



Kelvin

User's Manual

for models:

Kelvin EZ

Kelvin 64



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Introduction

Kelvin™ is a powerful graphics accelerator that provides high-speed horizontal and vertical acceleration in all graphic modes. It uses a non-interleaved DRAM interface with twice the throughput. The result is top graphic responsiveness.

Two versions of Kelvin are available: *Kelvin EZ* is the 32-bit version of Kelvin and supports resolutions up to 1280x1024 and colors up to 16.8 million. *Kelvin 64* is the first affordable 64-bit graphics accelerator for ISA, VL-Bus, PCI and Pentium systems. Kelvin introduces Green PC Power Management and VESA Display Power Management Signaling (DPMS). Operating at resolutions up to 1280x1024, the Kelvin's powerful architecture accelerates *all* your modes, provides true high resolution graphics and full VESA compliance.

In addition, Kelvin comes with a comprehensive range of software enhancements and utility programs. Orchid's customized Windows drivers incorporate "Big Picture," a feature that provides pan and zoom capabilities. A user-friendly screen utility is also provided that adjusts the refresh rate and centers the screen *without* using conventional memory.

Thank you for purchasing Kelvin. 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.

About This Manual

This manual presumes that you are already familiar with your IBM PC compatible computer. While Kelvin 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 Kelvin as quickly as possible. Each section is divided into short, easy-to-follow steps, to help you understand the installation and function of Kelvin.

Section 1: Hardware

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

Section 2: Software

Here you will be given the information needed to install high resolution device drivers such as AutoCAD, Windows 3.1, Lotus 1-2-3 and WordPerfect. Kelvin also provides a screen utility that adjusts the refresh rate and centers the screen.

Appendix A: Technical Information

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

Appendix B: Green PC

Appendix B provides details on the Green PC feature.

Important! - Before You Begin

This manual contains information for all of the products listed below. All references to "Kelvin" will refer to all these products, unless otherwise noted.

Kelvin EZ-VLB

Kelvin EZ-VLB provides 32-bit graphics processing. It is VESA Local Bus (VL-Bus 2.0) compliant and supports 50MHz operations. Kelvin EZ-VLB supports resolutions up to 1280x1024 and colors up to 16.8 million.

Kelvin EZ-PCI

Kelvin EZ-PCI is the PCI version of Kelvin EZ. It provides burst mode technology, which is required for the fastest graphics possible in Windows, OS/2, UNIX and other GUI environments.

Kelvin 64-VLB

Kelvin 64-VLB provides 64-bit graphics processing. It is VESA Local Bus (VL-Bus 2.0) compliant and supports 50MHz operations. Kelvin 64-VLB supports resolutions up to 1280x1024 and colors up to 16.8 million.

Kelvin 64-PCI

Kelvin 64-PCI is the PCI version of Kelvin 64. It provides burst mode technology, which is required for the fastest graphics possible in Windows, OS/2, UNIX and other GUI environments.

Kelvin 64-ISA

Kelvin 64-ISA is the ISA version of Kelvin 64.

This manual will familiarize you with the features, installation and use of your Kelvin. 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.



When you see the Exclamation Mark, it gives important information on avoiding damage to property.

Common Names

DPMS	Display Power Management Signaling
ISA	Industry Standard Architecture
PC	Refers to the family of IBM PC, PC/XT or PC/AT compatible computers
PCI	Peripheral Component Interconnect
SVGA	Super VGA
VESA	Video Electronics Standards Association
VGA	Video Graphics Array
VL-Bus	VESA Local Bus



Section

1

INSTALLING KELVIN

The Kelvin graphic cards are designed to be easy to use and easy to install. There are no switches or jumpers to set. If you want to add memory to Kelvin now or later, see "Adding Memory" in this section.

Hardware Installation

1. Turn off the power to your computer and disconnect all power cords and cables from the computer.
2. Remove the screws and slide the cover off.
3. Select an expansion slot for Kelvin. *Depending on what card you have, select a 32-bit VL-Bus slot for the Kelvin VLB versions, or a 32-bit PCI slot for the Kelvin PCI versions, or a 16-bit ISA slot for the Kelvin ISA version.*
4. Remove the rear slot cover bracket if it is present and keep the screw for future use.
5. Carefully hold Kelvin by the top edges and lower it into its expansion slot. Ensure that Kelvin seats firmly into the slot.
6. Secure Kelvin in place by fastening its metal bracket to the computer backplane.
7. Reconnect previously removed cables and power cords and replace the cover of the computer.
8. Connect your monitor cable to the 15-pin monitor connector on Kelvin (see Figure 1.4).



STATIC!

Before handling the Kelvin, be sure to guard against electrostatic discharge. Be properly grounded by touching the power supply housing, or you may want to buy a Ground strap from your local computer store.

