1 GRAPHICS SOLUTION

INTRODUCTION

The **Graphics Solution** provides ease of use due to its compatibility and flexibility. In addition to its compatibility with the IBM Color/Graphics adapter (CGA), the **Graphics Solution** combines the video functions of the IBM Monochrome Display Adapter (MDA), the Hercules Graphics Card (HGC) and the Plantronics Color Plus Adapter all on a single card.

FEATURES

1. **Displays Modes Not Normally Available.**
   - The **Graphics Solution** runs CGA, MDA, HGC, and Plantronics ColorPlus on any of the popular monitor types: RGB Color/Graphics Display, TTL Monochrome Display and Composite Monitors[3].

Monitor - Software Compatibilities

Monitor	Software Standard
IBM TTL Monochrome Display	1) IBM Color/Graphics Adapter (CGA)[1] 2) IBM Monochrome Adapter (MDA) 3) Hercules Graphics Card (HGC) 4) Plantronics ColorPlus Adapter[1] 5) ATI 132 Columns
IBM RGB Color/Graphics Display	1) IBM Color/Graphics Adapter (CGA) 2) IBM Monochrome Adapter (MDA)[2] 3) Hercules Graphics Card (HGC)[2] 4) Plantronics ColorPlus Adapter 5) ATI 132 Columns
Composite Monitor[3] (IBM PC Portable)	1) IBM Color/Graphics Adapter (CGA) 2) IBM Monochrome Adapter (MDA)[2] 3) Hercules Graphics Card (HGC)[2] 4) Plantronics ColorPlus Adapter 5) ATI 132 Columns

1 Text converted to 9x14 character, colors converted into shades, in full screen, no pre-boot drivers required.
2 Display interlaced to produce high resolution text and graphics.
3 Available on **Graphics Solution** equipped with composite monitor connector. Not available on **Graphics Solution/g**.

2. **16 Color Graphics**
   - Displays 16 colors in 640x200 resolution. Supported by *Lotus 1-2-3*, *Symphony*, *Framework II*, *AutoCAD*, and *PC Paintbrush+*.

3. **132 Column Support**
   - Displays 132x25 or 44 column spreadsheets and word processing.

4. **Fast Flicker-Free Scrolling**

5. **Advanced CMOS VLSI Gate Array Technology**
   - By integrating all complex video functions on a single VLSI custom chip, the **Graphics Solution** has low power requirements for increased reliability.

6. **MultiSwitch Software**
   - MultiSwitch software allows the user to change modes without having to reset hardware switches.

7. **Game Port Support (optional)**
   - The **Graphics Solution/g** has a 15 pin port which supports any IBM compatible joystick.

CONTENTS OF THE PACKAGE

Your **Graphics Solution** package includes the following: **Graphics Solution** Card, User's Guide and Software diskette.

If your package does not include the above items, contact your dealer immediately.

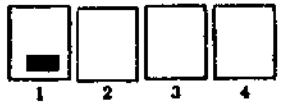
If you are installing the **Graphics Solution** on a system which requires 3.5" diskettes, please call ATI Technologies Inc., with the serial number of your card and we will send the appropriate disks, or contact your dealer to have the software downloaded to your diskette format.

2 HARDWARE INSTALLATION

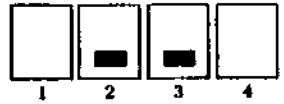
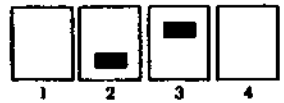
INSTALLATION INSTRUCTIONS

1. Turn off the computer and unplug its power cord, otherwise damage could result to both the **Graphics Solution** and computer which is not covered by warranty.
2. Set switches 1, 2 and 3 for the type of monitor used and the video mode you want the **Graphics Solution** to start up in.

For Monochrome Text Mode (MDA), and Hercules Monochrome Graphics modes, set switch 1 "ON", or for IBM Color/Graphics, set switch 1 to "OFF".

