POWER PRO II AGP VIDEO

Pentium II ATX Multimedia Motherboard

User's Manual
Version 1.0A

Contents

Chapter 1   Introduction

This manual is designed to give you information on the POWER PRO II AGP VIDEO motherboard. It is divided into the following sections:

- **Introduction**
- **Specifications**
- **Hardware Description**
- **Configuring the Motherboard**
- **Installation**
- **BIOS and System Setup**
- **VGA Installation Guide**
- **Audio Installation Guide**

Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The POWER PRO II AGP VIDEO Motherboard
- 1 IDE ribbon cable
- 1 floppy ribbon cable
- 1 serial ribbon cable
- 1 CD containing Intel PCI drivers, flash memory utility, Creative Labs ViBRA 16CL audio drivers and LANDesk Client Manager 3.x
- 1 diskette containing S3 ViRGE/GX2 VGA Drivers

Chapter 2   Specifications

The POWER PRO II AGP VIDEO is a high-performance ATX 440LX motherboard with a Slot 1 CPU socket for Pentium® II processors. It offers flexibility in terms of CPU frequency and main memory type and size. The main features of the motherboard consist of the following:

CPU Socket
  Slot 1

Processor
  Intel Pentium II 233/266/300MHz

L2 Cache
  CPU integrated L2 cache

CPU Voltage
  Switching voltage regulator on board supporting multiple voltage ranging 1.8V-3.5V

Main Memory
  Three 168-pin DIMM sockets
  Memory types: Extended Data Output (EDO) DRAM, SDRAM (Synchronous DRAM)

Chipset
  Intel 82440LX with built-in PCI-IDE

BIOS
  AMIBIOS with ISA Plug and Play (PnP) extension, DMI, 4*4 bootable CD-ROM and power-management features

Power Connector
   ATX power supply connector

PCI Bus Master IDE Controller (Ultra DMA/33)
  Onboard PCI Bus Master IDE (Ultra DMA/33) controller with two connectors for up to four IDE devices in two channels, supporting faster data transfer rates, enhanced IDE devices such as Tape Backup and CD-ROM drives, PIO Mode 3/4 and Bus Mastering Ultra DMA/33

Super I/O
    Onboard super I/O is an SMC 37C932 that provides:
    ● Two 16550 UART compatible serial ports
    ● One parallel port (ECP/EPP compatible)
    ● One floppy controller (2.88MB compatible)
    ● One IrDA port
    ● Keyboard Controller

Mouse Connector
    PS/2 type

Keyboard Connector
    PS/2 type

USB Connector
    2 ports onboard

Win95-shut-off
    Allows shut-off control from within Windows 95

Modem-ring-on
    Supports modem-ring-on capability through an external modem.

DMI BIOS Support
    Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, internal/external frequencies and memory size.

Onboard VGA (AGP)
    Powered by S3 ViRGE/GX2, the multimedia VGA combines high-performance integrated SDRAM-based 2D/3D graphics accelerator and full motion video playback including MPEG-1, with AGP (Accelerated Graphics Port) support. (4MB memory onboard.) AGP is a platform bus specification that enables 3D graphics capabilities including support for z-buffering, alpha blending and faster texture mapping.

Onboard Audio
    Creative Labs ViBRA 16CL, 3D

Expansion Slots
    Three PCI 32-bit slots
    Three ISA 16-bit slots

Form Factor
    ATX, 12" x 9.5" (30.7cm x 24.1cm)

Chapter 3   Hardware Description

This chapter briefly describes each of the major features of the POWER PRO II AGP VIDEO motherboard. The layout of the board in Figure 1 shows the location of the key components. The topics covered in this chapter are as follows:

toc \o "1-3" \t "subhead,3,CT1,4"
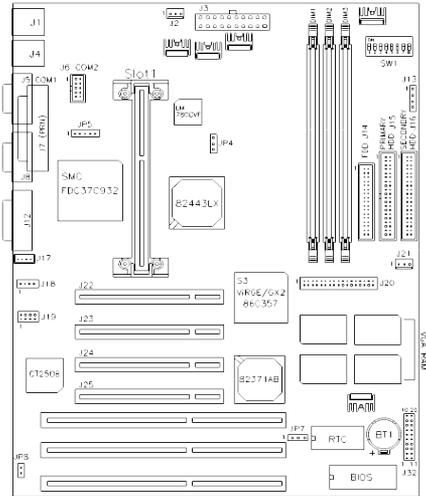
Figure 1: Layout of the POWER PRO II AGP VIDEO Motherboard

3.1 Processor

The POWER PRO II AGP VIDEO motherboard is designed to take a Pentium II processor running 233MHz/266MHz/300MHz with its SLOT 1 CPU connector.

3.2 L2 Cache

The L2 cache is integrated in the Pentium II processor. The private L2 cache bus is not connected to package pins, rather its signals are routed between the two cavities using standard package techniques. The high-performance bandwidth is used by the CPU to serve all L1 cache misses, the characteristic of a CPU-cache bus, and is utilized 90-95 percent of the time.

3.3 Main Memory

The POWER PRO II AGP VIDEO motherboard supports three 168-pin DIMM (Dual In-line Memory Module) sockets to form a memory configuration from 8MB to 384MB. DIMM modules can be 8MB, 16MB, 32MB, 64MB and 128MB in SDRAM or EDO DRAM. In populating the DIMM sockets, DIMM1, DIMM2 and DIMM3 bank can be populated first. Refer to the following table on how to configure the memory.

168Pin DIMM (3.3V)
SDRAM or EDO DRAM

Bank0 (DIMM3)	Bank1 (DIMM2)	Bank2 (DIMM1)	Total Memory
8MB	-----	-----	8MB
16MB	-----	-----	16MB
32MB	-----	-----	32MB
64MB	-----	-----	64MB
128MB	-----	-----	128MB
8MB	8MB	-----	16MB
16MB	8MB	-----	24MB
32MB	8MB	-----	40MB
64MB	8MB	-----	72MB
128MB	8MB	-----	136MB
8MB	8MB	8MB	24MB
16MB	8MB	8MB	32MB
32MB	8MB	8MB	48MB
64MB	8MB	8MB	80MB
128MB	8MB	8MB	144MB
16MB	16MB	-----	32MB
32MB	16MB	-----	48MB
64MB	16MB	-----	80MB
128MB	16MB	-----	144MB
16MB	16MB	8MB	40MB
32MB	16MB	8MB	56MB
64MB	16MB	8MB	88MB
128MB	16MB	8MB	152MB
16MB	16MB	16MB	48MB
32MB	16MB	16MB	64MB
64MB	16MB	16MB	96MB
128MB	16MB	16MB	160MB
32MB	32MB	-----	64MB
64MB	32MB	-----	96MB
64MB	32MB	-----	96MB
128MB	32MB	-----	160MB
32MB	32MB	8MB	72MB
64MB	32MB	8MB	104MB
128MB	32MB	8MB	168MB
32MB	32MB	16MB	80MB
64MB	32MB	16MB	112MB
128MB	32MB	16MB	176MB
32MB	32MB	32MB	96MB
64MB	32MB	32MB	128MB

168Pin DIMM (3.3V) (continued)
SDRAM or EDO DRAM

Bank0 (DIMM3)	Bank1 (DIMM2)	Bank2 (DIMM1)	Total Memory
128MB	32MB	32MB	192MB
64MB	64MB	-----	128MB
128MB	64MB	-----	192MB

64MB	64MB	8MB	136MB
128MB	64MB	8MB	200MB
64MB	64MB	16MB	144MB
128MB	64MB	16MB	208MB
64MB	64MB	32MB	160MB
128MB	64MB	32MB	224MB
64MB	64MB	64MB	192MB
128MB	64MB	64MB	256MB
128MB	128MB	128MB	384MB

3.4   BIOS

The BIOS on the POWER PRO II AGP VIDEO motherboard provides the standard BIOS functions plus the following additional features:

1. ISA Plug and Play (PnP) Extension
Unlike PCI cards that are Plug and Play, ISA cards require setting jumpers to resolve hardware conflicts. To make a computer system PnP, an ISA PnP standard is established and supported by new operating systems, such as Windows 95. Under Windows 95, the motherboard BIOS must have an ISA PnP extension to support new ISA PnP cards.

2. Power Management
The power management feature provides power savings by slowing down the CPU clock, turning off the monitor screen and stopping the HDD spindle motor. The BIOS fully conforms to APM 1.2 specifications.

3.5   I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. There is a total of 1K port address space available. The following table lists the I/O port addresses used on the motherboard.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock,, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal

0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2F8h - 2FFh	Serial Port #2(COM2)
378h - 3FFh	Parallel Port #1(LPT1)
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

3.6   DMA Channels

There are seven DMA channels available on the motherboard. Only DMA2 is used by the floppy controller. In the case that ECP mode on the parallel port is utilized, DMA1 or DMA3 will be used.

3.7   Interrupt Request (IRQ) Lines

There is a total of 15 IRQ lines available on the motherboard. Peripheral devices use an interrupt request to notify the CPU for the service required. The following table shows the IRQ lines used by the devices on the motherboard:

Level		**Function**
IRQ0		**System Timer Output**
IRQ1		**Keyboard**
IRQ2		**Interrupt Cascade**
	IRQ8	**Real Time Clock**
	IRQ9	**Software Redirected to Int 0Ah**
	IRQ10	**Reserved**
	IRQ11	**Reserved**
	IRQ12	**Reserved**
	IRQ13	**Co-Processor**
	IRQ14	**Primary IDE**
	IRQ15	**Secondary IDE**
IRQ3		**INTERRUPT**
IRQ4		**Serial Port #1**
IRQ5		**INTERRUPT**
IRQ6		**Floppy Disk Controller**
IRQ7		**Parallel Port #1**

3.8   Onboard PCI-IDE

The PCI-IDE controller is a part of the 82440LX PCIset. It supports PIO mode 3/4 and bus mastering Ultra DMA/33. The peak transfer rate of PIO mode 3/4 can be as high as 17MB/sec. Using HDDs that support Ultra DMA/33, the peak transfer rate can reach 33MB/sec. There are two

IDE connectors - primary IDE and secondary IDE. With two devices per connector, up to four IDE devices can be supported.

3.9   Onboard Multi-I/O

The onboard multi-I/O chip, SMC37C932, provides a keyboard controller (AMI copyright), two serial ports, one parallel port, one floppy controller and one IrDA port. The serial ports are 16550 UART compatible. The parallel port supports high-speed EPP/ECP mode. The floppy controller supports up to 2.88 MB format.

