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LCD-V8™

Portable Workstation

User's Guide

Version 1.0

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Contents

Chapter 1 Introduction 1
About This User's Guide 2

Chapter 2 Installation 3
Before You Start 3
Important Safety Instructions 3
Where To Get Help 5
Unpacking Your LCD-V8 Workstation 6
Setup At A Glance 7
System Components 9

Chapter 3 Starting Your System 15
The Video Subsystem 15
LCD-V8 With Digital Flat Panel Controller 16
LCD-V8 With Analog Video Card And Conversion Board 17
Proper Care For Your Flat Panel LCD 21
Audio Controls 22
Using Your GlidePoint Touchpad 22
Customizing Your GlidePoint Touchpad 23
Troubleshooting Your GlidePoint Touchpad 24

Chapter 4 Adding Components 29
Opening The System 29
Installing Add-on Cards 31
Installing Internal Drives 33

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Appendix A Service And Warranty 37

Appendix B Technical Specifications 40

Mechanical Drawings 40
External Ports Description 42
PCI Flat Panel Controller Features 46
AGP Flat Panel Controller Features 48
A/D Conversion Board Features 50

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Chapter 1
Introduction

Welcome to your BSI (Broadax Systems, Inc.) LCD-V8 portable workstation. Your LCD-V8 workstation is one member of an entire family of portable computers and workstations designed by BSI.

Founded in 1986, BSI is one of the pioneers in the portable computer industry. BSI started by producing a transportable PC with an integrated monochrome CRT display. In 1987, BSI introduced its first flat panel portable PC-AT system with a back-lit super-twisted neumatic monochrome LCD. It represented BSI's successful effort in reducing the overall size and weight of a portable PC, while retaining all the expansion capacities of a desktop computer. Since then, BSI has continued to expand to the current lines we now have.

Your LCD-V8 workstation is designed to provide the full power of a desktop computer, and the ability to use standard add-on cards in a portable package. It features up to four drive bays, a crisp, bright flat panel LCD, detachable keyboard, GlidePoint touchpad pointing device, stereo speakers, dual cooling fans, 250W power supply, and a carrying case.

Combining cutting-edge processors and peripherals, your new LCD-V8 sets a new standard for portable computational power by delivering performance, versatile system configuration, high level of expandability, and reliability that can ultimately increase your productivity.

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About This User's Guide

This is your guide to setting up, adding new components, and diagnosing your workstation. You'll also find contact information here.

This guide tells you how to:

- Setup and start your workstation.
- Fine tune your flat panel LCD for best image quality.
- Add new expansion cards and drives.
- Care for your workstation.

This guide, however, contains no information regarding configuration of your add-on cards or additional drives. Refer to the setup information for those devices to complete your installation.

Your LCD-V8 workstation can be configured with a dual processor capable single board computer (SBC). If you initially purchased a single processor in a dual-processor capable system, BSI recommends that when you decide to add a secondary processor, you do so with professional assistance from BSI.

Any updates to this user's guide as well as additional technical information can be found on our web site: http://www.bsicomputer.com. Updates are referenced by their version numbers. Your current version number can be found on the inside cover of this guide.

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Chapter 2
Getting Started

Before You Start

Before you unpack and start using your LCD-V8 workstation, please take a few minutes to read these first few pages to prevent problems from arising due to shipping damages, missing items, or possible misuse of the workstation.

Important Safety Instructions

Before using your workstation, read the following safety instructions to make sure you use the workstation safely and effectively:

- Always check for any power supply input voltage selector switch before connecting the AC power cord to your workstation. Autosensing power supplies switch automatically to your AC supply voltage. Non-autosensing power supplies will come with a two position switch that sets the power supply for 115V or 230V AC input voltage. Be sure to select the correct AC input voltage if you have a non-autosensing type power supply.
- Use your workstation on a stable surface.

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- Always disconnect the power cord from the workstation before making any hardware installation. Be sure both the system and the external devices are turned OFF. Sudden surges of power could damage sensitive components.
- Before installing internal add-on cards or components, always ground yourself first to prevent static electricity from damaging the components. You can touch the metal housing of the power supply to discharge any electrostatic charge on your body, or use a grounding wrist strap attched to the chassis. Leave all electronic components in their antistatic containers until you're ready to install them.
- Do not block or cover the ventilation openings on the left and on the right-hand sides of the workstation chassis.
- Do not drop the chassis! Prevent any sharp or hard objects from hitting the LCD panel! The LCD panel is made of glass that can easily crack if dropped.
- Occasionally you may want to clean or dust off the external chassis and the LCD panel. Turn OFF the system power and disconnect the power cord before cleaning. Clean the chassis using a cloth only. Do not spray any liquid cleaner directly onto the screen.
- Do not open the system's back cover except for adding or removing expansion cards or drives. Except as specifically explained in this User's Guide, do not attempt to service the workstation yourself, this may void your warranty.
- Before transporting your workstation, be sure the LCD panel is pushed back into the chassis recess. Unplug the keyboard and touchpad cable and properly tuck it away in its storage space. Securely lock the keyboard in place.

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Where To Get Help

BSI provides technical assistance through online support and telephone services during regular work hours.

The following lists contact information:

Corporate headquarters contact information:

Broadax Systems, Inc.

17533-B Rowland St

City Of Industry, CA 91748

1-800-872-4547

E-mail: info@bsicomputer.com

On the web: www.bsicomputer.com

Technical support contact information:

Phone support is available Monday through Friday, from 8:30 AM to 5:30 PM Pacific time.

Tech support e-mail: support@bsicomputer.com

Before calling:

- Make a note of the BSI serial number(s) found on your workstation. They help our support staff quickly identify the exact item you have. If you have your invoice with you, write down the invoice number too.
- Write down exactly what occurred, including the configuration of your system and exact nature of the problem. Have this information ready when you call tech support.

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Unpacking Your LCD-V8 Workstation

Your LCD-V8 workstation is shipped in a corrugated paper carton with the workstation in its soft carrying case.

- Remove all packing materials from the workstation.
- Check for damage during shipping while unpacking the workstation. If you notice any damage, notify the shipper to report the damage. Then notify BSI customer service.
- The LCD panel is covered with a clear plastic protective film. Carefully peel it off before you start your workstation.
- Save all packing materials in case you want to transport it in the future.

You should find the following items:

- LCD-V8 workstation.
- Carrying case with telescopic handle and wheels.
- Power cord.
- Hardware User's Guide.
- Drivers and user's manuals for installed components.
- Any software that you may have purchased with the system.

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Setup At A Glance

Take a moment to familiarize yourself with the various components and external controls/connectors of your workstation with the help of the following illustrations.

Your LCD-V8 workstation is an all-in-one portable computer with a flat panel LCD and detachable keyboard. The keyboard is securely attached to the chassis by two latches.

- Set your workstation on a flat and stable surface so you can detach and lay down the keyboard. Since two internal fans are used to keep the system cool during operation, you should leave enough space around the unit to allow adequate airflow through the system.

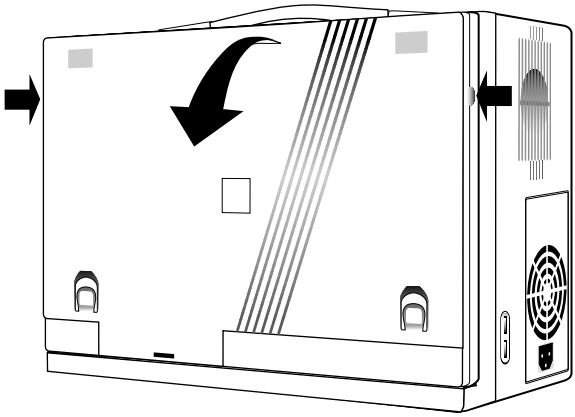


Fig.[1] Releasing the LCD-V8 keyboard.

