SAGP-815EV series

Socket 370 Based SBC

With 10/100Mbps Ethernet, VGA, Audio

Manual Revision 1.0
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Support

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Introduction

Welcome to SAGP-815EV socket 370 base Single Board Computer. Based on Intel i815EB chipset, SAGP-815EV board is a PIAGP form factor board which works perfectly with high performance Pentium® III, or cost-effective Celeron. This product is designed for system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

The advantages of migrating to PIAGP architecture are numerous. To name a few,

1. It supports standard AGP V2.0 cards on the PCIAGP/PXAGP series passive backplane;
2. It is compatible with all available AGP cards;
3. With optional PISA-KIT1 PCI-to-ISA bridge module, legacy ISA device are also supported;
4. Many PCIAGP/PXAGP series passive backplanes support conventional PICMG CPU cards;
5. Onboard RAID controller is available as an option on certain PCIAGP/PXAGP series passive backplanes, making storage capability of your industrial PC several steps forward.

In addition, SAGP-815EV's on-chipVGA provides up to 1600x1200 resolution. The VGA subsystem shares main memory.

An advanced high performance super AT I/O chip – ITE IT8712 is used in the SAGP-815EV board. Which provide two UARTs are

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compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

SAGP-815EV has an Intel 82562BA as its integrated LAN controller. It meets the10/100BASE-TX specification with high performance networking functions and advanced features like Alert-on-LAN.

SAGP-815EV's Intel 815EB chipset supports up to 133MHz FSB CPU and 133MHz SDRAM memory modules.

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**: Supports Socket-370 CPU

    Celeron® Processor up to 1.2GHz

    Pentium® III (FC-PGA) Processor up to 1.4GHz

- **DMA channels**: 7

- **Interrupt levels**: 15

- **Chipset**: Intel 815EB

- **RAM memory**: Provides two 168-pin DIMM socket. Maximum memory size is 512MB/133MHz.

- **Ultra ATA/33/66/100 IDE Interface**: Two PCI Enhance IDE channel. The onboard ICH2 supports Ultra ATA/33/66/100 IDE interface. To get optimal performance of Ultra ATA66/100 Hard disk, a specified 80-pin cable must be used.

- **Floppy disk drive interface**: Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.

- **CompactFlash^{TM} interface:** Supports CompactFlash^{TM} Type II socket for Compact Flash Disk or IBM Micro Drive.

- **Serial ports**: Two high-speed 16C550 compatible UARTs ports

- **Parallel Port** :one IEEE1284 compatible Bi-directional ports

- **IrDA port:** Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface.

- **USB port:** Supports 4 USB 2.0 compatible ports.

- **Audio:** CMI8738LX supports 6CH DAC for AC-3 5.1 channel purpose. HRTF –based positional audio, supporting DirectSound 3D and A3D interface.

- **Watchdog timer**: Time setting form 1 second to 255 second System Reset generate when CPU did not periodically trigger the timer.

- **VGA Controller:** On-chip VGA controller, screen resolution up to 1600x1200 in 256 Colors at 85Hz refresh rate.

- **Intel 82562BA embedded LAN Controller:** IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. Fast back-to-back transmission support with minimum interframe spacing. Connected to your LAN through RJ-45 connector.

- **Keyboard Controller:** 8042 compatible for keyboard and PS/2 mouse

- **Power Consumption**: 5V/9A and 12V/0.1A, as running by PIII 933MHz and 256MB

- **Operating Temperature**: 0∘ ~ 55∘ C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the SAGP-815EV package includes the following items:

- SAGP-815EV Socket-370 based Single Board Computer

- One FDD Cable

- One IDE Cable

- Keyboard / Mouse Y-Adapter Cable

- One Printer Cable with Bracket

- Two RS-232 Serial Ports Cable with Bracket

- One Audio Cable with Bracket

2

Installation

This chapter describes how to install the SAGP-815EV. At first, the layout of SAGP-815EV is shown, and the unpacking information that needs your attention is described. The jumpers and switches setting for the SAGP-815EV 's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

