

# **MAXI 66320F**

## **CompactPCI Computer**

### **User's Guide**

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# How to use this guide

This manual is written to help you use the MAXI 66320. The manual describes how to arrange various settings on the 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, "Switches and Connectors"** describes the definitions and positions of Jumpers and Connectors that you may easily configure and set up per your requirement.

**Chapter 3, "Installation"** 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 MAXI 66320, including the watchdog timer.

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

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## Chapter 1 Introduction

The MAXI 66320 is a 6U CompactPCI CPU board built with high performance Dual Socket 370 Celeron/Pentium III CPU running 100 MHz memory Bus, high performance PCI Bus and I/O's, huge memory support, and complies with the new PICMG standard. The MAXI 66320 can run with Dual Intel Pentium III processor up to 700 MHz, and memory support up to 384 MB SDRAM. It's the best product with excellent cost/performance ratio for the system integrators in various mission critical and heavy-duty applications.

### 1-1 Features

- Intel Dual Celeron/Pentium III CPU with 66/100MHz FSB up to 850MHz
- On board 128MB SDRAM, Support 384MB SDRAM (Max), SO-DIMM x 1
- Intel 440BX AGP set
- C&T 69000 AGP Mode VGA controller with CRT/LCD support
- Intel 82559 10/100 Base Ethernet controller
- On board socket for DiskOnChip up to 288MB
- 2S1P, IDE x 1, FDC x 1, RS-422/485 x 1
- Front I/O, Rear I/O options, support 7 CompactPCI slots
- Hot Swap support

### 1-2 Specifications

- **System Architecture**
  - 6U CompactPCI CPU board
  - Intel Dual Celeron/ Pentium III with 66/100MHz FSB
  - PCI V2.1 compliant
  - PICMG 2.0 R2.1 compliant
- **CPU**
  - Intel Celeron/ Pentium III CPU with 128/256K on die cache
  - Brand New Socket 370 FC-PGA CPU running at 66/100MHz FSB
  - Dual CPU support up to 850MHz
  - Supports streaming SIMD instruction
  - On board intelligent switching type power regulator x2

- **Main Memory**
  - On board 128MB SDRAM
  - 144 pin SO-DIMM ×1 reserved
  - Maximum 384MB SDRAM supported
  - 144 pin SO-DIMM ×1 reserved on the backside, maximum 640MB SDRAM supported for OEM only (one extra slot will be occupied)
  - On board and SO-DIMM memory ECC support (single bit error correction/multiple bit errors reporting)
  
- **BIOS**
  - Award System BIOS
  - Plug & Play support
  - Advanced Power Management support
  - Advanced Configuration & Power Interface support
  - 2M bits flash ROM
  
- **Chip Set**
  - Intel 82440BX AGP set
  - 66/100MHz FSB support
  - PCI V2.1 compliant
  - Optimized SDRAM support
  
- **On Board VGA**
  - C&T 69000 AGP mode VGA controller
  - TFT LCD/DSTN LCD/CRT control
  - 2MB SDRAM on die
  - Maximum Res. Color & Refresh Rate

Resolution	Colors	Refresh Rate (Hz)
1280×1024	256	60
1024×768	16bits (High color)	85, 75, 60
800×600	24bits (True color)	85, 75, 60

  - Drivers support : Windows 95/98, Windows NT4.0
  - 15 pin CRT connector ×1 (Front I/O & Rear I/O option), 40 pin LCD panel connector ×1 (Rear I/O)

- **On Board LAN**
  - Intel 82559 Single Ethernet controller
  - 10 Base T/100 Base TX support, full duplex
  - Complied with PCI V2.1, IEEE802.3, IEEE802.3U
  - Backward compatible with former 82558 Ethernet controller based net modules
  - Drivers support: DOS/Windows, Windows 95/98, Windows NT4.0, SCO Open Server 5.0
  - RJ45 connector ×1
  
- **On Board I/O**
  - Winbond W83977 Super I/O
  - On board SIO ×2, with 1×RS422/485 options, 9 pin D-type ×2 (Both Front & Rear I/O)
  - PIO ×1, Bi-directional, EPP/ECP support, 26 pin connector ×1
  - Floppy disk controller : 5.25" 360K/1.2MB, 3.5" 720K/1.2MB/1.44MB/2.88MB support
  - On chip enhanced IDE ×1 : PIO up to mode 4, DMA master up to mode 2, Ultra DMA /33 support, 40 pin ×1 (Rear I/O), total 2 IDE Devices support
  - On chip keyboard, mouse controller, 6 pin mini DIN ×1 for both PS/2 mouse and keyboard
  - On board USB port connector ×1(Front I/O), USB port connector ×2(Rear I/O)
  - On board buzzer ×1
  - IR × 1 (Rear I/O)
  
- **On Board RTC**
  - High precision real time clock/calendar with battery back up
  
- **On Board Solid State Disk Socket**
  - On board reserved socket for DOC of M-systems : 2MB~288MB, etc
  
- **Watchdog Timer**
  - 1,2,4...64 seconds time-out intervals
  
- **Front I/O connectors**
  - USB ×1, PWR/LAN LED ×4
  - KBD/Mouse mini DIN ×1 (Y-cable)
  - VGA (15 pin D-type) ×1
  - Micro connector ×1 for printer
  - RS-232 (9 pin D-TYPE) ×2
  - RJ 45 ×1 (for 10/100Base T)
  - Reset Switch × 1

- **CompactPCI Connectors**
  - J1/J2 for 1st PCI Bus
  - J4/J5 for Rear I/O
  
- **Dimensions**
  - 233.35mm(L) × 160mm(W)
  
- **Power Requirements**
  - +3.3V : 12A (Max.)
  - +5V : 10A (Max.)
  - +12V : 500mA (Max.)
  - -12V : 50mA (Max)
  
- **Environments**
  - Operating temperatures : 0°C to 60°C
  - Storage temperatures : -20°C to 80°C
  - Relative humidity : 10% to 90% (Non-condensing)
  
- **Certification**
  - CE approval
  - FCC Class A
  
- **Model Available**
  - MAXI 66320F--6U Dual Socket 370 Celeron/Pentium III CompactPCI CPU Board w/ VGA/LAN (for Front I/O)
  - MAXI 66320R--6U Dual Socket 370 Celeron/Pentium III CompactPCI CPU Board w/ VGA/LAN (for Rear I/O MAXI 610)

### 1-3 What you'll have from the package

The MAXI 66320 series package includes the following items.