- Face the chassis as shown and release the keyboard from the chassis by pushing in both release buttons as indicated by the arrows.

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- Tilt the keyboard away from the chassis and set it down on your work surface.
- Open the keyboard/touchpad cable storage compartment and pull out the cable.

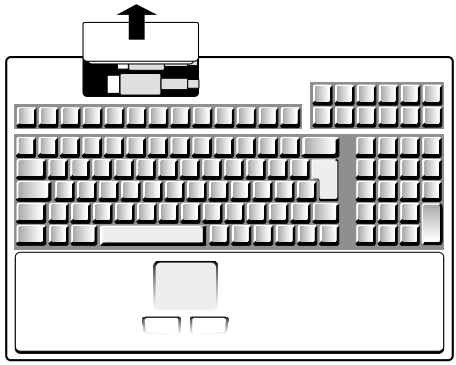


Fig.[2] Keyboard/touchpad cable storage compartment.

- Align the notches on the keyboard and touchpad connectors to their respective sockets on the chassis and firmly push them into place.

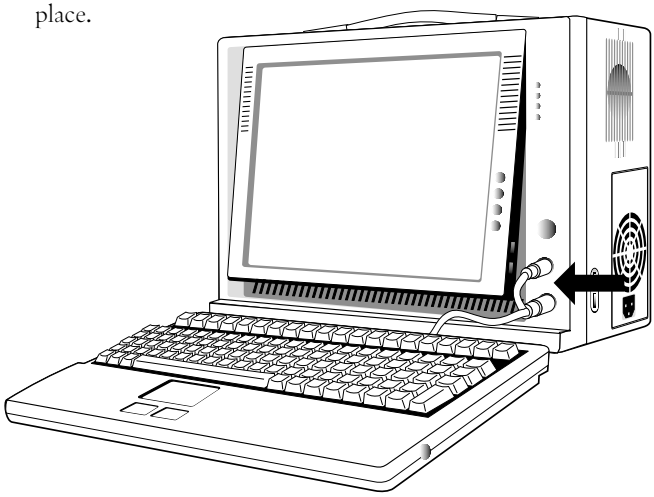


Fig.[3] Connecting the keyboard/touchpad cable to the chassis.

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- Set your power supply input voltage to your local AC voltage if you have a non-autosensing power supply. Auto-sensing power supplies do not have a switch.

System Components

The following illustrations will help you identify the main parts of your LCD-V8 portable workstation chassis. Depending on the specific type of LCD and LCD controller installed in your system, adjustment controls such as CONTRAST and BRIGHTNESS may differ from system to system.

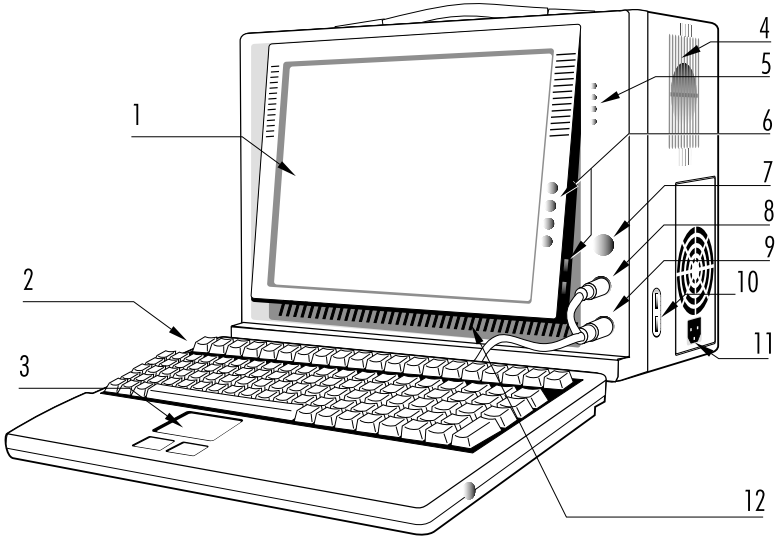


Fig.[4] Chassis components for LCD-V8 with 13.3" and smaller LCD screens.

1. *Flat panel display.*
2. *Keyboard with wrist-rest.*

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3. *GlidePoint touchpad.*
4. *Cooling fan.*
5. *System status LEDs, LCD on/off switch, system reset switch.*
6. *LCD brightness and contrast controls. The illustration shows both push-button type, located on the front panel, and thumb-wheel type controls, located along the side of the panel. Your system comes with only one type of control.*
7. *Power ON/OFF switch.*
8. *Touchpad connector.*
9. *Keyboard connector.*
10. *Left and right speaker volume controls.*
11. *AC power cord connector.*
12. *Location of left and right speakers.*

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On systems with 14.1" and 15.1" LCD screens, the LCD panel is fixed. Instead of a pull-up type LCD panel, you tilt the chassis to adjust the screen angle. Placement of some controls and speakers are also different as illustrated by the following drawing.

1. *System status LEDs, LCD brightness control.*
2. *Power on/off switch.*
3. *Tip-up legs.*
4. *Left and right speakers.*

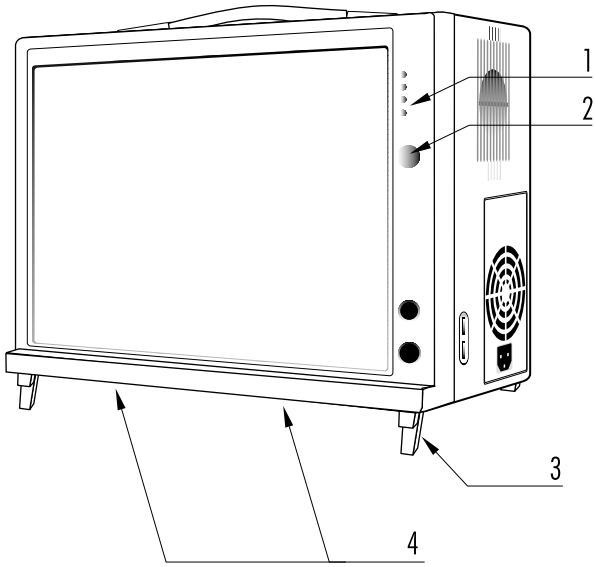


Fig.[5] Chassis components and control locations for LCD-V8 portable workstations with 14.1" and 15.1" LCD screens.

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On the left side of your chassis, you'll find the following :

1. *Expansion slot cover door.*
2. *Cooling fan.*
3. *3.5" half-height drive bays.*
4. *5.25" half-height drive bay.*

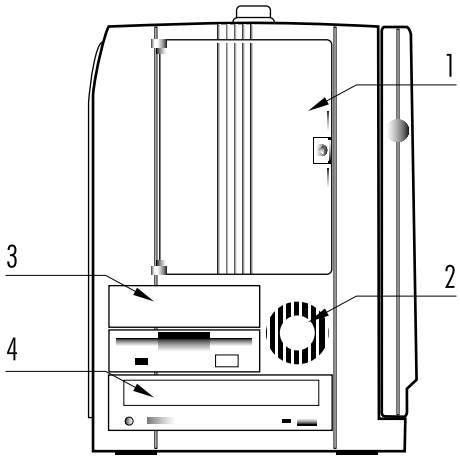


Fig.[6] Left-side view of your LCD-V8 portable workstation.

