

## Chapter 1

### Introduction



Welcome to the PEAK 570 series Pentium/Socket 7 single board computer.

The PEAK 570 series is a brand new generation of proven technologies. It's built with high performance, cost effective Pentium/Socket 7 CPU up to 333 MHz, high performance PCI Bus and I/O's, huge memory support (256MB), and complied with the new PICMG standard. Further more, this is the first Pentium /Socket 7 SBC designed with all advanced features in one SBC. It's excellent to the system integrators, VARs, or turnkey vendor demanding high performance computing, high performance I/O, high data availability, and great system expandability.

The PEAK 570 series can run with Intel Pentium MMX processor up to 266 MHz, AMD K6-2 up to 333 MHz, memory support up to 256 MB SDRAM. This generates great computing power. The on board enhanced PCI IDE interface can support up to mode 4 PIO and Mode 2 DMA master also support the Ultra DMA 33. The on board Adaptec's AIC 7880 is the popular high performance PCI SCSI master with ultra and ultra wide SCSI interfaces, providing very high value at a reasonable cost.

The Ultra wide SCSI now supports 40MB/s data rate, it's high enough for most of the mass storage access. The new C&T 69000 VGA Controller with 2MB embedded SDRAM could supports both CRT and Panel displays. The Intel single chip 82558 Ethernet Controller supports 10 Base T/ 100 Base TX, full Duplex. To support these high performances on board PCI Device, the Intel 21152 PCI Bridge Controller is used. So the PEAK 570A is an all-in-one, single board server.

The SMC 37C932 integrates the floppy controller, two serial ports, one parallel port, and keyboard/mouse controller. The two on-chip UARTs are compatible with NS 16C550, and the parallel port support EPP/ECP.

The PICMG standard makes the PEAK 570 series work with the legacy ISA back plane and brand new PCI back plane. The system monitoring features like the voltage levels, the FAN speeds, and the temperatures could be shown on screen, then monitored by the system manager. The flash ROM is used to make the BIOS update easier, the additional keyboard connector is reserved for connecting to the keyboard connector on the back plane. The Universal Serial Bus (USB) is also supported by this product for flexible connections. The high precision real time clock/calendar is built in for accurate scheduling and the watch dog timer is also the standard feature.

The PEAK 570 series is a highly integrated design with six optional models as follows.

Model Feature	Peak 570	Peak 570V	Peak 570VL	Peak 570VS	Peak 570SL	Peak 570A
Common Features	V	V	V	V	V	V
Ultra Wide SCSI				V	V	V
VGA		V	V	V		V
LAN			V		V	V

## 1-1 Specifications



- **System architecture**
  - All socket 7 CPU supported
  - All in one with VGA, 100 Base TX, Ultra Wide SCSI.
  - PC' 97 fully complied
  - PCI V2.1 complied
  - PICMG 2.0 complied
  - Full size SBC with ISA/PCI Gold finger
- **CPU support**
  - Intel Pentium MMX CPU up to 266 MHz (**Low power CPU support**)
  - Other compatible socket 7 CPU (AMD K6, Cyrix 6x86mx) support up to 333 MHz
  - 66 MHz CPU clock
- **Cache memory**
  - 512KB Level 2 cache standard
  - Pipeline Burst SRAM only
- **Main memory**
  - EDO/SDRAM support
  - 64MB SDRAM support
  - 8MB up to 256MB(MAX)
  - 168pin DIMM socket x 2
- **BIOS**
  - Award System BIOS with PC' 97 support
  - 2M bit flash ROM
  - C&T VGA BIOS
  - Adaptec SCSI BIOS
  - Intel LAN BIOS
- **Chipset**
  - Intel 82430TX PCI set
  - 3<sup>rd</sup> generation Pentium Chip Set with MMX support
  - Fully comply with PC' 97
  - PCI V2.1 Concurrent PCI
  - Optimized SDRAM support

- **VGA**

C&T 69000 VGA controller  
 2MB SDRAM embedded.  
 CRT & Panel support.

Max. Resolution	Color	Refresh Rate
800 x 600	true color	85 Hz
1024 x 768	64K color	85 Hz
1280 x 1024	256 color	60 Hz

Drivers Support: window 95/98, Window NT 4.0/5.0  
 15 pin D-type connector x 1  
 50 pin panel connector x 1

- **SCSI**

Adaptec AIC 7880 RISC SCSI Controller  
 Ultra wide SCSI up to 40 MB/S data Transfer rate.  
 Backward compatible with wide SCSI, SCSI II. etc.  
 10 Base T/100 Base TX support, full Duplex.  
 Driver support Windows 95/98, Windows NT 4.0/5.0, SCO Open server,  
 Novell, Netware  
 68 pin wide SCSI connector

- **LAN**

Intel 82558 Single Ethernet Controller  
 10 Base T/100 Base TX support, full Duplex  
 Complied with PCI V2.1, IEEE 802.3 IEEE 802.3U  
 Backward compatible with former 82557 Ethernet controller based net modules  
 Driver support:  
 Dos/Windows, Netware, Windows95/98, Windows NT 4.0/5.0, SCO Open  
 Server 5.0  
 RJ45x1

- **On Board PCI Bridge**

Intel 21152 PCI bridge controller  
 Control all on board device  
 4 PCI slots full loading support

- **On Board I/O**

SMC 37C932 Super I/O ON BOARD  
 SIOx2, with 2x16C550 UARTs, 9 pin D-type x 1, 10 Pin connector x 1  
 PIOx1, Bi-directional, EPP/ECP support, 26 Pin connector x 1  
 Floppy Disk controller: 5 1/4" 360K/1.2MB, 3 1/2" 720K/1.2MB/1.44MB  
 /2.88MB support, 34 Pin connector x 1

PCI IDE Hard Disk Interfaces: Support up to four enhanced IDE devices  
up to mode 4 PIO and mode 2 DMA  
Master also support Ultra DMA 33

On chip Keyboard, mouse controller

On Board 5 pin header x 1 for keyboard

PS/2 Keyboard, 6 pin mini DIN x 1 for 570, 570V, 570VS (Optional: PS/2  
6 pin mini DIN x1 for keyboard/mouse only for 570A, 570VL, and 570SL)

PS/2 mouse, 6 pin mini DIN x 1 for 570, 570V, and 570VS

On Board buzzer x 1

On Board USB port x 2 with 6 pin header x1

On Board 2 pin header for reset SW, 4 pin for speaker, 5 pin for keylock

On Board IR, 5 pin header x 1



- **On Board RTC**  
High precision clock/calendar with battery back up
- **On Board solid state Disk**  
Socket reserved for M-systems' DiskOnChip (DOC)  
Memory size up to 72MB single chip  
Drivers support DOS, Windows, Win 95 and NT (Bootable)
- **On Board ISA MAX**  
ISA MAX circuit for 20 ISA slot support
- **System monitor feature**  
Four voltage values (For +5V, +12V, +3.3V and Vcore)  
One Fan speed (For CPU)  
One temperature  
All values shown on screen (under Windows95/98, Windows NT 4.0)
- **Watchdog timer**  
1, 2, 4, 8, 16, 32, 64 second time-out interval
- **Dimensions**  
Dimensions: 338mm(D) x 122mm(W)
- **Power requirements**  
+5V: 10A(Max)  
+/-12V: 20mA(Max)
- **Environments**  
Operating temperatures: 0°C to 60°C  
Storage temperatures: -20°C to 80°C  
Relative humidity: 10% to 90% (Non-condensing)

## 1-2 What you'll have from the package

In addition to this manual, the PEAK 570 series package includes the following items

- PEAK 570 series single board computer x 1
- SIO+PIO cable x 1
- FDC cable x 1
- IDE cable x 1
- 5 pin to 5 pin keyboard cable x 1 (for DIN keyboard connector)
- Wide SCSI cable x 1 (only PEAK 570VS/570SL/570A)
- Adaptec SCSI Drivers Diskettes x 3 (only PEAK 570VS/570SL/570A)
- Manuals for Adaptec SCSI drivers x 2 (only PEAK 570VS/570SL/570A)
- VGA Driver diskette x 1 (all models except 570/570SL)
- LAN Driver diskette x 1 (only PEAK 570VL/570SL/570A)
- System Monitor Driver diskette x 2

If any of these items is missed or damaged, please contact your vendor for what you want.

