

Electrical Specifications

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

| Category | Specifications |
|--------------------|---|
| Input voltage | 24 VDC nominal |
| Power requirements | 50 Watts maximum |
| Fuse rating | 3.15A (IEC 127-2 sheet 1, fast-acting type) |



The Industrial Monitor'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 power lines to enhance noise immunity.

Important If possible, locate the monitor away from machinery that produces intense electrical noise (for example, arc welders). Otherwise, isolate the input power to the monitor from the equipment generating the noise.

Testing Specifications

The Industrial Monitor conforms to the testing specifications listed below.

| Testing Criteria | Classification |
|-----------------------------------|--------------------|
| 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 |
| European Harmonized EAC Standards | EN50082-2, EN55011 |
| Operating vibration | IEC 68-2-6 |
| Mechanical shock | IEC 68-2-27 |
| Random vibration | MIL-STD-810E |

Faceplate Chemical Resistance

The Industrial Monitor's screen can resist the chemicals listed below, with no visible effect.

| Screen Chemical Resistance | | |
|----------------------------|-----------------------|---------------------|
| Acetone | Sulfuric Acid 10% | Motor oil |
| MEK | Hydrochloric Acid 10% | Gasoline |
| Toluene | Acetic Acid | 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 | |

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

- Commercial glass cleaners
- Ammonia (10% dilute solution)
- Motor oil

- Hydraulic fluid
- Diesel fuel
- Gasoline (leaded and unleaded)
- Silicone-based lubricant
- Alcohol (ethyl, methyl)
- Automatic transmission fluid



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

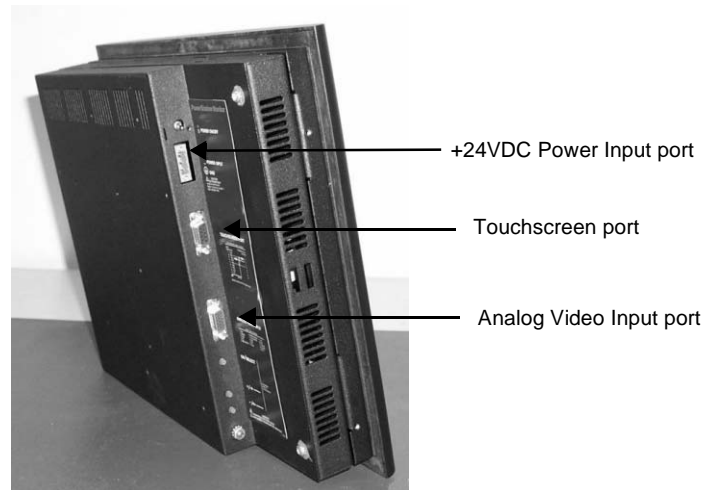
Available Connectors

The Industrial Monitor has three connectors, all located on its left side. They are as follows, moving from top to bottom:

- +24VDC Power Input port
- Touchscreen port (used only in touchscreen monitors)
- Analog Video Input port

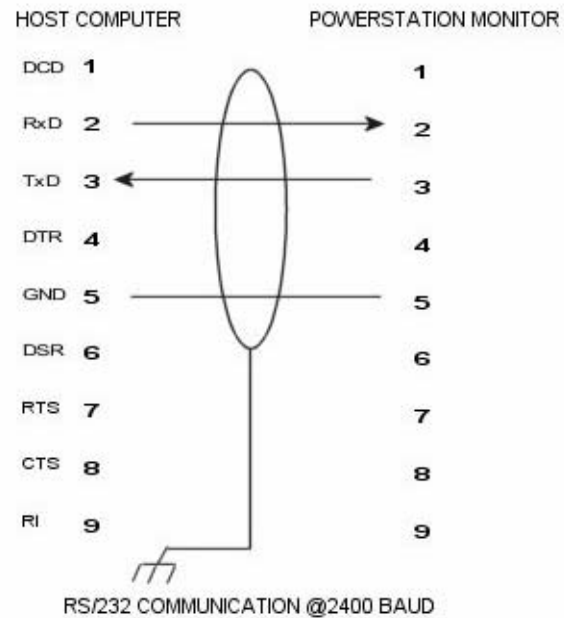
Important To be compliant with CE EMC emission requirements under EN55011, all video, serial, and parallel port communication cables must be 100% braided shielded cable.

The following illustration shows a side view of the Industrial Monitor with its three connectors.



Touchscreen Cable Diagram

For Industrial Monitors with a touchscreen, the diagram below shows the connections between the monitor and a host computer.



Video Input Signals

The table below shows the video inputs from a host computer to the Industrial Monitor.

| Video Cable Signals | | |
|---------------------|----------------|----------|
| 1 Red | 6 Green Shield | 11 N/C |
| 2 Green | 7 Blue Shield | 12 N/C |
| 3 Blue | 8 GND | 13 HSYNC |
| 4 N/C | 9 N/C | 14 VSYNC |
| 5 Red Shield | 10 GND | 15 N/C |

Installing the Industrial Monitor

You can install the Industrial Monitor by mounting it in a control enclosure or on an adjustable arm.

This chapter explains how to select an appropriate location for the monitor, create a cutout for the monitor, and mount the monitor in an enclosure.

You will need to read the last two sections of this chapter, *Creating a Cutout* and *Mounting the Monitor in an Enclosure*, only if you intend to mount the Industrial Monitor in an enclosure. If you are mounting the monitor on an adjustable arm, see the documentation for the Industrial Monitor Mounting Cover and the documentation that accompanies the arm for installation instructions.

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Selecting a Location

The first step in installing your unit is to select an appropriate location. This is the most important aspect of installation because the location you select will affect the monitor's performance, ease of use, and life-expectancy. This section provides some guidelines to follow when selecting a location.

Underwriters Laboratories Approval

In order to obtain Underwriters Laboratories approval for your monitor installation, the installation must meet the following criteria:

1. The monitor must be mounted in a standard industrial enclosure that provides fire protection.
2. The monitor must be mounted in an enclosure that meets a NEMA 4 rating.
3. If you purchased an Industrial Monitor with mounting cover, the monitor must use a limited energy power source, such as CTC Parker's External AC Power Supply Adapter (PWR-PSAC).

Class I, Division 2 Guidelines

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

- The monitor is suitable for use in Class I, Division 2, Groups A, B, C, and D hazardous locations only.



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.



Warning **Explosion Hazard** — Substitution of components may impair suitability for Class I, Division 2.

Environmental Guidelines

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

Faceplate considerations

The monitor's faceplate is designed for a Type 4/4X environment. The faceplate is resistant to a variety of chemicals. See *Faceplate Chemical Resistance* on page 14 for a complete list.

Important The system is only rated NEMA 4 when it is installed in a UL listed NEMA 4X enclosure.

Electrical Guidelines

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

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 power lines.

Important In order to comply with UL 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 system.

To comply with UL 60950 requirements for permanently connected equipment, a readily accessible disconnect device shall be incorporated in the building installation wiring.

The Industrial Monitor accepts DC input only. To apply AC power, you must use an AC adapter.

Note You can purchase an AC adapter from your local distributor.

See *Electrical Specifications* on page 13 of this manual for a list of the Industrial Monitor's electrical specifications. Make sure that your power source is completely compatible with the monitor before starting the unit.