3.10   Onboard VGA

The onboard VGA is an S3 ViRGE/GX2 graphics accelerator with AGP support. The ViRGE graphics accelerator has the following functions:
- 2D/3D graphics
- Video scaler, color space converter and true color palette
- Local Peripheral Bus (LPB) connector
- AGP 1.0 compliance
- Power management

3.11   Onboard Audio

The onboard audio chip is a Creative Labs ViBRA 16CL codec. It provides all the digital audio and analog mixing functions needed for recording and playing sound on personal computers.

The ViBRA 16CL features the following:
- Analog mixing of six audio sources
- Digital audio (stereo)
- CD audio (stereo)
- Synthesized music (stereo)
- Line level audio (stereo)
- Microphone level audio (mono)
- PC speaker (mono)
- Individual software programmable volume controls

Mixer controlled record for recording and playing and playing sound on personal computers.

Chapter 4   Configuring the Motherboard

The following sections describe the necessary procedures and proper jumper settings to configure the POWER PRO II AGP VIDEO motherboard. For the locations of the jumpers, refer to Figure 2.

The following examples show the conventions used in this chapter.

□ □	Jumper Open
□ □	Jumper Closed

	Switch 1 and switch 2 are set to OFF. Switch 3 and switch 4 are set to ON.
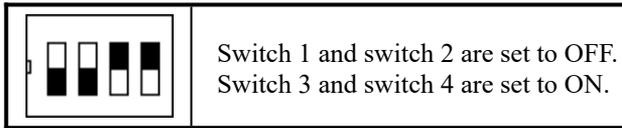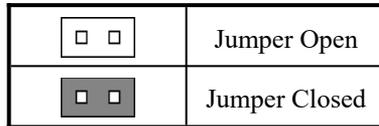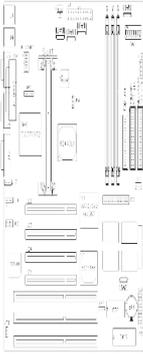
Figure 2: Jumper Location on the POWER PRO II AGP VIDEO

4.1   CPU Frequency: SW1(1-8)

SW1(1-4) *sets the clock generator frequency to 66MHz*, which is the frequency of the CPU, to the bus clock. **SW1(5-8)** *sets the ratio of the bus clock to the CPU internal clock*.

Refer to the following table for the correct setting to match the CPU frequency.

Pentium II CPU FREQ.	SW1(1-8)	Switch Settings					
Pentium II 233MHz	ON	1 off	2 off	3 on	4 off	5 off	6 on off 7 off 8
Pentium II 266MHz	ON	1 off	2 off	3 off	4 on	5 on	6 on off 7 off 8
Pentium II 300MHz	ON	1 off	2 off	3 off	4 on	5 off	6 on off 7 off 8
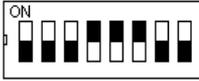
4.2   Clear CMOS Selection: JP7

Use JP7, a 3-pin header, to clear the contents of the CMOS RAM. Do not clear the CMOS RAM unless it is absolutely necessary. You will lose your password, etc.
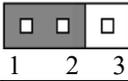
JP7	Function
1 2 3	**Normal**
1 2 3	**Clear CMOS**

Note: To clear CMOS, the ATX-power connector should be disconnected from the motherboard.

4.3   Audio Enable/Disable: JP8

Use JP8, a 2-pin header, enable or disable the onboard audio capability of the motherboard.

JP8	Function
□ □	**Disable**
□ □	**Enable**

Chapter 5   Installation

This chapter describes the interface that the POWER PRO II AGP VIDEO provides for creating a working system. Refer to Figure 3 for the location of the connectors.

The following items are covered in this chapter:

Figure 3: Connector Location on the POWER PRO II AGP VIDEO

5.1   I/O Connectors

The I/O connectors connect the POWER PRO II AGP VIDEO to the most common peripherals. To attach cables to these connectors, carefully align Pin 1 of the cables to that of the connectors. Refer to Figure 4 for the location and orientation of the connectors.
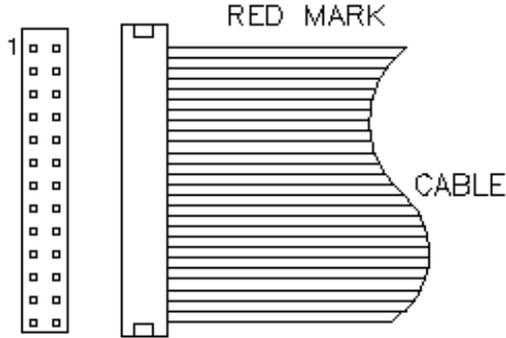
Figure 4: Orientation of the I/O Connector

5.2   J1: AT Keyboard and PS/2 Mouse Connectors

Below are the pin-out assignments of the connectors.

Keyboard	Signal Name	Mouse	Signal Name
1	Keyboard data	1	Mouse data
2	N.C.	2	N.C.
3	GND	3	N.C.
4	5V	4	5V
5	Keyboard clock	5	Mouse Clock
6	N.C.	6	N.C.

5.3   J2: CPU Fan Power Connector

J2 is a 3-pin header for the CPU fan power connector. The fan must be a 12V fan.
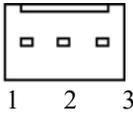
J2 Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

5.4   J3: ATX Power Supply Connector

J3 is a 20-pin ATX power supply connector. Refer to the following table for the pin out assignments.
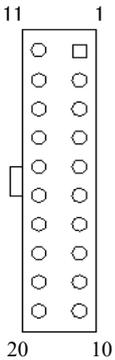
Signal Name	Pin #	Pin #	Signal Name
3.3V	11	1	3.3V
-12V	12	2	3.3V
Ground	13	3	Ground
PS-ON	14	4	+5V
Ground	15	5	Ground
Ground	16	6	+5V
Ground	17	7	Ground
-5V	18	8	Power good
+5V	19	9	5VSB
+5V	20	10	+12V

5.5   J4: USB Connector

J4 is the standard USB external connector consisting of two ports. USB support allows connections of up to 64 plug and play external peripherals per channel. The following table shows the pin outs of these ports.

J4 Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	Ground

5.6   J5, J6: Serial Ports

The onboard serial ports of the POWER PRO II AGP VIDEO 10 are J5, a DB-9 connector which is COM1 and J6, a 10-pin header connector which is COM2. The following table shows the pin-out assignments of the these connectors.

COM1   **COM2**
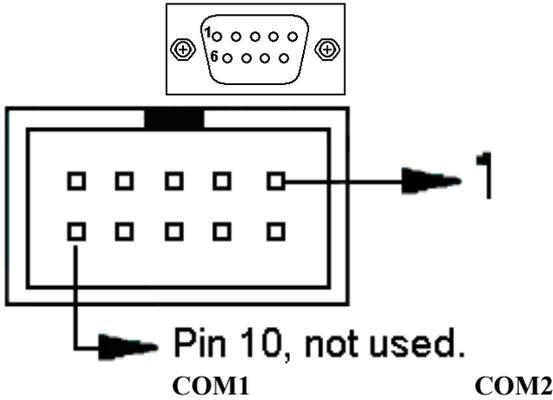
Pin #	Signal Name	Pin #	Signal Name
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	GND, ground	10	Not Used

5.7   J7: Parallel Port Connector

J7 is a DB-25 external connector. The following table describes the pin-out assignments of this connector.

Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed

PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

5.8   J8: VGA Port Connector

J8 is a DB-15 VGA connector. The following table shows the pin-out assignments of this connector.
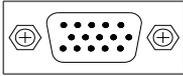
Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

5.9   J9, J10, J11: Line Out, Line In, Mic-In Connectors
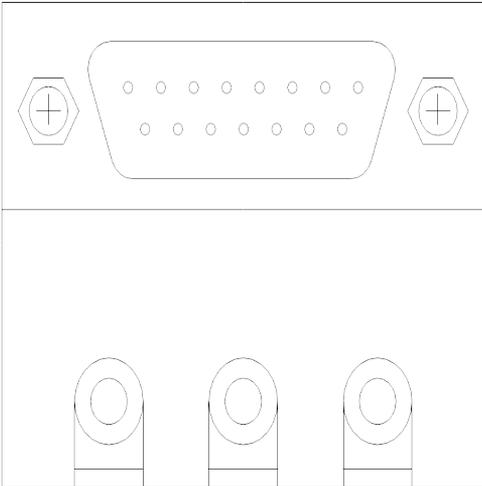
J9, J10 and J11 are the input jacks for Line Out, Line In and Microphone respectively. J9 is for audio out to amplifiers; J10 is for audio input from external sources; J11 is for audio input from external microphones.

5.10   J12: Game Port Connector
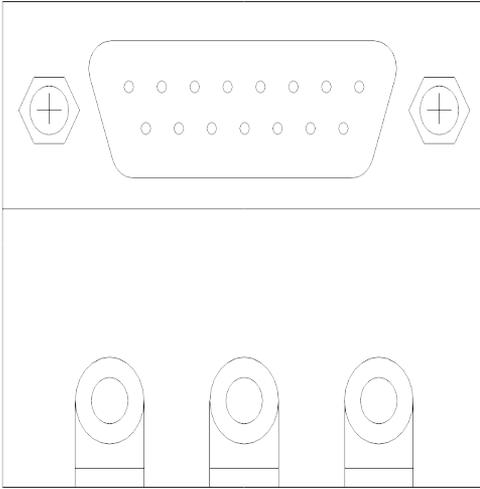
J12 is the game port connector that is primarily used for joysticks.

5.11   J13: TV Out Connector

J13 is a 4-pin header TV Out connector for the optional external jack that supports video output to a television screen.

