CELSIUS

V L B

ORCHID

IMPORTANT

Record your serial number below

for future reference:

The serial number (xxxxx-#####) is located on the back of the board by the metal bracket.

Celsius/VLB

User's Manual

Orchid Technology
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Fremont, CA 94538-9973

TABLE OF CONTENTS

Orchid Technology has been a leading manufacturer of hardware and peripherals for personal computers since its incorporation in 1982, and is noted for introducing new standards to the personal computer industry:

1982 **PCnet**: first personal computer Local Area Network.

1984 **PCturbo**: first Accelerator card for PC compatible computers.

1985 **ECCELL**: first PC Multifunction card with error correction.

1987 **RamQuest 50/60**: first EMS (Expanded Memory Specification) product for the IBM PS/2 computers.

1990 **ProDesigner II**: first Beyond Super VGA graphics adapter to support 1024 x 768 graphics in 256 colors on interlaced and non-interlaced monitors.

1991 **Fahrenheit 1280**°: first to ship a Windows accelerator based on S3's 86C911 chip.

1992 **Fahrenheit VA:** first to ship a Windows accelerator with voice annotation built-in.

1993 **Celsius/VLB:** first to ship a Windows accelerator based on IIT's award-winning AGX015 chip.

The Orchid Celsius/VLB is a Windows accelerator for 486 personal computers that provides direct support for the VESA Local Bus (VL-Bus) standard. It combines a Graphical User Interface (GUI) accelerator for incredible speed, flicker-free 90Hz support, 16.8 million true colors, high resolution graphics (1280x1024x16 colors, non-interlaced) and full VESA compliance at an affordable price. In addition to the Windows drivers, the Celsius/VLB comes with *high performance 32-bit* AutoCAD Display List Drivers.

Thank you for purchasing the Celsius/VLB. Care has been taken to ensure that it will provide you with years of trouble-free operation. We believe you will be pleased with your purchase.

ORCHID

INTRODUCTION

The Celsius / VLB uses the IIT AGX015 graphics processor and high performance VRAM. The local bus design provides 32-bit direct support to the VESA Local Bus.

The Celsius / VLB implements hardware-based graphics instructions for improved performance of faster hardware-based graphic operations including, BitBlt, raster operations, image transfers, line drawing / clipping, color expansion and polygon fill.

The Celsius / VLB supports resolutions up to 1280x1024x16 colors *(non-interlaced)* and provides you with 16.8 (24-bit true colors) on-screen colors. The Celsius / VLB maintains full compatibility with most monitor types, including interlaced and non-interlaced monitors.

It comes with several software enhancements, such as graphics drivers for Microsoft Windows 3.1, AutoCAD (Protected Mode), AutoShade, 3D Studio, WordPerfect, PCAD, Microstation, VersaCAD 386 and VersaCAD Designer. Also included is the Big Picture feature, and a utility program that will allow you to customize the display parameters for your monitor.

In addition, the Celsius / VLB comes standard with 1MB of VRAM memory and is easily upgraded to 2MB. The additional memory is automatically detected by the Celsius / VLB.

About This Manual

This manual presumes that you are already familiar with your IBM PC compatible computer. While the Celsius/VLB has been designed to be easy to install, we recommend that you refer to your computer's reference manual when terminology or installation steps are unfamiliar to you.

This manual has been organized to help you set up and install the Celsius/VLB as quickly as possible. Each section is divided into short, easy to follow steps, to help you understand the installation and function of the Celsius/VLB.

Section 1: Installing the Celsius/VLB

Whether you are a beginner or an experienced user, this section will give you important information on the proper installation of the Celsius/VLB.

Section 2: Device Drivers

Here you will be given the information needed to install high resolution device drivers for Microsoft Windows 3.1, AutoCAD (Protected Mode), AutoShade, 3D Studio, WordPerfect, PCAD, Microstation, VersaCAD 386 and VersaCAD Designer. This section also covers the Big Picture feature and the monitor adjustment utility program.