Temperature/ Humidity Guidelines

You can safely operate the Industrial Monitor within the tempera-

ture range specified in *Environmental Specifications* on page 12.



Warning If the monitor is operating inside an enclosure at temperatures above its rated ambient temperature, you must cool the enclosure.

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

Enclosure Guidelines

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

Refer to your Industrial Monitor Documentation, Drivers, and Drawings CD for dimensional drawings that list the measurements you will need to mount your system. These include the unit's height, width, and depth; and location measurements for ports and controls.

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

Make sure that the surface where the unit will meet the front panel of the enclosure is flat in order to ensure a NEMA type 4 seal.

Accessing Ports and Other Controls

As shown in the illustration on page 16, a power input port, touch-screen port, analog video input port, and the on-screen display controls (OSD) are located on the left side of the unit in all models of the Industrial Monitor. Be sure to design your enclosure with these locations in mind.

Refer to your Industrial Monitor Documentation, Drivers, and Drawings CD for dimensional drawings that list location measurements of your system's ports and controls. Use these dimensions to customize the mounting of your unit.

Creating a Cutout

You will need to read this section of the manual only if you intend to mount the Industrial Monitor in an enclosure. If you plan to mount the monitor on an adjustable arm, see the documentation for the Industrial Monitor Mounting Cover and the documentation that accompanies the arm for installation instructions. The Industrial Monitor Mounting Cover instructions are also located on the Industrial Monitors Documentation, Drivers, and Drawings CD.

If you are mounting the Industrial Monitor in an enclosure, you first will need to create a cutout for the unit and clean the area of any dirt or debris that might come in contact with the monitor.

To create a cutout for the monitor, complete the following steps:

1. Cut a space in which to mount the monitor. The cutout dimensions will depend upon the size of your monitor. Cutout dimensions for the Industrial Monitors are shown in the table below.

| Monitor Size | Cutout Height | Cutout Width |
|--------------|-------------------|-------------------|
| 10.4" | 9.86" (250.4mm) | 12.6" (320mm) |
| 12.1" | 11.25" (285.75mm) | 14.15" (359.41mm) |
| 15.1" | 12.40" (314.96mm) | 15.90" (403.86mm) |
| 18.1" | 14.26" (362.3mm) | 17.06" (433.4mm) |

Refer to the Industrial Monitor Documentation, Drivers, and Drawings CD for the depth and port dimensions of your monitor. Use these dimensions to customize the mounting of your unit.

Important An External AC Adapter for the Industrial Monitor is available from CTC Parker and can be mounted on the back of all Industrial Monitors that do not have a mounting cover. If you choose to mount the adapter on the back of the monitor, be sure to take the adapter's dimensions into account when planning the depth of the monitor enclosure. See *Mounting the External AC Adapter* on page 24 of this manual for instructions on how to mount the adapter on the monitor.

2. Debur the cutout area.
3. Make sure that both sides of the panel mounting surface are clean, flat, and free of foreign materials.

Mounting the Monitor in an Enclosure

You will need to read this section of the manual only if you intend to mount the Industrial Monitor in an enclosure. If you plan to mount the monitor on an adjustable arm, see the documentation for the Industrial Monitor Mounting Cover and the documentation that accompanies the arm for installation instructions.

This section of the manual will tell you how to mount CTC Parker's External AC Power Supply Adapter on the monitor and how to install the monitor in an enclosure.

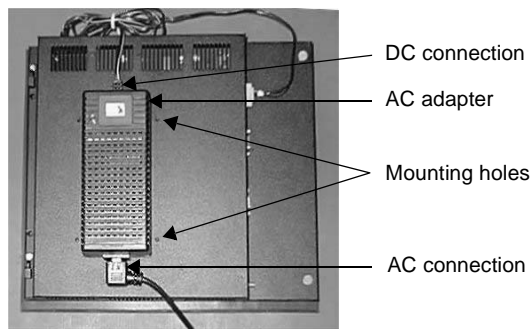
Mounting the External AC Adapter

Since the Industrial Monitor is a DC device, you will need to use an AC adapter if you intend to power the monitor with AC voltage. An External AC Power Supply Adapter (PWR-PSAC) is available from CTC Parker, along with an installation kit that will enable you to mount the adapter either on the back of the monitor or near the monitor. The adapter can only be mounted on the back of Industrial Monitors that do not have a mounting cover.

Important If you intend to mount the External AC Adapter on the back of the Industrial Monitor, be sure to take the adapter's dimensions into account when planning the depth of the monitor enclosure.

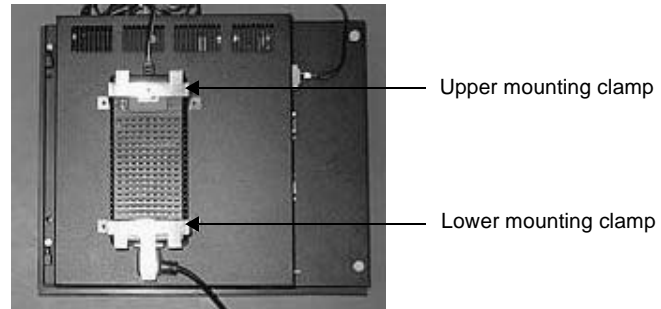
To mount the External AC Adapter on the back of the monitor, complete the following steps:

1. Place the monitor face-down on a static dissipative mat in a location free from dirt and moisture and protected against static discharge.
2. Place the External AC Adapter between the four mounting holes in the center of the monitor back, as shown below. Make sure that the Adapter's DC connection is toward the top of the monitor and that the AC connection is toward the bottom.

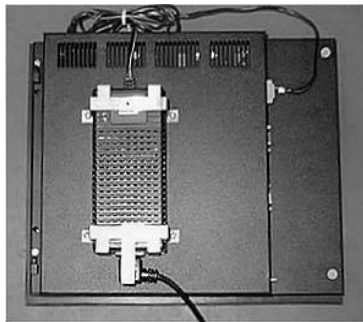


3. Place the two adapter mounting clamps over the top and bottom of the adapter, as shown below. Align the holes in the clamps with the mounting holes in the back of the monitor.

Note Notice that the lower mounting clamp has a special extension that reaches down over the AC connection and holds it in place.



4. Fasten the adapter to the monitor with the four retaining screws included in the adapter installation kit. The completed installation should look like the illustration below.



Note For instructions on how to mount the External AC Adapter near the monitor, see the documentation that accompanies the adapter installation kit.

