VGA - 8O

USER'S GUIDE

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SECTION 1
OVERVIEW

1.1 FEATURES

- Single chip (Oak Technology OTI-037) VGA™ graphics controller for IBM PC/XT/AT™ compatible and PS/2™ Model 25/30 systems
- 100% hardware compatible with IBM VGA in all modes
- EGA™, CGA™, MDA™ and Hercules Graphics™ compatible through emulation
- Fast host access to video memory
- 32-bit video RAM access
- Supports both digital (TTL) and analog monitors
- 800 X 600 high-resolution graphics mode with 16 colors
- Supports132-column text mode
- 256K bytes memory configuration
- 35.5 MHz dot clock
- Analog and Digital connectors
- Fully compatible with IBM basic input/output system (BIOS)

1.2 OVERVIEW

The Video Graphics Array (VGA) board is a medium resolution display adapter for the IBM PC/XT, the IBM PC/AT, the IBM PS/2 model 25/30 and similar IBM-compatible systems. It offers more functions than a conventional IBM VGA Adapter and it also emulates the adapter standard for the IBM Monochrome Display Adapter (MDA), the monochrome Hercules Graphics board, the IBM Color Graphic Adapter (CGA) and the IBM Enhanced Graphics Adapter (EGA).

Operating at dot clock rates of up to 35.5 MHz, the OTI-037 chip set upon which this video adapter card is based supports high resolution graphics modes for high-resolution variable frequency monitors. With a digital (TTL) color monitor connected, a maximum of 16 out of 64 colors can be selected and displayed. For analog monitors, the 256 color graphics mode can display 256 out of 256K colors simultaneously through the external color palette.

SECTION 2
INSTALLATION

2.1 PHYSICAL INSTALLATION PROCEDURE

Once you have properly set the switches (see section 4, switch settings), you can install the VGA board in any open expansion slot of your computer system. Follow the steps outlined below:

1. Prepare your computer system.
   a. Turn off the power to the computer system and unplug the power cord.
   b. Disconnect all cables connected to the computer system.
   c. Using a screwdriver (or nut driver), remove the cover mounting screws. These screws are at the rear of a PC PC/XT and PC/AT and on each side (lower edge) of a PS/2 Model 30.
   d. Remove the computer system's cover.

2. If you are installing the VGA board in a PC, PC/XT or PC/AT, configure the computer system for the type of monitor you'll be using. (If you're using a PS/2 Model 30, skip this step and go on to step 3.) The computer can be configured for Monochrome or Color, or No Display can be used to enable a VGA or EGA board to boot up properly. Refer to your system manual and follow the steps below:

a. Locate the monitor selection switch(es) on the computer's motherboard.

- In an IBM PC, locate switches 5 and 6. They are located in switch block 1, which is the DIP switch on the left (closest to the expansion slots).
- In an XT, locate switches 5 and 6. They are located in the switch block near the slot J8 connector.
- In an AT, there is only one switch for monitor selection. That switch is labeled SW1 and is located next to the 80287 socket in most ATs.

b. If you are using a PC or PC/XT, set switches 5 and 6 to ON. This configures your PC for No Display. Do NOT change any other switches.

CAUTION:
Failure to set switches 5 and 6 on PC and XT motherboards to the ON position may result in severe damage to your monitor.

c. If you are installing the VGA board in an AT and want to use a color monitor, set Switch 1 back (toward the rear of the AT), and set Switch 2 forward (toward the front of the AT).

3. Insert the VGA board into your computer.

a. PC, PC/XT AND PC/AT SYSTEMS:

- Find an empty expansion slot for the VGA board. If the slot still has the metal expansion-slot cover attached, remove the cover with a screwdriver (or nut driver).

- Hold the VGA board firmly at the top edge of the board, and press the gold connector into an empty expansion slot.
- Line up the VGA board retaining bracket with the screw hole in the rear plate of the computer system.
- Using a screwdriver (or nut driver), screw the retaining bracket tightly against the rear plate of the computer system.

b. PS/2 MODEL 30 SYSTEM ONLY:

- Find an empty expansion slot for the VGA board. If the slot still has the metal expansion-slot cover attached, remove the cover with a screwdriver (or nut driver). Save the screw to install the VGA board.
- At the rear of the case, remove the plastic insert from the location desired for the VGA board.
- Hold the VGA board by the edges and align it with the system's support brackets.
- Firmly press the VGA board into the expansion slot.
- To secure the board, reinstall the expansion-slot screw.