## Chapter 2

# Switches and Connectors

This chapter gives the definitions and shows where to locate the positions of switches and connectors.

### 2-1 Switches

Switches on the CPU board are used to select options for different functions used. The switch-on or off is to accommodate the variations of the following table. (see figure 2-1 for switch positions)

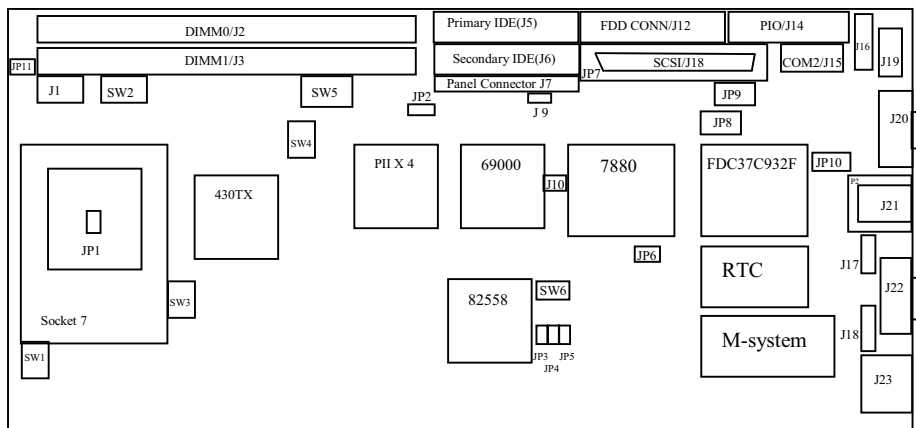


Figure 2-1 Switches Positions

**Switch Setting Table (\*:default setup)**

<b>VCORE Voltage</b>	1.9V	2.2V	*2.8V	2.9V	3.2V	3.3V	3.5V
	P266/P166	K6/K6-2 266	P55C	K6-166	K6-233		WINCHIP
	(0.25micron)	K6/K6-2 300		K6-200		P54C	
		K6-2 333					
SW1.1	ON	OFF	OFF	OFF	OFF	OFF	OFF
SW1.2	ON	OFF	ON	ON	ON	ON	ON
SW1.3	ON	OFF	OFF	OFF	ON	ON	ON
SW1.4	OFF	ON	OFF	OFF	OFF	OFF	ON
SW1.5	OFF	OFF	OFF	ON	OFF	ON	ON

<b>Sensor SMI</b>	Enable	*Disable
SW1.6	ON	OFF

<b>For INTEL Processor</b>								
SW2.1	SW2.2	SW2.3	SW2.4	SW2.5	SW2.6	SW2.7	SW2.8	Core/Bus Ratio
ON	OFF	ON	OFF	-	-	-	-	1.5x
OFF	ON	ON	OFF	OFF	ON	-	-	2.0x
OFF	ON	OFF	ON	OFF	ON	-	-	2.5x
ON	OFF	OFF	ON	OFF	ON	-	-	3.0x
ON	OFF	ON	OFF	OFF	ON	-	-	*3.5x
OFF	ON	OFF	ON	ON	OFF	-	-	4.0x

<b>For AMD Processor</b>								
SW2.1	SW2.2	SW2.3	SW2.4	SW2.5	SW2.6	SW2.7	SW2.8	Core/Bus Ratio
OFF	ON	ON	OFF	-	-	ON	OFF	2.0x
OFF	ON	OFF	ON	-	-	ON	OFF	2.5x
ON	OFF	OFF	ON	-	-	ON	OFF	3.0x
ON	OFF	ON	OFF	-	-	ON	OFF	3.5x
OFF	ON	ON	OFF	-	-	OFF	ON	4.0x
OFF	ON	OFF	ON	-	-	OFF	ON	4.5x
ON	OFF	OFF	ON	-	-	OFF	ON	5.0x
ON	OFF	ON	OFF	-	-	OFF	ON	5.5x

<b>VCC3 Voltage</b>	*3.3V	3.45V
SW3.1	ON	OFF
SW3.2	OFF	ON

<b>CPUVIO Voltage</b>	2.5V	*3.3V	3.45V
SW3.3	ON	OFF	OFF
SW3.4	OFF	ON	OFF
SW3.5	OFF	OFF	ON
SW3.6	ON	OFF	OFF
SW4.4	OFF	ON	ON
SW4.5	ON	OFF	OFF



<b>CPU CLK(MHz)</b>	50.0	75.0	83.3	68.5	83.3	75.0	60.0	*66.8
<b>PCI CLK</b>	25.0	32.0	41.65	34.25	33.3	37.5	30.0	33.4
SW4.1	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW4.2	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW4.3	ON	OFF	ON	OFF	ON	OFF	ON	OFF

<b>SDRAM Refresh Rate(MHz)</b>	*66	60
SW4.6	ON	OFF

<b>About PANEL</b>	Default	Reserved
SW5.1	*OFF	ON
SW5.2	*ON	OFF
SW5.3	-	-
SW5.4	-	-

<b>PANEL Types</b>	1	2	3	4	5	6	7	8	9	*10	11	12	13	14	15	16
SW5.5	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SW5.6	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW5.7	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW5.8	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

<b>PANEL Types</b>	
1	1024x768 Dual Scan STN Color Panel
2	1280x1024 TFT Color Panel
3	640x480 Dual Scan STN Color Panel
4	800x600 Dual Scan STN Color Panel
5	640x480 Sharp TFT Color Panel
6	640x480 18-bit TFT Color Panel
7	1024x768 TFT Color Panel
8	800x600 TFT Color Panel
9	800x600 TFT Color Panel (Large BIOS only)
10	800x600 TFT Color Panel (Large BIOS only)
11	800x600 Dual Scan STN Color Panel (Large BIOS only)
12	800x600 Dual Scan STN Color Panel (Large BIOS only)
13	1024x768 TFT Color Panel (Large BIOS only)
14	1280x1024 Dual Scan STN Color Panel (Large BIOS only)
15	1024x600 Dual Scan STN Color Panel (Large BIOS only)
16	1024x600 TFT Color Panel (Large BIOS only)

<b>M-SYSTEM ADDRESS</b>	*Disable	C0000	C8000	D0000	D8000
SW6.1	OFF	ON	ON	ON	ON
SW6.2	-	ON	ON	OFF	OFF
SW6.3	-	ON	OFF	ON	OFF

<b>BIOS Refresh</b>	Enable	*Disable
SW6.4	ON	OFF

<b>SCSI Terminator</b>	*Enable	Disable
SW6.5	ON	OFF



<b>8/16 Bit SCSI</b>	*16 Bit	8 Bit
SW6.6	ON	OFF
<b>CMOS RAM</b>	Clear	*Normal
SW6.7	ON	OFF
<b>ATX Power</b>	*No USE	Use
SW6.8	ON	OFF
J9	NC	1-2
<b>PANEL Voltage</b>	*3.3V	5V
JP2	2-3	1-2

## 2-2 Connectors

Connectors on the CPU Board provide interfaces to other devices.

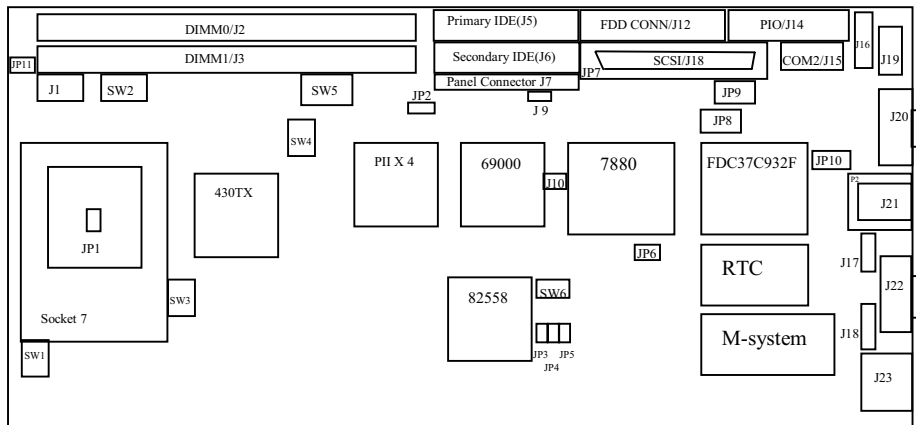


Figure 2-2 Connector positions

## Connectors vs. Functions

Connector	Function	Remark
J1	FAN Conn.	
J2	DIMM 0	
J3	DIMM 1	
J5	Primary IDE	
J6	Secondary IDE	
J7	PANEL Conn.	
J9	IDE LED Conn.	
J10	Reset	
J12	Floppy	
J14	PIO	
J15	COM2	
J16	USB Conn.	
J17	Speaker	
J18	Keylock	
J19	Keyboard.	
J20	VGA Conn.	CRT
J21	PS/2 Mouse	
J22	COM1	
J23	PS/2 Keyboard	
JP1	CPU Temperature Sensor Pin	
JP2	Panel Voltage	3.3V/5V
JP3	SPEED LED	For LAN
JP4	ACTIVE LED	For LAN
JP5	LINK LED	For LAN
JP6	SCSI LED	
JP7	Ultra Wide SCSI	
JP8	ATX Controller	
JP9	ATX Button-in	
JP10	IR	
JP11	SM BUS	
P2	LAN Connector	

