

SAGP-845EV

User Manual

Version 2.0

**SOCKET 478 PENTIUM 4/4-M
with
10/100 Ethernet LAN & AGP4X VGA SBC**

March 1, 2004



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Chapter 1 Introduction

SAGP-845EV is a PSB form factor board to work with a high performance processor. It is equipped with advanced multi-mode I/O, and designed for system manufacturers, integrators, or VARs who want to provide reliable and quality performance at a reasonable price.

In addition, SAGP-845EV's onboard Intel 845G MGCH chip features built-in AGP4X capability which provides 3D graphics of up to 2048x1536x16-bit-color resolution. The onboard VGA shares 8MB system DDR-SDRAM.

An advanced high performance super AT I/O chip – ITE IT8712 is used in the SAGP-845EV board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

SAGP-845EV's built-in ICH4 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-845EV uses the advanced Intel 845G Chipsets that is a 100% software-compatible chipset with PCI 2.2 standard.

This PIAGP CPU card must be installed on IEI PCIAGP/PXAGP series backplanes. If onboard ISA interface is required, please be sure to install PISA-KIT01 daughter board on the specific socket on the backplane before ISA cards are installed to make sure the system works properly.

1.1 Specifications

CPU (PGA 478)	Intel Pentium 4/4-M Processor, supports 400/533 MHz FSB
Bus interface	PCIAGP golden finger, but only AGP/PCI signal is provided
Bus speed	PCI: 33MHz
DMA channels	7
Interrupt levels	15
Chipset	INTEL 845G/GE/82801DB (ICH4)
Real-time clock	INTEL 82801DB (ICH4)
System memory	Two 184-pin DIMM sockets support DDR 200/266/333(845GE) SDRAM up to 1GB.
ATA/100 IDE interface	<ul style="list-style-type: none">– Up to four PCI Enhanced IDE hard drives– Can handle data transfer up to 100Mbps– Backward-compatible with existing ATA-2 IDE specifications so there is no need to do any changes to 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	<ul style="list-style-type: none">– COM1 (RS-232) & COM2 (RS-232) with 16C550 UART (or compatible) with 16-byte FIFO buffer– Data transfer up to 115.2Kbps– Each port 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	Monitors power supply voltage and fan speed status
IrDA port	Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface
USB port	Supports 4 USB2.0 ports for future expansion
Watchdog timer	<ul style="list-style-type: none"> – Programmable – Reset generated when CPU does not periodically trigger the timer – The BIOS routine INT15 can be used to control the watchdog and generate a system reset
VGA controller	<ul style="list-style-type: none"> – Built-in AGP2.0 4X 3D graphics engine – Share system DDR SDRAM 8M – Screen Resolution: up to 2048x1536x16 bit
Ethernet	<ul style="list-style-type: none"> – ICH4 Fast Ethernet controller, IEEE 802.3u Auto-Negotiation support for 10BASET/100BASE-TX standard – One RJ45 connector is located on the mounting bracket
Keyboard and PS/2 mouse connector	<ul style="list-style-type: none"> – A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. – For alternative applications, a keyboard and a PS/2 mouse pin header connectors are also available on board.
Audio	<ul style="list-style-type: none"> – CMI8738LX supports 6CH DAC for AC3 5.1 channel purpose – HRTF-based positional audio, support Directsound 3D and A3D interface
Compact flash	It can be used with a passive adapter (True IDE Mode) in a Type I/II Socket.
Power consumption	<ul style="list-style-type: none"> – (PENTIUM 4: 2GHz, 1GB PC2100 DDR SDRAM) +5V @ 4.46A, +12V @ 6.55A. – (PENTIUM 4-M: 2.5GHz, 512MB PC2100 DDR SDRAM) +5V @ 4A, +12V @ 3A. <p>Recommended: 350-watt or higher output power supply</p>
Operating temperature	0° ~ 60° C (*CPU needs Cooler & silicone heat sink compound*)

WARNING!

1. Never run the processor without a heat sink (Cooler) properly and firmly attached.
2. Please use ATX-12V power connector (PW2) to provide power to the CPU.

