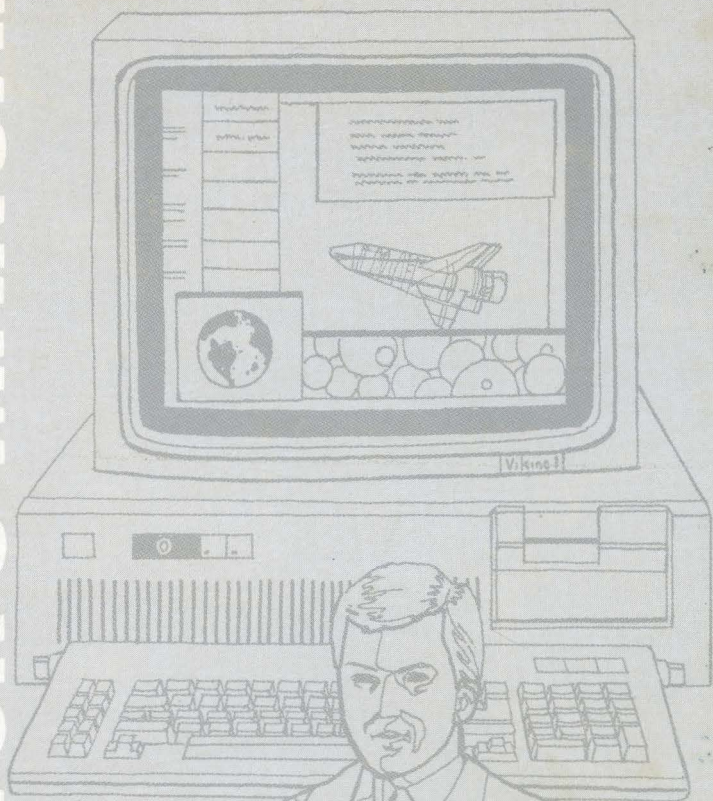


# OPERATOR'S MANUAL



**VIKING 1**  
**MONITERM**

**MONITERM VIKING 1**  
**Operator's Manual**

**REV 2.1**

**2/87**



# 1 INTRODUCTION

This owner's manual provides the information you will need to install, configure, and operate the Viking 1 high-performance display system:

## Chapter 1

Introduction. What you need to get started.  
Owner registration.

## Chapter 2

Installation. How to unpack, check out, and install Viking 1 hardware and software.

## Chapter 3

Theory of Operation. This chapter is intended for programmers but will also satisfy the curious.

## Appendices

Specifications. Supplementary documentation on Viking 1 applications and options.

*Your comments and suggestions on the usefulness of this manual are welcome. If you discover unclear, inaccurate, or undocumented information, please call or write us. We plan to incorporate information received from Viking 1 users in future editions of this manual.*

## **INTRODUCING THE VIKING 1**

The Viking 1 high resolution monochrome display system provides an unsurpassed level of display capability and flexibility for the IBM PC, XT, AT, and true compatibles. Based on the Hitachi HD63484 ACRTC Advanced CRT Controller, the Viking 1 enables a standard personal computer to match the speed and resolution of a dedicated graphics workstation. The system includes the Viking 1 graphics controller board, a 19" high resolution monochrome monitor, system cabling, and a powerful control and diagnostic software package.

The Viking 1 controller board occupies a standard PC expansion slot and provides two megabits of on-board RAM for bit-mapped graphics. A unique "frame grabber" features a high-speed character mode that supports standard PC programs (24x80 format) on the Viking 1 monitor, eliminating the need to use a second monitor with standard PC programs.

The 19" Viking 1 monochrome monitor is packaged in a compact, tilt-adjustable cabinet that can be placed on top of the standard IBM PC system unit. The Viking 1 graphics controller displays 960x1280 pixels at a 66 Hz refresh rate. Viking 1 hardware provides all high-speed graphics control functions including circle, ellipse, copy, paint, bit blit, hardware zoom, and pan. With various applications, the display background can be toggled to either black or white with a single keyboard command.