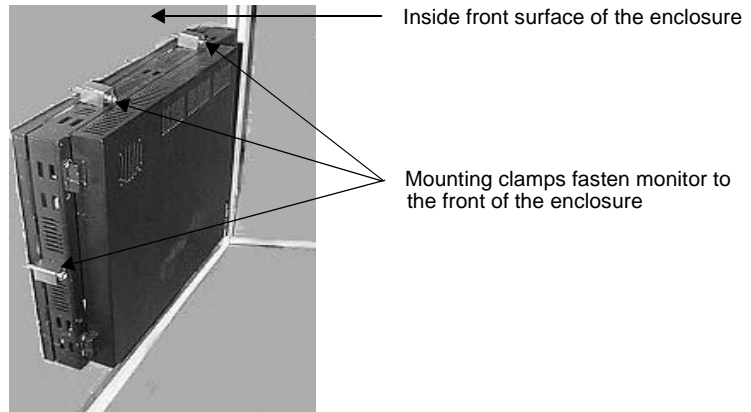
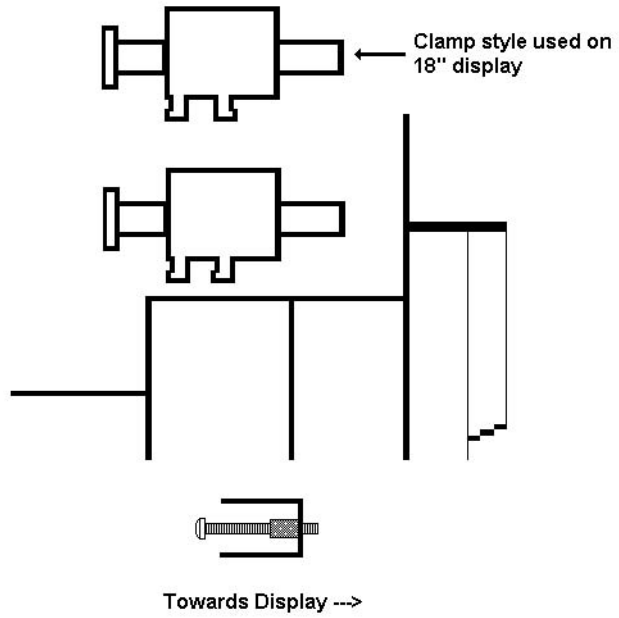
Mounting the Monitor

The procedures for mounting the various Industrial Monitor display sizes are slightly different. This is because the 12.1” monitor uses six clamps to mount in its enclosure, while the 15.1” monitor uses eight clamps.

To mount the Industrial Monitor in an enclosure, complete the following steps:

1. Slide the monitor into the cutout from the front.
2. Attach the mounting clamps to the back of the unit.
 - If you have a 10.4” Industrial Monitor, attach 6 mounting clamps, with their screws, to the back of the monitor in the spaces provided. You will place 2 clamps at the top and bottom of the monitor and 1 on each side.
 - If you have a 12.1” Industrial Monitor, attach 6 mounting clamps, with their screws, to the back of the monitor in the spaces provided. You will place 2 clamps at the top and bottom of the monitor and 1 on each side.
 - If you have a 15.1” Industrial Monitor, attach 8 mounting clamps, with their screws, to the back of the monitor in the spaces provided. You will place 2 clamps at the top and bottom of the monitor and 2 on each side.
 - If you have an 18.1” Industrial Monitor, attach 12 mounting clamps, with their screws, to the back of the monitor in the spaces provided. You will place 3 clamps at the top and bottom of the monitor and 3 on each side.

Note There are two styles of clamps used to secure the unit to your enclosure. Both styles are illustrated in the figure below. The clamp shown at the top of the figure is used on the 18.1” monitor while all other units use the clamp shown at the bottom of the figure. The prongs at the bottom of each clamp should hook into the slots in each space. The end of each screw should point toward the front of the enclosure.



3. Tighten each screw against the front of the enclosure to a torque of 0.5 lb./in.

After you have mounted the Industrial Monitor, you are ready to connect the monitor to a computer, start up your system, and, if necessary, set up the monitor. Instructions for these activities are described in Chapter 4 of this manual, *Connecting to a Computer*.

Connecting to a Computer

The Industrial Monitor is designed to be used with a computer—either CTC Parker’s RS, RX, RC PowerStation or another computer running MS-DOS or Windows 98, NT 4.0, Embedded NT, 2000, or XP. If you purchase the RS, RX, or RC PowerStation with your monitor, your complete PowerStation Remote System will be set up and ready for you to use once you connect the components. However, if you connect your monitor to another computer, you will have to perform some monitor setup procedures.

This chapter will tell you how to connect the Industrial Monitor to your computer, how to prepare the monitor to work with your computer, and how to read and adjust the on-screen display (OSD).

Chapter Contents

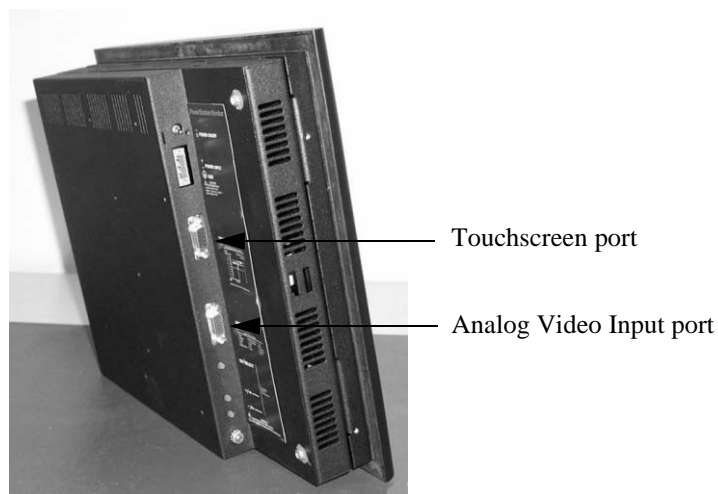
| | |
|---|----|
| <i>Connecting to a Non-display PowerStation</i> | 30 |
| <i>Connecting to Other Computers</i> | 31 |
| <i>Starting Up</i> | 32 |
| <i>Setting Up the Industrial Monitor</i> | 34 |

Connecting to a Non-display PowerStation

To connect your Industrial Monitor to one of the non-display PowerStations, complete the following steps:

1. Connect the 15-pin video cable to the Analog Video Input port on both the monitor and the non-display PowerStation.
2. If you have a touchscreen monitor, connect the 9-pin touchscreen cable to the Touchscreen port on the monitor and to the COMC port on the non-display PowerStation, which will be used for touchscreen communications.

Note The COMC port on the non-display PowerStation is configured, by default, for communication with the touchscreen monitor.



Connecting to Other Computers

To connect your Industrial Monitor to a generic computer running MS-DOS or Windows, complete the following steps:

1. Connect the 15-pin video cable to the Analog Video Input port at the left side of the monitor and to the 15-pin video port on your computer.
2. If you have a touchscreen monitor, connect the 9-pin touchscreen cable to the Touchscreen port on the monitor and to the 9-pin serial port on your computer that you will use for touchscreen communications.

Starting Up

Once you have connected your Industrial Monitor to the non-display PowerStation or to another computer, you are ready to start your system. The procedure for doing this is described below.

Before connecting power to your unit, make sure that you have read and understood *Electrical Specifications* on page 13 of this manual and *Testing Specifications* on page 14. Also, make sure that you follow the guidelines listed below:

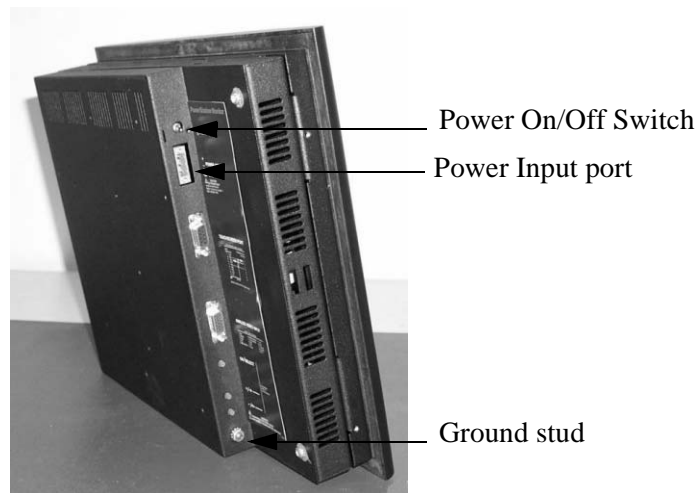
- **For permanently connected equipment**, a readily accessible disconnect device must be incorporated in the fixed wiring.
- **For pluggable equipment**, the socket-outlet must be installed near the equipment and should be easily accessible.