5.12   J14: Floppy Drive Connector

J14 of the POWER PRO II AGP VIDEO is a 34-pin header and will support up to 2.88MB floppy drives. The following table shows its pin-out assignments.
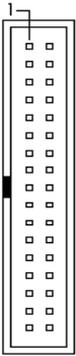
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

5.13   J15, J16: EIDE Connectors

J15: Primary IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

J16: Secondary IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
MIRQ0	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

5.14   J17, J18: CD-ROM Audio In Connector
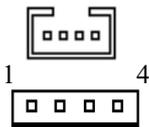
J17, J18 Pin #	Signal Name
1	Ground
2	CD left
3	Ground

4	CD right

5.15   J19: Wave Table Connector

This 8-pin header can be used to interface to an optional wave table module.
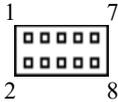
J19 Pin #	Signal Name
1	Wave Right
2	Ground
3	Wave Left
4	Ground
5	Key
6	Ground
7	MIDI-WR
8	MIDI-out

5.16   J20: VGA Feature Connector

J20 is a 34-pin VGA feature connector. The first 26 pins provide the necessary signals to an interface for VESA feature connector. The additional pins provide an interface for S3 LPB interface connector.
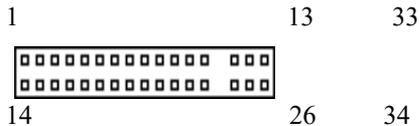
5.17   J21: Chassis Fan Power Connector

J21 is a 3-pin header for the CPU fan power connector. The fan must be a 12V fan.
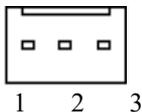
J21 Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

5.18   J32: Front Bezel Connectors

The front bezel of the case has a control panel which provides light indication of the computer activities and switches to change the computer status. J32 is a 20-pin header that provides interfaces for the following functions.

Hard Disk Drive LED

Turbo LED Connector

SMI / Hardware Switch

Speaker

Reset Switch

ATX Power On Switch

Power LED and Keylock
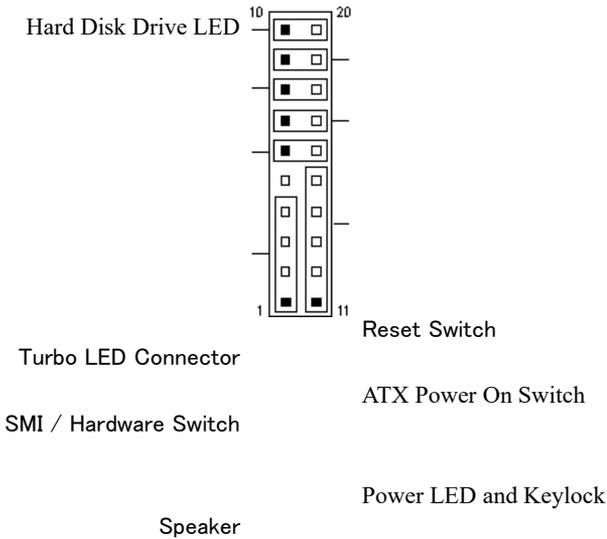
Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.
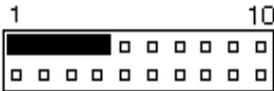
J32 Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED and Keylock: Pins 11 - 15

The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.

J32 Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	Keylock
15	Ground

SMI/Hardware Switch: Pins 6 and 16

This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system board into the power-saving mode immediately.
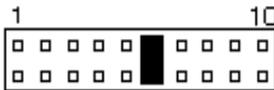
J32 Pin #	Signal Name
6	Sleep
16	Ground

ATX Power ON Switch: Pins 7 and 17

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the motherboard that connects to the power switch on the case. When pressed, the power switch will force the motherboard to power on. When pressed again, it will force the motherboard to power off.
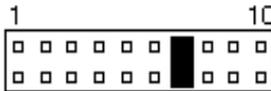
Turbo LED Connector: Pins 8 and 18

There is no turbo/deturbo function on the motherboard. The Turbo LED on the control panel will always be On when attached to this connector.
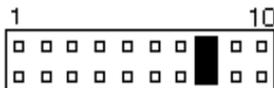
J32 Pin #	Signal Name
8	5V
18	Ground

Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch Off and then On. Orientation is not required when making a connection to this header.
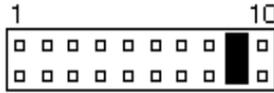
Hard Disk Drive LED Connector: Pins 10 and 20

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.
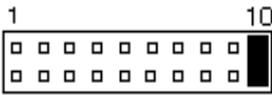
J32 Pin #	Signal Name
10	Ground
20	5V

5.19   JP4: Chassis Intrusion Monitoring Connector

JP4 is a 3-pin header for chassis intrusion monitoring, a feature of the LM78 device.

5.20   JP5: IrDA Connector

This connector is used for an IrDA connector that supports infrared wireless communication.
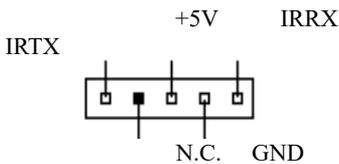
JP5 Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

Chapter 6   BIOS and System Setup

This chapter describes the different settings available in the BIOS. The POWER PRO II AGP VIDEO motherboard comes with AMIBIOS in HIFLEX version. The topics covered in this chapter are as follows:

Reserved Memory Size
Reserved Memory Address

Onboard FDC
Onboard Serial Port1
Onboard Serial Port2
Onboard Parallel Port
Parallel Port Mode
Parallel Port DMA Channel
Onboard IDE

If You Do Not Want to Use a Password
Setting a Password

6.1   Invoking the System Setup Program

Power on the system and the screen will display:

```
Hit <Del> to enter Setup
```

Hit the <Del> key and screen will display the main Setup screen.

```
                   AMIBIOS  HIFLEX SETUP UTILITY - VERSION 1.12
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                            Standard CMOS Setup
                            Advanced CMOS Setup
                           Advanced Chipset Setup
                           Power Management Setup
                          PCI / Plug and Play Setup
                              Peripheral Setup
                           Hardware Monitor Setup
                           Auto-Detect Hard Disks
                            Change User Password
                          Change Supervisor Password
                   Auto Configuration with Optimal Settings
                   Auto Configuration with Fail Safe Settings
                           Save Settings and Exit
                            Exit Without Saving


         Standard CMOS setup for changing time, date, hard disk type, etc.
   ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                          F2/F3:Color  F10:Save & Exit
```

6.2   Running the Setup

Using the Keyboard with Setup

Use the following keys to modify and move around in the Setup:

Keystroke	Function
<Tab>	Move to the next field.
symbol 224 \f "Wingdings" \s 9→", symbol 223 \f "Wingdings" \s 9←", symbol 225 \f "Wingdings" \s 9↑", symbol 226 \f "Wingdings" \s 9↓"	Move to the next field to the above, or below.
<Enter>	Select in the current field.
symbol 43 \f "Symbol" \s 9+ / -	Modify Selection
<Esc>	Close the current operation and return to the previous level.
<PgUp> / <PgDn>	Modify Selection
F2, F3	Change Screen Color
F10	Save and Exit

6.3   Setup Main Menu

Default Values

The icons in this section permit you to select a group of settings for all the Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a better chance of working when the system is having configuration-related problems.

Optimal

```
            AMIBIOS  HIFLEX SETUP UTILITY - VERSION 1.12
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                      Standard CMOS Setup
                      Advanced CMOS Setup
                     Advanced Chipset Setup
                     Power Management Setup
                    PCI / Plug and Play Setup
                        Peripheral Setup
                     Hardware Monitor Setup
                     Auto-Detect Hard Disks
                      Change User Password
                    Change Supervisor Password
             Auto   Configuration   with   Optimal
             Settings
             Auto Configuration with Fail Safe Settings
                     Save Settings and Exit
                       Exit Without Saving
```

```
      Standard CMOS setup for changing time, date, hard disk type, etc.
 ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                      F2/F3:Color  F10:Save & Exit
```

You can load the optimal default settings for the BIOS by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

Note: The optimal values are for regular use.

Fail safe

```
        AMIBIOS  HIFLEX SETUP UTILITY - VERSION 1.12
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                    Standard CMOS Setup
                    Advanced CMOS Setup
                  Advanced Chipset Setup
                  Power Management Setup
                PCI / Plug and Play Setup
                     Peripheral Setup
                  Hardware Monitor Setup
                  Auto-Detect Hard Disks
                   Change User Password
                Change Supervisor Password
            Auto   Configuration   with   Optimal
            Settings
            Auto   Configuration   with   Fail   Safe
            Settings
                  Save Settings and Exit
                   Exit Without Saving


       Standard CMOS setup for changing time, date, hard disk type, etc.
   ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                  F2/F3:Color  F10:Save & Exit
```

You can load the Fail-Safe BIOS Setup option setting by selecting the Fail-Safe icon from the Default section of the Setup main menu.

The Fail-Safe settings provide far-from-optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

Save Changes and Exit

```
            AMIBIOS   HIFLEX SETUP UTILITY - VERSION 1.12
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                        Standard CMOS Setup
                        Advanced CMOS Setup
                      Advanced Chipset Setup
                      Power Management Setup
                     PCI / Plug and Play Setup
                          Peripheral Setup
                      Hardware Monitor Setup
                      Auto-Detect Hard Disks
                       Change User Password
                     Change Supervisor Password
               Auto   Configuration   with   Optimal
               Settings
              Auto Configuration with Fail Safe Settings
                      Save   Settings   and
                      Exit
                      Exit Without Saving


          Standard CMOS setup for changing time, date, hard disk type, etc.
    ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                       F2/F3:Color  F10:Save & Exit
```

Select this option to save into the CMOS RAM all the modifications you have specified during the current session.

Exit Without Saving

```
            AMIBIOS   HIFLEX SETUP UTILITY - VERSION 1.12
            ©1996 American Megatrends, Inc. All Rights Reserved


                        Standard CMOS Setup
                        Advanced CMOS Setup
                      Advanced Chipset Setup
                      Power Management Setup
                     PCI / Plug and Play Setup
                          Peripheral Setup
                      Hardware Monitor Setup
                      Auto-Detect Hard Disks
                       Change User Password
                     Change Supervisor Password
               Auto   Configuration   with   Optimal
               Settings
              Auto Configuration with Fail Safe Settings
                      Save   Settings   and
                      Exit
                         Exit Without
                           Saving


          Standard CMOS setup for changing time, date, hard disk type, etc.
    ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                       F2/F3:Color  F10:Save & Exit
```

Select this option to exit the current session while disregarding the modifications that you have made.

Setup Menu Categories

Your Setup program can have up to five separate screens. Different types of system configuration parameters are set on each screen.

Type	Description
Standard CMOS Setup	Set the time and date. Configure disk drives.
Advanced CMOS Setup	Configure basic system performance parameters.
Advanced Chipset Setup	Configure features specific to the chipset used in the computer.
Power Management Setup	Configure power conservation features.
PCI / Plug and Play Setup	Configure PCI and Plug-and-Play features.
Peripheral Setup	Configure I/O support.