ITEM	Model	MAXI 66320F	MAXI 66320R
CPU Card		1	1
Printer Adapter Cable		1	×
Keyboard/Mouse Adapter Cable		1	×
CPU assembly tooling		1	1
Screw Driver		1	1
Driver CD; includes complete drivers and manual		1	1
Reference Guide		1	1

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

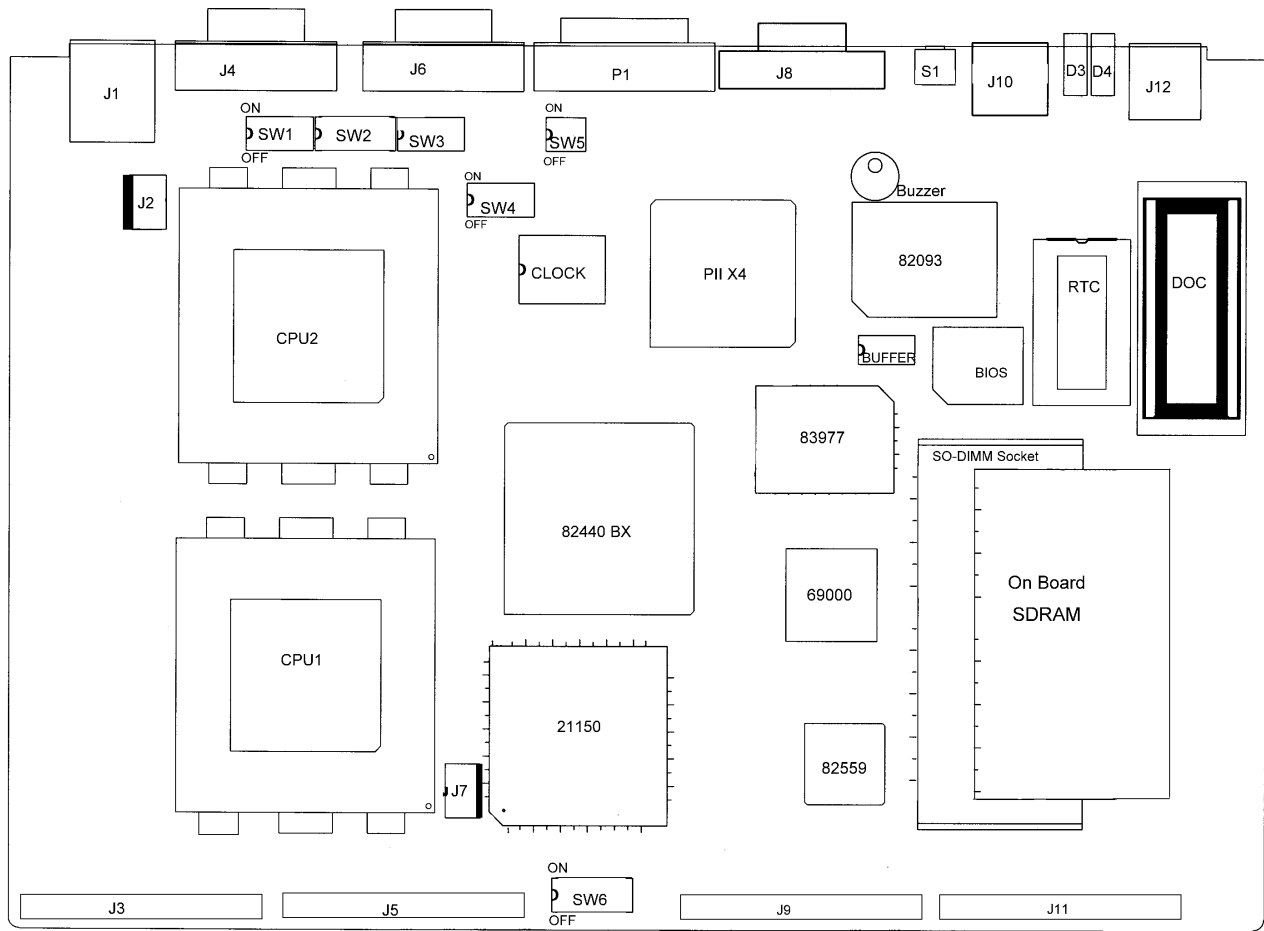
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# Chapter 2 Switches and Connectors

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

## 2-1 Main Board Layout

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



## 2-2 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.

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

#### CPU Type

Type	SW5.1	SW5.2	SW5.3	SW5.4
*Coppermine	ON	OFF	ON	OFF
Celeron	OFF	ON	OFF	ON

#### CPU FREQUENCY SETTING:

Freq.	SW4.1	SW4.2	SW4.3	SW4.4	SW4.5	SW4.6	SW4.7
66 MHz	ON	ON	OFF	OFF	OFF	ON	OFF
*100 MHz	OFF	OFF	OFF	OFF	OFF	OFF	OFF

#### CPU PIPELINED:

Mode	SW4.8
*Enabled	OFF
Disabled	ON

#### ON BOARD LAN

Mode	SW6.5
*Enabled	ON
Disabled	OFF

#### ON BOARD VGA

Mode	SW6.6
*Enabled	ON
Disable	OFF

**14 SLOTS PCI SUPPORT for NEXCOM MBP6EH110 BACKPLANE**

Mode	SW6.7	SW6.8	SW6.9
*Disabled (7 slots PCI)	OFF	OFF	OFF
Enabled (14 slots PCI)	ON	ON	ON

