

**SAGP-4620E**  
**AMD Duron™ & Athlon(XP)™**  
**With 10/100 Ethernet LAN SBC**  
**User Manual**  
**Version 1.0**

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# Table of Contents

<b>CHAPTER 1. INTRODUCTION .....</b>	<b>5</b>
1.1 SPECIFICATIONS.....	6
1.2 PACKAGE CONTENTS .....	8
<b>CHAPTER 2. INSTALLATION .....</b>	<b>9</b>
2.1 SAGP-4620E'S LAYOUT .....	9
2.2 CLEAR CMOS SETUP.....	11
2.3 COMPACT FLASH CARD MASTER/SLAVE MODE SETTING .....	11
2.4 SETTING THE CPU OF SAGP-4620E .....	11
2.5 SETTING THE POWER TYPE OF SAGP-4620E.....	12
<b>CHAPTER 3. CONNECTION .....</b>	<b>13</b>
3.1 FLOPPY DISK DRIVE CONNECTOR .....	14
3.2 ULTRA ATA33/66/100/133 IDE DISK DRIVE CONNECTOR ..	15
3.3 PARALLEL PORT.....	16
3.4 SERIAL PORTS.....	17
3.5 KEYBOARD CONNECTOR .....	18
3.6 USB PORT CONNECTOR.....	18
3.7 IRDA INFRARED INTERFACE PORT .....	19
3.8 LAN RJ45 CONNECTOR .....	19
3.9 FAN CONNECTOR.....	20
3.10 AUDIO CONNECTORS .....	20
3.11 COMPACT FLASH STORAGE CARD SOCKET .....	21
3.12 EXTERNAL SWITCHES AND INDICATORS .....	22
<b>AMI BIOS SETUP .....</b>	<b>23</b>
4.1 INTRODUCTION .....	23
4.2 STARTING SETUP.....	23
4.3 USING SETUP.....	24
4.4 MAIN MENU.....	25
4.5 STANDARD CMOS SETUP SELECTIONS.....	28
4.6 ADVANCED CMOS SETUP SELECTIONS .....	30
4.7 ADVANCED CHIPSET SETUP SELECTIONS.....	35
4.8 POWER MANAGEMENT SETUP SELECTIONS .....	37
4.9 PCI / PLUG AND PLAY SETUP SELECTIONS .....	40
4.10 PERIPHERAL SETUP SELECTIONS .....	42

4.11	HARDWARE MONITOR SETUP SELECTIONS .....	44
<b>APPENDIX A.</b>	<b>WATCHDOG TIMER .....</b>	<b>45</b>
<b>APPENDIX B.</b>	<b>ADDRESS MAPPING .....</b>	<b>47</b>
IO	ADDRESS MAP.....	47
1ST MB	MEMORY ADDRESS MAP.....	48
IRQ	MAPPING TABLE .....	48
DMA	CHANNEL ASSIGNMENTS .....	48
<b>APPENDIX C.</b>	<b>AGP SLOT.....</b>	<b>49</b>

# Chapter 1. Introduction

Welcome to SAGP-4620E SOCKET 462 AMD Duron™ & Athlon(XP)™ Single Board Computer. SAGP-4620E is a PSB form factor board, which works with high performance processor and comes equipped with advanced multi-mode I/O, designed for system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, SAGP-4620E's onboard VIA KT400A chip features built-in AGP8X capability.

An advanced high performance super AT I/O chip – Winbond W83697HF is used in the SAGP-4620E board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

SAGP-4620E's built-in VT8235 has 10/100 Fast Ethernet LAN capability. It's fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and low power features.

SAGP-4620E uses the advanced VIA VT8235 Chipsets that is a 100% software-compatible chipset with PCI 2.2 standard.

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## 1.1 Specifications

CPU(PGA 462)	AMD Duron™ & Athlon(XP)™, supports 200/266/333 MHz FSB.
Bus interface	PCIAGP golden finger, but only PCI signal are provided.
Bus speed	PCI: 33MHz.
DMA channels	7.
Interrupt levels	15.
Chipset	VIA KT400A.
Real-time clock	VIA VT8235.
System memory	Two 184-pin DIMM socket support DDR 200/266/333/400 SDRAM supporting up to 2GB. Note: To achieve optimal performance, we suggest that the memory clock should be the same as CPU clock.
ATA/133 IDE interface	Up to four PCI Enhanced IDE hard drives. The ATA/133 IDE can handle data transfer up to 133MB/s. Backward-compatible with existing ATA-2 IDE specifications so there is no need to do any changes for users' current peripherals.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB).
Serial ports	COM1 (RS-232) & COM2 (RS-232) with 16C550 UART (or compatible) with 16-byte FIFO buffer. Supports up to 115.2Kbps. Ports can be individually configured to be COM1, COM2 or disabled.
Bi-directional parallel port	Configurable to LPT1, LPT2, LPT3 or disabled. Supports EPP/ECP/SPP.
Hardware monitor	Built-in to monitor power supply voltage and fan speed status.
IrDA port	Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface.

