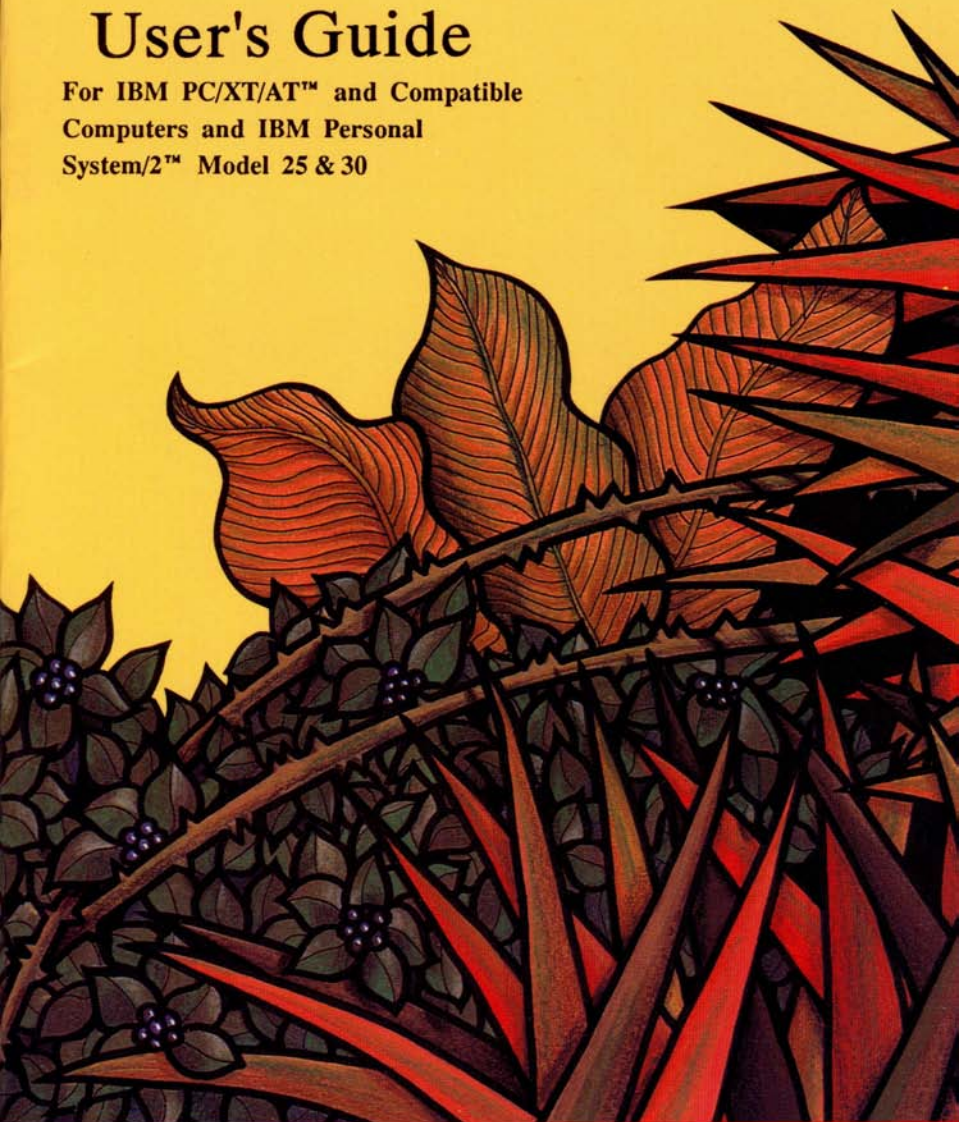


ET4000 VGA

User's Guide

For IBM PC/XT/AT™ and Compatible
Computers and IBM Personal
System/2™ Model 25 & 30



ET4000 VGA

User's Guide

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Table of contents

| | |
|---|----|
| INTRODUCTION..... | 1 |
| SOFTWARE INSTALLATION IMPORTANT NOTICE..... | 2 |
| SECTION 1: INSTALLATION | |
| 1.1 Preparing The ET4000 Super VGA Card..... | 4 |
| 1.2 Installation Instructions..... | 4 |
| 1.3 Problems after Installation..... | 7 |
| SECTION 2: HARDWARE INFORMATION | |
| 2.0 Understanding Your Display Card..... | 9 |
| 2.1 Memory Configuration..... | 9 |
| 2.2 ET4000 Super VGA Card Configuration..... | 11 |
| 2.3 ET4000 VL-BUS VGA Card Configuration..... | 13 |
| SECTION 3: SOFTWARE UTILITIES | |
| 3.1 Utility On Your Driver Diskette..... | 15 |
| 3.2 Installing The Fastbios.sys Device Driver..... | 16 |
| 3.3 Using The Replacement Ansi Standard Console Drive..... | 17 |
| 3.4 Using The Custom Font Loader And Font Editor..... | 18 |
| 3.5 Using The Diagnostic Test Program..... | 19 |
| 3.6 DMODE.COM For Software Mode Switching..... | 20 |
| 3.7 VMODE.COM For Software Text Mode Switching..... | 23 |
| SECTION 4: SOFTWARE DRIVERS | |
| 4.1 Driver Installation For AUTODESK'S AUTOCAD 2.6..... | 25 |
| 4.2 Driver Installation For Auto Desk's AutoCAD Release 10/11 (NTH Driver)..... | 27 |
| 4.3 8514/A Emulation Driver..... | 27 |
| 4.4 Driver Installation For Lotus 2.2 and 2.3..... | 29 |
| 4.5 Driver Installation For GEM 2.2-3.1..... | 31 |
| 4.6 Driver Installation For Ventura Publisher Versions 1.1-2.0..... | 34 |
| 4.7 Driver Installation For WordPerfect 5.0-5.1..... | 35 |
| 4.8 Driver Installation For Auto Desk 3D Studio and Auto Shade 2.0..... | 37 |
| 4.9 Driver Installation For Windows 3.0 and 3.1..... | 38 |
| SECTION 5: OTHER INFORMATIONS | |
| 5.1 Other Drivers informations..... | 43 |
| 5.2 Application Note..... | 43 |
| 5.3 In Case of Difficulty..... | 44 |
| .Supplemtray Information | 46 |

INTRODUCTION

Congratulations on the purchase of your Display Card. We would like to take a moment to familiarize you with some of your new board's special features.

1. VGA Compatibility

Your Display Card is based on Tseng ET4000 Turbo Mega VGA Chip and BIOS, which provides proven full VGA BIOS and Registers Compatibility.

2. Extended Resolution and Colors on Standard Monitors

This Display Card based on the Tseng ET4000 chip supports extended resolutions and colors conforming to generally accepted monitor frequency standards (many other VGA cards are not compatible with popular monitor standards).

Following is a partial list of display modes supported by your Display Card:

| Resolution | Colors | Standard Frequency |
|-------------------|--------------------|---|
| 640X480 | 256,32K,64K,16.7M* | 31.5 KHz/60H /38 KHz/60Hz |
| 800X600 | 256,32K,64K* | 35.5 KHz/56Hz 38 KHz/60Hz 56 KHz/70Hz |
| 1024X768 | 256 | 56 KHz/70Hz |
| 1280X1024 | 16 | 48.0 KHz/43.5Hz** |

* 32K and 64K colors require HiColor DAC. 16.7 Million colors requires 24 bit DAC.