4. Reassemble the computer system :

a. Replace the cover on the computer, and plug in the power cord.
b. If you have a PC/AT, reinstall the back panel by pressing the plastic fastening strips together.
c. Reconnect all cables that were previously attached to the rear of the computer.

2.2 MONITOR CABLES

The VGA board has a 9-pin cable connector (commonly referred to as a DB-9 or DE-9 connector) for TTL (digital) monitors, and a 15-pin connector for PS/2-type analog monitors. Multifrequency monitors can be connected to either connector if the monitor is configured to accept the type of signal (TTL or Analog) present at the 9-pin connector; however, analog is the recommended configuration. Colors displayed on a TTL-configured monitor may not be the same as those displayed on an analog monitor, and it is possible to display only 256 colors simultaneously on a TTL-configured monitor.

> NOTES
> Some multi-frequency monitors have a switch that must be set to specify connection to either a digital or analog connector. For example, if you connect a multi-frequency monitor to the DB-9 connector on the VGA board, you must set the monitor switch to reflect a digital connection. Analog is recommended for best results.

For detailed information on monitor types, refer to Section 3 for monitor support and specifications.

CAUTION:
The VGA board has the same 15-pin connector available from monitor manufacturers to interface with IBM PS/2 computers. Using an incorrect cable may result in damage to the monitor and/or adapter. If you have an older multi-frequency monitor with a 9-pin analog connector, you must purchase a 9-to-15-pin converter. Attaching a 9-pin cable from an analog connector on your monitor to the 9-pin (TTL) connector on the VGA board will not work.
Please also note that different cables from different monitor suppliers are not interchangeable (e.g., the Sony Multiscan™ has different wiring than the NEC Multisync™). Contact your dealer or the monitor manufacturer for specific cable information.

2.3 PIN ASSIGNMENTS FOR VGA BOARD OUTPUT CONNECTORS

PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	Ground	6	Intensity
2	Ground	7	Video
3	N/A	8	Horizontal sync (+)
4	N/A	9	Vertical Sync (-)
5	N/A	-	---

Table 1 MONOCHROME DISPLAY PIN OUTS

PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	Ground	6	Intensity
2	Ground	7	N/A
3	Red	8	Horizontal Sync (+)
4	Green	9	Vertical Sync (-)
5	Blue	-	---

Table 2 COLOR DISPLAY PIN OUTS

PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	Ground	6	Green
2	Red	7	Blue
3	Red	8	Horizontal Sync (+)
4	Green	9	Vertical Sync (-)
5	Blue	-	---

Table 3 ENHANCED COLOR DISPLAY & MULTI-FREQUENCY PIN OUTS

PIN #	ASSIGNMENT	PIN #	ASSIGNMENT
1	Red (out)	9	(no pin)
2	Green (out)	10	Sync return
3	Blue (out)	11	Mon ID (0) (in)
4	Mon ID(2)(in)	12	Mon ID (1) (in)
5	Ground	13	Horizontal Sync (out)
6	Red return	14	Vertical Sync (out)
7	Green return	15	(reserved)
8	Blue return	-	---

Table 4 ANALOG DISPLAY PIN OUTS

SECTION 3
MONITOR SUPPORT AND SPECIFICATIONS

The VGA card runs digital and analog monitors including monochrome, color, EGA, PS/2 and multi-frequency monitors. It is used as the monitor adapter for new computers and to replace an older, less functional monitor adapter on computers already in use. There are two types of monitors used with the VGA card.

3.1 DIGITAL MONITORS

Digital monitors receive data through a nine-pin connector. Each pin conducts a different type of signal. Signals include red, green, blue, secondary red, secondary green, secondary blue, horizontal synchronization, vertical synchronization and ground. The signals are transmitted in one of two states: ON or OFF. Standard color digital monitors have three electron guns at the rear of the screen. These guns, named red, green and blue, fire electrons at red, green and blue colored phosphorus dots painted on the screen. Each gun fires only at dots of a particular color and responds to signals sent over one or two pins on the monitor signal jack. For example, when a signal is transmitted to the red pin, the red gun fires an electron at a red dot on the screen and the dot is illuminated.

When both a red signal and a secondary red signal are transmitted, the red gun fires with twice the number of electrons at the dot. The intensity of the light emitted by the phosphor, as interpreted by the human eye and brain, is directly proportional to the number of electrons hitting the single red dot. When the monitor is on, each dot is in one of three states: off, on or on intensely.