Default Modes	**Graphics Solution** Switch Settings
Monochrome/Graphics	 OFF/OPEN ON/CLOSED
Color/Graphics	 OFF/OPEN ON/CLOSED

Type of Display
Switches 2 and 3 select the type of monitor attached.

Monitor Type	**Graphics Solution** Switch Settings
TTL Monochrome	 OFF/OPEN ON/CLOSED
RGB Color, Composite Color	 OFF/OPEN ON/CLOSED
Composite Monochrome, IBM PC Portable	 OFF/OPEN ON/CLOSED

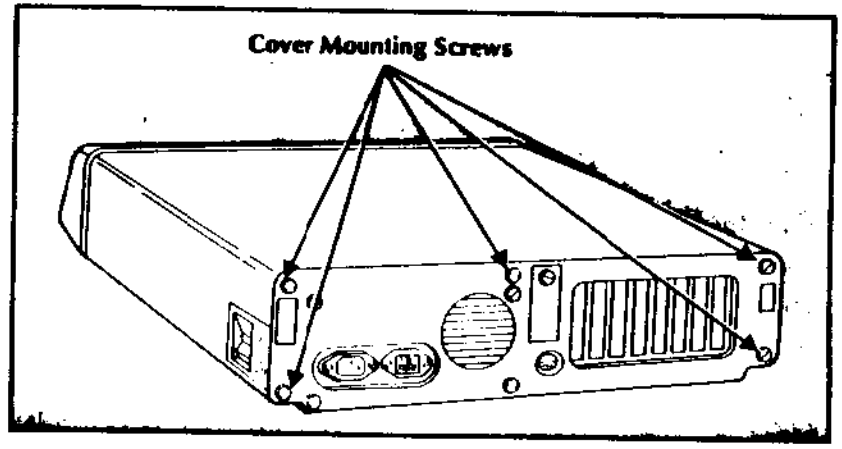
Warning - Switches 2 and 3 must be set according to the type of monitor being used. Incorrect switch settings may result in damage to the monitor and/or Graphics Solution which is not covered by warranty.

Dual monitor configurations are outlined in Appendix A.

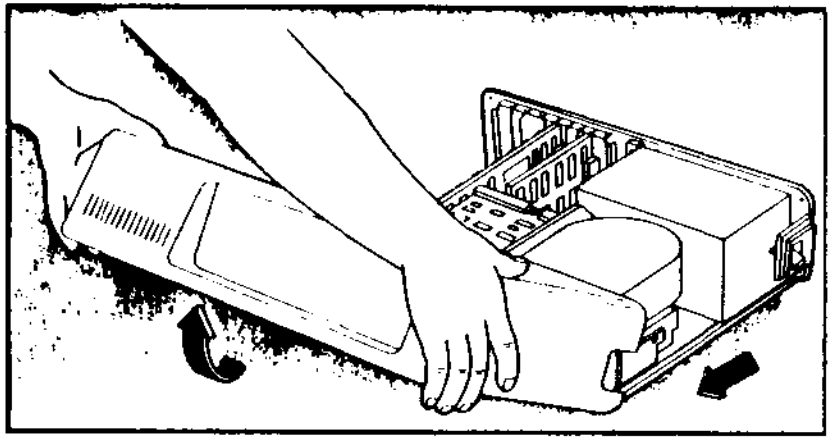
Factory Settings
The **Graphics Solution** is shipped pre-set for the Color/Graphics default mode and a TTL Monochrome monitor display: 1-OFF, 2-OFF and 3-OFF. Switch 4 is used only on the **Graphics Solution/g**.

For Graphics Solution/g Only
The game port is enabled by setting switch 4 to the ON/CLOSED position.

3. Remove the 5 cover mounting screws from the rear of the PC. On an IBM PC/AT, unlock the key lock.



4. Carefully slide the system unit cover forward. When the cover will go no further, tilt it up and away from the system unit.

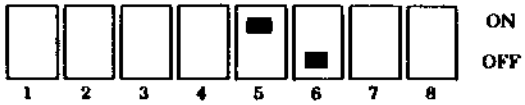


5. Set the switches on the PC's system board to correspond to the video default mode selected on the **Graphics Solution** as follows:

IBM PC, PC/XT, PC Portable and Compatibles

Set switches 5 and 6 on SW1 of the system board as outlined below. Do not change any other switches.

