



530A

**ISA/PCI AGP Mainboard with Onboard
PCI IDE and Super Multi-I/O**

TRADEMARK

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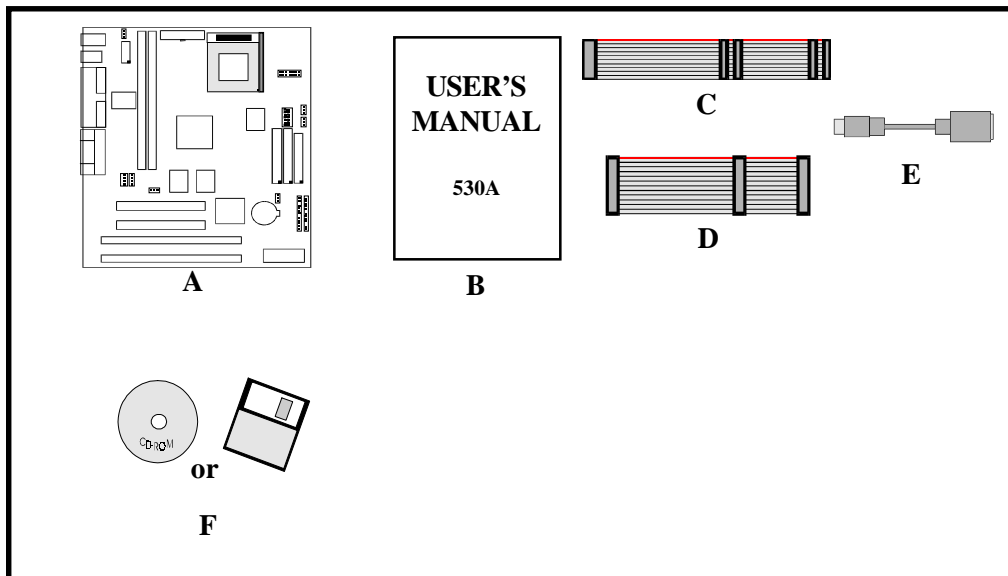
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Section 1

INTRODUCTION

Components Checklist

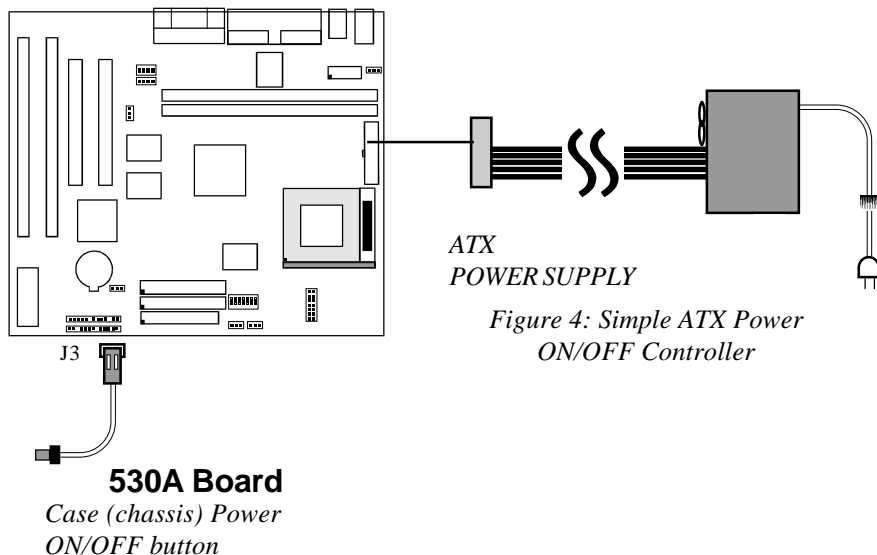
- ✓ A. (1) One mainboard
- ✓ B. (1) One user's manual
- ✓ C. (1) Floppy ribbon cable
- ✓ D. (1) IDE ribbon cables
- E. (2) PS/2 to AT keyboard connector adapter (optional)
- ✓ F. (1) Ultra_DMA IDE driver diskette
(1) AGP Drivers



Power-On/Off (Remote)

The **530A** has a single 20-pin connector for ATX power supplies. For ATX power supplies that support the **Remote On/Off** feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The **530A** has been designed with "Soft Off" functions. You can turn Off the system from one of two sources: The first is the front panel Power On/Off button, and the other is the "Soft Off" function (coming from the 530A's onboard circuit controller) that can be controlled by the operating system. Windows 95/98 will control this when the user clicks that they are ready to Shutdown the system.



System Block Diagram

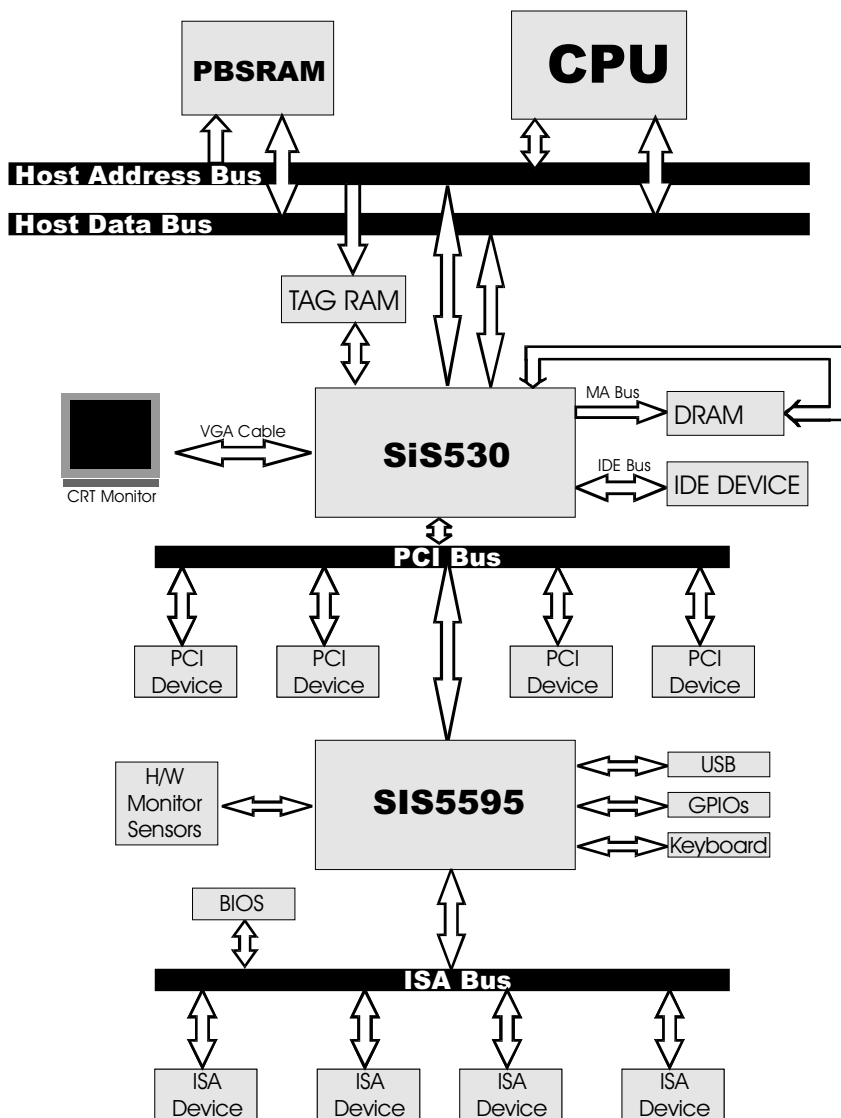


Figure 5: SiS530/SiS5595 System Block Diagram

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Section 2

FEATURES

530A Features:

- Intel **Pentium®** Processor, Pentium Processor with MMX technology, AMD K5/K6, Cyrix 6x86L/6x86MX & *idt* C6 operating at **133 ~ 500 MHz** with **321 ZIF socket 7** provides scalability to accept faster Processors in the future.
- Designed with SiS530 Chipset.
- Supports up to 512 Mega of DRAM (minimum of 16 MB) on board, You can use 168-pin DIMM x 2. It will automatically detect Extended Data Output (EDO) DRAM at 66MHz only or Synchronous DRAM memory (SDRAM) at 66MHz or 100MHz (please see Section 3-4).
- Supports (2) 16 bit ISA slots, (2) 32 bit PCI slots, (2) independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 66 devices. The 530A supports (2) PCI Bus Master slots and a jumperless PCI INT# control scheme which reduces configuration confusion when plugging in PCI card(s).
- Supports ATAPI (e.g. CD-ROM) devices on both Primary and Secondary IDE interfaces.
- Designed with Winbond W83877TF Multi I/O: (1) floppy port, (1) parallel port (EPP, ECP), and (2) serial ports (16550 Fast UART).
Note: Japanese “Floppy 3 mode” is also supported
- Built-in ATX 20-pin and supply connector.
- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released.
- 530A utilizes a Lithium battery which provides environmental protection and longer battery life.
- Software power-down when using Windows® 95/98.

- Supports ring-in feature (remote power-on through external modem, allows system to be turned on remotely).
- Resume by Alarm - Allows your system to turn on at a preselected time.
- Supports Keyboard power ON function (KBPO).
- Built-in WOL (Wake On Lan) Connector.
- Built-in ForteMedia FM801 PCI Sound.
- Built-in AGP 3D-Graphics.

Section 3

INSTALLATION

530A Detailed Layout

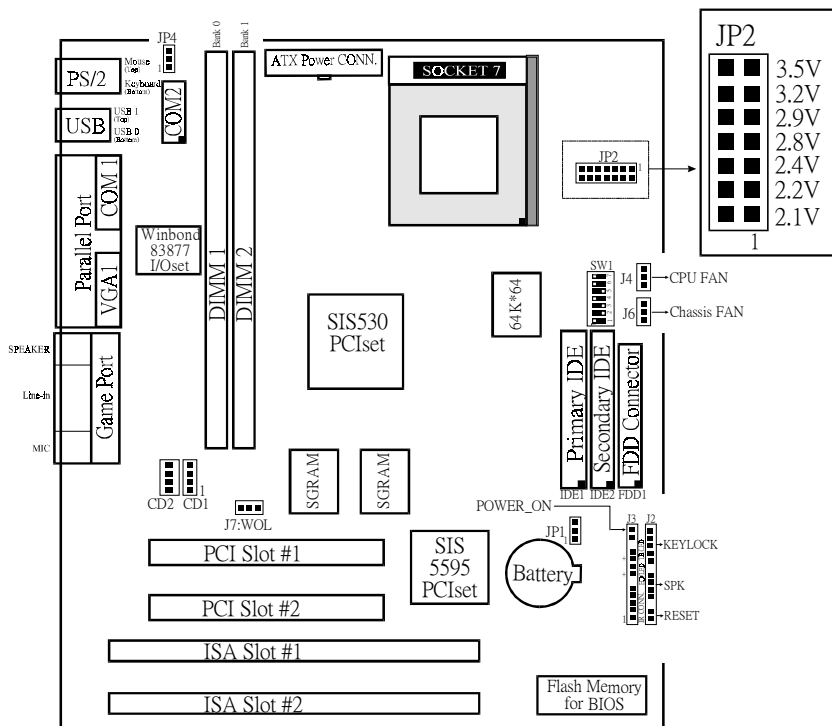


Figure 1

Easy Installation Procedure

The following must be completed before powering on your new system:

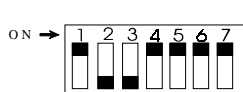
- 3-1. Configure DIP Switch and Jumper to match your hardware
- 3-2. Install memory chips
- 3-3. Device Connectors

Section 3-1 Configure DIP Switch

We design this motherboard with a DIP Switch to make your installation fast and easy.

The following will describe all of the DIP Switch that you are required to set before moving on to step 3-2.

Note: The DIP Switch as depicted as shown (Figure 1) in their correct physical orientation.



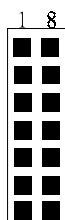
SW 1			CPU Multiplier
1	2	3	
ON			2.0X
ON	ON		2.5X
	ON		3.0X
			3.5X
ON		ON	4.0X
ON	ON	ON	4.5X
	ON	ON	5.0X
		ON	5.5X

SW 1				CPU BUS CLOCK
4	5	6	7	
ON	ON	ON		66MHz
ON	ON			75MHz
ON		ON		83MHz
ON	ON		ON	90MHz
ON				95MHz
	ON	ON		100MHz

JP1 1 Clear CMOS
 1-2 : Run Mode(default)
 2-3 : Clear CMOS

JP2:

CPU Vcore voltage selection : For Pentium Processor with MMX technology, AMD K6 and Cyrix 6x86L/6x86MX/M II



- 1-8 : 2.1V Reserved
- 2-9 : 2.2V for AMD K6-2 (3D) CPUs
- 3-10 : 2.4V for MD K6-2-450MHz
- 4-11 : 2.8V for Pentium MMX and Cyrix 6x86L
- 5-12 : 2.9V for AMD K6-2-166/200MHz and Cyrix 6x86MX/M II
- 6-13 : 3.2V for AMD K6-2-233MHz
- 7-14 : 3.5V for Pentium, AMD K5 and Cyrix 6x86

Section 3-2

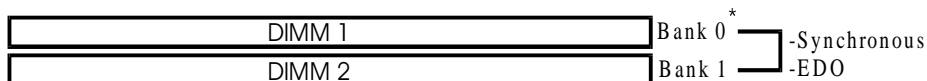
System Memory Configuration

Memory Layout

The 530A supports (2) 168-pin DIMMs (Dual In-line Memory Module). The DIMMs can be either EDO (Enhanced Data Out) or SDRAM (Synchronized DRAM).

- DIMM SDRAM may be 83MHz (12ns), 100MHz (10ns) or 125MHz (8ns) bus speed.
- If you use both 50ns and 60ns memory you must configure your BIOS to read 60ns.
- When using Synchronous DRAM we recommend using the 4 clock variety over the 2 clock.

Figure 2 and Table 1 show several possible memory configurations using DIMM.



Note : If you are installing just one DIMM, you must install it in DIMM 1

Total Memory	DIMM 1 (Bank 0)	DIMM 2 (Bank 1)
= 256MB Maximum	EDO/SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1	None
= 512MB Maximum	EDO/SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1	EDO/SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1

* SDRAM only supports 8, 16, 32, 64, 128, 256MB DIMM modules.

Table 1

DIMM Module Installation

Figure 5 displays the notch marks and what they should look like on your DIMM memory module.

DIMMs have 168-pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 6) until it fits tightly into the DIMM socket (figure 7).