Standard digital OFF signals carry a voltage of 0 to 0.8 volts; standard ON signals carry a voltage of 0.8 to 3.5 volts. The voltages are dependent on the particular monitor.

The greatest number of colors that digital monitors can display at one time is 64. This limit is imposed by the monitor design, not by the display adapter.

3.2 ANALOG MONITORS

Analog monitors receive data through a fifteen-pin connector. Each pin carries a different signal. Signals include red, green, and blue; monitor signals zero, one,and two; and vertical synchronization, horizontal synchronization and ground.

The standard analog signal varies from 0.0 volt to 1.0 volt. Theoretically, there are an infinite number of analog signals that can be transmitted in this range. The digital-to-analog converter on the Enhanced VGA Adapter converts the digital signals to analog signals, and each phosphorus dot is illuminated to one of 256,000 intensities. But, the greatest number of colors the VGA display adapter can display at one time is 256.

3.3 SUPPORTED SCREEN FORMATS

MODE	Type	COLxROW	Colors	Pages	Map Addr (HEX)	CharBox
00	Text	40x25	16	8	B800	8x8
01	Text	40x25	16	8	B800	8x8
02	Text	80x25	16	8	B800	8x8
03	Text	80x25	16	8	B800	8x8
00*	Text	40x25	16	8	B800	8x14
01*	Text	40x25	16	8	B800	8x14
02*	Text	80x25	16	8	B800	8x14
03*	Text	80x25	16	8	B800	8x14
00+	Text	40x25	16	8	B800	9x16
01+	Text	40x25	16	8	B800	9x16
02+	Text	80x25	16	8	B800	9x16
03+	Text	80x25	16	8	B800	9x16
07	Text	80x25	2	8	B000	9x14
07+	Text	80x25	2	8	B000	9x16
04	Graphic	320x200	4	1	B800	8x8
05	Graphic	320x200	4	1	B800	8x8
06	Graphic	640x200	2	1	B800	8x8
0D	Graphic	320x200	16	8	A000	8x8
0E	Graphic	640x200	16	4	A000	8x8
0F	Graphic	640x350	2	2	A000	8x14
10	Graphic	640x350	16	2	A000	8x14
11	Graphic	640x480	2	1	A000	8x16
12	Graphic	640x480	16	1	A000	8x16
13	Graphic	320x200	256	1	A000	8x8
4F	Text	132x60	16	2	B800	8x8
50	Text	132x25	16	4	B800	8x14
51	Text	132x43	16	2	B800	8x8
52	Graphic	800x600	16	1	A000	8x8

Table 5 MODE TABLE

Remarks:

1. Mode 0, 1, 2, 3, 0*, 1*, 2*, 3* , 0+, 1+, 2+, 3+ differs in the CharBox size and the display scan line.
2. Mode 3+ or 7+ is the default mode at power up time.
3. Mode 50h, 51h and 52h are Extended Video Modes.

Supported	Digital Monitors			Analog Monitors	
Modes	Monochrome	CGA	EGA	Multi-Frequency	Fixed-Frequency
0		Y	Y	Y	Y
1		Y	Y	Y	Y
2		Y	Y	Y	Y
3		Y	Y	Y	Y
4		Y	Y	Y	Y
5		Y	Y	Y	Y
6		Y	Y	Y	Y
7	Y		Y	Y	Y
D		Y	Y	Y	Y
R		Y	Y	Y	Y
F	Y	Y	Y	Y	Y
10		Y	Y	Y	Y
11				Y	Y
12				Y	Y
13				Y	Y
50				Y	
51				Y	
52				Y	

Table 6 MONITOR TABLE

SECTION 4
SWITCH AND JUMPERS SETTING

4.1 SWITCH SETTING

For multi-frequency monitors, use the analog multi-frequency switch settings (such as NEC Multisync). For IBM 8503, 8512, 8513 or compatible color single frequency monitors use the PS/2 switch setting (X X X on for sw. 1. 2. 3. 4). The switch settings are listed in the following table:

sw1	sw2	sw3	sw4	Configuration
on	on	on	off	MDA Monitor
off	on	on	off	CGA Monitor
on	off	on	off	EGA Monitor
off	off	on	off	NEC Multisync or Compatible
on	on	off	off	NEC Multisync Plus™ or Compatible
off	on	off	off	NEC Multisync 2A™
on	off	off	off	NEC XL
off	off	off	off	Reserved
off	on	on	on	VGA (mono)
on	off	on	on	VGA (color)
off	off	on	on	VGA 16-inch (color)
on	off	off	on	NEC Multisync 4D/5D

Table 7 VGA CARD SWITCH SETTING

NOTES :

MDA = Monochrome Display (Hsync = 18.4KHz)
CGA = Color Display (Hsync = 15.75KHz)
EGA = Enhanced Color Display (Hsync = 21.85KHz 15.7 KHz)

X = Don't care
Off = Open
On = Close

4.2 JUMPERS SETTING

Two user selectable jumpers (JP1 and JP2) on the VGA board can significantly alter the board's operation. You need to understand their function before attempting to change the factory settings.