6.4   Standard CMOS Setup

Standard Setup options are displayed by choosing the Standard icon from the Setup menu. All Standard Setup options are described below.

```
                    AMIBIOS SETUP - STANDARD CMOS SETUP
               ©1996 American Megatrends, Inc. All Rights Reserved
Date (mm/dd/yyyy) : Fri July 04, 1997                Base Memory : 640 KB
Time (hh/mm/ss)   : 14:44:03                         Extd Memory : 383 MB

Floppy Drive A: 1.44MB 3symbol 171 \f
"MS LineDraw" \s 6½}
Floppy Drive B: Not Installed


                                                    LBA  Blk  PIO 32Bit
             Type          Size  Cyln Head Wpcom Sec Mode Mode Mode Mode
Primary Master: Auto                                                 On
Pri Slave    : Auto                                                  On
Sec Master   : Auto                                                  On
Sec Slave    : Auto                                                  On

Boot Sector Virus Protection:  Disabled
Month:  Jan - Dec                            ESC: Exit  symbol 225 \f
Day  :   01 - 31                       "Wingdings" \s 6symbol 226 \f
Year : 1901 - 2099                            "Wingdings" \s 6:Sel
                                                  PgUp/PgDn:Modify
                                                      F2/F3:Color
```

Date/Time

Select the Date/Time option to change the date or time. The current date and time are displayed. Enter new values through the displayed window.

Floppy Drive A, B

Choose the Floppy Drive A or B icon to specify the floppy drive type. The settings are *360KB 5 1/4", 1.2MB 5 1/4", 720KB 3 1/2", 1.44MB 3 1/2",* and *2.88MB 3 1/2"*

Configuring IDE Drives

If the hard disk drive to be configured is an IDE drive, select the appropriate drive icon (Pri Master, Pri Slave, Sec Master, or Sec Slave). Choose the *Type* parameter and select *Auto*. The BIOS automatically detects the IDE drive parameters and displays them. Click the OK button to accept these parameters.

Configuring an MFM Drive

In configuring an old MFM   hard disk drive, you must know the drive parameters (number of heads, number of cylinders, number of sectors, the starting write precompensation cylinder, and drive capacity). Choose *Type* and choose the appropriate hard disk drive type (1-46).

User-Defined Drive

If you are configuring a SCSI drive or an MFM, RLL, ARLL, or ESDI drive with drive parameters that do not match drive types 1-46, you must select *User* in the *Type* field and enter the drive parameters on the screen that appears. The drive parameters include:

- Cylinder (number of cylinders),
- Hd (number of heads),
- WP (starting write precompensation cylinder),
- Sec (number of sectors), and
- Size (drive capacity).

Configuring a CD-ROM Drive

Select the appropriate drive icon (Pri Master, Pri Slave, Sec Master, or Sec Slave). Choose the *Type* parameter and select CDROM. You can boot the computer from a CD-ROM drive.

Boot Sector Virus Protection

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

NOTE: Many disk diagnostic programs which attempt to access the boot sector table can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

6.5   Advanced CMOS Setup

```
            AMIBIOS SETUP - ADVANCED CMOS SETUP
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    Quick Boot                    Disabled        Available Options:
    1st Boot Device               FLOPPY            Disabled
    2nd Boot Device               IDE-0             Enabled
    3rd Boot Device               Disabled
    Try Other Boot Devices        Yes
  Floppy Access Control           Read-Write
    HDD Access Control            Read-Write
    S.M.A.R.T. for Hard Disks     Disabled
  BootUp Num-Lock                 On
  Floppy Drive Swap               Disabled
  Floppy Drive Seek               Enabled
  PS/2 Mouse Support              Enabled
  Primary Display                 VGA/EGA
  Password Check                  Setup
    Boot To OS/2 > 64MB           No
    Internal Cache                WriteBack
    System BIOS Cacheable         Enabled             ESC:Exit   symbol
    C000, 16k Shadow              Cached      225  \f  "Wingdings"  \s
    C400, 16k Shadow              Cached      6symbol      226      \f
                                              "Wingdings" \s 6:Sel
                                                  PgUp/PgDn:Modify
                                                     F2/F3:Color
```

Quick Boot

Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old **Above 1 MB Memory Test** Advanced Setup option.

BootUp Sequence

This option sets the sequence of boot drives. Four boot devices can be set according to the user's preference (Floppy*, IDE-0 / IDE-1, CD-ROM, SCSI, FLOPTICAL[LS-120]*).

Floppy / HDD Access Control

Set this option to Normal to allow the floppy and hard disk drive to perform read and write operations. The settings are *Normal* and *read only.* The Optimal and Fail-Safe default setting is ***Normal.***

S.M.A.R.T. for Hard Disks

Enabling this option allows the system to support hard disks with the S.M.A.R.T. feature. The default setting is ***Disabled***.

BootUp Num-Lock

Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* and *Off.* The default setting is ***On.***

Floppy Drive Swap

Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* and *Disabled*. The default setting is ***Disabled.***

Floppy Drive Seek

Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Disabled* and *Enabled*. The Optimal default setting is ***Enabled.***

PS/2 Mouse Support

When this option is set to *Enabled*, AMIBIOS supports a PS/2-type mouse. The settings are *Enabled* and *Disabled*. The default setting is ***Enabled.***

Primary Display

This option specifies the type of display monitor and adapter in the computer. The settings are *Mono, CGA40, CGA80, VGA/EGA,* and *Absent*. The Optimal and Fail-Safe default setting is ***VGA/EGA***.

Password Check

This option enables password checking every time the computer is powered on or every time BIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if BIOS is executed. The Optimal and Power On defaults are ***Setup.***

Boot to OS/2 > 64MB

This option allows the system to access greater than 64MB fo DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The settings are *Yes* and *No*. For non-OS/2 systems, set this option to *No*. The default setting is ***No.***

Internal Cache

This option specifies the caching algorithm used for the internal cache memory. The settings are:

Setting	Description
Disabled	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
Write Back (default)	Use the write-back caching algorithm.
Write Thru	Use the write-through caching algorithm.

System BIOS Shadow cacheable

When this option is set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to the system RAM for faster execution.

The settings are *Enabled* and *Disabled*. The Optimal default setting is ***Enabled***. The Fail-Safe default setting is ***Disabled***.

C000-DC000, 16k Shadow

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether optional ROM will be copied to RAM or not.

6.6   Advanced Chipset Setup

```
                    AMIBIOS SETUP - ADVANCED CMOS SETUP
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Auto Configure EDO DRAM Timing    Enabled          Available Options:
EDO DRAM Speed (ns)               60                  Disabled
   EDO Read Burst Timing          x222                Enabled
   EDO Write Burst Timing         x222
   MA Wait State                  Fast
********SDRAM Timing ********
   SDRAM RAS to CAS Delay         2 Clks
   SDRAM CAS Latency              3 Clks
   SDRAM RAS Precharge Time       2 Clks
DRAM Integrity Mode               Non ECC
Fixed Memory Hole                 Disabled
CPU To PCI IDE Posting            Enabled
USWC Write I/O Post               Disabled
AGP Aperture Size                 64MB
PIIX4 Delayed Transaction         Disabled
USB Function                      Disabled
USB Keyboard legacy Support       Disabled
                                                    ESC:Exit   symbol
                                         225  \f  "Wingdings"  \s
                                         6symbol      226        \f
                                         "Wingdings" \s 6:Sel
                                              PgUp/PgDn:Modify
                                                 F2/F3:Color
```

Auto Configure DRAM Timing

Use this option to specify the timing on the memory bus. The default setting is ***Enabled***.

EDO DRAM Speed

This specifies the RAS access speed of the SIMMs installed on the motherboard as system memory. The settings are *60ns* and *70ns*. The default setting is ***60ns***.

EDO Read Burst Timing

This sets the timing for burst mode reads from different DRAMs (BEDO/EDO/FP). Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

EDO Write Burst Timing

This sets the timing for burst mode writes from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

MA Wait State

This option sets the wait state of the memory address. The settings are *Fast* and *Slow*. By default, it is set to ***Fast***.

SDRAM RAS to CAS Delay

When DRAM is refreshed, both rows and columns are addressed separately. This field allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS). By default, it is set to ***2 clocks.***

SDRAM CAS Latency

This option sets the CAS latency of the SDRAM. The higher the speed, the better quality the performance of the SDRAM. The default setting is ***3 clocks.***

SDRAM RAS Precharge Time

DRAM must continuously be refreshed or it will loose its data. This option allows you to determine the number of CPU clocks allocated for Row Address Strobe to accumulate its charge before DRAM is refreshed. If the refreshed time is not enough, refresh may be incomplete and data will be lost.

DRAM Integrity Mode

This option allows software configurability of selecting between ECC (error checking and correction) mode, EC only or Non-ECC. The default setting is ***Non-ECC***.

Fixed Memory Hole

Enabling this feature reserves (15MB to 16MB or 512KB to 640KB) memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB or 512MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. The default setting is ***Disabled***..

CPU To PCI IDE Posting

When enabled,   the CPU to PCI IDE posting cycles are treated as normal I/O write transactions. The default setting is ***Enabled***.

USWC Write I/O Post

The setting of *Enabled* allows USWC write posting during I/O bridge access. The default setting is ***Disabled***.

AGP Aperture Size

The settings for this options are *4MB*, *8MB*, *16MB*, *32MB*, *64MB*, *128MB* and *2566MB*. The default setting is ***64MB***.

PIIX4 Delayed Transaction

When enabled, the PIIX4 transaction is delayed. By default the optimal settings are ***Disabled***.

USB Function

When enabled, the option allows legacy support for a USB keyboard. By default, the optimal settings are ***Disabled***.

6.7   Power Management Setup

```
                 AMIBIOS SETUP - POWER MANAGEMENT SETUP
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   Power Management/APM          Enabled          Available Options:
   Green PC Monitor Power State  Off                 Disabled
   Video Power Down Mode         Suspend             Enabled
   Hard Disk Time Out (Minute)   Disabled
   Standby Time Out (Minute)     Disabled
   Suspend Time Out (Minute)     Disabled
   Throttle Slow Clock Ratio     50-62.5%
   Modem Use IO Port             N/A
   Modem Use IRQ                 N/A
   Display Activity              Ignore
   Device 6 (Serial port 1)      Monitor
   Device 7 (Serial port 2)      Monitor
   Device 8 (Parallel port)      Ignore
   Device 5 (Floppy disk)        Monitor
   Device 0 (Primary master IDE) Monitor
   Device 1 (Primary slave IDE)  Ignore
   Device 2 (Secondary master IDE) Monitor
   Device 3 (Secondary slave IDE) Ignore         ESC:Exit    symbol
   Power Button Function         On/Off      225 \f  "Wingdings"  \s
   Ring Resume From Soft Off     Disabled    6symbol       226     \f
                                             "Wingdings" \s 6:Sel
                                                  PgUp/PgDn:Modify
                                                    F2/F3:Color
```

Power Management/ APM

Set this option to *Enabled* to enable the power-management and APM (Advanced Power Management) features. The settings are *Enabled* and *Disabled*. The default setting is **Enabled**.