2.1 SAGP-815EV 's Layout

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SAGP-815EV's Layout
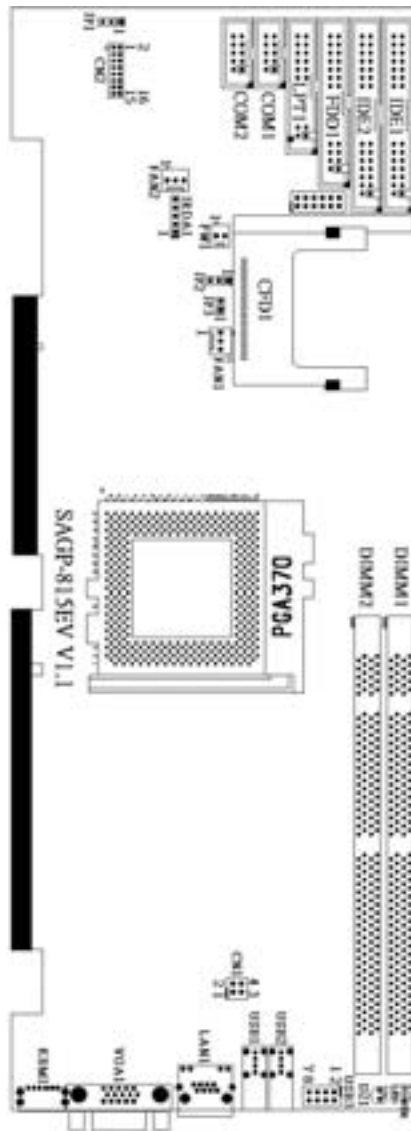
2.2 Clear CMOS Setup

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 1-2) about 3 seconds, then open again, set back to normal operation mode, open JP1.

- **JP1: Clear CMOS Setup**

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

2.3 Keyboard Power Selection

- **JP2: Keyboard Power Selection**

JP2	DESCRIPTION
1-2	**VCC**
2-3	5VSB

2.4 Compact Flash Card Master/Slave Mode Setting

This jumper configures CF card as Master or Slave device on secondary IDE channel.
- **JP3: Master/Slave Mode Setting**

JP3	DESCRIPTION
OPEN	**SLAVE**
SHORT	MASTER

3

Connection

This chapter describes how to connect peripherals, switches and indicators to SAGP-815EV.

3.1 Floppy Disk Drive Connector

SAGP-815EV has a 34-pin daisy-chain driver connector cable.

● **FDD1: FDC CONNECTOR**

PIN NO.	DESCRIPTION	PIN NO.	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#

1 ☐ ☐ 2

33 ☐ ☐ 34
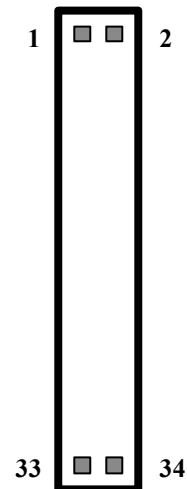
3.2 Ultra ATA33/66/100 IDE Disk Drive Connector

You can attach two IDE (Integrated Device Electronics) hard disk drives to each of the SAGP-815EV IDE connectors.

IDE1: Primary 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	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 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	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

1 ▪ ▪ 2

39 ▪ ▪ 40

3.3   Parallel Port

This port is usually connected to a printer. SAGP-815EV includes an on-board parallel port, accessed through a 26-pin flat-cable connector LPT1. Three modes – SPP, EPP and ECP – are supported.

● **LPT1: Parallel Port Connector**

PIN NO.	DESCRIPTION	PIN NO.	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

```
1  [ ][ ]  14




13 [ ][ ]  26
```
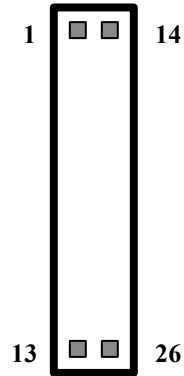
3.4   Serial Ports

The SAGP-815EV offers two high-speed NS16C550- compatible UARTs with Read/Receive 16 byte FIFO serial ports.

● **COM1 10-pin Connector**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND

```
1  [ ][ ]  6



15 [ ][ ]  10
```
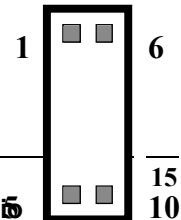
SAGP-815EV Socket 370 base SBC
With 10/100Mpbs Ethernet , VGA , Audio 5

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 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)
10	NC	

1 ☐ ☐ **6**

5 ☐ ☐ **10**
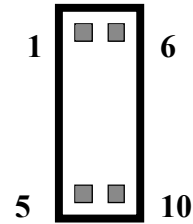
3.5 Keyboard Connector

SAGP-815EV provides a 6-pin keyboard/mouse connector.