USB port	Supports 6 USB2.0 ports for future expansion.
Watchdog timer	Software-programmable. Reset generated when CPU does not periodically trigger the timer. You can use BIOS routine INT15 to control the watchdog and generate a system reset.
AGP controller	AGP v3.0 compliant with 8x transfer mode.
Ethernet	VT8235 Fast Ethernet controllers, IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. One RJ45 connector is located on the mounting bracket.
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connector are also available on board.
Audio	VT1612A for AC97 2.1 compliant.
Compact flash	It can be used with a passive adapter (True IDE Mode) in a Type I/II Socket.
Power consumption	(Athlon (XP) <sup>TM</sup> : 2.5+GHz, 512MB DDR333 with GeForce4 Ti4200) +5V @ 19.5A ,+12V @ 0.95A,-12V@0.2A Recommended : 300-watt or higher output power supply.(+5V need 30A)
Operating temperature	0° ~ 60° C (*CPU needs Cooler & silicone heat sink compound*)

**WARNING !**

1. Never run the processor without heat sink (Cooler) properly and firmly attached.
2. The duration between power-off and next power-on should be greater than 5 seconds for normal operation.
3. While selecting a backplane, please obtain one that support AGP8X standard.
4. As CN3 is reserved to support CPUs that requires large power consumption so we suggest users not to set this when system is in normal operation.

---

## 1.2 Package Contents

The SAGP-4620E package includes the following items:

- One SAGP-4620E Single Board Computer
- One FDD cable
- One ATA/66 IDE cable
- One 6-pin Mini-Din converts to two 6-pin mini-Din cables for keyboard and mouse connection
- One Printer Cable & RS232 serial ports Cable with bracket
- One Audio Cable
- One Driver CD
- Quick installation guide

If any of these items are missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.



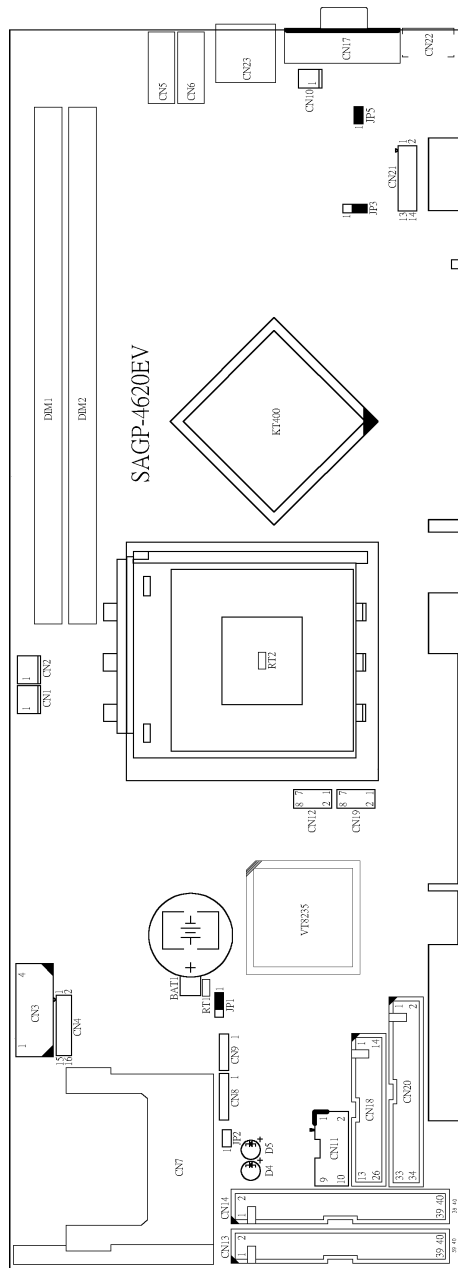
## Chapter 2. Installation

This chapter describes how to install the SAGP-4620E. At first, the layout of SAGP-4620E is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the SAGP-4620E's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

---

### 2.1 SAGP-4620E's Layout

<This area is intentionally left blank. Please turn to the next page for layout diagram.>



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## 2.2 Clear CMOS Setup

If you want to clear the CMOS Setup data (for example, you forgot the password and you need to clear the setup data then set the password again), you should close the JP1 (set the jumper to 2-3) about 3 seconds, then open again, thus the system will be set back to normal operation mode. Just keep the jumper to 1-2 for normal operation.