## GETTING STARTED

Viking 1 hardware and software will operate with the following minimum PC requirements:

- **An IBM PC, XT, AT or compatible computer with DOS 2.1 or higher and a minimum of 512K RAM memory**
- **IBM PC monochrome, color, or Hercules graphics adapter board**

You will also need:

- **one free expansion board slot in the PC chassis**
- **a screwdriver to remove and replace PC chassis cover mounting screws**
- **a standard PC monochrome or color monitor to be used during Viking 1 installation**

We also recommend that you have the following publications on hand during Viking 1 installation procedures:

- **Your PC hardware and operation reference manuals**
- **Your Hercules Graphics Card Owner's Manual (if used)**

## Introduction

### **VIKING 1 OWNER REGISTRATION**

Before you proceed to Chapter 2, we suggest that you take a few minutes to register your Viking 1. Viking 1 software updates and warranty service are available to registered owners/licensees only. We also need your owner information in our files in order to notify you of future Viking 1 upgrades and enhancements.

Please fill out and mail the Viking 1 Owner Registration Card included with this manual.

## 2 INSTALLATION

This chapter provides step-by-step instructions that will help you install Viking 1 hardware and software for a standard application. Be sure to perform all procedures in the order presented.



## SITE SELECTION

You will be able to install the Viking 1 monitor on top of your PC chassis if you wish, but be sure to allow adequate installation space if you plan to use a second monitor for standard applications. (As explained in Chapter 1, you will be able to use the Viking 1 for all your applications.) In all cases, we recommend that you use a standard monochrome or color monitor during Viking 1 installation procedures.

Since you will have to remove the PC system unit cover during Viking 1 hardware installation, we recommend that you place your PC monitor next to rather than on top of your computer.

*Important: Before starting the procedures on the next page, set up and operate your PC to be sure that it runs properly with a standard monitor.*

## UNPACKING THE VIKING 1

### Step 1.

Check Viking 1 shipping containers for signs of external damage. If damage is discovered, proceed immediately to step 4.

### Step 2.

Carefully unpack and examine the system for broken or damaged components. If damage is discovered, proceed immediately to step 4.

*Important: Be sure to save and store all packing materials in case you need to reship the system.*

### Step 3.

Check your Viking 1 shipment against your invoice and packing slip for the following items:

- 19" monochrome display monitor
- Power cable, monitor
- Viking 1 controller board
- 3' cable, Viking 1 controller-to-monitor
- 12" cable, Viking 1 controller-to-PC adapter
- Viking 1 software diskettes (one or more program disks plus the diagnostics disk)
- Viking 1 Operator's Manual

### Step 4.

If your system was shipped by common carrier, contact the shipping agent immediately to report broken, damaged, or missing components. The system was inspected and certified

## Installation

at the factory before shipment; broken, damaged, or missing parts are the responsibility of the carrier.

Assuming that your Viking 1 system is complete, intact, and unpacked, you are now ready to perform the installation procedures described on the following pages. For the best results, follow the instructions in the order presented.

## **CONTROLLER JUMPER CHECKOUT**

The Viking 1 controller board is equipped with seven jumper blocks that are used to configure system functions. These jumper settings are used in most cases to select whether the controller is installed in an AT or a PC and the type of display adapter for the frame grabber. You will most likely be able to operate the system with jumper block settings made at the factory, but be sure to check all jumper block settings before installing the controller board in your PC system unit.