1.2 Package Contents

- SAGP-845EV single board computer x 1
- FDD cable x 1
- ATA/100 IDE cable x 1
- ATX-12V cable x 1
- PS/2 Y splitter cables for keyboard and mouse connection x 1
- Printer cable with bracket x 1
- RS-232 serial ports cable with bracket x 2
- Audio cable with bracket x 1
- Installation Guide CD (user manual included) x 1
- Quick Startup Reference x 1

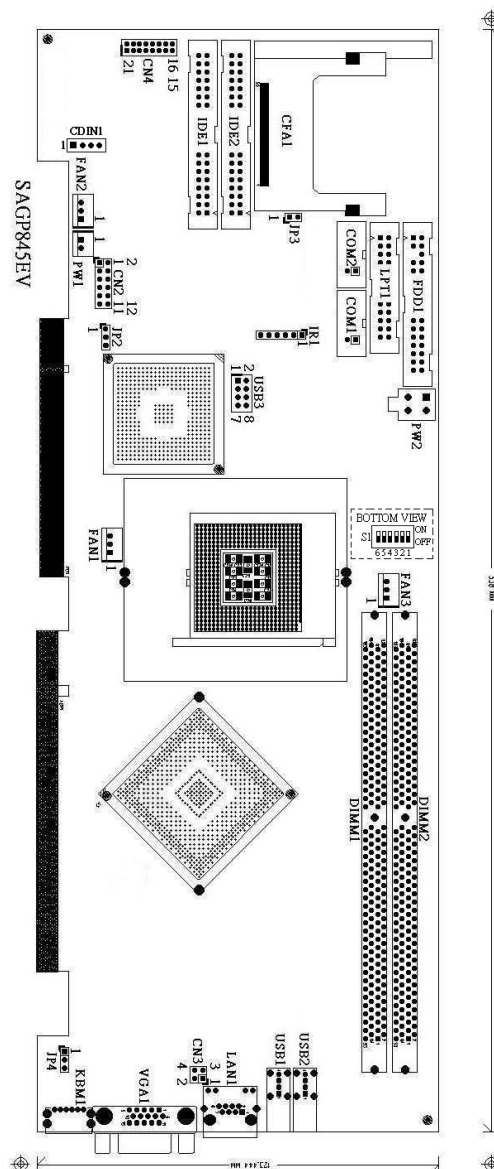
If any of these items are missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

Chapter 2 Installation

This chapter describes how to install the SAGP-845EV. At first, the layout of SAGP-845EV is shown, and the unpacking information that you should be careful with is described. The jumpers and switch settings for the SAGP-845EV 's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

2.1 SAGP-845EV Layout

- Layout



2.2 Clear CMOS Setup

If the user wants to clear the CMOS Setup data (for example, the user forgot the password and needed to clear the setup data then set the password again), the user should close the JP2 (set the jumper to 2-3) about 3 seconds, then open it again. For normal operation, set the jumper to 1-2 or open JP2.

- **JP2: Clear CMOS Setup**

JP2	Description
1-2	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

2.3 Keyboard Power Selection

This board can support keyboard wakeup. If the user wants to use this function, the keyboard has to be supplied with standby 5V by setting the jumper to 2-3.

- **JP4: Keyboard Power Selection**

JP4	Description
1-2	VCC
2-3	5VSB

2.4 Compact Flash Card Master/Slave Mode Setting

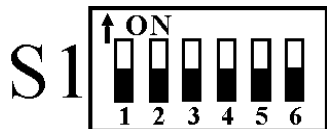
- **JP3: Master/Slave Mode Setting**

JP3	Description
OPEN	SLAVE
SHORT	MASTER

2.5 CPU Voltage Setting

SAGP-845EV can use two different types of CPU. One is Pentium4 CPU model and the other is Pentium4-M CPU.

While using Pentium4 CPU, please turn OFF 1, 2, 3, 4, 5, and 6 of S1 switch. CPU VID will now automatically configure the power of CPU (Default).



When using Pentium4-M CPU, turn ON 1,4,6 of S2 switch, and turn OFF 2, 3, 5. The power of CPU will be set to 1.3V at this time.



Chapter 3 Connection

This chapter describes how to connect peripherals, switches and indicators to the SAGP-845EV board.