- **JP1: Clear CMOS Setup**

JP1	DESCRIPTION
1-2	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

---

## 2.3 Compact Flash Card Master/Slave Mode Setting

- **JP2: Master/Slave Mode Setting**

JP2	DESCRIPTION
OPEN	SLAVE
SHORT	MASTER

---

## 2.4 Setting the CPU of SAGP-4620E

- **JP3: CPU FSB 200/266/333MHz Setting**

JP3	DESCRIPTION
200MHz	2-3
266MHz	open
333MHz	1-2

---

## 2.5 Setting the Power Type of SAGP-4620E

- **JP5: Power Type Setting**

<b>JP5</b>	<b>DESCRIPTION</b>
<b>ON</b>	<b>ATX</b>
<b>OFF</b>	AT

## Chapter 3. Connection

This chapter describes how to connect peripherals, switches and indicators to the SAGP-4620E board.

- **Table of Connectors**

<b>LABEL</b>	<b>FUNCTION</b>
CN20	Floppy Disk Drive Connector
CN14	Primary IDE Connector
CN13	Secondary IDE Connector
CN18	Parallel Port Connector
CN17,CN11	Serial Port Connectors
CN22	PS/2 MOUSE & KEYBOARD Connector
CN5,CN6, CN19,CN12	USB Connectors
CN8	IrDA connector
CN23	LAN RJ45 Connectors
CN1,CN2	Fan Connectors
CN4	AUDIO Connector
CN9	CD-IN Connector
CN7	Compact Flash Socket
CN21	External Switches and Indicators
CN10	ATX BUTTON (Power ON) Switch
CN3	Power 5V/12V(MOLEX.A-8981-4V).
D5	Power LED

---

### 3.1 Floppy Disk Drive Connector

SAGP-4620E board has a 34-pin daisy-chain driver connector cable.

• **CN20: FDC CONNECTOR**

<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	N/C	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

---

## 3.2 Ultra ATA33/66/100/133 IDE Disk Drive Connector

You can attach two IDE (Integrated Device Electronics) hard disk drives to each of the SAGP-4620E IDE connectors.

- **CN14 / CN13: Primary / Secondary IDE Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	REQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IORDY	28	BALE - DEFAULT
29	ACK	30	GROUND
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

---

### 3.3 Parallel Port

This port is usually connected to a printer. SAGP-4620E includes an on-board parallel port accessed through a 26-pin flat-cable. Three modes – SPP, EPP and ECP – are supported.

• **CN18: Parallel Port Connector**

<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	STROBE#	14	AUTO FORM FEED #
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT LN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND
13	PRINTER SELECT	26	N/C



---

## 3.4 Serial Ports

SAGP-4620E offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

- **CN17: COM1 DB-9 Connector**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

- **CN11: COM2 10-pin Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)	2	DATA SET READY (DSR)
3	RECEIVE DATA (RXD)	4	REQUEST TO SEND (RTS)
5	TRANSMIT DATA (TXD)	6	CLEAR TO SEND (CTS)
7	DATA TERMINAL READY (DTR)	8	RING INDICATOR (RI)
9	GROUND	10	NC

---

## 3.5 Keyboard Connector

SAGP-4620E provides a 6-PIN keyboard/mouse connector.

- **CN22: 6-pin Mini-DIN Keyboard/Mouse Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

---

## 3.6 USB Port Connector

SAGP-4620E provides 6 built-in USB2.0 ports for future I/O bus expansion.

- **CN5(USB1) & CN6(USB2):single port**

PIN No.	DESCRIPTION
1.	VCC
2.	DATA-
3.	DATA+
4.	GROUND

- **CN19(USB3) & CN12(USB4):dual port**

Provides two sets (pins 1/3/5/7 and 2/4/6/8) of USB connectors.

PIN No.	DESCRIPTION	PIN No.	DESCRIPTION
<b>Port 1</b>		<b>Port 2</b>	
1	VCC	2.	GROUND
3	DATA-	4.	DATA+
5	DATA+	6.	DATA-
7	GROUND	8.	VCC

---

### 3.7 IrDA Infrared Interface Port

SAGP-4620E has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. When used, the IrDA port has to be set to SIR or ASKIR model in the BIOS's Peripheral Setup's COM 2. At the same time the normal RS-232 COM2 will be disabled.

