Chapter 1

Introduction

The mainboard is a high performance system hardware based on Intel Pentium processor and is equipped with four PCI slots, three standard ISA slots, Super Multi-I/O controller and dual ports PCI-IDE connectors for the future expansion. The hardware dimension is 220mm x 250mm with four layer design technology.

Specification

- Intel 430TX PCIset chipset
- Intel Pentium Processor operating up to 233MHz and Intel Pentium MMX^{TM}(P54C/P55C), AMD K5,K6, Cyrix 6x86MX^{TM}/6x86L, M2 with 321 ZIF socket 7 and scalability to accept faster Processors in the future.
- Supports up to 256 MegaBytes DRAM (minimum of 8 MB) on board (72-pin SIMM x 4, 168-pin DIMM x 2), and BIOS auto FP DRAM, EDO DRAM and SDRAM configuration.
- Supports Onboard Burst/Pipelined burst synchronous L2 Write Back Cache. The cache memory combination could be 256KB/512KB (32KB x 32 or 64KB x 32 SRAM respectively).
- Support three 16-bits ISA slots, four 32-bits PCI slots, and provides two independent high performance PCI IDE interface capable of supporting PIO Mode 3 and Mode 4 devices. Support **Ultra DMA 33**.

- Supports ATAPI (e.g. CD-ROM) devices on both IDE interface.
- Supports 1 floppy port, 1 parallel port (EPP, ECP port), and 2 serial port(16550 Fast UART compatible).
- Supports a PS/2 style mouse and standard AT style keyboard connectors.
- Supports Award Plug & Play BIOS. The BIOS is stored in Flash EPROM form . It provides better upgradeability for the system.
- Supports CPU Hardware sleep and SMM (System Management Mode).
- Supports Universal Serial Bus port (USB).
- Supports 115.2Kbps IrDA/ASK IR port.
- Supports Switching power supply.
- Utilizes Lithium battery which provides environmental protection and longer life time.
- Provided modem ring on & wake up suspend.

Chapter2

Hardware Design

Motherboard Layout

The main board is designed with Intel 430TX PCIset chipset which is developed by Intel Corporation to fully support Pentium Processor PCI/ISA system. The Intel 430TX PCIset chipset provides increased integration and improved performance designs. The chipset provides an integrated IDE controller with two high performance IDE interfaces for up to four IDE devices (hard devices, CD-ROM device, etc).The Super I/O controller provides the standard PC I/O function: floppy interface, two 16Byte FIFO serial ports and EPP/ECP capable parallel port. This main board layout is shown in previous page (left page) for user's reference. Care must be taken when inserting memory modules, inserting CPU or even plugging PCI card into associated slots to avoid damaging any circuits or sockets on board. A cooling fan is strongly recommended when installing P54C. P55C/K5/K6/6x86/6x86L processor due to possible overheat.

The main board supports minimum of 8MB of system memory and maximum of 256MB while L2 Cache can be 256KB/512KB synchronous SRAM Onboard .

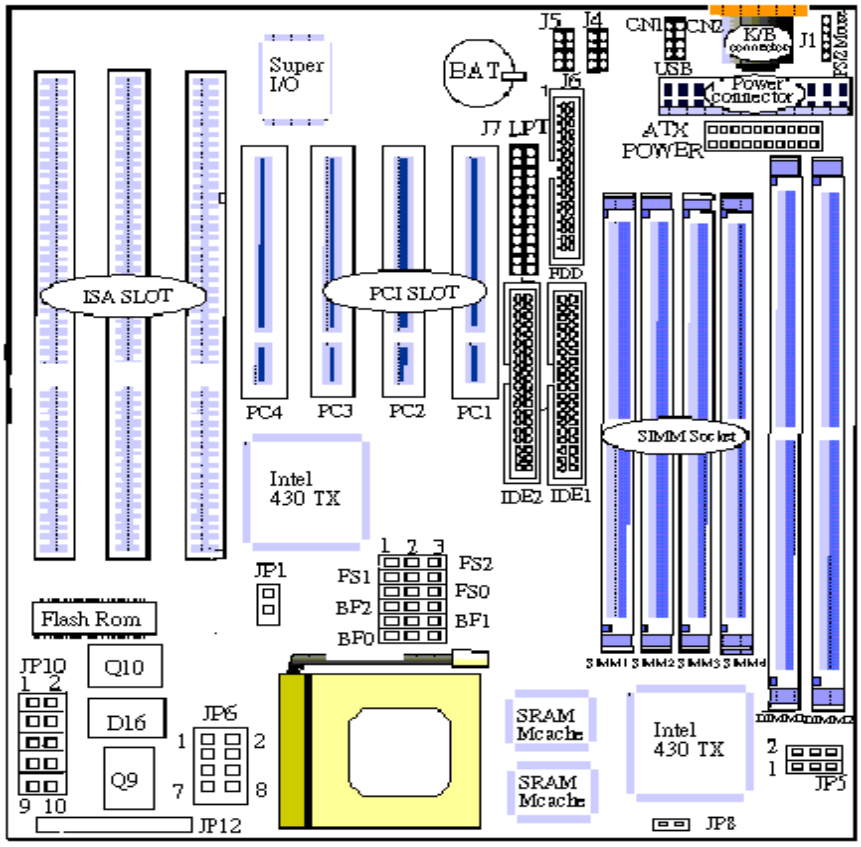
The main board supports standard Fast Page, EDO(Extended Data Out or Hyper Page Mode) or synchronous DRAM. The main board provides four 72-pins SIMM and two 168-pins DIMM sites for memory expansion. The socket support 1M x 32 (4MB), 2M x32 (8MB), 4M x 32(16MB), and 8M x 32(32MB) single-sided or double-sided memory modules. The memory timing requires 70 ns Fast Page devices or 60 ns EDO DRAM. Memory parity generation and checking is not supported. (DRAM Modules may