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On the back cover of your chassis, there are knockouts to mount D-sub connectors. In LCD-V8 systems based on AT form factor motherboards or single board computers, input/output ports such as serial and parallel ports use header pin connectors. These ports are externally accessible through D-shaped connectors mounted on slot cover brackets that occupy a slot opening. If you need to free up this slot opening for an add-on card, you can use these knockouts to reroute your input/output port connectors to the back cover.

1. *Input/output port knockouts .*
2. *Back cover retaining screws.*

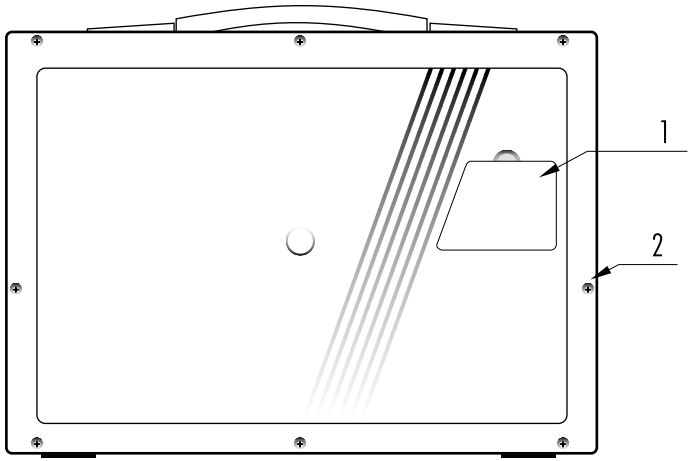


Fig.[7] Back view of your LCD-V8 portable workstation.

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Chapter 3
Starting Your System

Before you turn on your system, observing the following steps will prevent any startup problems.

1. If you don't have an auto-sensing power supply make sure the input voltage selector switch on the power supply is set correctly to either 115V or 230V depending on your local outlet voltage.
2. Connect the keyboard and touchpad connectors according to Figure [3].
4. Plug in the AC power cord. You are now ready to turn on your system.
5. Press the power on/off switch. The system will automatically start. If an operating system is already installed, your workstation should boot to the operating system's startup screen.

The following sections tell you more about your LCD controller, how to fine tune your LCD display, and configuration and trouble shooting techniques for your GlidePoint touchpad.

The Video Subsystem

The LCD-V8 series of portable workstations are available with different combinations of video controllers and LCD screens. The LCD may be an

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active matrix type incorporating amorphous silicon thin-film-technology (TFT), or a double-layer supertwist nematic type (DSTN). Each has up to 1024x768 addressable pixels and is capable of displaying color images from a palette of up to 16 million colors.

The LCD is either driven by a single video card or a combination of an analog/digital conversion board and an analog video card. The single card option incorporates a digital flat panel controller on a PCI or AGP plug-in card. The dual video controller option offers compatibility with standard analog video cards. It enables you to use a third party analog video card with the LCD screen. The conversion board converts the analog video output to digital data for the LCD.

Depending on how your system is configured, you'll find a set of controls, either on the LCD panel or on the card edge of the conversion board, to adjust the display quality of your LCD . The next two sections cover how to use these controls.

LCD-V8 with Digital Flat Panel Controller

If your workstation is configured with a digital flat panel controller, the image is already optimized for many display modes. You can adjust the brightness and contrast of your display through a pair of thumb-wheel controls located on the side panel of your LCD (on some models, you adjust the brightness and contrast using four push-button controls located on the front panel of the LCD).

You use the CONTRAST control to adjusts image brightness in relation to the background. The contrast control is indicated by this icon: ◑

To adjusts overall image quality and background screen brightness use the BRIGHTNESS control indicated by this icon: ☼

Figure [8] shows the location of these controls.

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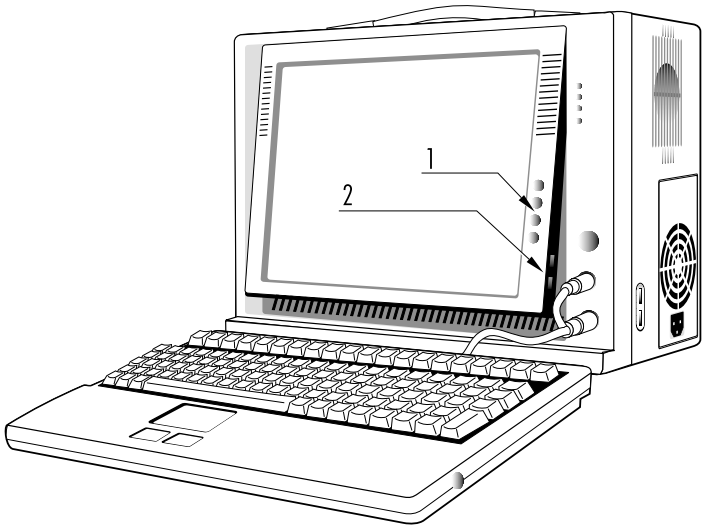


Fig.[8] Brightness and Contrast controls on systems with 13.3" or smaller LCD screens. Push button type (1) or thumb wheel type (2).

LCD-V8 with Analog Video Card and Conversion Board

If your workstation is configured with an A/D conversion board, you adjust the display characteristics of your LCD through an OSD (on screen display) menu. The OSD menu and menu items are controlled by four push button switches on the A/D conversion board's mounting bracket. The functions of the push buttons are:

A OSD menu on/off and menu page toggle.

B Page item select.

C Change parameter (move slider left or highlight item on the left).

D Change parameter (move slider right or highlight item on the right).

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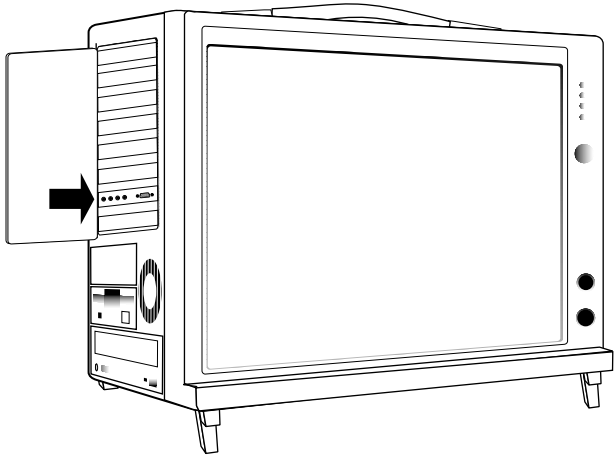
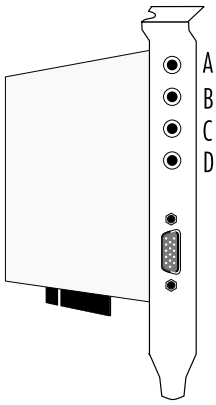


Fig.[9] OSD menu controls on the conversion board mounting bracket.

Follow these steps to use the OSD menu:

1. Turn on the system and wait for about twenty minutes before making any screen adjustments. The LCD needs time to become thermally stable to achieve more accurate results.
2. Locate the OSD control buttons on the left side of your workstation as illustrated in Figure [9]. Press button A to invoke the on-screen menu.
3. Press button A again to step through each OSD menu page. The top item on each page is always highlighted and selected by default.
4. Press button B to select other items on the page. The selected item will be highlighted.