JP1-IRQ2 (Interrupt Request Level 2): When this jumper is ON "1-2", the VGA board will generate the CGA vertical retrace interrupt to the computer system. Setting this jumper to OFF will disable the interrupt generation. IRQ2 is a "chained" interrupt, meaning that it is commonly used by other add on boards. This may cause problems so it is best to change the add on board's interrupt level to some other such as IRQ5 or simply disable the VGA board's IRQ2 by removing this jumper. VGA and EGA have a different method to access the vertical interrupt.

JP2-Automatic Bus Size Detection: When a Network LAN Card, ESDI hard disk controller card or SCSI hard disk controller are installed in the system, the Jump JP2 should be in the position as "1-2". Otherwise it can be in the position as "2-3".

SECTION 5
CONNECTORS

5.1 ANALOG SIGNAL CONNECTOR

PIN	I/O	OUTPUT	MONOCHROME	COLOR
1	O	RED		NO PIN RED
2	O	GREEN	MONO	GREEN
3	O	BLUE		NO PIN BLUE
4	NA	RESERVED	NO PIN	NO PIN
5	NA	DIGITAL G	SELF TEST	SELF TEST
6	NA	RED RTN	DUMMY PIN	RED RTN
7	NA	GREEN RTN	MONO RTN	GREEN RTN
8	NA	BLUE RTN	NO PIN	BLUE RTN
9	NA	PLUG	NO PIN	NO PIN
10	NA	DIGITAL G	DIGITAL G	DIGITAL G
11	NA	RESERVED	NO PIN	DIGITAL G
12	NA	RESERVED	DIGITAL G	NO PIN
13	O	HSYNC	HSYNC	HSYNC
14	O	VSYNC	VSYNC	VSYNC
15	NA	RESERVED	NO PIN	NO PIN

RED RTN, GREEN RTN, BLUE RTN = ANALOG GROUNDS

DIGITAL G = DIGITAL GROUND FOR SYNC RETURNS AND SELF TEST

TABLE 8 15-PIN D-SHELL DISPLAY CONNECTOR SIGNALS

5.2 DIGITAL SIGNAL CONNECTOR

PIN NO.	SIGNAL NAME
1	SIGNAL GROUND
2	SECONDARY RED/SIGNAL GROUND
3	RED
4	GREEN
5	BLUE
6	SECONDARY GREEN/INTENSITY
7	SECONDARY BLUE/MONOCHROME VIDEO
8	HORIZONTAL SYNC
9	VERTICAL SYNC

Table 9 9-PIN D-SHELL CONNECTOR SIGNALS

SECTION 6
BACKWARD COMPATIBILITY

Backward compatibility is provided through hardware/firmware emulation. All previous video standards: Monochrome Graphics, Color Graphics and Enhanced Graphics modes are emulated. To activate/deactivate the emulation modes, a program called VGAMODE.EXE is provided.

When VGAMODE is entered at the DOS prompt without any parameters, a menu will be displayed that allows the selection of the emulation modes as well as the display modes. There is a message at the bottom of the screen which explains the action item at the current cursor.

A LOCK/UNLOCK feature allows locking and unlocking of the emulation mode. Locking an emulation mode will cause the VGA to remain in the chosen mode even after a warm reboot (but not a cold boot). This feature is ideal for the running of self-bootable game programs.

VGAMODE can also be executed from the DOS prompt with parameters in order to automatically enter an emulation mode. To select an emulation, type VGAMODE followed by a 'C', 'M', 'E' or 'V' to switch to CGA, MGA, EGA and back to VGA respectively.

C>VGAMODE C (switch to CGA emulation mode)

C>VGAMODE M (switch to MGA emulation mode)

C>VGAMODE E (switch to EGA emulation mode)

C>VGAMODE V (switch back to normal VGA mode)

To select a display mode, append the mode number (in hex) after VGAMODE.