be parity (x 36) or non-parity (x32)).

The main board supports Onboard two PCI IDE connectors, and detects IDE harddisk type by BIOS utility automatic.

The main board supports Award Plug & Play BIOS for the ISA and PCI cards. The BIOS can be located in Flash EPROM . The advantage of having Flash EPROM is much easier to replace BIOS code if necessary.

Mainboard Layout



Connectors and Jumpers

This section describes all of the connectors and jumpers equipped in the motherboard. Please refer to board layout page 5 for actual location of each connector and jumper.

PS/2 Mouse Connector:

Pin	Desoription
1	RED wire
2	NC
3	Green wire
4	Yellow Wire
5	Blue Wire

JP12 For IRDA/ASK IR Connector:

Pin	Description
24	VCC
26	IRRX
28	GND
30	IRTX

For Intel P54C/AMD K5

CPU MODE	BUS CLOCK	RATIO	FS0	FS1	FS2	BF0	BF1	BF2
AMD-K5-PR90 INTEL Pentium 90(P54C)	60MHZ	1.5	1-2	2-3	2-3	1-2	1-2	1-2
AMD-K5-PR100 INTEL Pentium 100(P54C)	66MHZ	1.5	2-3	1-2	2-3	1-2	1-2	1-2
AMD-K5-PR120 INTEL Pentium 120(P54C)	60MHZ	2.0	1-2	2-3	2-3	2-3	1-2	1-2
AMD-K5-PR133 INTEL Pentium 133(P54C)	66MHZ	2.0	2-3	1-2	2-3	2-3	1-2	1-2
AMD-K5-PR166 INTEL Pentium 166(P54C)	66MHZ	2.5	2-3	1-2	2-3	2-3	2-3	1-2
INTEL Pentium 200(P54C)	66MHZ	3.0	2-3	1-2	2-3	1-2	2-3	1-2

Cyrix M1(PR+)/M2/L

CPU MODE	BUS CLOCK	RATIO	FS0	FS1	FS2	BF0	BF1	BF2
Cyrix 6x86-pr133+	55MHZ	2.0	2-3	2-3	1-2	2-3	1-2	1-2
Cyrix 6x86-pr150+	60MHZ	2.0	1-2	2-3	2-3	2-3	1-2	1-2
Cyrix 6x86-pr166+	66MHZ	2.0	2-3	1-2	2-3	2-3	1-2	1-2
Cyrix 6x86-pr200+	75MHZ	2.0	1-2	2-3	1-2	2-3	1-2	1-2

For Intel P55C/AMD K6

CPU MODE	BUS CLOCK	RATIO	FS0	FS1	FS2	BF0	BF1	BF2
AMD-K6-PR166 INTEL Pentium 166(P55C)	66MHZ	2.5	2-3	1-2	2-3	2-3	2-3	1-2
AMD-K6-PR200 INTEL Pentium 200(P55C)	66MHZ	3.0	2-3	1-2	2-3	1-2	2-3	1-2
AMD-K6-PR233 INTEL Pentium 233(P55C)	66MHZ	3.5	2-3	1-2	2-3	1-2	1-2	1-2

*****Default Intel P55C 166 Jumper setting**

FS0, FS1 ,FS2 (for Bus clock)

Bus clock	FS0	FS1	FS2
50MHz	2-3	2-3	2-3
55MHz	2-3	2-3	1-2
60MHz	1-2	2-3	2-3
66MHz	2-3	1-2	2-3
75MHz	1-2	2-3	1-2
83.3MHz	2-3	1-2	1-2

BF0,BF1,BF2 (for RATIO select)

RATIO	BF0	BF1	BF2
1.5X	1-2	1-2	1-2
2.0X	2-3	1-2	1-2
2.5X	2-3	2-3	1-2
3.0X	1-2	2-3	1-2
3.5X	1-2	1-2	1-2

JP1 (for 12Vdc CPU fan)