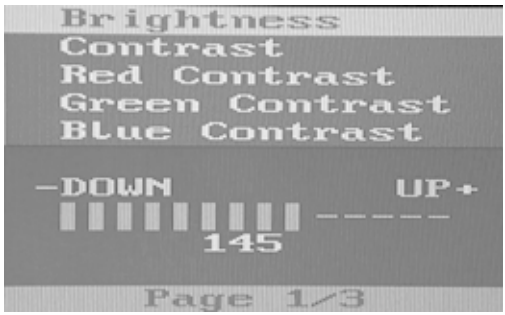
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5. Press button C or D to adjust the parameters corresponding to the highlighted item. If any adjustments are accomplished by moving a slider, button C moves the slider left and button D moves it right. If adjustments are made through options, button C selects options on the left side while button D selects options on the right side.
6. After you've made your adjustments press button A to disengage the on-screen menu.

The following are all the adjustable parameters as they appear on each page:

Page 1:

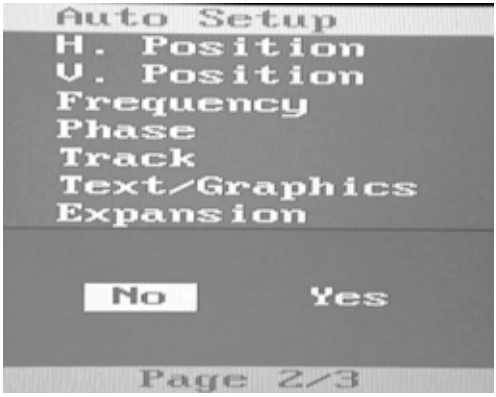
- Brightness - Adjusts overall image quality and background screen brightness.
- Contrast - Adjusts image brightness in relation to the background.
- Red Contrast - Adjust the contrast setting of the color red.
- Green Contrast - Adjust the contrast setting of the color green.
- Blue Contrast - Adjust the contrast setting of the color blue.



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Page 2:

- H Position - Adjusts the horizontal image position within the display area of the LCD.
- V Position - Adjusts the vertical image position within the display area of the LCD.
- Frequency, Phase, Track - LCD controller generates the pixel clock to ensure that the red, green, and blue components of each pixel precisely align with each other as each line is scanned. Adjust these to reduce noise in the video signals that may show as shimmering in the image.
- Graphics/Text - Select the video input for text mode (720x400/350) or graphics mode (640x400/350) [Not applicable if your video controller is set at VGA (640x480), SVGA (800x600) and XGA (1024x768) resolutions]. Specifically on LCD panels with 1024x768 pixels, this item has three sub-items labelled GFX/TXT1/TXT2. Select TXT1 to obtain a fixed font for text mode display. Select TXT2 to expand the text mode display to fit the entire panel.
- Expansion - If you select a display mode lower than 1024x768, this control can expand the image up to your LCD's native

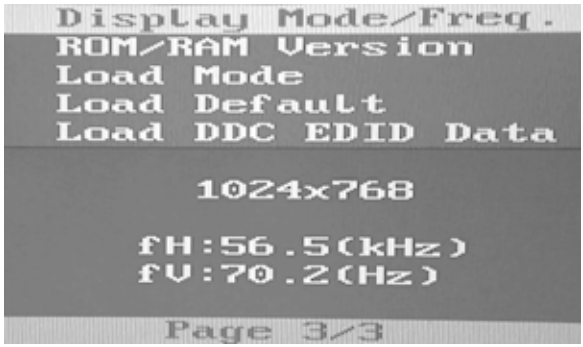


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addressable pixels. Note that when the controller expands an image, it uses interpolation to fill all addressible pixels. This may result in "jaggie" images.

Page 3:

- Display Mode / Frequency - Display on-time VGA input display resolution and Hsync/Vsync frequency
- ROM/RAM Version - Display on-system (PCB) MPU BIOS ROM version and 24Cxx serial EEPROM RAM version
- Load Mode - Load the on-time VGA input display mode RMA data (16 bytes) from on-system ROM to update the on-system 24Cxx serial EEPROMPage1.



Proper Care For Your Flat Panel LCD

The LCD panel is made of glass. It may break or crack by rough handling, excessive pressure, being struck by a hard object or if your system is accidentally dropped.

If the LCD panel is soiled or if occasionally you want to wipe off any dust or finger prints from the LCD surface do so with a damp cloth. Never spray cleaning fluids directly onto the LCD surface. Never use solvents or abrasives.

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Long contact with water may cause discoloration or spots on the LCD surface. Wipe off water drops immediately.

Audio Controls

There are two thumb-wheel volume controls located on the right side panel of your workstation. You adjust the volume of the left and right speakers individually using one of these controls.

If your system comes with a sound card, the stereo speakers are connected to your sound card's line-out socket through a stereo plug. If your system does not include a sound card, the speakers are connected to the system board speaker-out connector (if one is available). Only mono audio is available.

If you decide to install a sound card later, be sure to connect the stereo plug to your sound card speaker-out socket. Please refer to your sound card user's guide to properly configure it for your operating system.

Using Your GlidePoint Touchpad

Your keyboard has an integrated touchpad pointing device compatible with the Microsoft PS/2 mouse. You can configure your touchpad through the Windows control panel. Please refer to your operating system setup guide for more information.

To use the GlidePoint touchpad, lightly glide your finger across the surface of the touchpad. GlidePoint responds best to a light touch; no pressure is required. To 'click', do one of the following:

1. Gently and quickly tap the surface of the touchpad. A single tap is a single click while two rapid taps correspond to a double click.
2. Press the button at the base of the touchpad. Button function is

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dependent on how the GlidePoint touchpad is configured. The default setting configures the left button as the primary button--similar to how your left mouse button works.

To drag or highlight, double tap the surface, hold on the second tap and drag to the desired position. To drag further than the surface of the touchpad, press and hold down the left button as you drag.

Customize Your GlidePoint Touchpad

The GlidePoint touch pad is ready for use; however the following functions can be custom adjusted:

- Enable or disable tapping of the touchpad.
- Change or disable button function.
- Change GlidePoint orientation.
- Change the touch sensitivity.
- Display the current driver version.

To customize:

1. Insert the GlidePoint Driver and Utility Disk
2. From the DOS prompt (C:>), type a: gpsetup <Enter> (where "a:" represents the drive in use) to display instructions and commands for GlidePoint touchpad customization.

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Troubleshooting Your GlidePoint Touchpad

Q: How do I uninstall the GlidePoint drivers and utilities from the hard disk?

A: Follow these steps to uninstall the drivers and utilities.

1. Use a text editor such as NOTEPAD to access your AUTOEXEC.BAT in your root directory.
3. Remove the following statements:

   set mouse= c:<directory>

   C:<directory>glide

   where <directory> indicates the directory where you installed the GlidePoint software.
4. Save and then close AUTOEXEC.BAT
5. Open file SYSTEM.INI in your WINDOWS directory and move to the boot section.
6. Remove c:\glide\glide.drv from the "mouse.drv=" statement. Leave this statement as "mouse.drv=".
7. Save and then close SYSTEM.INI.
8. Open WIN.INI in your WINDOWS directory and move to the window's section.
9. Remove "c:glide xpoint.exe" from the load statement. Leave the statement as "load=".
10. Save and then close file WIN.INI
11. Exit from the text editor.
12. Reboot the computer for the changes to take effect.