2

## Pin definitions of connectors

- J1: Fan Connector

Pin No.	Description
1	GND
2	+12V
3	Sense

- J5 /J6: IDE Interface Connector

Pin No.	Description	Pin No.	Description
1	Reset#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	N/C
29	DMA ACK	30	Ground
31	Interrupt	32	IOCS16#
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

- J7: Panel Connector

Pin No.	Description	Pin No.	Description
1	ENABKL	2	+12V SAFE
3	LP	4	DE
5	SHFCLK	6	FLM
7	PO	8	VDDSAFE
9	P2	10	P1
11	P4	12	P3
13	P6	14	P5



15	P8	16	P7
17	P10	18	P9
19	P12	20	VDDSAFE
21	P14	22	P11
23	GND	24	P13
25	P16	26	P15
27	P18	28	P17
29	P20	30	ENAVEE
31	P22	32	P19
33	GND	34	P21
35	P24	36	P23
37	P26	38	P25
39	M/PCLK	40	GND
41	P28	42	P27
43	P30	44	P29
45	P32	46	P31
47	P34	48	P33
49	GND	50	P35

Description Table	
ENABKL	Backlight enabled control pin (Active high)
+12V SAFE	Backlight power +12V
LP	Latch Pulse/HSYNC Single
DE	Display Enable
SHFCLK	Shift Clock/Pixel Clock
FLM	First Line Marker/VSYNC
P0 – P35	Digital R.G.B. Signal Pixel Data
VDDSAFE	Panel Power
GND	Ground Pin
ENAVEE	Panel Bias Voltage
M/PCLK	Display Enable/Video in port PCLK output

• J9: IDE LED Connector

Pin No.	Description
1	+5V
2	HDD Active #

• J10: Reset

Pin No.	Description
1	Reset
2	Ground

## • J12: FDC Connector

Pin No.	Description	Pin No.	Description
1	Ground	2	Density Select
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	Index#
9	Ground	10	Motor Enable A#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor Enable B#
17	Ground	18	Direction#
19	Ground	20	Step#
21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	N/C	30	Read Data#
31	Ground	32	Head Side Select#
33	N/C	34	Disk Change#

## • J14: Parallel Port Connector

Pin No.	Description	Pin No.	Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialize
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	GND

## • J15/J22: COM2/COM1 (D-Sub 9 pin)

Pin No.	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

## • J16: USB connector

Pin No.	Description
1	VCC
2	SBD0-
3	SBD0+
4	SBD1-
5	SBD1+
6	Ground

## • J17: Speaker

Pin No.	Description
1	Speaker Signal
2	GND
3	GND
4	+5V

## • J18: Keylock

Pin No.	Description
1	+5V
2	N/C
3	Ground
4	Keylock
5	Ground



• J19: Keyboard Connector

Pin No.	Description
1	Keyboard Clock
2	Keyboard Data
3	N/C
4	Ground
5	+5V

• J20: VGA Connector (CRT Mode)

Pin No.	Description
1	RED
2	Green
3	Blue
4	NC
5	GND
6	GND
7	GND
8	GND
9	+5
10	GND
11	NC
12	Display Data channel data
13	Horizontal Sync
14	Vertical Sync
15	Display Data Channel CLK

• J21: PS/2 Mouse Connector (Mini DIN)(for 570, 570V, 570VS)

Pin No.	Description
1	Mouse Data
2	N/C
3	Ground
4	+5V
5	Mouse Clock
6	N/C



- J23: PS/2 Keyboard/Mouse Connector (Mini DIN)

Pin No.	Description
1	Keyboard DATA
2	Mouse DATA (for 570A, 570VL, 570SL)
3	Gnd
4	+5V
5	Keyboard CLK
6	NC/Mouse CLK (for 570A, 570VL, 570SL)

- JP3: External SPEED LED for LAN

Pin No.	Description
1	SPEEDLED
2	+5V

- JP4: External ACTIVE LED for LAN

Pin No.	Description
1	ACTLED
2	+5V

- JP5: External LINK LED for LAN

Pin No.	Description
1	LILED
2	+5V

- JP6: External SCSI LED

Pin No.	Description
1	LED#
2	+5V

- JP7: Wide SCSI 68-Pin High Density Connector

1	Ground	35	SCSI Data 12
2	Ground	36	SCSI Data 13
3	Ground	37	SCSI Data 14
4	Ground	38	SCSI Data 15
5	Ground	39	SCSI high Byte Parity#
6	Ground	40	SCSI Data 0
7	Ground	41	SCSI Data 1
8	Ground	42	SCSI Data 2
9	Ground	43	SCSI Data 3

10	Ground	44	SCSI Data 4
11	Ground	45	SCSI Data 5
12	Ground	46	SCSI Data 6
13	Ground	47	SCSI Data 7
14	Ground	48	SCSI Low Byte Parity#
15	Ground	49	Ground
16	Ground	50	Ground
17	Termination Power	51	Termination Power
18	Termination Power	52	Termination Power
19	N/C	53	N/C
20	Ground	54	Ground
21	Ground	55	Attention#
22	Ground	56	Ground
23	Ground	57	Busy#
24	Ground	58	Acknowledge#
25	Ground	59	Reset#
26	Ground	60	Message#
27	Ground	61	Select#
28	Ground	62	Command/Data#
29	Ground	63	Request#
30	Ground	64	In/Out#
31	Ground	65	SCSI Data 8
32	Ground	66	SCSI Data 9
33	Ground	67	SCSI Data 10
34	Ground	68	SCSI Data 11

• JP8: ATX Controller

Pin No.	Description
1	5VSB
2	GND
3	Wake-up

• JP9: ATX Button-in

Pin No.	Description
1	5VSB
2	Button-in

• JP10: IR

Pin No.	Description
1	IRRX
2	IRTX
3	GND
4	IR_MODE
5	+5V

• JP11: External SMBUS Connector

Pin No.	Description
1	SMBDATA
2	SMBCLK

• P2: LAN Connector (for 570VL, 570SL, 570A)

Pin No.	Description
1	TD+
2	TD-
3	RD+
4	TERMPLANE
5	TERMPLANE
6	RD-
7	TERMPLANE
8	TERMPLANE
9	NC
10	NC
11	GND
12	GND



## Chapter 3

# Capability Expanding

This chapter explains how you can expand capability of your CPU board in such aspects as system memory, cache memory, and CPU.

### 3-1 System Memory

Your system memory is provided by DIMM's (Dual In-line Memory Modules) on the CPU board. The CPU board contains two memory banks: Bank 0, 1, corresponds to connector DIMM0 and DIMM1.

The table below shows possible DIMM configurations for the memory banks and the figure helps you correctly install the DIMM modules. The Peak 570 series supports both EDO memory and SDRAM.

