

**Peak 555A**  
**Single Board Computer**

**Users Guide**

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## How to use this guide

This manual is written to help you use Peak 555A. The manual describes how to arrange various settings on the Pentium CPU board to meet your requirements. It's briefed as follows:

**Chapter 1**, "Introduction" gives an overview of the product's specifications. It also tells you what are included in the product package.

**Chapter 2**, "Jumpers and Connectors" describes the definitions and positions of Jumpers and Connectors that you may easily configure and set up per your requirement.

**Chapter 3**, "Capability Expanding" describes how to change or expand the CPU Board by changing the system memory, cache memory, and CPU to get more power out from the CPU board.

**Chapter 4**, "Award BIOS Setup" describes how to use the advanced PCI/Green BIOS to control almost every feature of the Peak 555A, including the watchdog timer.

**The Appendix** describes how to set up the Watch Dog Timer (WDT) and gives an example to program the WDT.

## Chapter 1

### Introduction

Welcome to the PEAK-555A Pentium single board computer.

The PEAK 555A is a brand new generation of advanced technologies. They are built with high performance socket7 CPU with clocks up to 100MHz, high performance PCI Bus and I/O's, and the brand new technologies: the pipeline burst cache and the 4<sup>th</sup> generation VGA with Unified Memory Architecture (UMA) are also included. An optional ultra wide SCSI module also gives the PEAK 555A unique feature. It's excellent to the system integrators, VARs, or turnkey vendor demanding high performance computing, high performance I/O and the best solution as the Industrial workstation, and the controller in the computer telephony application.

The PEAK 555A can run with Intel Pentium MMX processor up to 233 MHz, the brand new socket7 CPU like AMD K6-2 with 100MHz external clocks are also supported. The CPU support up to 400MHz very high performance, moreover, think to its advanced design, the Peak 555A also supports Intel low power CPU up to 266 MHz. It could run without and cooling fan! Memory support up to 512 KB/1MB pipeline burst cache and 512 MB SDRAM. This generates great computing power. The Winbond integrates the floppy controller, two serial ports, one parallel ports as well as the KBD/mouse controller. The two on-chip UARTs are compatible with NS 16C550, and the parallel port support EPP/ECP. The on board VGA is a high performance graphic and video accelerator and 3D AGP built in, with the unified memory architecture it can fully utilize the system memory up to 1280x1024, true color, and 1600x1200, high color . The shared memory could be 8MB for display purposes. The IDE now supports the Ultra DMA/33, DMA/66 and the USB ports are also reserved, the socket for Disk on Chip of the M-systems is on board, supporting up to 144MB. The 10 Base T/100 Base TX Ethernet Controller is standard on board with PCI Interface. The proprietary PCI Bus is reserved. Now it's for the

adapted AIC 7880, the Ultra wide SCSI module. It's easy to design another module if necessary.

The additional keyboard connector is reserved for connecting to the keyboard connector on the back plane. The high precision real time clock/calendar is built in for accurate scheduling and the watchdog timer is also the standard feature.

A special circuit is reserved to monitor the CPU cooling fan. If the cooling fan stops or abnormally slow, the buzzer will beep as alarm. The Peak's unique offering the ISAMAX is the standard feature of the Peak 555A, and supporting up to 20 PCs of ISA add-on cards without any problems

A 4pin power connector is severed on the advanced power regular module for standalone application. The Peak 555A already integrates lot of features on hand. It's actually complete enough for most of the normal applications.

The PEAK 555A will be available our two module as follows:

--- PEAK 555VL: All common feature plus V6A and LAN, no SCSI module.

--- PEAK 555A: Plus ultra wide SCSI module.



## 1-1 Specifications

- **System architecture**

- All socket 7 CPU supported, 66/100 MHz external clocks
- All in one with VGC/Panel, 100 Base TX, Ultra Wide SCSI
- PC' 99 fully complied
- PCI V 2.2 complied
- PICMG 2.0 complied
- Half size SBC with ISA Gold finger

- **CPU support**

- Intel Pentium MMX CPU up to 266 MHz (low power CPU supported)
- Other compatible socket 7 CPU (AMDK6, Cyrix 6x 86MX) support up to 400 MHz
- 66/100 MHz external clocks

- **Cache memory**

- 512KB/1MB Level 2 cache standard
- Pipeline Burst SRAM

- **Main memory**

- 64Mb SDRAM support
- 8 MB up to 512MB (MAX)
- 168pin DIMM socket x 2

- **BIOS**

- Award System BIOS with PC' 97 support
- 2M bit flash ROM
- SIS VGA BIOS
- Adaptec SCSI BIOS

- **Chipset**

- SIS 530/5595 PCI chip set
- 66/100 MHz socket 7 CPU support
- UMA Graphics with 3D/DVD acceleration
- VGA CRT/Panel control
- Fully comply with PC' 99
- PCI V2.2 Concurrent PCI

• **VGA**

64 bit/100 MHz host Interface  
Shared memory 2MB, 4MB up to 8MB  
CRT & Panel support

Max Res.	Color	Refresh rate
800 x 600	True color	85 Hz
1024 x 768	True color	85 Hz
1280 x 1024	True color	85 Hz
1600 x 1200	256 color	60 Hz

• **SCSI Controller (Optional)**

Adaptec AIC 7880 RISC Controller  
Ultra wide SCSI support  
40MB/S (Max.) transfer rate  
Backward compatible with Wide SCSI, SCSI II, etc.  
Drivers for DOS/Windows, windows 95/98, Windows NT, Netware,  
SCO Unix  
68 Pin Wide SCSI connector x 1 (option)

• **LAN**

MXIC' s MX98725/MX98715 Ethernet controller  
10 Base T/100 Base TX support, full Duplex  
Complied with PCI V2.1, IEEE 802.3, IEEE 802.3U  
Driver support windows95/98, windows NT 4.0/5.0, Netware, SCO Open  
Server 5.0  
RJ45 x1

• **On Board I/O**

Winbound 83977 Super I/O ON BOARD  
SIO x2, with 2x 16C550 UARTs, 9 pin D-type x1, 10 Pin connector x1  
PIO x1, Bi-directional, EPP/ECP support, 20 Pin x1  
Floppy Disk controller: 5 4/1" 360K/1.2MB, 3 1/2"  
720K/1.2MB/1.44MB/2.88MB support, 26 Pin x1  
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, Ultra DMA66  
On chip Keyboard, mouse controller  
PS/2 Keyboard, 6 Pin mini DIN x1 for keyboard and mouse,  
5 Pin header x1

- On Board USB port x2 with 6 pin header x1
- On Board 2 pin header for reset sw, 4 pin for speaker, 5 pin for keylock  
5 pin header (keyboard)

- On Board 4 pin Power Connector for stand alone applications

- **On Board RTC**

High precision clock/calendar with battery back up

- **On Board solid state Disk Socket**

Socket reserved for M-systems' DiskOnChip(DOC)

Memory size up to 144MB single chip

Drivers support DOS, Windows, Win 95 and NT(Bootable)

- **System monitor feature**

Four voltage values (For +5v, +12v, +3.3v and Vcore)

One Fan speed (For CPU)

One temperature

- **Watchdog Timer**

-1,2,4,8,16,32, 64 second time-out interval

- **Dimensions**

Dimensions: 185mm(D) x 122mm(W)

- **Power requirements**

+5v: 10A(Max.)