Kelvin hardware installation is complete.

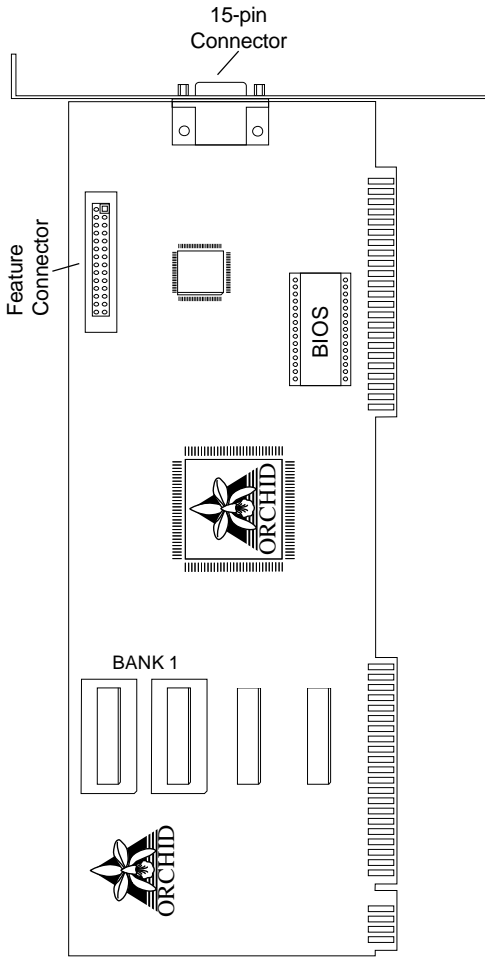


Figure 1.1: Kelvin EZ-VLB & Kelvin 64-VLB Diagram

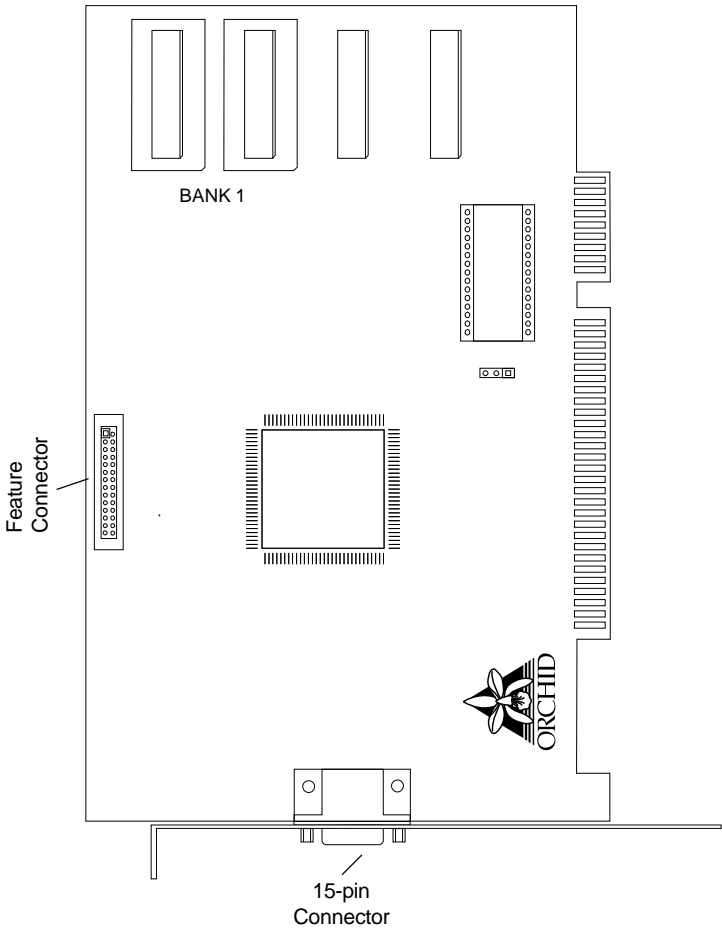


Figure 1.2: Kelvin EZ-PCI & Kelvin 64-PCI Diagram

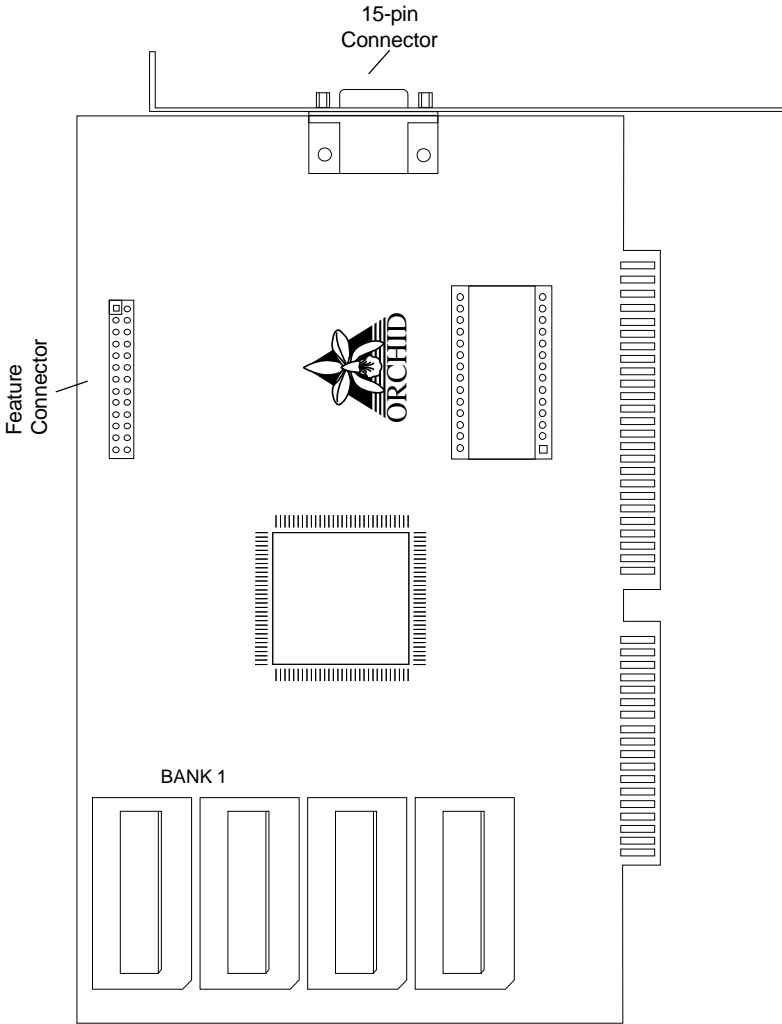


Figure 1.3: Kelvin 64-ISA Diagram

Adding Memory

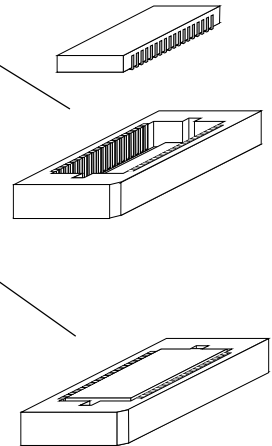
Kelvin comes configured with 1MB of DRAM (Dynamic Random Access Memory) and is easily upgraded to 2MB. The additional memory is automatically detected by Kelvin and must meet the following specifications:

- 256K x 16 DRAM
- Operate at 70 nanoseconds access time or faster. The access time is indicated on the chip as follows:
-7 = 70 nanoseconds access time

Installing the memory chips:

To add 1MB of memory to your Kelvin, you will need to install two 256K x 16 DRAM chips into BANK 1. See the following steps for proper installation. *NOTE: Avoid electrostatic discharge when handling the memory chips. Be properly grounded by touching the power supply housing or by using a Ground Strap.*

1. To install a memory chip, position it over the empty socket. Make sure the writing on the chip is facing the same direction as the memory chips already installed.
2. Place the memory chip down into the socket.
3. Use your thumbs to press evenly each side of the memory chip down into the socket. You will hear a small "snap" as the chip is fully installed.



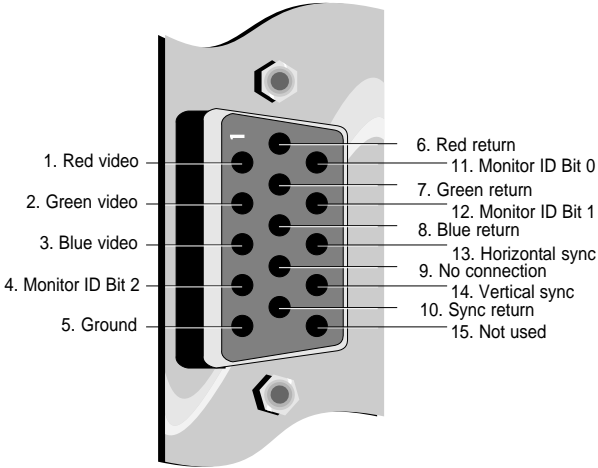


Figure 1.4: Standard 15 pin D-shell Connector

Section

2



Some software programs may already include software drivers for Kelvin. Check with the manufacturer for verification.