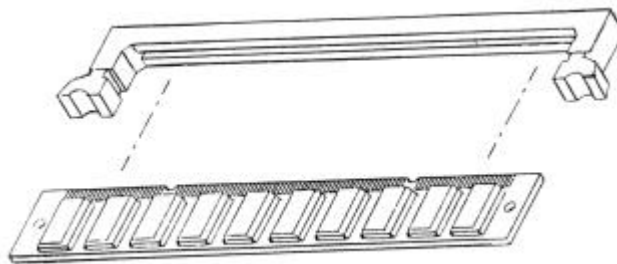
DIMM 0	DIMM 1	Total Memory
16 MB	Empty	16 MB
16 MB	16 MB	32 MB
32 MB	Empty	32 MB
32 MB	16 MB	48 MB
32 MB	32 MB	64 MB
64 MB	Empty	64 MB
64 MB	32 MB	96 MB
64 MB	64 MB	128 MB
128 MB	Empty	128 MB
128 MB	64 MB	192 MB
128 MB	128 MB	256 MB



## Installing DIMM

To install the DIMM's, first make sure the two handles of the DIMM socket are in the "open" position, i.e. the handles stay outward. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket. Then press the DIMM module down right into the socket, until a click sound is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket as Figure 3-1 shows. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

Figure 3-1 Install DIMM



## 3-2 Cache Memory

The Peak 570 series only support high speed pipeline burst SRAM. The standard configuration is 64K x 64 for 512KB.

### 3-3 Change CPU

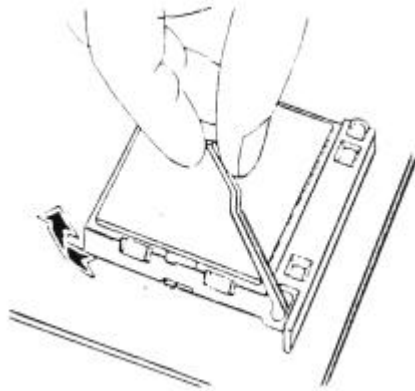
To change the CPU, pull the handling bar of the socket upward to the other end to loosen the socket's openings. Carefully lift the existing CPU up to remove it from the socket.

Figure 3-2 Removing CPU



Place the new CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings. Replace the handling bar to fasten the CPU to the socket. Be sure to re-arrange the jumper setting for the correct clock (SW4.1, SW4.2, SW4.3) and Core/Bus ratio (SW4).

*Figure 3-3* Installing CPU



## Chapter 4

# AWARD BIOS Setup

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





**Control Keys**

Up arrow ↑	Move to previous item
Down arrow ↓	Move to next item
Left arrow →	Move to the item in the left hand
Right arrow ←	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp / "+" key	Increase the numeric value or make changes
PgDn / "-" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

## *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 the items and press <Enter> to accept or enter the sub-menu.

Figure 1. Main Menu  
ROM PCI/ISA BIOS (PEAK570A)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

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

### **Standard CMOS Setup**

This setup page includes all the items in a standard compatible BIOS. See Page 4-6 to Page 4-8 for details.

### **BIOS Features Setup**

This setup page includes all the items of Award special enhanced features. See Page 4-9 to Page 4-13 for details.

### **Chipset Features Setup**

This setup page includes all the items of chipset special features. See Page 4-14 to 4-17 for details.

### **Power Management Setup**

This category determines how much power consumption for system after selecting below items. Default value is Disable. See Page 4-18 to Page 4-21 for details.

### **PNP/PCI Configuration**

This category specifies the assignment of all the IRQ's and DMA's. See Page 4-22 to Page 4-23 for details.

### **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.

### **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.

### **Integrated Peripherals**

This category allows you to set up all the on board I/O controllers like IDE, SCSI, FDC, etc.,. See Page 4-24 to Page 4-26

### **Supervisor/User Password**

Change, set, or disable password of supervisor or user. It allows you to limit access to the system and Setup, or just to Setup. See Page 4-27 for details.

### **IDE HDD Auto Detection**

Automatically configure hard disk parameters. See Page 4-28 to Page 4-30 for details.

### **HDD Low Level Format**

Hard disk low level format utility.

### **Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

### **Exit Without Saving**



Abandon all CMOS value changes and exit setup.

**Standard CMOS Setup Menu**

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 key 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  
ROM PCI/ISA BIOS (PEAK570A)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Mon, Dec 14 1998	
Time (hh:mm:ss) : 17:58: 3	
<b>HARD DISKS</b>	<b>TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE</b>
Primary Master : AUTO	0 0 0 0 0 0 0 AUTO
Primary Slave : AUTO	0 0 0 0 0 0 0 AUTO
Secondary Master : AUTO	0 0 0 0 0 0 0 AUTO
Secondary Slave : AUTO	0 0 0 0 0 0 0 AUTO
Drive A : 1.44M, 3.5 in.	
Drive B : None	
Floppy 3 Mode Support : Disabled	
640K	
LCD&CRT : Auto	
Halt On : All , But keyboard	
262144K	
Base Memory:	
Extended Memory: 261120K	
Other Memory: 384K	
Total Memory:	
262144K	
ESC : Quit	↑ ↓ → ← : Select Item
F1 : Help	(Shift) F2 : Change Color
	PU / PD / + / - : Modify

**Date**

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun through Sat, determined by the BIOS, is read only
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date	The date, from 1 through 31 (or the maximum allowed in the month), can key in the numerical /function key
month	The month, from Jan through Dec
year	The year, depend on the year of BIOS

## Time

The time format is <hour> <minute> <second>, which accepts either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

## Primary Master/Primary Slave/Secondary Master/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types for enhanced IDE BIOS. Type 1 to Type 45 are predefined. 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 precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

If a hard disk has not been installed select NONE and press <Enter>.



**Drive A Type/Drive B Type**

The category identifies the type of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

**Floppy 3 Mode Support:**

The category determines whether the floppy 3 mode support is enabled or not.

**LCD&CRT:**

On board VGA select display type.

Type	Function
CRT	Boot from CRT only
LCD	Boot on LCD only
BOTH	Boot both LCD and CRT
AUTO	Boot on CRT or LCD

**Error Halt On**

The category determines whether the computer will stop or not if an error is detected during power up.

No Errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All Errors	The system boot will not be stopped for any error that may be detected.
All, but Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, but Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, but Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

**BIOS Features Setup Menu**

ROM PCI/ISA BIOS (PEAK570A)  
 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 From LAN First	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot up Floppy Seek	: Enabled		
Boot up Numlock Status	: On		
Boot up System Speed	: High		
Gate A20 Option	: Normal		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6	ESC : Quit	↑↓→← : Select Item
Typematic Delay (Msec)	: 250	F1 : Help	PU/PD/+/- : Modify
Security Option	: Setup	F5 : Old Values	(Shift) F2 : Color
PCI/VGA Palette Snoop	: Disabled	F6 : Load BIOS Defaults	
OS Select For DRAM > 64ME	: Non-OS2	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.

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 (Default)	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Note: This function is available only for DOS and other OSes 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 Enable. If your CPU without Internal Cache then this item "CPU Internal Cache" will not be show.

Enabled (Default)	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 (Default)	Normal POST

### **Boot From LAN First**

This category specifies whether System Boot through the LAN Boot ROM. If not, just disable it.

Enabled	Boot from LAN
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Disabled (Default)	Not Boot from LAN
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### **Boot Sequence**

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

A, C, SCSI	Default
C, A, SCSI	
C, CDROM, A	
CDROM, C, A	
D, A, SCSI	
E, A, SCSI	
F, A, SCSI	
SCSI, A, C	
SCSI, C, A	
C only	
LS/ZIP, C	

### **Swap Floppy Drive**

This item allows you to determine whether enable the swap floppy drive or not. The choice: Enabled/Disabled (Default).

### **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.

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 category 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.

**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 (Msec)**

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

250 (Default)	250 msec
500	500 msec
750	750 msec
1000	1000 msec

**Security Option**

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

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 Snoop**

Enable PCI controller support PCI/VGA palette snoop or not, if enabled, VGA cycle will transfer to ISA bus. If disabled (Default), VGA cycle only transfer to PCI bus.

**OS Select for DRAM 64MB**

This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise, non-OS2 (Default).

**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 (Default)	Video shadow is enabled
Disabled	Video shadow is disabled

**C8000 - CFFFF Shadow/D0000 - 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 (Default)	Optional shadow is disabled

- Note: 1. For C8000-DFFFF option-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.
2. IDE second channel control:  
Enable : enable secondary IDE port and BIOS will assign IRQ15 for this port.  
Disable: disable secondary IDE port and IRQ15 is available for other device. The item is optional only for PCI BIOS.
3. Some of the sound cards have an onboard CD-ROM controller which uses IDE Secondary Port. In order to avoid PCI IDE conflict, the IDE secondary channel control has to select “disable” then CD-ROM can work.