+12v: 1mA(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-555A 550 package includes the following items

- PEAK 555A single board computer x 1
- Printer and SIO cable x 1
- FDC cable x 1
- IDE cable x 1
- 5 pin to 5 pin keyboard cable x 1 (for DIN keyboard connector)
- SiS VGA driver diskette x 1 (Win95, Win NT 3.5, Win NT 4.0)
- LAN driver diskette x 1
- Y cable for Keyboard and Mouse
- SCSI driver diskette x 3 (for PEAK 555A only)
- Wide SCSI Cable x 1 (for PEAK 555A only)

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

## Chapter 2

### Jumpers and Connectors

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

#### 2-1 Jumpers

Jumpers on the CPU board are used to select options for certain features. To select any option, cover the jumper cap over (short) or remove it from (open) the jumper pins according to the follows instructions. (see figure 2-1, 2-2 for jumper positions)

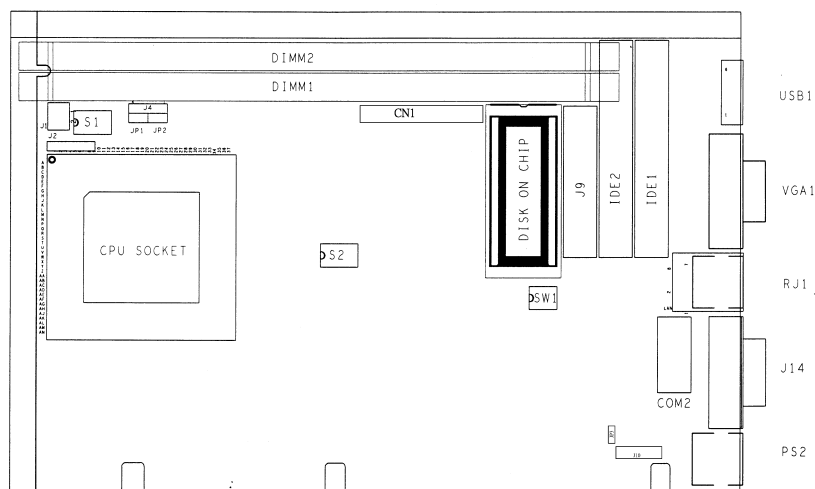


Figure 2-1 Jumper Positions

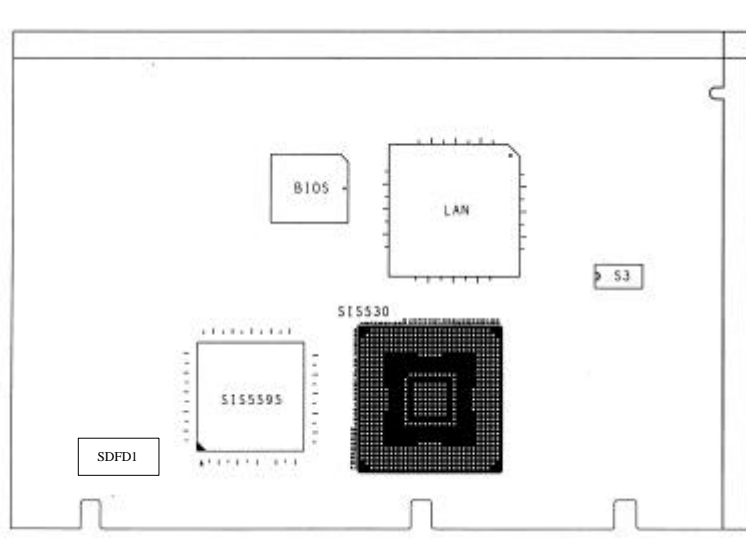


Figure 2-2 Jumper Positions

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

DISK		ON Chip			
SW1	1	2	3		
	X	X	OFF		Disable Doc
	OFF	ON	ON		C8000
	OFF	ON	ON		D0000
*	ON	*OFF	*ON		D8000
	ON	ON	ON		E0000

BIOS Refresh	SW1.4
* ON	Enabled
OFF	Disabled

**CLOCK Frequency****S2**

<b>S2.1</b>	<b>S2.2</b>	<b>S2.3</b>	<b>S2.4</b>	<b>CPU</b>	<b>SDRAM</b>	<b>PCI</b>
ON	ON	ON	ON	90.00	90.00	30.00
ON	ON	ON	OFF	100.05	66.70	33.35
ON	ON	OFF	ON	95.00	63.33	31.66
ON	ON	OFF	OFF	100.00	66.66	33.33
ON	OFF	ON	ON	100.00	75.00	30.00
ON	OFF	ON	OFF	112.00	74.66	37.33
ON	OFF	OFF	ON	124.00	88.86	31.00
ON	OFF	OFF	OFF	133.30	66.70	33.32
*OFF	*ON	*ON	*ON	66.70	66.70	33.35
OFF	ON	ON	OFF	75.00	75.00	30.00
OFF	ON	OFF	ON	83.30	83.30	33.30
OFF	ON	OFF	OFF	95.00	95.00	31.66
OFF	OFF	ON	ON	100.00	100.00	33.33
OFF	OFF	ON	OFF	112.00	112.00	37.33
OFF	OFF	OFF	ON	124.00	124.00	31.00
OFF	OFF	OFF	OFF	133.30	133.30	33.33

**CPU V I/O**

<b>S2.5</b>		
*	ON	3.3
	OFF	2.5 (when used Intel Low power CPU)

<b>S1.1</b>		<b>Integrated VGA Function</b>
*	OFF	Enabled
	ON	Disabled

<b>S1.2</b>		<b>Slow Decoding OFF GUI Host Interface</b>
*	OFF	Fast Decode
	ON	Slow Decode

