INTEL 82430I PCI BUS MAIN BOARD USER'S MANUAL

(Green function)

CONTENTS

CHAPTER 1.

1. INTRODUCTION

INTEL 82437FX	SYSTEM CONTROLLER (TSC)
INTEL 82371FB	PCI ISA IDE XCELERATOR (PIIX)
INTEL 82438FX	DATA PATH UNIT (TDP)
SMC FDC37C665	FDC,PARALLEL,SERIAL,

The INTEL 82430I board is a baby size main board integrated by INTEL 82437FX, 82438FX and 82371FB PCIset & SMC I/O FDC37C665GT chipset. The INTEL 82430FX PCIset forms a Host-to-PCI bridge and provides the second level cache control and a full function 64-bit data path to main memory. The TSC integrates the cache and main memory DRAM control function and provides bus control for transfer between the CPU, cache, main memory, and the PCI bus. The second level (L2) cache controllers support a write-back cache policy for cache size of 256K Byte and 512K Byte. Tag RAM is used for address tag and an internal Tag RAM for the cache line status bits. For the TSC's DRAM controller four rows are supported for up to 128M Byte of main memory. The TSC's optimized PCI interface allows the CPU to sustain the highest possible bandwidth to the graphics frame buffer at all frequencies. Using the snoop ahead feature. The TSC allows PCI masters to achieve full PCI bandwidth. The TDPs provide the data paths between the CPU/cache,main memory, and PCI. For incereased system performance, the TDPs contain read prefetch and post write buffers.
SMC I/O chipset provides two FDC (360K, 720K, 1.2M, 1.44M, 2.88M) , two serial port compatible UARTS, one multi-mode parallel port for SPP, EPP, ECP

2.SPECIFICATION

CPU:
INTEL PENTIUM 75/90/100/120../180 MHZ VR/VRE SPEC.

CACHE:

256K/512K Asynchronous SRAM

256K (two piece 32K X 32 bit) Synchronous

Pipelined burst SRAM

Provides Write Back

MEMORY:

72 pins SIMM module x 4 UP TO 128M Byte

EDO and Fast Page DRAM module supported.

IDE

Support dual PIO and BUS Master IDE

Up to mode 4 timing, Transfer rate to 22M Byte/s

Support Enhance IDE Hard disk x 4 or IDE CD-ROM

I/O

FDC x 2 (360K/720K/1.2M/1.44M/2.88M)

Two serial port for UARTS(16C550)

One parallel port for SPP/EPP/ECP

Jumper setting by BIOS setup

PS2 mouse supported

PCI:

32 bit X 3 slots for PCI ver 2.0

ISA:

16 bit X 5 slots

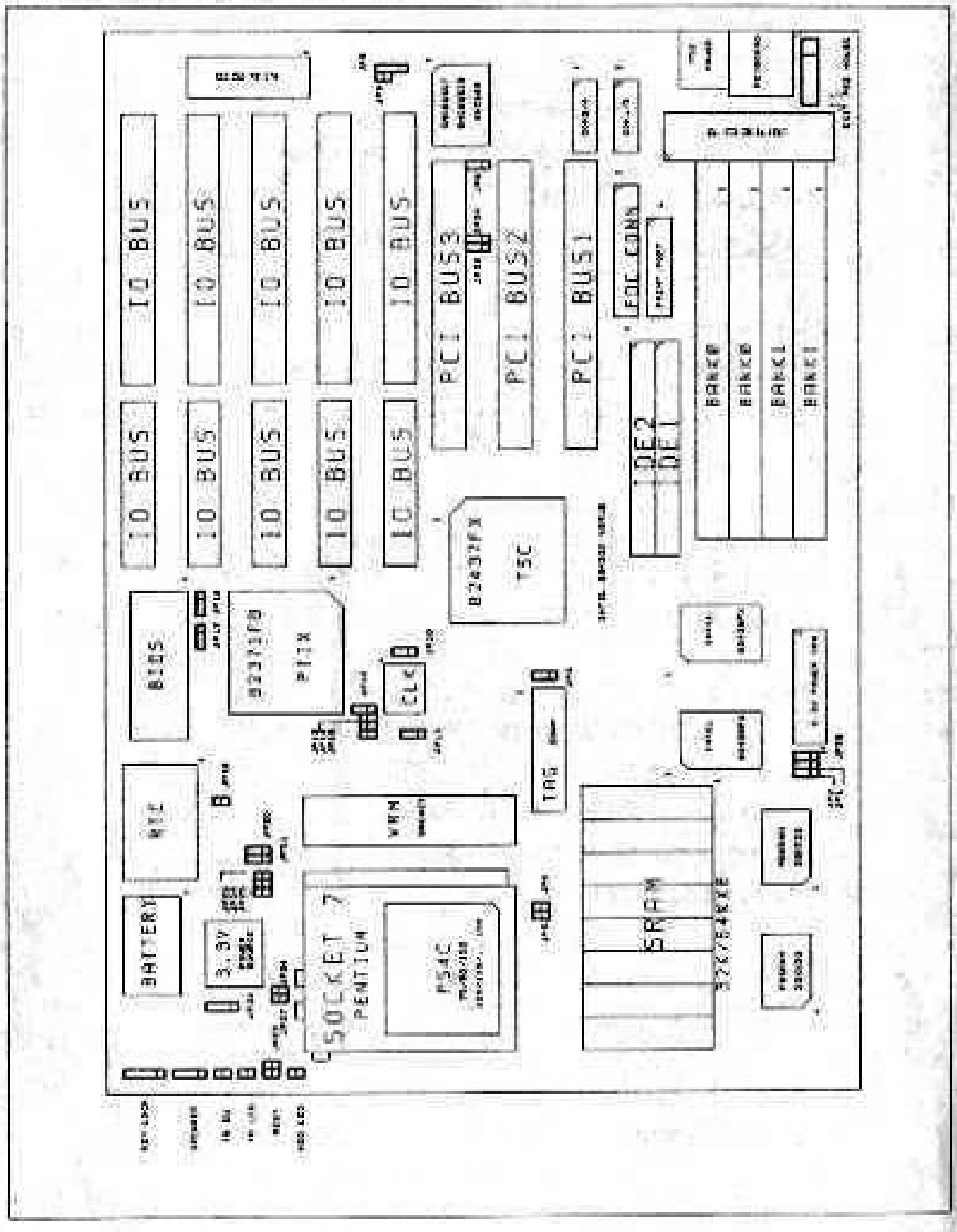
BIOS:

AWARD BIOS

Support "plug and play" function

CHAPTER 2.

Hardware Configuration & Jumper Layout



CHAPTER 3.

JUMPER SETTING

1. Clock Select

CLOCK FREQUENCY	50MHZ	60MHZ	66MHZ
JP13	ON	ON	ON
JP14	OFF	OFF	ON
JP15	OFF	ON	ON
CPU TYPE	Pentium 75MHZ M16X86 100MHZ AMD5K 75MHZ	Pentium 90MHZ Pentium 120MHZ Pentium 150MHZ Pentium 180MHZ M16X86 120MHZ	Pentium 100MHZ Pentium 133MHZ Pentium 166MHZ Pentium 200MHZ

IF You want to use Pentium 120/133 MHZ, please reference JP25, JP29 setting

2.Bus Frequency

JP29	JP25	CPU-TO-BUS CLOCK	
OFF	OFF	3/2 (X1.5 default)	for AMD5k86-P75
OFF	ON	2/1 (X2)	for pentium 120/133 M16X86 100/120
ON	ON	5/2 (X2.5)	for pentium 150/166
ON	OFF	3/1 (X3)	for pentium 180/200

The CPU-to-BUS frequency ratio is defined by bus frequency.

