Version 1.0

Mainboard Name: MS-6104
Manual Rev: 1.0
BIOS Version: W48X
Release Date: June, 1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Edition

June 1996

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Chapter 1

INTRODUCTION

The PCI P6 NA2 PCI/ISA system board is an ATX high-performance personal computer system board based on the Pentium™ Pro microprocessor.

System Board Specifications

Power Selection:
- ATX or PS/2 Power Selection

Hardware Installation:
- The system board provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The system board provides a Desktop Management Interface (DMI) function which records your sytem board specifications.

CPU:
- The system board supports 150/166/180/200 MHz Intel Pentium Pro CPUs.

Cache Memory:
- Internal Level 1 Cache: 8KB instruction code and 8KB data cache.
- Internal Level 2 Cache: 256KB/512KB(depending on CPU)

Chip Set:

- The system board utilizes the Intel Pentium Pro Chipset which includes SB82441FX (PMC) PCI bridge and memory controller, and SB82442FX(DBX) Data Bus Accelerator and SB82371(P11X3) PCI to ISA Bridge.

Multi-I/O:

- The system board has a built in Plug and Play Winbond W83877 and Multi-I/O chipsets to support 2 high-speed serial ports, one parallel port with ECP and EPP capabilities, and one floppy drive.

Enhanced IDE Support:

- A PCI IDE controller and built-in P11X3 supports dual channels and four hard drives.

IrDA and PS/2 support:

- This board supports an infrared port connector for wireless interface and a jumperless PS/2 mouse connector.

USB support:

- The system board supports a two channel USB port connector.

AHA SCSI BIOS:

- This optional feature supports on-board an AHA AIC 7880 SCSI controller.

Main Memory:

- Supports four memory banks using four 72-pin SIMM sockets.
- Up to 512 Mbytes main memory.
- Supports Fast Page (FP) Mode, Extended Data Output (EDO) Mode, and Burst Extended Data Output (BEDO) Mode DRAM.

- Supports symmetric or asymmetric DRAM memory, 70ns or faster.
- Provides ECC (Error Check Function) Function.

Slots:
- Four 32-bit PCI Bus slots and four 16-bit ISA bus slots. One shared slot that can be used as ISA or PCI.

On-Board I/O:
- A 32-bit enhanced dual channel and 4 enhanced hard drives PCI IDE controller, supports fast-ATA2 PIO Mode 0-4 and bus Master DMA Mode 2.
- One floppy disk drive controllers, two high-speed serial prots, and one parrallel port with ECP or EPP capabilities.
- IrDA function.
- Optional SCSI controller.
- 2 channel USB function.

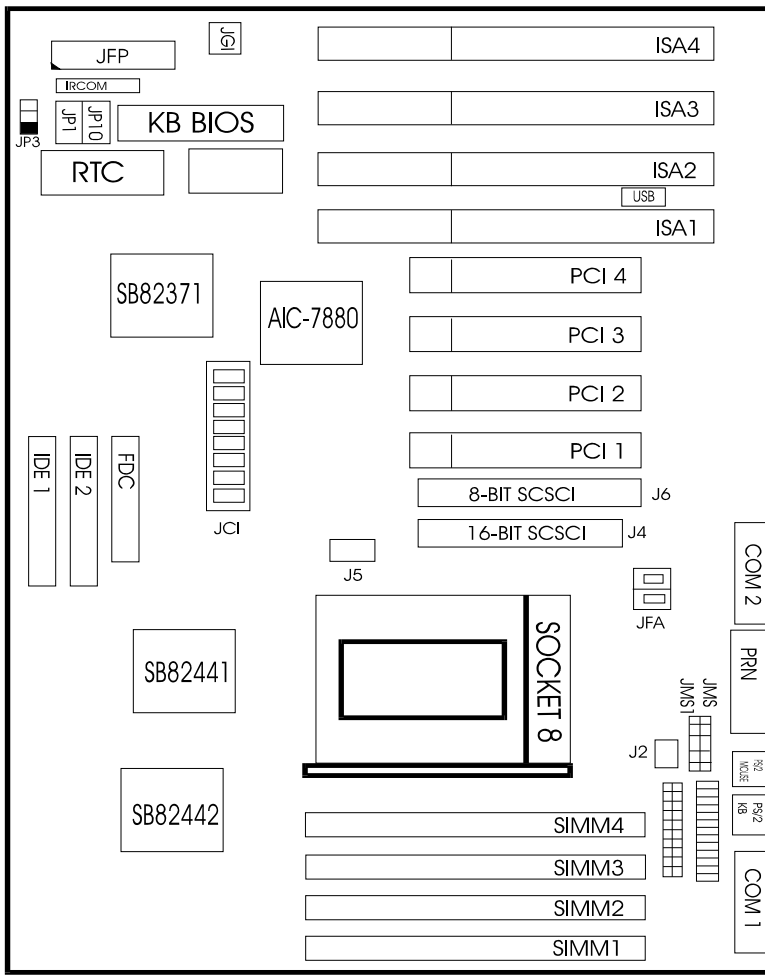
Keyboard Connector:
- PS/2 keyboard interface and PS/2 Mouse interface.
- 5X2-pin connector for PS/2 Keyboard and Mouse.

Dimensions
- ATX size: 30cm x 24.5cm x 6-layer PCB.

Mounting
- 9 mounting holes

1.2 System Board Layout

Figure 1-1



Chapter 2

HARDWARE INSTALLATION

It is important to set jumpers correctly. Improper jumper setting will cause system instability, destruction of components, and/or system hang-up.

Step 1: Set the CPU BUS CLOCK and Core Frequency Ratio (see "JC1 Jumper" section)
JC1 is used for CPU BUS CLOCK and bus to core frequency ratio. Caution: If these jumpers aren't set correctly, it will cause the system to be unstable or system hang-up, and it may reduce the life cycle of the CPU.

Step 2: Install CPU, VRM, DRAM, Expansion Card, and External cables (see "Connectors" section)
Caution: All parts need to be set to avoid system board malfunction.

Step 3: Turn Power on and setup BIOS software (see "BIOS Setup" section)

Jumper Settings

This table is useful to conveniently locate information on specific jumpers and connectors.