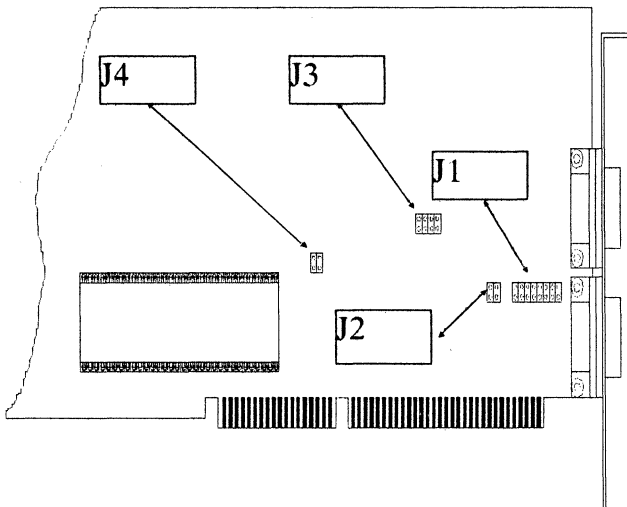
## Installation

### **CONTROLLER JUMPER LOCATIONS**

Carefully place the Viking 1 controller board component-side up on a static-free surface and locate jumpers J1-J4 (see diagram below). As you check (and possibly reinstall) each jumper described on the following pages, we recommend that you mark your actual jumper positions with a pencil on each diagram for future reference.

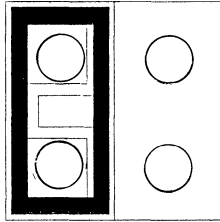
**Important:** Whether you move jumpers or not, be sure that all jumpers are securely installed on the appropriate jumper blocks.

In almost all cases there are only three jumper locations that may need to be modified to properly install the Viking 1 in your system. These jumper settings indicate the type of display adapter for the frame grabber option and whether you are installing in an AT or PC type system.



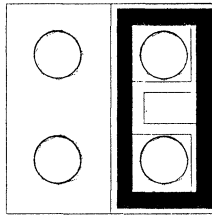
**JUMPER J2 ADAPTER SELECT**

Jumper J2 is used to identify the type of display adapter board installed in your PC.



**M C**

Jumper J2-M for IBM monochrome or Hercules



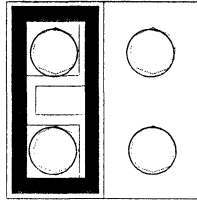
**M C**

Jumper J2-C with IBM color adapter

## Installation

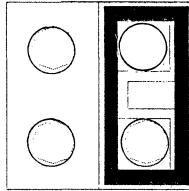
### JUMPER J4 FRAME GRABBER

Jumper J4 is used to select the type of Frame Grabber interface required for your PC adapter board.



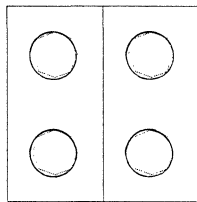
C I

Jumper J4-C for IBM color adapter:



C I

Jumper J4-I for IBM monochrome adapter:

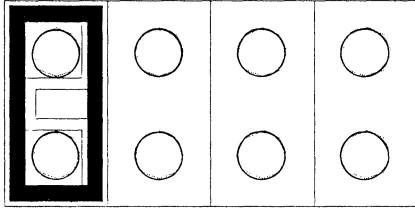


C I

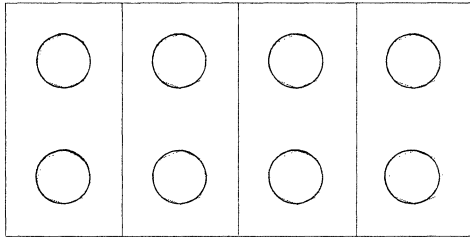
No jumpers for Hercules adapter:

**JUMPER J3 - AT PC SELECT**

Jumper J3 is used to select the type of PC buss for your computer.



Jumper J3 for IBM PC or XT:



No jumper on J3 for IBM AT :



## Installation

### **HARDWARE INSTALLATION**

With controller board jumpers configured properly as described on the preceding pages, Viking 1 hardware is now ready to be installed in your PC system unit. Install hardware as follows:

#### **Step 1.**

If your PC is powered ON, turn the system unit, monitor, and peripherals OFF as described in your PC hardware reference manuals

#### **Step 2.**

Remove the cover from your PC system unit as described in your PC reference manual.