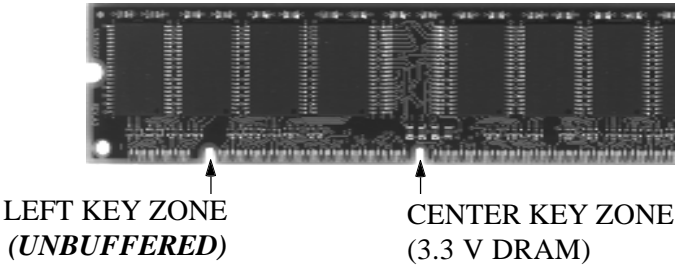


Figure 5

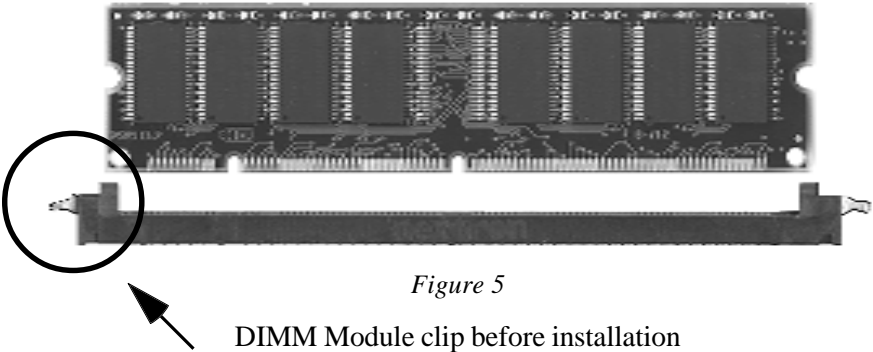
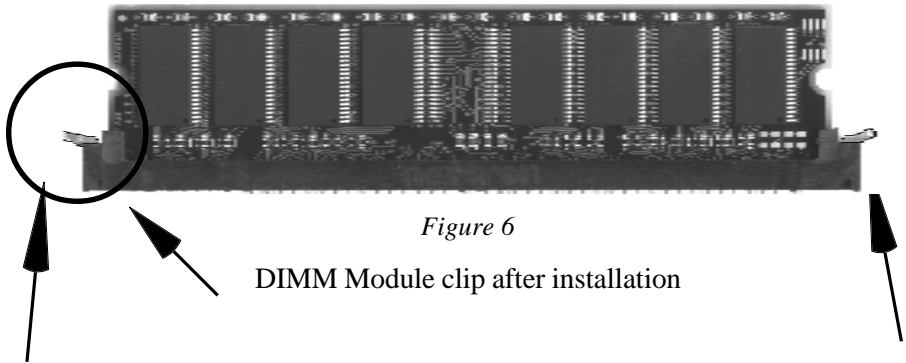


Figure 5



To remove the DIMM module simply press down both of the white clips on either side and the module will be released from the socket.

Section 3-3

Device Connectors

Please install the motherboard into the chassis.

Now that your motherboard is installed you are ready to connect all your connections (figure 7).

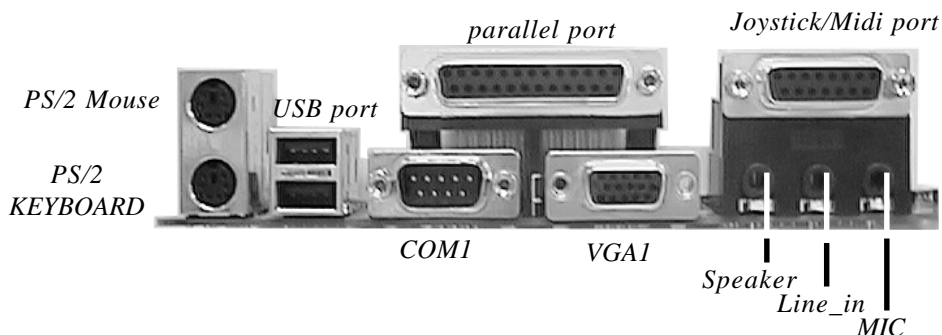



Figure 7

- J2:** Chassis Panel Connector
 - Keylock, Speaker, Reset
- J3:** Turbo LED, HDD LED, IR Conn., Sleep/Power_ON
- J4:** CPU Fan Power
 - A plug-in for the CPU Fan Power
- J6:** Chassis Fan Power
 - A plug-in for the chassis Fan Power
- J7:** WOL Connector
- IDE1:** Primary IDE
- IDE2:** Secondary IDE
- FDD1:** Floppy Controller Connector
- PW1:** ATX Power Connector
 - 20-pin power connector

Section 3-4

Device Connectors (continued)

J2 1  **KeyLock** - Keyboard lock switch & Power LED connector

- | | |
|-----------------|------------|
| 1. Power LED(+) | 4. Keylock |
| 2. N/C | 5. GND |
| 3. GND | |

1 **Speaker** - Connect to the system's speaker for beeping

- | | |
|------------|--------|
| 1. Speaker | 3. GND |
| 2. N/C | 4. GND |

Reset - Closed to restart system.

J3 1 IR Connector

- | | |
|---------|---------|
| 1. VCC | 4. GND |
| 2. NC | 5. IRTX |
| 3. IRRX | |

+ **IDE LED indicator** - LED ON when Onboard PCI IDE Hard disks is activate

+ **Turbo LED indicator** - LED ON when higher speed is selected

- **Power On/Off** - This is connected to the power button on the case.

- Using the Soft-Off by Pwr-BTTN feature, you can choose either Instant Off (turns system off immediatly), or 4 sec delay (you need to hold the button down for 4 seconds before the system turns off). When the system is in 4 sec delay mode, we has added a special feature to make the system go into suspend mode when the button is pressed momentarily.

Section 4

AWARD BIOS SETUP

BIOS Instructions

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

To enter the Setup Program :

Power on the computer and press the key immediately, this will bring you into the BIOS CMOS SETUP UTILITY.

ROM PCI / ISA BIOS (2A5IMPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION INTEGRATED PERIPHERALS LOAD SETUP DEFAULTS	SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : QUIT F10 : Save & Exit Setup	↑ ↓ → ← : SELECT ITEM (Shift)F2 : Change Color
Time, Date, Hard Disk Type...	

Figure 1: CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction key) to the item and pressing the ‘Enter’ key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose “Standard CMOS Setup” in the CMOS SETUP UTILITY Menu (Figure 2). The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select), the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

ROM PCI/ISA BIOS(2A5IMPA9)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Apr 17 1996
Time (hh:mm:ss) : 14 : 30 : 50

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master	: Auto	0	0	0	0	0	0	Auto
Primary Slave	: Auto	0	0	0	0	0	0	Auto
Secondary Master	: Auto	0	0	0	0	0	0	Auto
Secondary Slave	: Auto	0	0	0	0	0	0	Auto

Drive A : 1.44M, 3.5 in.
Drive B : None
Floppy 3 Mode Support : Disabled

Video : EGA/VGA
Halt On : A11, But Keyboard

Base Memory : 640K
Extended Memory : 261120K
Other Memory : 384K

Total Memory : 262144K

ESC : Quit
F1 : Help

↑ ↓ → ← : Select Item
(Shift) F2 : Change Color

PU/PD/+/- : Modify

Figure 2: Standard CMOS Setup

NOTE: If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

NOTE: The “Halt On:” field is used to determine when to halt the system by the BIOS if an error occurs.

NOTE: Floppy 3 Mode support is a mode used to support a special 3.5” drive used in Japan. This is a 3.5” disk that stores only 1.2 MB, the default setting for this is disabled.

4-2 BIOS Features Setup

Selecting the “BIOS FEATURES SETUP” option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer’s default values for the EP-61BXC-A.

Pressing the [F1] key will display a help message for the selected item.