** Interlaced display mode. All other modes are non-interlaced display

3. Software Drivers for Extended Modes Following high resolution drivers are Provided.

Microsoft Windows 3.xx/38
GEM 2/3
Ventura 1/2
AutoCAD 2.6/R10/R11
Lotus 1-2-3

Word Perfect 5 (132x25/28/44, 80x60 text)
AutoShade/3D Studio

4. 132-Column Text Display

Your Display Card Provides 132-column text for Lotus 1-2-3, Symphony, Word Perfect, etc.

132-column text display is widely used by popular emulator software which require 132 columns of text to emulate terminals such as the DEC VT100 and the IBM 3278.

5. Multiple Soft Fonts

The Font Loader and Font Editor software included in the Utility Diskette let you design and use custom character fonts for scientific and foreign language applications.

6. True Colors

ET4000 VGA Card could provide 16.7 Million colors, if the 24-bit DAC is equipped on your card. With such DAC, it could support 32K and 64K colors also.

SOFTWARE INSTALLATION IMPORTANT NOTICE

Please check your diskette pack first before you start to play with your ET4000 card. If the pack contains two diskettes, you should first read the "Supplementary Information" section which is located at the end of this manual, otherwise, please follow the instructions of this manual to run your software. The supplementary information will tell you how to install and utilize the compressed format software. Sometimes, you may find the installed software directories name which are not exactly the same as the directories name described in this manual, but, you will soon find out that is the only difference which will not disturb you in using this manual. All the file names described in this manual will not show up when you use DOS command "DIR" to find them on your compressed format diskettes, but, after you installed the software, you can find them on your hard disk related directories. Thus, to run the software correctly, you should just change the working drive from floppy driver to hard driver whenever this manual mentioned.

SECTION 1: INSTALLATION

1.1 Preparing The ET4000 Super VGA Card

This section is applicable to most IBM compatible computers. However, internal configurations sometimes differ between vendors. Thus, to install the ET4000 SUPER VGA Card in your system seems to differ dramatically from that described below. Please refer directly to the relevant User's Manual or your PC Dealer if it is necessary.

Tool Requirements:

To install your ET4000 SUPER VGA Card, you may need medium-size flat-blade screwdriver.

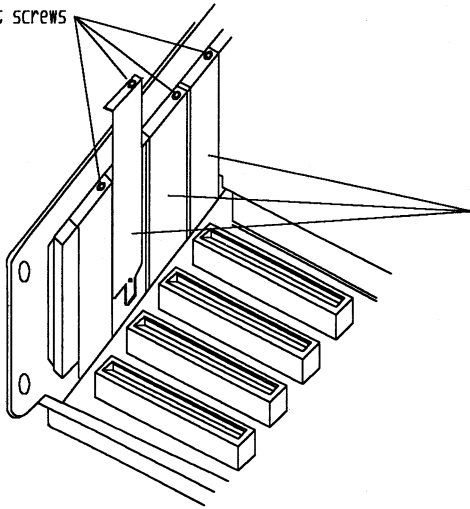
Inventory Check list:

Check you display Card box to ensure that it contains the following items: The Display card, four Driver Diskettes or two compressed format Driver Diskettes, User's Guide.

1.2 Installation Instructions

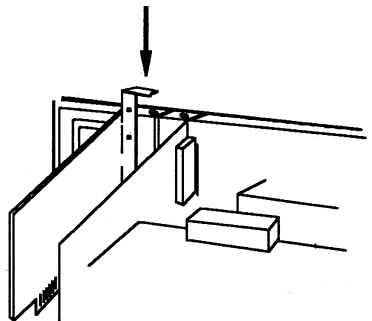
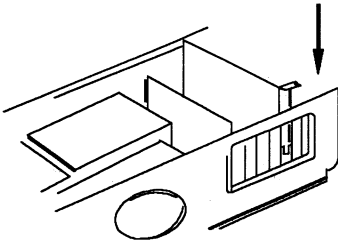
1. Turn the power OFF to any devices (printer, display, modem, etc.) you may have attached to your computer.
2. Turn the power OFF to your computer system.
3. Disconnect all cables from the rear of your computer.
4. Remove the cover from the computer.
5. Your Display Card can go into any unused slot on the computer motherboard. Remove the screw which holds the chosen expansion slot rear panel cover. Remove the cover and set the screw and cover aside.

expansion slot screws



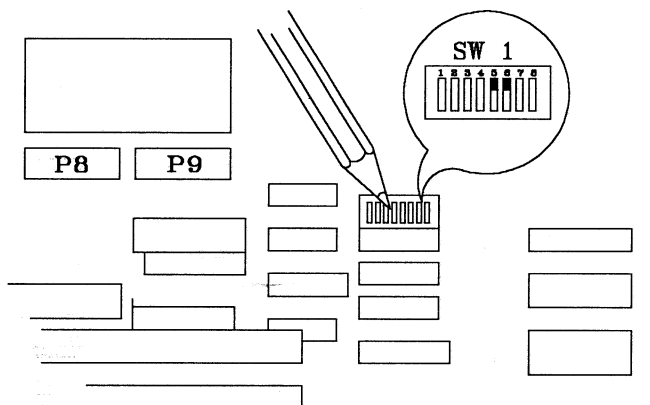
expansion slot covers

6. Install your Display Card. Make sure the Card is fully inserted into the slot. Insert the screw that was removed with the expansion slot and tighten firmly.



-
-
7. If you are installing your Display Card in an original IBM PC, please observe the following instructions. If you are installing the card in an XT, AT, PS/2 or any compatible devices, go to the next step.

Using the tip of a ballpoint pen or similar object, set levers 5 and 6 on switch block 1 on the motherboard of the IBM PC (switch block 1 is the one closest to the expansion slots; it is marked as SW1) to the ON position. The ON and OFF positions are usually marked along the side of the switch.



8. Carefully slide the cover back over the computer. Install the mounting screws that hold the cover to the computer.
9. Reconnect all cables to the rear of the computer. If necessary, refer to the instructions supplied with your display monitor, printer or other equipment.

NOTE

Refer of the user's guide included with your computer system for additional instructions concerning the installation of options. Switch and/or jumper settings vary from system to system.

1.3 Problems after Installation

The ET4000 SUPER VGA Card, installation is now completed, and your system should boot up and work as usual. If, however, you experience any problem after installation, one of the followings is the most likely cause:

- * Cabling is incorrect.
- * Switches or jumpers are set incorrectly.
- * Other potions may have been loosened.
- * ET4000 SUPER VGA Card itself.

To determine which of these causes if responsible, answer the following questions:

- * After removing the ET4000 SUPER VGA Card, does everything work normally?
- * Is the power plus securely connected?
- * Are there any loose connectors to the boards?
- * Are the DIP switches on the main board and ET4000 SUPER VGA Card set up properly?
- * Has the monitor type jumper been set up properly?
- * Are you using the right type of monitor?

If all these do not help you, turn the power off and ask for assistance from your local dealer.

SECTION 2: HARDWARE INFORMATION

2.0 Understanding Your Display Card

Your Display Card consists of the following key components and functions:

1. The Tseng Labs ET4000 Video ASIC Chip
2. The Memory
3. The Digital-to-Analog Converter Chip (DAC)
4. Video BIOS
- * 5. VGA-Sync ROM
6. PC bus connector
7. Clock IC

* If your ET4000 VGA is a simplified version, this component may not exist.

