

**MAXI 6560**  
**Compact PCI Computer**

**User's Guide**

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## How to use this guide

This manual is written to help you use the MAXI 6560. The manual describes how to arrange various settings on Intel MMC1 and MMC2 CPU module 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**, "Switches and Connectors" describes the definitions and positions of Switches 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 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 MAXI 6560, including watchdog timer.

**The Appendix 1** describes how to set up Watch Dog Timer (WDT) and gives an example to program the WDT.

**The Appendix 2** describes the memory mapping of MAXI 6560 for user's reference in add-on card or programming.

## Chapter 1

# Introduction

Welcome to MAXI 6560 – the new generation Compact PCI CPU board. The MAXI 6560 is a brand new generation of advanced technologies. It's based upon Intel's notebook architecture and achieves the widest ever CPU support. With unique MMC1 and MMC2 architecture, the MAXI 6560 could support Intel Mobile Module (IMM), with Pentium from 166 MHz to 266 MHz, and Pentium II from 233 MHz to 300 MHz. It also supports the new generation of Pentium II module, up to 100 MHz external bus and over 500MHz CPU clock in the near future through the sophisticated MMC2. It's excellent to the system integrators ruggedized equipments vendors who needs the widest selections of computing power on the same basic design.

The MAXI 6560 is the only one product in the world, which could support three CPU families on the same design. The user now could put on the Pentium IMM, e.g. 200 MHz – for acceptable performance and low power consumed as well as low heat generated. Or he can upgrade to Pentium II 300 MHz if the Top performance is the priority. The memory support is 64 MB or 128 MB SDRAM mounted on board for real ruggedized applications. One additional SO-DIMM is reserved to double the memory size if necessary. The computing power is kept high and growing even higher when CPU and memory getting faster and larger.

The MAXI 6560 adopts the brand new C&T 69000 VGA/panel controller from Chip & Technologies with the embedded 2 MB SDRAM. This chip can support TFT panel up to 1280 x 1024, 256 color, 75 Hz or support CRT up to 1600 x 1200, 256 color, 60Hz. This is good enough for any embedded display. The Intel 82558 Single Chip Ethernet controller is on board. The MAXI 6560 now could support either 10 base T or 100 Base TX complied with the industry standard. (Intel's LAN solution is one of the major standards in the industry!) The Advanced Adaptec AIC 7890, the ultra 2 SCSI controller is also on board to provide the no compromise I/O solutions with the 80MB per second data rate, the MAXI 6560 could be used the powerful server in the harsh environments.

All the standard IPC features, such as four serial ports, one parallel port, high precision RTC, keyboard mouse ports, and the USB are all standards on board. The SIO COM1/COM3 are also optional for RS422/485. The socket for Disk On Chip, which is the important feature for the Embedded Application is also reserved. The single chip DOC memory size could be as large as 72 MB; big enough for various applications.

One special feature of the MAXI 6560 is the Front I/O, Rear I/O options. Now the connectors and cables all go from the rear side. This makes a clean operation environment and significantly shortens the MTTR. The MAXI 6560 also supports the PICMG Hot Swap spec. (PICMG 2.1). So the product is really suitable for the mission critical applications. All these I/O's are arranged through J4 & J5. As to J1 & J2, they are reserved for the primary cPCI channel, supporting up to 7 cPCI slots.

The notebook type floppy connector and IDE connector are reserved. The watch dog timer is on board. The Flash ROM BIOS is also standard for easier BIOS update. The IDE supports mode 4 PIO, mode 2 DMA master and ultra DMA/33. The MAXI 6560 will be available with four models, depending on the memory size mounted on board and Front/Rear I/O's as the following table shows:

Feature Model	Common Features	Memory Size	I/O
MAXI 6560F/64	YES	64MB	Front
MAXI 6560F/128	YES	128MB	Front
MAXI 6560R/64	YES	64MB	Rear
MAXI 6560R/128	YES	128MB	Rear

## 1-1 Specifications

- **System architecture**
  - 6U Compact PCI CPU board
  - Intel MMC1/MMC2 architecture
  - Intel Pentium/Pentium II IMM series support
  - All in one design
  - PC' 98 fully complied
  - PCI V2.1 complied
  - PICMG 2.0 complied
  
- **CPU support**
  - Intel MMC1/MMC2 architecture.
  - Pentium IMM from 166 MHz to 266MHz (MMC1)
  - Pentium II IMM from 233MHz to 300 MHz (MMC1 or MMC2)
  - 400MHz and up support reserved. (MMC2)
  - MMC1 connector x 1
  - MMC2 connector x 1
  
- **Cache memory**
  - 512KB 2<sup>nd</sup> Level 2 cache (pipeline burst SRAM) on Pentium/Pentium II IMM
  - No more cache memory on Board.
  - Level 2 Cache ECC
  
- **Main memory**
  - Only support SDRAM
  - 64Mb SDRAM support
  - On board 64MB SDRAM
  - 144 pin SO-DIMM x 1 reserved
  - Maximum 256 MB SDRAM supported
  
- **BIOS**
  - Award System BIOS with PC' 97 support
  - 2M bit flash ROM
  - C&T VGA BIOS
  - Adaptec SCSI BIOS
  
- **Chip Set**
  - Intel 82371EB/PIIX4 (South Bridge, North Bridge on IMM)
  - 2<sup>nd</sup> generation Pentium II Chip Set with MMX support
  - Fully comply with PC' 97
  - PCI V2.1 Concurrent PCI