IBM PC and PC/XT Switch Settings

Graphics Solution Video Default Mode	PC and PC/XT Switch Block 1
Monochrome Graphics	
Color Graphics	

For IBM PC/AT and Compatibles

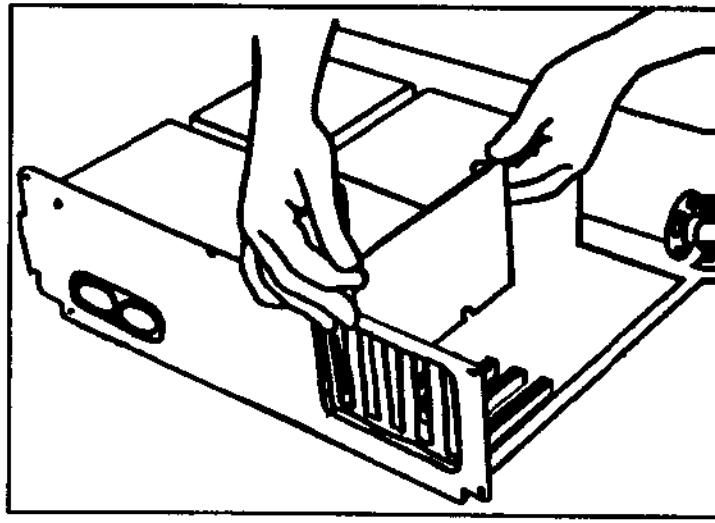
Set the video display switch on the AT motherboarc run the diagnostics "Setup" program. When the vic default is set for Monochrome/Graphics, set the AT play switch to the "mono" position. For Color/Graph set the AT display switch to the "color" position. Re the System's Manual for the location of the display switches.

6. Locate any unused expansion slot and remove t slot cover.

Warning: Graphics Solution will not function slot 8 of an IBM PC/XT or Portable PC.

7. Hold the **Graphics Solution** by its top corners slide it into the system unit.

8. Firmly press the card's bus connector into the system's expansion slot.



9. Insert the screw removed from the expansion slc cover into the hole at the top of the **Graphics Solution's** retaining bracket and tighten it.

10. Stop here and re-check the installation. Make sure that the switches on both the **Graphics Solution** and the PC are set correctly and that the card is fully seated in its socket.

11. Replace the system unit cover and fasten the screws.

12. Using a properly shielded cable, attach the monitor to the **Graphics Solution's** 9 pin connector and re-connect all of the cables that were previously attached to the rear of the computer. If connecting a composite video monitor, attach the composite interface to the **Graphics Solution** RCA jack.

13. **For IBM/AT and compatibles**, it is necessary to configure the system using the SETUP program. Select the "mono" option if the **Graphics Solution** is set for monochrome and "color" if the **Graphics Solution** is set for color/graphics. Refer to your System's Manual for instructions on using the SETUP program.

14. To test the operation of the **Graphics Solution**, place the **Graphics Solution** diskette in drive A and type:

    A> **ALLTEST** <enter>

If further assistance regarding installation and **ALLTEST** is required, please refer to the troubleshooting section in Appendix B.

3 SOFTWARE UTILITIES

The **Graphics Solution** is shipped with software utilities and drivers to enhance software applications. The **Graphics Solution** diskette contains the following files:

ALLTEST.COM	- diagnostics
ATIGSHA2.DRV	- 132x44 Lotus driver for TTL monochrome monitors
ATIGSMB1.DRV	- 80x25 Lotus color text driver
ATIGSMC1.DRV	- 640x200 Lotus color graphics driver
ATIGSME1.DRV	- 640x200 Lotus color graphics driver to be used in conjuction with 80x25 color text driver
FWSETUP	- Ashton-Tate Framework II installation utility for SOLUTION.SC driver
GSACAD.EXE	- AutoCAD 640x200 16 color driver
GSDEMO1.C	- 640x200 programmers example source code in "C"
GSDEMO1.COM	- 640x200 programmers example compiled version
IOX.ASM	- 640x200 programmers example source code in assembler
MS.COM	- MultiSwitch mode switching utility
PREDRIVER.EXE	- Lotus driver installation utility
PRTSCRN.COM	- 132 color print screen utility
README	- documentation and driver installation instructions. Use a Word Processor or the DOS command, "Type README" to examine, or "Copy README>PRN" to send to printer
SOLUTION.SC	- Ashton-Tate Framework II Driver
PROGINFO.DOC	- advanced programming information

RUNNING MULTISWITCH MODE SOFTWARE

MultiSwitch is a software utility which allows switching between video modes while operating the computer without opening the computer chassis to reset switches.

Designed to be user friendly, MultiSwitch is completely menu driven. Instructions about operating the program will be shown on a menu after placing the utilities diskette in drive A and typing:

A> MS<enter>

On an RGB color or composite monitor, the computer will then display the following screen:

```
ATI TECHNOLOGIES INC ATI TECHNOLOGIES INC A
TI TECHNOLOGIES INC ATI TECHNOLOGIES INC AT
I TECHNOLOGIES INC ATI TECHNOLOGIES INC  ATI
          © COPYRIGHT 1989
  Graphics Solution Mode Selection Menu Ver. x.x

POWER UP MODE SELECTION

[A] Monochrome Text 80x25          - MT
[B] Monochrome Graphics 1 page     -MG1
[C] Monochrome Graphics 2 pages    -MG2
[D] Color Text 80x25               -C80
[E] 132x25 Columns                 -C132
[F] Change to TTL Monochrome Monitor
[G] 132 Columns Screen Adjustment

CURRENT STATUS: Color Text 80x25 (C80)

Use < ↑↓ > or < letter > and < ret > to select option, < esc >
to abort.
```

Select the video mode by entering a letter (A-G) for the option desired.

On a monochrome monitor, the computer will display the following screen:

```
ATI TECHNOLOGIES INC ATI TECHNOLOGIES INC A
TI TECHNOLOGIES INC ATI TECHNOLOGIES INC AT
I TECHNOLOGIES INC ATI TECHNOLOGIES INC  ATI
          © COPYRIGHT 1989
  Graphics Solution Mode Selection Menu Ver. x.x

POWER UP MODE SELECTION

[A] Monochrome Text 80x25          - MT
[B] Monochrome Graphics 1 page     -MG1
[C] Monochrome Graphics 2 pages    -MG2
[D] Color Text 80x25               -C80
[E] 132x25 Columns                 -L25
[F] 132x44 Columns                 -L44
[G] Change to RGB Monitor
[H] 132 Columns Screen Adjustment

CURRENT STATUS: Monochrome Text 80x25 (M80)

Use < ↑↓ > or < letter > and < ret > to select option, < esc >
to abort.
```

When switching from a color monitor to a monochrome monitor (or vice versa), MultiSwitch will remind you to connect the proper monitor to the **Graphics Solution**. It is important to follow the directions carefully, otherwise damage could result to the monitor which is not covered by warranty.

[A] Monochrome Text 80x25
This will disable graphics output, making the **Graphics Solution**'s video functions identical to those of the IBM Monochrome Display Adapter.

[B] Monochrome Graphics 1 page
Monochrome Graphics modes (MG1, MG2) allocate memory for either one or two pages of Hercules compatible 720x348 monochrome graphics. MG1 allows for use of another video adapter such as the IBM Color/Graphics Adapter and is equivalent to the HALF utility on the Hercules diskette.

[C] Monochrome Graphics 2 pages
MG2 is equivalent to the Hercules FULL utility and is the option required for most monochrome graphics programs.

[D] Color Text 80x25
Color Text (C80) selects for IBM compatible color/graphics, Plantronics compatible color/graphics and ATI 640x200 16 color high resolution color/graphics. When C80 is selected, the **Graphics Solution** is able to sense the difference between these color modes and automatically display them.