#### **Step 3.**

Install the Viking 1 controller board in a free PC expansion slot as described in your PC reference manual. (Important: If you are using an IBM AT, please be sure to install the controller board in a dual, i.e. 16 bit, slot.) When the board is installed, replace and secure the PC system unit cover.

#### **Step 4.**

Carefully set the Viking 1 monitor in place. (We recommend setting the monitor on top of the PC system unit.) Adjust the viewing angle with the screw-adjustable support leg attached to the rear of the monitor.

### **Step 5**

Move the Viking 1 monitor power switch to the OFF position. Also check to be sure that a fuse is installed in the fuse holder on the back of the monitor. The Viking 1 is set for 110V at our factory. If your requirement is 220V, turn the card over in the fuse holder before turning the monitor on.

### **Step 6.**

If you ARE NOT going to use a second (standard) monitor with the system, skip this step and proceed to Step 7. If you ARE going to use a second monitor, connect it to the PC adapter board with the standard PC monitor interface cable and skip steps 7 and 8.

*Caution: The Viking 1 monitor must never be connected to any device other than the Viking 1 controller board described in Step 7. The monitor generates enough power to severely damage any device other than the Viking 1 controller board.*

### **Step 7.**

Connect the Viking 1 monitor to Viking 1 controller board connector P4 (upper connector). Use the 3' interface cable included with the system. Secure connectors with a screwdriver.

### **Step 8.**

If you ARE NOT using a second monitor, connect Viking 1 controller board connector P3 (lower connector) to the proper 9-pin connector on the PC adapter board . Use the 12" "loop-

## Installation

back" cable included with the system. Secure connectors with a screwdriver.

### **Step 9.**

Attach the Viking 1 monitor power cable to the power input connector on the rear of the monitor. (If you are using a second monitor, also plug in its power cord.)

Viking 1 installation is now complete. Be sure to read Power-Up Sequence before you refer to the appendices for specific applications instructions.

## POWER-UP SEQUENCE

Always power up your system in the following sequence:

### Step 1.

With all hardware power switches in the OFF position, plug all power cords into the power source. Important: *Since the Viking 1 controller board is powered by the Viking 1 monitor, it is important to apply power to the Viking 1 monitor before or at the same time as you power up the PC system unit. We recommend a shared power strip with master ON/OFF switch.*

### Step 2.

Apply power. The system will load and the DOS prompt (or an application banner page) should appear on the monitor.

Note: *Viking 1 software can be loaded by 1) being included in an AUTOEXEC.BAT sequence at power-up, or 2) being entered on the DOS command line. (See Appendices for specific applications.)*

### Step 3.

Adjust the Viking 1 display intensity to a suitable level with the brightness knob located on the back of the Viking 1 monitor cabinet.

Important: *All Viking 1 adjustments other than brightness are internal and should be performed by qualified service personnel only.*

## Installation

### **SOFTWARE CONFIGURATION**

Before you can run application programs such as Windows or AutoCAD with the Viking 1 system, you must configure these applications properly.

Please refer to the appendices in this manual that apply to the particular applications program for detailed configuration instructions.

## **3 THEORY OF OPERATION**

This chapter is intended specifically for Viking 1 users who plan to use the system in nonstandard applications. The information provided is highly complex, and has been written with the assumption that the reader is an accomplished and experienced programmer. A working knowledge of the Hitachi HD63484 Advanced CRT Controller (ACRTC) used with the Viking 1 is required.

The information in this chapter consists of three detailed technical descriptions of the Viking 1, which should be read and studied in the order presented:

- a functional overview, which describes the overall capabilities of the Viking 1
- a functional description, which explains how the Viking 1 executes its various tasks
- a description of Viking 1 controller board jumper options, which are used to enhance system performance in complex, nonstandard applications

## **FUNCTIONAL OVERVIEW**

The Viking 1 Controller is an interface board for IBM PC, XT, AT and compatible personal computers which permits the connection of a high-resolution 19" monochrome monitor capable of displaying 1280 x 960 pixels. The Viking 1 provides a full range of sophisticated graphics commands such as vector and circle drawing, area fills, and polygon generation.