- **CN8: IrDA connector**

PIN NO.	DESCRIPTION
1	VCC5V
2	CIR-RX
3	IR-RX
4	Ground
5	IR-TX

---

### 3.8 LAN RJ45 Connector

SAGP-4620E is equipped with a built-in 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignment is as follows:

- **CN23: LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C

---

### 3.9 Fan Connector

SAGP-4620E provides three CPU cooling fan connectors, which supply 12V/500mA.

- **CN1 / CN2: CPU Fan Connector**

PIN NO.	DESCRIPTION
3	Sensor
2	12V
1	Ground

---

### 3.10 Audio Connectors

SAGP-4620E has an onboard AUDIO AC97 chipset (VIA VT1612A) that connects input and output devices through pin-headers (CN4).

- **CN4: Audio Connector (2x8\_2.00mm)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	AMPOUT_R	2	GROUND
3	AMPOUT_L	4	GROUND
5	LINEOUT_R	6	LINEOUT_L
7	GROUND	8	GROUND
9	LINEIN_R	10	LINEIN_L
11	GROUND	12	GROUND
13	N/C	14	N/C
15	MIN_IN	16	GROUND

- **CN9 : CD-IN**

PIN NO.	DESCRIPTION
1	CD LEFT SIGNAL
2	GROUND
3	GROUND
4	CD RIGHT SIGNAL

---

### 3.11 Compact Flash Storage Card Socket

SAGP-4620E configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

• **CN7: Compact Flash Storage Card Socket pin assignment**

<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	N/C
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

---

## 3.12 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are integrated in CN2 connector.

- **CN21: Multi Panel**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	POWER-LED +	2	SPEAKER -
3.	POWER-LED -	4	N/C
5.	GROUND	6	N/C
7.	N/C	8	SPEAKER +5V
9.	HDD LED+	10	RESET SW
11.	HDD LED -	12	RESET SW GND

- **CN10: ATX Power Switch Connector**

PIN NO.	DESCRIPTION
1	PWR_BUTTON+
2	PWR_BUTTON-

- **CN3: Power Connector (for CPU)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	GND	4	+5V

- **D5: POWER LED**

Green	POWER OK
-------	----------

## Chapter 3. AMI BIOS Setup

---

### 4.1 Introduction

This chapter discusses the Setup program written in the BIOS. It will give you a step-by-step guidance to configure your system. The user-defined configuration is then stored in battery-backed CMOS RAM, which retains the customized information while the power is off.

---

### 4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears at the bottom of the screen during POST (Power On Self-Test):

**DEL: Setup F11: Boot Menu F12: Network boot**

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

**Press F1 to RUN SETUP**

**Press F2 to load default values and continue**

---

## 4.3 Using Setup

In general, you can use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

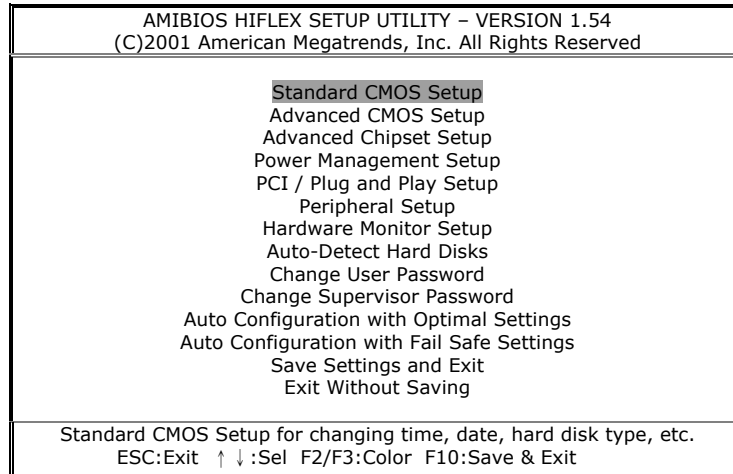
Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and save no changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F2/F3 key	BIOS Display Color
F10 key	Save all the CMOS changes and exit



---

## 4.4 Main Menu

Once you enter the AMIBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to go through the items and press <Enter> to accept and enter the sub-menu.



**Figure 1: The Main Menu**

Note that a brief description of each highlighted selection appears at the bottom of the screen.

#### 4.4.1 Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

- **Standard CMOS Setup:**  
Standard CMOS Setup to change time, date, hard disk type, etc.
- **Advanced CMOS Setup:**  
Advanced CMOS Setup to configure system options.
- **Advanced Chipset Setup:**  
Advanced Chipset Setup to configure chipset features.
- **Power Management Setup:**  
Power Management Setup to configure power management features.
- **PCI / Plug and Play Setup:**  
Configures PCI / Plug and Play features.
- **Peripheral Setup:**  
Configures peripheral features.
- **Hardware Monitor Setup:**  
Configures hardware monitor features.
- **Auto-Detect Hard Disks:**  
Selecting these options allow the user to configure the drive named in the option. Select Auto-Detect Hard Disks to allow AMIBIOS to automatically configure the drive. A list of drive parameters the appears on the screen.
- **Change User Password:**  
Change the user password.
- **Change Supervisor Password:**  
Change the supervisor password.