ROM PCI/ISA BIOS(2A5IMPA9)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS	Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF	Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF	Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF	Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D4000-D7FFF	Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF	Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFFF	Shadow	: Disabled
Boot Up NumLock Status	: On			
Memory Parity Check	: Disabled			
Typematic Rate Setting	: Disabled			
Typematic Rate (Chars/Sec)	: 6			
Type matic Delay (Msec)	: 250			
Security Option	: Setup			
PCI/VGA Palette Snoop	: Disabled			
Assign IRQ For VGA	: Enabled			
OS Select For DRAM > 64MB	: Non-OS2			
Report No FDD For WIN 95	: Yes			
		Esc : Quit	↑ ↓ → ← : Select Item	
		F1 : Help	PU/PD/+/- : Modify	
		F5 : Old Values	(Shift) F2 : Color	
		F7 : Load Setup Defaults		

Figure 3: BIOS Features Setup

Virus Warning: During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

The default value is Disabled.

Enabled: *Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector.*

Disabled: *No warning message will appear when anything attempts to access the boot sector.*

Note: *Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.*

CPU Internal Cache: This controls the status of the processor's internal cache area.

The default is Enabled.

Enabled: *This activates the processor's internal cache thereby increasing performance.*

Disabled: *This deactivates the processor's internal cache thereby lowering performance.*

External (L2) Cache: This controls the status of the external (L2) cache area.

The default is Enabled.

Enabled: *This activates the motherboard's L2 cache thereby increasing performance.*

Disabled: *This deactivates the motherboard's L2 cache thereby lowering performance.*

Quick Power On Self Test: This category speeds up the Power On Self Test (POST).

The default is Enabled.

Enabled: *This setting will shorten or skip of the items checked during POST.*

Disabled: *Normal POST.*

Boot Sequence: This category determines which drive is searched first by the O/S (Operating System).

The default is A,C,SCSI.

The following is your list of options:

[A, C, SCSI] - [C, A, SCSI] - [C, CD-ROM, A] - [CD-ROM, C, A]

[D, A, CD-ROM], [E, A, CD-ROM] - [F, A, CD-ROM] - [SCSI, A, C]

[SCSI C, A] - [C Only]

Swap Floppy Drive: This will swap your physical drive letters A & B if you are using two floppy disks.

The default is Disabled.

***Enabled:** Floppy A & B will be swapped under the O/S.*

***Disabled:** Floppy A & B will be not swapped.*

Boot Up Floppy Seek: During Power-On-Self-Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. Only 360K type is 40 tracks while 760K, 1.2MB and 1.44MB are all 80 tracks.

The default is Enabled.

***Enabled:** The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks.*

***Disabled:** The BIOS will not search for the type of floppy disk drive by track number.*

***NOTE:** BIOS can not tell the difference between 720K, 1.2MB and 1.44MB drive types as they are all 80 tracks.*

Boot Up NumLock Status: This controls the state of the NumLock key when the system boots.

The default is On.

***On:** The keypad acts as a 10-key pad.*

***Off:** The keypad acts like the cursor keys.*

Typematic Rate Setting: This determines the keystrokes repeat rate.

The default is Disabled.

***Enabled:** Allows typematic rate and typematic delay programming.*

***Disabled:** The typematic rate and typematic delay will be controlled by the keyboard controller in your system.*

Typematic Rate (Chars/Sec): This is the number of characters that will be repeated by a keyboard press.

The default is 6.

***6:** 6 characters per second. **8:** 8 characters per second.*

***10:** 10 characters per second. **12:** 12 characters per second.*

***15:** 15 characters per second. **20:** 20 characters per second.*

***24:** 24 characters per second. **30:** 30 characters per second.*

Typematic Delay (msec): This setting controls the time between the first and the second character displayed by typematic auto-repeat.

The default is 250.

250: 250 msec.

500: 500 msec.

750: 750 msec.

1000: 1000 msec.

Security Option: This category allows you to limit access to the System and Setup, or just to Setup.

The default is Setup.

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

***Setup:** The system will boot; but the access to Setup will be denied if the incorrect password is not entered at the prompt.*

PCI/VGA Palette Snoop: This field controls the ability of a primary PCI VGA controller to share a common palette (When a snoop write cycles) with an ISA video card.

The default is Disabled.

***Enabled:** If an ISA card is connected to a PCI VGA card via the VESA connector, and that ISA card connects to a VGA monitor, then that ISA card uses the RAMDAC of the PCI card.*

***Disabled:** Disables the VGA card Palette Snoop function.*

Assign IRQ For VGA: This option allows BIOS to assign IRQ for VGA device

***Enabled:** The system was assigned IRQ for VGA Card.*

***Disabled:** The system was not assigned IRQ for VGA Card.*

OS Select For DRAM > 64MB: Some operating systems require special handling. Use this option only if your system has greater than 64MB of memory.

The default is Non-OS2.

***OS2:** Select this if you are running the OS/2 operating system with greater than 64MB of RAM.*

***Non-OS2:** Select this for all other operating systems and configurations.*

Report No FDD For WIN95: This option allows BIOS to indicate whether WIN95 is with FDD or not. The Default value is NO.

***NO:** Report No FDD for WIN95.*

YES: Report FDD for WIN95

Video BIOS Shadow: This option allows video BIOS to be copied into RAM. Video Shadowing will increase the video performance of your system. The default is Enabled.

Enabled: Video shadow is enabled.

Disabled: Video shadow is disabled.

C8000 - CBFFF Shadow:

CC000 - CFFFF Shadow:

D0000 - D3FFF Shadow:

D4000 - D7FFF Shadow:

D8000 - DBFFF Shadow:

DC000 - DFFFF Shadow:

These categories determine whether ROMs from option cards will be copied into RAM. This will be in 16K byte or 32K byte units, and the size will depend on chipset of the option card.

Enabled: Optional shadow is enabled.

Disabled: Optional shadow is disabled.

4-3 Chipset Features Setup

Choose the “CHIPSET FEATURES SETUP” in the CMOS SETUP UTILITY menu to display following menu.

ROM PCI/ISA BIOS(2A5IMPA9)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Refresh Rate Control	: 15.6us	System BIOS Cacheable	: Disabled
Ref/Act Command Delay	: 6T	Video BIOS Cacheable	: Enabled
Refresh Queue Depth	: 12	Memory Hole at 15M-16M	: Disabled
RAS Precharge Time	: 3T	PCI Post Write Buffer	: Disabled
RAS to CAS Delay	: 3T	PCIDelayed Transaction	: Disabled
ISA Bus Clock Frequency	: PCICLK/4	Auto Detect DIMM/PCI Clk	: Enabled
Starting Point of Paging	: 1T	Spread Spectrum	: Disabled
NA# Enabled	: Enabled		
L2 Cache Burst RD Cycle	: Delay 1 T		
SDRAM CAS Latency	: 3T		
SDRAM WR Retire Rate	: x-1-1-1		
DRAM opt RAM Precharge	: Enabled		
PCI Peer Concurrency	: Enabled		
Read Prefetch Memory RD	: Enabled		
Assert TRDY After Prefet	: 2 QWs		
CPU to PCI Burst Mem. WR	: Enabled	Esc : Quit	↑ ↓ → ← : Select Item
CPU to PCI Post Write	: Enabled	F1 : Help	PU/PD/+/- : Modify
AGP Aperture Size	: 64MB	F5 : Old Values	(Shift) F2 : Color
		F7 : Load Setup Defaults	

Figure 4: Chipset Features Setup

Refresh Rate Control: Select the period required to refresh the DRAMs, according to DRAM specifications.
The default is 15.6us.