Section 3: Technical Help and Information

If you are experiencing installation difficulties or require troubleshooting information, this section will give you checkpoints to look at to ensure that your Celsius/VLB is operating properly. Section 3 also includes information on the Celsius/VLB technical specifications and features.

Before You Begin

This manual will familiarize you with the features, installation and use of the Celsius/VLB. There are several symbols and conventions used throughout this manual which will help to draw your attention to a feature or to focus on important information:

When you see the Magnifying Glass it means the text is referring to something you should take a closer look at before proceeding further.

FILENAMES All MS/PC DOS filenames and DOS commands will be emphasized by this type style.

Common Names

PC Refers to the family of IBM PC, PC/XT or PC/AT compatible computers

SVGA Super VGA

VESA Video Electronics Standard Association

VGA Video Graphics Array

VL-Bus VESA Local Bus

VRAM Video Random Access Memory

Section

1

INSTALLING THE CELSIUS/VLB

The Celsius/VLB is designed to be easy to use and easy to install. There are three fundamental steps to the installation:

Step 1: Preparing your Computer

You will need to take the cover off your computer and prepare a VESA Local Bus (VL-Bus) expansion slot for the Celsius/VLB.

STATIC!

Before handling the Celsius/VLB, be sure to guard against electrostatic discharge. Do not wear clothing that causes static (such as wool sweaters). In most cases, touching the power supply housing before handling the board will discharge static electricity, or you may want to buy a Ground strap from your local computer store.

Step 2: Preparing your Celsius/VLB

The Celsius/VLB has one jumper that may need to be configured for your system. The jumper has been preset to provide optimum performance and, in most cases, will not have to be set again. However, because there are many different PC configurations, it is provided to ensure that the Celsius/VLB will work properly in your system. If you want to add memory to your Celsius/VLB, Section 3 will give you information on the type of memory used.

Step 3: Installing your Celsius/VLB

Once the Celsius/VLB has been securely seated in the computer and the cover replaced, the Celsius/VLB will be installed and ready to operate.