SOFTWARE OVERVIEW

Kelvin comes with software device drivers for popular software applications and a comprehensive range of utility programs. Kelvin 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 available are:

Windows 3.1
Lotus 1-2-3

WordPerfect
AutoCAD

Other drivers are available through the Orchid Technical Support Department, or may be downloaded from the Orchid Bulletin Board System or CompuServe.



If you install drivers for a resolution that your monitor is not capable of producing, the results will probably be unsatisfactory and may damage your monitor.

Before You Begin

Before installing any of the Kelvin high resolution drivers, verify the capabilities of your monitor. If you use Windows, you should set Windows to use the standard VGA driver before beginning the Kelvin driver installation. To set up the standard VGA driver, follow the instructions below:

1. Change to your Windows directory. The Windows Setup screen is displayed by typing:


SETUP **Enter** ←

2. Highlight the Display option and press ENTER. From the menu select the VGA video display driver and press ENTER.
3. Save your configuration and exit to DOS.

SOFTWARE INSTALLATION

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.

You must have an application installed on your computer before you can install the Kelvin software drivers for that application. KINSTALL.EXE is an easy-to-use, menu driven installation program that allows you to automatically install the Kelvin software drivers and utilities to your hard drive. Insert the Kelvin disk into your floppy drive and invoke the KINSTALL.EXE installation program by typing:

A : \KINSTALL 

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

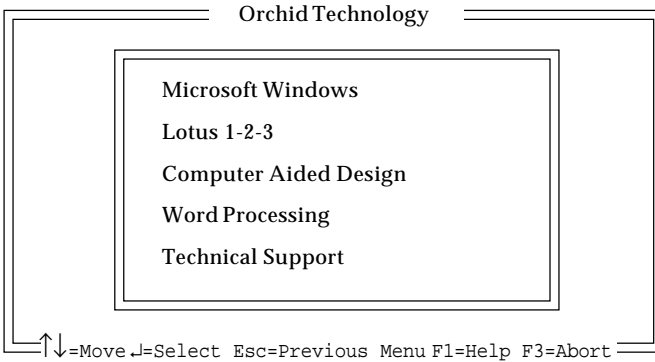


Figure 2.1: KINSTALL Main Menu Screen

From the Main Menu, highlight the driver to be installed by using the ↑↓ arrow keys and press ENTER to select. Proceed through the installation as prompted by the program. Repeat this process for all drivers you wish to use with your Kelvin.



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

Network Considerations



The Orchid icon will appear only on workstations that have a Kelvin installed.

The installation program offers standard and network installation options for Windows drivers. When using Windows in a Novell (or compatible) network, select the Network Server Installation option. The installer will ask for a directory name to install the drivers to. You must install the Kelvin Windows drivers to the *shared* Windows directory on the network server. Once the drivers are installed on the network server, the Orchid icon appears in the Windows Control Panel on each workstation, for individual driver customization.

WINDOWS UTILITIES

Kelvin Setup Utility

This easy-to-use setup menu allows you to configure your Windows video display driver, configure your monitor, center the display and enable the power management feature. The Kelvin Setup Utility can be accessed from the Windows Control Panel

To configure the Windows driver:

1. Start the Microsoft Windows application.
2. Double-click on the Control Panel icon. Double-click on the Kelvin Setup icon and the following menu appears:



NOTE:
The Font Cache option on the Kelvin Setup menu is not available with the Kelvin EZ or the Kelvin 64-ISA card.



Figure 2.2: Kelvin Setup Menu

This easy-to-use setup menu allows you to configure your Windows video driver by choosing the resolution, colors, font cache, text font size, and configure monitor's refresh rates. The Kelvin Setup menu also includes the Big Picture feature, which provides Virtual Screen and Magnification options for your display.

3. Make your desired selections and click on the Change button to restart Windows. You are now ready to use the graphics capabilities of Kelvin. Use this utility now and for any future changes to the Kelvin graphics display.

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



If the Font Cache selection is grayed out, the mode selected does not support font caching.

Menu Features

Refresh Rates

With the Kelvin, you can specify the refresh rates for each individual resolution so that you can take full advantage of your monitor's capabilities.

1. Open the Kelvin Setup menu. From the Refresh Rates box, click on Configure. The following menu appears:



Figure 2.3: Refresh Rates



Setting the incorrect values may damage your monitor. Consult your monitor's reference guide for the vertical refresh rates available.