The choice: **3.9us, 7.8us, 15.6us:**

Ref/Act Command Delay: Set the DRAM clock of the refresh command to refresh/active command delay.
The default is 6T.

The choice: **5T, 6T, 7T, 8T:**

Refresh Queue Depth: Set the depth of refresh queue.
The default is 12.
The choice: **0, 4, 8, 12**

Ras Precharge Time: The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

The default is 3T

The choice: **2T, 3T, 4T, 5T**

RAS to CAS Delay: When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS(row address strobe) to CAS(column address strobe).

The default is 3T.

The choice: **2T, 3T, 4T, 5T**

ISA Bus Clock Frequency: You can set the speed of the AT bus at one-third or one-fourth of the CPU clock speed.

The default is PCICLK/4.

The choice: **7.159MHz, PCICLK/3, PCICLK/4**

Starting Point of Paging: This value controls the start timing of memory paging operations.

The default is 1T.

The choice: **1T, 2T, 4T, 8T**

NA# Enable: Selecting *Enabled* permits pipelining, in which the chipset signals the CPU for a new memory address before all data transfers for the current cycle are complete, resulting in faster performance.

The default is Enabled.

L2 Cache Burst RD Cycle: These timing numbers are the pattern of cycles the CPU uses to read data from the cache.

The default is Delay 1T

The choice: **Normal, Delay 1T**

SDRAM CAS Latency: When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

The default is 3T.

The choice: **2T, 3T**

SDRAM WR Retire Rate: The system designer must select the correct timing for data transfers from the write buffer to memory, according to DRAM specifications. The default is X-1-1-1.

The choice: **0WS, 1WS**

DRAM Opt RAS Precharge: The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. The default is Enabled.

The choice: **Enabled, Disabled**

PCI Peer Concurrency: Peer concurrency means that more than one PCI device can be active at a time. The default is Enabled.

The choice: **Enabled, Disabled:**

Read Prefetch Memory RD: When this item is *Enabled*, the system is allowed to prefetch the next read instruction and initiate the next process. The default is Enabled.

Assert TRDY After Prefet: When you select 1QWs SiS530 asserts its first TRDY# for 1 transaction after it prefetched 1 quadword of data from system memory. Otherwise, SiS530 asserts its first TRDY# after 2 quadwords are prefetched.

The default is 2 QWs.

CPU to PCI Burst Mem. WR: Select *Enabled* permits PCI burst memory write cycles, for faster performance. When *Disabled*, performance is slightly slower, but more reliable.

The default is Enabled.

CPU to Post Write: Select *Enabled* to use a fast buffer for posting writes to memory. Using a fast buffer releases the CPU before completion of a write cycle to DRAM.

The default is Enabled.

AGP Aperture Size: The amount of system memory that the AGP card is allowed to share.

The default is 64.

4: 4MB of systems memory accessible by the AGP card.

8: 8MB of systems memory accessible by the AGP card.

16: 16MB of systems memory accessible by the AGP card.

32: 32MB of systems memory accessible by the AGP card.

64: 64MB of systems memory accessible by the AGP card.

128: 128MB of systems memory accessible by the AGP card.

256: 256MB of systems memory accessible by the AGP card.

System BIOS Cacheable: This allows you to copy your BIOS code from slow ROM to fast RAM.

The default is Enabled.

Enabled: The option will improve system performance. However, if any program writes to this memory area, a system error may result.

Disabled: System BIOS non-cacheable.

Video BIOS Cacheable: This option copies the video ROM BIOS to fast RAM (C0000h to C7FFFh).

The default is Enabled.

Enabled: Enables the Video BIOS Cacheable to speed up the VGA Performance.

Disabled: Will not use the Video BIOS Cacheable function.

Memory Hole at 15M-16M: You can reserve this memory area for the use of ISA adaptor ROMs.

The default is Disabled.

Enabled: This field enables the main memory (15~16MB) to remap to ISA BUS.

Disabled: Normal Setting.

NOTE: *If this feature is enabled you will not be able to cache this memory segment.*

Auto Detect DIMM/PCI Clk: Allows you to stop DIMM/PCI Clock drive when the DIMM site or PCI Slot are not plug. This item may help reduce EMI.

The default is Enabled.

Enabled: Provides unused DIMM/PCI to stop.

Disabled: Provides the clock generator always driving.

Spread Spectrum : Allows you to active the Spread Spectrum function for reduce EMI. (Note: When Enabled the item that performance will be impacted).

The default is Disabled.

Enabled: Provides the Spread Spectrum function from clock generator.

Disabled: NO Spread Spectrum function.

4-4 Power Management Setup

Choose the “POWER MANAGEMENT SETUP” in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it’s absolutely necessary.

ROM PCI/ISA BIOS (2A5IMPA9)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI Function	: Enabled	VGA Activity	: Enabled
Power Management	: User Define	IRQ [3-7, 9-15], NMI	: Enabled
Video off option	: Susp, Stby -> off	IRQ 8 Break Suspend	: Disabled
Video off Method	: V/H SYNC+Blank	Power Button Over Ride	: Delay 4 Sec
Switch Function	: Break/Wake	Ring Power Up Control	: Enabled
Doze Speed (div by)	: 2/8	GPIO5 Power Up Control	: Enabled
Stdby Speed (div by)	: 1/8	KB Power ON Password	: Enter
MODEM Use IRQ	: 9	Power Up by Alarm	: Disabled
Hot Key Function As	: Power off		
** PM Timers **			
HDD off After	: Disabled		
Doze Mode	: Disabled		
Standby Mode	: Disabled		
Suspend Mode	: Disabled		
** PM Events **			
HDD Ports Activity	: Enabled	Esc : Quit	↑ ↓ → ← : Select Item
COM Ports Activity	: Enabled	F1 : Help	PU/PD/+/- : Modify
LPT Ports Activity	: Enabled	F5 : Old Values	(Shift) F2 : Color
		F7 : Load Setup Defaults	

Figure 5: Power Management Setup

You can only change the content of Doze Mode, Standby Mode, and Suspend Mode when the Power Management is set to ‘User Define’.

ACPI Function: This option allows you to select ACPI Function.

The default is Enabled.

***Enabled:** Support ACPI function for new O.S*

***Disabled:** No Support ACPI function.*

Power Management: Use this to select your Power Management selection.

The default is User define.

***Disabled:** The system operates in NORMAL conditions (Non-GREEN), and the Power Management function is disabled.*

***Max. saving:** Maximum power savings. Inactivity period is 1 minute in each mode.*

***Min. saving:** Minimum power savings. Inactivity period is 1 hour in each mode.*

***User define:** Allows user to define PM Timers parameters to control power saving mode.*

Video off Option: When enabled, this feature allows the VGA adapter to operate in a power saving mode.

The default is susp, stby -> off

***Always On:** Monitor will remain on during power saving modes.*

***Suspend-->Off:** Monitor blanked when the systems enters the Suspendn mode.*

***Susp, Stby -> Off:** Monitor blanked when the system enters either Suspend or Standby modes.*

***Susp, Stby -> Off:** Monitor blanked when the system enters any power saving mode.*

Video Off Method: This option allows you to select how the video will be disabled by the power management.

The default is V/H Sync + Blank

***V/H Sync + Blank:** System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.*

***DPMS:** Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video sub-system to select video power management values.*

***Blank Screen:** System only writes blanks to the video buffer.*

Switch Function: You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period.
The default is Break/wake.

Doze Speed (div by): Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8.