C>VGAMODE 3 (select mode 3 - 80x25 color text mode)

C>VGAMODE 51 (select mode 51 - 132x43 color text mode)

C>VGAMODE 13 (select mode 13 - 320x200 256 colors graphics mode)

NOTE
1. VGAMODE is not a memory resident program. The emulation firmware is embedded within the VGA BIOS.
2. If the switch setting is set to digital monitor, such as EGA, CGA, etc., then the emulation will be automatically brought up right after system boot up. In this case, you don't have to run VGAMODE to turn on the emulation.

SECTION 7
HIGH RESOLUTION DRIVERS INSTALLATION INSTRUCTIONS

7.1 WINDOWS 2.1X™, WINDOWS/386™, WINDOWS 3.0™

The 800x600 high resolution driver is supported for Windows version 2.x and Windows/386. The installation procedure for Windows 286 and 386 is described below, Windows 3.0 is after.

1. Insert WINDOWS "set up" diskette in drive A and run the Setup program. Type in:

   A >SETUP [ENTER]

2. Run the Setup program according to the instructions on the screen and Microsoft Windows documentation.

3. When the Setup program displays the list of options that it thinks is installed, select "VGA" [ENTER]

4. When Setup asks for type of display adapter use the cursor keys to move the highlighted bar to:

   = = = > Select "Other" (requires disk provided by a hardware manufacturer)

5. Insert the manufacturer supplied Display Driver disk in A drive, and hit [ENTER].
   = = = > **Note:** For Windows 286 type "A:\WIN286" [ENTER].

6. You should see:
   "Here are the display drivers on your disk."
   = = = > Select "OAK TECHNOLOGY INC. VGA 800x600 color display"

7. After the 800x600 driver is installed, just follow the instructions to finish the installation and setup procedure.

To install the 800x600, 16 color resolution driver for **Windows 3.0** you need to follow this installation procedure:

1. Go into your Windows 3.0 directory and type "SETUP" [ENTER].

2. Use the cursor keys to choose "Display:..." [ENTER].

3. Use the cursor keys to move down and choose "Other (Requires other...)" [ENTER].

4. Place the manufacturer supplied Display Driver diskette in drive A: [ENTER].

5. Select "Super VGA 800x600" as the resolution option.

6. Hit enter three times to select the defaults and load the new 800x600 resolution driver. (You may need to specify A: before hitting enter.)

7. Your Windows 3.0 800x600 driver should now be installed.

7.2 AUTOCAD™, AUTOSKETCH™, AND AUTOSHADE™

The 800x600 driver is supported for AutoCAD Version 2 and Release 9/10. The drivers DSVGA9.EXE is for AutoCAD Release 9, DSVGA.EXE is for AutoCAD Version 2.18 or above, and DSVGA10.EXE is for Release 10.

Before you start running AutoCAD you must load the driver into your computer's memory. This procedure must be done every time you power up your computer, or when you do a warm boot. If you are a frequent user of AutoCAD, you may want to add the load driver command to your AUTOEXEC.BAT file.

The procedure to bring up the 800x600 driver is as follows:

1. Install your AutoCAD first by following the instructions provided by AutoCAD.

2. Insert the manufacturer supplied Display Driver disk in drive A. Copy AutoCAD driver DSVGA.EXE for AutoCAD Version 2, or DSVGA9.EXE for AutoCAD Release 9, or DSVGA10.EXE for AutoCAD Release 10, and AutoShade V1.0 to your AutoCAD subdirectory if you have a hard disk. To install the AutoCAD driver, type in:

   DSVGA.EXE [ENTER] for Version 2;

DSVGA9.EXE [ENTER] for Release 9 or;

DSVGA10.EXE [ENTER] for Release 10.

Now the driver is loaded into memory and you can set up your MOUSE driver as usual.

3. Bring up AutoCAD by typing in:

   ACAD [ENTER]

When you see the main menu on the screen:

= = = > Select (5) Configure AutoCAD

It will show your current configuration on the screen. if your current video display is "ADI display" then you are set up to run AutoCAD in 800x600 resolution. Now you can go back to main menu and do your work. If your current video display is not "ADI display," then press RETURN to continue.

4. Now you will see the configuration menu displayed:

   = = = > Select (3) Configure video display

   After you select 3, it shows your currently selected video display again and asks you:

   "Do you want to select a different one? <N>_".
   Answer "Y"es to this question.

5. The screen then shows "Available video displays:" for your new selection:

= = = > Select (1) ADI display V2.0 (or V3.0) (or V4.0)

6. After this you may have to answer several questions about your desired configuration.

7. Once these questions are answered, the display returns to the configuration menu again. Select **0** to exit to main menu.