- **Auto Configuration with Optimal Settings:**  
Load configuration settings that ensure the highest performance.
- **Auto Configuration with Fail Safe Settings:**  
Load fails-afe configuration settings.
- **Save Settings and Exit:**  
Write the current settings to CMOS and exit.
- **Exit Without Saving:**  
Exit without saving the current settings.

## 4.5 Standard CMOS Setup Selections

AMIBIOS SETUP – STANDARD CMOS SETUP	
(C)2001 American Megatrends, Inc. All Rights Reserved	
Date (mm/dd/yyyy): Tue Mar 19, 2002	Base Memory: 639 KB
Time (hh/mm/ss) : 17:18:10	Extd Memory: 511 MB
Floppy Drive A: Not Installed	
Floppy Drive B: Not Installed	
	LBA Blk PIO 32Bit Type
Size Cyln Head WPcom Sec Mode Mode Mode	
Pri 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 ↑ ↓ :Sel
Day: 01 – 31	PgUp/PgDn:Modify
Year: 1980 – 2099	F1:Help F2/F3:Color

**Figure 2:Standard CMOS Setup**

- **Date(mm/dd/yyyy)**  
Set the system date.
- **Time(hh/mm/ss)**  
Set the system time.
- **Floppy A, B**  
Move the cursor to these fields and select the floppy type.
- **Primary/Secondary Master/Slave LBA Mode**  
LBA(Logical Block Addressing) is a new IDE HDD access method to developed to overcome the 528-megabyte capacity bottleneck. If your IDE hard disk capacity is greater than 528MB, AMIBIOS can enable this LBA mode feature. The option is only for Primary Master IDE LBA mode.
- **Primary/Secondary Master/Slave Block Mode**  
If your hard disk drive supports IDE block transfer mode, enable this option for a faster IDE hard disk drive transfer rate. The option is only for Primary Master Block mode.

- **Primary/Secondary Master/Slave PIO Mode**

This option enables Primary Master IDE PIO mode on the IDE, which can set proper cycle timings. The cycle timing between the IDE PIO mode value and IDE cycle timing is shown below :

Mode 0 -> Timing ( 600ns ) Mode 1 -> Timing ( 383ns )  
Mode 2 -> Timing ( 240ns ) Mode 3 -> Timing ( 180ns )  
Mode 4 -> Timing ( 120ns ) Mode 5 -> Timing ( 60ns )
- **Primary/Secondary Master/Slave 32Bit Mode**

This option enables Primary Master IDE 32-bit data transfers on the IDE data port. If disabled, 16-bit data transfer is used by the BIOS. 32-bit data transfers can only be enabled if IDE prefetch mode is also enabled.
- **Boot Sector Virus Protection**

When this option is enabled, AMIBIOS issues a warning when any program or virus issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The settings are Disabled, Enabled.
- **Base/Extd Memory**

Displays the amount of conventional/extended memory detected during boot up.

## 4.6 Advanced CMOS Setup Selections

AMIBIOS SETUP – ADVANCED CMOS SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Quick Boot	Enabled	Available Options: Disabled > Enabled
1st Boot Device	Disabled	
2nt Boot Device	Disabled	
3rd Boot Device	Disabled	
Try Other Boot Devices	Yes	
Boot From LAN	Enabled	
Floppy Access Control	Read-Write	
Hard Disk Access Control	Read-Write	
S.M.A.R.T. for Hard Disks	Disabled	
BootUP Num-Lock	On	
Floppy Drive Swap	Disabled	
Floppy Drive Seek	Disabled	
PS/2 Mouse Support	Enabled	
System Keyboard	Absent	
Primary Display	VGA/EGA	
Password Check	Setup	
Boot To OS/2	No	
L1 Cache	Enable	
L2 Cache	Enable	
System BIOS Cacheabled	Enable	
C000 32K Shadow	Cached	
C800 16K Shadow	Disabled	
CC00 16K Shadow	Disabled	
D000 16K Shadow	Disabled	
D400 16K Shadow	Disabled	
D800 16K Shadow	Disabled	
DC00 16K Shadow	Disabled	
		ESC:Exit ↑ ↓ :Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

**Figure 3:Advance CMOS Setup**

- Quick Boot**  
 When Quick Boot is selected, DRAM testing function will be disabled.
- 1st Boot Device**  
 This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes.The settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, SCSI.