Important Proper installation of the Industrial Monitor 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 Industrial Monitor is only connected to the main supply with a harmonized power cord.



To start up your system:

1. Locate the Power On/Off switch at the upper left side of the monitor, as shown below.



2. Make sure that the Power switch is off (in the “down” position).
3. Connect the power cord to the Power Input port at the left side of the monitor and to the voltage source (see the preceding illustration).

Warning Voltage input to the unit should be within the range specified in *Electrical Specifications* on page 13 of this manual.

4. Connect the ground stud at the lower left side of the monitor to an effective, known earth ground (see the preceding illustration).
5. Connect your computer to a power source.
6. Turn on the monitor (Power On/Off switch in the “up” position).
7. Turn on the computer.

Setting Up the Industrial Monitor

If you connect the Industrial Monitor to the non-display PowerStation, CTC Parker will already have configured your monitor and PowerStation with the proper settings. Your system should now be completely installed and functioning. You may skip this section of the manual. Refer to this section only if you need to make adjustments to your monitor in the future.

If you connect the Industrial Monitor to a generic computer, you will have to perform some setup activities so that the monitor will work with your computer. These activities will depend upon the operating system your computer uses and whether your monitor has a touchscreen or not. The setup activities and the components for which you would perform them are shown in the table below. A discussion of each activity follows the table.

| Setup Activity | Touch-screen Monitor | Non-touch-screen Monitor | Windows 98, NT, Embedded NT, 2000, XP | DOS |
|--------------------------------|----------------------|--------------------------|---------------------------------------|-----|
| Setting the monitor type | X | X | X | |
| Installing touchscreen drivers | X | | X | X |
| Calibrating the touchscreen | X | | X | X |
| Adjusting the video image | X | X | X | X |

Setting the Monitor Type

You will only have to set the monitor type if your computer is running a Windows operating system.

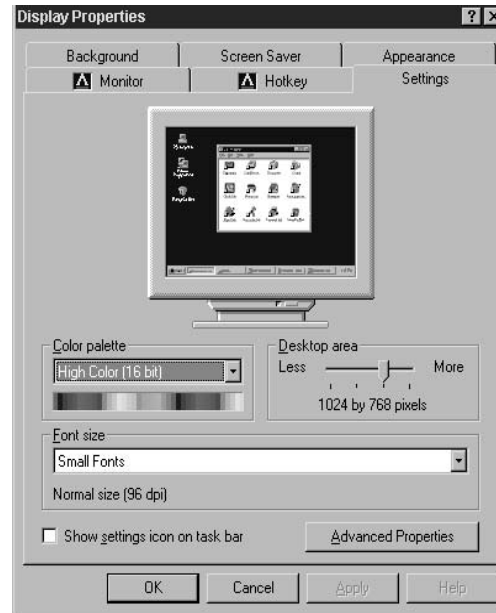
Important Windows versions that will support the Industrial Monitor include versions 98, NT, Embedded NT, 2000, and XP.

To set the monitor type, complete the following steps:

1. Right-click on the Windows desktop.
2. In the menu that appears, click the **Properties** option.

- When the **Display Properties** dialog box opens, click the **Settings** tab. The **Settings** dialog box will appear as shown below.

Note Depending upon the type of computer you are using (for example, non-display PowerStation or a generic computer), the screen displayed as you set the monitor type may differ slightly from the one shown below.

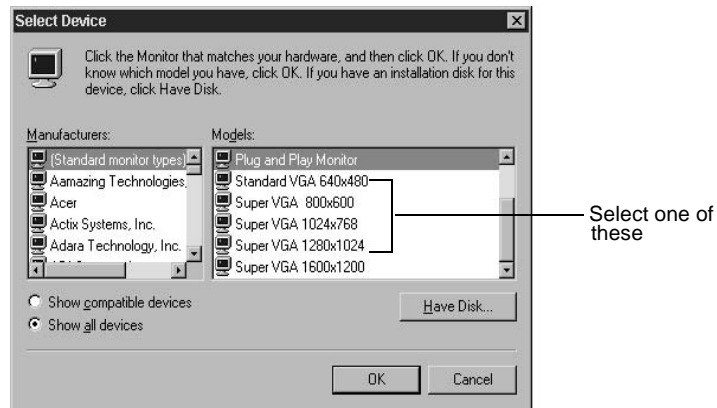


- In the **Settings** dialog box, click the button at the lower right that says either **Change Display Type** or **Advanced Properties**. A dialog box will appear.
- If a **Change Display Type** dialog box appears on your screen, click the **Change** button under the Monitor Type heading and go to step 8.
- If an **Advanced Display Properties** dialog box appears, click the **Monitor** tab. The **Monitor** dialog box will appear.

7. In the **Monitor** dialog box, click the **Change** button at the upper right.

Note In the **Monitor** dialog box, you will see a box that says, **Monitor is Energy Star Compliant**. If you check this box and select the energy-saving options (Low Standby and Shut Off Monitor) in the **Screen Saver** tab, you will take advantage of energy- and backlight-saving features built into the monitor.

8. When you click the **Change** button in either the **Change Display Type** or the **Monitor** dialog box, the **Select Device** dialog box will appear as shown below. Make sure that **Show All Devices** (at the lower left) is selected.



9. In the **Manufacturers** list box, select **Standard Monitor Types**.
10. In the **Models** list box, select the type of Industrial Monitor you are using, either:
 - VGA 640 X 480 (10.4" monitor)
 - SVGA 800 X 600 (10.4" monitor)
 - Super VGA 800 X 600 (12.1" monitor)
 - Super VGA 1024 X 768 (15.1" monitor)
 - Super VGA 1280 X 1024 (18.1" monitor)
11. Click **OK**. A message will appear telling you that Windows will change the refresh rate of your monitor and that your

monitor may blink when Windows does this.

12. Click **OK**. Your monitor may go blank for a second or two, then return to the display.
13. A message will appear that tells you that Windows has set your monitor. Click **OK** and close all dialog boxes.

Installing the Touchscreen Driver

You will only need to install the touchscreen driver if you have a touchscreen monitor. If you do not have a touchscreen monitor, you may skip this section of this manual and go to the section on *Adjusting the Video Image*, page 47.

If you purchased a CTC non-display PowerStation with your Industrial Monitor, CTC Parker will install a touchscreen driver in your PowerStation before it is shipped. If you need to reinstall the driver for any reason you may follow the applicable procedures listed within this section.

If you are using your Industrial Monitor with another computer, or if your system becomes damaged, you will need to install (or re-install) the touchscreen driver.

This section describes the installation of the touchscreen driver on either an MS-DOS or Windows based operating system. Ensure you read the section that pertains to your particular unit.