JP5 (for DIMM module power voltage)

	JP5
5.0V	1-3,2-4
3.3V	3-5,4-6

JP6 (for CPU class single or double voltage)

	JP6
Dual voltage (P55C, K6,M2)	5-6,7-8
Single voltage (P54C,AMDK5)	1-2,3-4

JP10 (for CPU Voltage Select)

CPU Core	1-2	3-4	5-6	7-8	9-10
2.1	o	o	o	o	s
1.8	o	o	o	s	o
2.9	o	o	s	s	o
3.0	o	s	o	s	o
3.1	o	s	s	s	o
3.2	s	o	o	s	o
3.3	s	o	s	s	o
3.4	s	s	o	s	o
3.5	s	s	s	s	o

***** O: OPEN ; *** S: SHORT**

JP8 (for U12 MTX clock select)

	JP8
60MHz	CLOSE
66MHz	OPEN

Jumper Settings for Cyrix 6x86/6x86L and AMD 5x86 CPUs

Warning :

Before you install a Cyrix 6x86 CPU, the CPU's cooler model must be approved by Cyrix. Otherwise, your system may overheat. Please refer to your Cyrix CPU dealer for details. Besides, the cooler must be installed in a way that air flow from the CPU fan to requlator heat sink must be strong enough.

System Memory Configuration

The mainboard supports different type of settings for the system memory. There is no jumper nor connector needed for memory configuration. Following figures provides all possible memory cominations.

SIMM1,2 BANK0	SIMM3,4 BANK1	DIMM1 BANK0	DIMM2 BANK1	
Installed	None	None	None	OK
None	Installed	None	None	OK
None	None	Installed	None	OK
None	None	None	Installed	OK
Installed	Installed	None	None	OK
None	None	Installed	Installed	OK
Installed	None	None	Installed	OK
None	Installed	Installed	None	OK

Note:

1. **Supports both Fast Page DRAM and EDO DRAM SIMMs, but they can not be mixed in the same memory bank.**

***2.Because the DIMM**

occupies the same memory block(Bank 0). So they cannot be installed at the same time.

3. **DIMM Module Specification: 3.3V/Unbuffered**

The mainboard supports 168-pin DIMM module to extend system memory size. You can install (3.3V/UNBUFFERED) Fast Page, EDO or Synchronous DRAM.

When you have a DIMM module to plug into a 168-pin dual readout connector, you must make sure that the DIMM module is 3.3V/Unbuffered and supports Intel Pentium Processor System.

Chapter 3

Award BIOS Setup

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 RAM so data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless there is configuration change in the system, such as hard drive replacement or new equipment change.

It is possible that CMOS had a battery failure which cause data lose in CMOS RAM. If so, re-enter system configuration parameters become necessary.

To Enter Setup Program :

Power on the computer and press <**Del**> key immediately will bring you into BIOS CMOS SETUP UTILITY.

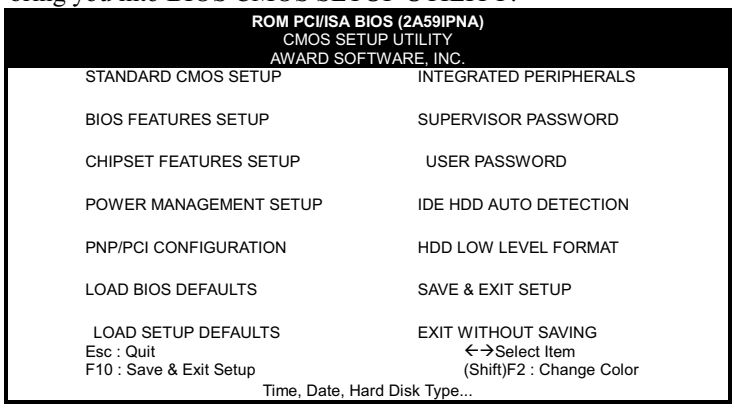


Figure 3-1 CMOS SETUP UTILITY

The menu displays all the major selection items and allow user to select any one of shown item. The selection is made by moving cursor (press any direction key) to the item and press <**Enter**> key. An on line help message is displayed at the button of the screen as cursor is moving to various items which provides user better understanding of each function. When a selection is made, the menu of selected item will appear so the user can modify associated configuration parameters.

Standard CMOS SETUP

Choose "STANDARD CMOS SETUP " in the CMOS SETUP UTILITY Menu (Fig.3-1). The STANDARD CMOS SETUP allows user to configure system setting such as current date and time, type of hard disk drive installed in the system, floppy drive type, and the type of display monitor. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (Direction keys to move cursor and <**Enter**> key to select),the entries in the field will be changed by pressing <**PgDn**> or <**PgUp**> keys or user can enter new data directly from the keyboard.