*** ET4000 VL-Bus doesn't have VGA-Sync ROM**

2.1 Memory Configuration

Your Display Card may come with three possible memory configurations: 256KByte, 512KByte or 1MByte. You may or may not field-upgrade the memory capacity depending on the model you have purchased.

If your Display Card is purchased with field-upgradable option, you may upgrade the memory capacity by inserting more 256x4 (44256-10) type DRAMs.

Quality 44256-10 DRAM is recommended (when in doubt of the quality of the DRAM, please use 44256-8 DRAM).

Memory Configuration Rules

(ISA)

- 256KByte: install DRAM Number U4 and U8
- 512KByte: install DRAM Number U3, U4, U7 and U8
- 1MByte: install all U8 DRAMs

(VL-Bus)

256K byte: To install DRAM number : U8 and U12

512K byte: To install DRAM number : U8,U9,U12,U13

1MB byte: To install all DRAMs

The size of memory on your Display Card determines the graphic resolutions and the number of colors that the card can support.

The following resolutions/colors require **256KByte** of memory

. 320x480 in 256 colors

. 640x350 in 16 colors

. 640x480 in 16 colors

. 800x600 in 16 colors

The following resolutions/colors require **512KByte** of memory

. 640x200 in 256 colors

. 800x600 in 256 colors

.1024x768 in 16 colors

The following resolutions/colors require **1MByte** of memory

.1024x768 in 256 colors

.1280x1024 in 16 colors

. 640x480 in 32K, 64K, and 16.7Million colors (optional)*

. 800x600 in 32K and 64K colors (optional)*

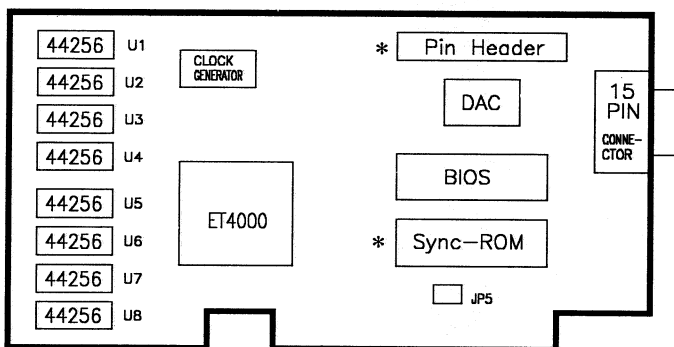
* 32K-and 64K-color require HiColor DAC. 16.7Million-color requires 24-bit DAC.

2.2 ET4000 Super VGA Card Configuration

Your ET4000 Super VGA Card could be one the following hardware configurations. Please check your card with the graphic diagrams to set the jumpers if it is necessary.

Fig 2.2-1

CONNECTOR, AND JUMPER LOCATION



JUMPER SETTINGS

JP5 O-Wait State Selection

Installed O-Wait State enable (default setting)
Open O-Wait State disable

* If your ET4000 VGA is a simplified version, then, these components may not exist.

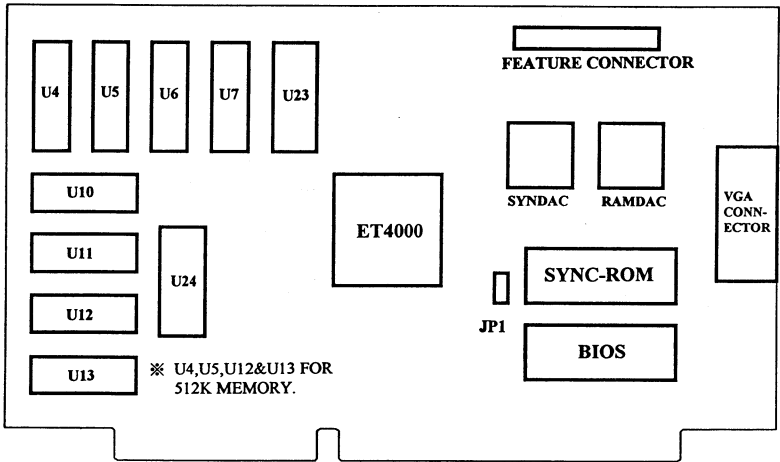
IMPORTANT NOTE

JP5 is a 2-pin jumper for Turbo speed of your Display Card and always connected as a default setting. JP5 should be disconnected only when

you find that your Display Card is not compatible with your PC motherboard. To disconnect JP5, simply remove the jumper cap of JP5 or put jumper cap on either pin of JP5.

Fig 2.2-2

According to the configuration as below, It is another version, Only DRAMs changed.



2.3 ET4000 VL-BUS VGA Card Configuration

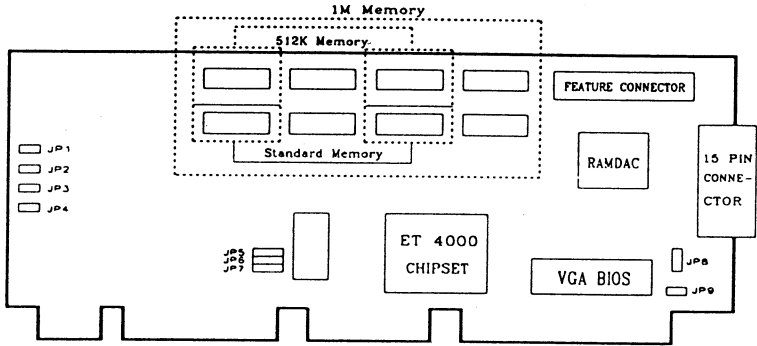


Fig 2.3-1 Connector And Jumper Location.

Please check your card with the graphic diagrams to set the jumper if it is necessary.

JUMPER SETTINGS

Jp1, Jp4 : Open Jp1 and Jp4 to disable Local-Bus VGA.

Jp2, Jp3 : To set M/IO cycles, The default value : Jp2=1, Jp3=0

| JP2 | JP3 | MIN T2 MIO =1 | MIN T2 MIO =1 |
|-----|-----|------------------|------------------|
| 1 | 1 | 1 | 3 |
| 1 | 0 | 2 | 4 |
| 0 | 1 | 3 | 3 |
| 0 | 0 | 4 | 4 |

PS : 1=INSTALL
0=NOT INSTALL

Jp5, Jp6, Jp7 : To set clock IC frequency (default).

Jp8 : Close Jp8 to enable VGA BIOS on ISA bus.

Jp9 : Close Jp9 to enable IRQ9

Notice :

For 386 or 486 with VESA LOCAL Bus STANDARD PC System.

SECTION 3: SOFTWARE UTILITIES

3.1 Utility On Your Driver Diskette

The following is a description of your Display Card's utilities and other files.

- FASTBIOS.SYS** Speeds up video BIOS operations when used in 80286-and 80386-based systems. It must be installed as the FIRST device in the CONFIG.SYS file.
- ENANSI.SYS** Replaces the ANSI.SYS device driver supplies on your DOS system disk. EANSI.SYS is compatible with the standard ANIS.SYS, and additionally supports the extended screen modes provided by your Display Card.
- FONT.DOC** Contains the latest information on the Font Editor and Font Editor and Font Loader, describing new fonts and features. Print this file and read it before using the font software.
- FEDIT.COM** The font editor, used to create new fonts and/or modify existing fonts. Uses's. FNT font files are also included on the diskette.
- FLOAD.COM** The font loader, used to load a selected font into video memory from disk.
- TVDIAG.EXE** Diagnostic program that tests the video modes of your Display Card and reports the configuration of the system. This test can also be used to check/align your display screen.
- DMODE.COM** Utility program which is used to switch the card display modes (e.g. EGA, CGA, Hercules, 132-column display, etc), If your ET4000 VGA Card is a simplified version, then the EGA, CGA and Hercules mode are not available. (e.g. No VGA-SYNC Bios component on the Card)

VMODE.COM Utility program which is used to switch the card text modes (e.g. 132x44 etc.)