Q: When I access a communication program to use my modem, either the communication application or the GlidePoint locks up. Why?

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A: This is most likely due to an IRQ conflict. It is critical that the devices on your computer accessing IRQ addresses do not conflict with each other.The basic rule of thumb (if the original IRQ assignments have not been changed) COM I will conflict with COM3 and COM2 will conflict with COM4. If a modem is configured on COM3 and the GlidePoint is plugged into COM 1, an IRQ conflict may result. If a network adapter is installed on the system using IRQ3, it may also conflict with a COM port used by another device.

Q: I've installed the GlidePoint drivers to be loaded in high memory but the touch pad does not work under Windows. What's wrong?

A: High memory can cause conflicts when Windows is running. If possible do not load the drivers into high memory.

Q: I'm using a computer that has power management software, and my GlidePoint is not functioning properly. What's wrong?

A: Power management software and BIOS settings can interfere with GlidePoint performance on some systems. Disable the power management utilities.

Q: I'm using the GlidePoint with an OS/2 system, but the touchpad is not functioning properly.

A: The standard mouse driver included with the OS/2 system must be used. Uninstall the touchpad driver, and use the OS/2 mouse driver instead.

Q: Why does my GlidePoint work with the older driver, but when I install the latest upgraded driver I experience various functionality problems?

A: If an upgraded driver is installed on top of an exisitng driver, there will be conflict. Always remove any existing driver so that you are at a Microsoft mouse set up. Then, install our latest driver. To remove the driver, go to your control panel, and then the mouse

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properties box. Under the "General' tab, select "Change". Select a MS mouse. This will rewrite your files and put your system back to an original configuration.

Q: My GlidePoint causes my system to lock up as I move the pointer around.

A: Try turning down the graphic accelerator. Go into the Control Panel. Open the system icon. Open the performance folder and select "graphics" under the advanced settings to move the switch down a notch or two. This usually resolves most lock up issues.

Q: Where is the GlidePoint touchpad control panel?

A: In Windows 95/98 go to the mouse properties box. Under the "General" tab, select Options to go to a 4 tabbed folder with the Alps logo present in the lower right hand corner. This is the correct box for settings that get saved.

Q: I changed motion and other settings in the control panel, but everytime I reboot Windows, the settings are being retained. What is wrong?

A: Make sure the path statement is correct in your autoexec.bat. Typically, there will be a mouse.ini file in the Windows\system directory. A statement in the autoexec.bat should point to that file. Look for any other mouse.ini files that reflect other pointing devices and disable them.

Q: I get "General Protection Fault" messages after loading the GlidePoint driver.

A: Use a text editor and go into your system.ini file. Under the 386Enh section, there is a statement that reads "mouse=scvmd.386". Change that to "mouse=vmd.386".

Q: Can I use the GlidePoint without loading the software?

A: Yes. You will not have the enhancements including "taps" at your fingertips but the GlidePoint will function as an MS mouse.

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Q: I have installed the GlidePoint software, and after rebooting my PC locked up. Whats wrong?

A: Once the programmable software is loaded, the GlidePoint takes an IRQ (interrupt) assignment. If the available IRQ is then selected by another device there will be a conflict. You can change IRQ settings for the GlidePoint in the mouse.ini file manually yourself where it defines the present IRQ. You will most likely see "Auto Determination" as the present settings. You might also choose to reselect the IRQ setting in the offending device instead.

Q: My GlidePoint works in DOS, but locks up in Windows.

A: Check the system.ini file for conflicting touchpad device drivers getting loaded. Check the Win.ini file for multiple load lines.

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Chapter 4
Adding Components

Your LCD-V8 portable workstation has the unique capability to accept a wide range of industry standard add-on cards through available expansion slots on the system board. The number of available slots and slot types depends on how your system was initially configured. In general your video card already occupies an AGP or PCI slot. If you have a conversion board, it will also take up a PCI slot.

This section provides you with procedures and illustrations to help you install add-on cards to your system. Before you start, shut down the system, ground yourself and disconnect the AC power cord.

Opening The System

Follow these steps to remove the back cover:

1. Place your workstation on a stable surface.
2. Face the back side of your workstation and remove the back cover by first removing all the screws as shown in Figure [7] on page 13.

Internal system components and layout are illustrated in the following figure. The type of slots available in your system may differ from the illustration. In general, ISA slots are black in color and about 6" long. PCI

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slots are about 3.5" long and are usually white in color. AGP slot is brown in color and approximately 3" long.

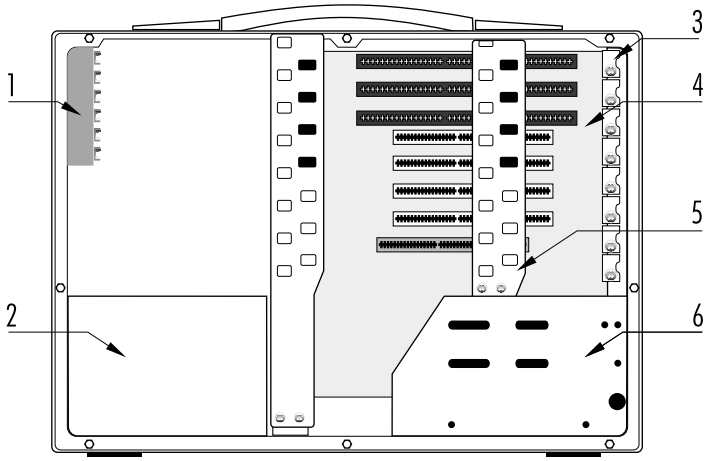


Fig.[10] LCD-V8 internal components and layout.

1. *Card edge retainer*
2. *Power supply.*
3. *Expansion slot cover.*
4. *System board.*
5. *Card stabilizer.*
6. *Drive housing.*

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Installing Add-on Cards

Follow these steps to install add-on cards to your workstation:

1. Remove both card stabilizers. They are metal bars with adjustable plastic hold-down clamps designed to hold add-on cards securely in their slots. The card stabilizers are attached to the chassis by screws located at both ends of the metal bars. Remove the screws and then the card stabilizers.
2. Locate an open slot compatible with your add-on card bus type.
3. Remove the screw that holds the slot cover and then remove the metal slot cover.
4. Hold your card by its edge taking care not to touch the gold-plated edge connectors. Insert the card firmly into the expansion slot.
5. Reinstall the screw.

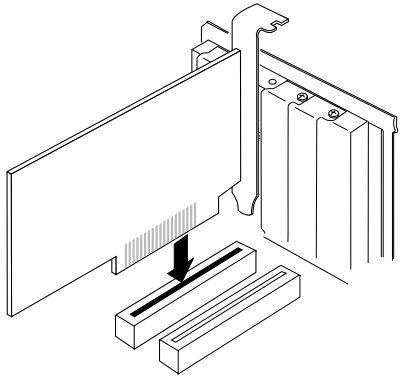


Fig.[11] Installing add-on cards.

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Next you need to reinstall the card stabilizers. The plastic hold-down clamps are designed to securely hold down your add-on card in its slot. The plastic clamps can be adjusted to accommodate add-on cards of different height. Follow these steps to finish installing your add-on card:

1. Locate the clamp that will be positioned directly above the add-on card.
2. Each clamp is secured by a rectangular shaped clip. Slide the clip along the metal bar as shown in Figure [12] to free the clamp.