[E] 132x25 Columns
The 132 column mode (L25) is a special ATI mode. Only software written for **Graphics Solution** in 132 columns will run in this mode.

[F] 132x44 Columns
The 132x44 column mode (L44) displays 44 lines and is similar to L25.

[G] Change to RGB Monitor
This enables the user to use an RGB monitor.

[H] 132 Columns Screen Adjustment
In order to center text in 132 column mode, MultiSwitch includes a screen adjustment.

After becoming familiar with MultiSwitch, it is possible to skip the menu. To do this enter:

A> **MS** [keyword]<enter>

Possible keywords are: MT, MG1, MG2, C80, L25 or L44 as shown in the MultiSwitch menu diagrams.

The syntax of MultiSwitch is:

MS [keyword] [-nonresident]<enter>

[-Nonresident] specifies that the program will not stay

memory resident. Square brackets [] indicate an optional argument. Arguments can appear in any order. If a video mode keyword is not specified, the menu will appear to prompt selection. Default options are wait and stay resident.

MultiSwitch is a memory resident program which means it will stay in memory even after being run. In some instances, it may conflict with other resident programs, thus it has the option to allow the switch to a different video mode without staying resident. When using the [-nonresident] option however, a software reboot might fail if the **Graphics Solution** is switched to a mode which is incompatible to the DIP switch setting of the PC's motherboard.

SPECIAL NOTE FOR USING THE MONOCHROME GRAPHICS MODE

When using the **Graphics Solution** in the Monochrome Graphics mode, a utility program must be run to allocate 1 or 2 pages of memory for graphics. Since this utility must be used in order to perform graphics, a batch file can be written to run the utility automatically upon power-up. To create such a batch file:

1) Place the **Graphics Solution** disk in drive B and DOS in drive A.

2) Copy MultiSwitch onto the DOS diskette by typing:

A> **COPY B:MS.* A:**

3) Create an AUTOEXEC.BAT file by typing:

A> **COPY CON AUTOEXEC.BAT**
MS MG2 <enter>
Press: <F6> and then press: <enter>

DRIVER INSTALLATION

The **Graphics Solution** includes drivers which allow 132x44 column *Lotus 1-2-3* and *Symphony* spreadsheets on monochrome monitors and 640x200 in 16 colors high resolution color/graphics on color monitors, for *1-2-3*, *Symphony*, *Framework II* and *AutoCAD*. Complete documentation for these drivers is contained in a README file on the **Graphics Solution** diskette.

132 COLUMN WORD PROCESSING

To run *WordStar* in 132 columns, the WS.COM file on the *WordStar* diskette must be modified. To modify WS.COM, follow these simple steps (a backup copy of WS.COM should be made first). Use the DOS DEBUG program and type:

DEBUG WS.COM <enter>
E CS:249 <enter>
84 <enter>
W <enter>

WordPerfect 4.0 or later can be adapted to run 132 columns on the **Graphics Solution**. This is achieved using the *WordPerfect* Setup menu. With *WordPerfect* in the default drive, type:

A> **WP/S**<enter>

When the menu appears, choose the option SET SCREEN SIZE. Then enter a screen size of either 132x44 or 132x25.

Remember to use MultiSwitch and change the **Graphics Solution** into 132 column mode before using 132 column modes.

Appendix A

DUAL DISPLAY ADAPTER CONFIGURATIONS

The **Graphics Solution** can be used for applications that require both color and monochrome monitors. It can co-exist with another **Graphics Solution**, (providing one is placed in a Monochrome and the other in a color mode), Monochrome/Printer Adapter, Color/Graphics Adapter, Hercules Graphics Card or most other compatible video adapters. One adapter must control the monochrome display with the other controlling the color display. Possible dual display adapter configurations are summarized in the table below.