Jumper	Setting/Description	Page
JC1	CPU Frequency Selection	2-2
JP3	Flash ROM Selection	2-3
JG1	Power Saving Switch Connector	2-3
JP1	CMOS RAM Clear	2-4
JFP	Case Connector Block	2-7
PS/2-KB	Keyboard Connector	2-9
PS/2-MS	PSII Mouse Connector	2-9
COM1 & COM2	Serial Port Connector	2-10
PRN	Parallel Port Connector	2-10
FDD	Floppy Disk Connector	2-11
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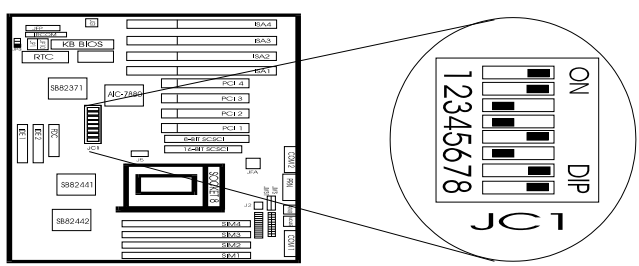
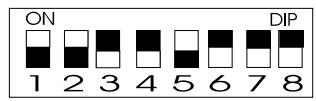
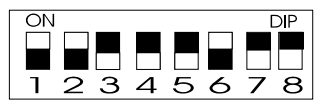
JFAN	CPU Fan Connector	2-12
IRCON	Infrared Module	2-12

CPU Frequency Selection: JC1

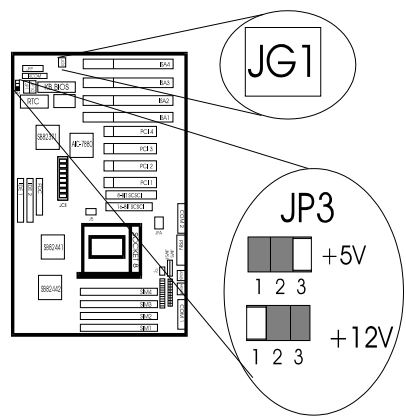
The CPU BUS CLOCK of the MS-6104 supports two frequencies: 60MHz (default) and 66MHz. Refer to the following figure for jumper location and settings.



JC1 SETTINGS

CPU SPEED	JC1
150MHz	
166MHZ	
180MHz	
200MHz	

Flash ROM Selection: JP3



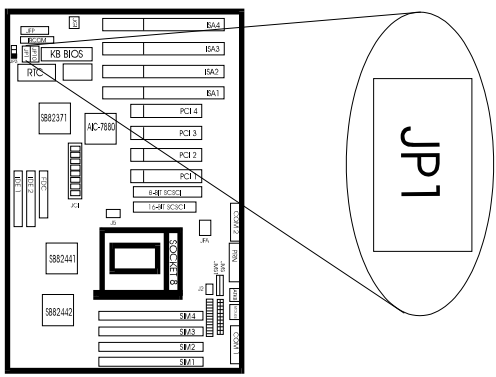
Jumper JP3 sets the mainboard to be used with either +12V or +5V Flash ROM.

Power Saving Switch: JG1

Attaching a power saving switch to this connector will allow the system into sleep mode whenever this switch is pressed.

CMOS RAM Clear: JP1

The system board configuration is stored in CMOS RAM. If you need to clear the system board configuration do the following:

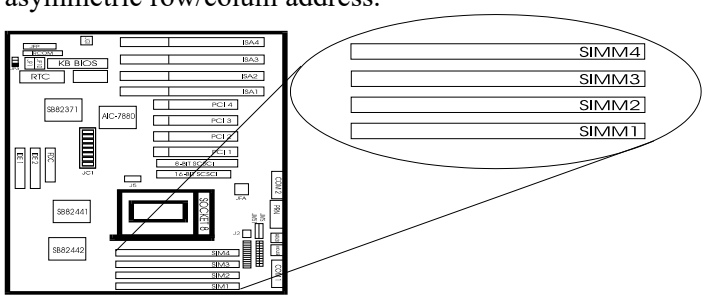


1. Turn power off.
2. Short jumper JP1.
3. Turn power on.
4. Enter the BIOS setup to re-setup the BIOS.
5. Reboot the system.

Note: Some CMOS RAMs require a different procedure:
1. Short jumper JP1.
2. Turn on system
3. Turn off the system
4. Remove JP1 jumper.
5. Turn on power again.
6. Reset BIOS.

System Memory Installation: SIMM1-SIMM4

The system board provides four 72-pin SIMM sockets which are numbered from SIMM1 to SIMM4. The system board supports memory sizes from 8MB to 512MB using 4MB, 8MB, 16MB, 32MB, 64MB, and 128MB DRAM modules. It supports both Fast Page Mode (FP), Extended Data Output Mode (EDO), and Burst Extended Data Output Mode (BEDO), with symmetric or asymmetric row/colum address.



DRAM Population Rules

In order to create a memory array, certain rules must be followed. The following set of rules allows for optimum configuration.

1. DRAM modules must be populated in pairs; the memory array is 64-or-72-bits wide. (64-bit modules are no parity.)

2. DRAM modules can be populated in any order (i.e. SIMM1/2 does not have to be populated before SIMM3/4 are used.)

3. DRAM module pairs need to be populated with the same densities...single or double. For example, SIMM1/2 sockets must be populated with identical densities. However SIMM3/4 sockets can be populated with different densities than SIMM socket pair 1/2. In addition, asymetric DRAMs of the same type should be used in a whole row.

4. BEDO, EDO, FP modes can be mixed in the memory array. However only one type should be used per SIMM socket pair. For example: SIMM sockets 1 & 2 can be populated with EDO while SIMM sockets 3 & 4 can be populated with FP mode type DRAM.

5. The DRAM timing which provides the DRAM speed grade control for the entire memory array must be programmed to use the timing of the slowest DRAM that is currently installed.

Note: To use the ECC (Error Code Correct) function, a SIMM module with parity support must be used. At this time you can turn on the ECC function in the BIOS setup.

Note: Before using DRAM modules, make sure that that the modules used is the same as in the above chart.

DRAM Memory Installation

1. Check to see which side of the plastic safety tab is on the slot before installing.

2. Line up the notch of the module against the slot.

3. Press the module firmly into place at a 45 degree angle.

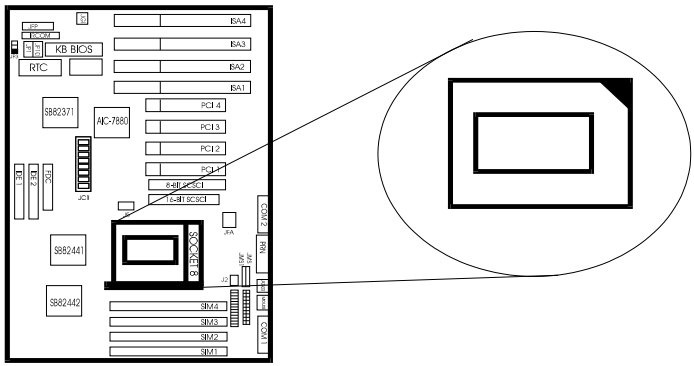
4. Carefully press down on the top edge of the module to set it in the SIMM slot.

5. The plastic guides should go through the two holes on the sides and the metal clips should snap on the other side. If it doesn't slide in easily, take it out and try again.