3.2 Installing The Fastbios.sys Device Driver

The FASTBIOS.SYS device driver is used to transfer the contents of the video ROM BIOS to PC system memory. This utility enhances video BIOS operation speed considerably when used in 80286-and 80386-based systems.

FASTBIOS.SYS is installed in the system **CONFIG.SYS** file with following line:

DEVICE=FASTBIOS.SYS

and must be the **FIRST** device driver in the **CONFIG.SYS** file. If this is not done, the following message may result upon loading:

FASTBIOS NOT INSTALLED--another (earlier installed) device driver has taken over video interrupt; make sure the line **DEVICE=FASTBIOS.SYS** occurs first in your **CONFIG.SYS** file.

Should an attempt be made to install **FASTBIOS.SYS** in anything other than an 80286-or 80386-based system, the following message will result:

FASTBIOS requires an 80286 or 80386 machine

When **FASTBIOS.SYS** is successfully installed the following message appears:

FASTBIOS Installed

FASTBIOS.SYS, residing within **CONFIG.SYS**, can only be installed during system boot-up. Please remember to reboot your system after adding **FASTBIOS** to your **CONFIG.SYS** file, and ensure that the **FASTBIOS.SYS** file resides in the same directory as **CONFIG.SYS**.

Note: If your PC provides shadow RAM, please turn on the shadow RAM instead of using the **FASTBIOS.SYS** device driver, Shadow RAM

provides the same high speed BIOS operation as FASTBIOS.SYS without consuming system memory.

3.3 Using The Replacement Ansi Standard Console Drive

EANSI.SYS is installed in the system CONFIG.SYS file with the following line:

DEVICE=EANSI.SYS

EANSI.SYS should appear in the CONFIG.SYS file in the same manner as your standard DOS ANSI.SYS would. EANSI.SYS is compatible with the standard ANSI.SYS, and gives additional support for the extended screen modes provided by your Display Card. Once installed with above command, EANSI.SYS provides all the screen control and keyboard remapping features of ANSI.SYS (see your DOS Technical Reference manual). EANSI.SYS is a replacement for ANSI.SYS, and the two should not be used at the same time.

EANSI.SYS may be used to select the extended screen modes. This is accomplished by issuing an escape sequence with the "set mode" command, just as any standard mode would be selected with the normal ANSI.SYS. For example, screen mode 22 hex would be selected by sending the escape sequence:

(Esc)[=34h

to the screen. (Note that 34 is the decimal equivalent of 22 hexadecimal). To select other modes, simply replace 34 with the number of the mode you wish to select.

The available extended screen modes using an enhanced color display are as follows:

| Mode | Columns | Rows |
|-----------------|----------------|-------------|
| 34 dec (22 hex) | 132 | 44 |
| 35 dec (23 hex) | 132 | 25 |
| 36 dec (24 hex) | 132 | 28 |

| | | |
|-----------------|----|----|
| 38 dec (26 hex) | 80 | 60 |
| 2 dec (02 hex) | 80 | 25 |

For example, to place the screen in 132-column by 44-row mode, do the following.

Place the DEVICE command:

```
DEVICE=EANSI.SYS
```

in the CONFIG.SYS file on a bootable disk, and place EANSI.SYS and BASICA.COM on that disk. Boot the system, and under to the DOS prompt, type BASICA, then press ENTER and type the following BASIC commands:

```
OPEN"0",1,"TEMP.DAT"  
PRINT #1, CHR$(27);"[=34H";  
CLOSE  
SYSTEM
```

This creates the file TEMP.DAT, containing the escape sequence to select mode 22 hex, 132-column mode. In response to the DOS prompt, type:

```
TYPE TEMP.DAT then press ENTER
```

which sends the escape sequence to the screen. The screen is immediately set to 132-column mode.

3.4 Using The Custom Font Loader And Font Editor

The Custom Font Loader and Font Editor let you instantly change the set of characters (character font) displayed on the screen. For example, the letter "A" could be displayed as or , or could even be changed to a different character entirely. This is very useful for scientific and foreign language application, as well as for simply customizing the look of your screen.

Normally, fonts must be changed from within a program, but the Font Loader lets you change the displayed font with a single DOS command.

You can load one of the several ready-made fonts provided on the Diskette, or you can use the font editor to create or customize your own fonts.

The font software consists of:

FONT.DOC the latest information about the font software, describing new fonts and features.

FEDIT.DOC the font editor, used to create new fonts and/or modify existing fonts. Start the Font Editor by typing the command "FEDIT" at the DOS prompt. Select the Help option in FEDIT's main menu for more information.

FLOAD.COM the font loader, used to load a selected font from disk into video memory. Up to four fonts may be stored in video memory at once, with any one of the fonts selected for display. Type the command FLOAD, with no parameters, for more information on the use of this program.

Assorted fonts fonts packaged on your Diskette include the two standard fonts, a font designed for the APL language, and a thin, single-dot font. You may modify any of these fonts as you wish with the font editor. Files on your Diskette with the extension. FNT contain a font.

NOTE

Fonts may be loaded in text mode only. When a font is selected to be displayed, every character on the screen is immediately displayed in that new font.

3.5 Using The Diagnostic Test Program

Included on your Diskette is a test program called TVDIAG.EXE which can help you verify that your card and attached display monitor are working properly.

-
1. At the DOS prompt, type **TVDIAG** then press **ENTER**.
 2. The test will start and it will prompt you with further instructions.

3.6 DMODE.COM For Software Mode Switching

Your Display Card is designed to provide compatibility with the following standards: IBM's VGA, EGA, CGA, MGA and the Hercules mode. Please note that if your Display Card is a simplified version. (without VGA-SYNC Bios installed), then only the VGA mode can be used.

DMODE.COM is a utility program which is used to switch display modes after the PC is turned on. **DMODE** can be used to select various display standards (VGA, EGA, CGA, MDA), various display formats (132-column text, high resolution graphics, etc.), various vertical refresh rates of a display mode (60Hz, 70Hz, 72Hz, etc) and the type of monitor your Display Card supports.

DMODE is an easy-to-use, menu-driven program. By executing **DMODE** at DOS prompt, there will be a screen for you to setup the desired mode.

To use the program simply move the cursor to the required field, change the selection within the field by pressing the **SPACEBAR**, and press **ENTER** key to activate the selections.

Easy to understand on-screen operating instructions are included and these will guide you through all the steps.

NOTE

The default mode of your Display Card is **VGA**. When, after selecting another mode, you wish to return to the default **VGA** mode, please run **DMODE** again and select the **VGA** mode. A "Soft-boot" of your PC (by pressing **Ctrl-Alt-Del**) does not change the mode of your Display Card. In most cases when the PC is "soft-booted", the user wishes to operate in the previous video mode.

A typical example is the use of game software that requires **CGA**

resolution. If the software needs to be booted in order to work, simply place your Display Card in CGA-compatible mode using DMODE and soft-boot with your game diskette in drive A:

*** ET4000 VL-Bus only VGA selection**

3.6.1 Selecting 70Hz/72Hz Flicker-Free Display

In addition to the standard 60Hz display, your Display Card provides 70Hz and/or 72Hz flicker-free display.