- **2nd Boot Device**  
This option sets the type of device for the second boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM.
- **3rd Boot Device**  
This option sets the type of device for the third boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM.
- **Try Other Boot Devices**  
Set this option to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, 4th Boot Device options. The settings are Yes or No.
- **Floppy Access Control**  
This option specifies the read/write access that is set when booting from a floppy drive.
- **Hard Disk Access Control**  
This option specifies the read/write access that is set when booting from a hard disk drive.
- **S.M.A.R.T. for Hard Disks**  
Self-Monitoring, Analysis and Reporting Technology. This option can help the BIOS to warn the user of a possible device failure and give the user a chance to back up the device before the failure actually happens. The settings are Auto, Disabled, Enabled.
- **Floppy Drive Swap**  
Set this option to Enabled to permit drives A: and B: to be swapped. Configuration options : Enabled or 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 Enabled or Disabled.
- **BootUp Num-Lock**  
When this option is selected, Num Lock is turned off when the system is powered on so the user can use the arrow keys on both the numeric keypad and the keyboard.
- **PS/2 Mouse Support**  
When this option is enabled, BIOS supports a PS/2- type mouse.
- **System Keyboard**  
This option does not specify if a keyboard is attached to the computer. Rather, it specifies if error messages are displayed if a keyboard is not attached. This option permits you to configure workstation with no keyboard. The settings are Absent, Present.
- **Primary Display**  
Select this option to configure the type of monitor attached to the computer. The settings are Monochrome, Color 40x25, Color 80x25, VGA/PGA/EGA, or Not Install.
- **Password Check**  
This item allows you Setup/Always Password Check.
- **Boot To OS/2**  
Set this option to Enabled if running OS/2 operating system and using more than 64MB of system memory on the motherboard. The settings are Disabled or Enabled.
- **L1 Cache**  
The option Disabled/Enabled the internal cache memory in the processor.



- **L2 Cache**  
The option Disabled/Enabled the secondary cache memory.
- **System BIOS Cacheable**  
When this option is set to enabled, the System ROM area from F0000-FFFFF is copied (shadowed) to the RAM for faster execution.
- **C000,32k Shadow**  
When this option is set to enabled, the Video ROM area from C0000-C7FFF is copied (shadowed) to the RAM for faster execution.  
Disabled: The contents of the video ROM are not copied to the RAM.  
Cached: The contents of the video ROM area from C0000h – C7FFFh are copied from the ROM to the RAM and can be written to or read from the cache memory.  
Enabled: The contents of the video ROM area from C0000h – C7FFFh are copied(shadowed) from the ROM to the RAM for faster execution.
- **C800,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.
- **CC00,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

- **D000,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.
- **D400,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.
- **D800,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.
- **DC00,16k Shadow**  
These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

## 4.7 Advanced Chipset Setup Selections

AMIBIOS SETUP – ADVANCED CHIPSET SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
***** DRAM Timing *****		Available Options: Disabled > Enabled
Configure SDRAM Timing by SPD	Enabled	
SDRAM Frequency	Auto	
SDRAM CAS# Latency	2.5	
SDRAM Bank Interleave	Disabled	
SDRAM Burst Length	4 QW	
SDRAM Command Rate	2T	
Fast Command	Normal	
AGP Fast Write	Enabled	
AGP Aperture Size	64MB	
AGP Master 1 W/S Write	Disabled	
AGP Master 1 W/S Read	Disabled	
AGP Read Synchronization	Disabled	
APIC Interrupt Mode	Disabled	
MPS Revision	1.1	
PCI Delay Transaction	Enabled	
USB Controller	6 USB Ports	
USB Device Legacy Support	Disabled	
		ESC:Exit ↑ ↓ :Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

Figure 4: Advanced Chipset Setup

- Configure SDRAM Timing by SPD**  
 This sets the optimal timings for items "SDRAM Refresh", "SDRAM Cycle time", "CAS# Latency", "RAS to CAS delay" and "SDRAM RAS# Precharge", depending on the memory modules that you are using.
- SDRAM Frequency**  
 This field displays the capability of the memory modules that your system memory frequency.
- SDRAM CAS# Latency**  
 This controls the latency between the SDRAM read command and the time that the data actually becomes available.
- AGP Aperture Size**  
 This feature allows you to select the size of mapped memory for AGP graphic data.

- **USB Controller**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

- **USB Device Legacy Support**

This motherboard support Universal Serial Bus (USB) devices. If detected, USB controller legacy mode will be enabled. If not detected, USB controller legacy mode will be disabled.