6. To release module, squeeze both metal clips outwards and rock the module out of the metal clips.

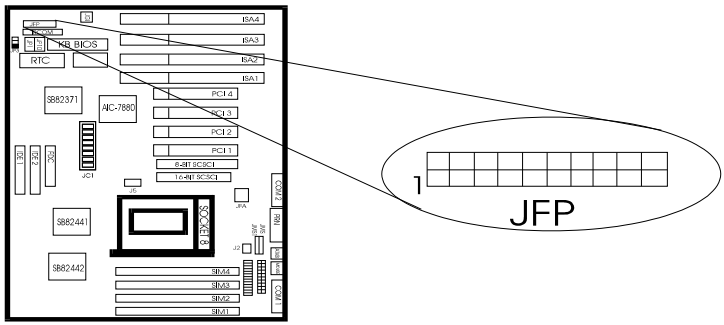
CPU Installation

Open Socket 8 by pulling the lever away from the socket then upwards at a 90 degree right angle. Insert the CPU according to the orientation as shown. IF it does not fall in easily then try a different direction because the pin configuration only fits one way as opposed to earlier CPUs. Make sure that the CPU is well seated and close to the lever. See following figure:

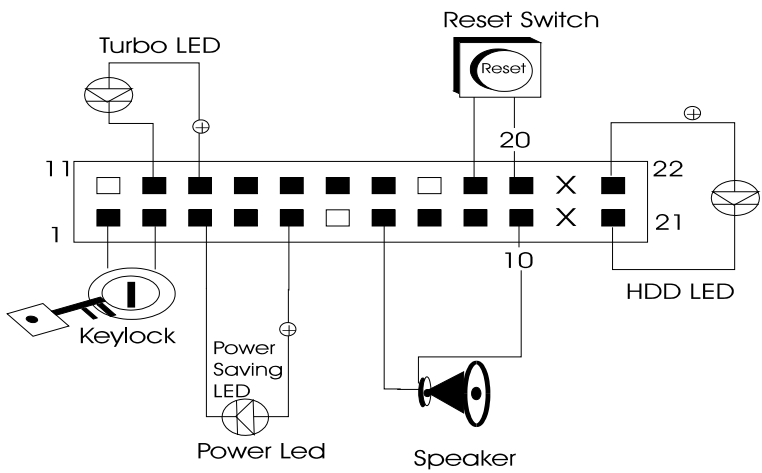


Case Block Connector : JFP

The Turbo LED, Hardware Reset, Key lock, Power LED, Power Saving LED, Speaker,and HDD LED all connect to the JFP connector block as below.



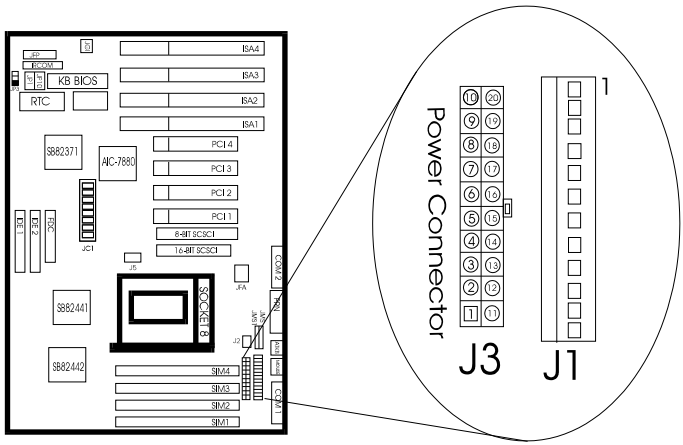
Note : The hardware Turbo switch is not functional. But the Turbo LED can be controled by software Turbo/Deturbo.

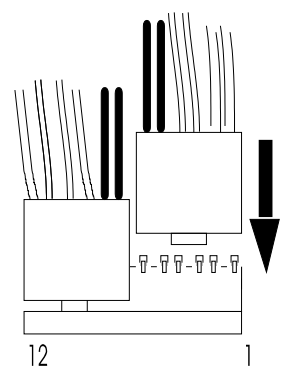


Power Supply Connector

The power supply connector is a twelve-pin male connector (J1) or a 2X10-pin ATX connector (J3). Dual connectors from the power supply can fit in only one direction. Make sure to attach the

connector with the two black wires at the center as shown in the diagram below.





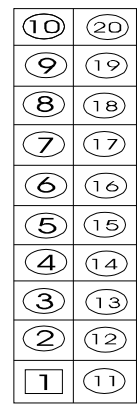
12-pin Connector Pin Description

Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	-5V DC
4	-12V DC	10	+5V DC
5	Ground	11	+5V DC

6	Ground	12	+5V DC

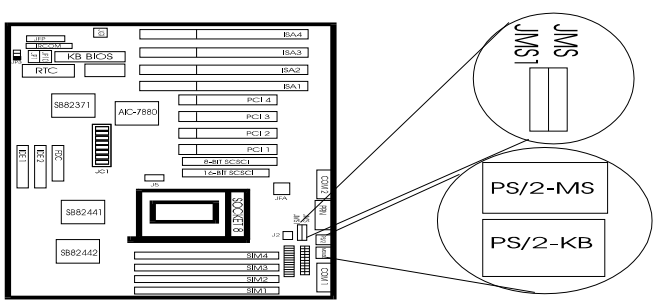
2X10-Pin Connector Pin Description

Pin	Description	Pin	Description
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GROUND	13	GROUND
4	5V	14	PS-ON
5	GROUND	15	GROUND
6	5V	16	GROUND
7	GROUND	17	GROUND
8	PW-OK	18	-5V
9	5VSV	19	5V
10	12V	20	5V



Keyboard Connector: PS/2-KB, or JMS1

Choose either PS/2-KB or JMS1 as a keyboard connector. The system board provides a standard five-pin female DIN connector for attaching a keyboard. You can plug a keyboard cable directly into this connector.

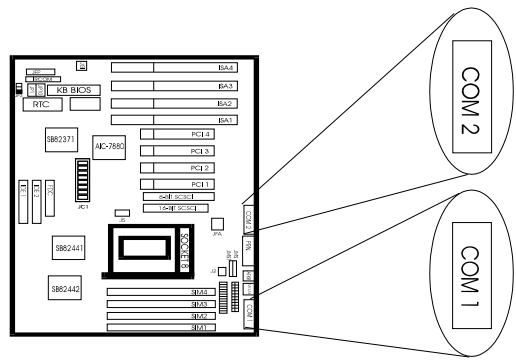


Mouse Connector: JMS or PS/2 Style Mouse

Choose either PS/2 or JMS as a mouse connector.

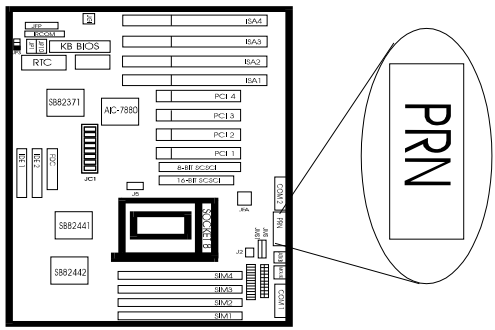
Serial Port Connectors: COM1 & COM2

The system board has two 9-pin male serial port connectors, COM1 and COM2. The two ports are 16550 high speed communication ports that send/receive 16 byte FIFOs. You can attach a mouse or a modem cable directly to these connectors. COM1 and COM2 converter plugs are provided with the system board.