Table of Connectors

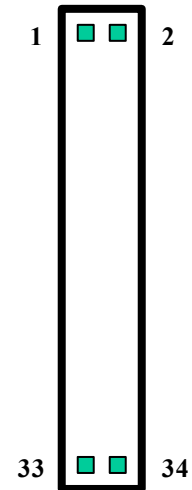
Label	Function
FDD1	Floppy Disk Drive Connector
IDE1	Primary IDE Connector
IDE2	Secondary IDE Connector
LPT1	Parallel Port Connector
COM1, COM2	Serial Port Connectors
KBM1	PS/2 MOUSE & KEYBOARD Connector
USB1~USB3	USB Connectors
IR1	IrDA connector
FAN1~FAN3	Fan Connectors
LAN1	LAN RJ45 Connectors
CN3	LAN Status LED Connectors
VGA1	VGA 15-pin Female Connector
CN4	AUDIO Connector
CFA1	Compact Flash Socket
CN2	External Switches and Indicators
PW1	ATX BUTTON (Power ON) Switch
PW2	ATX-12V CPU Power Source
S1	CPU voltage setting

3.1 Floppy Disk Drive Connector

SAGP-845EV board has a 34-pin connector for the floppy drive.

- **FDD1: FDC Connector**

PIN	Description	PIN	Description
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	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

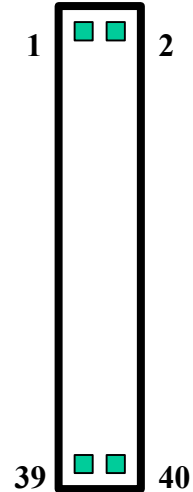


3.2 Ultra ATA33/66/100 IDE Disk Drive Connector

Each of the SAGP-845EV IDE connectors can have one IDE (Integrated Device Electronics) attached to it.

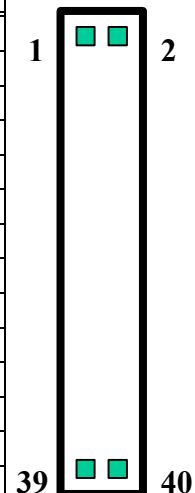
- IDE1: Primary IDE Connector**

PIN	Description	PIN	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	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND



- IDE2: Secondary IDE Connector**

PIN	Description	PIN	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	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

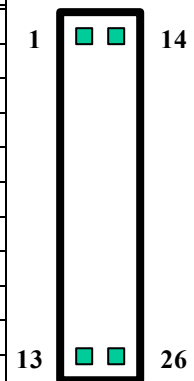


3.3 Parallel Port

This port is usually connected to a printer. SAGP-845EV includes an on-board parallel port accessed through a 26-pin flat-cable. Three modes— SPP, EPP and ECP— are supported.

- **LPT1: Parallel Port Connector**

PIN	Description	PIN	Description
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

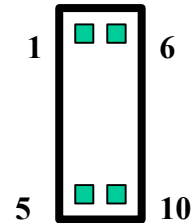


3.4 Serial Ports

SAGP-845EV offers two high speed NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports.

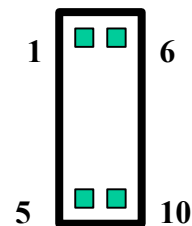
- **COM1 10-pin Connector**

PIN	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)
10	NC



- **COM2 10-pin Connector**

PIN	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)
10	NC



3.5 Keyboard Connector

SAGP-845EV provides a 6-pin keyboard/mouse connector.

- **KBM1: 6-pin Mini-DIN Keyboard/Mouse Connector**

PIN	Description
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

3.6 USB Port Connector

SAGP-845EV provides 4 built-in USB2.0 ports for future I/O bus expansion.

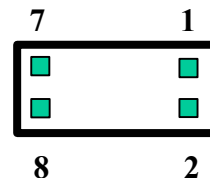
- **USB1 & USB2 (single port)**

PIN	Description
1	VCC
2	DATA-
3	DATA+
4	GROUND

- **USB3 (dual port)**

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

PIN	Description	PIN	Description
Port 1		Port 2	
1	VCC	2	GROUND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GROUND	8	VCC

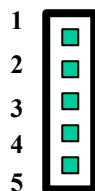


3.7 IrDA Infrared Interface Port

SAGP-845EV 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 COM 2 will be disabled.