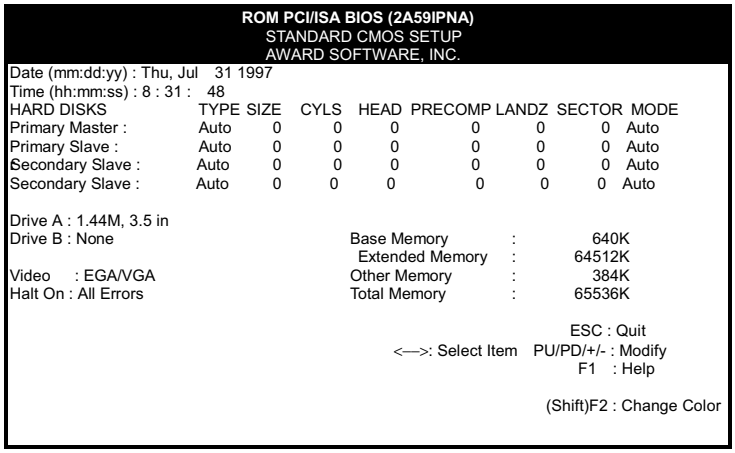


Figure 3-2 STANDARD CMOS SETUP

Note:

If hard disk Primary Master/Slave and Secondary Master/Slave were used Auto, then the hard disk size and model will be auto-detected on display during POST.

The "Halt On" :" field is to determine when to halt the system by the BIOS if error occurs during POST

BIOS FEATURES SETUP

Selecting the "**BIOS FEATURES SETUP**" option in the CMOS SETUP UTILITY menu allows user to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values of this mainboard. Again, user can move the cursor by pressing direction keys and <**PgDn**> or <**PgUp**> keys to modify the parameters. Pressing <**F1**> key to display help message of the selected item.

This setup program also provides 1 convenient ways to load the default parameter data from CMOS <**F7**> area if shown data is corrupted. This provides the system a capability to recover from any possible error.

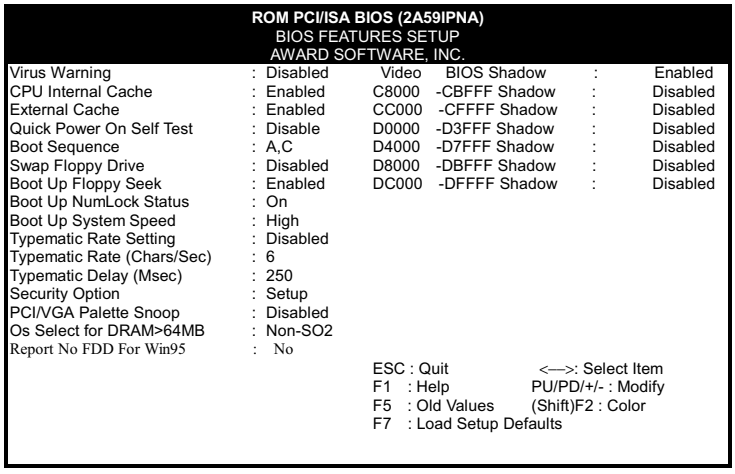


Figure 3-3 BIOS FEATURES SETUP

Note:

The security Option contains "setup" and "system". The "setup" indicates that the password setting is for CMOS only while the "system" indicates the password setting is for

both CMOS and system boot up procedure.

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. 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 or hard disk partition table.

Disabled : No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache:

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

Enabled : Enable cache

Disabled: Disable cache

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: Normal POST.

Boot Sequence:

This category determines which drive computer searches first for the DOS (Disk Operating System). Default value is A,C. SCSI.

C Only **:** System will search IDE hard disk driver.

A,C SCSI **:** System will first search for floppy disk driver and next search IDE hard disk driver,then SCSI hard disk driver.

C, A SCSI **:** System will first search for IDE hard disk driver C : and next search floppy disk driver,then SCSI

hard disk driver .

C, CDROM, A : System will first search for the hard disk driver and next search the CD-ROM driver (If the CDROM has a bootable CD title.) then floppy disk driver.

CDROM, C, A : System will first search for the CD-ROM driver (If the CDROM has a bootable CD title.) and next search hard disk driver then floppy disk driver.

D, A, SCSI : System will first search for the D: disk driver and next search floppy disk driver then SCSI hard disk driver.

E, A, SCSI : System will first search for the E: disk driver and next search floppy disk driver then SCSI hard disk driver.

F, A, SCSI : System will first search for the F: disk driver and next search floppy disk driver then SCSI hard disk driver

SCSI, A, C : System will first search for the SCSI hard disk driver and next search floppy disk driver then hard disk driver C: .

SCSI, C, A : System will first search for the SCSI hard disk driver and next search hard disk driver C: then floppy disk driver.

LS/ZIP, C : System will first search for the LS120/ZIP driver (If the LS120/ZIP has a bootable tape.) and second search hard disk driver.