Stdby Speed (div by): Select a divisor to reduce the CPU speed during *Standby* mode to a fraction of the full CPU speed. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8.

MODEM Use IRQ: Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Default is IRQ 9.

<i>N/A: No IRQ is used.</i>	3: IRQ 3
4: IRQ 4	5: IRQ 5
7: IRQ 7	9: IRQ 9
10: IRQ 10	11: IRQ 11

The 530A supports HDD Power Down, Doze and Standby power saving functions when using the Intel Pentium II Processor.
The default is Disabled

Hot Key Power Off: Select *Enabled* if your system has a hot key for soft power off.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when User Defined power management has been selected. See above for available selections.

HDD Off After: By default, this item is Disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.

Doze Mode: When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode: When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode: When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

PM Events

You may disabled activity monitoring of some common I/O events and interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity.

When *On*(or named, in the case of LPT & COM), any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD Ports Activity: When set to *On*(default), any event occurring at a HDD (serial) port will awaken a system which has been powered down.

COM Ports Activity: When set to *On*(default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

LPT Ports Activity: When set to *On*(default), any event occurring at a LPT (printer) port will awaken a system which has been powered down.

VGA Activity: When set to *On*(default), any event occurring at VGA will awaken a system which has been powered down.

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *off*.

When set *On*, activity will enither prevent the system from going into a power management mode nor awaken it.

- **IRQ [3-7, 9-15], NMI**

● **IRQ 8 Break Suspend:** You can *Enabled* or *Disabled* monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Power Button Over Ride: You could press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has “hung”.

Ring Power Up Control: When you select Enabled, a signal from ring returns the system to Full On state.

GPIO5 Power Up Control: When you select Enabled, a signal from General Purpose Input 05 returns the system to Full On state.

KB Power ON Password: When you set a password for keyboard. The password you set the keyboard that returns the system to Full On state.

To install a password, follow these steps:

1. Highlight the item Password Settings on the main menu and press **Enter**.
2. The password dialog box will appear.
3. If you are installing a new password, carefully type in the password. You cannot use more than 8 characters or numbers. The password will differentiate between upper case and lower characters. Press **Enter** after you have typed in the password. If you are deleting a password that is already installed just press **Enter** when the password dialog box appears.
4. The system will ask you to confirm the new password by asking you to type it in a second time. Carefully type the password again and press **Enter**, or just press **Enter** if you are deleting a password that is already installed.
5. If you typed the password correctly, the password will be installed.

Power Up by Alarm: When you select Enabled, the following fields appear. They let you set the alarm that returns the system to Full On state.

4-5 PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots.

WARNING: Conflicting IRQ's may cause the system to not find certain devices.

ROM PCI/ISA BIOS(2A5IMPA9)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By Reset Configuration Data	: Auto : Disabled	PCI IRQ Actied By Assign IRQ FOR USB	: Level : Enabled
		Slot 1 use IRQ No	: Auto
		Slot 2 use IRQ No	: Auto
		Slot 3 use IRQ No	: Auto
		PCI Audio use IRQ No	: 9
		Esc : Quit F1 : Help F5 : Old Values F7 : Load Setup Defaults	
		↑ ↓ → ← : Select Item PU/PD/+/- : Modify (Shift) F2 : Color	

Figure 6: PCI Configuration Setup

Resources Controlled By: Who controlled the system PNP/PCI resources. The default is Manual.

Manual: PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA Cards.

Auto: If your ISA card and PCI card are all PNP cards, BIOS will assign the interrupt resource automatically.

Reset Configuration Data: This setting allows you to clear ESCD data. The default is Disabled

Disabled: Normal Setting.

Enabled: If you have plugged in some Legacy cards to the system and they were recorded into ESCD (Extended System Configuration Data), you can set this field to Enabled in order to clear ESCD.

PCI IRQ Activated: This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Level:

Edge:

Assign IRQ For USB: This item allows BIOS to assign whether IRQ is with USB or not. If you have not connect the USB device. Can release the IRQ for other device.

The default is Enabled.

Enabled: Provides IRQ for USB device.

Disabled: Release IRQ for other device.

4-6 Load Setup Defaults

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

4-7 Integrated Peripherals

ROM PCI/ISA BIOS(2A5IMPA9)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

Internal PCI/IDE	: Both	Onboard Parallel Mode	: ECP/EPP
IDE Primary Master PIW	: Auto	ECP Mode Use DMA	: 3
IDE Primary Slave PIO	: Auto	Parallel Port EPP Type	: EPP1.9
IDE Secondary Master PIO	: Auto	PS/2 mouse function	: Enabled
IDE Secondary Slave PIO	: Auto	USB Keyboard Support	: Disabled
Primary Master UltraDMA	: Auto	USB Keyboard Support	: Disabled
Primary Slave UltraDMA	: Auto	Init Display First	: PCI Slot
Secondary Master UltraDMA	: Auto		
Secondary Slave UltraDMA	: Auto		
IDE Burst Mode	: Enabled	Current CPU Temperature	: 71°C/159°F
IDE Data Port Post Write	: Disabled	Current CPU Fan Speed	: 4245 RPM
IDE HDD Block Mode	: Enabled	Current ChassisFan Speed	: 0 RPM
		+12V : 12.41V	Vcc : 5.00V
Onboard FDD Controller	: Enabled	Vio : 3.45V	Vcore : 2.90V
Onboard Serial Port 1	: 3F8/IRQ4		
Onboard Serial Port 2	: 2F8/IRQ3	Esc : Quit	↑ ↓ → ← : Select Item
UART 2 Mode	: Standard	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
Onboard Parallel Port	: 378/IRQ7	F7 : Load Setup Defaults	

Figure 8: Integrated Peripherals

Note: If you do not use the Onboard IDE connector, then you will need to set Onboard Primary PCI IDE: Disabled and Onboard Secondary PCI IDE: Disabled

Note: The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm.).

IDE Primary Master PIO

The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the IDE Programmed interrupt mode.

IDE Primary Slave PIO

The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the IDE Programmed interrupt mode.

IDE Secondary Master PIO:

The default is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the IDE Programmed interrupt mode.

IDE Secondary Slave PIO:

The default is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode.

Mode 0~4: Manually set the IDE Programmed interrupt mode.

Primary Master UltraDMA: This allows you to select the mode of operation for the hard drive.

The default is Auto.

Auto: The computer will select the optimal setting.

Disabled: The hard drive will run in normal mode.

Primary Slave UltraDMA: This allows you to select the mode of operation for the hard drive.

The default is Auto.

Auto: The computer will select the optimal setting.

Disabled: The hard drive will run in normal mode.

Secondary MasterUltraDMA: This allows you to select the mode of operation for the hard drive.

The default is Auto.

Auto: The computer will select the optimal setting.

Disabled: The hard drive will run in normal mode.

Secondary Slave UltraDMA: This allows you to select the mode of operation for the hard drive.

The default is Auto.

Auto: The computer will select the optimal setting.

Disabled: The hard drive will run in normal mode.

IDE HDD Block Mode: IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time.

The default is Enabled.

***Enabled:** Enable IDE HDD Block Mode. Provides higher HDD transfer rates.*

***Disabled:** Disable IDE HDD Block Mode.*

Onboard FDD Controller: This controls the state of the onboard floppy controller. The default value is Enabled.

***Enabled:** Enable the Onboard Winbond Chips's floppy drive interface controller.*

***Disabled:** Disable the Onboard Winbond Chip's floppy drive interface controller.*

Onboard Serial Port 1: This field allows the user to configure the 1st serial port. The default is 3F8/IRQ4.