Green PC Monitor Power State

This option specifies the power-management state that the Green PC-compliant video monitor enters after the specified period of display inactivity has expired. The settings are *Disabled, off, Standby,* and *Suspend*. The default setting is **Off**.

Video Power Down Mode

This option specifies the power-management state that the video subsystem enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, and *Suspend*. The default is **Suspend**.

Hard Disk Power Down Mode

This option specifies the power-management state that the hard disk drive enters after the specified period of display inactivity has expired. The settings are *Disabled, Standby,* and *Suspend*. The default setting is **Disabled.**

Standby Timeout

This option specifies the length of the period of system inactivity when the computer is in Full On mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed. The settings are *Disabled, 1 Min, 2 Min*, and *all one minute intervals up to and including 15 Min.* The default setting is **Disabled**.

Suspend Timeout

This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power use is curtailed. The settings are *Disabled, 1 Min, 2 Min,* and *all one minute intervals up to and including 15 Min.* The default setting is **Disabled.**

Throttle Slow Clock Ratio

This option specifies the speed at which the system clock runs in power-saving modes. The settings are expressed as a ratio between the normal clock speed and the power down clock speed. The settings are *-0-12.5%, 12.5-25%, 25-37.5%, 27.5-50%, 50-62.5%, 62.5-75%, 75-87.5%*. The Optimal and Fail-Safe default settings are **50-62.5%**.

Modem Use I/O Port

This option specifies the COM port that is being used by the system's modem. The settings are *N/A, COM1, COM2, COM3* and *COM4*. The default setting is *N/A.*

Modem Use IRQ

This option specifies the IRQ being used by the external modem for the Modem wake-up feature of the motherboard.

Display Activity

This option specifies if the BIOS is to monitor activity on the display monitor for power conservation purposes.

Device 0/1/23/5/6/7/8(Serial port 1/2, Parallel port, Floppy disk, Primary master/slave IDE, Secondary master/slave IDE)

These options enable event monitoring. When the computer is in a power-saving mode, activity on the named interrupt request line is monitored by AMIBIOS. When any activity occurs, the computer enters the Full On mode.

Power Button Function

This option allows the power button to function as a simple on/off button or with the suspend function. The options are *On/Off* and *Suspend*. In the Suspend mode, the system powers off after pressing the power button for more than four seconds or enters the suspend mode when pressed for less than four seconds. By default, this option is set to ***On/Off***.

Ring Resume From Soft Off

This option allows the system to be turned on remotely through a modem from its soft-off state. By default, this option is set to ***Disabled***.

RTC Alarm Resume From Soft Off

This allows the system to be turned on automatically through the timer set in the BIOS to make the system more scheduleable. By default, this option is set to ***Disabled***.

6.8   PCI / Plug and Play Setup

```
                AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP
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  Plug and Play Aware O/S         No              Available Options:
  Clear NVRAM on Every Boot       No                 No
  PCI Latency Timer (PCI Clocks)  64                 Yes
  PCI VGA Palette Snoop           Disabled
  Allocate IRQ to PCI VGA         Yes
  PCI IDE Busmaster               Disabled
  OffBoard PCI IDE Card           Auto
  OffBoard PCI IDE Primary IRQ    Disabled
  OffBoard PCI IDE Secondary IRQ  Disabled
  DMA Channel 0                   PnP
  DMA Channel 1                   PnP
  DMA Channel 3                   PnP
  DMA Channel 5                   PnP
  DMA Channel 6                   PnP
  DMA Channel 7                   PnP
  IRQ3                            PCI/PnP
  IRQ4                            PCI/PnP
  IRQ5                            PCI/PnP            ESC:Exit   symbol
  IRQ7                            PCI/PnP     225  \f  "Wingdings"  \s
  IRQ9                            PCI/PnP     6symbol     226      \f
                                             "Wingdings" \s 6:Sel
                                                PgUp/PgDn:Modify
                                                    F2/F3:Color
```

Plug and Play Aware OS

Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware.

Set this option to *No* if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP. You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly. The settings are *No* and *Yes*. The Optimal and Fail-Safe default settings are *No*.

Clear NVRAM on Every Boot

Enabling this option erases the NVRAM containing PnP information on every boot. The Optimal and Fail-Safe settings are *No*.

PCI Latency Timer (in PCI Clocks)

This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The settings are *32, 64, 96, 128, 160, 192, 244,* and *248.* The Optimal and Fail-Safe default settings are *64*.

PCI   VGA   Palette   Snoop
Set this option to *Enabled* if any ISA adapter card installed in the computer requires VGA palette snooping. The settings are *Disabled* and *Enabled*. The Optimal and Fail-Safe default settings are *Disabled.*

Allocate IRQ to PCI VGA

Enabling this option allocates an IRQ to the PCI VGA on the motherboard. Normally, PCI VGA does not use any IRQ. If you have several add-on cards on the motherboard and the IRQs are not enough, then this option can be set to *No*. By default, this field is set to ***Yes***.

PCI IDE BusMaster

Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. The settings are *Disabled* and *Enabled*. The Optimal and Fail-Safe default setting is ***Disabled.***

Offboard PCI IDE Card

This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the onboard IDE controller on the motherboard is automatically disabled. The settings are *Disabled, Auto, Slot1, Slot2, Slot3,* and *Slot4*.

If *Auto* is selected, AMIBIOS automatically determines the correct setting for this option. The Optimal and Fail-Safe default setting is ***Auto.***

Offboard PCI IDE Primary IRQ

The Optimal and Fail-Safe default setting is ***Disabled.***

Offboard PCI IDE Secondary IRQ

The Optimal and Fail-Safe default setting is ***Disabled***.

DMA Channel 0 / 1 / 3 / 5 / 6 / 7

| **IRQ3** | **IRQ5** | **IRQ9** | **IRQ11** | **IRQ14** |
| **IRQ4** | **IRQ7** | **IRQ10** | **IRQ12** | **IRQ15** |

These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQs pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these

PCI/PnP Setup options to remove the IRQ by assigning the option to the ISA setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured *PCI/PnP*.

The settings are *PCI/PnP* and *ISA*. The Optimal and Fail-Safe default setting is **PCI/PnP**.

Reserved Memory Size

This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are *16K*, *32K* and *64K*. The Optimal and Fail-Safe default setting is **Disabled**.

Reserved Memory Address

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for used by legacy ISA adapter cards. The settings are *C0000*, *C4000*, *C8000*, *CC000*, *D0000*, *D4000*, *D8000* and *DC000*. The Optimal and Fail-Safe default setting is **Disabled**.

6.9   Peripheral Setup

Peripheral Setup options are displayed by choosing the Peripheral Setup icon from the Setup main menu. All Peripheral Setup options are described in this section.

```
                    AMIBIOS SETUP - PERIPHERAL SETUP
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  OnBoard FDC                    Auto            Available Options:
  OnBoard Serial Port1           Auto              Auto
  OnBoard Serial Port2           Auto              Disabled
   Serial Port2 Mode             Normal            Enabled
     IR Transmission Mode        N/A
     Receiver Polarity           N/A
     Transmitter Polarity        N/A
  OnBoard Parallel Port          Auto
   Parallel Port Mode            Normal
   EPP Version                   N/A
   Parallel Port IRQ             Auto
   Parallel Port DMA Channel     N/A
  Onboard IDE                    Both


                                             ESC:Exit   symbol
                                    225  \f  "Wingdings"  \s
                                    6symbol      226       \f
                                    "Wingdings" \s 6:Sel
                                        PgUp/PgDn:Modify
                                           F2/F3:Color
```

Onboard FDC

This option enables the floppy drive controller on the motherboard. The Optimal and Fail-Safe default settings are ***Auto***.

Onboard Serial Port1

This option enables serial port 1 on the motherboard and specifies the base I/O port address for serial port 1.

The settings are *3F8h, 3E8h, Auto,* and *Disabled*. The Optimal default and Fail-Safe settings are ***Auto***.

Onboard Serial Port2

This option enables serial port 2 on the motherboard and specifies the base I/O port address for serial port 2.

The settings are *3F8h, 3E8h, Auto,* and *Disabled*. The Optimal default and Fail-Safe settings are ***Auto***.

Onboard Parallel Port

This option enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The settings are *378h, 278h, Auto,* and *Disabled.*

The Optimal and Fail-Safe settings is ***Auto***.

Parallel Port Mode

This option specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes that adhere to the IEEE P1284 specifications. The settings are:

Setting	Description
Normal	The normal parallel port mode is used. This is the default setting.
EPP	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.
ECP	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve transfer rates of approximately 2.5MB/sec. ECP provides symmetric bi-directional communications.

Parallel Port DMA Channel

This option is only available if the setting for the **Parallel Port Mode** option is ECP. The settings are *Disabled, DMA CH (channel) 0, DMA CH 1,* and *DMA CH 3*. The default setting is ***N/A.***

Onboard IDE

This option specifies the onboard IDE controller channels that will be used. The settings are *Primary, Secondary, Both,* and *Disabled*. The Optimal and Fail-Safe default settings are ***Both.***

6.10 Hardware Monitor Setup

```
                    AMIBIOS SETUP - PERIPHERAL SETUP
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---System Hardware Monitor---                      Available Options:
   Current CPU Temperature      39symbol 176 \         -
   Current CPU Fan Speed        f  "Symbol"  \s        -
   Current Chassis Fan Speed    6°}C/102symbol
   Vcore                        176          \f
   Vio                          "Symbol"     \s
   +5.000V                      6°}F
   +12.000V                     6463RPM
   -12.000V                     6875RPM
   -5.000V                      2.832V
                                3.408V
                                5.013V
                                12.567V
                                -11.930V
                                -5.124

                                               ESC:Exit   symbol
                                        225  \f  "Wingdings"  \s
                                        6symbol       226     \f
                                        "Wingdings" \s 6:Sel
                                            PgUp/PgDn:Modify
                                              F2/F3:Color
```

The Hardware Monitor Setup is for read-only. It shows the current status of the system hardware being monitored which include the system temperature, system voltages, cpu fan speed and chassis fan speed.