**PANEL TYPE TABLE**

PANEL TYPES	1	2	3	4	5	6	7	8	9	*10	11	12	13	14	15	16
SW6.1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SW6.2	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW6.3	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW6.4	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

**Panel Type Table**

1	1024x768 dual scan STN color panel
2	1280x1024 TFT color panel
3	640x480 dual scan STN color panel
4	800x600 dual scan STN color panel
5	640x480 sharp TFT color panel
6	640x480 18 bit TFT color panel
7	1024x768 TFT color panel
8	800x600 TFT color panel
9	800x600 TFT color panel
10	800x600 TFT color panel
11	800x600 dual scan STN color panel
12	800x600 dual scan STN color panel
13	1024x768 TFT color panel
14	1280x1024 dual scan STN color panel
15	1024x600 dual scan STN color panel
16	1024x600 TFT color panel

**Serial Port 2:**

Mode	SW1.1	SW1.2	SW1.3	SW1.4
*RS232	OFF	ON	OFF	OFF
RS422	ON	OFF	ON	OFF
RS485	ON	OFF	OFF	ON

Mode	SW2.1	SW2.2	SW2.3	SW2.4	SW2.5	SW2.6	SW2.7	SW2.8	SW2.9	SW2.10
*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

Mode	SW3.1	SW3.2	SW3.3	SW3.4	SW3.5	SW3.6
*RS232	OFF	ON	OFF	ON	OFF	ON
RS422	ON	OFF	ON	OFF	ON	OFF
RS485	ON	OFF	ON	OFF	ON	OFF

**CMOS RAM:**

Mode	SW3.7
Clear	ON
* Normal	OFF

**Disk On Chip configuration table:**

Active Address	SW1.5	SW1.6	SW1.7	SW1.8
C000H	ON	OFF	OFF	OFF
C800H	OFF	ON	OFF	OFF
D000H	OFF	OFF	ON	OFF
*D800H	OFF	OFF	OFF	ON

## 2-3 Connectors

### Connector Position

Connector	Function	Remark
P1	Parallel Port Connector	
S1	Reset Push Button	
J1	LAN Connector	RJ45
J2/J7	CPU Fan Connector	Optional
J3/J5	Standard CPCI J1/J2 Connector	
J4	Serial Port 1 Connector	
J6	Serial Port 2 & RS422/RS485 Connector	
J8	VGA Connector	
J9/J11	Rear I/O Connector, CPCI J4/J5 Connector	
J10	PS/2 Keyboard & PS/2 Mouse Connector	
J12	USB Connector	

### Pin Definition:

#### **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	26	NC

**S1: RESET PUSH BOTTON**

PIN No	Description
1	Ground
2	Reset

**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

**J2/J7: CPU FAN Connector (Optional)**

PIN No.	Description
1	Ground
2	+12V
3	Sense

**J4/J6: Serial Port Connector D-Sub 9-Pin (RS-232)**

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)

**J6: 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 +

**J8: VGA Connector**

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

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

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

**J12: USB Connector**

PIN No.	Description
1	+5V
2	SBD0-
3	SBD0+
4	Ground

**J9(25Pin)+J11(22pin)****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
No	A	B	C	D	E	F
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	----	LAN_SPD#	VCC	----	FD_DRV1#	GND
17	----	----	----	----	SMBCLK	GND
18	----	----	----	----	SMBDATA	GND
19	----	----	----	----	----	GND

No	A	B	C	D	E	F
20	DTR2#	-----	-----	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	-----	-----	-----	L1_BUSY	L1_D1	GND
30	-----	-----	-----	-----	L1_D0	GND
31	-----	-----	-----	-----	-----	GND
32	-----	-----	-----	-----	-----	GND
33	-----	-----	VCC3	-----	GND	GND
34	-----	-----	-----	-----	-----	GND
35	VCC3	-----	-----	-----	-----	GND
36	GND	-----	-----	-----	-----	GND
37	-----	-----	-----	-----	-----	GND
38	-----	-----	-----	-----	-----	GND
39	-----	-----	-----	-----	-----	GND
40	-----	VCC3	-----	-----	-----	GND
41	VCC3	GND	-----	-----	-----	GND
42	GND	BHSYNC	VCC3	DDCCLK	VCC3	GND
43	BVSYNC	BLUE	DDCDAT	RED	GND	GND
44	ENABKL	+12V	GREED	MS_CLK	KB_CLK	GND
No	A	B	C	D	E	F
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>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. Only RS232 Function: RTS2#, CTS2#, DTR2#, DSR2#, RI2#, DCD2#, RXD2, TXD2 2. With RS422/485 Function: C1_RTS, C1_CTS, C1_DTR, C1_DSR, C1_RI, C1_DCD, C1_RXD, C1_TXD.
<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
<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#