Inquiry Option

You can request information about the menu options on the Kelvin Setup menu. Each option has a drop-down list box to show available choices and offer help for each option. For example, to request information about the Desktop Resolution, follow the steps below:

1. Using your *right* mouse button, click on the arrow at the right of the box. A drop-down list appears.

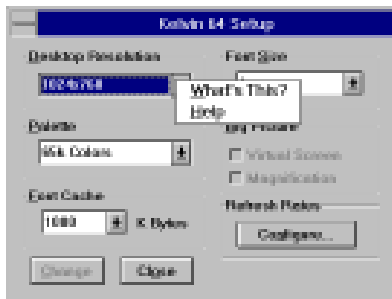


Figure 2.4: Inquiry Option

2. Click on the What's This? choice. A definition of your menu selection is displayed.



Figure 2.5: Inquiry Option Defined

Center Window Option

This option centers the Kelvin Setup menu. Selecting Center Window places the menu screen in the center of the screen every time it is accessed. To use this option, follow the steps below:

1. Click on the Control-menu box in the upper-left corner of the dialog box (see Figure 2.2). Click on the Options selection. The following screen appears:

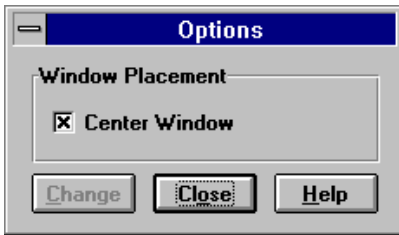


Figure 2.6: Center Window Option

2. Click on the Center Window box, then click on Change to save your selection. Restart Windows so your changes will take effect.

Screen Saver Option

Use this option for power savings on your Green PC monitor while your monitor is inactive. When you use this option with a Green PC monitor or other type of monitor, you will see a blank screen.

To configure the screen saver:

1. Double-click on the Control Panel icon. From the Control Panel window, double-click on the Desktop icon.
2. From the Screen Saver box, click on the arrow at the right of the box. A drop-down list appears. Click on the Kelvin Green PC selection.

3. Click on the Test button to test the screen saver. Click on Cancel to stop the test.
4. Click on the Setup button and the following screen appears:


For more information on the Green PC feature, see Appendix B.



Figure 2.7: Screen Saver Option

5. Configure the screen saver and select a power saver mode for your Green PC monitor.

Big Picture Feature

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

Virtual Screen

You can use the Virtual Screen option to create a larger desktop workspace. 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 is 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 workspace by transforming

your standard VGA monitor into a virtual display with the maximum resolution available.

To configure Virtual Screen:

1. From the Control Panel window, double-click on the Kelvin Setup icon. The menu in Figure 2.2 appears.
2. From the Big Picture box, click on Virtual Screen.
3. Select your choice of resolution, colors, font cache, text font size and refresh rates. Click on Change 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 allows 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*)

Freeze = No panning. Use the Freeze command to turn off panning, which prevents the Window from moving even if you move your mouse. You can unfreeze the Window by using the Hot Key combination. (*Default is ALT + 3*)

To configure Magnification:

1. Start the Microsoft Windows application.
2. From the Control Panel window, double-click on the Kelvin Setup icon.
3. From the Big Picture box, click on Magnification.

- Click on the Magnification Key Configuration option. An additional set of options appear in the Kelvin Setup menu.



Figure 2.8: Magnification Option

- Select a key to use to activate each of the Magnification features (a Hot-Key). Press ALT plus a key of your choice. Click on Change to reset Windows so your changes will take effect. When Windows restarts, the Magnification icon appears on the desktop.

DOS UTILITY

KSCAN Monitor Setup

With a few simple keystrokes, the KSCAN utility program allows you to define your monitor type and select a video mode for your monitor. KSCAN is installed using the KINSTALL program. Because it is a DOS-based utility, do not run KSCAN from inside other programs, such as Windows.

Using KSCAN, you can also center the screen on your monitor while in Video Modes Preview. To run KSCAN from the DOS prompt, type:

C:\>CD KELVIN 

then

C:\>KSCAN 

The following menu appears:

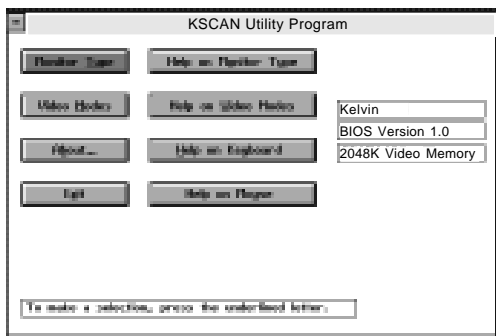


Figure 2.9: KSCAN Main Menu

This menu displays the BIOS version of your Kelvin and the amount of video memory installed. From this menu, you can configure your monitor type and preview all the video modes supported by your monitor. The video modes available to you depend on your monitor type and the amount of memory installed on your Kelvin.



If you do not have a mouse driver loaded in DOS, or if you prefer using the keyboard, use the TAB key to move around the menus.