● **KBM1: 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-815EV provides 4 built-in USB2.0 ports for future I/O bus expansion.

USB1 & USB2:

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 pin headers.

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

```
    7           1
    ■           ■

    ■           ■
    8           2
```
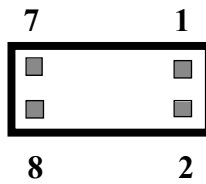
3.7 IrDA Infrared Interface Port

SAGP-815EV 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.

● **IRDA1: IrDA connector**

PIN NO.	DESCRIPTION
1	VCC5V
2	N/C
3	IR-RX
4	Ground
5	IR-TX

1
2
3
4
5
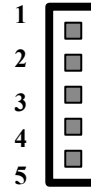
3.8 Fan Connector

SAGP-815EV provides two CPU cooling fan connectors, which supply 12V/500mA.

● **FAN1/FAN2: CPU Fan Connector**

PIN NO.	DESCRIPTION
3	Sensor
2	12V
1	Ground

3 2 1
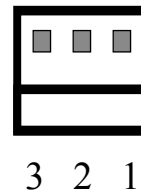
3.9 LAN RJ45 Connector

SAGP-815EV 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:

● **LAN1: 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

1	100ACT+	2.	100ACT-
3	100LINK+	4.	100LINK-

3.10 VGA Connector

SAGP-815EV has a 15-pin VGA connector that connects directly to your CRT monitor.

● **VGA1: 15-pin Female Connector**

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-815EV has an onboard AUDIO chipset (CMEDIA CMI8738LX), which connects input and output devices through pin-headers (CN2). The Audio chipset can support 5.1 channel sounds that include LINEOUT, REAR, and CENTER/BASS.

● **CN2: Audio Connector (2x8_2.00mm)**

PIN NO.	DESCRIPTION	PIN NO.	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

3.12   Compact Flash Storage Card Socket

SAGP-815EV configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

● **CFD1: Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	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 CN24 connector.

● **CN3: Multi Panel**

	PIN	DESCRIPTION	PIN	DESCRIPTION	
Power	1	+5V	2	Speaker	Speaker
LED	3	GND	4	N/C	
	5	GND	6	N/C	
	7	EXTSMI#	8	+5V	
HDD	9	+5V	10	Reset Switch	Reset

	11	IDELED-	12	GND	

● **PW1: ATX Power Switch Connector**

PIN NO.	DESCRIPTION
1	PWR_BUTTON+
2	PWR_BUTTON-

4

Award 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):

Press DEL to enter SETUP

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 CONTINUE, DEL TO ENTER SETUP

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
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 item you desired
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

Once you enter the AwardBIOS™ 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.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults

Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving

Esc : Quit   F9 : Menu in BIOS   ↑ ↓ ← → : Select Item

F10 : Save & Exit Setup

Time, Date, Hard Disk Type….

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 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 your system. See Section 4.6 for the details.

Advanced Chipset Features

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

Integrated Peripherals

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

Power Management Setup

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

PnP / PCI Configuration

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

Frequency/Voltage Control

Use this menu to configure your 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 your 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 performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. 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 no, 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 value you want in each item.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software