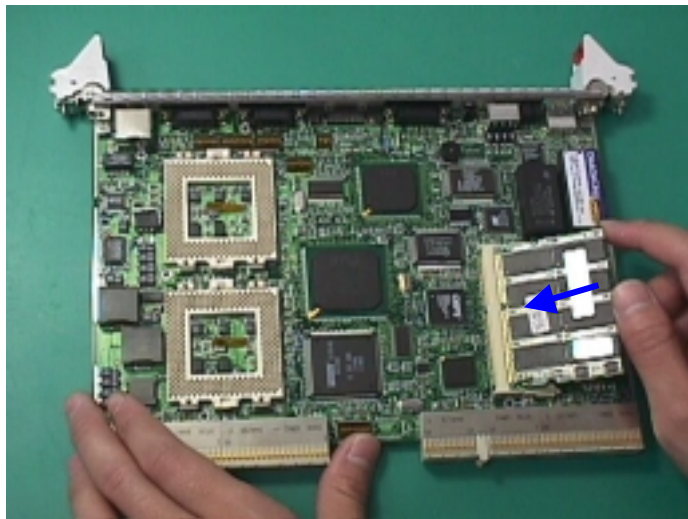
## Chapter 3 Installation

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

### 3-1 *Installing SO-DIMM*

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

1. 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.

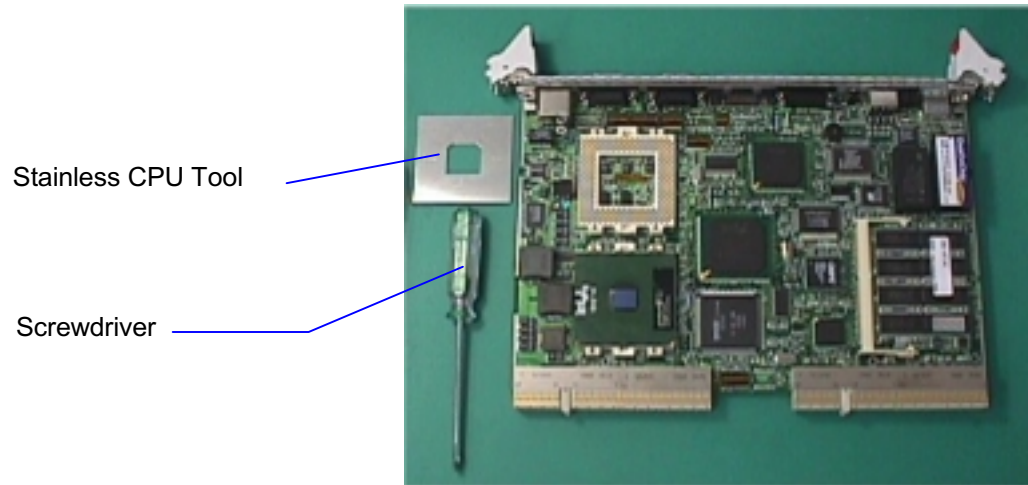


2. When the gold finger of the memory module is completely slid into the socket, push the memory module onto the clip of the socket. With two clicks, the memory module is firmly held by SO-DIMM socket.



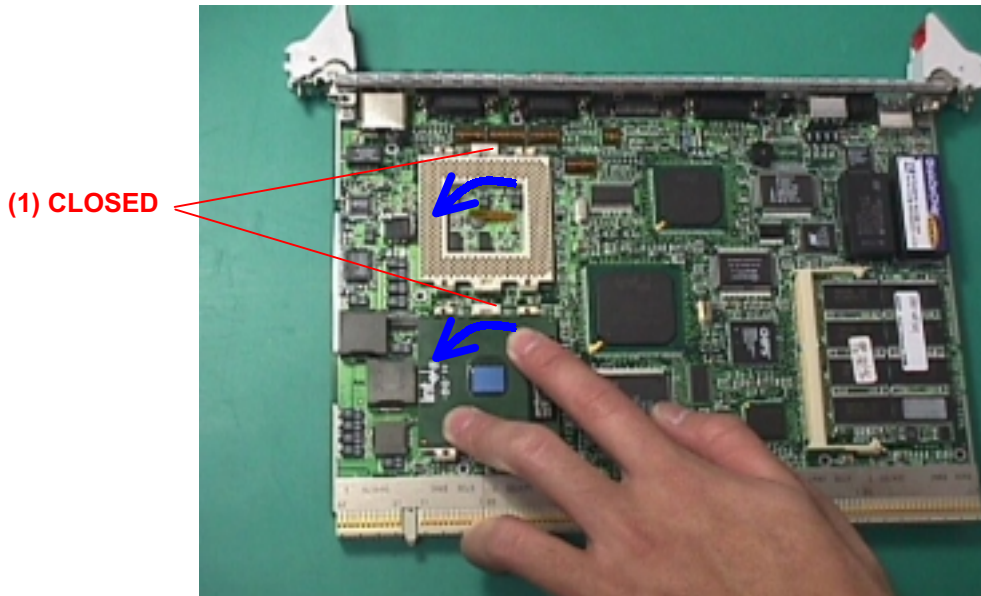
### 3-2 CPU Installation

To install CPU, you need a screwdriver, a stainless CPU tool and a thermal dissipation paste.



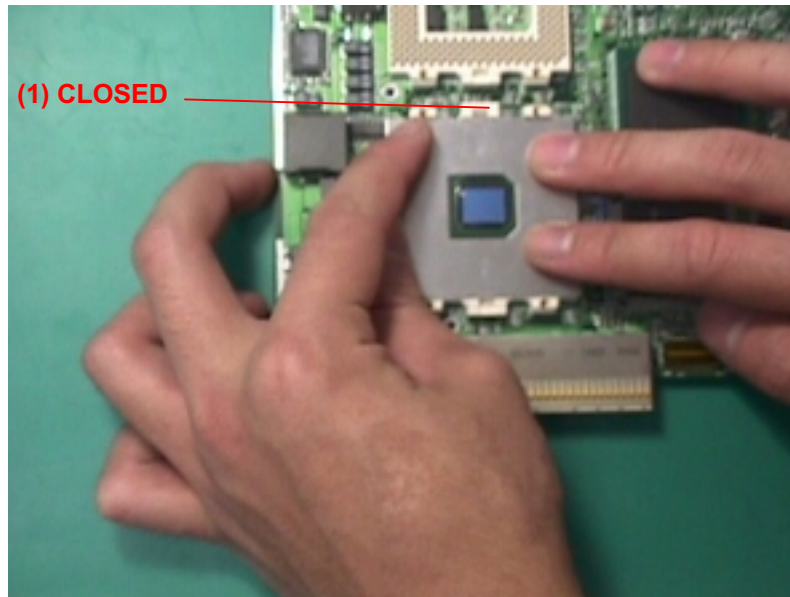
#### **Step 1**

Place the CPU in the empty socket.