### **Hitachi HD63484 Advanced CRT Controller (ACRTC)**

As shown in the Functional Block Diagram, the heart of the Viking 1 Controller is the Hitachi HD63484 Advanced CRT Controller (ACRTC), an extremely sophisticated VLSI device. The ACRTC provides all access to the Video Memory and controls all display parameters such as video monitor synchronization pulses.

### **PC Interface/Control Register**

The Viking 1 PC Interface provides the connection to the PC bus, including DMA support and address decoding. The Control Register is an eight bit register that allows software to configure the Viking 1 in various ways.

### **VIDEO MEMORY**

Viking 1 Video Memory is a 1024 by 2048 bit memory. In graphics mode, the monitor displays a 1280 by 960 segment of this memory, and commands are provided within the ACRTC to scroll within Video Memory.

## **FRAME GRABBER**

"Frame Grabber" (PC video adapter emulator) circuitry permits the use of standard PC monitor interfaces with the Viking 1 monitor. This is accomplished by connecting the Viking 1 Controller to the monitor output port of an IBM CGA color graphics adapter, monochrome adapter, or Hercules graphics card. The Frame Grabber digitizes the input signal, stores the frame in another block of video RAM, and sends it to the display driver on request. The practical result is that software which requires a specific monitor interface can be used with the Viking 1 with no "standard" additional monitor required.

## **BASIC SOFTWARE INTERFACE**

The software interface to the Viking 1 involves accessing only two elements: the ACRTC and the Control Register. These are each accessed in the I/O space of the PC, at an address set on Viking 1 jumper block J1. These six jumpers select bits 8 through 3 of the I/O address to which the board responds. Thus the board uses a block of eight contiguous addresses between 200H and 3FFH in the I/O address space.

### **Base Address**

The address set with jumpers is the Base Address of the board; all elements are accessed as offsets from the Base Address:



## **ACRTC Address Register**

Base Address plus 0 accesses ACRTC Address Register on writes, ACRTC Status Register on reads.

## **ACRTC Data Register**

Base Address plus 2 accesses ACRTC Data Register

## **Control Register**

Base Address plus 4 or 6 accesses Control Register.

The Address, Status, and Data Registers of the ACRTC are described in the Hitachi ACRTC User's Manual. The Control Register is an eight bit register used for local configuration information.

Control Register bits are defined as follows:

### **Bit 0 - Reset.**

When zero, the entire Viking 1 board is RESET and only the Control Register may be accessed. When 1, normal operation is enabled.

### **Bit 1 - AT Select.**

This read only bit is a zero if the Viking 1 XT-select jumper at J1 is installed, and a one if the AT mode is requested (no jumper). The jumper only provides this indication, and the actual board mode is determined by the AT Control bit described on the next page. Bits 2 and 3 - Not used.

### **Bit 4 - AT Control.**

This bit selects whether the ACRTC is in AT mode (transfers 16 bits at a time) or XT mode (transfers eight bits at a time). This bit is only significant when bit 0 is changed from zero to one. At that time a one in this position creates AT mode, while a zero forces XT mode. If this bit changes at the same time as bit 0, an indeterminate state exists.

### **Bits 5, 6 - Selection Mode.**

These bits control the switching between the Frame Grabber and the Video Memory for screen display. Four modes may be selected:

11 - Disable all video.

00 - Automatic switching between the Frame Grabber and Video Memory based on memory accesses. When the Viking 1 board is accessed, the display switches to Video Memory. When IBM monochrome or color adapter addresses are accessed, the display switches to the Frame Grabber. Jumper block J2 selects the correct adapter. If jumper 1 is installed, the switch occurs on the monochrome reference. If jumper 2 is installed, the switch occurs on the color reference. This allows the use of two monitors if desired.

01 - Force Video Memory to be displayed.

10 - Force Frame Grabber to be displayed.

**Bit 7 - Vertical Sync (Read Only).**

This bit is low when the ACRTC is in the vertical retrace period. Some registers internal to the ACRTC should be modified only during this time; this bit allows software to perform this synchronization.