This section covers the following topics:

- *Any MS-DOS Computer: Installing the Touchscreen Driver under MS-DOS.*
- *Generic Computer: Operating a Mouse and the Touchscreen concurrently under MS-DOS*
- *CTC RS, RC, or RX PowerStations: Installing the UPDD Touchscreen Driver under any Windows Operating System*
- *Generic Computer: Installing the UPDD Touchscreen Driver under any Windows Operating System*

Any MS-DOS Computer: Installing the touchscreen driver under MS-DOS

This section describes how to install the touchscreen driver in any computer system running MS-DOS.

If you do NOT have a CD-ROM drive:

1. Locate a computer that has a CD-ROM drive and a floppy drive.
2. Insert the Industrial Monitors Documentation, Drivers, and Drawings CD into the CD-ROM drive.
3. Select the **Explore the CD** button.
4. **Windows Explorer** will launch.
5. Insert a floppy disk into the floppy drive.
6. Locate the Touch folder on the CD.
7. Copy the files from the Drivers\Touch\DOS folder to the floppy disk.
8. Insert the floppy disk into the computer in which you wish to install the touchscreen driver.
9. Read the **Readme.txt** file located on the floppy drive for instructions.
10. Run the **Install.exe** file to launch the **Touchscreen Driver Installation** program.

Finish the installation by following the steps located under *Finishing the Touchscreen Driver Installation* steps.

If you do have a CD-ROM drive:

1. Insert the Industrial Monitors Documentation, Drivers, and Drawings CD into the CD-ROM drive.
2. Select the **Touchscreen Drivers** button.
3. Select the **DOS Touchscreen Driver** button.

The **Touchscreen Driver Installation** program window opens. Finish the installation by following the steps located under *Finishing the Touchscreen Driver Installation* steps.

Finishing the Touchscreen Driver Installation:

1. On the Touchscreen Driver Installation window, select the **Dynapro - Serial, SC3** item.
2. Select **Start Installation**.
3. *Installation Complete* will display when the process is

finished. Press any key to continue.

4. The default setting for communications is COM1 at 2400, N, 8. Press any key to continue.
5. Press **ESC** to quit.
6. Press **Ctrl-Alt-Del** to restart your computer.

The following files will be placed in the \TOUCH directory on your hard drive.

| Directory | File |
|-----------|----------|
| \TOUCH | TBDriver |
| | TBDDemo |
| | TBCal |
| | TBDiag |
| | TBMouse |

Note When the touchscreen software is installed, the configuration parameters will be set according to your desired configuration. You should not need to change them.

If you are installing the touchscreen driver on a system running CTC Parker's Interact software, verify that the monitor is plugged into COM1.

7. To change the address or IRQ's from the touch directory, type the following line to get the command options.

Note: When entering the following line, include a space between tbdriver and the backslash.

```
C:\TOUCH>tbdriver /?
```

Generic Computer: Operating a Mouse and the Touchscreen concurrently under MS-DOS

CTC PowerStations already are configured to recognize a mouse and touchscreen concurrently. You may skip this section if you wish.

If you have a generic computer, and wish to use a mouse and the touchscreen concurrently, you can do so as long as the mouse driver appears in the AUTOEXEC.BAT file **before** the line that loads the touchscreen driver. To determine if this is so, complete

the following steps:

1. Use your DOS text editing program (for example, MS-DOS Edit) to access the AUTOEXEC.BAT file.
2. Find the entry that loads the touchscreen driver. The entry is:

```
C:\TOUCH\TBDriver.exe
```

3. Before this line, look for the entry that will load your mouse driver. That entry should look like the one immediately below, with the name of the appropriate subdirectory appearing where the bracketed expression is:

```
C:\[subdirectory]\mouse
```

Note If the mouse driver entry doesn't appear before the touchscreen driver, you will have to type the entry yourself. Do not use brackets when you type the entry. After you type the entry, save it, exit the DOS editing program, and restart your computer (Ctrl+ Alt + Del).

CTC RS, RC, or RX PowerStations: Installing the UPDD Touchscreen Driver under any Windows Operating System

To install the touchscreen driver on a CTC RS, RC, or RX PowerStation under Windows you will make note of the touchscreen IRQ and address values, you will install the driver, and then you will verify the settings.

Identifying the IRQ and address values

1. Start the system, and while the system is starting up, press the **F2** key on your keyboard.
2. The **PhoenixBIOS Setup Utility** screen will appear.
3. Select the **Advanced** tab.
4. Scroll down to **I/O Device Configuration**. You may have to scroll to the bottom of the screen to see this selection.
5. Press **ENTER**.

A list of Serial Ports is displayed. See the following table.

| Serial Ports | Address | IRQ |
|--------------|---------|-----|
| A | 3F8 | 4 |

| Serial Ports | Address | IRQ |
|--------------|---------|-----|
| B | 2F8 | 3 |
| C | 3E8 | 11 |
| Touchscreen | 2E8 | 9 |

6. Verify that your unit is configured as depicted in the table.

Note: The default setting for COM Port C is **3E8** and the IRQ is **11**.

Installing the driver

To install the touchscreen driver, complete the following steps:

1. Insert the Industrial Monitors Documentation, Drivers, and Drawings CD into your CD-ROM drive.
2. Select the **Touchscreen Drivers** button.
3. Select the **Windows Touchscreen Driver** button.
4. Select the **CTC PowerStations** button.
5. Follow the installation wizard to install the driver.
6. After installation is complete, restart the computer.

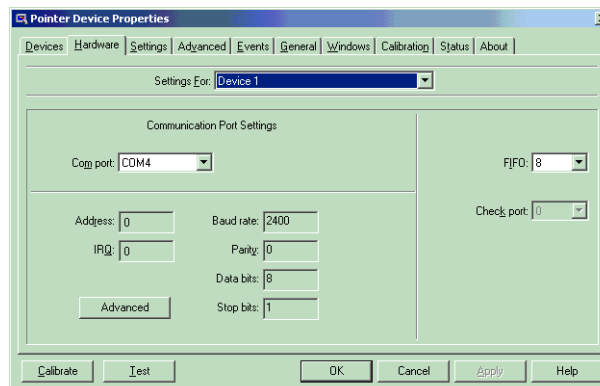
Note: You must restart the computer for your installation to take effect.

Verifying the settings

Important: Verify the touchscreen UPDD driver settings are using COM4.

1. Select **Start-Programs-UPDD Settings**.

The **Pointer Device Properties** window will appear.



2. Select the **Hardware** tab.
3. Verify the UPDD Com Port is set to COM4.
4. Determine if the touchscreen works when you select it with your finger.
 - a. If it does, continue with step 5.
 - b. If it does not work, you must verify your CMOS BIOS settings, refer to page 40. Windows will configure the COM ports based on data within the BIOS.
5. Calibrate the touchscreen if necessary. For instructions, see *Calibrating the Touchscreen* on page 43.

Generic Computers: Installing the UPDD Touchscreen Driver under any Windows Operating System

To install the touchscreen driver on a generic computer under any Windows Operating System perform the following steps.

1. Connect a serial cable between COM1 of the generic computer and the Touchscreen Port of the Industrial Monitor.
2. Connect the video cable between the video port of the generic computer and the video port of the Industrial Monitor.
3. Insert the Industrial Monitors Documentation, Drivers, and Drawings CD into your CD-ROM drive.
4. Select the **Touchscreen Drivers** button.

5. Select the **Windows Touchscreen Driver** button.
6. Select the **Generic Computers** button.
7. Follow the installation wizard to install the driver.
8. After installation is complete, restart the computer.