Selecting the Monitor Type

Selecting the proper monitor type allows Kelvin to display the highest quality output supported with your monitor. From the main menu select Monitor Type, and the following menu appears:

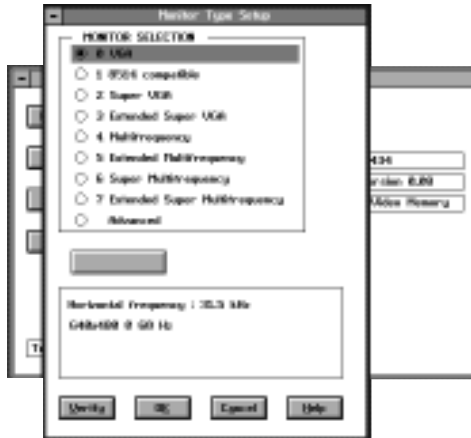


Figure 2.10: Monitor Type Setup



If you are not sure what type of monitor you have, consult your monitor's reference guide.

This screen displays a list of different monitor types. Use a mouse or TAB key on your keyboard to select your monitor type. **NOTE:** To use a mouse, the mouse driver must be installed in DOS before running the KSCAN utility program.

The resolutions and refresh rates available for your monitor are listed in the box below the monitor selections. Selecting the Advanced monitor selection allows you to customize the monitor timings for your monitor, more on this option in the Advanced Monitor Setup section.

After making your selection, select the Verify button to check that the setting selected is compatible with your monitor. The Verify option will test each video mode available for your monitor type. Each test

screen is displayed with a set of color blocks and sample text. The mode number and mode being tested is displayed at the bottom of the screen. Press ENTER to move through each mode available. You can abort the test at any time by pressing the ESC key.

If any of the screens appear distorted, rolling, or unreadable, or if the program hangs up, it is likely that the monitor type you selected is incorrect. Consult your monitor's reference guide before making another selection. After you have verified your selection, select the OK button to save your setting, or press the Cancel button to discard the change. Once you select the OK button, your selection is saved in the AUTOEXEC.BAT file.

Advanced Monitor Setup

You can customize the monitor timings for your monitor to achieve the highest vertical refresh rates available. From the Monitor Type Setup menu, select Advanced. Once you select Advanced, the gray button will show Set Advanced. Select Set Advanced and the following menu appears:

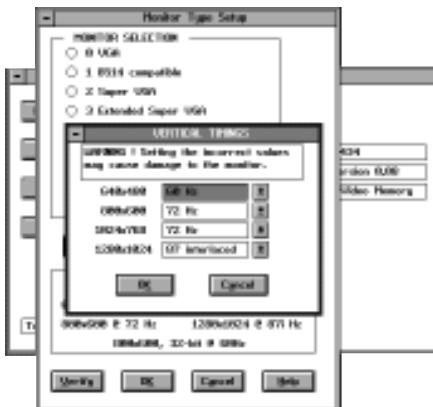


Figure 2.11: Advanced Monitor Type Setup



Setting the incorrect values may damage your monitor. Consult your monitor's reference guide for the vertical refresh rates available.

Selecting the Set Advanced button displays a dialog box with drop-down menus for each available resolution. Select the desired vertical refresh rate for each resolution. After making your selections, press the Verify button to check that the setting selected is compatible with your monitor. The Verify option will test each video mode available for your monitor type.

Video Modes

The Video Modes option displays all video modes supported, based on your monitor type and amount of video memory installed on Kelvin. From the main menu, select Video Modes. From the Video Modes screen, select Preview.

To see what a mode will look like on your monitor, highlight the mode, then select Preview. There are several test screens for each mode selected. Press ENTER to move through each test screen. You can abort the test at any time by pressing the ESC key.

TECHNICAL INFORMATION

A

Orchid Technology is known for its responsiveness to its customers. This section gives you helpful hints for troubleshooting Kelvin.

CompuServe

In addition to calling Orchid Technology, technical support is now available through the CompuServe Information Service (CIS). You can also download drivers and get new product information. To find us on CompuServe, follow the instructions below:

1. Log onto CompuServe.
2. Type GO MULTIBVEN to get into the Multimedia Vendor Forum B. Once you are in this forum, select Message Section #10. The message and library sections are labeled Orchid. . .

or

You may type GO ORCHID to get immediate access to the Orchid section.

3. If you would like to leave private mail for Orchid, type GO MAIL. Address your letters to our technical support account number 72662,2672.



All commands can be typed in lower or upper case letters.

Troubleshooting the Kelvin

The following information will help you diagnose problems you may have with the Kelvin. 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 Technical Support 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 Kelvin properly installed in the slot? Is the edge connector inserted all the way into the expansion slot? Is the Kelvin 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 Kelvin? 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 Kelvin card.
3. Is your monitor cable the correct kind for the Kelvin? Check Section 1 for the proper pin-out 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? 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 Kelvin 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 is not the Kelvin if it is working properly in another system.