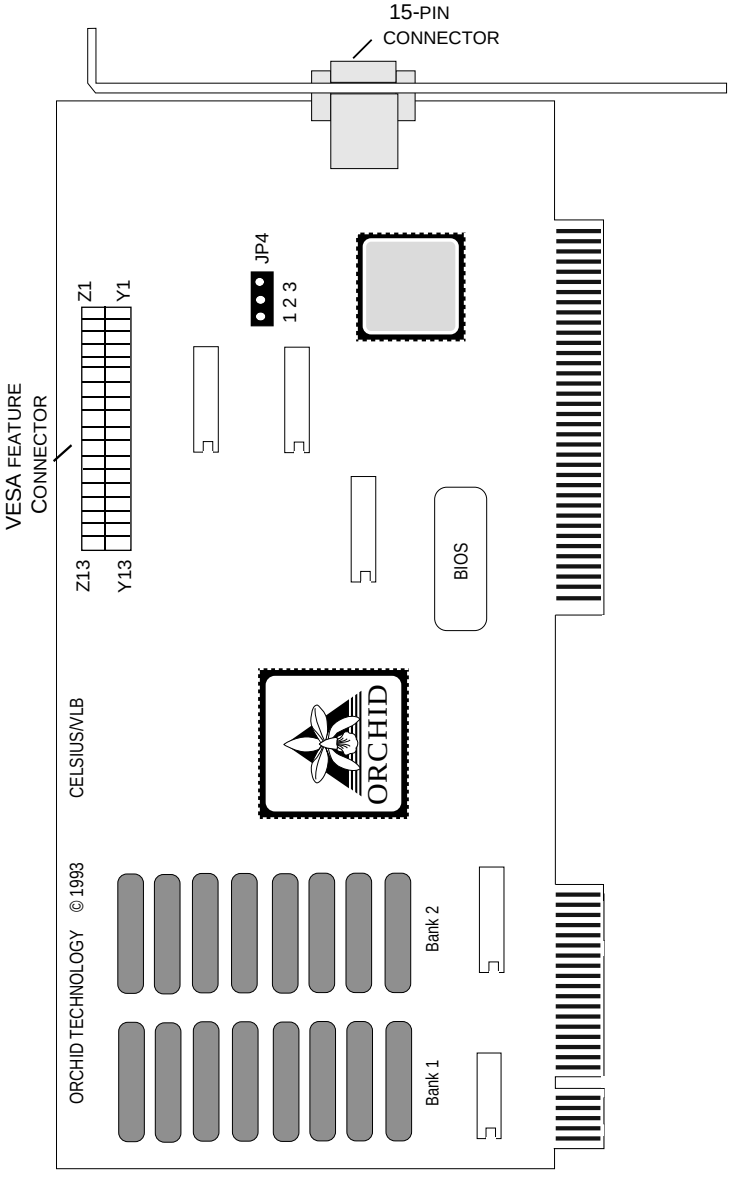


Figure 1.1: Celsius/VLB Diagram

Note: The feature connector is available only on the Celsius/VLB Revision B boards.

Summary of Jumper Setting

The following table lists the jumper setting used by the Celsius/VLB. For the location of the jumper setting, see Figure 1.1.

Location	Setting	Default	Function
Jumper JP4	Connect 1 & 2		Inverted Signal Polarity for the VGA Pass-Through Connector
	Connect 2 & 3	✔	Signal Polarity for VGA Pass-Through Connector

Table 1.1: Celsius/VLB Jumper Setting

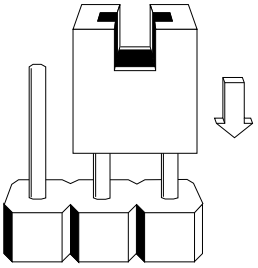
Step 1: Preparing Your Computer

1. Make sure the power to your computer is turned off and that all of the necessary power cords and cables are disconnected from the computer.
2. Remove the screws that secure the computer chassis cover and slide the cover off (be sure to keep the screws in a safe place).
3. Make sure your system is configured for color display. (Consult your computer user's manual for more information).

Step 2: Preparing Your Celsius/VLB

Jumper Setting

There is one jumper block used in the configuration of the Celsius/VLB. The following information will explain the use and proper setting. See Figure 1.1 for the jumper location.



Jumper blocks are configured by positioning a jumper connector over two pins on the jumper block. This creates a closed circuit across the two selected pins.

Figure 1.2: Jumper Connector

Jumper JP4: Signal Polarity for VGA Pass-Through

Jumper JP4 controls the use of the signal polarity for VGA pass-through. In its factory setting, the jumper connector is positioned on pins 2 and 3 of the jumper block. To invert the signal, place the jumper connector across pins 1 and 2.

Signal Polarity for VGA Pass-Through
The figure on the right shows the jumper connector across pins 2 and 3 of Jumper JP4.

This is the default setting

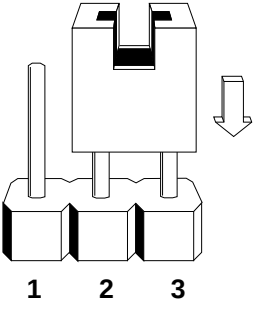


Figure 1.3: Jumper JP4 (pins 2 and 3 connected)

Step 3: Installing Your Celsius/VLB

Once you are sure your motherboard switches are set properly, you are ready to install the Celsius / VLB.