Note: You must restart the computer for your installation to take effect.

Calibrating the Touchscreen

You will need to calibrate the touchscreen only if you have a touchscreen monitor. Calibrating the touchscreen ensures that the touchscreen is aligned with your display. If you do not have a touchscreen monitor, you may skip this section of the manual and go to the section on *Adjusting the Video Image*, page 47.

The Industrial Monitor's touchscreen is calibrated before leaving CTC Parker. However, you may need to recalibrate the touchscreen when you begin using the monitor for the first time or whenever the cursor location and the location on the screen where the user touches do not match. This section describes how to calibrate the touchscreen under MS-DOS and under Windows.

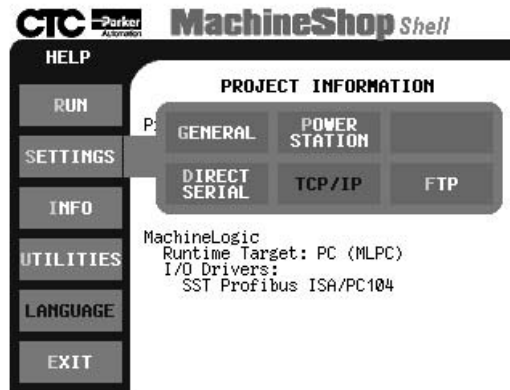
Calibrating under MS-DOS (connected to a CTC RS PowerStation)

To calibrate the touchscreen on computers running MS-DOS, complete the following steps:

Important For computers running MS-DOS, the calibration utility requires a keyboard and involves calibrating the touchscreen for text and graphics.

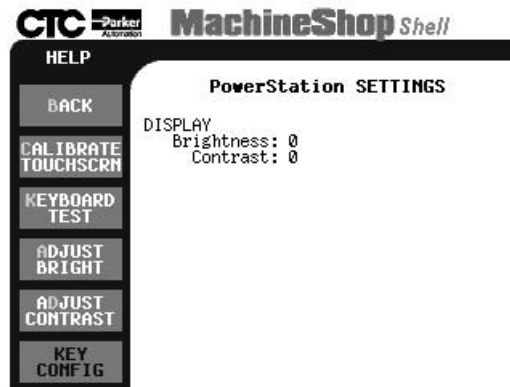
1. On the MachineShop Shell main menu, press the **SETTINGS** button.

The **Settings** submenu will appear.



2. Press the **POWERSTATION** button.

The **PowerStation Settings** submenu will appear.



3. On the **PowerStation Settings** submenu, press the **Calibrate Touchscrn** button.

You will be prompted that a keyboard is needed to calibrate the touchscreen. Then you will be asked if you want to continue.

4. Connect a keyboard to the system, if none is connected.

When you have connected a keyboard, press the **Yes** button to continue the calibration.

The **Touchscreen Calibration** screen will appear.

```
The calibration program will now be started automatically. To
calibrate your touchscreen, perform the following steps in the
calibration program.

- Select "H" to perform a Hard calibration.

- Select "X" to exit the calibration utility
  when finished

Press any key to continue . . .
```

5. Press any key on the keyboard when you are ready to begin calibration.

The **Touchscreen Driver Configuration** screen will appear.

```
DynaPro Thin Film Products Inc.      (c) Touch-Base Ltd. 1989-2000
Touchscreen Calibration Program (EEPROM version)  Version 4.26

----- Main Menu -----
H - Hard calibrate
T - Test menu
F - Display calib details
X - Exit

You must hard calibrate if you have not yet done so.
```

6. Type **H** for Hard Calibration.
7. Press **Esc** or **X** to exit the calibration utility.

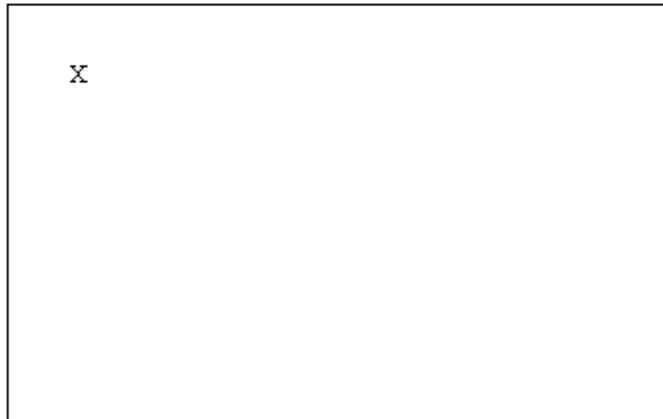
Important After calibrating the touchscreen, enter Interact in Program Mode. Verify that the cursor appears on the screen where you touch. If it does not, recalibrate the touchscreen. The calibration must be accurate to avoid activating a button unintentionally during Run mode.

Calibrating under Windows

To calibrate the touchscreen on computers running Windows complete the following steps:

1. Select **Start-Programs-UPDD-Calibrate**.

The following display will appear:



2. Place your finger on the **X** in the upper left corner of the screen.

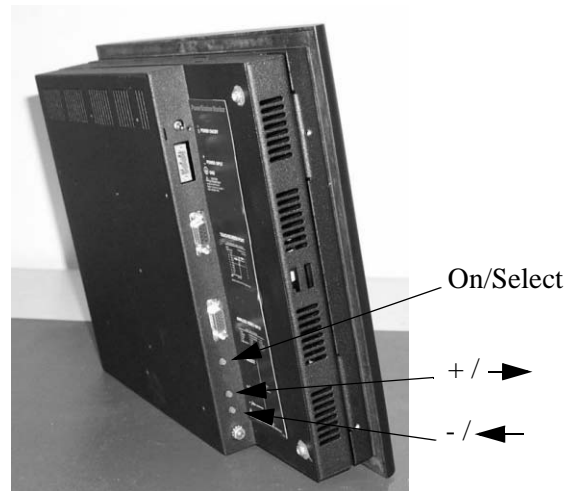
The **X** will automatically advance to the next corner when you touch it.

3. Touch the **X** in each of the next four locations.

After the calibration is complete, the UPDD calibrate program will automatically close and return you to the Windows desktop.

Adjusting the Video Image

The Industrial Monitor is equipped with an on-screen display (OSD) that allows you to adjust the video image for the best possible picture. You can do this whether you have a touchscreen or non-touchscreen monitor. You can make these adjustments by using the three buttons at the lower left side of the monitor, as shown below.