8. Then answer "Y"es to the question, "Keep configuration changes."

9. Finally, go back to the main menu and now you are ready to do your normal work in 800x600 resolution.

The **DSVGA10.EXE** AutoCAD driver also supports AutoShade and **AutoSketch**. Follow steps 1-4 to configure your system. Before you can start working with AutoCAD or AutoShade you must load the ADI Driver into your system memory first. This procedure must be done each time you turn on your computer, or when you perform a warm boot. We recommend installing the DSVGA10.EXE program in your AUTOEXEC.BAT file if you are a regular AutoCAD or AutoShade user.

To install the ADI driver for AutoCAD Release 10 or AutoShade, type:

DSVGA10 [ENTER]

After the ADI driver is loaded in to the computer's memory, it will then display information on the screen to notify users the driver has been installed. The driver will also notify you which interrupt vector will be used to communicate with AutoCAD or AutoShade.

The following instructions are provided in order to configure **AutoShade** properly:

1. When AutoShade is first run it will request information from you in order to configure itself properly. If you already have an existing configuration file, you must reconfigure it.

2. Select "1" (AutoDesk Device Interface Display Driver) when Display Device is requested. Use the interrupt vector (default is "7Ah") which corresponds to the interrupt vector configured in the ADI driver.

3. Select "1" again (AutoDesk Device Interface Rendering Driver) when requested to select the Rendering Display Device. Again make sure the interrupt vector is configured properly.

4. Answer "Yes" to the question "Do display and rendering devices share a single screen?".

7.3 GEM/3™

The 800x 600 driver is supported for GEM/3 version 3.0 and 3.1. Follow the procedure below to install the 800x600 driver:

1. Make a copy of the original System Master and Screen Disk #2 by using the DOS diskcopy command. Keep the original and use the copied diskettes for installation. This procedure will modify the copies.

2. Insert the manufacturer supplied Display Driver Disk into A: drive and run GEM install batch file:

   A> GEM3_1.BAT (for GEM V3.1) or
   A> GEM3_0.BAT (for GEM V3.0)

3. Follow the instructions displayed on the screen until finished and then exit.

4. Insert the modified System Master (not the original one) in A: drive and type in:

   A> GEMPREP [ENTER] (for GEM V3.0) or
   A> GEMSETUP [ENTER] (for GEM V3.1)

   = = = > Select "Install new configuration" [ENTER]

   Select the hard disk drive according to your configuration (if requested).

   = = = > Select "Super VGA 16-color VGA800 (800x600)" [ENTER]

   Select the mouse you installed.
   Select the communication port for your mouse (if using a serial mouse).
   If you have a printer installed, select
   = = = >"Continue"; otherwise select
   = = = > "Save and exit from GEM setup".

   Follow the remaining instruction to finish the GEM set-up.

7.4 VENTURA™

The 800x600 driver is supports both Ventura version 1.1 and version 2.0. Follow the procedure below to install the 800x600 driver:

1. If you have not installed Ventura on your system, then follow steps 2 through 4. If you have already installed Ventura, please skip to step 5 for driver installation.

Ventura Installation

2. Follow the instructions to install Ventura

3. Follow the instructions to continue the installation until you see this question in the selection menu:
   "Which graphics card and display do you have?"
   = = = > Select any one of them. The driver you select here will be replaced by the 800x600 driver later on.

4. Continue the installation until it is finished and exit. Go to step 5.

800 x 600 Driver Installation

5. Insert the manufacturer supplied Display Driver disk into A: drive. Run the Ventura 800x600 driver installation batch file:

   A>VP800 [ENTER]

6. Continue the installation procedure until you see: "Which graphics card and display do you have?"
   = = = > A "Super VGA (800x600) 16 colors".