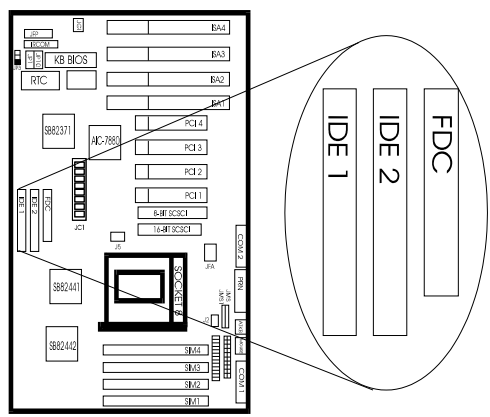
Parallel Port Connectors: PRN

The system board provides a 25-pin female parallel port connector, PRN. The parallel port is a standard printer port that also supports Enhanced Parallel Port (EPP) and Extended Parallel Port (ECP). See following figure:



Floppy Disk Connector: Floppy

The system board also provides a standard floppy disk connector, FDD, that supports 360K, 720K, 1.2M, or 1.44M floppy disk types. You can attach a floppy disk cable directly to this connector.



Hard Disk Connector: IDE1, IDE2

The system board has a 32-bit Enhanced PCI IDE Controller that provides for two HDD connectors, IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives or devices to IDE1 and IDE2.

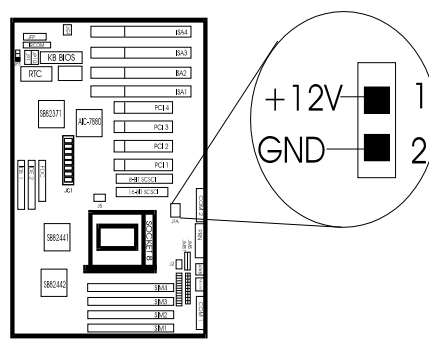
IDE1 (Pimary IDE Connector)

If you only use one hard disk you must connect to IDE1. You can also connect two hard disks, a Master drive and a Slave drive to IDE1.

IDE2 (Secondary IDE Connector)(see preceding figure)

If you use two hard disks, you can connect one to HDD1 and the other to HDD2. However, you must use a driver program for the hard disk connected to IDE2. You can also connect two hard disks to HDD2, a Master drive and a Slave drive.

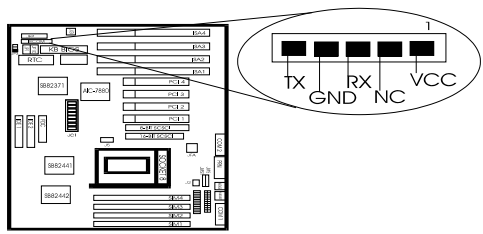
CPU Fan Connector: JFAN



This 2-pin connector connects a power source of +12V with your CPU's cooling fan. Check the voltage range and polarity of your cooling fan before you connect it.

IrDA Infrared Module Connector: IRCON

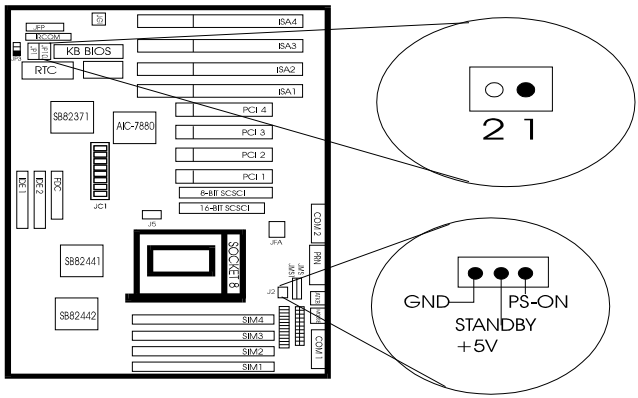
The system board provides a 5-pin infrared connector-JP4 as an optional module for wireless transmittng and receiving.



Infrared (IrDA/Consumer IR) Connector

Serial Port 2 can be configured to support an IrDA module via a 5-pin header connector. The IrDA functions enables the user to transfer files to or from portable devices such as laptops, PDAs, and printers, using application software such as Lap Link. The IrDA provides data transfers at 115kbps from a distance of 1 meter.

PS/2 Style Switch with Voltage Connector: J2
When using a PS/2 style switch with a standby +5V cable power switch, connect the +5V cable to J2.

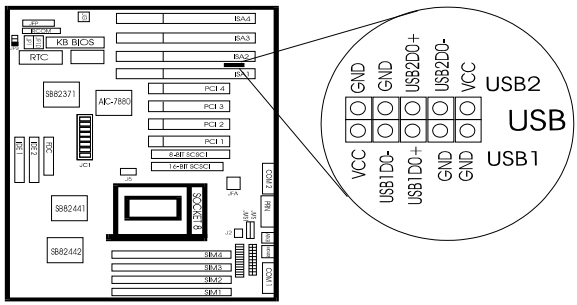


Remote On/Off: J10
The 2-pin connector must utilize a toggle switch (one push on/second push off). To use this function an ATX or PS/2 with a stand by +5V cable switch power is needed.

Remote ON/OFF and Soft Power Support
When connected to a momentary SPST switch, this 2-pin header is used to power up the system. When used with a power supply that supports remote power on/off the system board can be turned off by three different methods: The front panel "Remote On/Off" switch, a thermal trip signal from the Pentuim PRO™, or a soft signal from the Super I/O controller.

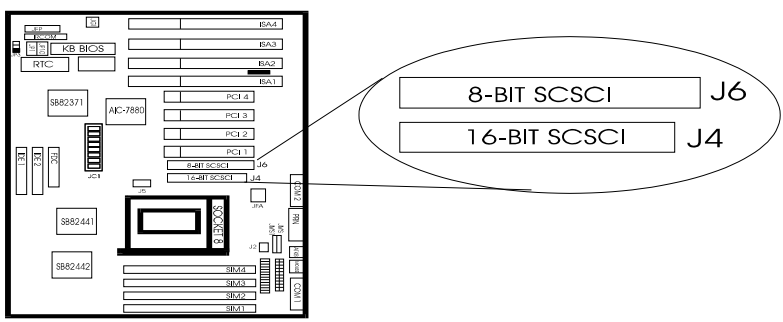
In "Soft Off," an APM command isssued to the system BIOS will cause the power supply to turn off via the "PS ON"" control signal on the power connector. For example Window™ 95 will issue this APM command when the user clicks on the Shutdown icon. Power can be restored via a front panel power button connected to the front panel header.