Dual Display Adapter Configurations

Graphics Solution As	Coexists With	Conflicts With
Monochrome Adapter (MT)	CGA, EGA	IBM MDA
Monochrome Graphics (MG1)	CGA, EGA	IBM MDA
Color/Graphics (C80)	HGC, EGA	IBM CGA

When two video adapters are installed in a PC, the switch settings of the PC's motherboard determine the primary adapter upon power up. For example, if the PC is set for 80x25 color/graphics, it will use the color/graphics adapter on power up and the monochrome adapter will be idle. Use the MODE command provided with DOS to change the active display adapter. The options for the MODE command are described in your DOS manual.

Appendix B

DIAGNOSTICS AND TROUBLESHOOTING

Use the **ALLTEST** diagnostics program when the **Graphics Solution** produces a display but does not work properly. For example:

- does not display graphics.
- has missing characters.
- has no color.
- does not display in all modes, etc.

ALLTEST is completely menu driven and is started by typing:

A> ALLTEST<enter>

Follow the menu driven instructions and a series of screens will be displayed. If these screens are displayed properly, then the functions of the **Graphics Solution** are in good working order.

If the **Graphics Solution** passes **ALLTEST** and problems are still encountered during normal operation, then these problems are most likely related to either installation, compatibility or operation. In this case, please review the troubleshooting steps listed below.

Compatiblility related problems can be isolated by trying the **Graphics Solution** on another monitor and /or another computer as appropriate.

INSTALLATION RELATED PROBLEMS

Using the following steps, check the installation of the **Graphics Solution**.

1. Check the **Graphics Solution** switch settings as outlined in Chapter 2, "Installation Instructions".

2. Check the PC's motherboard switch settings as outlined in Chapter 2, "Installation Instructions". Remember the PC must be set for Color/Graphics if the **Graphics Solution** is in Color/Graphics default mode and set for Monochrome if the **Graphics Solution** is in Monochrome/Graphics default mode.

3. Check that all data and power cables are properly connected.

4. Check that the **Graphics Solution** is fully seated in the PC's expansion bus.

5. Allow the computer 15 seconds or so to boot up.

6. Turn the video display's intensity and contrast controls up enough to produce an image.

7. Properly adjust the video display's vertical and horizontal hold controls. With some types of monochrome monitors, it is sometimes required to adjust the H-Hold and V-Hold of the monitor when the display mode is changed.

8. After switching modes, on some types of monitors it may be necessary to turn the monitor off and then on again.

OPERATION RELATED PROBLEMS

(For example - no graphics display for *Lotus 1-2-3*)

1. Make sure the **Graphics Solution** is configured for the corresponding video mode that the application software in use is configured to. For example, if *Lotus 1-2-3* is installed with a Hercules driver, make sure the **Graphics Solution** is configured to the MG2 mode.

2. If characters are distorted while operating in 132 column mode, a 132 column screen adjustment must be carried out using MultiSwitch (see Chapter 3).

COMPATIBILITY RELATED PROBLEMS

1. **Computer**
   - **The Graphics Solution** is designed for use in the IBM PC/XT/AT and PC Portable. Compatibles which have video circuitry built into their motherboards may not necessarily run all modes. Modes which will not work depend on the type of video circuitry built into the compatible.

     Even though the **Graphics Solution** provides flicker free scrolling, screen flicker may occur on some compatible PCs. This is caused by a PC BIOS which turns the video screen off before updating the video memory buffer. The screen blanking caused by this type of PC BIOS can be corrected by running MultiSwitch and having it stay resident.

2. **Monitor**
   - **The Graphics Solution** is designed to display on an IBM Monochrome display, an IBM Color/Graphics display, or a Composite monitor. All modes may not work on some compatible monitors. Some compatible monitors may require a vertical and/or horizontal hold adjustment. The **Graphics Solution** cannot be used on monitors which will not display off an IBM CGA or MDA card.

If none of the above solve the problem then contact the dealer who sold you the computer or **Graphics Solution**. If they are unable to solve the problem, fill out the Problem Report Form located on the following pages, and call the Technical Support Department.

ATI Technical Support Department Hours:
9:00 a.m. to 5:30 p.m. EST. Monday through Friday.
(416) 756-0711