Type in "A" to the question:
"Type the letter of the graphics card you have: _"

7. Continue the remaining installations procedure to the end.

8. Now, you can run Ventura in 800x600 resolution.

7.5 FRAMEWORK II™ AND FRAMEWORK III™

Several drivers are included to allow Framework II and III to make use of the VGA board's enhanced extended resolution. Table 10 and 11 show the supported 132 columns and graphics modes:

Driver	Desktop Format	Zoom [F9] Format
FW21.SC	132x25 text	640x480 graphics
FW22.SC	132x43 text	640x480 graphics
FW23.SC	132x25 text	800x600 graphics
FW24.SC	132x43 text	800x600 graphics
FW25.SC	640x480 graphics	640x480 graphics
FW26.SC	800x600 graphics	800x600 graphics

Table 10 FRAMEWORK DRIVERS

Driver	Desktop Format	Zoom [F9] Format
FW32.SC	132X25 text	640x480 graphics
FW33.SC	132X25 text	800x600 graphics
FW34.SC	132X43 text	640x480 graphics
FW35.SC	132X43 text	800x600 graphics

Table 11 FRAMEWORK III DRIVERS

The installation procedures for both Framework II and III are nearly identical so all references to Framework II/III refer to either program. If this is your first time installing a program, you can follow the instructions in the Framework II/III Getting Started Manual and select one of the standard IBM EGA, VGA and PS/2 display drivers. Make sure your Framework II/III is functioning properly before proceeding with the installation of any of these drivers.

1. Run the SETUP program on the Framework II/III SETUP disk or from your Framework II/III subdirectory on your hard disk. Type:

   SETUP [ENTER]
   or SETUP FW [ENTER] for Framework III

2. At the "Welcome to Framework II (or III) Setup Program" menu:
   = = = > Select option (2): All other uses of the setup program

3. Now, tell the Setup Program the location of the FWSETUP file that stores the current configuration.
   = = = > If you are using a floppy system, insert your SYSTEM DISK 2 into drive B: and press 1.
   = = = > If you are using a hard disk system, select option 2 since FWSETUP should be in the current directory.

4. At the "Main Menu":
   = = = > Select (2) Configuration Hardware
   or Select (1) Configuration Hardware for Framework III.

5. Now, you are in the menu of Change Configuration:
   = = = > Select (1) Primary hardware.
   = = = > Select (1) Screen driver.

6. Framework II
   Select (7) "I want to enter my own driver's file name". Make sure you enter the entire name including the proper extension.

   Framework III
   Select (1) "The screen driver I need is not listed here".
   Select (2) "I want to enter my own driver's file name".
   Refer to either Table 10 or Table 11 to enter a driver resolution of your choice, remember to type it in exactly.

7. Type "M" to return to the main menu.

8. At the main menu:
   = = = > Select (7) Save all new settings.

9. You will then be prompted to insert your Setup Disk into drive A:. At this time you insert the manufacturer supplied Display Driver disk which contains Framework II/III's drivers. Press the space bar when driver disk is in drive A.

> Note: Framework III asks, "on which disk drive will setup find your Driver Disk?" Put the driver disk into drive A and type A.

10. The Setup program is going to save the current configuration to the FWSETUP configuration file:
    = = = > Select
    (1) for floppy disk system or
    (2) for hard disk system
    Then strike any key.

11. You have now installed the new high resolution Framework driver.

7.6 LOTUS 1-2-3™, VERSION 2

Included are drivers to support both 132 columns text modes and high resolution graphics modes for Lotus 1-2-3. In text mode, it supports 132x25 and 132x43 modes. In graphics mode, both 600x480 and 800x600 modes are supported.

To install the new driver for Lotus 1-2-3, step through the following procedures:

1. Make a backup copy of the 1-2-3 INSTALL disk. Use only this backup disk throughout these steps.

2. Copy the following files from the manufacturer supplied Display Driver disk to the 1-2-3 INSTALL disk:
   OAK25V2.DRV
   OAK43V2.DRV
   OAK640V2.DRV
   OAK800V2.DRV

3. Insert the 1-2-3 UTILITY disk into drive A and type:
   INSTALL [ENTER]

4. Follow the instructions on the screen to the Main Menu.
   = = = > Select Advanced Options [ENTER]
   = = = > Select Add New Drivers to Library
   Follow the directions to add the new drivers.

5. Upon completion, you will return to the Advanced Options Menu.
   = = = > Select Modify Current Driver Set [ENTER]
   = = = > Select Text Display [ENTER]
   All available drivers are listed including:
   a. Oak VGA Super Text (132x25)
   b. Oak VGA Super Text (132x43)
   = = = > Select the driver you want [ENTER]
   = = = > Select Graphics Display [ENTER]
   All the available drivers are listed including:
   a. Oak VGA Graphics Driver (640x480)
   b. Oak VGA Graphics Driver (800x600)
   = = = > Select the driver you want [ENTER]
   = = = > Select Return to Menu [ENTER]

6. The display now returns to the Advanced Options Menu.
   = = = > Select Save Changes
   Follow the instructions to name the new driver set or, if you wish, leave it the same as the default name.