Symptom 6

The Orchid icon does not appear in the Windows Control Panel.

Check

1. Check to make sure that you installed the Kelvin Windows drivers into the correct directory.
2. Memory managers can prevent icons from appearing. Refer to your memory manager documentation for details about using memory managers.

Technical Specifications

This section covers the specifications and features of the Kelvin, and information on how to obtain the memory upgrade kit.

Configuration

Kelvin EZ - 1024 KB
2048KB
Kelvin 64 - 1024 KB
2048 KB

Video Chipset:

Cirrus Logic 5430 (*Kelvin EZ*)
Cirrus Logic 5434 (*Kelvin 64*)

Upgrade RAM Chips:

256KB x 16, 70 nanoseconds or faster DRAM

Computers Supported:

486 and compatibles
Pentium-based systems

Interface Speed

Up to 50MHz

BIOS:

8-bit

Bus Connector:

32-bit - Kelvin VLB versions
32-bit - Kelvin PCI versions
16-bit - Kelvin 64-ISA

Card Size:

9.34" x 3.34" (*Kelvin VLB versions*)
7" x 3.75" (*Kelvin PCI versions*)
7.25" x 3.75" (*Kelvin 64-ISA*)

Output Connectors:

15-pin D-Shell VGA

Feature Connector (VESA bi-directional)

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%

Additional Features:**Supports**

75Hz Vertical Scan Refresh Rate

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

640 x 480 x 16.8 million colors

800 x 600 x 16.8 million colors (with 2MB DRAM) (*Kelvin 64*)

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

Memory Address Setting

Kelvin 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 Kelvin address segment from being used. Refer to your software program user's manual for details on using an exclusion statement.

VESA Support



All Kelvin models support the VESA BIOS Extension (VBE) regardless of their bus interface type.

Kelvin is designed to support the VESA BIOS Extension (VBE) through its BIOS. The VESA BIOS Extension standard is a separate standard from VESA Local BUS (VLB). Extended modes can be selected through the VESA option in the application you are running. The BIOS supports the VESA 1.2 specification.

The *Kelvin EZ-VLB* and *Kelvin 64-VLB* are 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 for incredibly fast graphics.

How to obtain the Memory Upgrade Kit

If you have 1MB of memory on your Kelvin and would like to upgrade to 2MB of memory, call our Customer Service department to purchase a memory upgrade kit.

Kelvin Resolutions and Refresh Rates

Mode #	Resolution	Colors	Horz.	Vert.	Polarity	
04	320 x 200	4	31.5	70	-	+
05	320 x 200	4	31.5	70	-	+
06	640 x 200	2	31.5	70	-	+
OD	320 x 200	16	31.5	70	-	+
OE	640 x 200	16	31.5	70	-	+
OF	640 x 350	Mono	31.5	70	+	-
10	640 x 350	16	31.5	70	+	-
11	640 x 480	2	31.5	60	-	-
12	640 x 480	16	31.5	60	-	-
13	320 x 200	256	31.5	70	-	+

Table 1: IBM VGA Video Graphics Modes

Mode #	Resolution	Colors	Horz.	Vert.	Polarity	
00	40 x 25	16	31.5	70	-	+
01	40 x 25	16	31.5	70	-	+
02	80 x 25	16	31.5	70	-	+
03	80 x 25	16	31.5	70	-	+
07	80 x 25	Mono	31.5	70	-	+
54	132 x 43	16	31.5	70	+	-
55	132 x 25	16	31.5	70	-	+

Table 2: Video Text Modes

Horizontal frequencies are in kHz

Vertical frequencies are in Hz

Mode #	Resolution	Colors	Horz.	Vert.	Polarity	
100	640 x 480	256	31.5	70	-	-
101	640 x 480	256	31.5	60	-	-
			37.5	75	-	-
102	800 x 600	16	35.2	56	-	-
			37.9	60	+	+
			47.5	72	+	+
			46.9	75	+	+
103	800 x 600	256	35.2	56	-	-
			37.9	60	+	+
			47.5	72	+	+
			46.9	75	+	+
104	1024 x 768	16	35.7	43.5 (I)	+	+
			48.4	60	-	-
			56.5	70	-	-
			60.0	75	-	-
105	1024 x 768	256	35.7	43.5 (I)	+	+
			48.4	60	-	-
			56.5	70	-	-
			60.0	75	-	-
106	1280 x 1024	16	48.3	43.5 (I)	-	-
107 ^{1,2}	1280 x 1024	256	48.3	43.5 (I)	-	-
			64.9	60	-	-
			76.0	71	-	-
109	132 x 25	16	31.5	70	-	+
10A	132 x 43	16	31.5	70	+	-
110	640 x 480	32K	31.2	60	-	-
			37.4	75	-	-