<b>S1.3</b>		<b>INT A Control for Panel Link</b>
	OFF	Enabled
*	ON	Disabled

<b>S1.4</b>		<b>Video Subsystem Control by BIOS</b>
*	OFF	Enabled
	ON	Disabled

<b>S1.6</b>	
OFF	Normal
ON	Clear CMOS Data

**S3 for Intel CPU**

S3.1	S3.2	S3.3	S3.4	S3.5	S3.6	S3.7	S3.8	Core/Bu s Ratio
		X	X	ON	OFF	ON	OFF	1.5X
OFF	ON	X	X	ON	OFF	OFF	ON	2.0X
OFF	ON	X	X	OFF	ON	OFF	ON	2.5X
OFF	ON	X	X	OFF	ON	ON	OFF	3.0X
*OFF	*ON	X	X	*ON	*OFF	*ON	*OFF	3.5X
ON	OFF	X	X	OFF	ON	OFF	ON	4.0X

**S3 for AMD CPU**

S3.1	S3.2	S3.3	S3.4	S3.5	S3.6	S3.7	S3.8	Core/Bu s Ratio
X	X	ON	OFF	ON	OFF	OFF	ON	2X
X	X	ON	OFF	OFF	ON	OFF	ON	2.5X
X	X	ON	OFF	OFF	ON	ON	OFF	3X
X	X	ON	OFF	ON	OFF	ON	OFF	3.5X
X	X	OFF	ON	ON	OFF	OFF	ON	4X
X	X	OFF	ON	OFF	ON	OFF	ON	4.5X
X	X	OFF	ON	OFF	ON	ON	OFF	5X
X	X	OFF	ON	ON	OFF	ON	OFF	5.5X

**S3 for Rise CPU**

S3.1	S3.2	S3.3	S3.4	S3.5	S3.6	S3.7	S3.8	Core/Bu s Ratio
ON	OFF	X	X	ON	OFF	ON	OFF	1.5X
ON	OFF	X	X	ON	OFF	OFF	ON	2.0X
ON	OFF	X	X	OFF	ON	OFF	ON	2.5X
ON	OFF	X	X	OFF	ON	ON	OFF	3.0X
ON	OFF	X	X	ON	OFF	ON	OFF	3.5X



## 2-2 Connectors

Connectors on the CPU Board provide interfaces to other devices.

Connector	Function	Remark
J10	Key Lock Connector	
J4	Speaker Connector	
IDE1	Primary IDE Connector	
IDE2	Secondary IDE connector	
J13	FDC Connector	
J9	Printer Connector	
J11	Com2 Connector 2	
VGA 1	VGA Connector	
USB 1	USB Connector	
J14	Com1 Connector 1	
PS2	PS/2 Mini DIN KBD/Mouse Connector	
J12	5 Pins KBD Connector	
JP1	2 Pins HDD LED	
JP3	2 Pins (RTC Clear) Connector	
SDFD1	TFT LCD connector	
CN1	NEXCOM PCI connector	
RJ1	Lan RJ-45 connector	
J2	IR connector	
JP2	Reset Switch	
J1	GPIO connector	
J3/J5	Power regulator input connector	

## Pin definitions of connectors

- J10: Key lock

PIN No.	Description
1	+5V
2	Ground
3	Ground
4	Key lock
5	Ground

- J4: Speaker

PIN No.	Description
1	Speaker signal
2	Ground
3	Ground
4	+5V

- JP2: Reset Switch

PIN No.	Description
1	External Reset
2	Ground

## • IDE1/IDE2: IDE Interface Connector

<b>PIN No.</b>	<b>Description</b>	<b>PIN No.</b>	<b>Description</b>
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	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

## • RJ1: Lan connector (RJ-45)

<b>PIN No.</b>	<b>Description</b>
1	TXO+
2	TXO-
3	RXI+
4	75 $\Omega$ GND
5	75 $\Omega$ GND
6	RXI-
7	75 $\Omega$ GND
8	75 $\Omega$ GND

- J13: 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#

- J9: Parallel Port Connector

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

21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

- J14: Serial Port Connector -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)

- VGA1: VGA Connector

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

- USB1: USB Connector

PIN No.	Description
1	VCC
2	SBD1-
3	SBD1+
4	SBD0-

---

5	SBD0+
6	Ground

- PS2: 6-Pin Mini-DIN Keyboard Connector (PS/2 Type)

PIN No.	Description
1	Keyboard Data
2	Mouse/Data
3	Ground
4	+5V
5	Keyboard Clock
6	Mouse/Data

- J12: Keyboard Connector

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

- JP1: IDE LED Connector

PIN No.	Description
1	-
2	+

- J11: Serial Port Connector (2\*5 pin 2.54mm connector)

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)
10	+5V

- Mini PCI Connector

1	5V	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Ground
11	5V	12	Data 8
13	Data 9	14	Data 10
15	Data 11	16	Data 12
17	Data 13	18	Data 14
19	Data 15	20	Ground 16
21	5V	22	Data 18
23	Data 17	24	Data 20
25	Data 19	26	Data 22
27	Data 21	28	Data 24
29	Data 23	30	Ground
31	5V	32	Data 26
33	Data 25	34	Data 28
35	Data 27	36	Data 30
37	Data 29	38	Data 32
39	Data 31	40	Ground
41	5V	42	CB/E0
43	CB/E1	44	CB/E2
45	CB/E3	46	PAR
47	FRAME#	48	TRDY#
49	IRDY#	50	Ground
51	5V	52	STOP#
53	DEVSEL#	54	PERR#
55	SERR#	56	REQ 0#
57	GNT 0#	58	REQ 2#
59	GNT 2#	60	Ground
61	PCI CLOCK	62	PC1CLK
63	PCI RESET#	64	PLOCK#
65	INTA#	66	INTB#
67	INTC#	68	INTC#