6.11   Auto-Detect Hard Disks

```
         AMIBIOS  HIFLEX SETUP UTILITY - VERSION 1.12
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                    Standard CMOS Setup
                    Advanced CMOS Setup
                   Power Management Setup
                  PCI / Plug and Play Setup
                      Peripheral Setup
                   Hardware Monitor Setup
                   Auto-Detect Hard Disks
                    Change User Password
                  Change Supervisor Password
           Auto   Configuration   with   Optimal
           Settings
          Auto Configuration with Fail Safe Settings
                    Save Settings and Exit
                     Exit Without Saving


      Standard CMOS setup for changing time, date, hard disk type, etc.
ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                   F2/F3:Color  F10:Save & Exit
```

This option detects the parameters of an IDE devices and automatically enters them into the Standard CMOS Setup screen. Both CD-ROMs and FLOPTICAL drives can also be detected.

6.12   Password

```
               AMIBIOS  HIFLEX SETUP UTILITY - VERSION 1.12
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                        Standard CMOS Setup
                        Advanced CMOS Setup
                      Power Management Setup
                    PCI / Plug and Play Setup
                        Peripheral Setup
                      Hardware Monitor Setup
                      Auto-Detect Hard Disks
                      Change User Password
                    Change Supervisor Password
              Auto   Configuration   with   Optimal
              Settings
            Auto Configuration with Fail Safe Settings
                      Save   Settings   and
                      Exit
                      Exit Without Saving


        Standard CMOS setup for changing time, date, hard disk type, etc.
   ESC:Exit  symbol 225 \f "Wingdings" \s 6 symbol 226 \f "Wingdings" \s 6:Sec
                    F2/F3:Color  F10:Save & Exit
```

If You Do Not Want to Use a Password

Just press <Enter> when the password prompt appears.

Setting a Password

The password check option is enabled in Advanced Setup by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when BIOS is run). The password is stored in the CMOS RAM.

You can enter a password by typing the password on the keyboard.

When you select *Supervisor* or *User*, AMIBIOS prompts for a password. You must set the *Supervisor* password before you can set the *User* password. Enter a 1-6 character password. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain the CMOS RAM and reconfigure the system.

Chapter 7   Onboard VGA Installation Guide

This chapter describes the VGA onboard with the installation procedures necessary to take advantage of the features of the S3 ViRGE/GX2 graphics accelerator. The topics covered in this chapter are as follows:

7.1   Introduction

The POWER PRO II AGP VIDEO's onboard AGP VGA is powered by S3 ViRGE/GX2. It combines high-performance integrated SGRAM-based 2D/3D graphics accelerator and full-motion video playback including MPEG-1. It provides a boost in system performance for general Windows and DOS applications, as well as graphics-intensive desktop publishing, CAD and digital video software application.

The onboard VGA features include:

❋ S3 ViRGE/GX2 64 bits GUI & Multimedia Accelerator,

❋ Windows 95 Plug & Play compliant

❋ Base AGP 1.0 compliance

❋ High-performance Windows graphics acceleration

❋ Compatible with VGA and VESA standards

❋ DPMS and DDC2B support

❋ YUV 4:2:2 support accelerates MPEG-1 and MPEG-2 playback

❋ Hardware windows support video conferencing local view

❋ Integrated 230MHz RAMDAC

❋ TV output (Composite or S-Video)

DISPLAY RESOLUTIONS

❋ 1600x1200x64K colors at 75Hz refresh rates

❋ 1280x1024x64K colors at 85Hz refresh rates

❋ 1024x768x16.8M colors at 85Hz refresh rates

❋ 800x600x16.8M colors at 85Hz refresh rates

DISPLAY MEMORY CONFIGURATION

❋ 2MB to 4 MB SGRAM (100MHz)

7.2   Software Installation

7.2.1   Drivers

A diskette shipped with the POWER PRO II AGP VIDEO motherboard provides the drivers for Microsoft Windows 95 and Windows NT 4.0. To achieve high resolution, HiColor and True Color display, appropriate drivers must be loaded in your system.

1.

7.2.2   Installations

7.2.2-1   First Time Installation of Microsoft Windows 95

The procedures below are to be followed when you are installing Windows 95 for the fist time. After which, you can proceed to the next section on installing the ViRGE/GX2 driver for Windows 95. S3 *ViRGE/GX2 is a new VGA accelerator and requires proper driver installation to avoid any problem during the auto hardware detection under Windows 95.*

Installation procedure:

Refer to the following procedures when installing Windows 95 for the first time.

1. Start the installation and continue until the Windows 95 Setup Wizard appears.
2. Select "Custom" under the Setup Options menu.
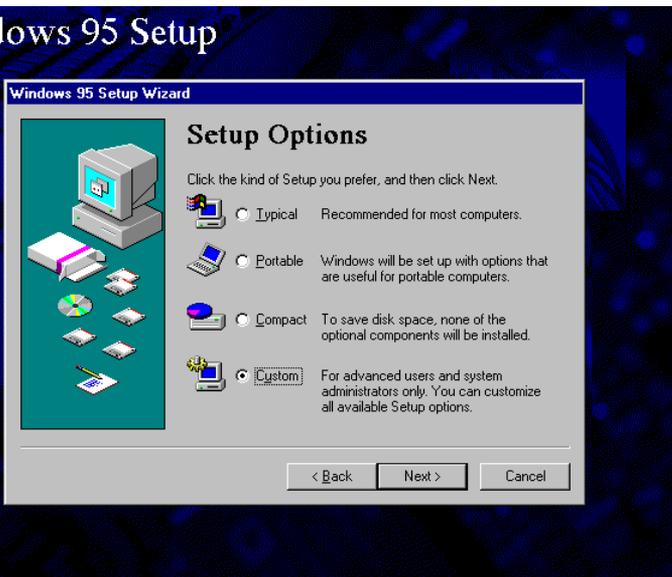
3. Continue the installation procedures until the Analyzing Your Computer menu appears. When prompted, choose "Yes", then select "Next" for Setup to check the system's hardware devices.
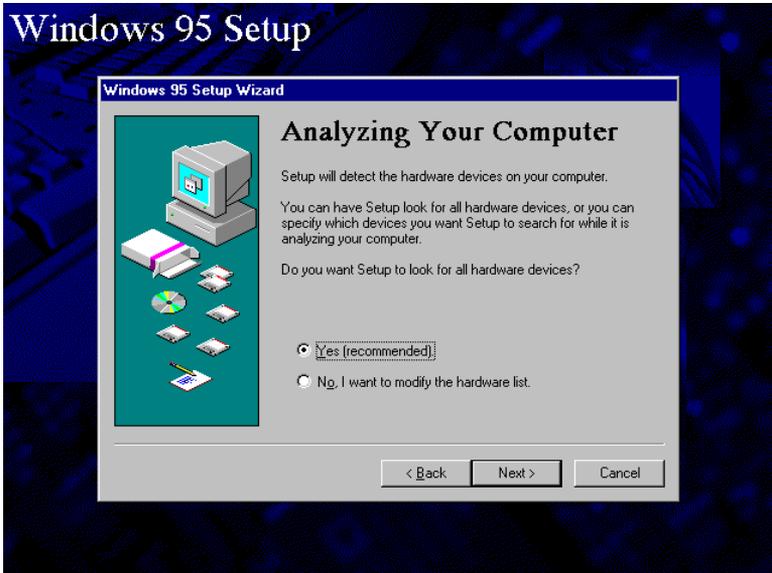
4. In gathering hardware information, Setup will prompt you for the correct hardware such as sound cards, networking cards, etc. Make your selections accordingly, or go to the next menu   as shown in the following figure when Setup does not list your hardware device.

5.   Setup automatically detects the "Display" with an "S3" display adapter type. Click "Change" and the selections for the display adapter appear as shown in the following figure.
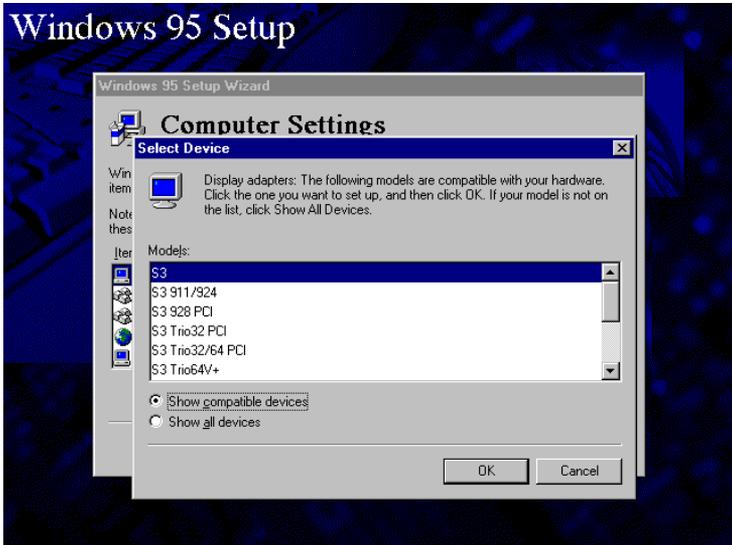
6. Select "Show all devices" for Setup to list all other selections. In the "Manufacturers" field, select "Standard display types" and "Standard PCI Graphics Adapter (VGA)" at the right field. Then click "OK".
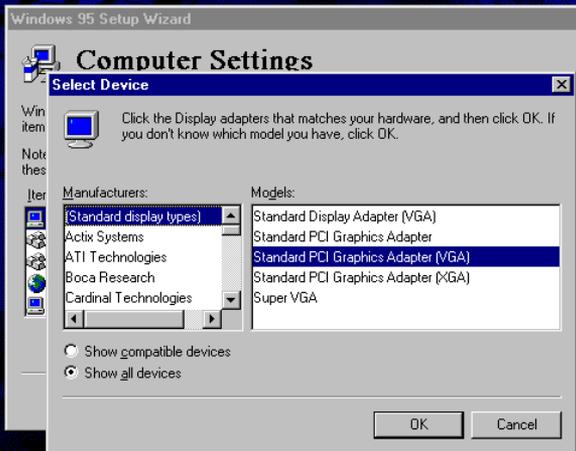
7. The following menu appears:
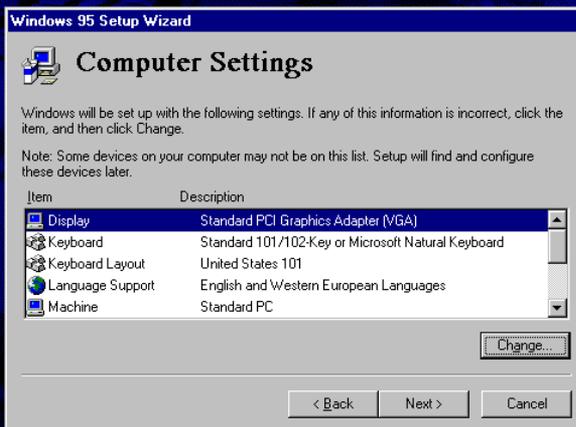
8. For other installation procedures, please refer to your Windows 95 installation manual.