- **IR1: IrDA Connector**

PIN	Description
1	VCC5V
2	N/C
3	IR-RX
4	Ground
5	IR-TX

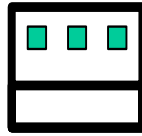


3.8 Fan Connector

SAGP-845EV provides three CPU cooling fan connectors, which supply 12V/500mA.

- **FAN1/FAN2/FAN3: CPU Fan Connector**

PIN	Description
3	Sensor
2	12V
1	Ground



3 2 1

3.9 LAN RJ45 Connector

SAGP-845EV is equipped with a built-in 10/100Mbps Ethernet controller. You can connect it to your LAN through RJ45 connector. The pin assignment is as follows:

- **LAN1: LAN RJ45 Connector**

PIN	Description	PIN	Description
1	TX+	5	N/C
2	TX-	6	RX-
3	RX+	7	N/C
4	N/C	8	N/C

- **CN3: LAN Status LED Connector**

PIN	Description	PIN	Description
1	100ACT+	2	100ACT-
3	100LINK+	4	100LINK-

3.10 VGA Connector

SAGP-845EV has a 15-pin VGA connector that connects directly to your CRT monitor.

- **VGA1: 15-pin Female Connector**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.11 Audio Connectors

SAGP-845EV has an onboard audio controller (CMEDIA CMI8738LX) that connects input and output devices through pin-headers (CN4). The audio controller supports 5.1 channel sounds including LINEOUT, REAR, and CENTER/BASS. CD-IN (CDIN1).

- **CN4: Audio Connector (2x8_2.00mm)**

PIN	Description	PIN	Description
1	LINEOUT_L	2	GROUND
3	LINEOUT_R	4	GROUND
5	CENTER	6	BASS
7	GROUND	8	GROUND
9	LININ_L	10	LINEIN_R
11	GROUND	12	GROUND
13	REAR_L	14	REAR_R
15	MIN_IN	16	GROUND

- **CDIN1: CD-IN Connector (1X4_2.54mm pin head)**

PIN	Description
	CDIN1
1	RIGHT
2	GND
3	GND
4	LEFT



3.12 Compact Flash Storage Card Socket

SAGP-845EV configures Compact Flash Storage Card to IDE mode. This type II Socket is compatible with IBM Micro Drive.

- **CFA1: Compact Flash Storage Card Socket Pin Assignment**

PIN	Description	PIN	Description
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	OBLIGATORY TO PULL HIGH
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	OBLIGATORY TO PULL HIGH
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

3.13 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.

- **CN2: Multiple Panel**

	PIN	Description	PIN	Description	
Power LED	1	+5V	2	Speaker	Speaker
	3	GND	4	N/C	
	5	GND	6	N/C	
	7	EXTSMI#	8	+5V	
HDD Indicator	9	+5V	10	Reset Switch	Reset button
	11	IDELED-	12	GND	

- **PW1: ATX Power Switch Connector**

PIN	Description
1	PWR_BUTTON+
2	PWR_BUTTON-

- **PW2: ATX12V Power Connector (for CPU)**

PIN	Description	PIN	Description
1	GND	2	GND
3	+12V	4	+12V

Chapter 4 Award BIOS Setup

4.1 Introduction

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

4.2 Starting Setup

The BIOS is immediately active when the computer has been turned on. While the BIOS is in control, the setup program will be activated by one of the following ways:

- a. Press immediately after switching the system on, or
- b. Press when the following message appears at the bottom of the screen during POST (Power On Self-Test):

Press DEL to enter SETUP

If the message passes before the user responds and the user still wants to enter Setup, please turn off the power first and then switch it back on to restart the system; or simply press the "RESET" button on the system case to reboot the system. The alternative way to restart the system is simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If the user does not press the keys at the right timing and the system does not boot, an error message will be displayed and the user will be prompted to.

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, the arrow keys are used to highlight items, and then press <Enter> to select the item. 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
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the desired item
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- 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
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main Menu

When entering the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows users 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.

CMOS Setup Utility - Copyright© 1984-2000 Award Software

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ ← → : Select Item F10 : Save & Exit Setup	
Time, Date, Hard Disk Type	

Note: The 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 Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the advanced features available on the system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to configure all settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to configure all settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if the system supports PnP / PCI. See section 4.10 for the details.