1. Locate a 32-bit VL-Bus slot for the Celsius / VLB. Be sure to check if any other video adapters in your system conflict with the video memory addressing of the Celsius / VLB. If so, and it is an on-board video display adapter, make sure it is disabled. If the video adapter is other than a standard MDA video adapter, remove it from the system.
2. Remove the rear slot cover bracket if it is present (keep the screw for future use).
3. Carefully hold the Celsius / VLB by its top edges and lower it into a VL-Bus expansion slot. Ensure that the Celsius / VLB seats firmly into the slot, and that it aligns properly with the computer's backplane.
4. Secure the Celsius / VLB in place by fastening its metal bracket to the computer backplane (use the screw you removed in # 2).
5. Replace the cover of the computer along with the previously removed cables and power cords.
6. Connect your monitor cable to the 15-pin monitor connector on the Celsius / VLB (see Figure 1.4).

Installation of your Celsius / VLB is complete.

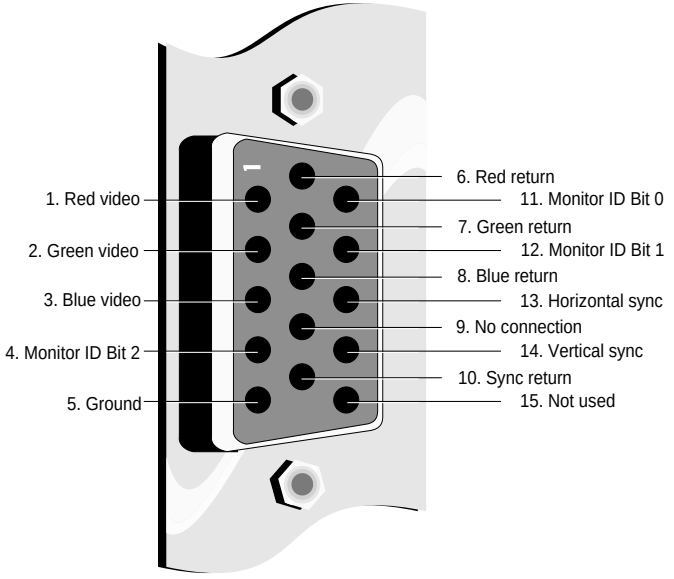


Figure 1.4: Standard 15 pin D-shell Connector

Additional Information

Memory Address Setting

For more details on the Memory Address Segments of Celsius/VLB, see Section 3.

Celsius/VLB uses the A000-C7FF memory address segment. Some memory manager programs may try to use this address segment. If you encounter a conflict, add an exclusion statement in your CONFIG.SYS file, to exclude the Celsius/VLB address segment from being used. (Refer to your software program user's manual for details on using an exclusion statement).

VESA Support

The Celsius/VLB is designed to support the VESA Local Bus (VL-Bus) standard. The local bus design provides 32-bit data transfer between the video card and the CPU, resulting in incomparable video speed.

Section

2

DEVICE DRIVERS

To take full advantage of the advanced features of the Celsius / VLB, high resolution drivers for popular software applications are provided. Follow the instructions for CINSTALL.EXE for automatic driver installation.

Your Celsius / VLB provides register-level VGA mode compatibility. Software programs can be operated in this mode using drivers supplied by the software manufacturer. The high resolution drivers included are the following:

Some software programs may already include software drivers for the Celsius/ VLB. Check with the manufacturer for verification.

Microsoft Windows	**WordPerfect**
AutoCAD Release 11,12	**3D Studio**
AutoShade	**VersaCAD 386**
PCAD	**VersaCAD Designer**
Microstation	

New drivers will be made available through the Orchid Technical Support Department, or may be downloaded from the Orchid BBS.

Before You Begin

Before installing any of the Celsius / VLB high resolution drivers, verify the capabilities of your monitor. If you install drivers for a resolution that your monitor is not capable of producing, the results will probably be unsatisfactory.

The following instructions assume you are using a floppy drive designated as Drive A:, and a hard drive designated as drive C:. Please substitute the correct drive letter if your computer is configured differently.

Using CINSTALL.EXE

You must have an application installed on your computer before you can install the Celsius/VLB software drivers for that application.