- **VGA**

C&T 69000 VGA controller  
2MB SDRAM embedded.  
CRT & Panel support.  
Max. Res./Color/Refresh rate  
800 x 600, true color, 85 Hz  
1024x768, 64K color, 85Hz  
1280x1024, 256 color, 60Hz  
Drivers Support: window 95/98, Window NT 4.0/5.0
- **LAN**

Intel 82558 Single Chip 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  
RJ45 jack x 1
- **On Board LAN**

Intel 82558 / 100 Base TX , Ethernet controller  
PCI V2.1 and full duplex  
Support IEEE 802.3 standard  
8 pin conn. for RJ45 JACK
- **Ultra 2 SCSI**

Adaptec AIC7890 RISC Controller for Ultra 2 SCSI  
Up to 80MB/s (MAX.) data rate  
Up to 12-meter cable support  
Backward Compatiable with Ultra wide, Ultra II SCSI.  
Drivers support DOS, Windows, Win95, Windows NT, SCO Open server  
Netware

- **On Board I/O**
  - SMC 37C669 Super I/O x 2 ON BOARD
  - SIOx4, with 2 x RS 422/485 options, 9PIN D-type x2
  - PIOx1, Bi-Directional, EPP/ECP support, 20pin micro connector x 1
  - Floppy Disk controller: 5 1/4" 360K/1.2MB, 3 1/2" 720K/1.2MB/1.44MB/2.88MB support
  - On chip enhanced IDE x 2
  - PIO up to mode 4
  - DMA master up to mode 2
  - Ultra DMA/33 support, 44 pin x 1, total 2 E.IDE Devices support
  - On chip Keyboard, mouse controller
  - PS/2 Keyboard, 6 pin mini DIN x 1
  - PS/2 mouse, 6 pin mini DIN x 1
  - On Board buzzer 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)
  
- **Watchdog timer**
  - 1, 2, 4, 8, 16, 32, 64 second time-out interval
  
- **Front I/O connectors**
  - USB x 2, PWR/ HDD LED x 4
  - KBD/Mouse mini DIN x 1
  - VGA (15 PIN D-type) x 1
  - Micro Connector x 1 for Printer
  - RS-232 (9 pin D-TYPE) x 2
  - RJ 45 X 1 (for 10/100 BaseT)

- **CPCI connector Definition**

- J1J2 for 1<sup>st</sup> PCI Bus
- J4J5 for Rear I/O
- IDE x 2
- FDC x 1
- 100 Base T
- Ultra 2 SCSI
- 4S1P
- KBD/Mouse
- VGA
- Panel Connector (LVD)

- **Dimensions**

- Dimensions: 233.35mm(D) x 160mm(W)

- **Power requirements**

- +3.3V: 12A (Max.)
- +5V: 6A(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 MAXI 6560 package includes the following items:

- MAXI 6560 cPCI CPU Board x 1
- SIO cable x 2
- Printer cable x 1
- FDC cable x 1
- Keyboard/mouse adapter cable x 1
- IDE cable(for 40/44 pin)x 1
- Integrated I/O kit x 1(for LAN, USB, KBD, Mouse)
- VGA Driver Diskette x 1
- LAN Driver Diskette x 1
- Panel cable x1
- Power adapter cable x 1
- VGA adapter cable x 1