***AUTO:** Enable Onboard Serial port 1 and address is Auto adjusted*

***COM1:** Enable Onboard Serial port 1 and address is 3F8H/IRQ4.*

***COM2:** Enable Onboard Serial port 1 and address is 2F8H/IRQ3.*

***COM3:** Enable Onboard Serial port 1 and address is 3E8H/IRQ4.*

***COM4:** Enable Onboard Serial port 1 and address is 2E8H/IRQ3.*

***Disabled:** Disable Onboard winboard CHIP's Serial port 1.*

Onboard Serial Port 2: This field allows the user to configure the 2nd serial port. The default is 2F8/IRQ3.

***AUTO:** Enable Onboard Serial port 2 and address is Auto adjusted*

***COM1:** Enable Onboard Serial port 2 and address is 3F8H/IRQ4.*

***COM2:** Enable Onboard Serial port 2 and address is 2F8H/IRQ3.*

***COM3:** Enable Onboard Serial port 2 and address is 3E8H/IRQ4.*

***COM4:** Enable Onboard Serial port 2 and address is 2E8H/IRQ3.*

***Disabled:** Disable Onboard winboard CHIP's Serial port 2.*

Onboard UART 2 Mode: The default value is standard. This field allows the User to select the COM2 port that can support a serial Infrared Interface. The default is Standard

***Standard:** Support a Serial Infrared Interface IrDA.*

***QHPSIR:** Support a HP Serial Infrared Interface format.*

***ASKIR:** Support a Sharp Serial Infrared Interface format.*

Onboard Parallel port: This field allows the user to configure the LPT port. The default is 378 / IRQ7.

378H: Enable Onboard LPT port and address is 378H and IRQ7.

278H: Enable Onboard LPT port and address is 278H and IRQ5.

3BCH: Enable Onboard LPT port and address is 3BCH and IRQ7.

Disabled: Disable Onboard Winbond Chip's LPT port.

Parallel port Mode: This field allows the user to select the parallel port mode. The default value is ECP+EPP.

Normal: Standard mode. IBM PC/AT Compatible bidirectional parallel port.

EPP : Enhanced Parallel Port mode.

ECP : Extended Capability Port mode.

EPP+ECP: ECP Mode & EPP Mode.

ECP Mode USE DMA: This field allows the user to select DMA1 or DMA3 for the ECP mode. The default is 3.

1: This field selects the routing of DMA1 for the ECP mode.

3: This field selects the routing of DMA3 for the ECP mode.

USB Keyboard Support: This controls the activation status of an optional USB keyboard that may be attached. The default is disabled.

Enabled: Enable USB keyboard support.

Disabled: Disable USB keyboard support.

Current CPU Temperature: This is the current temperature of the CPU.

Current CPU FAN Speed: The current CPU fan speed in RPMs.

Current Chassis FAN Speed: The current chassis fan speed in RPMs.

Vcore: The voltage level of the CPU.

Vio: The voltage level of the M/B's I/O.

Vio, +5V, +12V: The voltage level of the switch power supply.

4-8 Change Supervisor or User Password

To change the password, choose the “SUPERVISOR PASSWORD or USER PASSWORD” option from the CMOS SETUP UTILITY menu and press [Enter].

NOTE: Either “Setup” or “System” must be selected in the “Security Option” of the BIOS FEATURES SETUP menu.

1. If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message:

Enter Password:

Press the [Enter] key to continue after the proper password is given.

2. If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password, the SETUP UTILITY will display a message and ask for a confirmation.

Confirm Password:

3. After pressing the [Enter] key (ROM password if the option was not used) or current password (user-defined password), the user can change the

password and store new one in CMOS RAM. A maximum of 8 characters can be entered.

4-9 IDE HDD Auto Detection

The “IDE HDD auto detection” utility is a very useful tool, especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don’t need the “IDE HDD AUTO DETECTION” utility. The BIOS will Auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS(2A5IMPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS HEADS PRECOMP LANDZONE SECTORS MODE

Primary Master :

Select Secondary Slave Option (N=Skip) : N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2 (Y)	4310	524	255	0	14847	63	LBA
1	4310	14848	9	65535	14847	63	NORMAL
3	4310	928	144	65535	14847	63	LARGE

Note: Some OSes (like SCO-UNIX) must use NORMAL for installation

ESC : Skip

Figure 8: IDE HDD Auto Detection

NOTE: HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are.

1024, 16 & 63
 no. Cylinder (1024)
 x no. Head (16)
 x no. Sector (63)
x no. per sector (512)
 528 Megabytes

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that!

LBA (Logical Block Addressing) mode: A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 GigaBytes which is obtained by the following formula:

no. Cylinder (1024)
 x no. Head (255)
 x no. Sector (63)
x bytes per sector (512)
 8.4 GigaBytes

LARGE mode: Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode.

<u>CYLS</u>	<u>HEADS</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside

INT 12h in order to access the right HDD address!

Maximum HDD size:

no. Cylinder	(1024)
x no. Head	(32)
x no. Sector	(63)
<u>x bytes per sector</u>	<u>(512)</u>
	1 GigaByte

Note: To support LBA or LARGE mode of HDDs, there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.

4-10 Save & Exit Setup

The “SAVE & EXIT SETUP” option will bring you back to the boot up procedure with all the changes you just recorded in the CMOS RAM.

4-11 Exit Without Saving

The “EXIT WITHOUT SAVING” option will bring you back to normal boot up procedure without saving any data into CMOS RAM.

All old data in the CMOS will not be destroyed.

Appendix A:

A-1 MEMORY MAP

Address Range	Size	Description
[00000-7FFFF]	512K	Conventional memory
[80000-9FBFF]	127K	Extended Conventional memory
[9FC00-9FFFF]	1K	Extended BIOS data area if PS/2 mouse is installed
[A0000-C7FFF]	160K	Available for Hi DOS memory
[C8000-DFFFF]	96K	Available for Hi DOS memory and adapter ROMs
[E0000-EEFFF]	60K	Available for UMB
[EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
[F0000-F7FFF]	32K	BIOS CMOS setup utility
[F8000-FCFFF]	20K	BIOS runtime service routine (2)
[FD000-FDFFF]	4K	Plug and Play ESCD data area
[FE000-FFFFFF]	8K	BIOS runtime service routine (1)

A-2 I/O MAP

[000-01F]	DMA controller.(Master)
[020-021]	INTERRUPT CONTROLLER.(Master)
[022-023]	CHIPSET control registers. I/O ports.
[040-05F]	TIMER control registers.
[060-06F]	KEYBOARD interface controller.(8042)
[070-07F]	RTC ports & CMOS I/O ports.
[080-09F]	DMA register.
[0A0-0BF]	INTERRUPT controller.(Slave)
[0C0-0DF]	DMA controller.(Slave)
[0F0-0FF]	MATHCOPROCESSOR.
[1F0-1F8]	HARD DISK controller.
[278-27F]	PARALLEL port 2.
[2B0-2DF]	GRAPHICS adapter controller.
[2F8-2FF]	SERIAL port 2.
[360-36F]	NETWORK ports.
[378-37F]	PARALLEL port 1.
[3B0-3BF]	MONOCHROME & PARALLEL port adapter.
[3C0-3CF]	EGA adapter.

[3D0-3DF]	CGA adapter.
[3F0-3F7]	FLOPPY DISK controller.
[3F8-3FF]	SERIAL port 1.