You may select the 70Hz or 72Hz display via the DMODE menu or by using the DMODE command syntax as explained under DMODE COMMAND?

The following is a list of available frequencies and various resolutions that your Display Card can offer. Please make sure that your monitor is capable of supporting the frequencies required.

| Resolution | Horizontal Frequency | Vertical Frequency |
|-------------------|-----------------------------|---------------------------|
| 640x480 | 31.5KHz | 60 Hz |
| 640x480 | 38 KHz | 72 Hz |
| 800x600 | 35.5KHz | 56 Hz |
| 800x600 | 31.5KHz | 60 Hz |
| 800x600 | 31.5KHz | 72 Hz |
| 1024x768 * | 35.5KHz | 43.5 Hz |
| 1024x768 | 48 KHz | 60 Hz |
| 1024x768 | 55 KHz | 70 Hz |
| 1280x1024 * | 48 KHz | 43.5 Hz |

*Interlaced display

VIDEO MODES SUPPORTED BY YOUR DISPLAY CARD

GRAPHIC MODES

| Mode No. | Resolution | Mode | Colors |
|----------|------------|----------|-----------------|
| 4, 5 | 320x200 | CGA | 4 |
| | | EGA | 4 out of 64 |
| | | MCGA | |
| | | VGA | 4 out of 256K |
| 6 | 640x200 | CGA | 2 |
| | | EGA | 2 out of 64 |
| | | MCGA | 2 out of 256K |
| | | VGA | 2 out of 256K |
| D | 320x200 | EGA | 16 out of 64 |
| | | VGA | 16 out of 256K |
| E | 640x200 | EGA | 16 out of 64 |
| | | VGA | 16 out of 256K |
| F | 640x350 | EGA | monochrome |
| | | VGA | monochrome |
| 10 | 640x350 | EGA | 16 out of 64 |
| | | VGA | 16 out of 256K |
| 11 | 640x480 | MCGA | 2 out of 256K |
| | | VGA | 2 out of 256K |
| 12 | 640x480 | VGA | 16 out of 256K |
| 13 | 320x200 | MCGA | 256 out of 256K |
| | | VGA | 256 out of 256K |
| 25 | 640x480 | Extended | 16 out of 256K |
| 29 | 800x600 | Extended | 16 out of 256K |
| 2D | 640x350 | Extended | 256 out of 256K |
| 2F | 640x400 | Extended | 256 out of 256K |
| 2E | 640x480 | Extended | 256 out of 256K |
| 30 | 800x600 | Extended | 256 out of 256K |
| 37 | 1024x768 | Extended | 6 out of 256K |
| 38 | 1024x768 | Extended | 256 out of 256K |
| 3D | 1280x1024 | Extended | 16 out of 256K |

TEXT MODE

| Mode No. | Rows | Cols | Char.Box | Mode | Colors |
|----------|------|------|----------|------|--------------|
| 0, 1 | 25 | 40 | 8x8 | CGA | 16 |
| | | | 8x14 | EGA | 16 out of 64 |

| | | | | | |
|------|----|-----|------|----------|----------------|
| 2, 3 | 25 | 80 | 8x16 | MCGA | 16 out of 256K |
| | | | 9x16 | VGA | 16 out of 256K |
| | | | 8x8 | CGA | 16 |
| | | | 8x14 | EGA | 16 out of 64 |
| | | | 8x16 | MCGA | 16 out of 256K |
| 7 | 25 | 80 | 9x16 | VGA | 16 out of 256K |
| | | | 9x14 | MDA | Monochrome |
| | | | 9x14 | EGA | Monochrome |
| | | | 9x16 | VGA | Monochrome |
| 22 | 44 | 132 | 8x8 | Extended | 16 out of 256K |
| 23 | 25 | 132 | 8x14 | Extended | 16 out of 256K |
| 24 | 28 | 132 | 8x13 | Extended | 16 out of 256K |
| 26 | 60 | 80 | 8x8 | Extended | 16 out of 256K |

Note: if your VGA Card does not have VGA-SYNC Bios component, then the Mode other than VGA and Extended are not available.

3.7 VMODE.COM For Software Text Mode Switching

Your display card can support multiple text. The way to switch between these text modes is by executing VMOVE.COM at DOS prompt. After this program is executed, there will be a menu screen. You can move the highlight bar to choose the target mode and hit enter key to set the desired mode.

SECTION 4: SOFTWARE DRIVERS

4.1 Driver Installation For AUTODESK'S AUTOCAD 2.6

The following instructions are applicable to users of Autodesk's Inc. AutoCAD Version 2.6

The AutoCAD ADI driver named DSVGA.EXE is contained in the ACAD2 sub-directory.

Note: If your software pack contains compressed format diskettes, you should find DSVGA.EXE file after the software is installed.

Instructions:

1. Copy the driver program **DSVGA.EXE** from the Utility Diskette to the disk which has the AutoCAD program files.
2. The **DSVGA.EXE** driver needs to be loaded before you can use the 1024x768, 800x600 and 640x480 modes with AutoCAD. Once loaded, the driver remains memory resident until you power-off or restart your system. Remember that you need to load the driver only once each time you power on or restart the system.

To load the driver program via one line of entry type:

DSVGA-r {123456}-v {nn}

where-r selects the desired resolution as listed below.

- 1 = 640x480 (8x8 Font, 16 color)
- 2 = 1024x768 (8x16 Font, 16 color)
- 3 = 640x480 (8x16 Font, 2 color)
- 4 = 800x600 (8x16 Font, 16 color)
- 5 = 640x480 (8x16 Font, 16 color)

where-v selects the interrupt vector for driver used (7A is the default interrupt used by both AutoCAD and this driver).

Example: **DSVGA-r2-v7C**

selects 1024X768 resolution, using interrupt 7C.

Note: DSVGA and its attached parameters can be invoked in a batch file.

DSVGA may also be invoked by typing the following:

DSVGA

The driver program will display the following:

```
--AutoCAD ADI Driver V2.24--  
VGA Adapter AutoCAD Driver
```

If you are changing resolutions please respond with original INT number

Enter ADI INT number in HEX (Default = 7A) ==>

Please Enter Resolution

- 1 = 640x480 (8x8 Font, 16 color)
 - 2 = 1024x768 (8x8 Font, 16 color)
 - 3 = 640x480 (8x8 Font, 2 color)
 - 4 = 800x600 (8x8 Font, 16 color)
 - 5 = 640x480 (8x8 Font, 16 color)
- Choice ==>

The driver is now set to be used at the resolution you selected. If later on you wish to change the driver resolution just type DSVGA again.

3. Configure AutoCAD using the AutoCAD documentation. Simplified instructions are included below.

- . Type ACAD
- . Select Main Menu item 5 (Configure AutoCAD)
- . Select Configuration Menu item 3 (Configure video display)
- . Select ADI display
- . Select the hexadecimal interrupt, this must match the -v parameter selected with DSVGA. The default is 7A.
- . Continue through the configuration menu. After you complete the configuration you can begin using AutoCAD.