## **ACRTC IMPLEMENTATION DETAILS**

The ACRTC has a large number of registers and control modes. Some of these are fully selectable by the user, but others contain fixed information to support the operation of the Viking 1.

### **Command Control Register (0x02).**

The Graphics Bit Mode (bits 10-8) must be set to zero, since only one bit per pixel is supported.

### **Operation Mode Register (0x04).**

This register must be initialized to the value 0x8048. The only bit which may be modified is the START bit, bit 14. No other changes are allowed.

### **Display Control Register (0x06).**

The ACRTC Window Screen (screen 3) is not used by the Viking 1. The other three screens may be used as described. Bit 15 (DSP) is not used.

## Theory of Operation

### **Monitor Control Registers.**

These registers control timing and must be set to the following values:

<u>Register</u>	<u>Name</u>	<u>Value</u>
0x80	Raster Count	Read Only
0x82	Horizontal Sync	0x3302
0x84	Horizontal Display	0x0801
0x86	Vertical Sync	0x03E8
0x88	Vertical Display	0x2503
0x90	Horizontal Window	Not Used
0x94	Vertical Window Start	Not Used
0x96	Vertical Window Width	Not Used
0x98	Graphic Cursor X	0x310a
0x9A	Graphic Cursor Y Start	0x0025
0x9C	Graphic Cursor Y End	0x03E8
0xE8	Cursor Definition	0x8801

Note that the CUD1 signal is used by the Viking 1 hardware (there is no Graphics Cursor support), so the above values are all required.

#### Split Screen Width Registers (0x8A-0x8F).

These registers may all be freely used. The sum of the three values must be 960, which is the length of the displayable region.

Raster Address Registers (0xC0, 0xC8, 0xD0, 0xD8). These registers control the display of characters by defining how many raster lines are displayed. The font selected has only 16 lines, so the Last Raster Address must be 15 or less.

## Theory of Operation

The standard value for these registers is 0x0F00, which allows 60 lines to display on the screen. Other values will allow more lines but may cause characters to be truncated. The Window 3 register is not used.

Memory Width Registers (0xC2, 0xCA, 0xD2, 0xDA). These registers select Character Mode (bit 15 = 1) or Graphics Mode (bit 15 = 0) for a given screen. Width must be 0x80 in all cases, for example, a register value of 0x0080 selects Graphics and 0x8080 selects Character Mode. Screen 3 registers are not used.

Start Address Registers (0xC4, 0xCC, 0xD4, 0xDC). These registers define the start address for each window. The Start Dot Address must be zero; the Start Address Low must be a multiple of 2.

Block Cursor Register (0xE0-0xE7). Not supported.

Zoom Factor Register (0xEA). This register defines the zoom factors. The Horizontal Zoom Factor must be 1, 2, 4, 8, or 16. The standard initialization value is 0x0000.

Video Memory Addressing. Video Memory begins at Video Memory dot address 0x00000 and runs through dot address 0x1FFFFF. It is replicated in the address space up to 0xFFFFF.

## **JUMPER OPTIONS**

### **JUMPER J1 I/O ADDRESS**

The Viking 1's I/O port address consists of 16 bits. You can select an address of your choice by putting one or more pins on Jumper J1.

Jumper J1 positions 8-3 correspond to bits 8-3 of the selected address. In each of these six jumper positions, an A-B jumper produces an address bit of 0 and no jumper produces an address bit of 1. Bits A through F of the address are always 0. Bit 9 of the address is always a 1.

It is recommended that you use the default address "3E8" for the Viking 1 system. Default address "3E8" is made with a jumper on A4-B4.

Jumper J1 positions C and G are used to modify the frame grabber Configuration. These two positions are used to adjust the synchronization of the input signal from the standard CGA, Monochrome, or Hercules display adapter. Jumper C should only be added if the display of CHARACTERS appears to be unsteady when using the frame grabber. Jumper G should only be added if the display of GRAPHICS appears to be unsteady when using the frame grabber. The I/O port address is not affected whether or not there is a jumper on C or G.