Frequency/Voltage Control

Use this menu to configure all settings for frequency/voltage control. See section 4.11 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for the system to operate. See section 4.12 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal system performance. See section 4.12 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.13 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.14 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.14 for the details.

4.5 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes none, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the wanted value for each item.

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Standard CMOS Features

Date:	Wed, Nov 20 2002	Item Help
Time:	16:19:20	
IDE Primary Master	HD Model Name	Menu Level ➤
IDE Primary Slave	<Press Enter> None	Change the day,
Secondary Master	<Press Enter> None	month,
IDE Secondary Slave	<Press Enter> None	year and century
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All,But Keyboard	
Based Memory	640K	
Extended Memory	65535K	
Total Memory	1024K	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit		
F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (Described in Table 2)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (Described in Table 2)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (Described in Table 2)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (Described in Table 2)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 1 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Figure 2 shows the IDE primary master sub menu.

CMOS Setup Utility – Copyright © 1984-2000 Award Software IDE Primary Master		
IDE HDD Auto-Detection	Press Enter	Item Help Menu Level ➤➤
IDE Primary Master Access Mode	Auto Auto	To auto-detect the HDD's size, head... on this channel
Capacity	15362 MB	
Cylinder	29765	
Head	16	
Precomp	0	
Landing Zone	29764	
Sector	63	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Figure 2 IDE Primary Master Sub Menu

Use the legend keys to navigate this menu. Use Table 2 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 2 Hard Disk Selections

4.6 Advanced BIOS Features

This section allows users to configure the system for basic operation. The options for the system's default speed, boot-up sequence, keyboard operation, shadowing and security are available.

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Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU L1 & L2 Cache	Enabled	
P4-M Support	Disabled	
Quick Power On Self Test	Enabled	Menu Level ➤
LAN BootROM	Disabled	
First Boot device	Floppy	Allow you to choose the VIRUS
Second Boot device	HDD-0	warning feature for IDE Hard
Third Boot device	LS120	Disk boot sector protection. If
Boot other device	Enabled	this function is enabled and
Swap Floppy Drive	Disabled	someone attempt to write data
Boot Up Floppy Seek	Enabled	into this area, BIOS will show a
Boot Up NumLock Status	On	warning message on screen
Gate A20 Option	Fast	and alarm beep
Typematic Rate Setting	Disabled	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control For OS	1.4	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
Small Logo (EPA) Show	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Virus Warning

Allows users to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep will be heard.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

P4-M Support

Set this option to Enabled to permit P4-M CPU.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after the computer is on. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

LAN BootROM

Disabled/Enabled LAN BootROM

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, the logical drive name can be swapped.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up.

Make this option disabled speeds boot up.

The choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.
The choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.
The choice: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when the key has been held down.
The choice: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.
The choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when the user enters setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then the user will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and Setup page can be accessed freely.

OS Select For DRAM > 64MB

Select the operating system running with greater than 64MB of RAM on the system.
The choice: Non-OS2, OS2.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not.
The choice: Yes, No.

Small Logo (EPA) Show

Disabled/Enabled Small Logo (EPA) Show.

4.7 Advanced Chipset Features

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Advanced Chipset Features

DRAM Timing Selectable	By SPD	Item Help
CAS Latency Time	1.5	
Active to Precharge Delay	7	Menu Level ➤
DRAM RAS# to CAS# Delay	3	
DRAM RAS# Precharge	3	
Memory Frequency For	AUTO	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	
Delayed Transaction	Enabled	
AGP Aperture Size	64MB	
** Onboard Display Cache Setting **		
On-chip VGA	Enabled	
Flash BIOS	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit		
F1: General Help		
F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

This section allows users to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and accesses to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system.

DRAM Timing Selectable

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if the system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 1.5, 2, 2.5, 3.

DRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The choice: 5/7, 6/8.

DRAM RAS# to CAS# Delay

- This field lets users insert a timing delay between the CAS and RAS strobe signals.
- It is used when DRAM is written to, read from, or refreshed.
- Choice 2 means shorter delay which shortens the process of charging; and choice 3 means longer delay which lengthens the process of charging.
- This field applies only if the synchronous DRAM is installed in the system.

The choice: 2, 3.

DRAM RAS# Precharge

If an insufficient number of cycles are allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The choice: 2, 3.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may occur.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

This area of system memory can be reserved for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that requests this area of system memory usually discusses their memory requirements.