USB Connector : USB
This 10-pin connector connects USB cable to support USB device.



SCSI Hard Disk Connector: J4 & J6 (optional)

J4 is a 68-pin 16-bit SCSI Hard Disk Connector. J6 is a 50-pin 8-bit SCSI Hard Disk Connector. The SCSI controller interupt signal is shared with the PCI 4 slot. If you wish to install a PCI card in the PC1 4 slot, you must install the SCSI driver before installing any other drivers.



Chapter 3

AWARD BIOS SETUP (Version 4.51)

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

> TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY

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, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Figure 1 Main Menu

ROM PCI/ISA BIOS (2A69HM49)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

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

Standard CMOS setup

This setup page includes all the items in a standard compatible BIOS.

BIOS features setup

This setup page includes all the items of Award special enhanced features.

Chipset features setup

This setup page includes all the items of chipset special features.

Power Management setup

This category determines how much power consumption for system after selecting below items. Default value is Disable.

PCI Configuration setup

This category specifies the value (in units of PCI bus clocks) of the latency timer for this PCI bus master and the IRQ level for PCI device.

Load BIOS defaults

BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burn into the ROM.

Supervisor Password/User Password

Change set or disable password. This function allows the user access to the system and setup or just setup.

Load setup defaults

Chipset defaults indicates the values required by the system for the maximum performance. The OEM manufacturer may change to defaults through MODBIN before the binary image burn into the ROM.

IDE HDD auto detection

Automatically configure hard disk parameters.

HDD low level format

Hard disk low level format utility.

Save & exit setup

Save CMOS value changes to CMOS and exit setup.

Exit without save

Abandon all CMOS value changes and exit setup.

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.

Figure 2 Standard CMOS Setup Menu (Support Enhanced IDE)

ROM PCI/ISA BIOS (2A69HM49)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy): Fri, Apr 7, 1995

Time (hh:mm:ss): 00:00:00

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Primary Master:	Auto	0	0	0	0	0	0	AUTO
Primary Slave :	Auto	0	0	0	0	0	0	AUTO
Secdry Master :	Auto	0	0	0	0	0	0	AUTO
Secdry Slave :	Auto	0	0	0	0	0	0	AUTO

Drive A : 1.44M, 3.5 in.
Drive B : None

Video : EGA/VGA
Halt On : All, But keyboard

Base Memory: 640K
Extended Base Memory: 15360K
Other Memory: 384K

Total Memory: 16384K

ESC : Quit ↓ → ← : Select Item PU/PD/+/-:Modify
F1 : Help (Shift)F2 : Change Color

Date

The date format is <day><month> <date> <year>.

day	Day of the week, from Sun to Sat, determd. by BIOS, read only
month	The month Jan through Dec
date	The date from 1 to 31 can be keyed by numeric function keys
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>. which accepts both function key or numerical key.

PrimaryMaster/PrimarySlave SecondaryMaster/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

Press PgUp/<+> or PgDn/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be "Type 1".

If the controller of HDD interface is SCSI, the selection shall be "None".

If the controller of HDD interface is CD-ROM, the selection shall be "None".

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precomp
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

BIOS Features Setup

ROM PCI/ISA BIOS (2A69HM49)
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	: Disabled	D0000-D3FFF Shadow	:Disabled
Boot Sequence	: A,C	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		
Boot up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate(char/sec)	: 6		
Typematic Delay(Msec)	: 250		
Security Option	: Setup		
PCI/VGA palette snoop	: Disabled		
OS select for DRAM>64MB	: Non-OS2	Esc : Quit ↓ → ←	: Select : item
		F1 : Help	PU/PD/+/- : modify
		F5 : Old Value	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning

This category flashes on the screen. 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 the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.

!WARNING! Disk boot Sector is to be modified Type "Y" to accept write or "N" to abort write Award Software, Inc.

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

Note: This function is available only for DOS and other OS that do not trap INT13.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enabled. If your CPU is without Internal Cache then this item "CPU Internal Cache" will not be show.

Enabled (default)	Enable cache
Disabled	Disable cache

Note: The external cache is built-in the processor.

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled (default)	Normal POST

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). Default value is A,C.

C,A	System will boot from hard disk drive then floppy disk drive
A,C (default)	System will boot from floppy disk drive then hard disk drive
C, CDROM, A	System will boot from hard disk drive C, then CDROM and then from floppy disk drive A
CDROM, C, A	System will boot from CDROM first, then hard disk drive C, and then floppy drive A

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks.

Enabled (default)	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

The default value is On.

On (default)	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run at immediately after power up.

High (default)	Set the speed to high
Low	Set the speed to low

Gate A20 Option

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast (default)	Default : Fast. The A20 signal is controlled by Port 92 or chipset specific method.

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate and typematic delay programming
Disabled (default)	Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

Memory Parity Check: Enabled When using parity DRAM. Disabled setting will disable memory parity check function.

Typematic Rate (Chars/Sec)

6 (default)	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

Choose the length of delay from the time you press a key and the character repeating. (units are mil-secs)

Security Option

This category allows you to limit access to the system and Setup, or just to 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 (default)	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.

PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.
However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write, it should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

Disabled (default)	Disables the function
Enabled	Enables the function

OS Selection for DRAM > 64MB

Allows OS2 to be used with > 64 MB of DRAM. Settings are Non-OS2 (default) and OS2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

Enabled (default)	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/E8000 - EFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit and the size depends on chipset.

Enabled	Optional shadow is enabled
Disabled (default)	Optional shadow is disabled

Note: For C8000-DFFFF option-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.

Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.
Note: Change these settings only if you are familiar with the chipset.

Choose the "CHIPSET FEATURES SETUP" from the Main Menu and the following screen will appear.

ROM PCI/ISA BIOS(2A69HM49)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

Auto Configuration	: Enabled	8 Bit I/O Recovery time : 1
		16Bit I/O Recovery time : 1
DRAM Speed Selection	: 70ns	Memory Hole15M-16M : Disbld
DRAM RAS# Prechargetime	: 4	
RAS# to CAS# Delay	: Enabled	
DRAM Read Burst (B/E/F)	: x2/3/4	
DRAM Write Burst (B/E/F)	: x3/3/3	
ISA Bus Clock	PCICLK/4	
DRAM Refresh Queue	Enabled	
DRAM RAS only Refresh	Disabled	
ECC Checking/Generation	Disabled	
Fast Dram Refresh	Disabled	
Read Around Write	Disabled	
PCI Burst Write Combine	Enabled	
PCI to DRAM Pipeline	Enabled	ESC : Quit ↓ → ← Select Item
CPU TO PCI Write Post	Disabled	F1 : Help PU/PD/+/- : Modify
CPU TO PCI IDE Posting	Enabled	F5 : Old Values (Shift)F2 : Color
System BIOS Cacheable	Disabled	F6 : Load BIOS Defaults
Video RAM Cacheable	Disabled	F7 : Load Setup Defaults

Auto Configuration

Choosing Enabled (default) will automatically configure chipset features using default settings. Choose Disable to customize setup.