## 4.8 Power Management Setup Selections

AMIBIOS SETUP – POWER MANAGEMENT SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
<b>ACPI Aware O/S</b>	Yes	Available Options: No > Yes
USB Device wakeup Function	Enabled	
Power Management/APM	Enabled	
Video Power Down Mode	Disabled	
Hard Disk Power Down Mode	Disabled	
Standby Time Out (Minute)	Disabled	
Suspend Time Out (Minute)	Disabled	
Throttle Slow Clock Ratio	50%-56.25%	
Display Activity	Ignore	
IRQ3	Monitor	
IRQ4	Monitor	
IRQ5	Ignore	
IRQ7	Monitor	
IRQ9	Ignore	
IRQ10	Ignore	
IRQ11	Ignore	
IRQ13	Ignore	
IRQ14	Monitor	
IRQ15	Ignore	
System Thermal	Disabled	
Thermal Active Temperature	65°C/149°F	
Thermal Slow Clock Ratio	50%-56.25%	
Power Button Function	ON/Off	
Restore on AC/Power Loss	Power On	
Resume On Ring	Disabled	
Resume On LAN	Disabled	
Resume On PME#	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	30	
		ESC:Exit ↑ ↓:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

**Figure 5: Power Management Setup**

- **ACPI Aware O/S**  
This feature is switch of ACPI function(S1).
- **USB Device Wakeup Function**  
This option set to "Enabled", using USB Device can wake up system, when system entry to S3 mode.

- **Power Management/APM**  
Set this option to Enabled to run APM (Advanced Power Management).
- **Video Power Down Mode**  
Set this option to Enabled to allow the Video adapter and Monitor to be powered down by BIOS.
- **Hard Disk Power Down Mode**  
Set this option to Enabled to allow the IDE drive to be powered down by BIOS.
- **Standby Time Out (Minute)**  
This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state.
- **Suspend Time Out (Minute)**  
This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state.
- **Power Button Function**  
This option specifies how the power button mounted externally on the computer chassis is used.
- **Resume On Ring**  
Ring Resume From Soft Off
- **Resume On LAN**  
LAN Resume From Soft Off
- **Resume On PME#**  
PME# Resume From Soft Off
- **Resume On RTC Alarm**  
When this option is set enabled, system will according to you set time then wakeup from soft off mode.

- **RTC Alarm Date**  
You can set time for date.
- **RTC Alarm Hour**  
You can set time for hour.
- **RTC Alarm Minute**  
You can set time for minute.
- **RTC Alarm Second**  
You can set time for second.

## 4.9 PCI / Plug and Play Setup Selections

AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options: No > Yes
Clear NVRAM	No	
PCI Latency Timer (PCI Clocks)	32	
Primary Graphics Adapter	PCI	
PCI VGA Palette Snoop	Disabled	
Allocate IRQ to PCI VGA	Yes	
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	PCI/PnP	
IRQ3	PCI/PnP	
IRQ4	PCI/PnP	
IRQ5	PCI/PnP	
IRQ7	PCI/PnP	
IRQ9	PCI/PnP	
IRQ10	PCI/PnP	ESC:Exit ↑ ↓ :Sel
IRQ11	PCI/PnP	PgUp/PgDn:Modify
IRQ14	PCI/PnP	F1:Help F2/F3:Color
IRQ15		

**Figure 6: PCI / Plug and Play Setup**

- Plug and Play Aware O/S**  
 If enable, BIOS will configure only PnP ISA boot devices(i.e. all PnP ISA cards which has boot flag set). And PnP aware OS will configure all other devices. If disable, BIOS will configure all devices.
- Clear NVRAM**  
 When this option is set to Yes, system can auto clear NVRAM.
- PCI Latency Timer (PCI Clocks)**  
 This option specifies the latency timings(in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are 32, 64, 96, 128, 160, 192, 224, or 248.



- **PCI VGA Palette Snoop**

If enable, PCI will allow VGA palette signals to go to the ISA bus.

- **Allocate IRQ to PCI VGA**

Set this option to Yes to allocate an IRQ to the VGA device on the PCI bus. The settings are Yes or No.

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

The option allow you to specify the bus type used by each DMA channel. The settings are PnP or ISA/EISA.

- **IRQ3/4/5/7/9/10/11/14/15**

The option specify the bus that the specified IRQ line is used on. The option allow you to reserve IRQs for legacy ISA adapter cards. The option determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use the option to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are confogured as PCI/PnP.