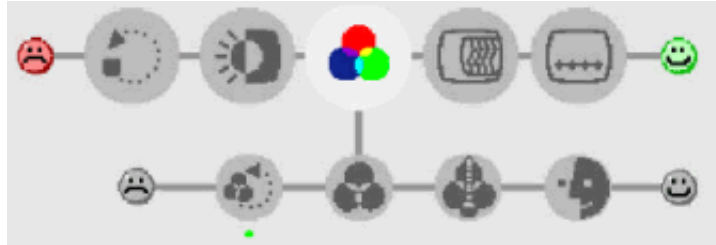


The buttons work as follows:

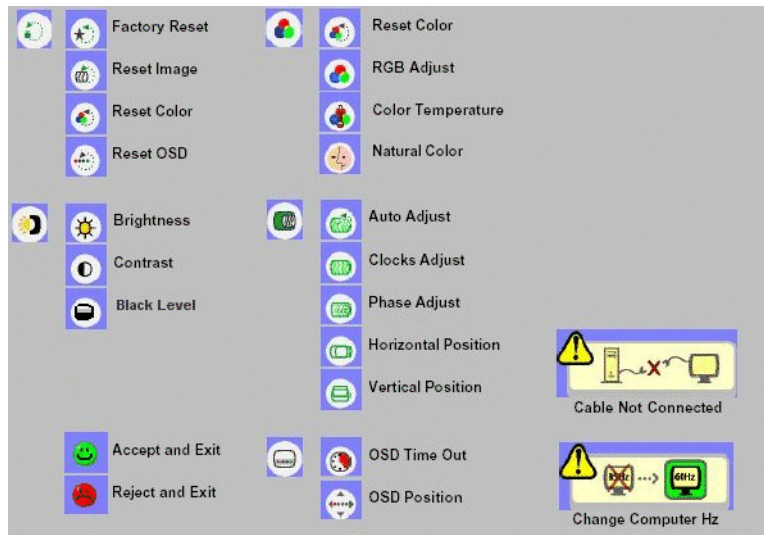
- **On/Select** — Switches the OSD on and off. When a particular setting you want to adjust is highlighted, press this button again to select the submenu. In most cases, this will display a control bar showing the increase or decrease in adjustment.
- **+ / →** — Functions like an arrow key on a keyboard, enabling you to progress through the OSD icons in order to select the setting you want to adjust. Once you have selected a setting, this button enables you to increase the value of the adjustment you want to make.
- **- / ←** — Functions like an arrow key on a keyboard, enabling you to reverse through the OSD icons in order to select the setting you want to adjust. Once you have selected a setting, this button enables you to decrease the value of the adjustment you want to make.

When you press the On/Select button, you will see the on-screen display illustrated similar to the figure below. This figure shows

the Color Adjustment icon selected.:



The figure below illustrates all the sub-menus associated with each selection along with two error symbols that may appear.



To adjust the video image on your monitor, complete the following steps:

1. Press the **On/Select** button to display the OSD.
2. Use the +/- buttons to choose the icon for the adjustment you want to make.
3. Press the **On/Select** button to activate the adjustment you want to make.

In the following settings, the monitor will display a control

bar, for making your adjustment:

- Brightness
- Contrast
- Black Level
- RGB Adjust
- Natural Color
- Clocks Adjust
- Phase Adjust
- Horizontal Position
- Vertical Position

In the following settings, the OSD provides selections in which you use the +/- buttons to move between the settings then choose the selection by pressing the **On/Select** button:

- Color Temperature
- OSD Time Out
- OSD Position

In the following settings, the On/Select button acts as a toggle switch, turning the settings on or off:

- Factory Reset
- Reset Image
- Reset Color
- Reset OSD
- Auto Adjust

4. In those settings that display the control bar, use the +/- buttons to make your adjustment.

The results of your changes will be immediately visible. Moreover, the monitor will "remember" all OSD adjustments so that you will not need to repeat them each time you turn on the monitor.

Note If the OSD is turned on and then left unattended, it will automatically shut off in 25 seconds.

Maintaining and Troubleshooting the Industrial Monitor

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

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

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| <i>Resolving Common Problems</i> | 56 |

Cleaning the Screen

Occasionally, you may wish to clean the Industrial Monitor's screen. Clean the screen using warm, soapy water and a cloth. You may also use any non-abrasive cleaner. See *Faceplate Chemical Resistance* on page 14 of this manual for a list of substances the screen can resist with no visible effect.

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

Warning Do **not** clean the unit while it is running. Especially if you have an Industrial Monitor with touchscreen, turn off the monitor before cleaning in order to avoid inadvertently activating the touchscreen.

Recalibrating the Touchscreen

If you have an Industrial Monitor with touchscreen, your touchscreen was calibrated by CTC Parker before your monitor was shipped. However, you may need to recalibrate the touchscreen when you begin using the Industrial Monitor for the first time, when you connect the monitor to a new computer, or whenever the cursor location and the place on the screen where the user touches do not match. See *Calibrating the Touchscreen*, beginning on page 43 of this manual for instructions on how to recalibrate your touchscreen.

Performing Internal Maintenance

The only internal maintenance procedures included in this manual are procedures to replace the fuse. If you need information on replacing the backlight bulbs, these instructions are included with the specific backlight bulb kit. Backlight bulb replacement instructions are also available on the CTC web site by selecting **Support - Product Manuals**.

To prevent injury to yourself and/or damage to the monitor, be sure to read and understand the procedures in this section before performing them.

This section will show you how to perform the following operations:

- Opening and closing the back cover
- Replacing a fuse

First, however, this section describes electrostatic discharge

(ESD) precautions that you should take whenever you work inside the Industrial Monitor.



Electrostatic Discharge (ESD) Precautions



Warning For safety reasons, the Industrial Monitor should be opened only by qualified service personnel.

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

- Always disconnect power from the monitor before opening or removing the back cover. **Do not** touch any components of the monitor while the monitor is on.
- Disconnect power before performing any internal maintenance or troubleshooting.
- Only handle internal components of the monitor 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 video controller board inside the monitor's back cover.
- Be particularly careful not to touch the components on the video controller board.
- Keep any monitor part in its anti-static packaging when it is not installed in the monitor and place it on a static dissipative mat when you are working on it.

Opening and Closing the Back Cover

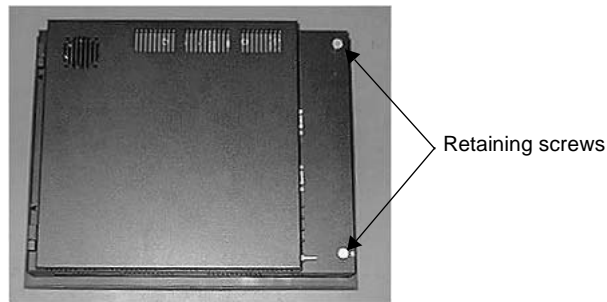
In order to perform internal maintenance on the Industrial Monitor, you will have to open and close the back cover of the unit. Those procedures are described here.

Opening the back cover

1. Turn off the computer to which the monitor is connected.
2. Turn off the monitor.
3. Unplug the monitor from its power source.

4. Disconnect the three cables attached to the upper left side of the monitor:
 - a. Power Input cable
 - b. Touchscreen cable (touchscreen monitors only)
 - c. Analog Video Input cable.
5. Remove the monitor from its enclosure or arm.
6. Place the monitor face down on a static dissipative mat in a location free from dirt and moisture and protected against static discharge.
7. If your monitor has been mounted on an adjustable arm, remove the screws that attach the monitor mounting cover to the back cover of the monitor; remove the monitor mounting cover.
8. Remove the two retaining screws that secure the back cover, as shown below.

Note The illustration below is of the 12.1" Industrial Monitor.



9. Open the back cover from the right side. It will swing from right to left on its hinges.
10. Proceed to the specific maintenance or troubleshooting procedures you need to perform.

Closing the back cover

1. Close the back cover of the monitor and fasten its two retaining screws.

2. If your monitor is mounted on an adjustable arm, replace the monitor mounting cover on the back cover of the monitor and fasten the retaining screws that you removed in step 7 above.
3. Reinstall the unit in its enclosure or on its arm.
4. Re-attach the Power Input cable, Touchscreen cable (touchscreen monitors only), and Video Input cable at the left side of the monitor.
5. Reconnect the monitor to a power source.
6. Turn on the monitor and computer.