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

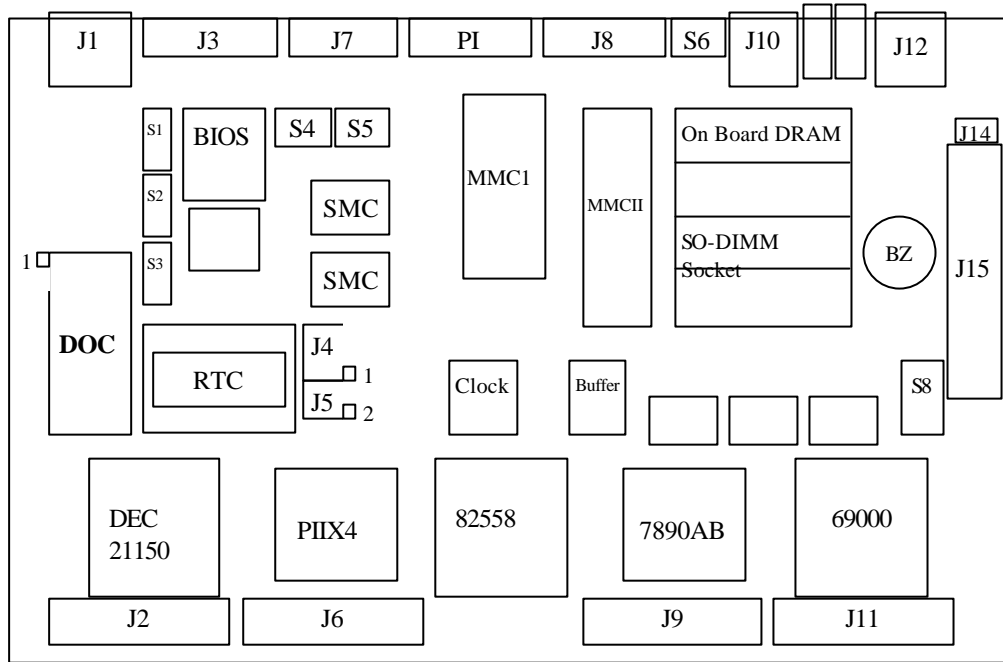
## Chapter 2

### 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.



*Figure 2-1 Switches Positions*

**Switch Setting Table (\*default setting)****● CPU Frequency Setting:**

Freq.	S8.3	S8.4	S8.6	S8.7	S8.8
*66 MHz	OFF	ON	ON	OFF	ON
75 MHz	OFF	ON	OFF	ON	ON
100 MHz	ON	OFF	ON	OFF	ON
105 MHz	OFF	ON	ON	OFF	OFF
112 MHz	ON	OFF	OFF	ON	ON
115 MHz	OFF	ON	OFF	ON	OFF
133 MHz	ON	OFF	ON	OFF	OFF
150 MHz	ON	OFF	OFF	ON	OFF

**● Serial Port 1:**

Mode	S3.1	S3.2	S3.3
*RS232	ON	OFF	OFF
RS422	OFF	ON	OFF
RS485	OFF	OFF	ON

Mode	S1.1	S1.2	S1.3	S1.4	S1.5	S1.6	S1.7
*RS232	OFF	ON	OFF	ON	OFF	ON	OFF
RS422	ON	OFF	ON	OFF	ON	OFF	ON
RS485	ON	OFF	ON	OFF	ON	OFF	ON

Mode	S2.1	S2.2	S2.3	S2.4	S2.5	S2.6	S2.7	S2.8	S2.9	S2.10
*RS232	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
RS422	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
RS485	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF

**● Serial Port 3:**

Mode	S3.4	S3.5	S3.6
*RS232	ON	OFF	OFF
RS422	OFF	ON	OFF
RS485	OFF	OFF	ON

Mode	S5.1	S5.2	S5.3	S5.4	S5.5	S5.6	S1.8
*RS232	OFF	ON	OFF	ON	OFF	ON	OFF
RS422	ON	OFF	ON	OFF	ON	OFF	ON
RS485	ON	OFF	ON	OFF	ON	OFF	ON

Mode	S4.1	S4.2	S4.3	S4.4	S4.5	S4.6	S4.7	S4.8	S4.9	S4.10
*RS232	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
RS422	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
RS485	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF

● **Disk On Chip configuration table:**

Active Address	S3.7	S3.8	S3.9	S3.10
C000H	ON	OFF	OFF	OFF
C800H	OFF	ON	OFF	OFF
D000H	OFF	OFF	ON	OFF
*D800H	OFF	OFF	OFF	ON

● **RTC Clearing:**

Mode	S8.5
Clear RTC	ON
* Normal	OFF

## 2-2 Connectors

Connectors on the CPU Board provide interfaces to other devices.

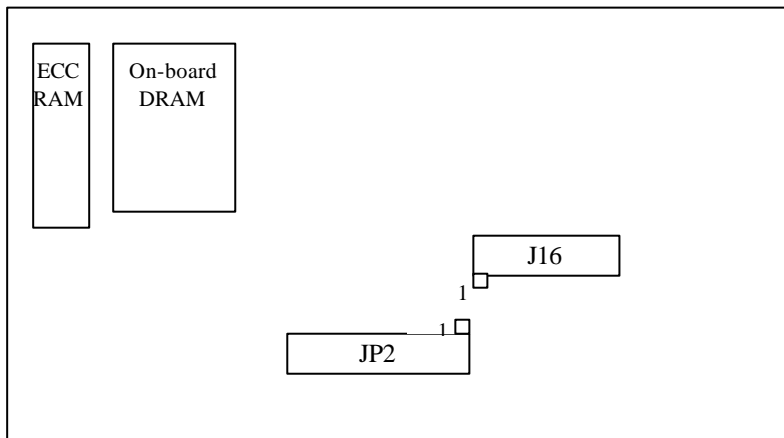


Figure 2-2 Connector positions

*Figure 2-2 Connector Positions*

### Connector Function Description

Connector	Function	Remark
J1	LAN Connector	RJ45
J2/J6	Standard CPCI J1/J2 Connector	
J3	Serial Port 1 & RS422/RS485 Connector	
J4	FAN Connector	
J5	KeyLock Connector	
J7	Serial Port 2 Connector	
J8	VGA Connector	
J9/J11	Rear I/O Connector	
J10	PS/2 Keyboard & PS/2 Mouse Connector	
J12	USB Connector	
J14	Thermal Resistance Connector	
J15	Ultra II SCSI Connector	
J16	Notebook Type Floppy Connector	
JP2	Notebook Type HDD Connector	
P1	Parallel Port Connector	
S6	Reset Push Button	

### Pin Definition of Connector

- J1: LAN Connector

PIN No	Description	PIN No	Description
1	TD +	2	TD -
3	RD +	4	TERMPANE
5	TERMPANE	6	RD -
7	TERMPANE	8	TERMPANE
9	NC	10	N/C
11	Ground	12	Ground

- J3/J7: RS422/485 Connector

PIN No	Description
1	485 Transmit & Receive + & 422 Transmit +
2	485 Transmit & Receive - & 422 Transmit -
3	422 Receive -
4	422 Receive +
5	N/A

6	Differential RTS +
7	Differential RTS -
8	Differential CTS -
9	Differential CTS +

● J3/J7: 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)