DRAM Speed Selection

Sets the DRAM speed at 70ns (default) or 60ns.

RAS# to Cas# Delay

Choosing Enabled will insert one clock delay between the RAS# and CAS#. There will be zero clock delay if Disabled (default) is chosen.

DRAM RAS# Pre-charge Time

Choose 4 (default) or 3. Ex. For 60MHz Bus speed (4 is about (4 clock x 16.6ns/clock) 66.4ns) (3 is about (3 clock x 16.6ns/clock) 49.8ns) For 66.6MHz Bus speed (4 is about (4 clock x 15ns/clock) 60ns) and 3 is about 45ns.

DRAM Read Burst (B/E/F) (x2/3/4)/(x2/2/3)/(x1/2/3)/(x3/4/4

Under Autoconfig the BIOS will identify which type of DRAM is being used and choose the setting accordingly. To customize use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used.

Note:
B stands for BEDO (Burst Extended Data Output) DRAM.
E stands for EDO (Extended Data Output) DRAM
F stands for FP (Fast Page) DRAM

Example: If the user chooses DRAM Read Burst (B/E/F): x2/3/4 it signifies that:
2 is used for setting BEDO
3 is used for setting EDO
4 is used for setting FP

Slower rates may be required to support slower memory.

DRAM Write Burst (B/E/F):(x3/3/4)/(x3/3/3)/(x2/2/3)/(x4/4/4)

This option chooses the Write Burst Timing for accessing DRAM. See: DRAM Read Burst Option

DRAM Refresh Queue:

If Enabled is chosen the system's chipset's internal 4-deep refresh queue is enabled with the 4th request being the priority request and all refresh requests are queued. If disabled is selected the refresh queue is disabled and all refreshs are priority requests.

DRAM RAS Only Refresh

This setting provides the RAS only refresh or CAS before RAS (CBR) refresh. Disabled (default) will utilize the CBR mode and the system will have better performance.

ECC Checking Generation

The system chipset supports Error Code Correct (ECC) checking and generation. To use this setting the system needs to be used with a parity bit DRAM module. Disabled is the default setting.

Fast DRAM Refresh

Choosing Disabled (default) will select the normal mode where the refresh rate is every 15ns. Choosing Enabled will call for a refresh cycle every 32 host clocks and the system will implement a refresh cycle every 531ns/480ns for 60MHz and 66MHz respectively.

Read-Around-Write

Choosing Disabled (default) will retire all the DBX before a CPU or PCI read access is serviced. If Enabled is chosen the DBX won't retire before a CPU or PCI read access is serviced.

Note: The DBX is Data Bus Accelerator which is one chip of the NATOMA chipset (Intel 440FX PCIset).

PCI Burst Write Combine

Choosing Enabled (default) allows the DBX to do back to back sequential CPU to PCI writes (Dword or larger) within a single PCI write Burst. When Disabled back to back sequential CPU to PCI writes (Dword or larger) will be split into several single PCI write cycles.

PCI To DRAM Pipeline

Choosing Disabled will restrict pipelining of PCI DRAM write cycles. Enabled is the default.

CPU To PCI Write Post_

Choosing Enabled will enable CPU to PCI posting.

CPU To PCI IDE Posting_

Choosing Disabled will allow the I/O Write port and the 1F0h and 170h to be treated as normal I/O Write Transactions. Using Enabled (default) will have the I/O Write cycles posted.

System BIOS Cacheable

By choosing Disabled (default) the system BIOS will be shadowed into DRAM only. Enabled will have the system BIOS shadowed and cacheable.

Video RAM Cacheable

Same as system BIOS Cacheable

8-bit I/O recovery time: 1/2/3/4/5/6/7/NA
16-bit I/O recovery time: 1/2/3/NA

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

Note: NA is not available and so the recovery time of 3.5 SYSCLK is inserted.

Memory Hole At 15M-16M:

Choosing Enabled will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on to the PCI. PCI cycles matching an enabled hole are ignored. Disabled (default) will disable this function.

Note: A selected (Enabled) hole is not remapped.

Power Management Setup

The Power management setup will appear on your screen like this:

ROM PCI/ISA BIOS (2A69HM49)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	**Power Down &	Resume Events*
PM Control by APM	: Yes	IRQ3 (COM 2)	: OFF
Video Off Method	: V/H SYNC+Blank	IRQ4 (COM 1)	: OFF
MODEM Use IRQ	: 3	IRQ5 (LPT 2)	: OFF
		IRQ6 (Flpy Disk)	: OFF
Doze Mode	: Disable	IRQ7 (LPT 1)	: OFF
Stanby Mode	: Disable	IRQ9 (IRQ2 Redir)	: OFF
Suspend Mode	: Disable	IRQ10(Reserved)	: OFF
HDD Power Down	: Disable	IRQ11(Reserved)	: OFF
		IRQ12(PS/2 Mouse)	: OFF
**Wake Up Events	In Doze&Standby	IRQ14(Hard Disk)	: OFF
IRQ3 (Wake Up	Event) : ON	IRQ14(Reserved)	: OFF
IRQ4 (Wake Up	Event) : ON		
IRQ12 (Wake Up	Event) : ON		

Esc : Quit	↓→ ←Select Item
F1 : Help	PU/PD/+/-: Modify
F5 : Old Values	(Shift)F2 Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Power Management_

This category determines how much power consumption for the system after selecting the below items. Default value is Disable. The following pages tell you the options of each item & describe the meanings of each options.

Item	Options	Descriptions
Power Management	1. Disable (Min. Saving)	Global Power Management will be disabled.
	2. User Define (Max. Saving)	Users can configure their own power management.
	3. Min Saving	Pre-defined timer values are used such that all timers are in their MAX value.
	4. Max Saving	Pre-defined timer values are used such that all timers MIN value.

PM Control by APM	1. No	System BIOS will ignore APM when power managing the system.
	2. Yes	System BIOS will wait for APM's prompt before it enter any PM mode e.g. DOZE, STANDBY or SUSPEND. Note: If APM is installed, & if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode!
	Note: – if APM is not installed, this option has no effect.	
Video Off Method	1.Blank Screen	The system BIOS will only blanks off the screen when disabling video.
	2. V/H SYN C+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals form VGA cards to monitor.

Item	Options	Descriptions
Video Off Method (cont.)	3. DPMS	This function is enabled for only the VGA card supporting DPMS.
	Note: Green monitors detect the V/H SYNC signals to turn off its electron gun.	
Doze Mode	1. Disable	System will never enter DOZE mode.
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering DOZE mode. If any item defined in The options of "Power Down and Resume events" is enabled & active, DOZE timer will be reloaded. When the system had entered in the Doze mode, any of the items that are defined in "Wake Up Events in Doze and Standby" will trigger the system to wake up.
	Note: Normally, STANDBY mode puts the system into low speed.	