Standard CMOS Features

```
┌─────────────────────────────────────────────────┬──────────────────────┐
│                                                  │      Item Help       │
│    Date:            Tue, Seq 17 2002             │                      │
│    Time:              16:19:20                   │──────────────────────│
│                                                  │  Menu Level    ➢     │
│  ➢  IDE Primary Master    HD Model Name          │                      │
│  ➢  IDE Primary Slave      <Press Enter>  None   │  Change the day,     │
│  ➢  IDE 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 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in Table 3)	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 2 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	Auto	
Access Mode	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 through this menu and exit to the main menu. Use Table 3 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 3 Hard disk selections

4.6 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

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Advanced BIOS Features

		Item Help
Virus Warning	Disabled	
CPU Internal Cache	Enabled	_____
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Menu Level ➢
Process Number feature	Enabled	
Quick Power On Self Test	Enabled	Allows you to choose the
Initial LAN BootROM	Disable	VIRUS warning feature for
First Boot device	Floppy	IDE Hard Disk boot sector
Second Boot device	HDD-0	protection. If this function is
Third Boot device	LS120	enabled and someone
Boot other device	Enabled	attempt to write data into this
Swap Floppy Drive	Disabled	area, BIOS will show a
Boot Up Floppy Seek	Enabled	warning message on screen
Boot Up NumLock Status	On	and alarm beep
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
Time Out(Sec.)For IDE Auto	2	
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 you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

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 Internal Cache/External Cache

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

Enabled	Enable cache
Disabled	Disable cache

CPU L2 Cache ECC Checking

This item allows you to enable/disable CPU L2 Cache ECC checking.
The choice: Enabled, Disabled.

Processor Number Feature

This item allows you to enable/disable support KLAMATH.
The choice: Enabled, Disabled.

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

Initial 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, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling 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 you hold the key 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 you enter 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 you 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 you can enter Setup freely.

OS Select For DRAM > 64MB

Select the operating system that is 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

4.7 Advanced Chipset Features

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Advanced Chipset Features

		Item Help
SDRAM CAS Latency Time	3	
SDRAM Cycle Time Tras/Trc	Auto	Menu Level ➢
SDRAM RAS-to-CAS Delay	Auto	
SDRAM RAS Precharge Time	Auto	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable Disabled		
Memory Hole At 15M-16M Disabled		
CPU Latency Timer	Enabled	
Delayed Transaction Enabled		
AGP Graphics Aperture Size	64MB	
Display Cache Frequency	100 MHz	
System Memory Frequency	Auto	
Special NT4.0 DRAM Report	Disabled	
On-Chip VGA Enabled		
* Onboard Display Cache Setting *		
CAS# Latency	3	
Paging Mode Control	Open	
RAS-to-CAS Override	by CAS# LT	
RAS# Timing	Fast	
RAS# Precharge Timing	Fast	
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 you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access 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 your system.

DRAM Settings

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 your 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.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.
The Choice: 2, 3

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *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.

SDRAM RAS Precharge Time

If an insufficient number of cycles is 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 result.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

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

The Choice: Enabled, Disabled.

CPU Latency Timer

Enabled :CPU cycle will only be Deferred after in has been in a "Snoop Stall" for 31 clocks and another ADS# has arrived.

Disabled: CPU cycle will only be Deferred immediately after the GMCH receives another ADS#.

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.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use.
The Choice: 32MB, 64MB, Disabled.

4.8 Integrated Peripherals

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Integrated Peripherals

		Item Help
On-Chip Primary PCI IDE	Enabled	
On-Chip Secondary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	Menu Level ➢
IDE Primary Slave PIO	Auto	If your IDE hard drive
IDE Secondary Master PIO	Auto	supports block mode
IDE Secondary Slave PIO	Auto	select Enabled for
IDE Primary Master UDMA	Auto	automatic detection
IDE Primary Slave UDMA	Auto	of the optimal number
IDE Secondary Master UDMA	Auto	of block read/write
IDE Secondary Slave UDMA	Auto	per sector the drive
Init Display First	PCI Slot	can support
Onboard USB 2.0 Device	Enabled	
Onboard Audio Device	Enabled	
IDE HDD Block Mode	Enabled	
KB Power ON Function	BUTTON ONLY	
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	
WatchDog Timer Unit Select	Second	

↑↓←→ Move　Enter: Select　+/-/PU/PD: Value　F10:Save　ESC: Exit
F1:General Help
F5:Previous Values　F6:Fail-safe defaults　　F7:Optimized Defaults

There are some item 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 you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. 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 your 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 your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

The Choice: Enabled, Disabled.

USB Keyboard Support

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

The Choice: Enabled, Disabled.

AC97 Audio

This item allows you to decide to enable/disable the 810E chipset family to support AC97 Audio.
The choice: Auto, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your 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 your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or 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

Select the WatchDog Timer unit.

The choice: Second, Minute

4.9 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

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Power Management Setup

ACPI Function	Enabled	Item Help
ACPI Suspend Type	S1<POS>	
Power Management	User Define	Menu Level ➢
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	NA	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
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 you to select the type (or degree) of power saving and is directly 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	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

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.

Suspend Type

Select the Suspend Type.
The choice: PWRON Suspend, Stop Grant.

Suspend Mode

When enabled and after the set time of system inactivity, 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, or **P**ersonal **C**omputer **I**nterconnect, 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 very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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PnP/PCI Configurations

		Item Help
PNP OS Installed	NO	
Reset Configuration Data	Disabled	------------------------
		Menu Level ➢
Resources Controlled By	Auto(ESCD)	
x IRQ Resources	Press	Default is Disabled.
Enter		Select Enabled to reset
x DMA Resources	Press	Extended System
Enter		Configuration
		Data(ESCD) when you
		exit Setup if you have
PCI/VGA Palette Snoop	Disabled	installed a new add-on
PCI Latency Timer(CLK)	32	and the system
		reconfiguration has
		caused such a serious
		conflict that the OS
		cannot boot

```
↑↓←→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

Normally, you leave this field 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 can not 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 you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").
The choice: Auto(ESCD), Manual.