### **JUMPER J2 ADAPTER SELECT**

Jumper J2 is used to identify the type of display adapter board installed in your PC.

Jumper J2 AM-BM for IBM monochrome or Hercules:

Jumper J2 AC-BC with IBM color adapter:

## **BIOS PROM ADDRESS**

Jumper J3 is used to select the beginning address of the Viking 1's BIOS PROM.

The Viking 1's BIOS PROM address consists of 20 bits. Bits 19 and 18 always have the value of 1. Bit 17 is always 0.

Bits 16 through 14 of the BIOS PROM address correspond to positions 4 through 6 on Jumper J3 respectively. You can select an address other than the default address by putting jumper(s) on position 4, 5 and 6.

Bit 16 = 1 with no jumper on A6-B6 (0 = with jumper). Bit 15 = 1 with no jumper on A5-B5 (0 = with jumper). Bit 14 = 1 with no jumper on A4-B4 (0 = with jumper).

We suggest you use the default address for the Viking 1 system. The default address is "DC000H". Default address "DC000H" is made with no jumpers on positions 4, 5 and 6 of Jumper J3.

In addition, Jumper J3 is used to tell the Viking 1 whether an IBM PC, XT or an AT is used.

Jumper J3 AN-BN for IBM PC or XT:

No jumper on J3 AN-BN for IBM AT :



## Theory of Operation

### **JUMPER J5 INTERRUPT SELECT**

Jumper J5 can be used to select an optional interrupt level for the Hitachi ACRTC processor.

Default is no interrupt level (no jumpers):

### **JUMPERS J6-J7 DMA SELECT**

Jumpers J6 and J7 are both used to select the Viking 1 DMA channel. To select DMA channel 7, for example, one jumper must be installed on J6 DM7A- DM7B and another jumper on J7 DM7A-DM7B. (The same channel must be selected on both jumper blocks.) Jumper position N is not used.

The default is channel 7 (DM7A-DM7B):

## VIKING 1 SPECIFICATIONS

### **PC Display Adapter**

Viking 1 operates with IBM monochrome or color display adapter board or Hercules Graphics Card.

### **PC Expansion Slot**

Viking 1 controller board occupies one standard PC expansion slot.

### **PC Disk Drive**

Double or quad-density floppy disk, hard disk.

### **Hardware Requirement**

Interface cables supplied: monitor-to-controller board and controller board-to-PC display adapter board.

### **Power Requirement**

Controller board powered by Viking 1 monitor power supply. Monitor requires external 110 VAC, 60 Hz (65W consumption). 220 VAC version available. Power cable supplied.

### **Operating Environment**

Same as IBM PC.

### **PC Operating System**

Viking 1 operates with DOS version 2.1 or higher.

## Specifications

### **Viking 1 Monitor Characteristics**

19" diagonal screen, 11"x14" raster size, 960x1280 pixels(vertical/horizontal), 110 MHz pixel rate, 66 Hz vertical frequency, 66 KHz horizontal frequency. Monochrome display, P-104 white phosphor. Tilt-adjustable housing.

### **Graphics Control Characteristics**

Hitachi HD63484 ACRTC Advanced CRT Controller with 2 megabits RAM (1Kx2K) for bit-mapped graphics. 768x1024 buffer reserved for fonts, figures, or formats. PC interface includes DMA support, address decoding on PC bus. BIOS PROM read at start-up to configure DOS and initialize ACRTC.

### **Graphics Functions**

High-speed circle, ellipse, copy, paint, bit blit, rectangle, polygon, draw line, polyline, hardware zoom and pan.

### **Frame Grabber Characteristics**

PC "frame grabber" with 64K bytes RAM supports high-speed character mode for display of standard PC programs in 24x80 format. (Second monitor not required.)