3 Cache Memory Configuration

L2 CACHE SIZE	256K	512K	PBSRAM
JP3	2-3	1-2	2-3
JP20	1-2	2-3	1-2
JP21	1-2	2-3	1-2
TAG size (U20)	8K * 8 16K * 8 32K * 8	16K * 8 32K * 8	8K * 8 16K * 8 32K * 8

*PBSRAM :Pipelined Burst SRAM

4. CPU Internal Cache Control

L1 CACHE	W/T (WRITE THROUGH)	W/B (WRITE BACK)
JP23	ON	OFF (default)

5.CPU NA# (Next Address)

PIPE LINE	DISABLE	ENABLE
JP24	OFF	ON (default)

6 VR/VRE Voltage Spec.

JP32	CPU VLOTAGE
1-2 3-4	3.3 V (default)
1-2	3.45V
ALL OFF	3.6 V

NOTE: Standard Spec is 3.135 - 3.465V
VR Spec is 3.300 - 3.465V
VRE Spec is 3.450 - 3.600V
Please reference INTEL Pentium Processor spec.

7.BIOS Option

TYPE	JP16	JP17
EPROM	1-2	1-2
5V FLASH ROM	1-2	2-3
12V FLASH ROM	2-3	2-3

8.AT Bus Clock Select.

JP 12	AT CLOCK
1-2	PCI CLOCK/3
2-3 (default)	PCI CLOCK/4

9.I/O Jumper Setting

ON BOARD I/O CHIPSET FUNCTION	ENABLE	DISABLE
JP6	1-2	2-3

10.Other Jumper Setting

JUMPER	SETTING	FUNCTION
TB LED		Turbo LED
HDD LED		Hard disk detect LED
RESET		Reset switch
SPEAKER		Speaker connector
KEY LOCK		Keyboard lock
JP10	1-2 (default)	CPU & SYSTEM CLK-PCI CLK X 2
	2-3	CPU & SYSTEM CLK-PCI CLK
J11		External battery connector
JP18	Break function	Connect to case turbo push button as a triggle switch (on then off), switch that system go into green mode immediately by hardware
JP11	1-2 (default)	CPU clock voltage 5 V
	2-3	CPU clock Voltage 3.3 V
JP9	on	For DALLAS CMOS DATA clear
JP30	2-3	For RTC power pin
JP31	on	JP30 (off) first and JP31 (on) then clear RTC CMOS data
J1		External PS2 mouse connector
JP4, JP5 JP26, JP27	on (default)	For P54C CPU voltage
	off	For P55CT CPU with VRM module
JP1, JP2	1-2 (default)	SRAM 5V voltage
	2-3	SRAM 3.3V voltage
JP35	1-2 (default)	ASYNC SRAM
	2-3	PBSRAM Board

CHAPTER 4.

BIOS CMOS SETUP

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

```
STANDARD CMOS SETUP              PASSWORD SETTING
BIOS FEATURES SETUP              IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP           HDD LOW LEVEL FORMAT
POWER MANAGEMENT SETUP           SAVE & EXIT SETUP
PCI CONFIGURATION SETUP          EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS
LOAD SETUP DEFAULTS

ESC : Quit                       ↑ ↓ ← →  : Select Item
F10 : Save & Exit Setup          (Shift) F2 : Change Color

                Time, Date, Hard Disk Type
```