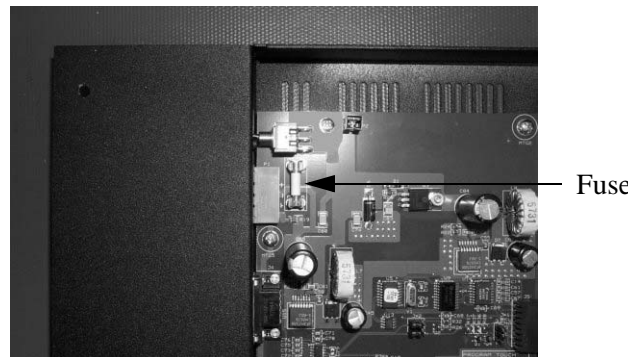
Replacing a Fuse



The Industrial Monitor uses a 3.15A fuse (IEC 127-2 sheet 1, fast-acting type), which may need to be replaced.

To replace the fuse, complete the following steps:

1. Open the back cover of the monitor (see the instructions for *Opening the back cover*, beginning on page 53 of this manual).
2. Locate the old fuse at the upper left of the video controller board on the inside of the back cover, as shown below.



3. Remove the old fuse and replace it with a new one.
4. Close the back cover of the monitor (see the instructions for *Closing the back cover*, beginning on page 54 of this manual).

Resolving Common Problems

This section provides some basic troubleshooting procedures to help you identify and correct problems you may have with the Industrial Monitor. Each problem is described, followed by 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 yourself, or if you encounter a problem that is not documented in this section, contact your CTC Parker distributor, check the Support page on the CTC website www.ctcusa.com, or call our Technical Support department at 513-248-1714.

Use the table below to find discussions of specific problems.

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Problems with Display Operation

A number of circumstances can cause problems in display operation. Here are some common problems and their solutions.

Computer is on, the video cable is connected, but the screen is blank.

Note If the video cable is not connected, the monitor will display the symbol: "Cable Not Connected".

1. The PC may be in screen saver mode or video "low power" mode. Touch the touchscreen (be careful not to activate an Interact or InteractX tool), move the mouse, or press a keyboard key to restore the image.
2. The monitor fuse has blown. Replace the fuse (see the instructions for *Replacing a Fuse* on page 57 of this manual).

Important If the monitor is exposed to a power supply voltage over 30VDC, its built-in protection will blow the fuse. In this case, you must correct the cause of the over-voltage.

"Change Computer Hz" symbol appears.

1. The currently chosen video mode is not in the monitor's list of supported modes. Consult the chart of *Video Modes Supported* on page 11 of this manual and set up your computer to use only those modes.
2. On computers running Windows 98, NT, Embedded NT, 2000, or XP Pro reduce the color palette—for example, from "High Color" to 256-color mode.

The touchscreen does not work properly, or calibration seems incorrect (touchscreen monitors only).

1. The computer wasn't restarted after installing the touchscreen drivers or after adjusting the touchscreen settings. Restart the computer.
2. Touchscreen calibration might be in error. Recalibrate the touchscreen (see the instructions for *Calibrating the Touchscreen*, beginning on page 43 of this manual).

3. The touchscreen drivers may have been installed incorrectly.
 - a. Look in the AUTOEXEC.BAT file for the following line, which verifies that the touchscreen driver is being loaded:
C:\TOUCH\TBDriver.exe
 - b. Make sure that the line that loads the mouse driver appears **before** the line that loads the touchscreen driver.

Important To perform this check, you must know the path for installing your mouse driver.

After calibrating the touchscreen, it does not work or follow your finger (touchscreen monitors only).

1. The touchscreen cable may be loose or improperly connected. Make sure that the touchscreen cable is properly connected.
2. The touchscreen cable may be damaged. Replace the touchscreen cable.
3. The touchscreen may be damaged. Contact CTC Parker Product Technical Support at 513-248-1714 about having the touchscreen replaced.
4. Cables or wiring inside the monitor may be damaged. Open the back cover of the monitor (see the instructions for *Opening the back cover*, beginning on page 55 of this manual) and inspect for broken, loose, or frayed cables or wiring. Secure loose cables and replace damaged cables or wiring.

Problems with the Displayed Image

A combination of incorrect on-screen display (OSD) adjustments can cause problems with the displayed image. In this circumstance, a good first step toward a solution is to select the Factory Reset icon in your OSD to reload the factory default settings. This will set up your monitor with standard video timings and provide a good starting place for fine-tuning adjustments.

Image does not fill the screen.

The current video mode has a resolution less than the monitor's pixel format. For example, the video mode is 640 X 480, and the monitor's pixel format is 800 X 600. Select the **Auto Adjust** selection in the OSD.

Image extends beyond the screen.

1. The horizontal and/or vertical position is not correct for the current video mode. Use the **OSD Horizontal Position** and/or **Vertical Position** selection to center the image on the screen.
2. The horizontal size is not correct for the current video mode. Use the **OSD Auto Adjust** or **Clocks Adjust** selection to fit the image completely on the screen.

Characters shimmer or appear fuzzy.

1. The clock phase for the current video mode is not correct. Use the **OSD Phase Adjust** selection to sharpen the image.
2. The horizontal size is not correct for the current video mode. Use the **OSD Auto Adjust** or **Clocks Adjust** selection to fit the image completely on the screen.

Important This problem may occur if the horizontal size is mis-adjusted by as little as one pixel too few or too many, so try to make as precise an adjustment as possible.

3. The current vertical refresh rate may not be optimal. If your computer's video card and driver will support it, change the vertical refresh rate until you find one that looks best with the monitor.

When video mode is changed, the screen image shifts left or right.

The image's horizontal position has not been optimized for the new video mode. Use the **OSD Horizontal Position** selection to center the image horizontally on the screen.

Note This adjustment is saved for each video mode individually, so you may have to make the adjustment for each video mode you use. However, you will only have to adjust once for each video mode since the adjustment will be saved permanently by the computer.

When video mode is changed, the screen image shifts up or down.

The image's vertical position has not been optimized for the new video mode. Use the **OSD Vertical Position** selection to center the image vertically on the screen.

Note This adjustment is saved for each video mode individually, so you may have to make the adjustment for each video mode you use. However, you will only have to adjust once for each video mode since the adjustment will be saved permanently by the computer.

Vertical bands appear in the image.

1. The clock phase for the current video mode is not correct. Use the **OSD Phase Adjust** selection to sharpen the image.
2. The horizontal size is not correct for the current video mode. Use the **OSD Clocks Adjust** selection to fit the image completely on the screen.

Important This problem may occur if the horizontal size is mis-adjusted by as little as one pixel too few or too many, so try to make the adjustment as precise as possible.

3. The current vertical refresh rate may not be optimal. If your video card and driver will support it, change the vertical refresh rate until you find one that looks best with the monitor.

Image appears faded or "washed out."

The contrast is set too high. Use the **OSD Contrast** selection to lower the contrast setting.

Top or bottom half of the screen looks dark.

One of the backlight bulbs may be burned out. Replace both backlight bulbs. Instructions for replacing the backlight bulbs are located on the CTC web site under the Support link. In addition, instructions are shipped with each bulb kit purchased from CTC Parker.

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