4.2 Driver Installation For AutoDesk's AutoCAD Release 10/11 (NTH Driver)

The following instructions are applicable to users of Autodesk Inc's AutoCAD Release 10/11. In your driver diskette , in the root directory, there is a program called "install.exe". To install ET4000 VGA AutoCAD driver, you can go through these steps:

1. At DOS prompt, e.g. A Drive, TYPE "**install [ENTER]**".
2. Answer the questions to install these drivers in the target subdirectory you wanted.
3. The install. exe program will decompress the software and copy all the files to the target directory.
4. Then, the install. exe program will create a **NTHLITE.BAT** file. The contents of this file is based on your AutoCAD configuration.
5. Every time, if you want to invoke AutoCAD, you could run the **NTHLITE.BAT**.
6. There is a file called **configur.exe**. You can use it fo change your AutoCAD configuration.

NOTE

This install. exe program can apply to both AutoCAD R10 and R11.

- * If your Software is a two diskettes version, you will find the "NTH" in the Software List when runing installation Utility, after you installed the software to your hard disk, you can follow the above description to install this Software.

4.3 8514/A Emulation Driver

The instructions that follow explain how to install the appropriate 8514/A emulation driver for your needs. On the Disk 1 Diskette under 8514AI subdirectory you should find these files:

RIXA14.EXE
RIXA18.EXE
STAN0715.FNT
STAN0814.FNT
STAN1220.FNT
README.DOC (this file)

Two emulators are provided. Choose either emulator depending on your video memory configuration and the number of colors desired. The following table illustrates the resolutions available by driver name according to the video memory configuration on your Display Card.

| Resolution | Color | Mode (hex) | Memory required | Driver |
|-------------------|--------------|-------------------|------------------------|---------------|
| 640x480 | 16 | 12 | 512K | RIxA14 |
| 1024x768 | 16 | 37 | 512KB | RIxA14 |
| 640x480 | 256 | 2E | 512KB | RIxA18 |
| 1024x768 | 256 | 38 | 1M | RIxA18 |

INSTALLATION

1. Create a subdirectory on the hard disk called **RIXAI** or another name of your choosing.
2. Copy the contents of the diskette to that newly-created subdirectory.

Decide which version of the emulator is needed based on the amount of video memory on your Display Card and the number of colors you wish to proceed.

3. Type **RIXAIx** at the DOS prompt, where x is either 4 or 8.
4. You can now run your application software under 8514/A emulation.

Please remember to load the appropriate emulation driver before running application software that requires 8514/A. You might want to create a simple batch file that loads the emulation driver and your software automatically to simplify the process.

EXAMPLE (acadai.bat)

```
RIXA18  
ACAD
```

You may need to reconfigure some software to run under an 8514/A driver. Please check the user manuals of your applications to determine if such a driver is supported.

To unload the driver, simply type the loading command followed by /U (e.g. **RIXAI8/U**)

4.4 Driver Installation For Lotus 2.2 and 2.3

4.4.1 LOTUS 1-2-3 Version 2.3 Driver Installation

The following are generic instructions for the installation of TLI text and graphics drivers for Lotus 1-2-3 Version 2.3. Lotus should first be installed for normal VGA and it is suggested that normal operation be assured before loading TLI extended mode drivers

- (1) Copy the files from the Lotus Driver Diskette to another diskette, placing all driver files in the same directory for the program to locate them during the installation process.
- (2) Enter Lotus INSTALL; e.g.
`C:\LOTUS>: INSTALL [enter]`
Press [enter] again after the Lotus logo appears.
- (3) From the Main Menu, choose the "Change Selected Equipment" option.
- (4) From that menu, choose "Add New Drivers to the Library."
- (5) When asked from which drive the drivers can be copied, indicate "A" or "B" depending on which drive the TLI drivers are located.
- (6) When the program is finished copying the drivers , choose "Save the Current Driver Set." You are then prompted to name the driver set. This name can be anything you choose, or if no name is specified, the default name "123.set" will be assigned.
- (7) The Lotus INSTALL program will then display three font sizes to choose from:
 - (1) **Basic**
 - (2) **Medium**
 - (3) **Extended**

Choose 2) Medium.

-
- (8) Answer "Yes" when asked if you want to generate fonts sizes now.
 - (9) After pressing ENTER you are returned to DOS.
 - (10) After returning to the DOS prompt, type
C:\LOTUS>: INSTALL [enter]
 - (11) Select the "Change Selected Equipment" option again.
 - (12) Choose "Modify the Current Driver Set" option.
 - (13) Select "Text Display."
 - (14) Select the desired driver.
 - (15) After returning to the submenu, select "Graphic Display."
 - (16) Select the desired driver.
 - (17) After returning to the submenu, choose "Return to Previous Menu" and choose "Save the Current Driver Set."
 - (18) Choose an arbitrary name for the driver set just defined or let the program default to "123.set".
 - (19) Press ENTER to move to the next menu and select the size of the font (medium is recommended).
 - (20) Answer "Yes" when asked if you want to generate fonts sizes now.
 - (21) Press ENTER to go to DOS and start Lotus the name of the defined driver set.

4.4.2 LOTUS 1-2-3 Version 2.2 Driver Installation

The following are generic instructions for the installation of TLI text and graphics drivers for Lotus 1-2-3 Version 2.2. Lotus should first be installed for normal VGA and it is suggested that normal operation be assured before loading TLI extended mode drivers

-
-
- (1) Copy the files from the Lotus Driver Diskette to your Lotus directory.
 - (2) Enter Lotus INSTALL; e.g.
`C:\LOTUS>: INSTALL [enter]`
 - (3) From the Main Menu, select "Advanced Options".
 - (4) From the Advanced Options menu, select "Add New Drivers to Library".
 - (5) After returning to the Advanced Options menu, select "Modify Current Driver Set", which then brings up the configuration menu.
 - (6) From the configuration menu, select the "Text Display" option, and then select the desired driver.
 - (7) After returning to the configuration menu, select the "Graphic Display" option, and then select the desired driver.
 - (8) After returning to the configuration menu, select "Return to menu". This returns you to the Advanced Options menu.
 - (9) From the Advanced Opting menu, select "Save Changes". Assign an arbitrary name to the driver set or let the program default to the 123. set driver set name. This brings you to the Exit menu.
 - (10) From the Exit menu, select "Yes" to leave Install.

4.5 Driver Installation For GEM 2.2-3.1

The GEM Drivers on your diskette can be used with GEM Version 2.2 and 3.0-3.1. Following are their installation instructions.

4.5.1 Driver Installation for GEM 2.2

The following instructions are applicable to the users of GEM 2.2

The enclosed GEM driver files require a new **GEMSETUP.TXT** file to be installed in place of that which is on GEM Driver Diskette #1. The driver makes full use of the 800X600 and 1024X768 graphics mode of the Display Card.

Before installing GEM, perform the following steps:

1. Make a DISKCOPY of the GEM Device Driver Disk #1. This copy will be used instead of the original during installation.
2. Copy GEMSETUP.V22 from your Driver Diskette to the newly-created copy of the GEM Device Driver Disk #1, as **GEMSETUP.TXT**.

Example: C:>COPY A:GEMSETUP.V22 B:GEMSETUP.TXT

Please note that you are copying the GEMSETUP.V22 file from your Driver Diskette to your GEM Device Driver Disk #1 diskette while simultaneously renaming it to GEMSETUP.TXT

After the GEM Device Driver Disk # is copied with the new GEMSETUP.TXT file, you can proceed with the installation.

3. Install GEM as per instructions. When the program asks, "Which graphics card and display do you have?", respond with choice:

**VGA Adapter (800X600) 16-color Mode; VGA 800 or
VGA Adapter (1024X768) 16-color Mode; VGA 1024**

as your video card, whichever is appropriate for your hardware configuration.