CINSTALL.EXE is an easy-to-use, menu driven installation program that will allow you to install Celsius/VLB software drivers automatically. Insert the Celsius/VLB Diskette into your A: drive and invoke the CINSTALL.EXE utility by typing:

A:**CINSTALL** Enter ↵

From the Display Driver Installation Program menu, press any key, and the following menu will appear:

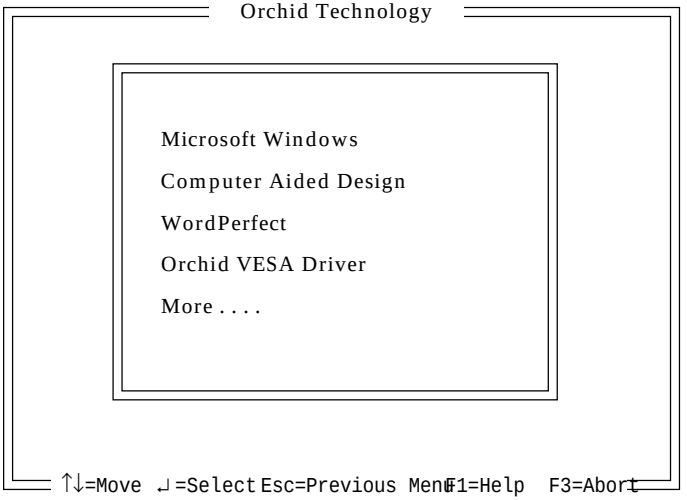


Figure 2.1: CINSTALL Main Menu

From the Main Menu, highlight the driver to be installed by using the <↑ ↓> arrow keys and press <ENTER> to select.

For assistance during the installation process, CINSTALL.EXE provides on-line Help by selecting the F1 key at any time.

Proceed through the installation as prompted by the CINSTALL.EXE program. Repeat this process for all of the drivers you wish to use with the Celsius / VLB.

Microsoft Windows Driver Installation

Once you select the Microsoft Windows installation, the CINSTALL program automatically copies the Windows 3.1 driver, the Celsius Display Setup and ADJUST utilities to your hard drive.

Follow the instructions below:

To configure the Windows 3.1 driver:

1. Start the Microsoft Windows application.
2. If this is your first time installing the Orchid Hyperdriver, the Control Panel window will automatically be open on your desktop. If not, double-click on the Control Panel icon (usually located in the Main group on the Windows desktop). From the Control Panel window, double-click on the Celsius Display icon. The following menu will appear:

You may need to run Windows Setup from the DOS prompt to change your video driver, if you had another manufacturers video card installed previously.

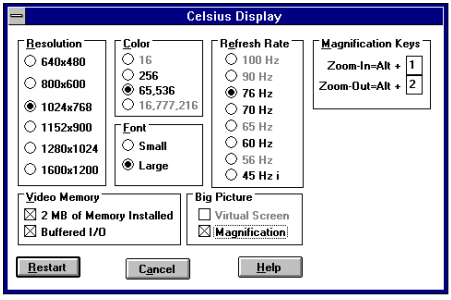


Figure 2.2: Celsius Display Menu

This easy-to-use utility will allow you to configure the following:

- Choose the desired color, resolution and menu text font size (96 or 120 DPI) for your Windows driver.

- Select whether you have 2MB of memory installed. Note: The default setting is 1MB. After you install an additional 1MB of memory, you must select this setting.
- Select Buffered I/O, which allows for faster input and output operations. Note: Some systems may have problems when this feature is enabled. If you experience problems such as unrecognizable characters on the display, disable this feature.
- In addition, the Big Picture feature is provided, which includes Virtual Screen and Magnification options for your display.

3. Make your desired selections and restart Windows for all configurations and changes to take effect. Use this utility now and for any future changes to the Celsius/VLB video display.

You are now ready to use the graphics capabilities of the Celsius/VLB.

For details on using the other CINSTALL menu options, press the F1 key at any time for on-line help.

Big Picture

The Big Picture feature of the Celsius Display utility offers two options: Virtual Screen and Magnification.