**J2: IR**

Pin No.	Description
1:	VCC
2:	IRRXH (FAST IR)
3:	IRRX
4:	GND
5:	IRTX

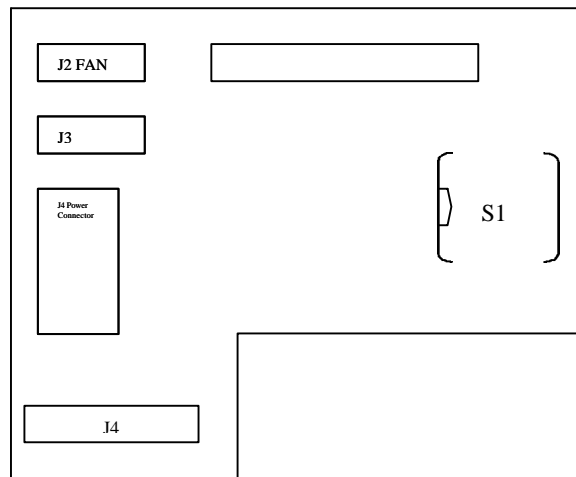


Figure 2-3 Power Module



**Vcore Voltage**

	<b>S1.1</b>	<b>S1.2</b>	<b>S1.3</b>	<b>S1.4</b>	<b>S1.5</b>	<b>S1.6</b>
1.9V	OFF	OFF	OFF	OFF	OFF	OFF
2.2V	ON	OFF	OFF	OFF	OFF	OFF
*2.8V	*OFF	*ON	*OFF	*OFF	*OFF	*OFF
2.9V	OFF	OFF	ON	OFF	OFF	OFF
3.2V	OFF	OFF	OFF	ON	OFF	OFF
3.3V	OFF	OFF	OFF	OFF	ON	OFF
.45V	OFF	OFF	OFF	OFF	OFF	ON

**V I/O**

<b>S1.7</b>	
*3.3V	*OFF
3.45V	ON

**CPU VIO**

	<b>S1.8</b>	<b>S1.9</b>
3.45V	OFF	OFF
*3.3V	*ON	*OFF
2.5V	OFF	ON

**Standby Power**

<b>S1.10</b>	
On	When AT power
Off	When ATX power

**J2: FAN Power**

1	12V
2	FAN sensor
3	GND

**J4: 5V Power input**

1	5V
2	5V
3	GND
4	GND

**J3: Standby By Power input/ATX power control pin**

1	SB 5V
2	Power on
3	GND

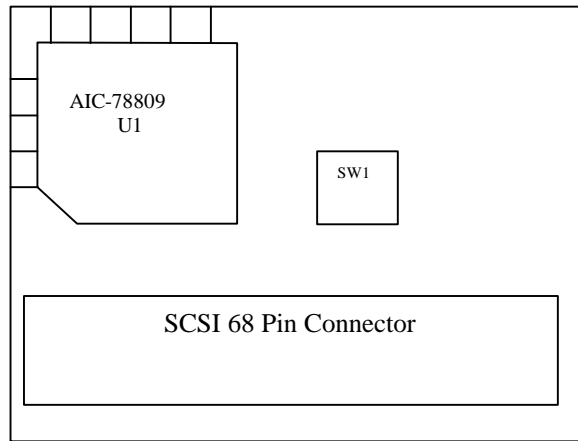


Figure 2-4 SCSI Connector

<b>SW1.1</b>	<b>SCSI Terminator</b>	<b>SW1.2</b>	<b>8/16Bit SCSI</b>
*ON	Enabled	*ON	16
OFF	Disabled	OFF	8

- JP3 ATX Power Bottom

1	Ground	2	Ground
3	Ground	4	Ground
5	Ground	6	Ground
7	Ground	8	Ground
9	Ground	10	Ground
11	Ground	12	Ground
13	Ground	14	Ground
15	Ground	16	Ground
17	TRMPWR	18	TRMPWR
19	NC	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground	26	Ground
27	Ground	28	Ground
29	Ground	30	Ground
31	Ground	32	Ground
33	Ground	34	Ground
35	SCD 12	36	SCD 13
37	SCD 14	38	SCD 15
39	SCDP1#	40	SCD 0
41	SCD 1	42	SCD 2
43	SCD 3	44	SCD 4
45	SCD 5	46	SCD 6
47	SCD 7	48	SCDP0#
49	Ground	50	Ground
51	TRMPWER	52	TRMPWER
53	NC	54	Ground
55	SATN#	56	Ground
57	SBSY#	58	SACK#
59	SRST#	60	SMSG#
61	SSEL#	62	SCD#
63	SREQ#	64	SIO#
65	SCD 8	66	SCD 9
67	SCD 10	68	SCD 11

## 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 DRAM is provided by 168 pin DIMM's (Dual In-line Memory Modules) on the CPU board. The CPU board contains two memory banks corresponding to connector DIMM1 and DIMM2.

The table below shows possible DIMM configurations for the memory banks and the figure helps you correctly install the DIMM modules. See Figure 3-2 for memory bank's location.

<b>DIMM 1</b>	<b>DIMM 2</b>	<b>Total Memory</b>
16MB	--	16MB
16MB	16MB	32MB
32MB	--	32MB
32MB	32MB	64MB
64MB	--	64MB
64MB	64MB	128MB
128MB	--	128MB
128MB	128MB	256MB
256MB	--	256MB
256MB	256MB	516MB

The DIMM used SDRAM memory. Please be noted that if the 100MHz CPU external lock is turned on, the memory should be SDRAM only and PC-100 complied.

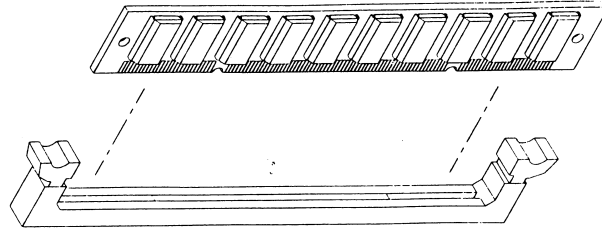


Figure 3-1 Installing DIMM

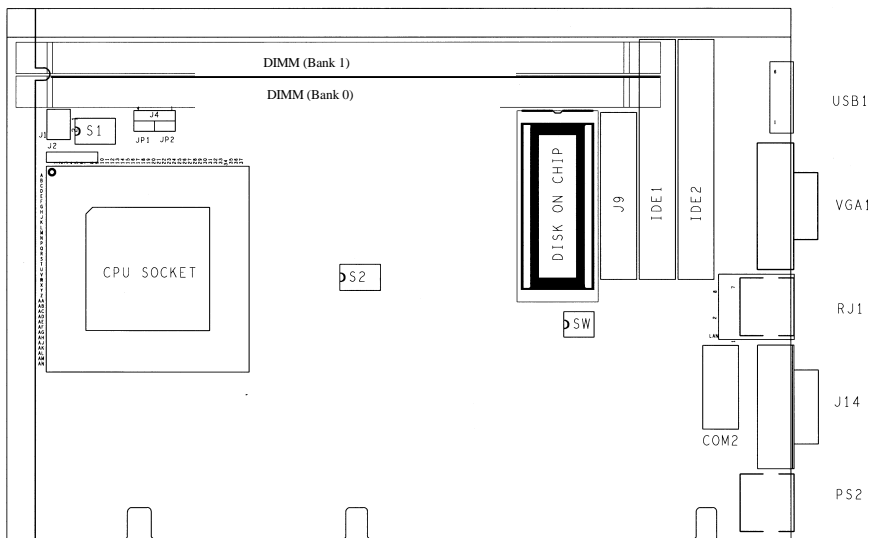


Figure 3-2 Memory Banks

## **3.2 The Cache Memory**

The Peak 555A series only support the high speed pipeline burst SRAM. The default L2 Cache is 512 KB.