The Choice: Enabled, Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

The Choice: Enabled, Disabled.

AGP Aperture Size (MB)

elect the on-chip video window size for VGA drive use.

The Choice: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB

On-chip VGA

Enabled/Disabled On-chip VGA

Flash BIOS

Disabled/Enabled Flash BIOS

4.8 Integrated Peripherals

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Integrated Peripherals

On-Chip Primary PCI IDE	Enabled	Item Help	
IDE Primary Master PIO	Auto		
IDE Primary Slave PIO	Auto	Menu Level ➤	
IDE Primary Master UDMA	Auto	If your IDE hard drive supports block mode select	
IDE Primary Slave UDMA	Auto		
On-Chip Secondary PCI IDE	Enabled	Enabled for automatic detection of the optimal number of block read/write per sector the drive can support	
IDE Secondary Master PIO	Auto		
IDE Secondary Slave PIO	Auto		
IDE Secondary Master UDMA	Auto		
IDE Secondary Slave UDMA	Auto		
USB Controller	Enabled		
USB 2.0 Controller	Enabled		
USB Keyboard Support	Enabled		
Onboard Audio Device	Enabled		
Init Display First	PCI Slot		
IDE HDD Block Mode	Enabled		
Power ON Function	BUTTON ONLY		
KB Power ON Password	Enter		
Hot Key Power ON	Ctrl-F1		
Onboard FDC Controller	Enabled		
Onboard Serial Port 1	3F8/IRQ4		
Onboard Serial Port 2	2F8/IRQ3		
UART Mode Select	Normal		
UR2 Duplex Mode	Half		
Onboard Parallel Port	378/IRQ7		
Parallel Port Mode	SPP		
ECP Mode Use DMA	3		
PWRON After PER-Fail	Off		
Watch Dog Timer Unit	Second		
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit			
F1: General Help			
F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults			

Note: There are some items in bottom of scroll.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.
The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let users set a PIO mode (0-4) for each of the four IDE devices supported by the onboard IDE interface. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if the IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA-33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

USB Controller

Select Enabled if the system contains a Universal Serial Bus (USB) controller.

The Choice: Enabled, Disabled.

USB Keyboard Support

Select Enabled if the system contains a Universal Serial Bus (USB) controller.

The Choice: Enabled, Disabled.

Onboard Audio Device

This item allows users to decide to enable/disable the CMIDER CMI8738LX chipset family to support 6CH DAC for AC-3 5.1 channel purpose.

The choice: Enabled, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If the IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Onboard FDC Controller

Select Enabled if the system has a floppy disk controller (FDC) installed on the system board. If the system has no floppy drive, select Disabled in this field.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

Select a serial port 2 operation mode.

The choice: Normal, IrDA, ASKIR, SCR.

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Select a parallel operation mode.

The choice: SPP, EPP, ECP, ECP+EPP.

Watchdog Timer Unit

Select the Watchdog Timer unit.
The choice: Second, Minute.

4.9 Power Management Setup

The Power Management Setup allows the user to configure the system to the most effective energy save.

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Power Management Setup

ACPI Function	Enabled	Item Help
ACPI Suspend Type	S1<POS>	
X Run VGABIOS if S3 Resume*	Auto	Menu Level ➤
Power Management	Min Saving	
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	3	
Suspend Mode	1 Hour	
HDD Power Down	15 Min	
Soft-Off by PWR-BTTN	Instant-Off	
Wake-up by PCI card	Enabled	
Power On by Ring	Enabled	
Resume by Alarm	Disabled	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD,COM,LPT Port	Disabled	
PCI, PIRQ[A-D]#	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit		
F1: General Help		
F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Power Management

This category allows the user to select the type (or degree) of power saving related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	<ul style="list-style-type: none">• Minimum power management• Doze Mode = 1 hr.• Standby Mode = 1 hr.• Suspend Mode = 1 hr.• HDD Power Down = 15 min.
Max. Power Saving	<ul style="list-style-type: none">• Maximum power management -- ONLY AVAILABLE FOR SL CPU's• Doze Mode = 1 min.• Standby Mode = 1 min.• Suspend Mode = 1 min.• HDD Power Down = 1 min.
User Defined	<ul style="list-style-type: none">• Allows the user to set each mode individually.• If it is not disabled, each of the ranges is from 1 min. to 1 hr. except for HDD Power Down ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner of how the monitor becomes blank.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.