## Chipset Features Setup Menu

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you know very detailed about the chipset features.

ROM PCI/ISA BIOS (PEAK 570A)  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	CPU Warning Temperature	: Disabled
DRAM Timing	: 70ns	Current CPU Temperature	: 0°C/32°F
DRAM Leadoff Timing	: 10/6/4	Current CPUFAN1 Speed	: 1999RPM
DRAM Read Burst (EDO/FP)	: x333/x444	Current Vin (V)	: 1.91V
DRAM Write Burst Timing	: x333		
Fast EDO Lead Off	: Disabled	Shutdown Temperature	: 60°C/140°F
Refresh RAS# Assertion	: 5 Clks		
Fast RAS To CAS Delay	: 3		
DRAM Page Idle Timer	: 2 Clks		
DRAM Enhanced Paging	: Enabled		
Fast MA to RAS# Delay	: 2 Clks		
SDRAM(CAS Lat/RAS-to-CAS)	: 3/3		
SDRAM Speculative Read	: Disabled		
System BIOS Cacheable	: Disabled	ESC: Quit	↑↓→← : Select item
Video BIOS Cacheable	: Disabled	F1 : Help	PU/PD/+/- : Modify
8 Bit I/O Recovery Time	: 1	F5 : Old Values	(Shift) F2 : Color
16 Bit I/O Recovery Time	: 2	F6 : Load BIOS Defaults	
Memory Hole At 15M-16M	: Disabled	F7 : Load Setup Defaults	
PCI 2.1 Compliance	: Disabled		

### Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled. The Choice: Enabled (Default), Disabled.  
Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.

### DRAM Timing

The DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

60ns	DRAM Timing Type.
70ns (Default)	DRAM Timing Type.

### **DRAM Read Burst (EDO/FP)**

This sets the timing for burst mode reads from two different DRAM(EDO/FPM). Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

x222/x333	Read DRAM (EDO/FPM) timings are 2-2-2/3-3-3
x333/x444 (Default)	Read DRAM (EDO/FPM) timings are 3-3-3/4-4-4
x444/x444	Read DRAM (EDO/FPM) timings are 4-4-4/4-4-4

### **DRAM Write Burst Timing**

This sets the timing for burst mode writes from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

x222	Write DRAM timings are 2-2-2-2
x333 (Default)	Write DRAM timings are 3-3-3-3
x444	Write DRAM timings are 4-4-4-4

### **Fast EDO Lead Off**

The item allows you to select the Fast EDO Lead Off or not to enhance the performance. The Choice: Enabled, Disabled (Default).

### **Refresh RAS# Assertion**

This item allows you to select the type of DRAM refresh clock delay.

4Clks	The timing type.
5Clks (Default)	The timing type.



**Fast RAS To CAS Delay**

This field lets you insert a timing delay to get a faster performance between the Row Address Strobe (RAS) to Column Address Strobe (CAS) strobe signals, used when DRAM is written to, read from, or refreshed.

2	The timing delay
3 (Default)	The timing delay.

**DRAM Enhanced Paging**

This item allows you to determine whether to keep the page open until a page/row miss or use additional information to keep the DRAM page open when host may be "right back".

The Choice: Enabled (Default), Disabled.

**Fast MA To RAS# Delay**

This item allows you to select the DRAM Row Miss timing. Note: the timing adjustments are independent of DLT timing adjustment.

1	One clocks. (MA setup to RAS# assertion)
2	Two clocks (Default).

**SDRAM (CAS Lat/RAS-to-CAS)**

This item allows you to select the CAS# latency for all SDRAM cycles and RAS# to CAS# delay.

2/2	The timing type.
3/3 (Default)	The timing type.

**SDRAM Speculative Read**

This item is capable of allowing a DRAM read request to be generated slightly before the address has been fully decoded. This can reduce all read latencies.

More simply, the CPU will issue a read request and included with this request is the place (address) in memory where the desired data is to be found. This request is received by the DRAM controller. When it is enabled, the controller will issue the read command slightly before it has finished determining the address.

The Choice: Enabled, Disabled (Default).

**System BIOS Cacheable**



Select Enabled allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled	BIOS access cached
Disabled (Default)	BIOS access not cached

### **Video BIOS Cacheable**

Select Enabled allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Enabled	Video BIOS access cached
Disabled (Default)	Video BIOS access not cached

### **8 Bit I/O Recovery Time**

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O. This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 (Default) to 8 CPU clocks.

### **16 Bit I/O Recovery Time**

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are NA, 1,2 (Default), 3, 4 CPU clocks.

### **Memory Hole At 15M-16M.**

In order to improve performance, certain space in memory can be reserved for ISA cards.. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled (Default)	Memory hole not supported

### **CPU Warning Temperature**

When the temperature is over the CPU warning temperature, then the warning signal will come out.



**Current CPU Temperature**

This field displays the current CPU of system temperature.

**Current CPU FAN1 Speed**

These fields display the current speed of CPU fans.

**Current Voltage**

These fields display the current voltage of voltage.

*Power Management Setup*

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

ROM PCI/ISA BIOS (PEAK570A)  
 POWER MANAGEMENT SETUP  
 AWARD SOFTWARE, INC.

CPI Function : Enabled Power Management : Max Saving PM Control by APM : Yes Video Off Method : V/H SYNC+Blank Video Off After : Standby MODEM Use IRQ : 3 Doze Mode : Disabled Standby Mode : Disabled Suspend Mode : Disabled HDD Power Down : Disabled Throttle Duty Cycle : 62.5% ZZ Activein Suspend : Disabled PCI/VGA Act-Monitor : Enabled PowerOn by Ring : Enabled IRQ 8 Break Suspend : Disabled	** Reload Global Timer Events ** IRQ[3-7, 9-15], NMI : Enabled Primary IDE 0 : Disabled Primary IDE 1 : Disabled Secondary IDE 0 : Disabled Secondary IDE 1 : Disabled Floppy Disk : Disabled Serial Port : Enabled Parallel Port : Disabled <hr/> ESC: Quit                    ↑↓→← : Select Item F1 : Help                    PU/PD/+/- : Modify F5 : Old Values                (Shift) F2 : Color F6 : Load BIOS Default F7 : Load Setup Default
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**Power Management**

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Doze Mode
2. Standby Mode

3. Suspend Mode

4. HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

Disabled	No power management. Disable all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving (Default)	Maximum power management -- <b>ONLY AVAILABLE FOR SL CPU'S</b> . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Define	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

**PM Control by APM**

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to *No*.

**Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank (Default)	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

**Video Off After**

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

N/A	Monitor will remain on during power saving modes.
Suspend	Monitor blanked when the systems enters the Suspend mode.
Standby	Monitor blanked when the system enters Standby mode.
Doze	Monitor blanked when the system enters any power saving mode.

### **MODEM Use IRQ**

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

The choices: NA, 3 (Default), 4, 5, 7, 9, 10, 11

PM Timers

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

### **Doze Mode**

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

Standby Mode

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

### **Standby Mode**

1. Disable	System will never enter STANDBY mode
2. 1 Min	Defines the continuous idle time before the system entering STANDBY mode.  If any item defined in (J) is enabled & active, STANDBY timer will be reloaded
2 Min	
4 Min	
6 Min	
8 Min	
10 Min	
20 Min	
30 Min	
40 Min	
1 Hr	



### **Suspend Mode**

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

### **HDD Power Down**

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

### **Throttle Duty Cycle**

When the system enters Doze mode, the CPU clock runs only part of the time.

You may select the percent of time that the clock runs.

The Choice: 12.5%, 25.0%, 37.5%, 50.0%, 62.5% (Default), 75.0%

### **PCI/VGA Active Monitor**

When Enabled, any video activity restarts the global timer for Standby mode.

The Choice: Enabled (Default), Disabled.

### **PowerOn by Ring**

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state..

The Choice: Enabled (Default), Disabled.

### **IRQ 8 Break Suspend**

You can Enable or Disable monitoring of IRQ8 so it does not awaken the system from Suspend mode. The Choice: Enabled, Disabled (Default).

### **Reload Global Timer Events**

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.