● J4: CPU FAN Connector

PIN No.	Description
1	Ground
2	+5V
3	FAN rotational speed

● J5: Key Lock Connector

PIN No.	Description
1	Key lock
2	Ground

● J8: VGA Connector

PIN No.	Description	PIN No.	Description
1	Red	2	Green
3	Blue	4	N/A
5	Ground	6	Ground
7	Ground	8	Ground
9	+5V	10	Ground
11	N/A	12	DDC Data
13	Horizontal Sync	14	Vertical Sync
15	DDC Clock		

● J10: 6-Pin Mini-DIN Keyboard Connector (PS/2 Type)

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

● J12: USB Connector 1/2

PIN No.	Description
1/5	+5V
2/6	-Data 0
3/7	+Data 0
4/8	Ground

● J16: FDD Connector

PIN No.	Description	PIN No.	Description
1	Ground	2	Index Pulse Input
3	Ground	4	Drive Select 0
5	Ground	6	Disk Change
7	N/A	8	N/A
9	N/A	10	Motor On 0
11	N/A	12	Step Direction
13	Drive Density Select 0	14	Step Pulse
15	Ground	16	Write Disk Data
17	Ground	18	Write Gate
19	Ground	20	Track 0
21	Ground	22	Write Protected
23	Ground	24	Read Disk Data
25	Ground	26	Head Select

● JP2: 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	Pull Down
29	DMA ACK	30	Ground
31	Interrupt 14	32	N/C
33	Disk Address 1	34	N/C
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active Led	40	Ground
41	+5V	42	+5V
43	Ground	44	Ground

● P1: 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		

**Rear I/O Define**

No	A	B	C	D	E	F
1	RJ6	RJ3	RJ2	RJ1	HD_DRY	GND
2	RJ7	RJ8	RJ4	RJ5	HD_IRQ14	GND
3	HD_D8	HD_DRQ0	HD_CS1A#	HD_IOW#	HD_RST#	GND
4	HD_D9	HD_D7	HD_CS3A#	HD_IOR#	HD_A2	GND
5	HD_D10	HD_D6	HD_LED#	HD_ACK0#	HD_A0	GND
6	HD_D11	HD_D5	VCC	FD_TRK0#	HD_A1	GND
7	HD_D12	HD_D4	GND	FD_STEP#	FD_WGATE#	GND
8	HD_D13	HD_D3	FD_MTR0#	FD_DIR#	FD_DRV0#	GND
9	HD_D14	HD_D2	FD_HDSEL#	FD_RDAT#	FD_INDX#	GND
10	HD_D15	HD_D1	FD_DS0#	FD_WRPT#	FD_DCHG#	GND
11	VCC	HD_D0	FD_DS1#	VCC	FD_WDATA#	GND
12	KEY	KEY	KEY	KEY	KEY	GND
13	KEY	KEY	KEY	KEY	KEY	GND
14	KEY	KEY	KEY	KEY	KEY	GND
15	GND	LAN_LINK#	LAN_ACTIVE#	SPEAKER#	FD_MTR1#	GND
16	C3_DTR	/LAN_SPD#	VCC	RI4#	FD_DRV1#	GND
17	C3_TXD	C3_RI	DTR4#	CTS4#	I2KCLK	GND
18	C3_RXD	C3_CTS	TXD4	RTS4#	I2KDATA	GND
19	C3_DSR	C3_RTS	RXD4	DCD4#	SCSI_LED#	GND
20	DTR2#	C3_DCD	DSR4#	VCC	PWRLED#	GND
21	TXD2	RI2#	GND	L1_SLIN#	RST_BUT#	GND
22	RXD2	CTS2#	USB1+	L1_INIT#	VCC	GND
23	DSR2#	RTS2#	USB1-	L1_ERROR#	L1_D7	GND
24	GND	DCD2#	USB2+	L1_STROB#	L1_D6	GND
25	C1_DTR	C1_RI	USB2-	L1_AFEED#	L1_D5	GND
26	C1_TXD	C1_CTS	VCC3	L1_SLCT	L1_D4	GND
27	C1_RXD	C1_RTS	IR_RX	L1_ACK#	L1_D3	GND
28	C1_DSR	C1_DCD	IR_TX	L1_PE	L1_D2	GND
29	LVRSTP	LVMSGP	LVSELP	L1_BUSY	L1_D1	GND
30	LVRSTM	LVMSGM	LVSELM	LVCDP	L1_D0	GND
31	LVDPLM	LVDPHM	LVBSYP	LVCDM	LVIOP	GND
32	LVDPLP	LVDPHP	LVBSYM	LVREQP	LVIOM	GND
33	LVDM13	DIFFSENSE	VCC3	LVREQM	GND	GND
34	LVDP13	LVDP10	LVDM6	LVDP12	LVACKM	GND
35	VCC3	LVDM10	LVDP6	LVDM12	LVACKP	GND
36	GND	LVDP5	LVDM2	LVDP7	LVATNM	GND
37	LVDP9	LVDM5	LVDP2	LVDM7	LVATNP	GND