Swap Floppy Drive:

The swap floppy drive. Default value is Disabled.

Enabled: Floppy A& B will be swapped under the DOS

Disabled: Floppy A & B will be not swap.

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 760K, 1.2M, and 1.44M are all 80 tracks, The default value is Disabled.

Enabled : 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 : Keypad is number keys

Off : Keypad is arrow keys.

Boot Up system Speed:

It selects the default system speed, that the system will run at immediately after system boot.

High : Set the speed to high.

Low : Set the speed to low.

Typematic Rate Setting :

This determines the typematic rate.

Enabled : Enable typematic rate and typematic delay programming.

Disabled : 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.

Typematic Rate (Chars/Sec) :

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):

When holding a key, the time between the first and second character displayed.

250 : 250msec.

500 : 500msec.

750 : 750msec.
1000 : 1000msec.

Security Option :

This category allows you to limit access to the system and Setup, or just to Setup. The default value is Setup.

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

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

PCI/VGA Palette Snoop :

This filed 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 value is Disabled.

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

Disabled : Disable the VGA card Palette snoop function.

***Video BIOS Shadow* :**

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

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 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 : Optional shadow is disabled

CHIPSET FEATURES SETUP

Choose the "**CHIPSET FEATURES SETUP**" in the CMOS SETUP UTILITY menu to display following menu.

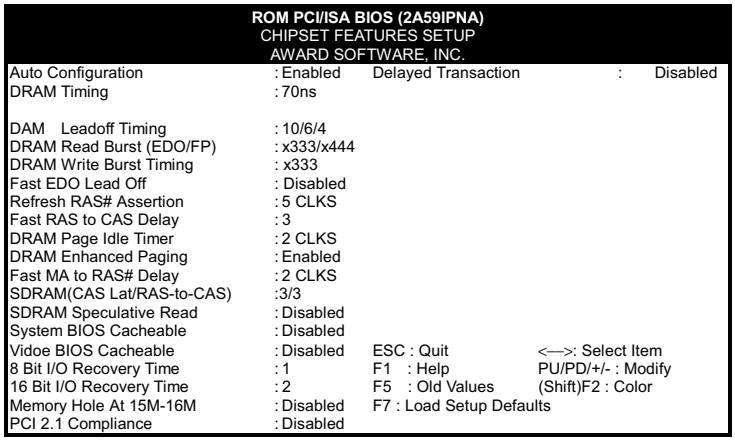


Figure 3-4 CHIPSET FEATURES SETUP

Auto Configuration :

This category allows you to set the DRAM timing. The default value is Enabled. When disabled this field. You can select the different DRAM timing that supports by chipset below item.

Note :

When you insert slower memory modules in the system and set a faster timing. Maybe the system will hang up.

Video BIOS Cacheable :

The default value is Disabled.

Enabled : This field Enabled the Video BIOS Cacheable to speed up the VGA performance.

Disabled : Disabled the Vidoe BIOS Cacheable function.

8.16 bit I/O Recovery Time :

The default value is 1.

8 bit I/O Recovery Time **:** This field defines the recovery time from 1 to 8 for 8-bit I/O.

16 bit I/O Recovery Time **:** To define the recovery time from 1 to 4 for 16-bit I/O

Memory Hole at 15M-16M :

The default value is Disabled.

Disabled : Normal Setting.

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

POWER MANAGEMENT SETUP

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

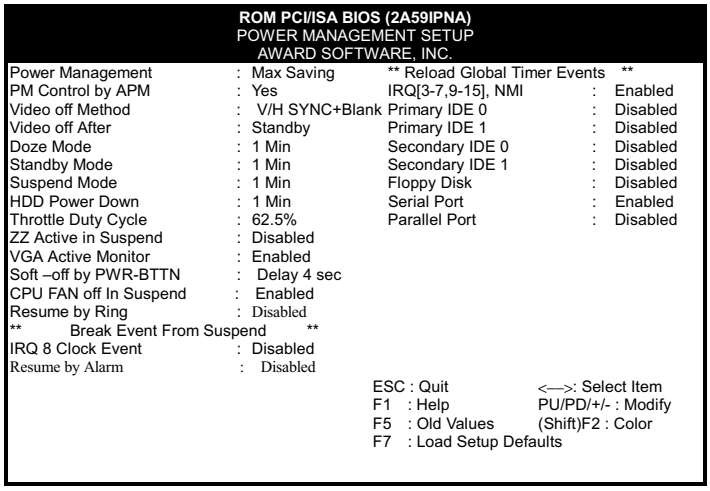


Figure 3-5 POWER MANAGEMENT SETUP

Again, user can move the cursor by pressing direction keys to the field needed to be modified an press <**PgDn**> or <**PgUp**> to alter item selection. You can only change the content of Doze Mode, Standby Mode, and Suspend Mode when the Power Management is set to "User Define".".