Item	Options	Description
Standby Mode	1. Disable	System will never enter STANDBY mode.
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering STANDBY mode. if any item defined in The Options of "Power Down and Resume events" is enabled & active, STANDBY timer will be reloaded. When the system has entered the Standby mode , any of the events defined in Wake Up Events of Doze and Stanby occur the system will be woken up from the Standby Mode,
	Note: Normally, STANDBY mode puts the system into low speed.	

Item	Options	Descriptions

Suspend Mode	1. Disable	System will never enter SUSPEND mode.
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. if any item defined in the Options of "Power Down & Resume Events" is enabled & active, SUSPEND timer will be reloaded when the system has not entered the Suspend Mode yet or if the system has been woken up from the Suspend Mode because the suspend mode's timer was in time out.
	Note: Normally,SUSPEND mode puts the system into low speed,	

Item	Options	Descriptions
HDD Power Down	1. Disable	HDD's motor will not shut off.
	2. 1 Min 2 Min 3 Min 4 Min 5 Min 6 Min 7 Min 8 Min 9 Min 10 Min 11 Min 12 Min 13 Min 14 Min 15 Min	Defines the continous HDD idle time before the HDD enters the power saving mode (motor off). BIOS will turn off the HDD's motor when time is out.

Wake Up Events In Doze and Standby
IRQ3 (Wake Up Event) :ON/OFF
IRQ4 (Wake Up Event) :ON/OFF
IRQ12(Wake Up Event) :ON/OFF

The system will wake up from Doze Mode or Standby Mode when any of the above options has been selected "ON" and the events have occured.

Power Down and Resume Events	
IRQ3 (COM 2)	:ON/OFF
IRQ4 (COM 1)	:ON/OFF
IRQ5 (LPT 2)	:ON/OFF
IRQ6 (Floppy Disk)	:ON/OFF
IRQ7 (LPT 1)	:ON/OFF
IRQ9 (IRQ2 Redir)	:ON/OFF
IRQ10 (Reserved)	:ON/OFF
IRQ11 (Reserved)	:ON/OFF
IRQ12 (PS/2Mouse)	:ON/OFF
IRQ14 (Hard Disk)	:ON/OFF
IRQ15 (Reserved)	:ON/OFF

If any situation shown in the above table occurs: (i.e. the option item is on and active.)

Case 1. The system remains in Normal mode, not entering Saving mode. Then Doze, Standby & Suspend mode Time will be reloaded.

Case 2. The system is in suspend mode, then it will be woken up and return to Normal mode.

PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

ROM PCI/ISA BIOS (2A69HM49)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP OS Installed:	: No		
Resources Controlled By	: Manual		
Reset Configuration Data	: Disabled	PCI IDE IRQ Map To	PCI-Auto
		Primary IDE INT#	: A
IRQ-3 assigned to :	Leagcy ISA	Secondary IDE INT#	: B
IRQ-4 assigned to :	Leagcy ISA		
IRQ-5 assigned to :	PCI/ISA PnP		
IRQ-7 assigned to :	PCI/ISA PnP		
IRQ-9 assigned to :	PCI/ISA PnP		
IRQ-10assigned to :	PCI/ISA PnP		
IRQ-11assigned to :	PCI/ISA PnP		
IRQ-12assigned to :	PCI/ISA PnP		
IRQ-14assigned to :	PCI/ISA PnP		
IRQ-15assigned to :	PCI/ISA PnP		
DMA-0assigned to :	PCI/ISA PnP		
DMA-1assigned to :	PCI/ISA PnP		
DMA-3assigned to :	PCI/ISA PnP	ESC : Quit	↓→ ← : Select Item
DMA-5assigned to :	PCI/ISA PnP	F1 : Help	PU/PD/+/-: Modify
DMA-6assigned to :	PCI/ISA PnP	F5 : Old Values	(Shift)F2 Color
DMA-7assigned to :	PCI/ISA PnP	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

PnP OS Installed: No/Yes

The system BIOS provides PNP features for the system's resource management. Choose "No" if the operating system don't supports the PnP feature. Choose Yes if the operating system supports the PnP feature

Resources Controlled By

By Choosing "Auto" the system BIOS will detect the system resource and automatically assign the relative IRQ and DMA Channel for each peripheral.

Note: There are limitations to this function. For example when choosing "Auto" you must be sure that all of the system add-on cards are PnP type.

By Choosing "Manual"(default), the user will need to assign IRQ & DMA for add-on cards. Be sure that there is no conflict IRQ/DMA and I/O ports.

Reset Configuration Data

The system BIOS supports the PnP feature so the system needs to record which resource is assigned and protect resources from conflict. Every peripheral device has a node which is called ESCD. This node records which resources are assigned to it. The system needs to record and update ESCD to the memory locations. These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen the system's ESCD will update automatically when the new configuration varies from the last one.

If Enabled is chosen the system will be forced to update ESCDs if the system configuration has changed and then auto set this option to the "Disabled" mode.

IRQ-3	assigned to : Legacy ISA
IRQ-4	assigned to : Legacy ISA
IRQ-5	assigned to : PCI/ISA PnP
IRQ-7	assigned to : Legacy ISA
IRQ-9	assigned to : PCI/ISA PnP
IRQ-10	assigned to : PCI/ISA PnP
IRQ-11	assigned to : PCI/ISA PnP
IRQ-12	assigned to : PCI/ISA PnP

IRQ-14	assigned to	:	PCI/ISA PnP
IRQ-15	assigned to	:	PCI/ISA PnP
DMA-0	assigned to	:	PCI/ISA PnP
DMA-1	assigned to	:	PCI/ISA PnP
DMA-3	assigned to	:	PCI/ISA PnP
DMA-5	assigned to	:	PCI/ISA PnP
DMA-6	assigned to	:	PCI/ISA PnP
DMA-7	assigned to	:	PCI/ISA PnP

The above settings will be shown on the screen only if "Manual" is chosen for the *Resources Controlled By* function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on card. PCI/ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

PCI IDE IRQ Map To

PCI-Auto: This setting is for off-board PCI IDE card and is fully compatible with PCI specifications.

PCI-Slot 1-4: This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications.

ISA: This setting is used if the off-board PCI IDE card uses an edge trigger and IRQ routes directly to the ISA Bus.

Note: The user will need to disable the on-board on-chipset PCI IDE controller when installing off-board PCI IDE add-on cards. (see the INTEGRATED PERIPHERALS SETUP) These two options choose the primary and secondary IDE Channel interrupts when the user installs off-board PCI IDE add-on cards.

Load BIOS/Setup Defaults

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults are loaded automatically. Choose this item and the following message appears:

" Load Setup Defaults (Y / N) ? N "

To use the Setup defaults, change the prompt to "Y" and press < Enter >

Note: The Setup defaults can be customized to increase performance. However the BIOS defaults can always be used as a back up if there is some problem with the system board operation.