38	LVDM9	LVDP0	LVDM14	LVDP15	LVDM8	GND
39	LVDP4	LVDM0	LVDP14	LVDM15	LVDP8	GND
40	LVDM4	VCC3	LVDM1	LVDP11	LVDM3	GND
41	VCC3	GND	LVDP1	LVDM11	LVDP3	GND
42	GND	BHSYNC	VCC3	DDCCLK	VCC3	GND
43	BVSYNC	BLUE	DDCDAT	RED	GND	GND
44	ENABKL	+12V	GREED	MS_CLK	KB_CLK	GND
45	ENAVDD	VCC3	GND	MS_DATA	KB_DATA	GND
46	LCD_TX0+	LCD_TX1-	LCD_TX2+	LCD_TX3+	LCD_CLK0+	GND
47	LCD_TX0-	LCD_TX1+	LCD_TX2-	LCD_TX3-	LCD_CLK0-	GND

### PIN Definition Group

<b>VGA</b>	BHSYNC, BVSYNC, GREEN, RED, BLUE, DDCCLK, DDCDAT
<b>Keyboard</b>	KB_DATA, KB_CLK
<b>PS/2 Mouse</b>	MS_CLK, MS_DATA
<b>LCD</b>	LCD_TX0+(-), LCD_TX1+(-), LCD_TX2+(-), LCD_TX3+(-), LCD_CLK0+(-), ENAVDD, ENKBAL
<b>Ultra II SCSI</b>	LVDM0-15, LVDP0-15, LVREQM(P), LVIOM(P), LVCDM(P), LVSELM(P), LVMSGM(P), LVRSTM(P), LVACKM(P), LVBSTM(P), LVATNM(P), LVDPLM(P), LVDPHM(P), DIFFSENSE
<b>Parallel Port</b>	L1_D0-7, L1_SLCT, L1_ACK#, L1_PE, L1_BUSY, L1_SLIN#, L1_INIT#, L1_ERROR#, L1_STROB#, L1_AFEED#
<b>Serial Port</b>	1. With RS422/485 Function: C1(3)_RTS, C1(3)_CTS, C1(3)_DTR, C1(3)_DSR, C1(3)_RI, C1(3)_DCD, C1(3)_RXD, C1(3)_TXD. 2. Only RS232 Function: RTS2(4)#, CTS2(4)#, DTR2(4)#, DSR2(4)#, RI2(4)#, DCD2(4)#, RXD2(4), TXD2(4)
<b>USB</b>	USB1+, USB1-, USB2+, USB2-
<b>IDE</b>	HD_D0-D15, HD_CS1(3)A#, HD_IOW#, HD_IOR#, HD_ACK0#, HD_DRQ0, HD_RDY, HD_IRQ14, HD_RST#, HD_A0-3

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<b>Floppy</b>	FD_MTR0(1)#, FD_DS0(1)#, FD_DRV0(1)#, FD_TRK0#, FD_STEP#, FD_DIR#, FD_RDAT#, FD_WRPT#, FD_WGATE#, FD_INDX#, FD_DCHG#, FD_WDATA#
<b>IR</b>	IR_TX, IR_RX
<b>LAN</b>	RJ1, RJ2, RJ3, RJ4, RJ5, RJ6, RJ7, RJ8
<b>SMBus</b>	SMBCLK, SMBDATA
<b>Other</b>	SCSI_LED#, PWRLED#, LAN_ACTIVE#, LAN_LINK#, LAN_SPD#, RST_BUT#, SPEAKER#

## 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 the on-board memory and the SO-DIMM on the CPU board. The on-board memory is default at 64MB. Th optional model has 128MB SDRAM on board.

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

The MAXI 6560 only supports the SDRAM. For the reservation to support the CPU module with 100 MHz External Bus, the 100 MHz SDRAM is used. So, the 66 MHz SO-DIMM is not recommended

The on-board memory also has parity bit support up to 128MB ECC capability. Please be noted that when the SO-DIMM is added to the MAXI 6560, the ECC capability will be sacrificed.

On Board Memory (Bank 1)	SO-DIMM (Bank 2)	Total Memory
64MB	32MB	96MB
	64MB	128MB
	128MB	192MB
128MB	32MB	160MB
	64MB	192MB
	128MB	256MB

## Installing SO-DIMM

Besides the on-board 64MB or ever 128MB SDRAM, the user could install another SDRAM based SO-DIMM onto the on board socket

To install SO-DIMM, you have to press SO-DIMM module gently but firmly into the SO-DIMM socket, with roughly 30-degree angle to the socket. Please note that the dented portion should coincide with the protruding spot of the socket. When the gold finger of the memory module is completely slid into the socket, push the memory module onto the clip of the socket. With two clicks, the memory module is firmly held by SO-DIMM socket. (See figure 3-1 & 3-2)

Figure 3-1

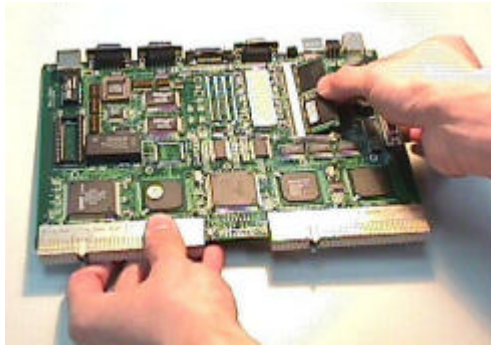
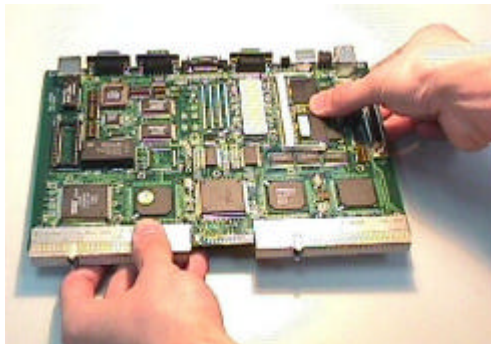


Figure 3-2



### 3-2 Cache Memory

Since the second level cache has been embedded into the MMC1 or MMC2 modules. You do not have to take care of either SRAM chips or SRAM modules. The cache size in the Pentium II mobile module, MMC1 or MMC2, is either 256KB (on die) or 512KB. However, for the Pentium MMC1 modules, the default L2 cache is 512KB.