The GEM installation program will ask you to insert the Utility Diskette into drive A: and the installation will continue. Complete the GEM installation as instructed.

4. You can now begin using GEM 2.2.

4.5.2 Driver Installation for GEM 3.0-3.1

The following instructions are applicable to users of GEM 3.0-3.1

The enclosed GEM driver files require a new GEMSETUP.TXT file to be installed in place of that which is on GEM System Master Disk. The drivers make full use of the extended graphics modes of the Display Card.

Before installing GEM, perform the following steps:

1. Make a DISKCOPY of the GEM System Master Disk, This copy will be used instead of the original during installation.
2. Copy the appropriate Setup file, GEMSETUP.V31 for Version 3.1 or GEMSETUP.V30 for Version 3.0, from your Driver Diskette to the newly created copy of the GEM System Master Disk, as GEMSETUP.TXT.

Example:

For Version 3.0, C:>COPY A:GEMSETUP.V30 B:GEMSETUP.TXT
For Version 3.1, C:>COPY A:GEMSETUP.V31 B:GEMSETUP.TXT

Please note that you are copying the GEMSETUP file from your Driver Diskette to the GEM System Master Disk while simultaneously renaming it to GEMSETUP.TXT.

3. After the GEM System Master Disk is copied and prepared with the new GEMSETUP.TXT file, you can proceed with the installation.
4. The installation of VGA extended mode drivers is a 2-step process.
 - a. Install GEM as per instructions, selecting

IBM 16-Color VGA for PS/2 (640X480) or Compatible

as your video driver. Complete the GEM installation instructions normally. After completing installation, it is a good idea to start GEM to ensure that it operates properly before doing the next step.

- b. Assuming that GEM worked properly with the IBM VGA driver loaded, reinsert your System Master Disk and run GEMPREP again. This time, choose to change your configuration. You want to change

the video adapter part of the configuration in order to load the driver. Select from the followings:

VGA Adapter (800X600) 16-Color Mode

VGA Adapter (1024X768) 16-Color Mode

The program will ask you to insert the GEM DRIVER PACK diskette. This is your Display Card's Driver Diskette. The driver will load and the program will conclude.

5. You can now begin using GEM 3.

4.6 Driver Installation For Ventura Publisher Versions 1.1-2.0

The following instructions are applicable to users of Ventura Publisher Versions 1.1-2.0.

The enclosed Ventura 800x600 and 1024x768 driver files are installed AFTER Ventura Publisher has been installed on your system.

To install your VGA driver, perform the following steps:

1. Follow the Ventura installation instructions.
2. When you are asked to select a video adapter, choose
**IBM Personal System/2 (640x480) two colors (Version 1.1) or
IBM VGA or Compatible (640x480) 2 colors (Version 2.0)**
3. Complete the Ventura Publisher installation and check that it is working properly using the installed IBM driver.
4. Exit Ventura Publisher and insert the Disk 2 Diskette in your A: drive.

5. Log on to your A: drive, for example

```
C:>A:[ENTER]
A:>CD Ventura,
A:\VENTVRA>and type VPDRV2_0 [ENTER]
```

6. The program will ask you some questions about your Ventura configuration. Answer them appropriately.

7. When the program asks you what display device and resolution you want to install for, make a selection from:

VGA Adapter (800x600) 16 colors or greys or
VGA Adapter (1024x 768) 16 colors or greys

depending on whichever is appropriate or desirable for your hardware configuration.

8. The program then asks for the type of mouse you have. Respond as you did during your initial installation.

9. Finally, the program displays the choices you have made and provides you the opportunity to change them again. If no change is necessary, press [ENTER] or "Y" (the default response is "Y") and the driver will be installed.

10. If you desire a change, press "N" [ENTER] and make your changes.

The driver will now be installed and you can log back on to the hard disk drive and begin using Ventura.

4.7 Driver Installation For WordPerfect 5.0-5.1

The following instructions are applicable to users of WordPerfect 5.0 and 5.1 at 800x600 or 1024x768 resolution.

The enclosed drivers, WP800.WPD, WP1024.WPD and WP51ET4.VRS are used to enable WordPerfect to display at 800x600 and 1024x768 resolutions respectively. The drivers needs to be copied to the directory where WordPerfect resides. Upon loading the program the following steps should be taken to choose the desired resolution:

1. From the document screen displayed after entering WordPerfect, press **SHIFT/F1** to get to the Setup menu.
2. Form Setup, choose Display option. This brings up the Setup: Display menu.
3. From the Setup: Display menu, choose "graphics Screen Type".
4. From the Setup: Graphics Screen Type menu, choose either;

VGA Adapter 800X600 16 color

or

VGA Adapter 1024X768 16 color (V.5.0)

or the "Tseng ET4000 Based SVGA" option and select from

| | | |
|-----|----------|-----------|
| VGA | 1024x768 | 16 color |
| VGA | 1024x768 | 256 color |
| VGA | 800x600 | 16 color |
| VGA | 800x768 | 256 color |
| VGA | 640x480 | 16 color |
| VGA | 640x480 | 256 color |

Note

Please only select drivers that your Display Card support.

5. Exit from the menus and begin using WordPerfect.

4. 8 Driver Installation For Auto Desk 3D studio and Auto Shade 2.0

Provided with your ET4000 card for 3D Studio and Auto shade 2.0 driver files are the Nth Render Driver.

Nth Render is a protected mode display/rendering driver. It supports VGA, 8514/A, TIGA 2.0, and Nth Engine 150 graphics adapters IN 256 COLOR MODES ONLY. The drivers are resided in the root directory of your Diskette

Note: If your Software pack contains two compressed format diskettes, after you installed the drivers to your hard disk, you can follow the instructions described in this section to utilize this software.

4.8.1 Nth Render Installation instructions:

To install:

1. **INSTALLING SOFTWARE: Type A:INSTALL.**

Follow the prompts, you will be asked where you would like to install the Nth Render software.

2. **CONFIGURING FOR YOUR VGA:**

Using the **CONFIGUR** program, select the appropriate video mode and rendering mode for your graphics adapter.

3. You may need to edit the sample batch files, **NTHSHADE.BAT** and **NTH3DS.BAT**, to contain the correct path for their environment variable settings.

4.8.2 Autoshade Configuration And Running

AutoShade configuration:

1. Run the **NTHSHADE.BAT** batch file.

2. Reconfigure Autoshade by typing: **SHADE -R**

-
3. Choose Option 2, p386 Autodesk Device Interface Driver, when prompted for the display device and the rendering device. Answer yes for all remaining questions regarding screen configuration.

Running AutoShade with the Nth Render driver.

1. Run the **NTHSHADE** batch file.
2. Change to your Autoshade 2.0 directory and type **SHADE** to load Autoshade.

4.8.3 3D Studio Configuration And Running

3D Studio configuration:

1. Change the following 3 lines in the 3DS.SET file (the 3DS.SET file is located in your 3DS directory).

change line 123 to read:

DEFAULT-DISPLAY = "RCPADI"

change line 138 to read:

MAIN-DISPLAY = "RCPADI"

change line 145 to read:

MATERIAL-DISPLAY = "RCPADI"

Running 3D Studio with the Nth Render driver.