The Description of the Power Management

A. Power Management mode selection:

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

Max.saving : This mode will maximize the power saving capability.
Min.saving : This mode will minimize the power saving capability.
User define : Allow user to define timeout parameters to control power saving timing. Refer to item B shown below.

B. Timeout parameters :

HDD Standby
HDD Standby timer can be set from 1 to 15 minute(s).

System Doze
The "System Doze" mode timer starts to count when there is no "PM events" occurred. The valid timeout setting is from 1 minute up to 1 hour.

System Standby
The "Standby" mode timer starts to count when "System Doze" mode timer timed out and no "PM events" occurred. Valid range is from 1 minute up to 1 hour.

System Suspend
This function works only when the Pentium Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" occurred. Valid range is from 1 minute up to 1 hour.

Description of the Green Functions

The mainboard supports HDD Power Down, Doze and standby power saving functions when Intel Pentium Processor is installed. In addition, the suspend function is supported when the J13 (pin7,12) be close to enter the green function.
The detail description of these functions are provided in next page.

HDD Standby Mode

When system stop reading or writing HDD, the timer starts to count. The system will cut off the HDD power when timer runs out of time. The system will not resume operation until either a read from or a write to HDD command is executed again.

Doze Mode

The system hardware will drop down CPU clock from normal working speed when Doze mode timeout occurs.

Standby Mode

When the system standby mode time runs out, it will enter the standby mode and retain CPU at slow working speed. The screen will be blanked out.

Suspend Mode

When the system suspend timer times out, the system will enter the suspend mode and the chipset will stop CPU clock immediately. The power consumption in Suspend Mode is lower than in standby mode. The screen is also blanked out.

PM Events:

AWARD BIOS defines 15 PM Event in the power management mode (Doze, standby & suspend). The user can initialize any PM Event to be "Enable" or "Disable". When the system detects all of the enabled events do not have any activity, it will start the system Doze timer first if the "Power Management" isn't "Disabled". Once the system Doze timer is timed out, it will process doze power saving procedure by starting the system standby timer. When the standby timer ran out and all of the "Enabled" events remains silent, the system will enter the standby mode. By now, the system will not only process the standby power saving procedures but also start the system suspend timer. When the suspend timer times out, all of the CPU clock will be stopped by dropping system clock down to zero and remains this way until any one of the "Enabled" event occurs.

PNP/PCI CONFIGURATION

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

WARNING:

Any misplacing IRQ could cause system can pick out the rescues.

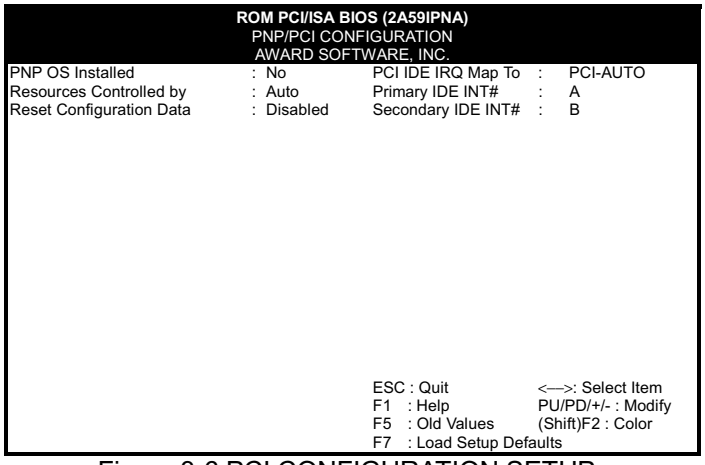


Figure 3-6 PCI CONFIGURATION SETUP

Resource Controlled By :

The default value is Manual.

Manual : The field defines that the PNP Card resource is controlled by manual. You can set which IRQ-X and DMA-X assigned to PCI/ISA PNP or Legacy ISA cards.

Auto : If your ISA card and PCI card are all PNP cards. To set this field Auto.
The BIOS will be assigned the interrupt resource automatically.

Reset Configuration Data:

The default value is Disabled

Disabled : Normal Setting

Enabled : If you had plugged some Legacy cards in the system and there were record into ESCD (Extended System Configuration Data). You can set this field to Enabled and to clear ESCD one time . When some Legacy cards were removed.

PCI IDE IRQ Map To:

The default value is PCI-AUTO

When you have true PCI card(s) plugged into the system, you will not need to change any thing here in the SETUP program.However, if you do not know whether you have true PCI card or not, please refer to your PCI card user manual for the detailed.

When you have Legacy card (Described in section 2-5) to be plugged into the system , a proper setting is extremely important or it may cause the system hang up.

The diagram show below tells you how the Rotating Priority Mechanism is designed.