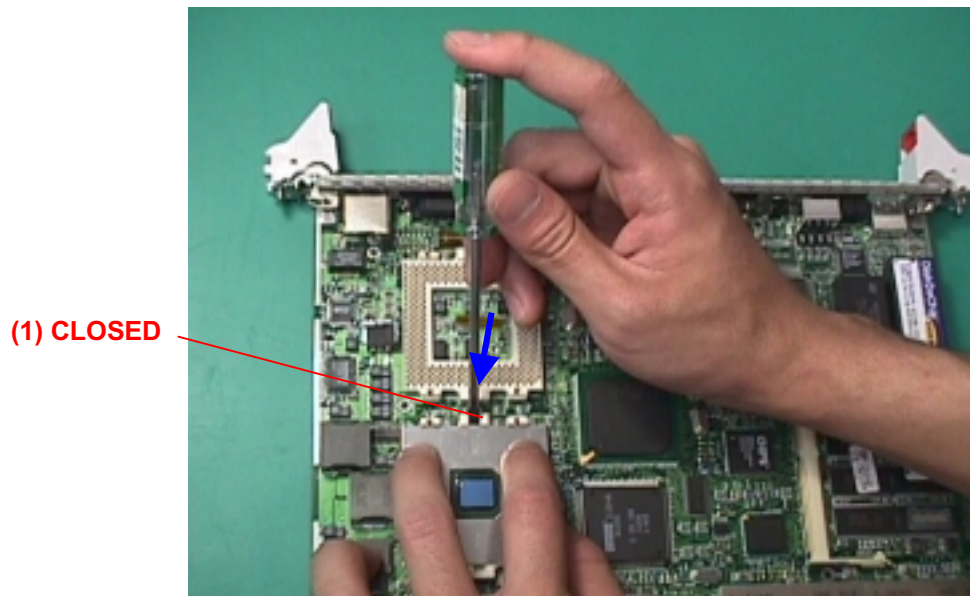


**Step 2**

Place the stainless CPU tool on the top of the CPU. The “close” on the tool should be set toward the position of **(1)** in the below picture.

**Step 3**

Stick the screwdriver into “close” on the tool at 45 degree.



**Step 4**

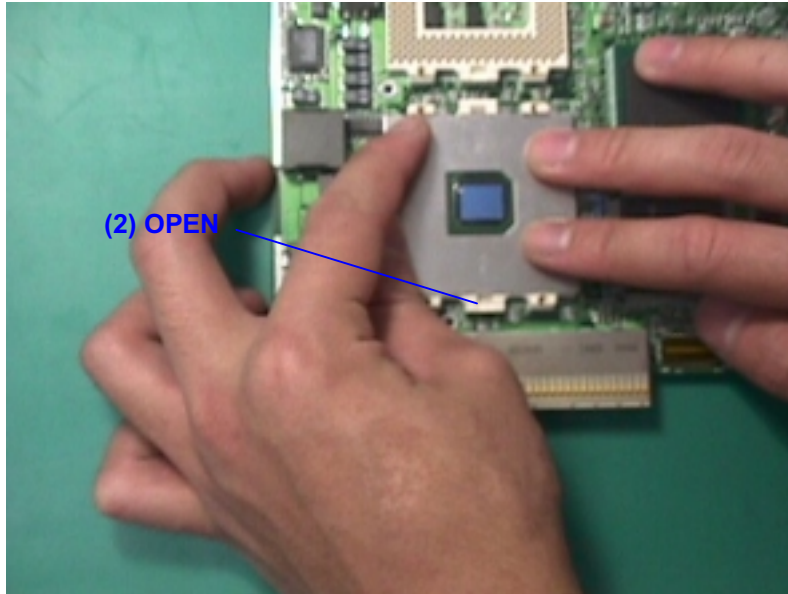
Push the screwdriver inward and the CPU is buckled on the socket.



### 3-3 CPU Removal

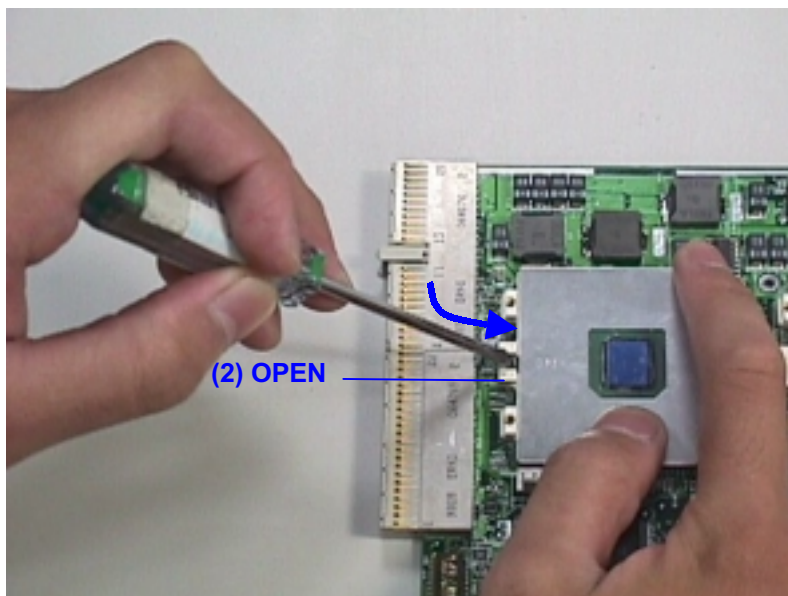
#### Step 1

Place the stainless CPU tool on the top of the CPU. The “open” on the tool should be set toward to the position of **(2)** in the below picture.