### 3-3 Mount-Change the CPU

The MAXI 6560 has two CPU connectors, the MMC1 and MMC2. Both connectors connect to the MMC1 and MMC2 CPU modules respectively. Their installation procedures are similar as follows.

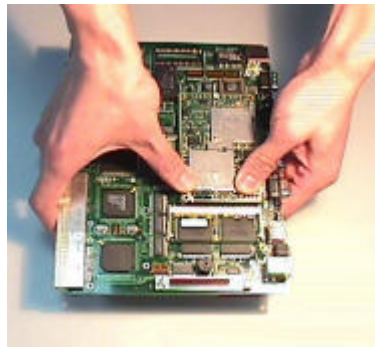
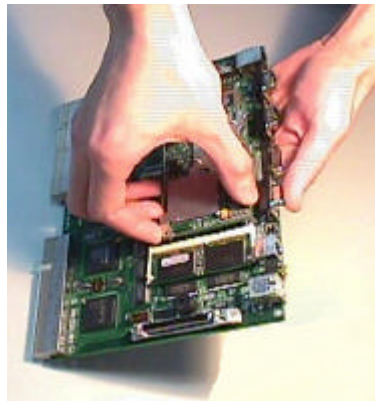
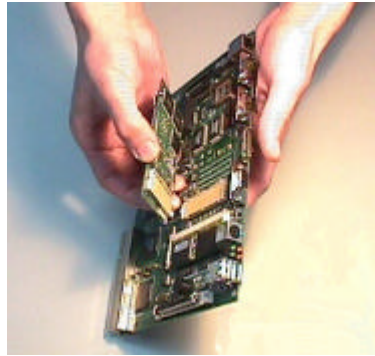
The CPU modules should be fixed with three copper stand offs on the three mounting holes at the corners of the CPU modules. These stand offs should be on the bottom side of the CPU module.

To mount the CPU module, first move the IMM within the area of the four mounting holes on the MAXI 6560 main board. Then carefully put the male portion of the MMC1 on the CPU module right on the female portion of the MMC1 on the main board. Press the CPU module evenly but firmly to the main board until the module is completely fitted into the MMC1 (See Figure 3-3). There are three mounting holes on the IMM modules. Just fix them with the stand offs and screws.

We also offer the optional heat sink with cooling FAN. If the heat sink kit is requested, it should be fixed to the CPU module first, then you could install the CPU module on to the MAXI 6560.

Please be noted that for the MMC2 CPU modules, a big proprietary heat sink is offered as an option for those applications like high CPU performance. No fan allowed and ruggedized construction. The heat sink is only available for MMC2 modules, not for MMC1 modules.

Figure 3-3 Mount-Change the 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.

ROM PCI/ISA BIOS (M6560_S-) 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 4-16 for details.

### **Power Management Setup**

This category determines how much power consumption for system after selecting below items. Default value is Disable. See Page 4-17 to Page 4-20 for details.

### **PNP/PCI Configuration**

This category specifies the assignment of all the IRQ' s and DMA' s. See Page 4-21 to Page 4-22 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 4-23 to Page 4-25 for details.

### **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 4-26 for details.

### **IDE HDD Auto Detection**

Automatically configure hard disk parameters. See Page 4-27 to Page 4-29 for details.

### **HDD Low Level Format**

Hard disk low level format utility. See Page 4-30 to Page 4-31 for details.

### **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.

ROM PCI/ISA BIOS (M6560_S-)									
STANDARD CMOS SETUP									
AWARD SOFTWARE, INC.									
Date (mm:dd:yy) : Tue, Jan 26 1999/2/1									
Time (hh:mm:ss) : 13 : 49 : 3									
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	
-----									
Primary Master	: 0	0	0	0	0	0	0	0	NORMAL
Primary Slave	: 0	0	0	0	0	0	0	0	NORMAL
Secondary Master	: 0	0	0	0	0	0	0	0	NORMAL
Secondary Slave	: 0	0	0	0	0	0	0	0	NORMAL
Drive A : None									
Drive B : None									
Floppy 3 Mode Support : Disabled									
LCD&CRT : Both									
Halt On : All Errors									
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 through Sat, determined by the BIOS, is read only
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 (M6560_S-)	
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
CPU L2 Cache ECC : Enabled	D0000-D3FFF Shadow : Disabled
Quick Power On Self Test : Disabled	D4000-D7FFF Shadow : Disabled
Boot From LAN First : Disabled	D8000-DBFFF Shadow : Disabled
Boot Sequence : A, C, SCSI	DC000-DFFFF Shadow : Disabled
Swap Floppy Drive : Disabled	
Boot Up Floppy Seek : Enabled	
Boot Up NumLock Status : On	
Gate A20 Option : Fast	
Typematic Rate Setting : Disabled	
Typematic Rate (Chars/Sec) : 6	
Typematic Delay (Msec) : 250	Esc : Quit                   ↑↓→← : Select Item
Security Option : Setup	F1 : Help                    PU/PD/+/-:Modify
PCI/VGA palette Snoop : Disabled	F5 : Old Values            (Shift) F2: Color
OS Select For : Non-OS2	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 (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
Disabled (Default)	Not Boot from LAN