**Installing the Viking 1 AutoCAD ADI  
Driver for AutoCAD versions 2.18  
and 2.52.**

In order to inform AutoCAD that the "dsviking" driver is available you must configure the display driver. In the setup procedure it will appear in the display driver list as "ADI Display". Once this driver is selected you will be asked to enter the interrupt vector to be used. The default (0x07A) is the correct interrupt vector. The remaining questions should probably be answered with the defaults also. Once the configuration is complete AutoCAD will exit.

Note For version 2.18: On the display driver disk there is a directory called 218. In this directory there is a driver DSGEN.DRV. This driver must be configured as the AutoCAD display driver before the Viking driver will work. To do this, reconfigure AutoCAD with this DSGEN.DRV in the same directory as the other drivers (\*.DRV) supplied by Autodesk.

At this point the Viking driver may be installed simply by typing

*dsviking*

in the directory containing the driver. This only needs to be done once after the system has been booted, and may be placed in the autoexec.bat file.

Note: The jumpers in the J1 jumper block used to select address should not be changed, since

## Software Installation

dsviking expects to find the viking board at that address.

### **Using the Viking 1 AutoCAD ADI Driver**

Execution:

The driver is a memory resident driver which is installed by executing dsviking.exe. This is performed by:

```
dsviking [w][vxx]
```

The "w" indicates that a white background with black vectors is to be drawn. The "vxx" indicates that vector xx (a Hexadecimal Number) should be used instead of the default (7A). Each time dsviking is executed, the memory it is using becomes unusable until the PC is rebooted.

Examples:

```
dsviking
```

Will install the driver with black background and using vector 7A for communications.

```
dsviking w
```

Will install the driver with white background and using vector 7A for communications.

```
dsviking v7d
```

Will install the driver with black background and using vector 7D for communications.

dsviking wv7d

Will install the driver with white background and using vector 7D for communications.

NOTE: Some versions of AutoCAD may not allow the communication vector to be changed from 7A. You should try to change this in the AutoCAD configuration before using the vxx argument to dsviking.

### **Special Keys:**

The Viking 1 AutoCAD ADI Driver interprets a special key sequence to change the background color of the graphics display. To execute this function, depress the T key while the CTRL, SHIFT, and ALT keys at the left of the keyboard, are depressed.

Also included are commands to ZOOM up, ZOOM down and LOCK the display. While in the ZOOM mode the drawing may be PANned around on the display by simply moving the cursor. The PANning mode may be disabled by using the lock feature. The keystrokes to activate these features are described below:

Ctrl A ZOOM up

Ctrl Z ZOOM down

Ctrl Q LOCK, UNLOCK

## **Installing the Viking 1 Windows Display Driver**

This directory contains the files necessary to use Microsoft Windows operating environment with your Viking 1 display system. Simply transfer the files VIKING1.DRV and HIFONTS.FON onto your Windows Setup disk and the other two files, VIKING1.GRB and VIKING1.LGO, onto your Windows Build disk.

Next, type setup and select the appropriate options.

For a more detailed description read the file VIKWIN.DOC.

**Installing the Viking 1 with Ventura  
Publisher**

The following is the series of steps to install the Viking 1 driver for the Ventura Publishing package as recommended by Ventura Software, Inc. ALL steps must be followed for successful installation.

1. Install or reinstall the Ventura Publishing package using the installation disks supplied with the Ventura Publishing package (11 disks). When requested to specify the graphics card used, select the following:

Hercules Card / Monochrome PC Display  
(720x348)

Select the mouse, printer, and printer port as normal.

2. After the standard Ventura Publishing package installation process has been completed, insert the Viking 1 Device Driver Disk #1 into drive A and type A:\_\_\_

3. Type CD \VENTURA

4. Type A:VPSETUP

5. When requested, specify the drive in which the VP package was installed.

6. When requested, select the Viking 1 Graphics Coprocessor System as the graphic display.

7. Select the mouse and confirm your selection.



## Software Installation

8. When the VPSETUP utility is complete, the Ventura Publishing package may be run as normal (type VP) .

**MONITERM**

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