## **3.3 Change CPU**

The Peak 555A uses the 321 pin PGA socket rather than the ZIF socket, so it needs force to push or pull the CPU into or out from the socket. Normally, you have to use some tools to pull the CPU out from the socket. To put on a new CPU, please 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, then press the CPU until all the pins fit into the socket. Be sure to re-arrange the DIP switch setting for the correct clock and Core/Bus ratio. The Peak 555A supports many kinds of CPU's, please refer to the DIP switch setting table for the right arrangement.

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

Figure 1 Main Menu

ROM PCI/ISA BIOS (Peak-555) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
<b>STANDARD CMOS SETUP</b> BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	<b>SYSTEM ENVIRONMENT</b> INTEGRATED PERIPHERALS PASSWORD SETTING IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift)F2 : Change Color

### Standard CMOS setup

This setup page includes all the items in a standard compatible BIOS. See Page 4-7 to Page 4-10 for details.

### BIOS features setup

This setup page includes all the items of Award special enhanced features. See Page 4-11 to Page 4-15 for details.

### Chipset features setup

This setup page includes all the items of chipset special features. See Page 4-17 to Page 4-21 for details.

### Power Management setup

This category determines how much power consumption for system after selecting below items. Default value is Disable. See Page 4-22 to Page 4-26 for details.

### PNP/PCI CONFIGURATION

This category specifies the assignment of all the IRQ's and DMA's. See Page 4-27 to Page 4-28 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 System Environment

This category allows you to set up all the on board I/O controllers like IDE, SCSI, FDC, etc,. See Page 4-30 to Page 4-32

### Password Setting

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 4-33 for details.

### IDE HDD auto detection

Automatically configure hard disk parameters. See Page 4-34.

### 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 keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Figure 2 Standard CMOS Setup Menu (Support Enhanced IDE)

ROM PCI / ISA BIOS (Peak-555)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Mon, Dec 14 1998									
Time (hh:mm:ss) : 17:58: 3									
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	
Primary Master	: AUTO	0	0	0	0	0	0	AUTO	
Primary Slave	: AUTO	0	0	0	0	0	0	AUTO	
Secondary Master	: AUTO	0	0	0	0	0	0	AUTO	
Secondary Slave	: AUTO	0	0	0	0	0	0	AUTO	
Drive A : 1.44M, 3.5 in.									
Drive B : None									
Floppy 3 Mode Support : Disabled									
640K									
LCD&CRT : Auto									
Halt On : All , But keyboard									
61440K									
					Base Memory: Extended Memory: 60416K Other Memory: 380K Total Memory:				
ESC : Quit			↑↓→← : Select Item			PU / PD / + / - : Modify			
F1 : Help			(Shift) F2 : Change Color						

### Date

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

Day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key

month	The month, Jan through Dec
year	The year, depend on the year of BIOS

## Time

The time format is <hour> <minute> <second>. which accepts both 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

The categories identify the types of drives that have been installed in the computer. There are 45 predefined types and 2 user definable types are 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 types of floppy disk drive A or drive B that have 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

## Video

The category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

You have two ways to boot up the system:

1. When VGA as primary and monochrome as secondary, the selection of the video type is "VGA Mode".
2. When monochrome as primary and VGA as secondary, the selection of the video type is "Monochrome Mode".

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

## Error halt

The category determines whether the computer will stop 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.

## Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

### Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

### Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

### Other Memory

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.

### Total Memory

System total memory is the sum of basic memory, extended memory, and other memory.



## BIOS Features Setup Menu

ROM PCI/ISA BIOS (Peak-555)  
 BIOS FEATURES SETUP  
 AWARD SOFTWARE, INC.

Virus Warning : <b>Disabled</b> CPU Internal Cache : <b>Enabled</b> External Cache : <b>Enabled</b> Quick Power On Self Test : <b>Disabled</b> Boot Sequence : <b>A,C,SCSI</b> Swap Floppy Drive : <b>Disabled</b> Boot Up Floppy Seek : <b>Enabled</b> Boot Up NumLock Status : <b>On</b> Typematic Rate Setting : <b>Enabled</b> Typematic Rate (Chars/Sec) : <b>30</b> Typematic Delay (Msec) : <b>250</b> Security Option : <b>Setup</b> PCI/UGA Palette Snoop : <b>Disabled</b> OS Select For DRAM > 64MB : <b>Non-OS2</b> Report No FDD For WIN 95 : <b>No</b>	Video BIOS Shadow : <b>Enabled</b> C8000-CBFFF Shadow : <b>Disabled</b> CC000-CFFFF Shadow : <b>Disabled</b> D0000-D3FFF Shadow : <b>Disabled</b> D4000-D7FFF Shadow : <b>Disabled</b> D8000-DBFFF Shadow : <b>Disabled</b> DC000-DFFFF Shadow : <b>Disabled</b> Cyrix 6x86/MII CPUID: <b>Enabled</b>
ESC : Quit            ↑↓+* : Select Item F1 : Help            PU/PD/+/- : Modify F5 : Old Values    (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

### Virus Warning

This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.

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

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

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	Enable cache
Disabled	Disable cache

### Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

### Boot Sequence

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

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.

Note: This function is only available for IDE type  
For SCSI type is always boot from A.

### 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	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
---------	---

Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.
----------	---

### Boot Up NumLock Status

The default value is On.

On	Keypad is number keys
Off	Keypad is arrow keys

### Typematic Rate Setting

This determines the typematic rate.

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

### Typematic Rate (Chars/Sec)

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

### Typematic Delay (Msec)

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

250	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	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

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card.
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card.

## 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 is NON-OS2.

## Video BIOS Shadow

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

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

## C8000 - CFFFF Shadow/D8000 - DFFFF Shadow

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

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

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 of the chipset features.

ROM PCI/ISA BIOS (Peak-555)  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.