Integrated Peripherals

ROM PCI/ISA BIOS (2A69HM49)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	USB Controller	: Disabled
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Primary PCI IDE	: Enabled		
PCI Slot IDE 2nd Channel	: Enabled		
Onboard PCI SCSI Chip	: Disabled		
Onboard FDD controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4		
Onboard Serial Port 2	: 2F8/IRQ3		
UART 2 Mode	: Standard		
Onboard Parallel Port	: 378H/IRQ7	ESC : Quit	↓→ ← : Select Item
Onboard Parallel Mode	: SPP	F1 : Help	PU/PD/+/-: Modify
		F5 : Old Values	(Shift)F2 Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

IDE HDD Block Mode: **Enabled/Disabled**
Enabled allows the Block mode access for the IDE HDD. Disable if not needed.

IDE Primary Master PIO: **Auto/Mode0/Mode1-4**

IDE Primary Slave PIO: **Auto/Mode0/Mode1-4**

IDE Secondary Master PIO: **Auto/Mode0/Mode1-4**

IDE Secondary Slave PIO: **Auto/Mode0/Mode1-4**

For these 4 IDE option choose "Auto" to have the system BIOS auto detect the IDE HDD operation mode for PIO access.

Note: Some IDE HDD can not operate at the responding HDD's mode. When the user has selected "Auto" and the system BIOS has accepted the HDD response mode the user may degrade the HDD's operation mode. Ex: IF the HDD reported it can operate in mode 4 but it is not operating properly the user will have to manually change the operation mode to mode 3.

Choosing Mode 1-4 will have the system ignore the HDD's reported operation mode and use the mode selected instead.

Note: According to ATA specs. Mode 4 transfer rate is > Mode 3 > Mode 2 > Mode 1 > Mode 0. If the user's HDD can operate at Mode 3 the user can also select a slower Mode (ie Mode 0-2) but not a faster Mode (ie Mode 4).

On-Chip Primary PCI IDE: **Enabled/Disabled**

On-Chip

Secondary PCI IDE: Enabled/Disabled

The system provides for a On-Board On-Chipset PCI IDE controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported. If the user to install the Off-Board PCI IDE controller (i.e. add-on cards), the user must choose which channels will be disabled. This will depend on which channel will used for the Off-Board PCIIDE add-on card.

Onboard PCI SCSI Chip: Enabled/Disabled

This item is optional. If your system board is utilizing a SCSI chipset controller the Enabled option must be chosen in order for the SCSI hard disk to be initialized. Otherwise choose Disabled.

PCI Slot IDE 2nd Channel: Enabled/Disabled

Choosing Enabled will allow the system to access the 2nd IDE channel without a device driver. If the Off-Board PCI IDE add-on card is installed the 2nd IDE channel will need to be used.

Onboard FDD Controller: Enabled/Disabled

The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K/720 K/1.2M/1.44M/2.8M. Choose "Enabled" to use the on-board FDD controller for accessing the FDD. Otherwise choose "Disabled" to use the off-board FDD controller.

Onboard Serial Port 1: Disabled/(3F8/IRQ4)/(2F8/IRQ3)/ (3E8/IRQ4)/(2E8/IRQ3)

Onboard Serial Port 2: Disabled/(3F8/IRQ4)/(2F8/IRQ3)/ (3E8/IRQ4)/(2E8/IRQ3)

The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

Disabled	
3F8/IRQ4	COMM1 uses IRQ4
2F8/IRQ3	COMM2 uses IRQ3
3E8/IRQ4	COMM3 uses IRQ4
2E8/IRQ3	COMM4 uses IRQ3

Note: Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line can not be shared by multiple sources. If an off-board ISA add-on card with a serial port the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

UART 2 MODE: **Standard/ASKIR/HPSIR(i.e. IrDA)**

The system's built-in IR (Infra Red) is on the on-board Super I/O chipset and is shares serial port 2 with UART 2. Only one option can be selected for serial port 2, either the IR or UART. Selecting the IR mode will prompt the following message:

IR Function Duplex: **Half/Full**

Users can choose between operating the IR in Half duplex or Full duplex mode. Half duplex designates one IR as a receiver and one as a transmitter simultaneously. Full duplex mode designates that the two IRs receive and transmit data together simultaneously.

RxD, TxD Active:

Hi-Hi/Hi-Lo/Lo-Hi/Lo-L0
The user can choose between the preceding RxD (Receive Data), TxD (Transmit Data) activity levels.

Onboard Parallel Port:

Disabled/(3BCH/IRQ7)/ (278H/IRQ5)/(378H/IRQ7)
There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

Disable	
3BCH/IRQ7	Line Printer port 0
278H/IRQ5	Line Printer port 2
378H/IRQ7	Line Printer port 1

Onboard Parallel Port:

SPP/(EPP/SPP)/ECP(ECP/EPP)
SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port
To operate the onboard parallel port as Standard Parallel Port only choose "SPP." To operate the onboard parallel port in the ECP and SPP modes simultaneously choose "ECP/SPP." By choosing "ECP" the onboard parallel port will operate in ECP mode only. Choosing "ECP/EPP" will allow the onboard parallel port to support both the

ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel so choose the onboard parallel port with the ECP feature. After selecting it the following message will appear: "ECP Mode Use DMA" At this time the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant so after the user chooses the onboard parallel port with the EPP function and the following message will be displayed on the screen: "Parallel Port EPP Type." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

USB Controller: **Enabled/Disabled**

Choosing Enabled, enables on board USB port. Choosing Disabled, Disables on board USB port.

Supervisor/User Password Setting

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

   "Enter Password:"

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.

3. After you enter the password, the following message appears prompting you to confirm the password:

   "Confirm Password:"

4. Enter exact the same password you just typed again to confirm the password and press <Enter>.

5. Move the cursor to Save & Exit Setup to save the password.

6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.

7. Move the cursor to Save & Exit Setup to save the option you did, otherwise the old password will still be there when you turn on your machine next time.

IDD HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master. If you accept a hard disk detected by the BIOS, you can enter "Y" to confirm and then press <Enter> to check next hard disk. This funtion allows you to check four hard desks and you may press the <Esc> after the <Enter> to skip this function and go back to the Main Menu.

ROM ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	:None	0	0	0	0	0	----
Primary Slave	:None	0	0	0	0	0	----
Secondary Master	:None	0	0	0	0	0	----
Secondary Slave	:None	0	0	0	0	0	----

Select Drive C Option (N=Skip) : N

OPTIONS	SIZE	CYLS HEAD		PRECOMP	LANDZ	SECTOR	MODE
1Y	0	0	0	0	0 Normal	0	

Note: Some OSes (Like SCO-UNIX) must use "Normal" for installation

ESC : Skip