1.STANDARD CMOS SETUP

ROM PCI/ISA BIOS
STANDARD CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

```
Date(mm:dd:yy) : Wed , Jun 1, 1995
Time(hh:mm:ss) : 00 : 00 : 00

HARD DISK       TYPE SIZE  CYLS HEADS PRECOMP LANDZONE  SECTORS MODE
-------------------------------------------------------------------
Primary Master  :User(428MB) 899  15    65535   898       62    NORMAL
Primary Slave   :None(  0MB)
Secondary Master:None(  0MB)
Secondary Slave :None(  0MB)

Drive A : 1.2M , 5.25 in
Drive B :1.44M , 3.5  in

Video   : EGA/VGA
Halt on : All Errors

        Base Memory  :   640K
    Extended Memory  : 15360K
       Other Memory  :   384K
    -----------------------------
       Total Memory  : 16384K

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

2.BIOS FEATURES SETUP

ROM PCI/ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE , INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C800-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: C,A	D4000-D7FFF Shadow	: Disabled
Swap Floppy Driver	: 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 (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI VGA Palette Snoop	: Disabled		
PS/2 mouse function control	: Enabled		

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

Virus Protection :

The "Virus Warning" default setting is "Disable". When enabled, this feature protect the boot sector and partition table of your disk. Any attempt to them will halt the system and cause a warning message to appear. If this happens, you can either allow the operation to continue, or stop it to use anti-virus utility on a virus-free, bootable, floppy disk to reboot and investigate your system.

Swap Floppy Driver:

The "Swap Floppy Driver" default setting is "Disabled". When enable, the BIOS will see the hardware "drive A: " as "dirve B:", and hardware "drive B:" as "drive A:". You can use this feature to boot from different size disks.

Gate A20 Option:

Define slowest timing to emulate the A20 command of keyboard controller.

Security Option:

The "Security Option" controls the password setting in the main screen The default setting is "setup". This will allow the system to boot, and use the password only to protect the Setup Utility configuration settings from being tampered with . The other setting, "System", uses the password feature every time you boot up. You create a password by using the "CHANGE PASSWORD" command from the main screen, as explained later in this section.

Shadow RAM address map:

Video BIOS,
C8000-CBFFF,CC000-CFFFF,D0000-D3FFF,D4000-D7FFF,D8000-DCFFF,
DD000-DFFFF

3.CHIPSET FEATURES SETUP

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

```
DRAM RAS# Precharge Time  :4          |  Onboard FDD Controller  : Enabled
DRAM R/W Leadoff Time     :8/6         |  Onboard Serial Port 1   : COM1
DRAM RAS TO CAS Delay     :3           |  Onboard Serial Port 2   : COM2
DRAM Read Burst Timing    :X2222       |  Onboard Parallel Port   : 378H
DRAM Write Burst Timing   :X3333       |  Parallel Port Mode      : Normal

System BIOS Cacheable     :Disabled    |
Video BIOS Cacheable      :Disabled    |
                                       |
Memory Hole At 15M-16M    :Disabled    |
IDE HDD Block Mode        :Enabled     |
IDE Primary Master PIO    :Auto        |  ESC:Quit      ↑ ↓ → ←  :Select Item
IDE Primary Slave PIO     :Auto        |  F1 :Help        PU/PD/+/-  :Modify
IDE Secondary Master PIO  :Auto        |  F5 :Old Values  (Shift)F2  :Color
IDE Secondary Slave PIO   :Auto        |  F6 :Load BIOS Defaults
On-Chip Primary PCI IDE   :Enabled     |  F7 :Load Setup Defaults
On-Chip Secondary PCI IDE :Enabled     |
PCI Slot IDE 2nd Channel  :Enabled     |
```

DRAM RAS# Precharge Time [The DRAM Precharge time by RAS.]

RAS = Row address strobe
CAS = Column address strobe

: 3 45ns
: 4 (default) 60ns

DRAM R/W Leadoff Time [The DRAM leadoff timing for page/row miss cycles Controls the MA setup to the first CAS# assertion.]

105/75ns
120/90ns

: 7/5
: 8/6 (default)

DRAM RAS TO CAS Delay [Control the DRAM page miss and row miss leadoff timing.]

: 2 30ns
: 3 (default) 45ns

DRAM Read Burst Timing [The timing used depends on the type of DRAM on a per-basis. The DRAM read burst timing are controlled by register.]

at 66MHz bus
30ns ←
45ns
60ns

: X2222 (default)
: X3333
: X4444

DRAM Write Burst Timing [Slower rate may be required in certain system designs to support layout with longer trace length or slower DRAM. The DRAM write burst timing are controlled by register.]

: X2222

: X3333 (default)
: X4444

System BIOS Cacheable

[Define whether system BIOS area cacheable or not.]
: Enabled
: Disabled (default)

Video BIOS Cacheable

[Define whether video BIOS area cacheable or not.]
: Enabled
: Disabled (default)

Memory Hole AT 15M-16M

[This field enable a memory hole in main memory space. CPU cycles matching an enabled hold are passed on to PCI. Note that a selected hole is not remapped. Note this field should not be changed while the L2 cache is enable.]
: Enabled
: Disable (default)

IDE HDD Block Mode

[This feature enhance hard disk performance by making multi sector transfer, instead of one sector per transfer. Most IDE drivers, except very early designs, can use this feature.]
: Enabled (default)
: Disabled

IDE Primary Master PIO

[Detect your Primary Master hard disk device.]
: AUTO (default)
: Mode 0,1,2,3,4

IDE Primary Slave PIO

[Detect your Primary Slave hard disk device.]
: AUTO (default)
: Mode 0,1,2,3,4

IDE Secondary Master PIO

[Detect your Secondary Master hard disk device.]
: AUTO (default)
: Mode 0,1,2,3,4

IDE Secondary Slave PIO

[Detect your Secondary Slave hard disk device.]
: AUTO (default)
: Mode 0,1,2,3,4

On-Chip Primary PCI IDE [Select use Chip support Primary PCI IDE.]
: Enabled (default)
: Disabled

On-Chip Secondary PCI IDE [Select use Chip support Secondary PCI IDE.]
: Enabled (default)
: Disabled

PCI slot IDE 2nd Channel [Use external IDE. AS ISA IDE or PCI IDE.]
: Enabled (default)
: Disabled

On-board FDD Controller : Enabled (default)
: Disabled

On-board Serial Port 1 : COM1 (default)
: COM2
: COM3
: COM4
: Disabled

On-board Serial Port 2 : COM1
: COM2 (default)
: COM3
: COM4
: Disabled

On-board Parallel Port : 378H (default)
: 278H
: 3BCH
: Disabled

On-board Parallel Mode : Normal (default)
: EPP
: ECP
: ECP+EPP

4.POWER MANAGEMENT SETUP

ROM PCI/ISA BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