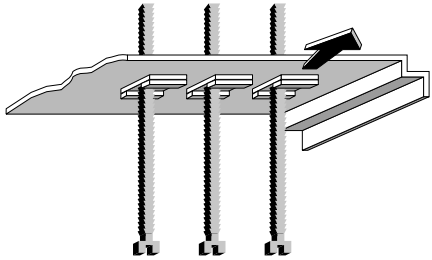


Fig.[12] Push the clip that holds the clamp.

3. With the clamp still free to move up and down, reinstall the metal stabilizer bars.
4. Push down on the clamp so that it comes in contact with the add-on card as shown in Figure [13].
5. Set the clamp by sliding the clip back to its original position.
6. Cut off any excessive part of the plastic clamp.

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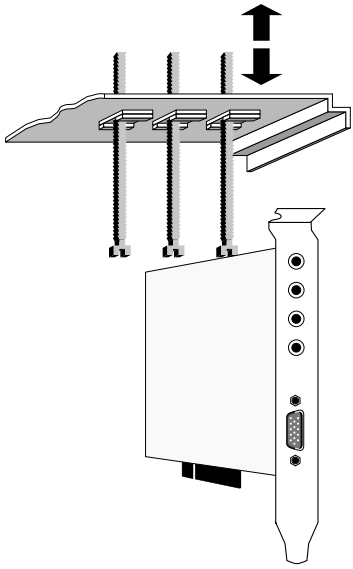


Fig.[13] Adjusting hold-down clamp.

Installing Internal Drives

Your workstation has space for a 5.25" and two 3.5" half-height drives. You may also have an optional fourth 3.5" hidden drive bay near the power supply. To install or remove a drive, follow these steps:

1. Shut down the system and unplug the power cord from the power supply. Set your workstation in its upright position with the back cover facing you.
2. The drive housing is attached to the chassis by four screws located on the bottom of the chassis and two screws on the left side panel

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as shown in Figure [14]. Refer to Figure [7] to take off the back cover. Once the back cover is removed, you can remove two mounting screws on the side panel.

3. Next, follow the steps in "Installing Add-on Card" to remove the add-on card stabilizers.

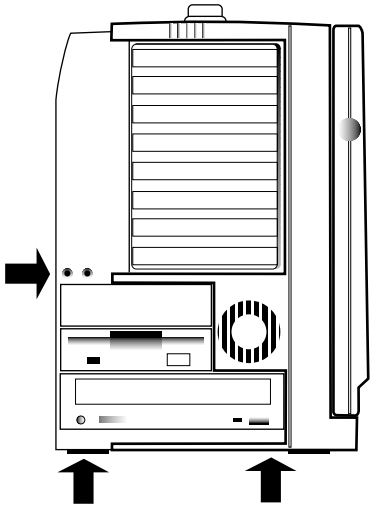


Fig.[14] Mounting screws on the side and the bottom.

4. Internal space is tight. You'll need to pull out the drive housing to add or remove a drive. Carefully unplug any signal and power cables attached to drives already installed in the system. Make a note of how they were originally connected. Especially note the orientation of the flat ribbon cables.
5. Face the back of the chassis and carefully pull out the entire drive housing assembly towards you.
6. Once you have the drive housing out of the chassis, adding or removing internal drives is straight forward. All drives are attached to the drive housing by four mounting screws.

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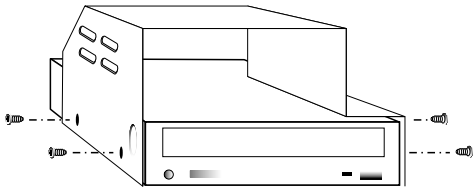


Fig.[15] Mounting screws for attaching drives to the drive housing.

7. Reinstall the drive housing in the reverse order.

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Appendix A
Service And Warranty

Limited Product Warranty

All hardware products are warranted to be free from manufacturing and material defects for one year from date of purchase. Products that become defective during such period shall be repaired or, at BSI's option, replaced at BSI service center. This warranty is made solely to Purchaser. This limited warranty is contingent upon proper use of the hardware products covered and does not cover products which have been modified or which have been subjected to unusual physical or electrical stress.

BSI's sole obligation (and Purchaser's remedy) in the event of breach of warranty shall be the repair or replacement of defective goods. In no event shall BSI be liable to purchaser or any other party for loss, damage, or injury of any kind arising out of or in connection with these terms and conditions, or any performance or nonperformance under these terms and conditions by Seller, its employees or agents, in excess of the net purchase price of goods and/or services actually delivered and paid for by purchaser. In no event shall BSI be liable for any incidental or consequential damages of any kind, including but not limited to any interruption of service, loss of business, loss of good will or loss of anticipated profits, even if BSI is notified of the possibility of such damages.

BSI, its hardware or software suppliers, make no warranty, express or implied, concerning the applicability of any hardware or software to any specific purpose.

BSI shall not be obligated to repair or replace goods rendered defective, in whole or in part, by causes external to the goods, such as, but not limited to, catastrophe, power failure or transients, over voltage on interfaces, environmental extremes, or use of unauthorized parts.

BSI makes no other express or implied warranty with respect to hardware products other than the limited warranty referred to above. All implied warranties including but not limited to implied warranty of merchantability and fitness for a particular purpose is hereby excluded.

Disclaimer Of Warranties On All Software

BSI makes no warranties, express or implied, with respect to all software and accompanying manuals and materials, regardless of their source, their quality,

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performance, merchantability or fitness for any particular purpose. All such items are sold or licensed to Purchaser by BSI on an "AS IS" basis. The entire risk as to their quality and performance is with the Purchaser. Should such software prove defective following their purchase, Purchaser (and not BSI or its suppliers), assumes the entire cost of all necessary service, repair or correction and any incidental or consequential damages resulting form any defect in such software. In no event will BSI or its suppliers be liable for direct, indirect or consequential damages resulting from any defect in any software, even if BSI has been advised of the possibility of such damages.

Service Policy And Procedures

BSI technical support and service department can be reached at:

Broadax Systems, Inc.

17533-B Rowland St

City Of Industry, CA 91748

Tech Support Tel:: (626)442-7038

Tech Support Fax: (626)442-9024

Tech Support E-mail: support@bsicomputer.com

Hours: 8:30 AM - 5:30 PM PST, Monday - Friday

Call BSI tech support to obtain an RMA number prior to returning any product for service. Always have your invoice and serial number ready when calling tech support. Mark the RMA number on the mailing label and enclose a copy of the invoice with a description of the problem.

Warranty repair covers labor and parts only. Purchaser pays for shipping to and from BSI. Return shipping charges will be COD unless other arrangements are made. For units whose warranty is close to expiration, to get warranty service, unit must arrive at BSI on or before date of invoice. BSI is not responsible for service items abandoned for more than 90 days.

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Out Of Warranty Service

BSI warrants that the parts installed will perform satisfactorily under normal conditions for a period of ninety (90) days. Parts replaced by BSI that become defective during this period shall be repaired, or at BSI's option, replaced free of charge, at BSI's service center. This warranty applies only to parts replaced and does not cover any other part already in the equipment. There is no warranty or guarantee of merchantability, or fitness for a particular purpose, with respect to the services performed or parts furnished by BSI. If repairs later become necessary due to other defective parts, they will be charged separately.