IRQ[3 -7, 9-15], NMI	Enabled (Default), Disabled
Primary IDE 0	Enabled, Disabled (Default)
Primary IDE 1	Enabled, Disabled (Default)
Secondary IDE 0	Enabled, Disabled (Default)
Secondary IDE 1	Enabled, Disabled (Default)
Floppy Disk	Enabled, Disabled (Default)
Serial Port	Enabled (Default), Disabled
Parallel Port	Enabled, Disabled (Default)

## PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or **Peripheral Component Interconnect**, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



ROM PCI / ISA BIOS (PEAK570A)  
 PNP/PCI CONFIGURATION  
 AWARD SOFTWARE, INC.

PNP OS Installed : No Resource Controlled : Auto By Reset Configuration : Disabled Data	Slot 1 Use IRQ No. : Auto Slot 2 Use IRQ No. : Auto Slot 3 Use IRQ No. : Auto Slot 4 Use IRQ No. : Auto PCI IDE IRQ Map To : PCI-AUTO Primary IDE INT# : A
---	---

	Secondary IDE : B
	INT#
	Assign IRQ for USB : Enabled
ESC : Quit                    ↑ ↓ → ← : Select Item	
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift) F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

### **PNP OS Installed**

Select Yes if the system operating environment is Plug-and-Play aware (e.g. Windows 95). The Choice: Yes and No (Default).

### **Resource Controlled by**

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

The choice: *Auto* (Default) and *Manual*.

### **Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The choice: *Enabled* and *Disabled* (Default).

### **Assing IRQ For USB**

Assing IRQ for USB : Enabled (Default)

Not assign IRQ for USB : Disabled

## *Integrated Peripherals*

# 4

ROM PCI / ISA BIOS (PEAK570A)  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378/IRQ 7
IDE Primary Master PIO	: Auto	Parallel Port Mode	: ECP+EPP1.9
IDE Primary Slave PIO	: Auto	ECP Mode Use DMA	: 3
IDE Secondary Master	: Auto		
UDMA			
IDE Secondary Slave UDMA	: Auto		
IDE Primary Master PIO	: Auto		



IDE Primary Slave PIO	: Auto	
IDE Secondary Master	: Auto	
UDMA		
IDE Secondary Slave UDMA	: Auto	
On-Chip Primary PCI IDE	: Enabled	
On-Chip Secondary PCI IDE	: Enabled	
Onboard PCI SCSI Chip	: Enabled	
USB Keyboard Support	: Disabled	
Onboard FDC Controller	: Enabled	
Onboard Serial Port 1	: Auto	ESC : Quit           ↑↓→← : Select Item
Onboard Serial Port 2	: Auto	F1 : Help            PU/PD/+/- : Modify
UART2 Mode	: Standard	F5 : Old Values     (Shift) F2 : Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

**IDE HDD Block Mode**

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled (Default)	IDE controller uses standard mode.

**IDE Primary/Secondary Master/Slave PIO**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

**IDE Primary/Secondary Master/Slave UDMA**

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support. The Choice: Auto (Default), Disabled

**On-Chip Primary/Secondary PCI IDE**

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled (Default) to activate each channel separately.

### **Onboard PCI SCSI Chip**

This item allows you to determine whether onboard PCI SCSI chip is enabled (Default) or not.

### **USB Keyboard Support**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The Choice: Enabled, Disabled (Default).

### **Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Choices: Enabled (Default), Disabled.

### **Onboard Serial Port 1/Port 2**

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address. The Choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto (Default).

### **UART 2 Mode**

This item allows you to determine which Infra Red (IR) function of onboard I/O chip. The Choice: Standard (Default), IrDA1.0, ASK-IR, IrDA1.1

### **Duplex Select**

This item allows you to select the IR function when you select the UART 2 Mode is IrDA1.0, ASK-IR, IrDA1.1  
Choices are Half, Full.

### **TxD, RxD Active**

This item allows you to determine the active of RxD, TxD.  
Choices are "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".



### **Onboard Parallel Port**

Select a logical LPT port name and matching address for the physical parallel (printer) port. The choice: 378H/IRQ7 (Default), 278H/IRQ5, 3BCH/IRQ7, Disabled.

### **Parallel Port Mode**

Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode.

The choice: SPP, ECP+EPP1.7, EPP1.7+SPP, EPP1.9+SPP, ECP, ECP+EPP1.9 (Default), and Normal.

### **ECP Mode Use DMA**

Select a DMA channel for the port.

Choices are 3 (Default), 1.

## *Supervisor/User Password Setting*

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

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

user password : just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

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

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

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 4). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.



### *IDE HDD Auto Detection*

The Enhance IDE features was included in all Award BIOS. Below is a brief description of this feature.

1. Setup Changes

<I> Auto-detection

BIOS setup will display all possible modes that supported by the HDD including NORMAL, LBA & LARGE.

if HDD does not support LBA modes, no 'LBA' option will be shown. Users can select a mode which is appropriate for them.

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

<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>
Select Primary Master Option (N = Skip) : N								
OPTION	SIZE	CYLS	HEADS	PRECOMP	LANDZ	SECTORS	MODE	
1(Y)	516	1120	1	65535	1119	59	NORMAL	
2	516	524	32	0	1119	63	LBA	

<II> Standard CMOS Setup

HARD DISK	TYPE	<u>Cyls</u>	<u>Heads</u>	<u>Precom</u>	<u>Landzone</u>	<u>Sector</u>	<u>Mode</u>
Primary Master:	User (516MB)	1120	16	65535	1119	59	Normal
Primary Slave:	None (203MB)	684	16	65535	685	38	-----
Secondary Master:	None	0	0	0	0	0	0
Secondary Slave	None	0	0	0	0	0	0

When HDD type is in 'user' type, the "MODE" option will be opened for user to select their own HDD mode.

(2) HDD Modes

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

NORMAL mode

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

The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

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

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

LBA (Logical Block Addressing) mode

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

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



LARGE mode

Extended HDD access mode supported by Award Software.

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

Example of LARGE mode:

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

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address!

Maximum HDD size:

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

(3) Remarks

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Routine(INT 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 INT 13h.

## Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Hard Disk Low Level Format Utility  SELECT DRIVE BAD TRACK LIST PREFORMAT  Current select drive is: C  DRIVE: C CYLINDER: 0 HEAD: 0	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">NO. CYLS HEAD</td> </tr> <tr> <td style="height: 50px;"> </td> </tr> </table>	NO. CYLS HEAD	
NO. CYLS HEAD			

		Size	Cyls	Head	Precom p	Landz	Sector	Mode
Primary Master	:	0	0	0	0	0	0	AUTO
Primary Slave	:	0	0	0	65535	65535	0	AUTO
Secondary Master	:	0	0	0	0	0	0	AUTO
Secondary Slave	:	0	0	0	0	65280	0	AUTO

Up/Down - Select item    ENTER-Accept    ESC-Exit/Abort Copyright (C) Award Software, Inc. 1992-98 All Rights Reserved
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### Control Keys

Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press [Enter] to accept the selection. Press Esc to abort the selection or exit the Utility.

### SELECT DRIVE

Select from installed hard disk drive C or D. List at the bottom of the screen



is the drive automatically detected by the utility.

## **BAD TRACK LIST**

### Auto scan bad track

The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen.

### Add bad track

Directly type in the information of the known bad tracks in the window at the right side of the screen.

### Modify bad track

Modify the information of the added bad tracks in the window at the right side of the screen.

### Delete bad track

Delete the added bad tracks in the window at the right side of the screen.

### Clear bad track table

Clear the whole bad track list in the window at the right side of the screen.

## **PREFORMAT**

### Interleave

Select the interleave number of the hard disk drive you wish to perform low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

### Auto scan bad track

This allows the utility to scan first then format by each track.

Start

Press <Y> to start low level format.

### *Power-On Boot*

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or Pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>, <Alt>, and <Delete> keys. Upon restart the system, immediately press <Insert> to load BIOS default CMOS value for boot up.

4

## *BIOS Reference - POST Message*

During the Power On Self Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

### **POST Beep**

Currently there is only one beep code in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

### **Error Messages**

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

#### **CMOS BATTERY HAS FAILED**

CMOS battery is no longer functional. It should be replaced.