### **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

### **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:  
 Enabled: enable secondary IDE port and BIOS will assign IRQ15 for this port.  
 Disabled: 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 (M6560_S-) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.	
SDRAM RAS-to-CAS : 3 SDRAM RAS Precharge : 3 SDRAM CAS latency Time : 3 SDRAM Precharge Control : Disabled DRAM Data Integrity Mode : Non-ECC System BIOS Cacheable : Disabled Video BIOS Cacheable : Disabled Video RAM Cacheable : Disabled 8 Bit I/O Recovery Time : 1 16 Bit I/O Recovery Time : 1 Memory Hole At 15M-16M : Disabled Passive Release : Enabled Delayed Transaction : Disabled AGP Aperture : 64	CPU Warning Temperature : Disabled Current CPU Temperature Current CPUFAN1 Speed Current CPUFAN2 Speed Current Vin (V) Current Vin1 (V) Current Vin2 (V) Current Vdd (V)
	Esc : Quit                    ↑↓→← : Select Item F1 : Help                      PU/PD/+/-:Modify F5 : Old Values                (Shift) F2: Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

### **SDRAM RAS-to-CAS Delay**

You can select RAS to CAS Delay time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. The Choice: 2, 3.

### **SDRAM RAS Precharge Time**

Defines the length of time for Row Address Strobe is allowed to precharge. The Choice: 2, 3.

**SDRAM CAS latency Time**

You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

**DRAM Data Integrity Mode**

Select Parity or ECC (ERROR-CORRECTING CODE), according to the type of installed DRAM.

**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

**Passive Release**

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM. The Choice: Enabled, Disabled.

**Delay Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles.. Select Enabled to support compliance with PCI specification version 2.1

**AGP Aperture Size (MB)**

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See [www.agpforum.org](http://www.agpforum.org) for AGP information.

The choice: 4, 8, 16, 32, 64, 128, 256

**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 FAN1/2 Speed**

These fields display the current speed of up to two CPU fans.

**Current Voltage**

These fields display the current voltage of up to four voltage.

## Power Management Setup

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

ROM PCI/ISA BIOS (M6560_S-) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
Power Management : Min 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% PCI/VGA Act-Monitor : Disabled IRQ 8 break Suspend : Disabled	** Reload Global Timer Event ** IRQ[3-7, 9-15], NMI : Disabled 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	Esc : Quit                    ↑↓→← : Select Item F1 : Help                     PU/PD/+/-:Modify F5 : Old Values             (Shift) F2: Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

### Power Management

This category 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.

### **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 (M6560_S-) PNP/PCI SETUP AWARD SOFTWARE, INC.	
PNP OS Installed : No Resources Controlled By : Manual Reset Configuration Data : Disabled  IRQ-3 assigned to : PCI/ISA PnP IRQ-4 assigned to : PCI/ISA PnP IRQ-5 assigned to : PCI/ISA PnP IRQ-7 assigned to e : PCI/ISA PnP IRQ-9 assigned to : PCI/ISA PnP IRQ-10 assigned to : PCI/ISA PnP IRQ-11 assigned to : PCI/ISA PnP IRQ-12 assigned to : PCI/ISA PnP IRQ-14 assigned to : PCI/ISA PnP IRQ-15 assigned to : PCI/ISA PnP DMA-0 assigned to : PCI/ISA PnP DMA-1 assigned to : PCI/ISA PnP DMA-3 assigned to : PCI/ISA PnP DMA-5 assigned to : PCI/ISA PnP DMA-6 assigned to : PCI/ISA PnP	Slot 1 Use IRQ No. : Auto Slot 2 Use IRQ No. : Auto Slot 3 Use IRQ No. : Auto Slot 4 Use IRQ No. : Auto  Used MEM base addr : N/A Assign IRQ For USB : Enabled  Esc : Quit                    ↑↓→← : Select Item F1 : Help                      PU/PD/+/-:Modify F5 : Old Values                (Shift) F2: Color F6 : Load BIOS Defaults

DMA-7 assigned to : PCI/ISA PnP | 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).

### **IRQ n Assigned to**

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

### **Used MEM base addr**

Select a base address for the memory area used by any peripheral that requires high memory.

The Choice: C800, CC00, D000, D400, D800, DC00, N/A.