Refresh Rate Control : 15-6us Ref/Act Command Delay : 6T Refresh Queue Depth : 12  RAS Precharge Time : 3T  RAS to CAS Delay : 3T  ISA Bus Clock Frequency : PCICLK/4  Starting Point of Paging : 1T  NA# Enable : Disabled L2 Cache Burst RD Cycle : Enabled Asyn/Sync Mode : CPU/DRAM : Asynchronous SDRAM CAS Latency : 2T SDRAM WR Retire Rate : x-1-1-1 DRAM Opt RAS Precharge : Disabled PCI Peer Concurrency : Enabled Read Prefetch Memory : Enabled RD Assert TRDY After Prefet : V CPU to PCI Burst Mem. : Enabled WR CPU to PCI Post Write : Enabled : AGP Aperture Size : 4MB	System BIOS Cacheable : Enabled Video BIOS Cacheable : Enabled Memory Hole at 15M-16M : Disabled PCI Post Write Buffer : Disabled PCI Delayed Transaction : Disabled Auto Detect DIMM/PCI Clk : Disabled Spread Spectrum : Disabled  ESC : Quit                    ↑ ↓ → ← : Select Item F1 : Help                    PU/PD/+/- : Modify  F5 : Old Values            (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
--	--

### 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 Timimg

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 (Peak-555)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.
```

<pre>Power Management : User Define Video Off Option : Susp,Stby -&gt; Off Video Off Method : U/H SYNC+Blank Switch Function  : Disabled Doze Speed (div by): 2/8 Stdby Speed(div by): 1/8 MODEM Use IRQ    : 3      ** PM Timers ** HDD Off After    : Disable Doze Mode        : Disable Standby Mode     : Disable Suspend Mode     : Disable      ** PM Events ** HDD Ports Activity : Enabled COM Ports Activity : Enabled LPT Ports Activity : Enabled</pre>	<pre>UGA Activity      : Enabled IRQ [3-7,9-15],NMI : Enabled IRQ 8 Break Suspend : Disabled Power Button Over Ride : Delay 4 Sec Ring Power Up Control : Enabled GPIO5 Power Up Control : Enabled Power Up by Alarm  : Disabled  ESC : Quit      ↑↓← : Select Item F1  : Help      PU/PD/+/ - : Modify F5  : Old Values (Shift)F2 : Color F6  : Load BIOS Defaults F7  : Load Setup Defaults</pre>
--	---

### Power Management

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

Item	Options	Descriptions
A. Power Management	1. Disable	Global Power Management will be disabled
	2. User Define	Users can configure their own power management
	3. Min Saving	Pre-defined timer values are used such that all timers are in their MAX value
	4. Max Saving	Pre-defined timer values are used such that all timers MIN value
B. Video Off Option	1. Always On	System BIOS will never turn off the screen
	2. Suspend->Off	Screen off when system is in SUSPEND mode
	3. Susp, stby->Off	Screen off when system is in STANDBY or SUSPEND mode
	4. All Modes ->Off	Screen off when system is in DOZE, STANDBY or SUSPEND mode
C. Video Off Method	1. Blank Screen	The system BIOS will only blanks off the screen when disabling video
	2. V/H SYN C+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA cards to monitor
	3. DPMS Supported	This function is enabled for only the VGA card supporting DPMS
		Note: Green monitors detect the V/H SYNC signals to turn off its electron gun

D. Switch Function	1. Break	The External Suspend Switch is "Break"
	2. Wake	The External Suspend Switch is "Wake"
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering DOZE mode.  if any item defined in (J) is enabled & active, DOZE timer will be reloaded
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be off depend on (E)
E. Doze Speed(div by) Stdby speed (div by)	1/8 2/8 3/8 4/8 5/8 6/8 7/8 8/8	System full speed could be divided by the optional integers, the bigger the number the slower the speed under Doze or standby mode
F. Modem Use IRQ	3,4,5,7,9 4,10,11,NA	For external modem, 3 or 4 will be used for card type modem. It is up to card definition. Default is 3.
G. Standby Mode (* Remark 1	1. Disable	System will never enter STANDBY mode
	2. 10 sec 1 Min 10 Min 30 Min 1 Hour 2 Hour 20 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
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be off depend on (E)

H. Doze (* Remark 1	1. Disable	System will never enter STANDBY mode
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering STANDBY mode.  if any item defined in (J) is enabled & active, STANDBY timer will be reloaded
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be off depend on (E)
I. Suspend Mode (* Remark 1	1. Disable	System will never enter SUSPEND mode
	2. 1 Min 2 Min 4 Min 6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hr	Defines the continuous idle time before the system entering SUSPEND mode.  if any item defined in (J) is enabled & active, SUSPEND timer will be reloaded
		Note: Normally, SUSPEND mode puts the system into low speed or 8 MHz, clock is stopped, screen may be off depend on (E)
J. HDD Off After:	1. Disable	HDD's motor will not off
	2. 10 Sec 1 Min 10 Min 30 Min 1 Hour 2 Hour 4 Hour	Defines the continuous HDD idle time before the HDD entering power saving mode (motor off)



K. VGA Activity	1. Disabled	
	2. Enabled	
IRQ3 (COM 2) IRQ4 (COM 1) IRQ5 (LPT 2) IRQ6 (Floppy Disk) IRQ7 (LPT 1) IRQ8 (RTC Alarm) IRQ9 (IRQ2 Redir) IRQ10 (Reserved) IRQ11 (Reserved) IRQ12 (PS/2 Mouse) IRQ13 (Coprocessor) IRQ14 (Hard Disk) IRQ15 (Reserved)		
L. Power Bottom Over Ride	1. Delay 4 Sec 2. Instant off	

\* Remark 1: All items mark with (\*) in this menu, will be loaded with predefined values as long as the item 'Power Management' is not configured to 'User Defined'

These items are:

Item 'System Doze' , 'System Standby' & 'System Suspend'

# Remark 2: Although the item 'HDD Power Down' is not controlled by item 'Power Management' in terms of timer value, the HDD (s) will not power down if the global power management is disabled!

## PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or **P**eripheral **C**omponent **I**nterconnect, 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 (Peak-555)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Resources Controlled By : Auto Reset Configuration Data : Disabled	PCI IRQ Activated By : Level Onboard PCI SCSI : Enabled  Used MEM base addr : N/A
ESC : Quit                      ↑ ↓ → ← : Select Item	
F1 : Help                          PU/PD/+/- : Modify	
F5 : Old Values                  (Shift) F2 : Color	
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

### **Resource Controlled by**

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95. Choices are *Auto* and *Manual* (default).

### **Reset Configuration Data**

This item allows you to determine reset the configuration data or not. Choices are *Enabled* and *Disabled* (default).

### **IRQ/DMA Assigned To**

This item allows you to determine the IRQ / DMA assigned to the ISA bus and is not available to any PCI slot. (Legacy ISA) or PnP for both ISA and PCI. Choices are *Legacy ISA* and *PCI/ISA PnP*.

### **PCI IRQ Activated by**

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer. Choices are *Level* (default) and *Edge*.

## System Environment

ROM PCI / ISA BIOS (Peak-555)  
SYSTEM ENVIRONMENT  
AWARD SOFTWARE, INC.

Current CPU Temperature Current CPU FAN Speed : DRPM In 0(v) : 5.08V In 2(v) : 2.80V	
	ESC : Quit            ↑ ↓ → ← : Select Item F1 : Help            PU/PD/+/- : Modify F5 : Old Values      (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