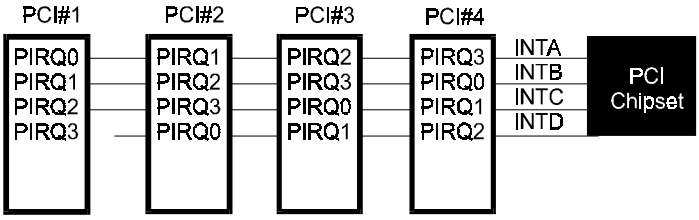


Figure 3-7 The Combination of PCI INT# lines

INTEGATED PERIPHERALS

ROM PCI/ISA BIOS (2A59IPNA)
INTEGATED PERIPHEALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Parallel Port :	378/IRQ7
IDE Primary Master PIO	: Auto	Parallel Port Mode :	SPP
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: Auto	ESC : Quit	<—>: Select Item
UR1 Mode	: Normal	F1 : Help	PU/PD/+/- : Modify
Onboard Serial Port2	: Auto	F5 : Old Values	(Shift)F2 : Color
UR2 Mode	: Normal	F7 : Load Setup Defaults	

Note:

If you don't use the Onboard IDE connector, than use On-card (PCI or ISA card) IDE connector, you will set Onboard Primary PCI IDE : Disabled and Onbard Secondary PCI IDE : Disabled from CHIPSETFEATURES SETUP UTILITY.

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

IDE HDD Block Mode: The default value is Enabled.

Enabled : Enabled IDE HDD Block Mode. The HDD transfer rate is better than Disable.

Disabled : Disable IDE HDD Block Mode.

PCI Slot IDE 2nd Channel : The default value is Enabled.

Enabled : Enable secondary IDE port and BIOS will assing MIRQ0 for this port.

Disabled : Disable secondary IDE port and MIRQ0 is available for other device.

Onboard Primary PCI IDE : The default value is Enabled.

Enabled : Enable Onboard 1st channel IDE port

Disabled : Disable Onboard 1st channel IDE port. When use On-card (PCI or ISA card) IDE connector.

Onboard Secondary PCI IDE **:** The default value is Enabled.

Enabled : Enable Onboard 1nd channel IDE port.

Disabled : Disable Onbaord 2nd channel IDE port. When use On-card (PCI or ISA card) IDE connector.

IDE Primary Master PIO **:**The default value is Auto.

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

Mode0-4 : Manually set the IDE Accessing mode.

IDE Primary Slave PIO **:**The default value is Auto.

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

Mode0-4 : Manually set the IDE Accessing mode.

IDE Secondary Master PIO : The defult value is Auto.

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

Mode0-4 : Manually set the IDE Accessing mode.

IDE Seconday Slave PIO : The defult value is Auto.

Auto : BIOS will automatically detect the Onbard Seconday Slave PCI IDE HDD Accessing mode.

Mode0-4 : Manually set the IDE Accessing mode.

***Onboard FDC Controller* :** The default value is Enabled.

Enabled : Enable the Onboard I/O CHIP floppy drive interface controller.

Disabled : Disable the Onboard I/O CHIP floppy drive interface controller. When use On-card ISA FDC controller.

***Onboard UART 1* :**This field allows the user to select the serial port. The default value is auto.

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 I/O CHIP Serial port 1.

***Onboard UART 2* :**This field allows the user to select the serial port . The default value is auto.

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 I/O CHIP 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.

Standard : Supports a Serial Infrared Interface IrDA.
HPSIR : Support a HP Serial Infrared Interface formats.
ASKIR : Support a Sharp Serial Infrared Interface formats.

***Onboard Parallel port* :**This field allows the user to select the LPT port. The default value is 378H/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 : Disabled Onboard I/O CHIP LPT port.

Note:
Parallel Port address is 378H/3BCH that selects the routing of IRQ7 for LPT1.
Parallel Port address is 278H that select the routing of IRQ5 for LPT1.

***Parallel port Mode*:**
This field allows the user to select the parallel port mode.
The default value is SPP.

SPP	: Standard mode. IBM PC/AT Compatible bidirectional parallel port
EPP	: Enhanced Parallel Port mode.
ECP	: Extended Capabilities Port mode
EPP+ECP	: ECP Mode & EPP Mode
EPP+SPP	: EPP Mode & SPP Mode

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

DMA1 :	The filed selects the rounting of DMA1 for the ECP mode.
DMA3 :	The filed selects the rounting of DMA3 for the ECP mode.

NORMAL mode :
Generic access mode in which either 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.Cyclinde	(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.Cyclinder	(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:

CYLS.	**HEADS**	**SECTOR**	**MODE**
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. Areverse transformation process will be made inside INT 12h in order to access the right HDD address the

right HDD address!

no.Cyclinder (1024)
x no.Head (32)
x no.Sector (63)
x bytes.per sector(512)
1 Gigabytes

Note:

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Rountine (1NT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole 1NT 13h. UNIX operating systems do not support either LBA or LARGE and must utilize teh Standard mode. UNIX can support drives larger than 528MB.