The choice: Yes, No.

SuspendType

Defines the Suspend Type.

The choice: PWRON Suspend, Stop Grant.

Suspend Mode

If it is enabled and the power save time of system has met, all devices except the CPU will be shut off.

The choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disabled.

PM EVENTS

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as Enabled, even when the system is in a power down mode.

Primary IDE 0

Primary IDE 1

Secondary IDE 0

Secondary IDE 1

FDD, COM, LPT Port

PCI PIRQ[A-D] #

4.10 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI stands for Personal Computer Interconnect. It is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some specific technical settings and it is strongly recommended that only experienced users should make any changes to the default settings.

CMOS Setup Utility – Copyright © 1984-2000 Award Software
PnP/PCI Configurations

PNP OS Installed		NO	Item Help
Reset Configuration Data		Disabled	-----
Resources Controlled By		Auto (ESCD)	Menu Level ➤
x IRQ Resources		Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when the user exits Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
x DMA Resources		Press Enter	
PCI/VGA Palette Snoop		Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit			
F1: General Help			
F5: Previous Values		F6: Fail-safe defaults	F7: Optimized Defaults

Reset Configuration Data

In most cases, this field is set to "Disabled". Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The choice: Enabled, Disabled.

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless the user is using a Plug and Play operating system such as Windows®95. If the option "Manual" is selected, the user can choose a specific resource from the sub-menu.

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type based on the type of interrupt the device uses.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows the user to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Leave this field disabled.

The choice: Enabled, Disabled.

4.11 PC Health Status

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PC Health Status

VCORE	1.44V	Item Help
+1.5V	1.47V	-----
+3.3V	3.26V	Menu Level ➤
+5.0V	5.05V	
+12V	11.58V	
-12V	(-)11.45V	
Current CPU Temp	25°C	
Fan 1 (CPU) Spend	5443	
Fan 2 (SYSTEM) Spend	0	
Fan 3 (SYSTEM) Spend	0	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit		
F1: General Help		
F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Note: Normal CPU Fan RPM is over than 5000 RPM. If the CPU Fan RPM is less than that figure, it means something is wrong and the CPU will be in an overheat condition. Make sure that the connection at Fan1/Fan2 is correct.

4.12 Frequency/Voltage Control

CMOS Setup Utility – Copyright © 1984-2000 Award Software
Frequency/Voltage Control

CPU Clock Ratio	8 X	Item Help
Auto Detect PCI Clk	Enabled	-----
Spread Spectrum	Disabled	Menu Level ➤
CPU Host/3V66/PCI Clock	Default	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Auto Detect PCI Clk

This item allows the users to enable/disable auto detect DIMM/PCI Clock.

The choice: Enabled, Disabled.

Spread Spectrum

This item allows the user to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

CPU Host / 3V66 / PCI Clock

This item allows the user to select CPU Host and PCI clock.

The choice: Default, 130/33,133/33,137/34,140/35,145/36,150/38 (M).

4.13 Defaults Menu

Selecting "Defaults" from the main menu will bring up the two options described below.

Load Fail-Safe Defaults

If the user presses <Enter> on this item, a dialog box with a message similar to the following will pop up:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

If the user presses <Enter> on this item, a dialog box with a message similar to the following will pop up:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.14 Supervisor/User Password Setting

The user can set the password for either supervisor or user, or for both of them.

Supervisor password: for entering and changing the settings of the system

User password: for just entering the system but does not have the privilege to change any settings of the system

If this function is enabled, the following message will appear to guide the user to create a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. The user will be asked to re-type the password, and press <Enter>.

Note: The user may press <Esc> to skip the selection and not to enter a password.

To disable a password, just press <Enter> when prompted to enter the password. Once the password is disabled, the system will boot and the user can enter Setup freely.

PASSWORD DISABLED:

When a password has been set, the user will be prompted to enter it every time when entering Setup. This prevents an unauthorized user from changing any part of the system configuration.

Additionally, when a password is set, the user can also require the BIOS to request a password every time the system starts. This would prevent any unauthorized use of the computer.