Virtual Screen

You can use the Virtual Screen option to create a desktop work space (see Figure 2.2). With Virtual Screen, your mouse movement automatically pans the desktop to give you access to any part of your document or window without resizing or using scroll bars. It's an ideal solution for spreadsheet or desktop applications. A large area of display can

be panned and viewed by simply moving your mouse. Virtual Screen doubles your work space by transforming your standard VGA monitor into a virtual display with pixel resolution up to 1024x768.

To configure Virtual Screen:

1. Start the Microsoft Windows application.
2. From the Control Panel window, double-click on the Celsius Display icon. The menu in Figure 2.2 will appear.
3. From the Big Picture box, click on Virtual Screen.
4. Click on your choice of resolution, color and menu text font size. Click on Restart to reset Windows so your changes will take effect.

Magnification

The Magnification option allows you to enlarge a portion of your document to its maximum size. This is ideal when you need a closer view of your drawing. The Magnification Key Configuration selection will allow you to configure a Hot-Key sequence to activate the following options:

In = Zoom In. Use the In command to magnify a portion of your document. *(Default is <ALT> + 1)*

Out = Zoom Out. Use the Out command to see all of your document at one time. *(Default is <ALT> + 2)*

To configure Magnification:

1. Start the Microsoft Windows application.
2. From the Control Panel window, double-click on the Celsius Display icon.
3. From the Big Picture box, click on Magnification.
4. Click on the Magnification Key Configuration

option. An additional set of options will appear on the Celsius Display menu (see Figure 2.3).

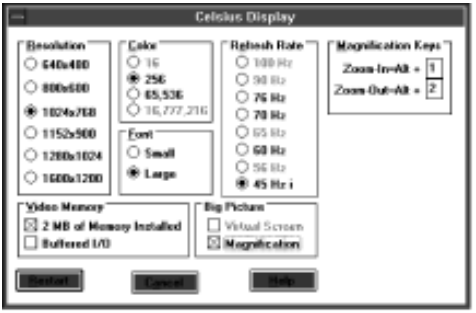


Figure 2.3: Magnification Option Menu

5. Select a Hot-Key to activate each of the Magnification features. Press <ALT> + a letter key of your choice. Click on Restart. When Windows restarts, the Magnification icon will appear on the desktop.

UTILITY SOFTWARE

Using ADJUST

The ADJUST program will allow you to customize the display parameters for your monitor in Windows 3.1. ADJUST can be installed using the CINSTALL program (see Using CINSTALL). To run the ADJUST program, follow the steps below:

Pre-packaged parameter files that have the .CRT extension can be loaded by selecting the File/Open menu.

1. Start the Microsoft Windows application.
2. From the Celsius program group, double-click on the ADJUST icon. The following menu will appear:

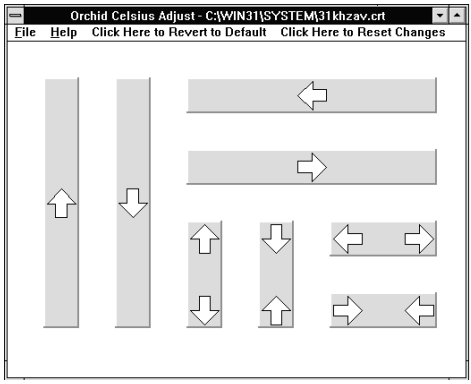


Figure 2.4: Celsius ADJUST Screen

There are eight panels on the ADJUST menu. You can shift the display area to the left, right, top, or bottom. Adjust the display on the screen by simply clicking and moving your mouse on the arrows located on the panel. You can also maximize or minimize the display horizontally or vertically.

If the display loses synchronization while you are in the ADJUST program, press the <ALT> + <F> keys, then press the <D> key for Default Display parameters. To revert to the previous changes, press <ALT> + <F>, then press the <R> key. Once you have made your selections, save them to a new file by selecting Boot With from the file menu.

Section

3

TECHNICAL HELP

Orchid Technology is known for its responsiveness to its customers. This section will give you helpful hints for troubleshooting Celsius/VLB.