SAVE & EXIT SETUP

The "**SAVE & EXIT SETUP**" option will bring you back to boot up procedure with all the changes you just made which are recorded in the CMOS RAM.

EXIT WITHOUT SAVING

The "EXIT WITHOUT AVING" option will bring you back to normal boot up procedure without saving any into CMOS RAM .

Chapter 4

Technical Information

I/O & Memory Map

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
[EF0000-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-FFFFF]	8K	BIOS runtime service routine (1)

I/O Map

[000-01F]	DMA controller (Master)
[020-021]	INTERRUPT Controller. (Master)
[022-023]	Chipset control register. 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]	MATH coprocessor.
[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 2
[3B0-3BF]	Monochrome & Parallel port adapter.
[3C0-3CF]	EGA adapter.
[3D0-3DF]	CGA adapter.
[3F0-3F7]	Floppy disk controller.
[3F8-3FF]	Serial port1

TIME & DMA Channel Map

Time 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 (Winbond CHIP)
DMA Channel 3	Onboard ECP (default)
DMA Channel 4	Cascade for DMA controller1.
DMA Channel 5	Available
DMA Channel 6	Available
DMA Channel 7	Available

Interrupt Map

NMI: Parity check error

IRQ (H/W):

0	System Timer interrupt from Timer0
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 (Winbond 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 (IDE2) Channel

RTC & CMOS RAM MAP

RTC & CMOS:

00	Second.
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.
34-3F Reserve.
40-7F Reserved for Chipset setting data.

Technical Information

PS/2 Mouse connector

Pin	Signal Name	
5	Clock	(Blue wire)
4	VCC	(Yellow wire)
3	GND	(Green wire)
2	NC	
1	Data	(RED wire)

COM1, COM2 : Serial Ports connector

Signal Name	Pin	Pin	Signame
DCD	1	2	SIN
SOUT	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	N.C

LPT : Parallel Port connector

Signal Name	Pin	Pin	Signal Name

Strobe-	1	14	Auto feed-
Data Bit 0	2	15	Error-
Data Bit 1	3	16	INIT-
Data Bit 2	4	17	SLCT IN-
Data Bit 3	5	18	Ground
Data Bit 4	6	19	Ground
Data Bit 5	7	20	Ground
Data Bit 6	8	21	Ground
Data Bit 7	8	22	Ground
ACJ-	10	23	Ground
Busy	11	24	Ground
PE	12	25	Ground
SLCT	13	26	N.C

FDD: Floppy Disk Connector

Ground	1	2	FDHDIN
Ground	3	4	N.C
N.C	5	6	N.C
Ground	7	8	Index-
Ground	9	10	Motor Enable
Ground	11	12	Drive Select B-
Ground	13	14	Drive Select A-
Ground	15	16	Motor Enable
Ground	17	18	DIR-
Ground	19	20	Step-
Ground	21	22	Write Data
Ground	23	24	Wirte Data
Ground	25	26	Track 00-
Ground	27	28	Write Protect-
Ground	29	30	Read Data
Ground	31	32	Side 1 select
Ground	33	34	Diskette

CN 1,2 USB Connector

CN1	CN2

Signal Name	Pin	Signal Name	Pin
USB VCC0	1	USB VCC1	2
USB P0 -	3	USB P1 -	4
USB P0 +	5	USB P1 +	6
USB GND0	7	USB GND1	8
HHIELOL GND	9	HHIELOL GND	10

DE1/IDE2 : Primary, Secondary IDE Connector

Signal Name	Pin	Pin	Signal Name
Reset	1	2	Ground
Host Data 7	3	4	Host Data 8
Host Data 6	5	6	Host Data 9
Host Data 5	7	8	Host Data 10
Host Data 4	9	10	Host Data 11
Host Data 3	11	12	Host Data 12
Host Data 2	13	14	Host Data 13
Host Data 1	15	16	Host Data 14
Host Data 0	17	18	Host Data 15
Ground	19	20	N.C
DRQ	21	22	Ground
I/O Write-	23	24	Ground
I/O Read-	25	26	Ground
IOCHRDY	27	28	
DACK	29	30	Ground
IRQ14	31	32	N.C
Addr 1	33	34	N.C
Addr 0	35	36	Addr 2
Chip select 0-	37	38	Chip select 1-
IDE LED	39	40	Ground

FS0,FS1,FS2 : Bus Clock Select
BF0,BF1,BF2 : RATIO Select

JP5 : DIMM Voltage Select
JP8 : MTX Clock Select
: Single/Dual Voltage Select

JP6

JP10 : CPU Voltage select
J1 : PS/2 Mouse
JP1 : FAN Connector
J4 : COMB Connector
J5 : COMA Connector
JP12 :