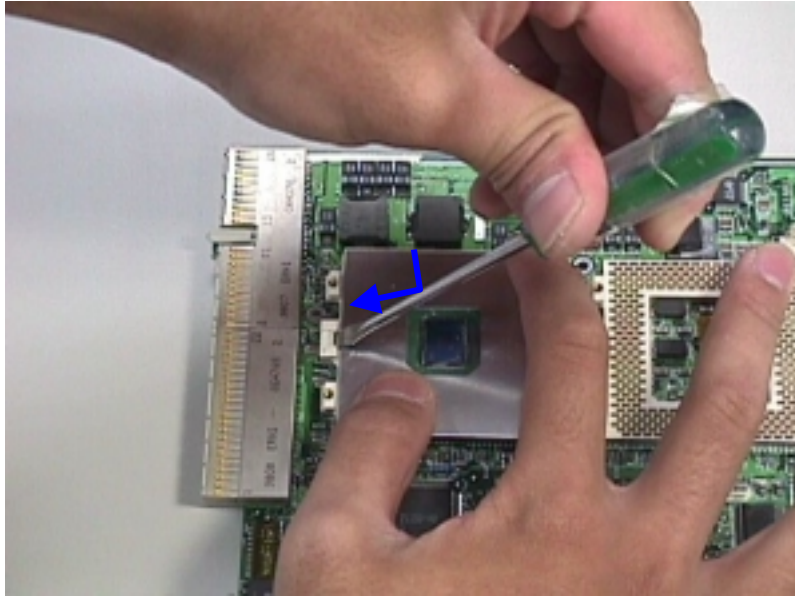
#### Step 2

Stick the screwdriver into “open” on the tool at 45 degree.



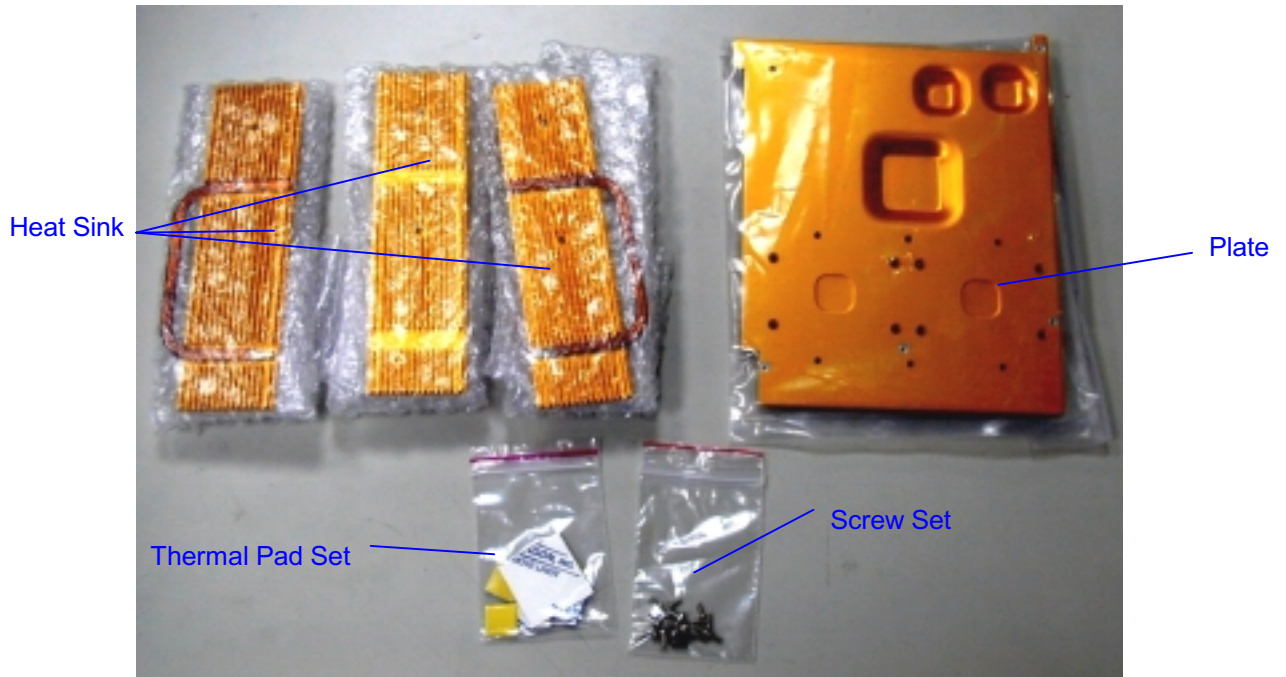
**Step 3**

Push the screwdriver inward and unbuckle the CPU, then CPU can be removed from the socket.