Troubleshooting the Celsius/VLB

The following information will help you diagnose problems you may have with the Celsius/VLB.

Following these simple steps serves a two-fold purpose:

> You may be able to fix your problem and avoid having to contact the Orchid Technology Technical Support Department...
>
> or
>
> if these steps do not help you solve your problem, the results will most certainly give you a better handle on what to tell the Technical Support Analysts once you do contact them.

The information provided here is in symptom/response form. That is, a symptom is given, and a check point response is provided for you.

Symptom 1

The computer does not power-up or respond when powered on. The screen is completely blank. There is no familiar boot up (POST test) beep.

Check

1. Is the Celsius/VLB properly installed in the slot? Is the edge connector inserted all the way into the expansion slot? Is the Celsius/VLB properly aligned with the motherboard's backplane?

2. Is there another display adapter in your system? If it is an on-board video display adapter, make sure it is disabled. If the video display adapter is other than a standard MDA video adapter, remove it from the system.
3. Is the computer set up correctly for the Celsius / VLB? Refer to your computer's reference manual for information on setting up your computer.
4. Are your computer and monitor plugged in? Check the power cables to your computer and monitor.

Symptom 2

The computer gives an error of 1 long beep and 2 short beeps at power up.

Check

1. Take a look at the check points for symptom 1, steps 1 through 4.

Symptom 3

The computer seems to boot up properly but there is no display.

Check

1. Is your monitor plugged in? Check the power cable to your monitor.
2. Is your monitor cable fastened securely and properly? Check both the connection at the monitor and at the Celsius / VLB card.
3. Is your monitor cable the correct kind for the Celsius / VLB? Check Section 1 for the proper pinout information to determine if your cable is correct.

4. Is there another display adapter in your system? If it is an on-board video display adapter, make sure it is disabled. If the video display adapter is other than a standard MDA video adapter, remove it from the system.

Symptom 4

The display loses synchronization once it gets into a graphics program.

Check

1. Is the vertical hold on your monitor properly set?
2. Is your software properly installed for your current application? Check Section 2 for Device Driver information.
3. Is your monitor able to display the graphics mode you are using? Double check your monitor specifications to determine if you are operating in a graphics mode that your monitor simply cannot handle.
4. Are you using the correct vertical refresh rate for your monitor? Double check your monitor specifications for the refresh rates supported.

Symptom 5

The Celsius/VLB works well in another brand computer, but not at all in mine.

Check

1. Take a look at the check points for symptom 1, steps 1 through 4. It is a pretty good guess that the problem isn't the Celsius/VLB if it is working properly in another system.

TECHNICAL INFORMATION

This section covers the specifications and features of the Celsius / VLB, as well as information on upgrading the memory.

Celsius/VLB Technical Specifications

Configuration

Celsius / VLB - 1024 KB
2048 KB

Video Chipset:

IIT AGX015

Upgrade RAM Chips:

256KB x 4, 80 nanoseconds or faster VRAM

Computers Supported:

486 and compatibles (with VL-Bus connector)

Interface Speed

Up to 50MHz

BIOS:

8-bit

Bus Connector:

32-bit

Card Size:

9.6" x 4.2"

Output Connectors:

15-pin D-Shell VGA

Feature Connector (VESA compliant) *(Revision B boards only)*

Additional Features:

Supports

100 Hz Vertical Scan Refresh Rate

800 x 600 x 16.8 million colors

640 x 480 x 64K colors

1024 x 768 x 256 colors - Interlaced and Non-Interlaced

1024 x 768 x 64K colors - Interlaced (with 2MB VRAM)

1280 x 1024 x 16 colors - Non-Interlaced

1280 x 1024 x 256 colors - Non-Interlaced (with 2MB VRAM)

Memory Address Segments:

RAM: A000-BFFF

ROM: C000-C7FF

I/O Address: 3B0-3DF (IBM standard)

Temperature:

Operating: from 0 to 40 degrees C

Storage: from -25 to 90 degrees C

Humidity:

Operating: from 15% to 90%

Storage: from 0% to 90%

Resolutions and Refresh Rates

Please be sure your monitor supports your selected mode and frequency (refer to your monitor's user's guide).