7. After changes have been saved, follow the instructions to exit the INSTALL program. Now Lotus 1-2-3 can be started in the mode you selected.

7.7 WORDPERFECT 5.0 AND 5.1

The VGA board supports the 800x600 resolution for WordPerfect 5.0 and 5.1. To install a new driver for WordPerfect use this installation procedure:

1. Copy the following files from the manufacturer supplied Display Driver disk driver disk to your WordPerfect directory:

   OAK.WPD (800x600 graphics) for WordPerfect v5.0 **only**
   OTI800.VRS (800X600 graphics) for WordPerfect v5.1 **only**
   37TEXT.VRS (text modes 132 x 25, 132 x 43) for WordPerfect v5.1 **only**

2. Run the WordPerfect program, then press SHIFT-F1 to get into the Setup menu.

3. Once in the Setup menu choose Option 3 for Version 5.0 and Option 2 for Version 5.1.

4. You should now be in the Display menu, choose Option 5 for Version 5.0, Option 2 for Version 5.1.

5. You should now be in the Setup Graphics Screen Type menu, choose the appropriate resolution desired. Choose Option 3 for Version 5.1 to get into the text mode of your choice.

6. Exit from the menus and WordPerfect will be set to take advantage of the extended resolution.

To run any of the older WordPerfect versions such as Version 4.2, follow these instructions:

1. Use the setup option of WordPerfect to set the new display dimensions

2. Create a batch file WPVGA.BAT to do the following:
   VGAMODE 50 (or 51)
   WP
   VGAMODE 3 (to return to normal text mode, 80x25)

7.8 PRESENTATION MANAGER™ (V1.1)

This VGA board supports the 800x600 resolution for Presentation Manager. To install this driver use the following procedure:

1. Using an ASCII text editor such as Edlin, add the following statement to the CONFIG.SYS file:

   IOPL = MONITOR

2. Go to the "\OS2\DLL" subdirectory. Locate the file "DISPLAY.DLL" and rename it to OLD_DISP.DLL by using DOS RENAME command as follows:

   RENAME DISPLAY.DLL OLD_DISP.DLL

3. While in the "\OS2\DLL" directory, copy the O37_800.DLL driver from the manufacturer supplied Display Driver disk and rename it to DISPLAY.DLL as follows:

   COPY A:O37_800.DLL DISPLAY.DLL

To view Presentation Manager in 800x600 mode you will need to reboot the system. From now on Presentation manager will come up in 800x600 mode, to change it back to the original resolution you will need to rename the OLD_DISP.DLL to DISPLAY.DLL.

SECTION 8
132-COLUMN TEXT MODE APPLICATIONS

8.1 GENERAL INFORMATION

The following is a general guide-line on how to prepare installable application programs to run in 132-column text mode:

1. Backup the application before installation.
2. Run the application's installation program and set the display dimensions to 132 columns, save the changes.
3. For convenience, create a batch file to switch video mode to 132-column text mode and then run the application.

The VGA card supports 132x25 and 132x43 text modes, and their mode numbers are (in hex) 50 and 51 respectively. The utility program called VGAMODE.EXE can be used to switch to those modes. For example:

- VGAMODE 50 (will switch to 132x25 mode)
- VGAMODE 51 (will switch to 132x43 mode)
- VGAMODE 3 (will switch to 80x25 mode)

8.2 WORDSTAR™ PROFESSIONAL RELEASE 4

1. Copy WS.EXE to, for instance, WS132.EXE.
2. Run WSCHANGE using WS132.EXE and save to WS132.EXE.
3. Create a batch file, for instance, WSVGA.BAT, to do the following:

   - VGAMODE 51
   - WS132
   - VGAMODE 3

When all these steps are performed, type WSVGA to start WordStar 4 in 132-column mode.

8.3 WORDSTAR™ VERSION 3.30

The utility program called PATCHWS.EXE is included for modifying this version of WordStar to operate in 132-column mode (the original installation program WINSTALL.COM is incapable of setting screen dimensions.)

1. Copy WS.COM to, for instance, WS132.COM.
2. Run PATCHWS.EXE on WS132.COM.
3. Create a batch file similar to WSVGA.BAT above.

8.4 WORD PERFECT™ VERSION 4.2

1. Use the setup option of Word Perfect to set the new display dimensions.
2. Create a batch file WPVGA.BAT to do the following:

   - VGAMODE 50 (or 51)
   - WP
   - VGAMODE 3 (to return to normal text mode, 80x25)