#### **CMOS CHECKSUM ERROR**

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

**DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

**DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP**

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

**DISPLAY SWITCH IS SET INCORRECTLY**

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

**DISPLAY TYPE HAS CHANGED SINCE LAST BOOT**

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

**EISA Configuration Checksum Error  
PLEASE RUN EISA CONFIGURATION UTILITY**

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

**EISA Configuration Is Not Complete  
PLEASE RUN EISA CONFIGURATION UTILITY**



The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

#### **ERROR ENCOUNTERED INITIALIZING HARD DRIVE**

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

#### **ERROR INITIALIZING HARD DISK CONTROLLER**

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

#### **FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT**

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

#### **Invalid EISA Configuration**

#### **PLEASE RUN EISA CONFIGURATION UTILITY**

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

#### **KEYBOARD ERROR OR NO KEYBOARD PRESENT**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

#### **Memory Address Error at ...**

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**Memory parity Error at ...**

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**MEMORY SIZE HAS CHANGED SINCE LAST BOOT**

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

**Memory Verify Error at ...**

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

**OFFENDING ADDRESS NOT FOUND**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

**OFFENDING SEGMENT:**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.



**PRESS A KEY TO REBOOT**

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

**PRESS F1 TO DISABLE NMI, F2 TO REBOOT**

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

**RAM PARITY ERROR - CHECKING FOR SEGMENT ...**

Indicates a parity error in Random Access Memory.

**Should Be Empty But EISA Board Found  
PLEASE RUN EISA CONFIGURATION UTILITY**

A valid board ID was found in a slot that was configured as having no board ID.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**Should Have EISA Board But Not Found  
PLEASE RUN EISA CONFIGURATION UTILITY**

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**Slot Not Empty**

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...**

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**Wrong Board In Slot**  
**PLEASE RUN EISA CONFIGURATION UTILITY**

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA configuration utility.

*BIOS Reference - POST Codes*

**Note:** EISA POST codes are typically output to port address 300h.  
 ISA POST codes are output to port address 80h.

POST (hex)	Description
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all the standard devices with default values standard devices includes: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of onboard DRAM & Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
09	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)





0A	<ol style="list-style-type: none"> <li>1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Suprious) Interrupt Handler</li> <li>2. Issue CPUID instruction to identify CPU type</li> <li>3. Early Power Management initialization (OEM specific)</li> </ol>
----	---

**This POST code is for boot block**

POST (hex)	Description
C0	<ol style="list-style-type: none"> <li>1. Turn off OEM specific cache, shadow...</li> <li>2. Initialize all the standard devices with default values standard devices includes:                             <ul style="list-style-type: none"> <li>-DMA controller (8237)</li> <li>-Programmable Interrupt Controller (8259)</li> <li>-Programmable Interval Timer (8254)</li> <li>-RTC chip</li> </ul> </li> </ol>
C1	Auto-detection of onboard DRAM & Cache
C3	Checking checksum of compressed code
C5	Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster
01	Clear base memory 0-640K
0C	Initial interrupt vector 00-1FH
0D	Initial ISA VGA
41H	Enable FDD and detect media type
FFH	Boot from FDD

**This page is for Non-Compressed Version only**

01-02	Reserved
C0	Turn off OEM specific cache, shadow...
03	<ol style="list-style-type: none"> <li>1. Initialize EISA registers (EISA BIOS only)</li> <li>2. Initialize all the standard devices with default values Standard devices includes: <ul style="list-style-type: none"> <li>-DMA controller (8237)</li> <li>-Programmable Interrupt Controller (8259)</li> <li>-Programmable Interval Timer (8254)</li> <li>-RTC chip</li> </ul> </li> </ol>
04	Reserved
05	<ol style="list-style-type: none"> <li>1. Keyboard Controller Self-Test</li> <li>2. Enable Keyboard Interface</li> </ol>
06	Reserved
07	Verifies CMOS's basic RW functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
C1	Auto-detection of onboard DRAM & Cache
C5	Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster
08	Test the first 256K DRAM
09	<ol style="list-style-type: none"> <li>1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table</li> <li>2. OEM specific cache initialization (if needed)</li> </ol>
0A	<ol style="list-style-type: none"> <li>1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Suprious) Interrupt Handler</li> <li>2. Issue CUID instruction to identify CPU type</li> <li>3. Early Power Management initialization (OEM specific)</li> </ol>

The following POST Codes are for all of Compress Version  
& Non-Compress Version

POST (hex)	Description
0B	<ol style="list-style-type: none"> <li>1. Verify the RTC time is valid or not</li> <li>2. Detect bad battery</li> <li>3. Read CMOS data into BIOS stack area</li> <li>4. PnP initializations including (PnP BIOS only) <ul style="list-style-type: none"> <li>-Assign CSN to PnP ISA card</li> <li>-Create resource map from ESCD</li> </ul> </li> <li>5. Assign IO &amp; Memory for PCI devices (PCI BIOS only)</li> </ol>
0C	Initialization of the BIOS Data Area (40 : 00 – 40:FF)
0D	<ol style="list-style-type: none"> <li>1. Program some of the Chipset's value according to Setup. (Early Setup Value Program)</li> <li>2. Measure CPU speed for display &amp; decide the system clock speed</li> <li>3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep which consists of one single long beep followed by two short beeps.</li> </ol>
0E	<ol style="list-style-type: none"> <li>1. Initialize the APIC (Multi-Processor BIOS only)</li> <li>2. Test video RAM (If Monochrome display device found)</li> <li>3. Show messages including: <ul style="list-style-type: none"> <li>-Award Logo, Copyright string, BIOS Date code &amp; Part No.</li> <li>-OEM specific sign on messages</li> <li>-Energy Star Logo (Green BIOS ONLY)</li> <li>-CPU brand, type &amp; speed</li> <li>-Test system BIOS checksum(Non-Compress Version only)</li> </ul> </li> </ol>
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory & Extended Memory Size

31	<ol style="list-style-type: none"> <li>1. Test Base Memory from 256K to 640K</li> <li>2. Test Extended Memory from 1M to the top of memory</li> </ol>
32	<ol style="list-style-type: none"> <li>1. Display the Award Plug &amp; Play BIOS Extension message (PnP BIOS only)</li> <li>2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port... according to setup value</li> </ol>
<b>POST(hex)</b>	<b>Description</b>
33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	<ol style="list-style-type: none"> <li>1. Initialize Keyboard</li> <li>2. Install PS2 mouse</li> </ol>
3E	<p>Try to turn on Level 2 cache</p> <p>Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h</p>
BF	<ol style="list-style-type: none"> <li>1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program)</li> <li>2. If auto-configuration is enabled, programmed the chipset with pre-defined values in the MODBINable Auto-Table</li> </ol>
41	Initialize floppy disk drive controller
42	Initialize Hard drive controller
43	If it is a PnP BIOS, initialize serial & parallel ports
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved
4E	If there is any error detected (such as video, kb...), show all the error messages on the screen & wait for user to press <F1> key
4F	<ol style="list-style-type: none"> <li>1. If password is needed, ask for password</li> <li>2. Clear the Energy Star Logo (Green BIOS only)</li> </ol>
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved
52	<ol style="list-style-type: none"> <li>1. Initialize all ISA ROMs</li> <li>2. Later PCI initializations (PCI BIOS only) <ul style="list-style-type: none"> <li>-assign IRQ to PCI devices</li> <li>-initialize all PCI ROMs</li> </ul> </li> <li>3. PnP Initializations (PnP BIOS only) <ul style="list-style-type: none"> <li>-assign IO, Memory, IRQ &amp; DMA to PnP ISA devices</li> <li>-initialize all PnP ISA ROMs</li> </ul> </li> <li>4. Program shadows RAM according to Setup settings</li> <li>5. Program parity according to Setup setting</li> <li>6. Power Management Initialization <ul style="list-style-type: none"> <li>-Enable/Disable global PM</li> <li>-APM interface initialization</li> </ul> </li> </ol>

53	<ol style="list-style-type: none"> <li>1. If it is NOT a PnP BIOS, initialize serial &amp; parallel ports</li> <li>2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value</li> </ol>
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup settin

### *BIOS Default Drive Table*

This is a current list of the drive type table contained in Setup.

Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	21	615	4	17	300	615	Seagate ST225, ST4026
3	32	615	6	17	300	615	
4	65	940	8	17	512	940	
5	49	940	6	17	512	940	
6	21	615	4	17	65535	615	Seagate ST125, Tandon TM262
7	32	462	8	17	256	511	
8	31	733	5	17	65535	733	Tandon TM 703
9	117	900	15	17	65535	901	
10	21	820	3	17	65535	820	
11	37	855	5	17	65535	855	
12	52	855	7	17	65535	855	
13	21	306	8	17	128	319	Disctron 526, MMI M125
14	44	733	7	17	65535	733	
15		Reserved					
16	21	612	4	17	0	663	Microscience HH725, Syquest 3250, 3425
17	42	977	5	17	300	977	
18	59	977	7	17	65535	977	
19	62	1024	7	17	512	1023	

20	31	733	5	17	300	732	
21	44	733	7	17	300	732	
22	31	733	5	17	300	733	Seagate ST4038
23	10	306	4	17	0	336	
24	42	977	5	17	65535	976	Seagate ST4051
25	80	1024	9	17	65535	1023	Seagate ST4096
26	74	1224	7	17	65535	1223	Maxtor 2085
27	117	1224	11	17	65535	1223	Maxtor 2140, Priam S14
28	159	1224	15	17	65535	1223	Maxtor 2190, Priam S19
Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
29	71	1024	8	17	65535	1023	Maxtor 1085, Micropolis 1325
30	98	1024	11	17	65535	1023	Maxtor 1105, 1120, 4780
31	87	918	11	17	65535	1023	Maxtor 1170
32	72	925	9	17	65535	926	CDC 9415
33	89	1024	10	17	65535	1023	
34	106	1024	12	17	65535	1023	
35	115	1024	13	17	65535	1023	
36	124	1024	14	17	65535	1023	
37	17	1024	2	17	65535	1023	
38	142	1024	16	17	65535	1023	
39	119	918	15	17	65535	1023	Maxtor 1140, 4380
40	42	820	6	17	65535	820	Seagate ST251
41	44	1024	5	17	65535	1023	Seagate 4053 Miniscribe 3053/6053
42	68	1024	5	26	65535	1023	Miniscribe 3053/6053 RLL
43	42	809	6	17	65535	852	Miniscribe 3650
44	64	809	6	26	65535	852	Miniscribe 3675 RLL
45	104	776	8	33	65535	775	Conner CP3104
Auto							
User							
None							



## Appendix 1

### Watch Dog Timer

#### Watch Dog Timer Working Procedure

The Watch Dog Timer (WDT) is the special hardware device. The WDT function is to monitor the computer system whether work normally, otherwise, it will have some measures to fix up the system.

It contains a receivable SQW signal from RTC, and could set time and can clear the counter function. When time is up, WDT can send Reset or NMI signal.

Operator has to write a value into WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

#### Watch Dog Timer character and function

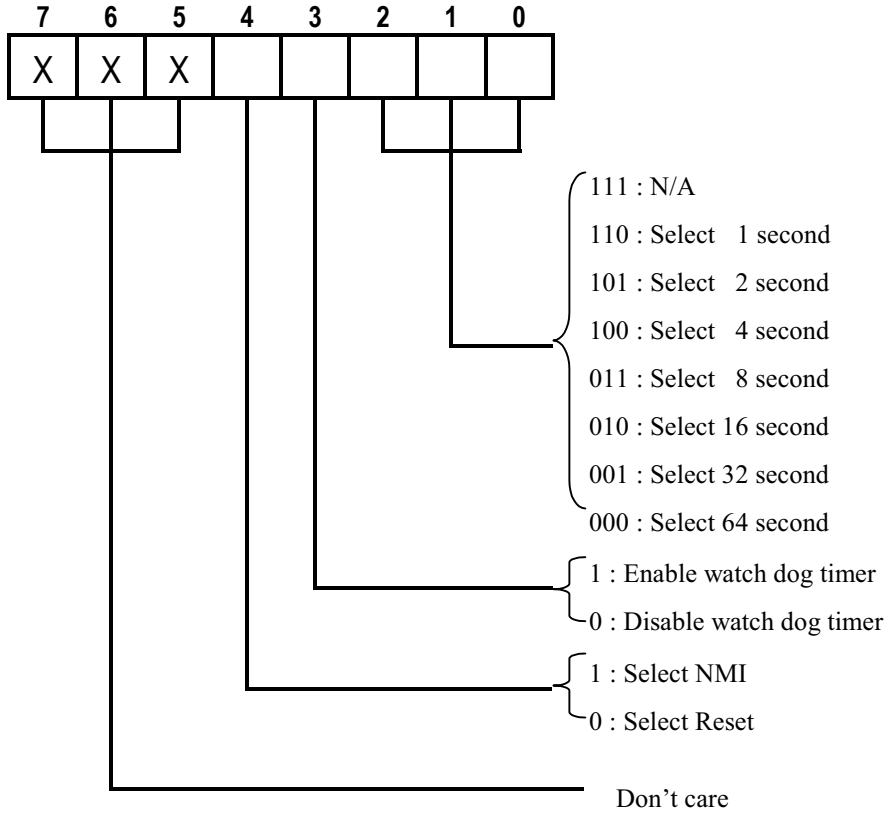
WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled Enabled	1. Default at disabled 2. Enabled for user's programming
WDT Time out active for	Reset NMI	Default at Reset
WDT Active Time	1 sec 2 sec 4 sec 8 sec 16 sec 32 sec 64 sec	Default at 64 sec



## Watch Dog Timer Control Register

The Watch Dog Timer Control Register is to control the WDT working mode. You can write the value to WDT Configuration Port.

The following is the Control Register bit definition.





## Watch Dog Timer Programming Procedure

### • Power on or reset the system

The initial value of WDT Control Register (D4~D0) is zero, when power is on or reset the system. The following means the initial value of WDT ( 00000000b ) :

Bit	Value	Mean
4	0	Select Reset
3	0	Disable watch dog timer
2, 1, 0	0 0 0	Select 64 second

### • Initialize the SQW of RTC (set SQW output period=0.5 second)

To initialize the SQW of RTC processor is to set the SQW signal which is output period=0.5 second. It offers the basic frequency of the WDT counter.

The following is an example of **initializing the SQW signal program** in Intel 8086 assembly language.

```

; (Generate SQW = 0.5 Sec.)
Mov dx, 70h
Mov ax, 0Ah
Out dx, al      ; Out port 70h = 0Ah
Mov dx, 71h
Mov ax, 2Fh
Out dx, al      ; Out port 71h = 2Fh
; (enable the SQW output)
Mov dx, 70h
Mov ax, 0Bh
Out dx, al      ; Out port 70h = 0Bh
Mov dx, 71h
Mov ax, 0Ah
Out dx, al      ; Out port 71h = 0Ah

```



**• Clear the WDT**

Repeatedly read WDT Configuration Port and the interval cannot be longer than the preset time, otherwise, the WDT will generate NMI or Reset signal for the system.

The following is an example of **clear the WDT program** in Intel 8086 assembly language.

```
; ( Clear the WDT)
Mov  dx, F2h ;Setting the WDT configuration port
In   al, dx
```

**Note:** Before running WDT, you must clear the WDT. It means to make sure the initial value is zero before enabling the WDT.

**• WDT Control Register (Write to WDT configuration port)**

You can set the WDT Control Register to control the WDT working mode.

The initial value of the WDT Control Register is as the following.

```
; (Setting the WDT Control Register as AL)
Mov  al, 0h ; Setting initial value = 0 for the WDT Control Register
```

You must plan the option of following:

1. Select NMI or Reset: decide D4 value in F2.

i.e. Setting D4 = 0, then it select Reset

```
AND  al, 11101111b ; Select Reset
```

i.e. Setting D4 = 1, then it select NMI

```
OR   al, 00010000b ; Select NMI
```

2. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2 )

Example: D2~D0 = 0, the time-out interval will be 64 sec.

```
AND  al, 11111000b ; Setting the time-out interval as 64 sec.
```

3. Enable or Disable the WDT ( decide D3 value in F2)

i.e. D3=0, Disable the WDT

```
AND    al, 11110111b    ; Disable the WDT
```

i.e. D3=1, Enable the WDT

```
OR     al, 00001000b    ; Enable the WDT
```

After finishing the above setting, you must be output for the Control Register's value to the WDT Configuration Port. Then WDT will start according to the above setting.

```
MOV    dx, F2h          ; Setting WDT Configuration Port
```

```
OUT    dx, al           ; Output the Control Register Value
```

- You should build in a mechanism in the program to continue to read the WDT Configuration Port for clearing WDT before the time out.



## Appendix 2 Memory Mapping