```
Power Management      :User define
PM Control by APM     :Yes
Video off Method      :Blank Screen

Doze Mode             :5 min.
Standby Mode          :1 min.
Suspend Mode          :1 min.
HDD Power Down        :Disabled

IRQ3 (Wake-up Event)  :On
IRQ4 (Wake-up Event)  :On
IRQ8 (Wake-up Event)  :On
IRQ12 (Wake-up Event) :On

Power Down Activities
---------------------
COM Port Accessed     :On
LPT Port Accessed     :On
Drive Port Accessed   :On
```

```
IRQ3  (COM2)              :On
IRQ4  (COM1)              :On
IRQ5  (LPT2)              :On
IRQ6  (Floppy Disk)       :On
IRQ7  (LPT1)              :On
IRQ8  (RTC Alarm)         :Off
IRQ9  (IRQ2 Redir)        :On
IRQ10 (Reserved)          :On
IRQ11 (Reserved)          :On
IRQ12 (PS/2 Mouse)        :On
IRQ13 (Coprocessor)       :On
IRQ14 (Hard Disk)         :On
IRQ15 (Reserved)          :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:

Disable : Global Power Management will be disabled.

User Define: Users can configure their own power management.

Min.Saving : Pre-define timer value are used such that all timers are in their MAX.value.

Max.Saving : Pre-define timer value are used such that all timers are in their MIN.value.

PM Control by APM :

No : System BIOS will ignore APM.

Yes: System BIOS will wait for APM's prompt before it enter any PM mode, e.g. DOZE, STANDBY or SUSPEND.

**** NOTE **** : 1. 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!
2. If APM is not installed, this option has no effect.

Video Off Method :
Blank Screen : The system BIOS will only blank off the screen when disable.
V/H SYNC+Blank : BIOS will also turn off the V/H SYNC signal from VGA card to monitor.
DPMS : Display Power Management by VGA card support.