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Appendix B
Technical Specifications

Mechanical Drawings (all dimension in inches)

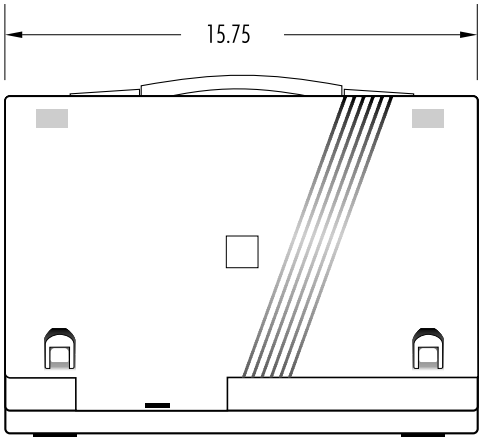


Fig.[16] LCD-V8 front view.

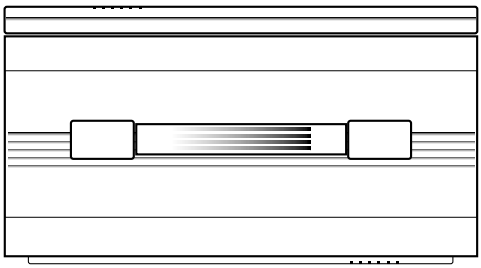


Fig.[17] LCD-V8 top view.

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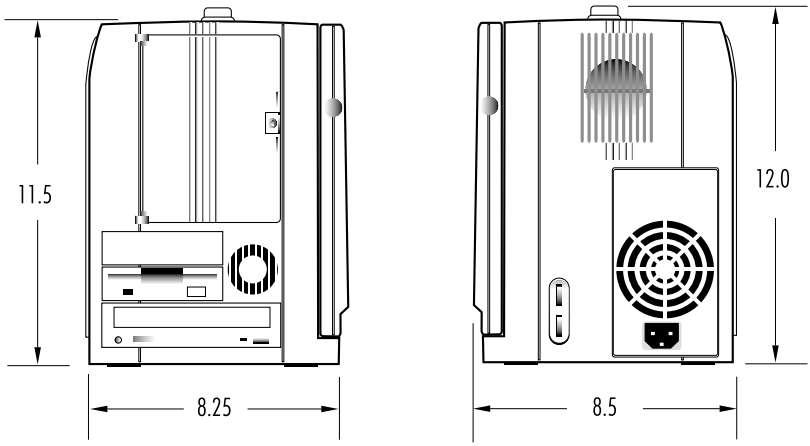


Fig.[18] LCD-V8 side views.

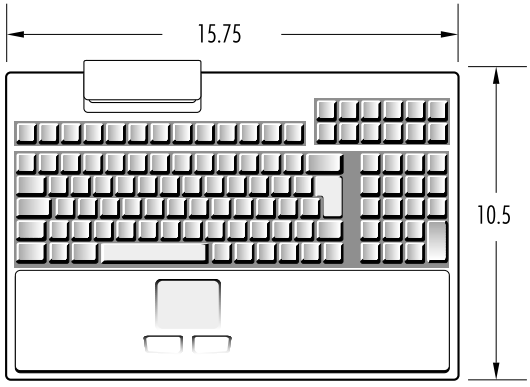


Fig.[19] LCD-V8 keyboard dimensions.

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External Ports Description

This section contains a description of the I/O ports on the LCD-V8 workstation.

Table B-1 Standard ports and connector type.

Port	Connector Type
Serial	DB-9 (male) RS-232
Parallel	DB-25 (female)
Video	Mini DB-15 VGA
USB	4-pin dual USB connectors
Mouse	6-pin Mini-DIN (female)
Keyboard	5-pin AT (female)

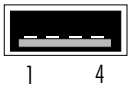


Table B-2 USB Port pinouts.

Pin	Assignment
1	VCC
2	-Data
3	+Data
4	Ground

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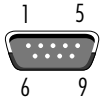


Table B-3 Serial port pinouts.

Pin	Assignment
1	DCD Data Carrier Detect
2	RD Receive Data
3	TD Transmit Data
4	DTR Data Terminal Ready
5	SG Signal Ground
6	DSR Data Set Ready
7	RTS Request to Send
8	CTS Clear to Send
9	RI Ring Indicator

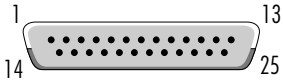


Table B-4 Parallel port pinouts.

Pin	Assignment	Pin	Assignment
1	Strobe	14	AutoFd
2	Data 0	15	Fault
3	Data 1	16	Init
4	Data 2	17	SelectIn
5	Data 3	18	Ground

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6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Ack	23	Ground
11	Busy	24	Ground
12	Error	25	Ground
13	Select		

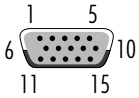


Table B-5 Video port pinouts.

Pin	Assignment
1	Red
2	Green
3	Blue
4	ID Bit
5	Unused
6	Red Return
7	Green Return
8	Blue Return
9	No Connect
10	Ground
11	ID Bit
12	ID Bit
13	Horizontal Sync

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14	Vertical Sync
15	Unused

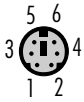


Table B-6 GlidePoint (PS/2 mouse) connector pinouts.

Pin	Assignment
1	Data
2	Reserved
3	Signal ground
4	Power (+5V)
5	Clock
6	Reserved

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PCI Flat Panel Controller Features

- Display adapter integrated with Chip & Technologies' 65554/5 Chipset.
- 2 MB upgradable to 4MB without CCD feature or 4MB w/ CCD feature available.
- Highly integrated design Flat Panel and CRT GUI Accelerator & Multimedia Engine, Palette/DAC, and Clock Synthesizer.
- Hardware Windows Acceleration.
  - 64-bit Graphics Engine
  - System-to-Screen and Screen-to-Screen BitBLT
  - 3-Operand raster-Ops
  - 8/16/24-bit Color Expansion
  - Transparent BLT, optimized for Windows BitBLT Format
- High Performance with deep write buffers
- CRT Support - 135MHz RAMDAC
- Display centering and stretching features for optimal fit of VGA Graphics and text on 800x600 and 1024x768 panels.
- Game Acceleration
  - Source Transparent BLT
  - Destination Transparent BLT
  - Double buffer support for YUV and 15/16bpp Overlay Engine
  - Instant Full Screen Page Flip
  - Read back of CRT Scan Line counters
- Optimized for High Performance Flat Panel Display
  - 640x480x24bpp
  - 800x600x24bpp
  - 1024x768x24bpp
  - 1280x1024x24bpp

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- 36-bit direct interface to color and monochrome, single drive(SS), and dual drive(DD), STN &TFT panels
  - VESA Standards supported DPMS for CRT power-down (required for support of EPA Energy-Star Program). DDC for CRT Plug-Play & Display Control
  - Power Sequencing control outputs regulate application of bias voltage, +5V to the panel and +12V to the inverter for backlite operation
  - Multiple Panel Support: 4 panels-640x480 and 800x600 TFT, 3 DSTN or 1024x768 DSTN. 3 panels-1024x768 TFT
  - Fully Compatible with IBM VGA
- BIOS Features
  - VGA Compatible BIOS
  - PCI Bus Support
  - PnP Support
  - VESA VBE 2.0 (incl. DPMS)
  - DDC 1, DDC 2AB
  - Text and Graphics Expansion
  - Auto Centering
  - 44 (40)K BIOS
  - CRT, LCD, Simultaneous display modes
  - Auto Resolution Switch
  - Multiple Refresh Rates
  - Extended Modes
  - Extended BIOS Function
  - 1024x768 TFT, DSTN Color Panels
  - Multiple Panel Support
  - Get Panel Type Function
  - Monitor Detect
- Drivers Features
  - High Performance Accelerated drivers
  - Auto Panning Support
  - LCD/CRT/Simultaneous Mode Support
  - Auto Resolution change
  - HW Stretching/Scaling

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- Double Buffering
- Internationalization
- ChipsCRL (Control Panel Applet)
- Direct Draw Support
- Game SDK support
- Dynamic Resolution Switching
- VGA Graphics applications in Windows
- VESA DDC Extension
- VESA DPMS Extension
- Property Sheet to change Refresh/Display
- Seamless Windows support

AGP Flat Panel Controller Features

Based on the Cyber9397DVD, your AGP flat panel controller is a SGRAM based, fully integrated LCD, CRT, and TV 64-bit 2D/3D multimedia flat panel controller for PCI systems. It is a high performance chip offering high speed 3D image processing in full compliance and compatibility with IBM VGA and VESA extended VGA; 32-BIT PCI 2.1 local bus interface with Bus Mastering capability; and with the Accelerated Graphics Port (AGP).