## 4.10 Peripheral Setup Selections

AMIBIOS SETUP – PERIPHERAL SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Enabled	Available Options: Disabled > Enabled
OnBoard Serial PortA	3F8/COM1	
OnBoard Serial PortB	2F8/COM2	
Serial PortB Mode	Normal	
IR Pin Select	IRRX/IRIX	
OnBoard Parallel Port	378	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port IRQ	7	
Parallel Port DMA Channel	N/A	
OnBoard IDE	Both	
OnBoard LAN	Enabled	
OnBoard LAN P.M.E	Enabled	
OnBoard AC'97 Audio	Enabled	
		ESC:Exit ↑ ↓ :Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

**Figure 7: Peripheral Setup**

- **OnBoard FDC**  
Set this option to Enabled to enable the floppy drive controller on the motherboard. The settings are Auto (AMIBIOS automatically determines if the floppy controller should be enabled), Enabled, or Disabled.
- **OnBoard Serial PortA/B**  
This option specifies the base I/O port address of serial port A. The settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, or 3E8h.
- **OnBoard Parallel Port**  
This option specifies the base I/O port address of parallel port on the motherboard. The settings are Disabled, 378h, 278h, or 3BCh.

- **Parallel Port Mode**

This option specifies the parallel port mode. The settings are Normal, Bi-Dir, EPP, ECP.

Normal : The normal parallel port mode is used.

Bi-Dir : Use this setting to support bidirectional transfers on the parallel port.

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 bidirectional 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 data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bidirectional communication.

- **Parallel Port IRQ**

This option specifies the IRQ used by the parallel port. The settings are Auto, (IRQ)5, (IRQ)7.

- **Parallel Port DMA Channel**

This option is only available if the setting for the Parallel Port Mode option is ECP. This option sets the DMA channel used by the parallel port. The settings are DMA Channel 0, 1, or 3.

- **OnBoard IDE**

This option specifies the IDE channel used by the onboard IDE controller

The settings are Disabled, Primary, Secondary.

## 4.11 Hardware Monitor Setup Selections

AMIBIOS SETUP – HARDWARE MONITOR SETUP	
(C)2001 American Megatrends, Inc. All Rights Reserved	
- = System Hardware Monitor = -	
Vcore	1.696 V
+ 3.300V	3.349 V
+ 5.000V	5.070 V
+12.000V	12.046 V
-12.000V	-11.978 V
Fan_2(CN2) Speed	0 RPM
Fan_1(CN1) Speed	6300 RPM
System Temperature	29°C/84°F
CPU Temperature	31°C/87°F
ESC:Exit ↑ ↓:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color	

**Figure 8: Hardware Monitor Setup**

This setup helps users monitor the SAGP-4620E board on board system voltage and fan speed. The function is implemented by on board W83697HF chip. The voltage monitoring will cover V core,+3.3V,+5V,+12V and +12V. And there is one fan connector for CPU fan.

## Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

### INT 15H :

<b>AH - 6FH</b>
<u>Sub-function:</u>
<b>AL - 2</b> : Set the Watchdog Timer's period
<b>BL</b> : Time-out value(the time unit--second, is dependent on the item "Watchdog Timer unit (selected in BIOS setup).

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. When the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

**A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.**

---

*Note: when exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.*

---

### **Example Program:**

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:
    MOV    AX, 6F02H    ;setting the time-out value
    MOV    BL, 30      ;time-out value is 48 seconds
    INT    15H
;
; ADD YOUR APPLICATION PROGRAM HERE
;
    CMP    EXIT_AP, 1  ;is your application over?
    JNE    W_LOOP     ;No, restart your application

    MOV    AX, 6F02H   ;disable Watchdog Timer
    MOV    BL, 0
    INT    15H
;
; EXIT
```

## Appendix B. Address Mapping

---

### IO Address Map

<b>I/O address Range</b>	<b>Description</b>
000-CF7	DMA Controller
040-043	System timer
060-060	Keyboard Controller
061-061	System speaker
064-064	Keyboard Controller
070-071	Real time Clock
081-08F	DMA Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
170-177	Secondary IDE Channel
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2
376-376	Secondary IDE Channel
378-37F	Parallel Printer Port 1
3B0-3DF	AGP Controller
3F2-3F7	Diskette Controller
3F6-3F6	Primary IDE Channel
3F8-3FF	Serial Port 1

---

## 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

\*Default setting

---

## IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Cascade to IRQ Controller	IRQ10	Available
IRQ3	COM2	IRQ11	Usb/Lan/Audio
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

---

## DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk ( 8-bit transfer )
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available



## **Appendix C. AGP slot**

This CPU Card has an Accelerated Graphics Port (AGP) slot that supports +1.5V AGP card. When you buy an AGP card, make sure that you ask for one with +1.5V specification. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your ICP CPU card.