The user determines when the password is required within the BIOS Features Setup Menu and its security option (see Section 3). If the security option is set to "password", then it will be required both at boot and at entry to Setup. If it is set to "Setup", the password is needed only when trying to enter Setup.

4.15 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after the system has been turned off. When the computer reboots again, the BIOS configures the system according to the Setup selections stored in CMOS.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows the user to exit Setup without saving any changes in CMOS. The previous selections remain in effect. This exits the Setup utility and restarts the computer.

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) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

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

INT 15H:

AH – 6FH	
Sub-function:	
AL – 2	: Set the Watchdog Timer's period
BL	: Time-out value(Its unit--second or minute, is dependent on the item "Watchdog Timer unit select" in CMOS setup).

The sub-function 2 needs to be called to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start to count down. While 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 the user set the time-out value to 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

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-05F	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BF	Intel(R) 82815 Graphics Controller
3C0-3DF	Intel(R) 82815 Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

1st MB Memory Address Map

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

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	USB2.0
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	AUDIO/SMBus Cntrlr
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	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 How to Upgrade a New BIOS

Note: Before flashing BIOS, please enable the item "FLASH BIOS" in BIOS setting.

The user can install an upgrade BIOS for the SAGP-845EV download from the manufacturer's web site (<http://www.ieiworld.com>). New BIOS may provide support for new peripherals, improvements in performance or fixes to addressed known bugs.

BIOS Update Procedure:

1. Make a boot disk. Go to the DOS command prompt in MS-DOS or Windows 9x and, with an available floppy disk in "A", type "format A: /s" That will format the floppy and transfer the needed system files to it.

Note:

- A. This procedure will erase any prior data on that floppy, so please proceed accordingly.
 - B. Typically four files will be transferred, only COMMAND.COM being visible when running a simple directory listing.
 - C. Please leave the diskette UN-write protected for the balance of this procedure.
2. Download the BIOS upgrade file and awdflash.exe utility from ICP web site to a temp directory on your hard drive, or directly to the floppy you made in step 1.
 3. Copy two files (BIOS file and awdflash.exe) to the boot floppy.
 4. Reboot the system to the DOS command prompt using the boot diskette you just made.
 5. At the DOS command prompt type, "awdflash filename.xxx", where filename.xxx is the file name of the BIOS file. Press enter.
 6. Your first option, in sequence, will be to save the old BIOS. We recommend that you do that in case, for whatever reason, you decide you don't wish to use the new version once it is installed.

Note:

- A. If you decide to save the old BIOS, PLEASE make sure you do NOT save it to the same file name as the new BIOS - if you use the same BIOS name the old file will be written over the new file with NO warning prompt. A simple file name to save the old BIOS to is OLDBIOS.BIN.
 - B. If you do NOT decide to save the old BIOS, PLEASE at least write down the version number of the old BIOS and store that information with your important computer documents. Enter N (for "no") and skip to step 9.
7. To save the old BIOS, press Y (for "yes").
 8. Enter a name for the OLD BIOS file and hit enter.

Note: PLEASE be sure you do NOT save the old BIOS file to the same file name as the new BIOS - if you use the same BIOS name, the old file will write over the

new BIOS file WITHOUT a warning prompt. A simple file name for saving the old BIOS to is OLDBIOS.BIN.

9. Your second option, in sequence, will be whether you want to flash your BIOS. Enter Y (for "yes").

Note: This is the critical step. Once you hit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be a bar progressing across the screen while the flashing is progressing.

10. When the flashing process is complete, you will be asked to reset or power off the system. Remove the floppy diskette from the floppy drive and either hit the reset button or the power button.
11. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. Your BIOS upgrade is now complete.

Recovering the previous BIOS:

1. Assuming you have the floppy made during the upgrade procedure noted above, boot the system with that diskette in the floppy drive. If you do not have floppy made during the upgrade procedure noted above, you will need to repeat steps 1 through 3 (above) for the version of the BIOS you wish to recover to.
2. Complete steps 4, 5, 6B, 9, 10, and 11 (above) substituting the name of the BIOS you wish to recover for the upgrade BIOS at step 5.

Install screen:

FLASH MEMORY WRITER V6.6	
<C>Award Software 1998 All Rights Reserved	
Flash Type -	
File Name to Program :	
Error Message:	

Appendix D AGP Slot

This IPC 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.