### **Assing IRQ For USB**

Assing IRQ for USB : Enabled (Default)

Not assign IRQ for USB : Disabled

## Integrated Peripherals

ROM PCI/ISA BIOS (M6560_S-) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode : Enabled IDE Primary Master PIO : Auto IDE Primary Slave PIO : Auto IDE Secondary Master PIO : Auto IDE Secondary Slave PIO : Auto IDE Primary Master UDMA : Auto IDE Primary Slave UDMA : Auto IDE Secondary Master : Auto IDE Secondary Slave : Auto On-Chip Primary PCI IDE : Enabled On-Chip Secondary PCI IDE : Enabled Onboard PCI SCSI Chip : Enabled USB Keyboard Support : Disabled Init Display First : PCI Slot	Onboard Parallel Port : 378/IRQ 7 Parallel port Mode : Normal  Onboard Serial Port3 : 3E8H Serial Port 3 Use IRQ : IRQ10 Onboard Serial Port 4 : 2E8H Serial Port 4 Use IRQ : IRQ5		
Onboard FDC Controller : Enabled Onboard UART 1 : 3F8/IRQ4 Onboard UART 2 : 2F8/IRQ3 Onboard UART 2 Mode : Standard	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).

### **Init Display First**

For user to select to init AGP or PCI VGA first

### **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 an in FDC or the system has no floppy drive, select Disabled in this field. Choices: Enabled (Default), Disabled.

### **Onboard Uart 1/Uart 2**

The Onboard UART 1 and UART 2 could be set as below:

Auto	Default
Disabled	
3F8/IRQ4	
2F8/IRQ3	
3E8/IRQ4	
2E8/IRQ3	

Different port requires different address to avoid conflicts.

### **On board UART 2 Mode**

This item allows you to determine which Infra Red (IR) function of onboard I/O chip. The Choice: Standard (Default), ASKIR, HPSIR.

### **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, and Normal.

### **ECP Mode Use DMA**

When the mode selected for the onboard parallel port is ECP, the DMA channel selected can be Channel 1 or Channel 3.

### **EPP Mode Select**

When the mode selected for the onboard parallel port is EPP, two EPP version options are available: EPP1.7 or EPP1.9

### **Onboard Serial Port 3**

This allows Onboard Serial Port 3 to set up disabled or 3F8H, 2F8H, 3E8H, 2E8H

### **Serial Port 3 Use IRQ**

This allows Serial Port 3 to use IRQ 10, 11, 9, 5

### **Onboard Serial Port 4**

This allows Onboard Serial Port 4 to set up disabled or 3F8H, 2F8H, 3E8H, 2E8H

### **Serial Port 4 Use IRQ**

This allows Serial Port 4 to use IRQ 11, 10, 9, 5

## *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

## &lt;II&gt; 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:

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

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:

CYLS.	HEAD	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

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

Maximum HDD size:

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

(3) Remarks

To support LBA or LARGE mode of HDDs, here 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.

<p style="text-align: center;">Hard Disk Low Level Format Utility</p> <hr/> <p style="text-align: center;">SELECT DRIVE BAD TRACK LIST PREFORMAT</p> <hr/> <p style="text-align: center;">Current select drive is: C</p> <hr/> <p style="text-align: center;">DRIVE: C CYLINDER: 0 HEAD: 0</p>	<p style="text-align: center;">NO. CYLS HEAD</p> <hr/>
--	--

		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

## **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.

## *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	<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-FFFFF 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-FFFF 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	<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).

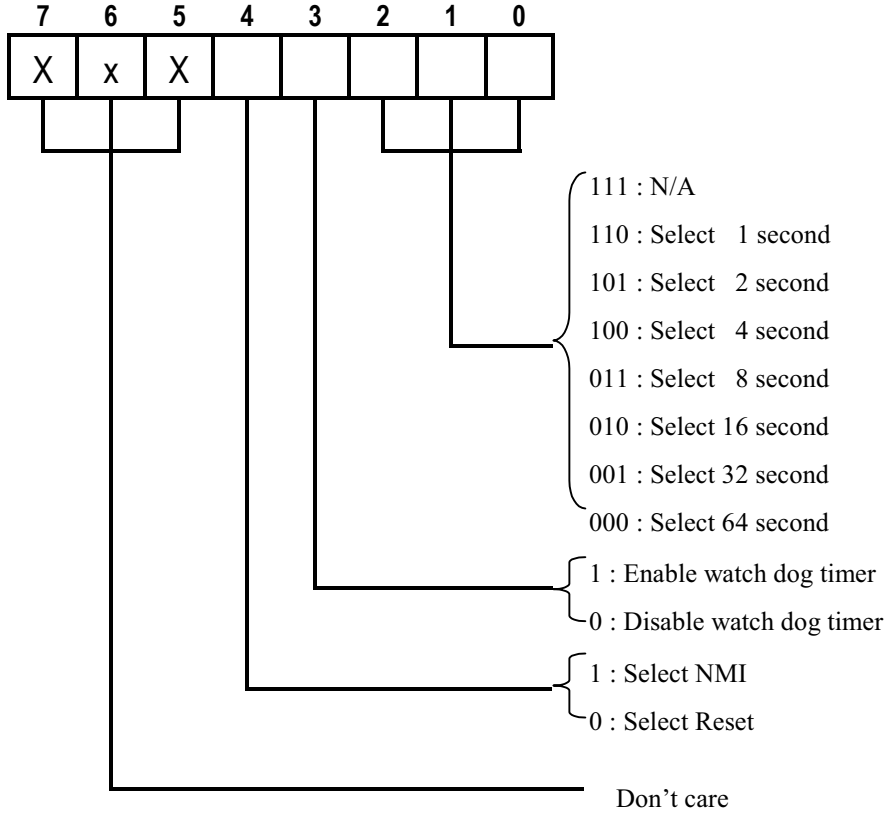
#### Watch Dog Timer character and function

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