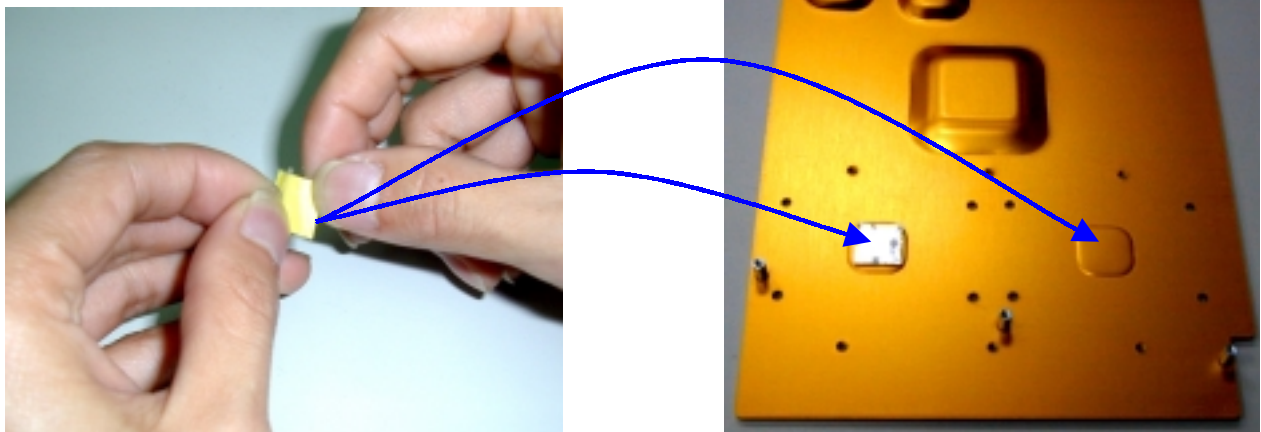
### 3-4 Heat Sink Installation

Open the CPU assembly-tooling package, and you will have:



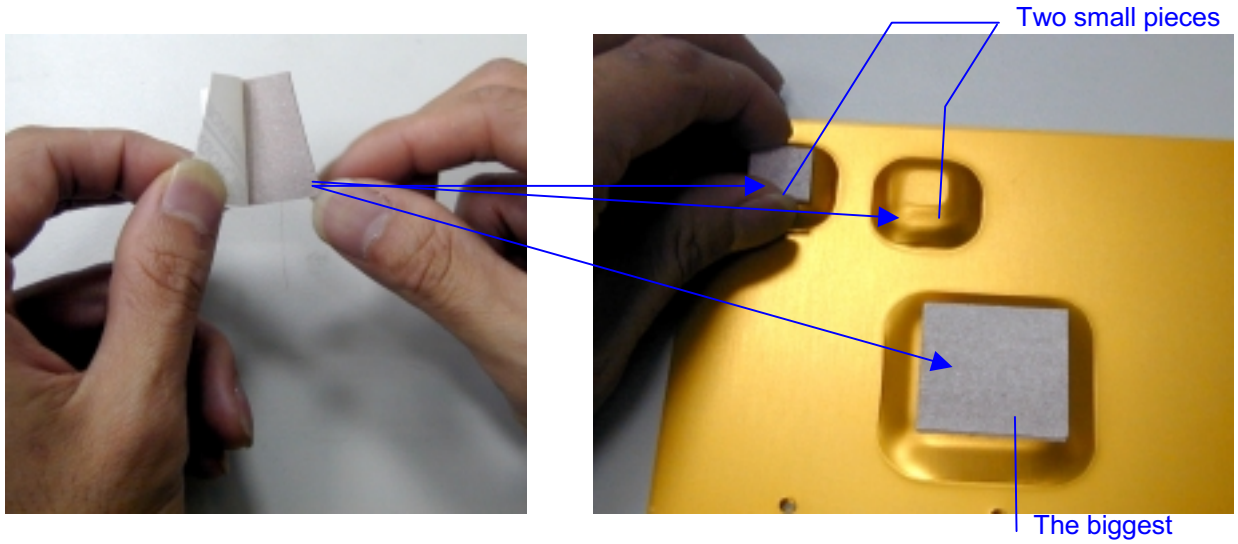
#### **Step 1**

Remove the tape from the silver thermal pad (with 4pieces), and stick the pad on the below position on the plate.

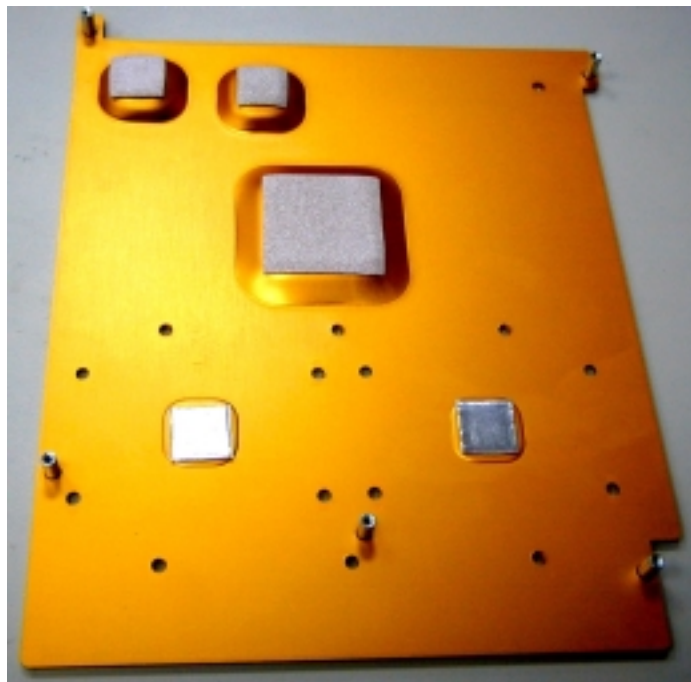


**Step 2**

Remove the tape from the others thermal pad, and stick it on the below position on the plate.