### System Environment show only

In 0	12V
In 1	5V
In 2	VI/O
In 3	Vcore

## Integrated Peripherals

ROM PCI / ISA BIOS (Peak-555)  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE, INC.

Internal PCI/IDE : Both IDE Primary Master PIO : Auto IDE Primary Slave PIO : Auto IDE Secondary Master PIO : Auto IDE Secondary Slave PIO : Auto Primary Master UltraDMA : Auto Primary Slave UltraDMA : Auto Secondary Master UltraDMA : Auto Secondary Slave UltraDMA : Auto IDE Burst Mode : Enabled IDE Data Port Post Write : Disabled  IDE HDD Block Mode : Enabled  KBC input clock : 8 MHz Onboard FDC Controller : Enabled Onboard Serial Port 1 : 3F8/IRQ4 Onboard Serial Port 2 : 2F8/IRQ3 Onboard IR Controller : Disabled	Onboard Parallel Port : 278/IRQ5 Parallel Port Mode : SPP  USB Controller : Disabled  Init Display First : AGP VGA Shared Memory Size : 4 MB VGA Memory Clock : 66  ESC : Quit                    ↑ ↓ → ← : Select Item F1 : Help                    PU/PD/+/- : Modify 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 BOPS (2XXXXXXX)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master :								
Select Primary Master Option (N = Skip) : N								
	OPTION	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
	1(Y)	516	1120	16	65535	1119	59	NORMAL
	2	516	524	32	0	1119	63	LBA
	3	516	560	32	65535	1119	59	LARGE

<II> Standard CMOS Setup

		<u>CYLS</u>	<u>Heads</u>	<u>Precom</u>	<u>Landzon</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.

$$\begin{array}{r}
 \text{no. Cylinder} \qquad \qquad \qquad (1024) \\
 \times \text{ no. Head} \qquad \qquad \qquad ( 16) \\
 \times \text{ no. Sector} \qquad \qquad \qquad ( 63) \\
 \hline
 \times \text{ no. per sector} \qquad \qquad \qquad ( 512) \\
 \hline
 \qquad \qquad \qquad \qquad \qquad \qquad 528 \text{ Megabytes}
 \end{array}$$

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:

$$\begin{array}{r}
 \text{no. Cylinder} \quad \quad \quad ( 1024) \\
 \times \text{ no. Head} \quad \quad \quad ( 255) \\
 \times \text{ no. Sector} \quad \quad \quad ( 63) \\
 \hline
 \times \text{ bytes per sector} \quad \quad ( 512) \\
 \hline
 8.4 \text{ Gigabytes}
 \end{array}$$

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

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by

dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address the right HDD address!

Maximum HDD size:

$$\begin{array}{r}
 \text{no. Cylinder} \quad \quad \quad ( 1024) \\
 \times \text{ no. Head} \quad \quad \quad ( 32) \\
 \times \text{ no. Sector} \quad \quad \quad ( 63) \\
 \hline
 \times \text{ bytes per sector} \quad \quad ( 512) \\
 \hline
 1 \text{ Gigabytes}
 \end{array}$$

(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.

## *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.

## ***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.

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

### **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	<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	<ol style="list-style-type: none"> <li>1. Test system BIOS checksum</li> <li>2. Test the first 256K DRAM</li> <li>3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS &amp; Option ROMs</li> </ol>
C5	Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
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 R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
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 CPUID instruction to identify CPU type</li> <li>3. Early Power Management initialization (OEM specific)</li> </ol>

☛ **This POST code is for boot block**

<b>POST (hex)</b>	<b>Description</b>
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	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	1. Initialize EISA registers (EISA BIOS only) 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
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
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	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Suprious) Interrupt Handler 2. Issue CUID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)

- ☞ 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	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1M to the top of memory
----	---

32	<ol style="list-style-type: none"><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>
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>



POST(hex)	Description
3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h
3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h
BF	1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program) 2. If auto-configuration is enabled, programmed the chipset with pre-defined values in the MODBINable Auto-Table
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	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved
52	1. Initialize all ISA ROMs 2. Later PCI initializations (PCI BIOS only) -assign IRQ to PCI devices -initialize all PCI ROMs 3. PnP Initializations (PnP BIOS only) -assign IO, Memory, IRQ & DMA to PnP ISA devices -initialize all PnP ISA ROMs 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization -Enable/Disable global PM -APM interface initialization
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup 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	20	615	4	17	300	615	Seagate ST225, ST4026
3	30	615	6	17	300	615	
4	62	940	8	17	512	940	
5	46	940	6	17	512	940	
6	20	615	4	17	None	615	Seagate ST125, Tandon TM262
7	30	462	8	17	256	511	
8	30	733	5	17	None	733	Tandon TM 703
9	112	900	15	17	None	901	
10	20	820	3	17	None	820	
11	35	855	5	17	None	855	
12	49	855	7	17	None	855	
13	20	306	8	17	128	319	Disctron 526, MMI M125
14	42	733	7	17	None	733	
15		Reserved					
16	20	612	4	17	0	663	Microscience HH725, Syquest 3250, 3425
17	40	977	5	17	300	977	
18	56	977	7	17	None	977	
19	59	1024	7	17	512	1023	

20	30	733	5	17	300	732	
21	42	733	7	17	300	732	
22	30	306	5	17	300	733	Seagate ST4038
23	10	977	4	17	0	336	

24	40	1024	5	17	None	976	Seagate ST4051
25	76	1224	9	17	None	1023	Seagate ST4096
26	71	1224	7	17	None	1223	Maxtor 2085
27	111	1224	11	17	None	1223	Maxtor 2140, Priam S14
28	152	1024	15	17	None	1223	Maxtor 2190, Priam S19
29	68	1024	8	17	None	1023	Maxtor 1085, Micropolis 1325
30	93	918	11	17	None	1023	Maxtor 1105 1120, 4780
31	83	925	11	17	None	1023	Maxtor 1170
32	69	1024	9	17	None	926	CDC 9415
33	85	1024	10	17	None	1023	
34	102	1024	12	17	None	1023	
35	110	1024	13	17	None	1023	
36	119	1024	14	17	None	1023	
37	17	1024	2	17	None	1023	
38	136	1024	16	17	None	1023	
39	114	918	15	17	None	1023	Maxtor 1140, 4380
40	40	820	6	17	None	820	Seagate ST251
41	42	1024	5	17	None	1023	Seagate 4053 Miniscribe 3053/6053
42	65	1024	5	26	None	1023	Miniscribe 3053/6053 RLL
43	40	809	6	17	None	852	Miniscribe 3650
44	61	809	6	26	None	852	Miniscribe 3675 RLL
45	100	776	8	33	None	775	Conner CP3104
46	203	684	16	38	None	685	Conner CP3204

User							
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## Appendix

### Watch Dog Timer

**Set up menu: refer to Page 4-24, "Integrated Peripherals"**

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 64sec

You can program "INDEX 7D" in the CMOS RAM to read or change the set up information.

**Example** · Read index 7D in the CMOS RAM