A-3 TIMER & DMA CHANNELS MAP

TIMER MAP:

TIMER Channel 0	System timer interrupt.
TIMER Channel 1	DRAM REFRESH request.
TIMER Channel 2	SPEAKER tone generator.

DMA CHANNELS:

DMA Channel 0	Available.
DMA Channel 1	Onboard ECP (Option).
DMA Channel 2	FLOPPY DISK (SMC CHIP).
DMA Channel 3	Onboard ECP (default).
DMA Channel 4	Cascade for DMA controller 1.
DMA Channel 5	Available.
DMA Channel 6	Available.
DMA Channel 7	Available

A-4 INTERRUPT MAP

NMI :

Parity check error.

IRQ (H/W):

0	System TIMER interrupt from TIMER 0.
1	KEYBOARD output buffer full.
2	Cascade for IRQ 8-15.
3	SERIAL port 2.
4	SERIAL port 1.
5	PARALLEL port 2.
6	FLOPPY DISK (SMC CHIP).
7	PARALLEL port 1.
8	RTC clock.
9	Available.
10	Available.
11	Available.
12	PS/2 Mouse.
13	MATH coprocessor.

- 14 Onboard HARD DISK (IDE1) channel.
- 15 Onboard HARD DISK (IDE1) channel.

A-5 RTC & CMOS RAM MAP

RTC & CMOS:

- 00 Seconds.
- 01 Second alarm.
- 02 Minutes.
- 03 Minutes alarm.
- 04 Hours.
- 05 Hours alarm.
- 06 Day of week.
- 07 Day of month.
- 08 Month.
- 09 Year.
- 0A Status register A.
- 0B Status register B.
- 0C Status register C.
- 0D Status register D.
- 0E Diagnostic status byte.
- 0F Shutdown byte.
- 10 FLOPPY DISK drive type byte.
- 11 Reserve.
- 12 HARD DISK type byte.
- 13 Reserve.
- 14 Equipment type.
- 15 Base memory low byte.
- 16 Base memory high byte.
- 17 Extension memory low byte.
- 18 Extension memory high byte.
- 19-2d
- 2E-2F
- 30 Reserved for extension memory low byte.
- 31 Reserved for extension memory high byte.
- 32 DATE CENTURY byte.
- 33 INFORMATION FLAG.
- 34-3F Reserve.
- 40-7F Reserved for CHIPSET SETTING DATA.

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Appendix B:

B-1 POST CODES

ISA POST codes are typically output to I/O port address 80h.

POST (hex)	DESCRIPTION
01-02	Reserved.
C0	Turn off OEM specific cache, shadow.
03	1. Initialize EISA registers (EISA BIOS only). 2. Initialize all the standard devices with default values Standard devices includes. <ul style="list-style-type: none"> - DMA controller (8237). - Programmable Interrupt Controller (8259). - Programmable Interval Timer (8254). - RTC chip.
04	Reserved
05	1. Keyboard Controller Self-Test.
06	2. Enable Keyboard Interface.
07	Reserved.
08	Verifies CMOS's basic R/W functionality.
C1	Auto-detection of onboard DRAM & Cache.
C5	Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster.
08	Test the first 256K DRAM.
09	OEM specific cache initialization. (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers. Initialize INT numbers from 33-120 with Dummy (Spurious) Interrupt Handler. 2. Issue CUID instruction to identify CPU type. 3. Early Power Management initialization. (OEM specific)
0B	1. Verify the RTC time is valid or not. 2. Detect bad battery. 3. Read CMOS data into BIOS stack area. 4. PnP initializations including. (PnP BIOS only) <ul style="list-style-type: none"> - Assign CSN to PnP ISA card. - Create resource map from ESCD. 5. Assign IO & Memory for PCI devices. (PCI BIOS only)

0C	Initialization of the BIOS Data Area. (40:00 - 40:FF)
0D	<ol style="list-style-type: none"> 1. Program some of the Chipset's value according to Setup. (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed. 3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
0E	<ol style="list-style-type: none"> 1. Test video RAM. (If Monochrome display device found) 2. Show messages including. <ul style="list-style-type: none"> - Award Logo, Copyright string, BIOS Data code & Part No. - OEM specific sign on messages. - Energy Star Logo. (Green BIOS ONLY) - CPU brand, type & speed. - Test system BIOS checksum. (Non-Compress Version only)
0F	DMA channel 0 test.
10	DMA channel 1 test.
11	DMA page registers test.
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2.
17	Reserved.
19	Test 8259 functionality.
1A-1D	Reserved.
1E	If EISA NVM checksum is good, execute EISA initialization. (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size.
31	<ol style="list-style-type: none"> 1. Test Base Memory from 256K to 640K. 2. Test Extended Memory from 1M to the top of memory.
32	<ol style="list-style-type: none"> 1. Display the Award Plug & Play BIOS Extension message. (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port ... according to setup value.
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	<ol style="list-style-type: none"> 1. Initialize Keyboard. 2. Install PS2 mouse.

3E	Try to turn on Level 2 cache. Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h.
3F-40	Reserved.
BF	1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program)
41	2. If auto-configuration is enabled, program the chipset with pre-defined Values.
42	Initialize floppy disk drive controller.
43	Initialize Hard drive controller.
45	If it is a PnP BIOS, initialize serial & parallel ports.
44	Reserved.
45	Initialize math coprocessor.
46-4D	Reserved.
4E	If there is any error detected (such as video, kb...), show all error messages on the screen & wait for user to press <F1> key.
4F	1. If password is needed, ask for password. 2. Clear the Energy Star Logo. (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS.
51	Reserved.
52	1. Initialize all ISA ROMs. 2. Later PCI initializations. (PCI BIOS only) - assign IRQ to PCI devices. - initialize all PCI ROMs. 3. PnP Initializations. (PnP BIOS only) - assign IO, Memory, IRQ & DMA to PnP ISA devices. - initialize all PnP ISA ROMs. 4. Program shadows RAM according to Setup settings. 5. Program parity according to Setup setting. 6. Power Management Initialization. - Enable/Disable global PM. - APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports. 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value.
60	Setup Virus Protection. (Boot Sector Protection) functionality according to Setup setting.

61	<ol style="list-style-type: none">1. Try to turn on Level 2 cache. <p>Note: If L2 cache is already turned on in POST 3D, this part will be skipped.</p> <ol style="list-style-type: none">2. Set the boot up speed according to Setup setting.3. Last chance for Chipset initialization.4. Last chance for Power Management initialization. (Green BIOS only)5. Show the system configuration table.
62	<ol style="list-style-type: none">1. Setup daylight saving according to Setup value.2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting.
63	<ol style="list-style-type: none">1. If there is any changes in the hardware configuration, update the ESCD information. (PnP BIOS only)2. Clear memory that have been used.3. Boot system via INT 19H.
FF	System Booting. This means that the BIOS already pass the control right to the operating system.

B-2 Unexpected Errors:

POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs.0

Appendix C

NOTE:

The "**LOAD SETUP DEFAULTS**" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

ROMPCI/ISA BIOS(2A5IMPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION	LOAD SETUP DEFAULTS
INTEGRATED PERIPHERALS	LOAD SETUP DEFAULTS
LOAD SETUP DEFAULTS	LOAD SETUP DEFAULTS

Load SETUP Default (Y/N)? Y

ESC: QUIT

F10: Save & Exit Setup

↑ ↓ → ← : SELECT ITEM

(Shift)F2 : Change Color

Load Setup Defaults Except Standard COMS SETUP

LOAD SETUP DEFAULTS