IRQ Resources

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

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

This item allows you 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 at *Disabled*.
        Choices are Enabled, Disabled.

SAGP-815EV Socket 370 Based SBC
With 10/100Mbps Ethernet , VGA , Audio

4.11 PC Health Status

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PC Health Status

CPU VCORE	1.40V	Item Help
VTT	1.23V	------------------------
+3.3V	3.29V	Menu Level ➢
+5V	4.99V	
+12V	12.03V	
-12V	(-	
)11.86V		
CPU Temperature	41°C	
Fan 1 Spend	6026	
Fan 2 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 your CPU Fan RPM is less than that figure, something is wrong and the CPU will be in overheat condition. Make sure that the connection at Fan1/Fan2 is correct.

4.12 Frequency/Voltage Control

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Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	------------------------
CPU Host/PCI Clock	Disabled	Menu Level ➢
CPU Clock Ratio	X 3	

↑↓←→ 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 DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.
The choice: Enabled, Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.
The choice: Enabled, Disabled.

CPU Host / PCI Clock

This item allows you to select CPU Host and PCI clock.
The choice: Default,130/33,133/33,137/34,140/35,145/36,150/38(M)

CPU Clock Ratio

This item allows you to select CPU clock ratio.
The choice: 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8,8.5,9,9.5,10,10.5,11,11.5,12.

4.13 Defaults Menu

Selecting "Defaults" from the main menu shows you two options which are described below

Load Fail-Safe Defaults
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

> 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
When you press <Enter> on this item you get a confirmation

dialog box with a message similar to:

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

You can set either supervisor or user password, or both of then.   The differences between are:

supervisor password :
can enter and change the options of the setup menus.

user password   :
just can only enter but do not have the right to change   the options of the setup menus. When you select this   function, the following message will appear at the center of the screen to assist you in creating 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. You will be asked to confirm the password. Type the

password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED:
When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine 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 will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs 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 you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your 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 halt. 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).

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. 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 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

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
201-201	Standard Game port
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

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	USB2.0/AUDIO/LAN
IRQ2	Available	IRQ10	Available
IRQ3	COM2	IRQ11	Available
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

You can install an upgrade BIOS for the SAGP-815EV that you can 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.

NOTES:
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 a ICP web site to a temp directory on your hard drive, or directly to the floppy you made in step 1..

3. Copy (BIOS file and awdflash.exe)two files 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 . Hit 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. NOTES:
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, hit 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 kit the enter key, do NOT touch the keyboard, the reset button, or power switch while the flashing is in progress. There will be bar progressing across the screen while the flashing is progresing.

---

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.
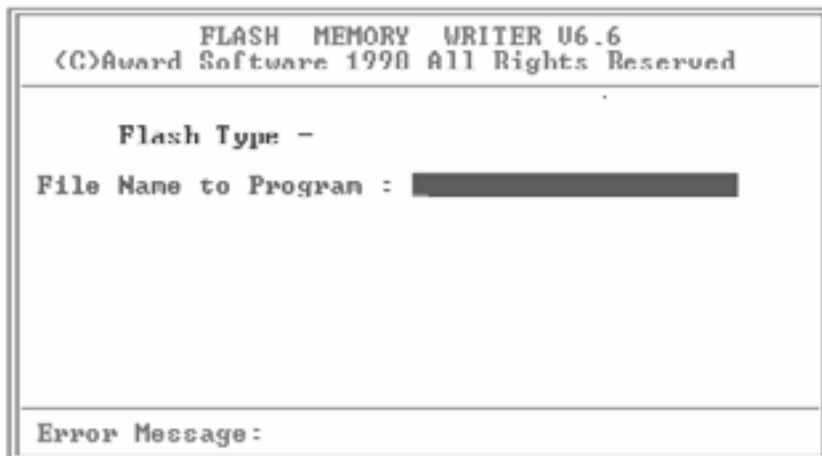
11. Reboot the system and note that the BIOS version on the initial boot-up screen has changed to the new BIOS version. Your BIOS upgrade is now complete.

Recovering Your Old 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 though 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 1990 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.