7.2.2-2   Microsoft Windows 95 Driver

Installation procedure:

1. You must have Windows 95 installed and operating in standard VGA mode.
2. Turn on your computer and start your Windows 95 under the standard PCI Graphics Adapter (VGA) mode.
3. Insert the diskette labeled "S3 ViRGE/GX2 VGA Drivers" in drive A.
4. Click the "Start" button. Select "Settings", then click "Control Panel".
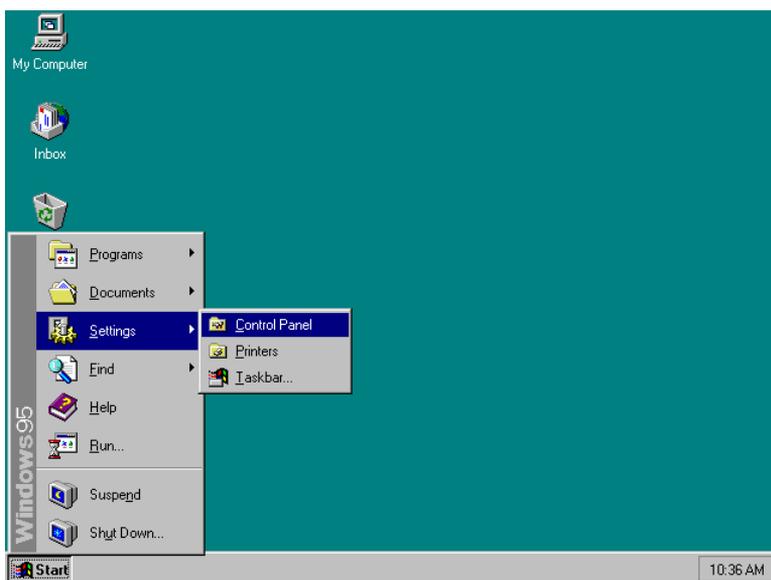
5. Click the "Display" icon.
6. Click "Settings".
7. Click "Advanced Properties".
8. Click "Change".
9. Click the "Have Disk …" button.
10. Type A:\Win95.

11.   Click "OK", and the following screen appears.
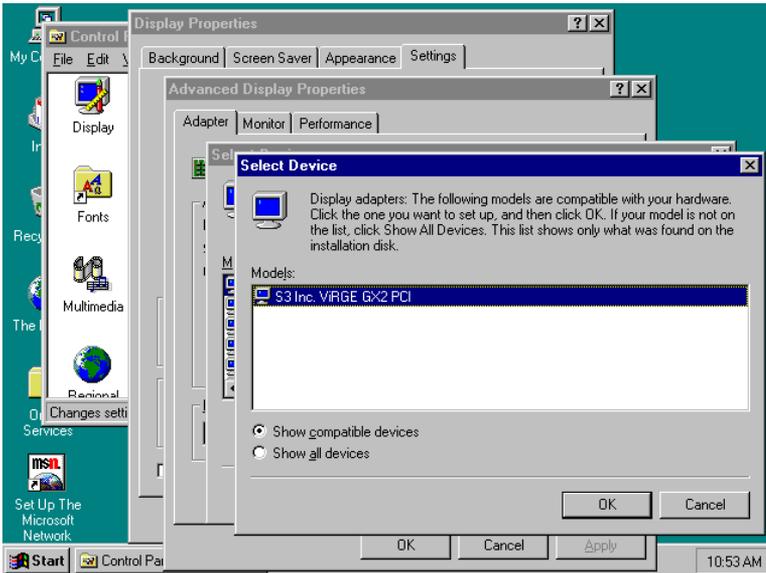
12.   Select "S3 Inc. ViRGE/GX2", then click "OK". After the files are copied, click the "Close" button and the following screen appears.
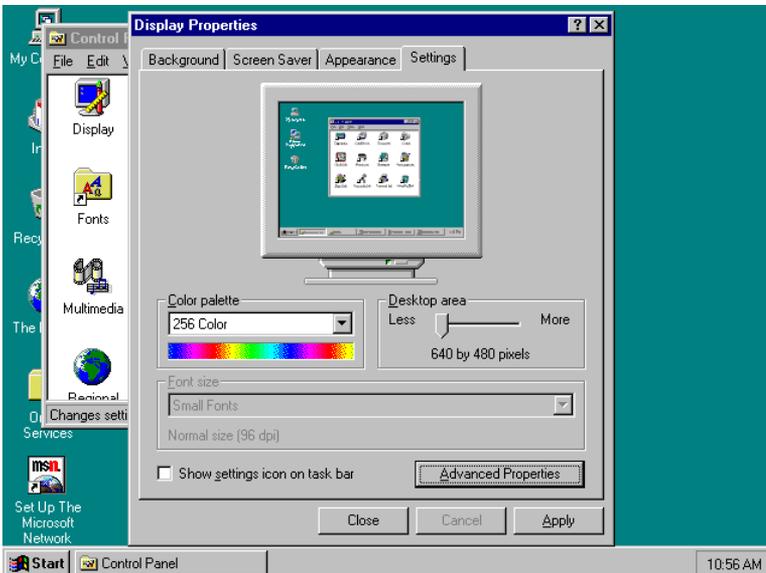
13. Click the "Yes" button to restart your computer and for the
    new settings to take effect.
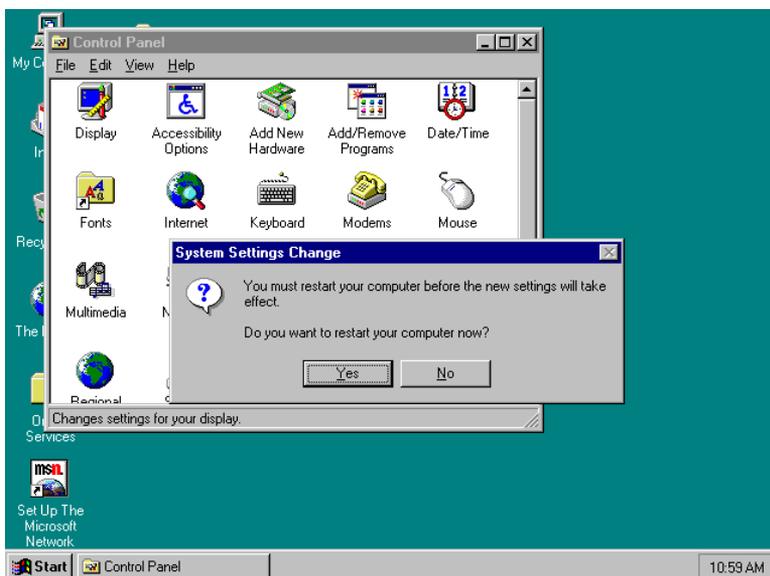
14. You have now finished the Microsoft Windows 95 Driver software
    installation.

7.2.2-3   Installing ViRGE/GX2 VGA Drivers for Windows NT 4.0

Installation procedure:

Your Windows NT 4.0 is default to the standard VGA mode (640 x 480,
16 colors).
***IMPORTANT: You should install the Windows NT 4.0 Service Pack 3
first before installing the S3 ViRGE/GX2 VGA drivers. If you don't
have the Windows NT 4.0 Service Pack 3, please contact your software
vendor or download it from Microsoft's web site.***
The procedures below show you how to install the S3 ViRGE/GX2 VGA
drivers for Windows NT 4.0.
1. Boot Windows NT 4.0.
2. Double click the "My Computer" icon.
3. Double click   "Control Panel".
4. Double click the "Display" icon.
5. Click "Change Display Type".
6. Click "Change".

7.
8. Click "Have Disk …", then insert the diskette labeled "ViRGE/GX2 VGA drivers " to the floppy disk drive, then type in "A:\NT40" and press "Enter". (for drive B:, substitute **B:** for **A:**)
9. Select "S3 ViRGE/GX2", then click "OK".
10. Click "Yes" to copy the drivers from the floppy disk to the hard disk.
11. When copying is done, click "OK".
12. Click "Close".
13. Click "OK".
14. Windows NT 4.0 will prompt you to restart computer. Click "OK" to change the Windows NT configuration.

7.3   TV Output Feature (for the optional TV output cable)

7.3.1   Introduction

The POWER PRO II AGP VIDEO motherboard provides an optional TV output cable that allows connection of your computer to a television. This function is enabled after you have installed the ViRGE/GX2 VGA drivers for Windows 95.   To enable the TV Output function, attach the Composite or S-Video cable (both included with the optional TV output cable) from the television to the external TV output cable. S-Video will give best results.   The following describes the procedures on how to enable the TV Output feature.