Resolution	Maximum Memory	Colors	Vertical Refresh
1280x1024	1MB	16	45,56
1152x900	1MB	16	45,56
1024x768	1MB	256	45,60,70,76
800x600	1MB	256	56,60,70,90,100
	1MB	65,536	56,60,65,90
640x480	1MB	256	60,70,90,100
	1MB	65,536	60,70,90,100
	1MB	16.8 million	60,70,100
1600x1200	2MB	16	45
1280x1024	2MB	256	45,56
1024x768	2MB	65,536	45
800x600	2MB	16.8 million	60,70

How to obtain the Memory Upgrade Kit

If you would like to add more memory to your Celsius / VLB, you can call our Technical Support Staff and ask about which memory kit options are available, the costs of each, and the method of payment.

Adding Memory

The Celsius / VLB comes configured with 1MB of VRAM (Video Random Access Memory) and is easily upgraded to 2MB. There are no switches or jumpers to set for the additional memory. The additional memory is automatically detected by the Celsius / VLB, and must meet the following specifications:

Avoid electrostatic discharge when handling the memory chips. Be properly grounded by touching the power supply housing or use a Ground strap.

- 256K x 4 VRAM (eight memory chips).
- Operate at 80 nanoseconds access time or faster. The access time is indicated on the chip as follows:

  -8 = 80 nanosecond access time

- Use only the following certified VRAM memory:

Manufacturer	Part Number
Micron	42C4256Z
Mitsubishi	M5M442256AL
Samsung	KM244C257Z

Feature Connector Pin Outs (VESA Standard)

The VESA standard Feature Connector (or Auxiliary Video Connector as it is sometimes called) is located at the top right of the Celsius / VLB (see Figure 1.1).

The feature connector permits third party add-on accessories to both share signals and share control of the VGA circuitry. The following table lists the feature connector's pin-out information:

Celsius/VLB Feature Connector Pin-Outs							
Pin	Function	Pin	Function	Pin	Function	Pin	Function
Y1	PB	Y8	SI	Z2	Ground	Z9	Ground
Y2	PG	Y9	Dot Clock	Z3	Ground	Z10	Ground
Y3	PR	Y10	Blank	Z4	Ext Video Select	Z11	Ground
Y4	PI	Y11	HSync	Z5	Ext Sync Select	Z12	No Connect
Y5	SB	Y12	VSync	Z6	Ext Dot Clk Select	Z13	No Connect
Y6	SG	Y13	Ground	Z7	No Connect		
Y7	SR	Z1	Ground	Z8	Ground		

Table 3.1: VESA Feature Connector Pin-Outs

FCC NOTICE

FCC# DDS7EF0493-93-CEL

Celsius/VLB
Certified compliant with FCC Class B limits, part 15

To meet FCC requirements, shielded cables are required to connect the unit to a Class B certified device

"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

This equipment generates and uses radio frequency energy and, if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio or television reception.

This device has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. Only equipment (computer input / output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this product.

If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient the receiving antenna.
2. Relocate the computer with respect to the receiver.
3. Move the computer away from the receiver.
4. Plug the computer into an outlet which resides on a different circuit breaker than the receiver.
5. If necessary, consult your dealer, or an experienced radio or television technician for additional suggestions.

You may find the booklet **How To Identify and Resolve Radio-TV Interference Problems** helpful. It was prepared by the Federal Communications Commission and is available from the U.S. Government Printing Office, Washington, DC 20402. Refer to stock number: 004-000-00345-4.

Orchid Technology is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

Operation with non-certified equipment is likely to result in interference to radio and TV reception. The user must use shielded interface cables in order to maintain the product within FCC compliance.

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