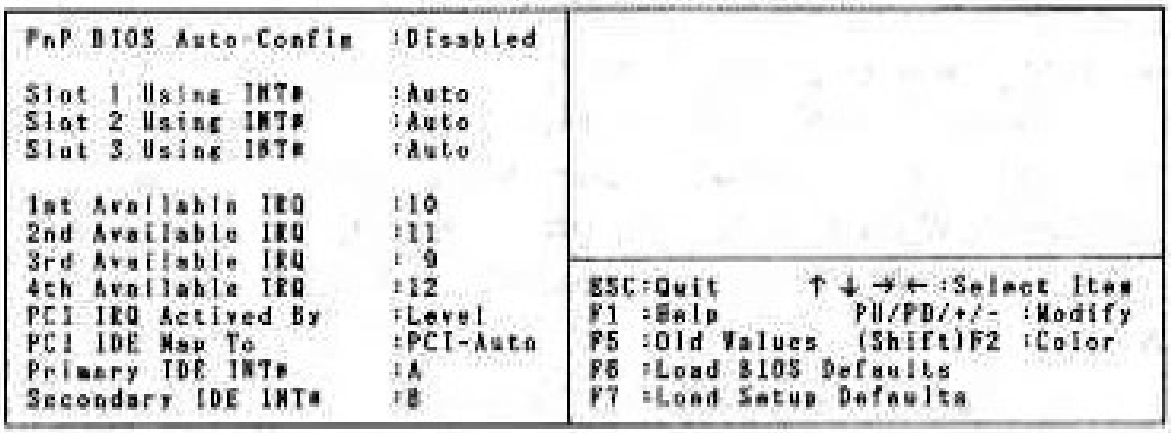
Doze Mode : disabled , 1 Min --- 1 Hour
Standby Mode : disabled , 1 Min --- 1 Hour
Suspend Mode : disabled , 1 Min --- 1 Hour
HDD Power Down : disabled , 1 Min ---15 Min

Wake-up Event : To IRQ3, IRQ4 , IRQ8 , IRQ12 check point. Any activity. The system will wake up.

Power down Activities : To COM ports, LPT ports and Drive ports IRQ3.....IRQ15 check point Then Into Green function.

5.PCI CONFIGURATION SETUP

ROM PCI/ISA BIOS
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.



Slot (1-3) Using Int# : Auto (A, B, C, D)
(1-4) Avaliable IRQ : (NA, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 15)
PCI IRQ Actived By : Level
PCI IDE IRQ Map To : PCI-AUTO (PCI-SLOT 1,2,3)
Primary IDE INT# : A (B, C, D)
Secondary IDE INT# : B (B, C, D)

PCI Slots routing method :
PCI 1: A, B, C, D
PCI 2: B, C, D, A
PCI 3: C, D, A, B

6. LOAD BIOS DEFAULTS

"LOAD BIOS DEFAULTS" loads default values permanently recorded in the BIOS ROM. If the stored record created by the Setup Utility becomes corrupted (and therefore unusable), these defaults will load automatically when you turn on the computer. These settings are non-optimal and turn off all high performance features. This is useful if you are having problems with your mainboard and need to debug or trouble shooting the source.

The defaults loaded only affect the BIOS Features Setup and Chipset Features Setup screens. There is no effect on the Stanndard CMOS Setup. To use this feature, highlight it on the main screen and press <Enter>. A line will appear on screen asking if you want to load the BIOS default values. Press the <Y> key and then press the <Enter> key. The BIOS defaults will then load. Press <N> if you don't want to process.

7. LOAD SETUP DEFAULTS

"LOAD SETUP DEFAULTS" loads optimized settings which are stored in the BIOS ROM.

The auto-configured settings only affect the BIOS Feature Setup and Chipset Features Setup screens. There is no effect on the Standard CMOS Setup. To use this feature, highlight it on the main screen and press the <Enter> key. A line will appear on screen asking if you want to load the Setup default values. Press the <Y> key and then press the <Enter> key. The Setup defaults will then load. Press <N> if you don't want to process.

8.PASSWORD SETTING

The "PASSWORD SETTING" utility sets the password. The mainboard may be shipped with the default password "award", or with the password disabled. If you want to change the password, you must first enter the current password ("award " in this case). Then at the prompt, type your new password. The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after the password. At the next prompt, confirm the new password by typing it and pressing <Enter> again. When you're done, the screen automatically reverts to the main screen. Remember, When you use this feature, the "Security Option" line in BIOS FEATURES SETUP will determine whether the password will be required.

To disable the password, press the <Enter> key instead of entering a new password when the "Enter Password"dialog box appears. A message will appear confirming that the password is disable. You may receive your mainboard set up this way.