Table A.3: VESA Video Graphics Modes

Horizontal frequencies are in kHz

Vertical frequencies are in Hz

(I) indicates interlaced mode

¹ Kelvin EZ and Kelvin 64-ISA:

Mode 107 supported at 43.5Hz only

² 2MB of memory required

Appendix A: Technical Information

Mode #	Resolution	Colors	Horz.	Vert.	Polarity	
111	640 x 480	64K	31.2	60	-	-
			37.4	75	-	-
112 ¹	640 x 480	16.8Mil	31.5	60	-	-
			37.5	75	-	-
113	800 x 600	32K	35.2	56	-	-
			37.9	60	+	+
			47.4	72	+	+
			46.9	75	+	+
114	800 x 600	64K	35.2	56	-	-
			37.9	60	+	+
			47.4	72	+	+
			46.9	75	+	+
115 ²	800 x 600	16.8Mil	35.2	56	-	-
			37.9	60	+	+
116 ¹	1024 x 768	32K	35.7	43.5 (I)	+	+
			48.4	60	-	-
			56.5	70	-	-
			60.0	75	-	-
117 ^{1,3}	1024 x 768	64K	35.7	43.5 (I)	+	+
			48.4	60	-	-
			56.5	70	-	-
			60.0	75	-	-

Table A.4: VESA Graphics Modes (cont.)

Horizontal frequencies are in kHz

Vertical frequencies are in Hz

(I) indicates interlaced mode

¹ Kelvin EZ:

Mode 112 supported in 60Hz only

Modes 116 and 117 are supported in interlaced mode only

² Kelvin EZ and Kelvin 64-ISA:

Mode 115 is not supported

³ 2MB of memory required

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 of the Kelvin (see Figure 1.1, 1.2 or 1.3).

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:

Kelvin Feature Connector Pin-Outs							
Pin	Function	Pin	Function	Pin	Function	Pin	Function
Y1	Pixel Data 0	Y8	Pixel Data 7	Z2	Ground	Z9	Ground
Y2	Pixel Data 1	Y9	Pixel Clock	Z3	Ground	Z10	Ground
Y3	Pixel Data 2	Y10	Blanking	Z4	(See Note 1)	Z11	Ground
Y4	Pixel Data 3	Y11	Hor. Sync	Z5	(See Note 2)	Z12	No Connect
Y5	Pixel Data 4	Y12	Vert. Sync	Z6	(See Note 3)	Z13	No Pin (Key)
Y6	Pixel Data 5	Y13	Ground	Z7	No Connect		
Y7	Pixel Data 6	Z1	Ground	Z8	Ground		

Table A.5: VESA Feature Connector Pin-Outs

NOTES:

- (1) Low Enable External Pixel Data Input to the motherboard DAC.
- (2) Low Enable External Sync and Blanking Inputs to the motherboard DAC.
- (3) Low Enable External Pixel Clock Input to the motherboard DAC.

GREEN PC

B

Orchid stays on the cutting edge of technology while maintaining compatibility. With the Kelvin, we took a power saving approach by incorporating the Green PC technology. The following information details the Green PC technology.

Green PC Feature

The Green PC feature allows a computer system to be energy efficient. The most common method to save energy was developed by VESA and called the Display Power Management Specification (DPMS). On computer desktop systems, monitors usually consume over 50% of the overall power used. Most monitors consume between 130-200 watts, even when idling.

Using a Green PC monitor and a Kelvin in conjunction, you can lower the power consumption to 30 watts when the monitor is idle. This power management feature is required by the EPA's Energy Star Program and is also required by all U.S. government agencies.

A Green PC monitor and your Kelvin can be placed into one of four states: On, Standby, Suspend or Off. Here is an overview of the DPMS signaling method:

Monitor State	Power Savings	Recovery Time
On	None	N/A
Standby	Minimal	Short
Suspend	Substantial	Longer
Off	Maximum	System-dependent

The power management technology of this feature implement the VESA Display Power Management (DPMS) proposal, the U. S. Government Environ

mental Protection Agency "Energy Star" and the European "Nutek" standards. The Green PC Power Management feature makes Kelvin a complete cost-effective solution for the energy conscious.

FCC NOTICE

FCC# DDS7EF1093-93-KVL *

Kelvin EZ-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.

** For Kelvin EZ-PCI the FCC is DDS7EF1193-93-PCI. For Kelvin 64-VLB the FCC is DDS7EF1093-93-KVL. For Kelvin 64-PCI the FCC number is DDS7EF1193-93-PCI. For Kelvin 64-ISA the FCC number is DDS7EF0294-94-ISA.*

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