1.   Click the "Start"button.
2.   Select "Settings".
3.   Click "Control Panel".
4.   Double click "Display".
5.   Click "S3". Refer to the figure below.
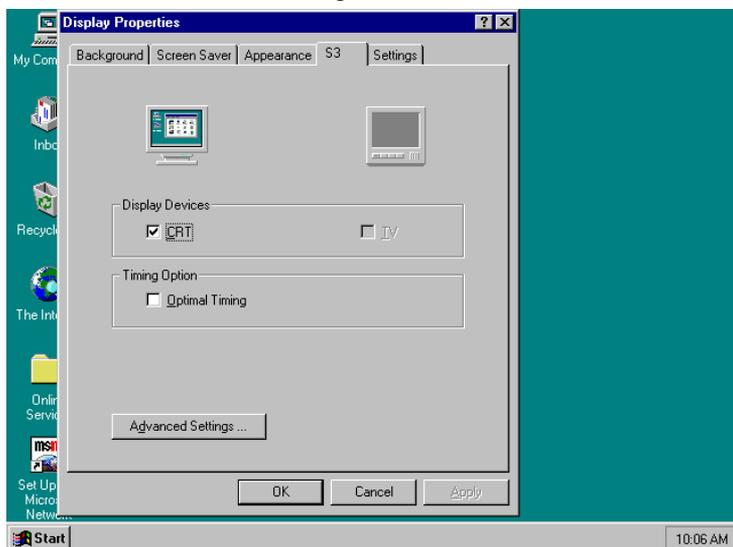
6.   In the previous figure, the TV option cannot be enabled. This happens when there is no connector attached from the television to the computer or the television is not turned on. To enable the TV option, attach the connector (S-Video or Composite) and turn on the television first, then repeat steps 1-5.

7. Afterwards, check the TV checkbox and click "Apply". The following figure appears.
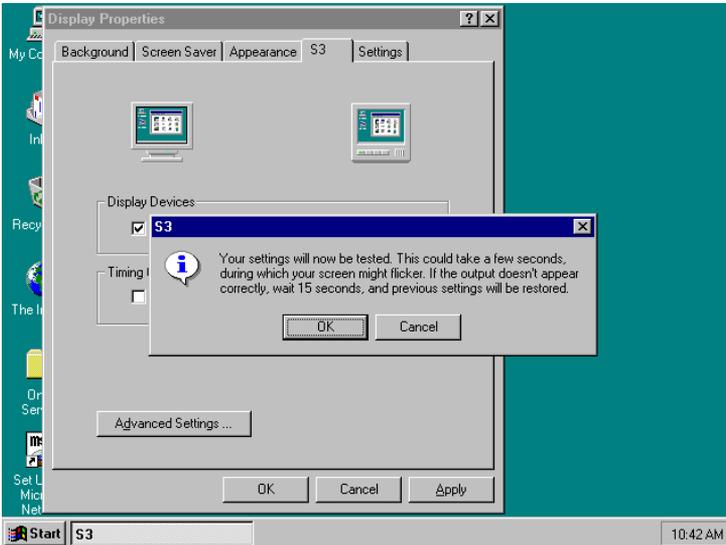
8. When prompted to test the new settings, click "OK".
9. When the settings have been changed, images are displayed on both your PC monitor and televisions simultaneously.

7.3.2   Timing Option

When TV Output is enabled, both the PC monitor and the television maintains a resolution of 640 x 400. The 80 horizontal lines difference on the television can be displayed by scrolling up or down using the mouse. The Optimal Timing option sets the PC monitor to use standard VGA resolution (640 x 480), while the television resolution remains unchanged. Follow the steps below to enable the Optimal Timing option.
1. Click the "Start" button.
2. Select "Settings".
3. Click "Control Panel".
4. Double click "Display".

5.   Click "S3" and the following figure appears.
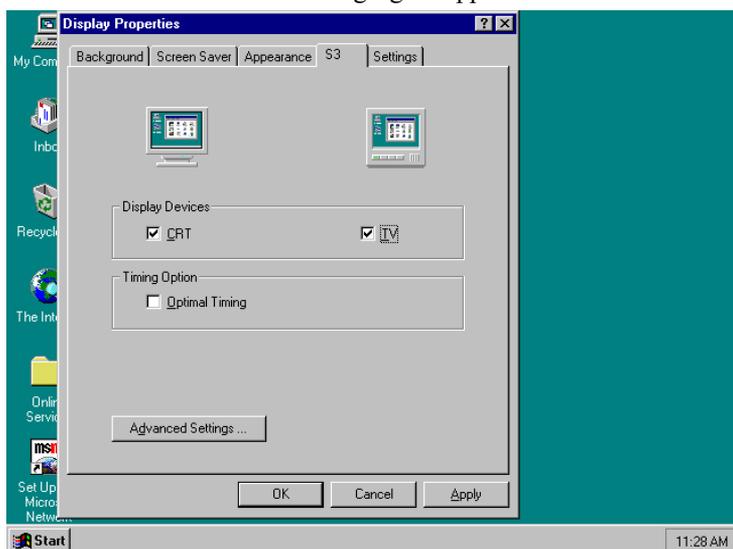
6.   Check the "Optimal Timing" checkbox and click "Apply". When prompted to test the new settings, click "OK".
7.   After enabling "Optimal Timing", the computer's display mode will be changed to standard display mode. ***The Optimal Timing option and the TV Output should be simultaneously enabled.***

7.3.3   Settings for Composite/S-Video and NTSC/PAL

The optional cable has connectors for Composite Output and S-Video Output that provide different TV output signals. The default setting under Windows 95 is set to Composite output signals. If you are using an S-Video connector, then change the default to S-video after you have enabled the TV Output function.

The TV output signals support both NTSC and PAL specifications. The driver for Windows 95 sets the default as NTSC (North American standard). For PAL signals (European standard), change the settings accordingly.

The section below describes the advanced display setting procedures for Composite/S-video and NTSC/PAL options.
1.   Click the "Start" button.
2.   Select "Settings".
3.   Click "Control Panel".
4.   Double click "Display".
5.   Click "S3" and the following figure appears.
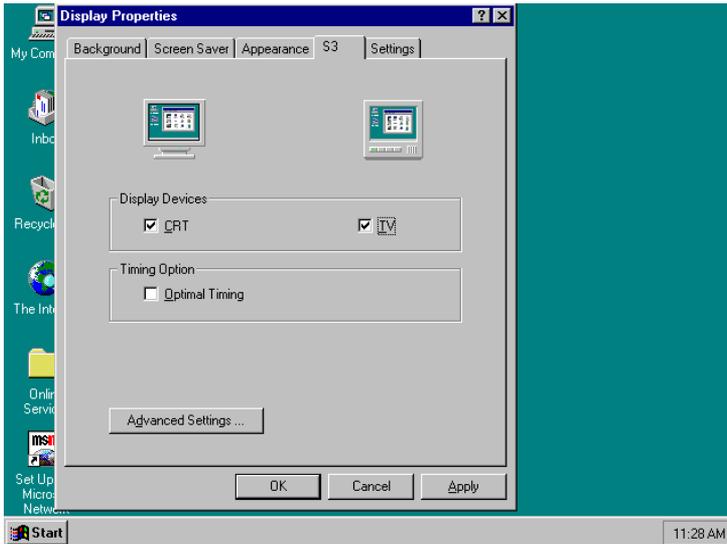
6. Click "Advanced Settings".
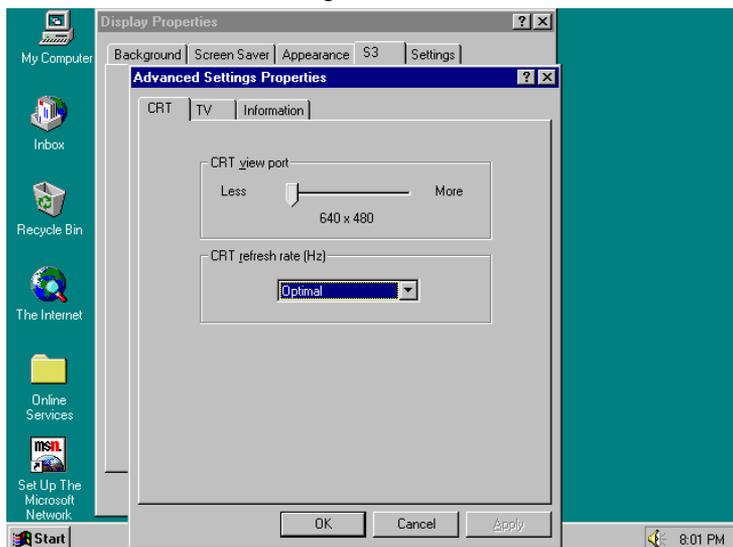
7. Select "TV".
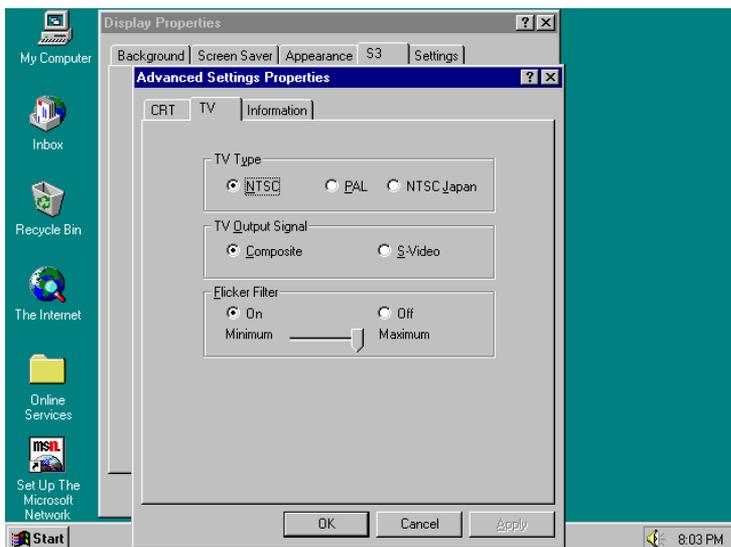
8. To change the TV Output Signal to S-Video, select the S-Video option. To change the TV type to PAL, select the PAL option.

9.

10. After you have finished changing the settings, click "Apply". When prompted to test the new settings, click "OK".

7.4   Technical Information

7.4.1   Display Memory Configuration

Resolution/Color Base support

Resolution
640x480x256
640x480x64K
640x480x16M
800x600x256
800x600x64K
800x600x16M
1024x768x256
1024x768x64K
1024x768x16M
1280x1024x256
1280x1024x64K
1280x1024x16M
1600x1200x256
1600x1200x64K

7.4.2   Monitor Connector Pin Assignments

Pin No.	Function
1	Red Video
2	Green Video
3	Blue Video
4	NC
5	Ground
6	Red Return (ground)
7	Green Return (ground)
8	Blue Return (ground)
9	Key (no connection)
10	Sync Return (ground)
11	NC
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLOCK

Appendix

A. Slot 1 Retention Mechanism

1. To install the Slot 1 mechanism, fasten it with the four screws from underneath the motherboard. Refer to the drawing below.

2. To release the CPU module from the retention mechanism, press the two sides of the module. Refer to the drawing below.