The Cyber9397DVD, equipped with a single-cycle 3D GUI engine, pipelines 3D rendering process architecture in hardware, providing real-time interactions with solid 3D models in CAD/CAM, 3D rendering operations, including:

- Gouraud shading for smooth object surfaces.
- Texture mapping for realistic object textures.
- 24-bit or 16-bit hardware Z-buffering for fast 3D depth calculations.
- Alpha Blending for transparency effects.

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Cyber9397DVD's highly innovative design, a full 64-bit memory interface with the high performance graphics engine which can support the RAMDAC running up to 170MHz. The Cyber9397DVD supports the AGP implementation, including 133 MHz operation with side-band addressing, in addition to the PCI 2.1 specification of 66MHz operation. The AGP operations can include direct access of the system memory by the 2D/3D engine to provide an increment of texture storage.

Cyber9397DVD's LCD interface dramatically reduces panel interface EMI noise by using LVDS and PanelLink technology. Advanced features of the Cyber9397DVD, such as color space conversation, TrueVideo scaling, dual-view display, Video module interface (VMI), interacts protocol Vertical Blanking Interleave (VBI), an 8-bit True Color DAC, and triple clock synthesizer allow this media chip to perform at peak levels.

The Cyber9397DVD's main system features include:

- High Performance 64-bit GUI.
- Highly Integrated RAM DAC and Triple Clock synthesizer.
- Full Feature High Performance 3D Engine.
- High Speed AGP and PCI Bus Mastering data bus supports DVD Video Playback.
- Hardware implementation of motion compensation; sub-picture supports DVD video in MPEG-1/2 format at sufficient frame rates.
- Advanced Flat Panel Image Control for display in TFT and DSTN with Advanced Phase Compensation (APC).
- Independent refresh rates for multi-view and Simultaneous Display of LCD+CRT or LCD+TV.
- Dual Video Windows for Video Conferencing.
- TrueVision Processor.

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- DirectDraw and DirectVideo Hardware Support.
- Versatile Motion Video Capture/Overlay Support.
- ClearTV for Flicker Free TV display.
- Advanced Mobile Power Management.
- CRT Power Management (VESA DPMS).
- Standard Bus Interface with bus Mastering Support.
- Accelerated Graphics Port support.
- PC98 Hardware Support.

A/D Conversion Board Features

The optional Analog-Digital Converter (A/D Converter) incorporated in your LCD-V8 workstation is an interface circuit designed to allow typical color TFT (Thin Film Transistor) or DSTN (Double-layer Supertwist Nematic) LCD panel to work with the analog signal from graphic cards that are normally connected to CRT type monitors.

The conversion board uses a single-chip analog panel monitor controller, TP6720, that contains all the logic required to convert PC VGA signals to color TFT/DSTN LCD signals. The TP6720 includes Memory Controller (MEMC), OSD Controller (OSDC), Display Mode Detector (DMD), Address Multiplexer (AMUX), Power Management Controller (PMC), PLL Frequency Synthesizers, Flat Panel Controller, RGB Space Converter and adds an MPU Interface to provide system setup and programming operation. With the deeper line FIFO and the multiple levels of display buffers, the TP6720 supports optimum system performance even in minimum memory configurations.

The TP6720 includes a built-in Frame Rate Controller to adjust the input horizontal/vertical sync. polarity and to provide the input/output frame rate control. It also implements a VESA DDC interface to communicate

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with users through VGA card and PC system. In addition, the TP6720 provides an 8-bit low byte address latch output for the external expansion ROM of 8x51 MPU and supports MPU with direct read/write frame buffer. The memory controller server as a DRAM controller for the frame buffer, which handles DRAM refresh, display panel refresh, frame buffer access by MPU and supply the control signal of SGRAM or SDRAM.

The TP6720 supports flat panel display with resolution up to 1024x768 true-color. The TP6720 also provides an approach to keep the horizontal/ vertical resolution of the display mode constant and centers the active display area on the panel. The flat panel interface supports Monochrome/ Color STN LCD panel, Color TFT LCD panel with direct panel interface to (DD) Dual-panel , Dual-drive for color and monochrome and (SS) Single-panel , Single-drive (supports 8,9,12,15,16,18,24,36-bit data).

Features Highlight:

- Provided 3-channel of RGB data input--Flexible 24/16/12-bit digital data input selection.
- VGA input Sync. capability
  - Horizontal Sync. : 15k-60kHz
  - Vertical Sync. : 55-90Hz
  - VGA input maximum pixel rate : 100MHz
- Support Flat Panel resolution up to 1024x768
- Flat Panel types support:
  - Color TFT LCD Panel
  - Color Dual-Scan STN LCD Panel
- Color TFT LCD Panel support:
  - Support 36/24-bit 2-pixels/clock data interface
  - Support 24/18-bit 1-pixels/clock data interface
  - Support 16/15/12/9-bit 1-pixels/clock data interface

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- Color Dual-Scan STN LCD Panel support:
  - Support 24-bit 4-pixels/clock data interface
  - Support 16-bit 8-pixels/3-clocks data interface
- Flat panel function support:
  - Amplitude modulation for color TFT LCD Panel
  - Color dithering for Dual-Scan STN LCD Panel
  - Shadow frame buffer interface for Dual-Scan STN LCD Panel
  - Pseudo frame buffer technique for Dual-Scan STN LCD Panel
  - Panel horizontal/vertical expansion
  - Panel horizontal pixel faded
- Flat panel frame buffer DRAM type support:
  - Provide SDRAM, and SGRAM memory configuration
  - Support 32-bit or 64-bit data width memory
- Provided 8x51 micro-processor interface:
- Provided flexible OSD (On Screen Display) function control.
- Time base clock resource support
  - Integrated triple PLL frequency synthesizers
  - Programmable VGA dot clock and up to 100 MHz
  - Programmable Panel dot clock and up to 100 MHz
  - Programmable/External memory clock and up to 100 MHz
  - Provided a MPU clock output from divided Panel clock
  - Provided a VGA dot clock output for external RGB AD converter
  - Provided a synchronized memory clock output for external SDRAM or SGRAM
- VESA DDC interface support
  - Support DDC1 (unidirectional) and DDC2B (bi-directional, I²C-compatible interface).
- VESA DPMS support
  - Built-In Power Management controller for Green PC of EPA

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Energy-Star support.

- Support multiple level power down : On/Standby/Suspend/ Off mode.
- Delay power on control to protect flat panel.

- Automatic VGA display mode detection and switching control.
- 208 PQFP Package.
- 3/5 volt operation.

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