```
MOV    DX, 70
MOV    AL, 7D
OUT    DX, AL
MOV    DX, 71
IN     AL, DX
```

• Write to index 7D in the CMOS RAM

```
MOV    DX, 70
MOV    AL, 7D
OUT    DX, AL
MOV    DX, 71
MOV    AL, Data
OUT    DX, AL
```

## Port Used

Default at F2

## Bit definitions of F2

- D4: 1    select NMI
- 0    select Reset
- D3: 1    Enable watch dog timer
- 0    Disable watch dog timer

- < D2, D1, D0>: 111 :    N/A
- 110 :    Select 1 second
- 101 :    Select 2 second
- 100 :    Select 4 second
- 011 :    Select 8 second
- 010 :    Select 16 second
- 001 :    Select 32 second
- 000 :    Select 64 second

## Watch dog Timer Programming Procedure

- Power on or reset the system  
The values of D4~D0 in port F2 are zero, i.e. the watch dog timer is disabled
- Clear the WDT, repeatedly read port F2 with the duration no longer than the preset  
time out interval, otherwise, the WDT will generate NMI or reset the system.

- Initialize the SQW of RTC, set SQW output period=0.5 second
  - Out port 70 = 0A
  - Out port 71 = 2F ( generate SQW = 0.5 Sec.)
  - Out port 70 = 0B
  - Out port 71 = 0A ( enable the SQW output)
- Select the time out intervals of WDT (decide the values of D2, D1, D0 in F2 , if you reset the system, i.e. D2~D0 = 0, the time out interval will be 64 sec.)
- Select NMI or CPU reset (decide D4 value in F2 or F6, if you just reset the system, i.e. D4 = 0, then it' s CPU reset)
- Enable or disable WDT ( decide D3 value in F2, if you reset the system, i.e. D3=0, it' s “disable”)
- You should build in a mechanism in the program to always read F2 to clear WDT before the time out of WDT.



### An Example

- a. Enable watchdog timer
- b. Select I/O port F2 & set WDT timer at 1 sec interval
- c. Select NMI
- d. Enable WDT
- e. Clear WDT
- f. Disable WDT

**a. Set RTC to generate WDT timer source "SQW" to generate 0.5 sec. duty cycle timer source**

```
MOV    AL, 0A    ; Set RTC output signal "SQW" to generate 0.5 sec.
                    cycling timer
MOV    DX, 070
OUT    DX, AL
MOV    AL, 2F
MOV    DX, 071
OUT    DX, AL

MOV    AL, 0B    ; Enable "SQW" signal pin active
MOV    DX, 070
OUT    DX, AL
MOV    AL, 0A
MOV    DX, 071
OUT    DX, AL
```

**b. Select WDT timer setting (use port F2)**

```
MOV    AL, 06    ; Setting WDT=1 sec.  
MOV    DX, 0F2  
OUT    DX, AL
```

**c. Select WDT for NMI or reset (select NMI)**

```
MOV    DX, 70  
MOV    AL, 7D  
OUT    DX, AL  
MOV    DX, 71  
IN     AL, DX  
OR     AL, 10  
MOV    DX, 0F2  
OUT    DX, AL  
MOV    BL, AL  
MOV    DX, 70  
MOV    AL, 7D  
OUT    DX, AL  
MOV    DX, 71  
MOV    AL, BL  
OUT    DX, AL
```

**d. Enable WDT**

```
MOV    DX, 70  
MOV    AL, 7D  
OUT    DX, AL  
MOV    DX, 71  
IN     AL, DX  
OR     AL, 08  
MOV    DX, 0F2  
OUT    DX, AL  
MOV    BL, AL  
MOV    DX, 70  
MOV    AL, 7D  
OUT    DX, AL  
MOV    DX, 71  
MOV    AL, BL  
OUT    DX, AL
```

**e. Clear WDT (this operation should be repeatedly executed before WDT time out, e.g. if WDT time out set at 16 sec., then to clear WDT, the instruction should be executed within 16 sec. repeatedly)**

```
MOV    DX, 0F2
IN     AL, DX
```

**f. Disable WDT**

```
MOV    DX, 70
MOV    AL, 7D
OUT    DX, AL
MOV    DX, 71
IN     AL, DX
AND    AL, 0F7
OUT    DX, AL
MOV    BL, AL
MOV    DX, 70
MOV    AL, 7D
OUT    DX, AL
MOV    DX, 71
MOV    AL, BL
OUT    DX, AL
```

You can also combine programming procedure b+c+d with same subroutine, for example, set WDT=1 sec, select NMI and go to enable WDT. The instruction as followings.

```
MOV    AL, 01E ; Directly write to port F2 to set WDT=1 sec, select
NMI    and Enable WDT
MOV    DX, 0F2
OUT    DX, AL
MOV    DX, 70 ; Save to CMOS index 7D
MOV    AL, 7D
OUT    DX, AL
MOV    AL, 01E
MOV    DX, 71
OUT    DX, AL
```