1. Run the **NTH3DS.BAT** batch file.
2. Change to your 3D Studio directory and type **3DS** to start 3D Studio.

4.9 Driver Installation for Windows 3.0 and 3.1

The provided Disk 3 and Disk 4 Driver Diskettes contain the ET4000 VGA Windows 3.0 and 3.1 drivers. Disk 3 contains Windows 3.0 and

Disk 4 contains Windows 3.1 Their installation procedure are the same basically. In order to avoid mixing these two versions of drivers together, and, you want to copy them into the hard disk, please make two different directories for them and copy them into these directories accordingly. These drivers can be installed from the DOS prompt and windows itself. Note that these driver files are in Microsoft compressed format and can only be accessed and executed by installing through Windows Setup. Simply copying the files into your \Windows\System subdirectory Will NOT work and may corrupt your Windows installation. Installing the drivers correctly is, however, a simple process. It is accomplished by following these instructions:

You can install and change drivers in two different ways: from the floppy driver disk or from your hard disk. If you do not wish to have the drivers installed on your hard disk, you can load or change them from the floppy disk.

Note:If your Software pack contains two compressed format diskettes, please follow the installation Utility instructions to install the driver into your hard disk, then, you can follow the "Installation from Hard Disk" procedure described in this section to accomplish your windows driver installation.

Installation from floppy disk

- (1) Insert your Driver Disk in the appropriate floppy drive.
- (2) From your Windows directory, type SETUP and select DISPLAY to change the video driver.
- (3) Select "Other disk..." to direct the program to the floppy disk holding the new drivers. Note that once the drivers are installed, you do not have to select "Other disk..." again should you decide to change resolutions. Look for the ET4000-based drivers in the Display selection menu to select the display resolution you want.
- (4) When asked where the drivers will be found, state the following:

A:

Following instructions 6-7 below.

Installation from Hard Disk:

(1) Having the drivers loaded on the hard disk will make it easier and faster to change drivers in the future. Make a subdirectory to hold the driver files.

example: C:>md \et4drv30 (for Windows 3.0)
or C:>md \et4drv31 (for Windows 3.1)
and switch to that subdirectory (e.g. C:>CD \et4drv30)

(2) Insert the drivers disk into the appropriate drive and type the following command:

COPY A:*.* (COPY Disk 3 to C:\ET4DRV30>)
or (COPY Disk 4 to C:\ET4DRV31>)

(3) From your Windows directory, type SETUP and select DISPLAY to change the video driver.

(4) Select "Other disk..." to direct the program to the subdirectory holding the new drivers. Note that once the drivers are installed, you do not have to select "Other" again should you decide to change resolutions. Look for the ET4000-based drivers in the Display selection menu to select the display resolution you want.

(5) When asked where the drivers will be found, state the following (deleting what the program has displayed in the input window):

[drive:]\[directory]

e.g. : C:>\et4drv30 (for Windows 3.0)

(6) A standard Windows selection menu will appear with additional video drivers from which to select.

(7) Proceed normally through the remainder of the process. Check Microsoft Windows installation procedures if necessary.

Note

Since your ET4000 VGA Card could be one of the different RAMDAC configurations. Before selecting the Windows driver, please make sure that the driver you selected is match your hardware configuration.

SECTION 5: OTHER INFORMATIONS

5.1 Other Drivers information

Provided with your ET4000 Card, there are other driver files which are not described in this manual. In case you may want to use them, you could refer to the related application software installation procedure or ask your dealer to help you if you experienced installation difficulties.

5.2 Application Note

Using The Extended Color Text Modes:

This application Note describes how to select the Display Card's 132-column text modes from application programs and how the 132-column text modes memory map is organized.

Selecting 132-and 80-Column Color or Monochrome Text Modes:

The Display Card BIOS supports the following 132-and 80-column text modes. These modes are not used by IBM VGA. The numbers are in decimal except as noted.

| Mode | Columns | Rows | Length of Memory Map |
|--------|---------|------|---|
| 22 hex | 132 | 44 | $132 \times 44 \times 2 = 11616 = 2D60$ hex |
| 23 hex | 132 | 25 | $132 \times 25 \times 2 = 6600 = 19C8$ hex |
| 24 hex | 132 | 28 | $132 \times 28 \times 2 = 7392 = 1CEO$ hex |
| 26 hex | 80 | 60 | $80 \times 60 \times 2 = 9600 = 2580$ hex |

The 132-column modes are selected exactly as the standard modes 0-7 and D-13 are selected:

1. Place a 0 in register AH to indicate "select mode" function.
2. Place the mode number in register AL.
- 3.-Execute an INT 10H instruction, generating software interrupt 10 hex, which invokes the Display card BIOS to set the mode.

The above calling sequence should be familiar to anyone who has ever called the BIOS from assembly language or from a machine language driver, and is the standard BIOS interface for video mode select.

132-Column Color Text Memory Map

The 132-Column color text memory map begins at B800:0000 (monochrome at B000:0000), just like other text modes. Memory is organized with even bytes as character codes and odd bytes as attributes, again just like normal text. The row offset REGISTER (CRTC register 13 hex) is normally set to 66 (42 hex) to compensate for the greater width of the screen, and so the start of each row is 264 bytes after the start of the row above it, as opposed to the 80-column row offset register of 40 (28 hex) and 160 bytes from the start of one row to the start of the next.

As indicated in the table above, the lengths of the 132-column memory maps are longer than the normal 80x25 length of 4000 bytes.

5.3 In Case of Difficulty

If you have problems after installation, one of the following is most probably the cause.

- a. Ensure that all cables are properly connected, and that all plugs are firmly seated in their sockets.
- b. Ensure that the display monitor is properly connected and that its power is turned on.

Power OFF the computer system and all other connected devices before checking the following:

- c. Ensure that the switches on your Display card (if any) are set properly and that the board is seated in the expansion slot.
- d. Ensure that the system motherboard switches/jumper(s) are set properly for use with your Display Card.

-
-
- e. Ensure that no other switch settings on the motherboard have been accidentally changed. Refer to the documentation provided with your computer to determine the correct switch settings.

If checking these items does not locate the problem, there may be a malfunction of the computer system, display monitor or the Display Card.

. ET4000 Software Drivers Installation Supplementary Information

In your ET4000 software drivers diskette pack, you may find two kinds of bundle. One is packed with two diskettes and another is packed with four diskettes. The "two diskettes bundle" contains the same software drivers as the "four diskettes bundle" did, but, they are in the compressed format. Within one of the two diskettes, there is a file called "INSTALL.EXE". you can run this program to unpack all software drivers. The following section will describe how to use it. As to the detail information of how to use these individual software drivers, please refer to the USER'S GUIDE that comes with your ET4000 card. If your software pack contains four diskettes, you can just ignore following section.

1. Insert the disk with "INSTALL.EXE" program into the A: or B: drive and type, for example:
C: \A: [ENTER]
A: \INSTALL [ENTER]
2. A menu screen with all supported software drivers will be displayed. By entering one of the preceding characters to select the wanted software driver, for example, enter character "a". Next, you will be prompted for another screen.
3. Now, the program will show the default drive and directory of the selected software driver for you.
please enter "y" for yes, then the installation will start.
please enter "n" for no. the program will ask you to type in the target drive and directory that you want. By typing in the wanted drive and directory, the installation will start accordingly. After finishing this installation, the program will return to the first menu screen for you to select another driver installation.
4. If you select a software driver which is not contained in the current disk, the INSTALL program will ask you to insert another disk into the floppy drive. please do so to finish the installation.
5. At any time except the program is in processing, you can enter "ESC" key to return to the previous stage or even quit the INSTALLATION program.