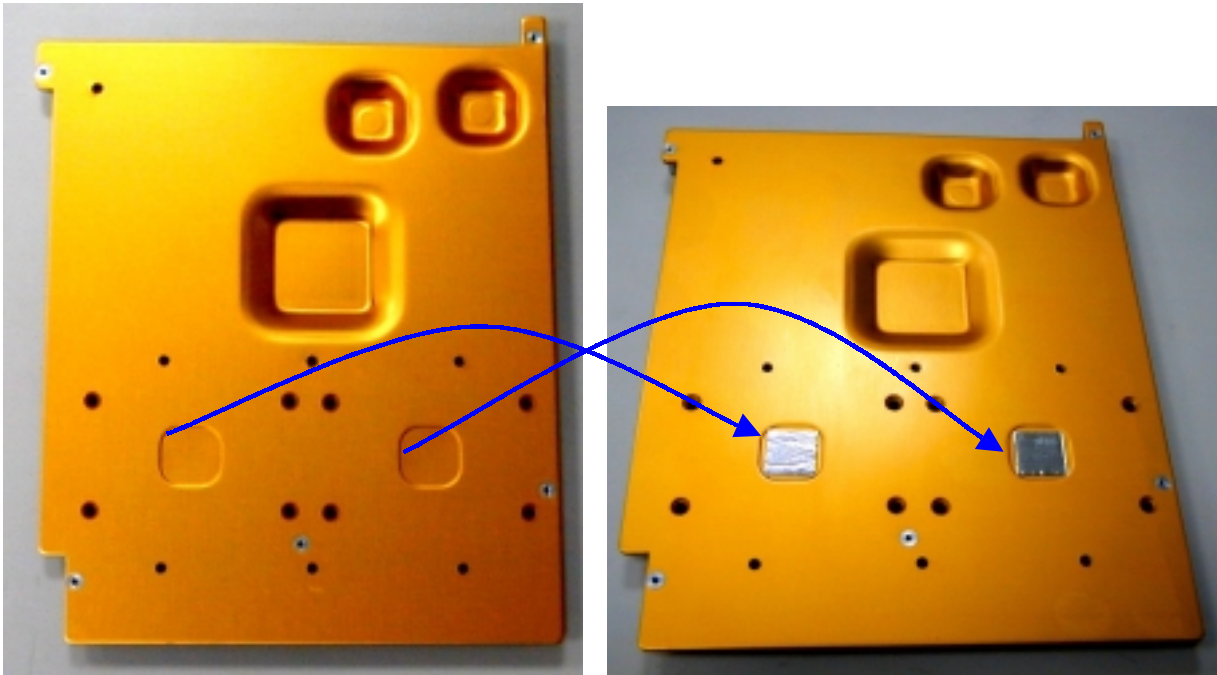


After finishing these steps, the plate would be as follow:



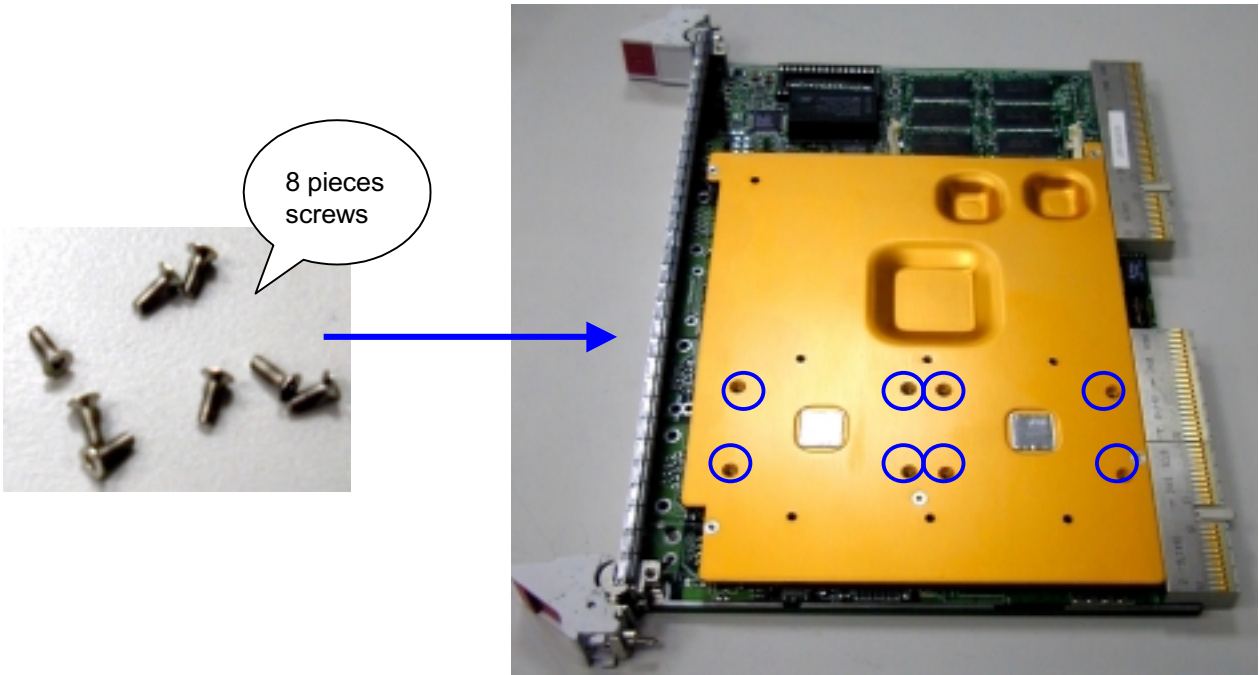
**Step 3**

Turn over the plate and stick the other two silver pads on the plate.



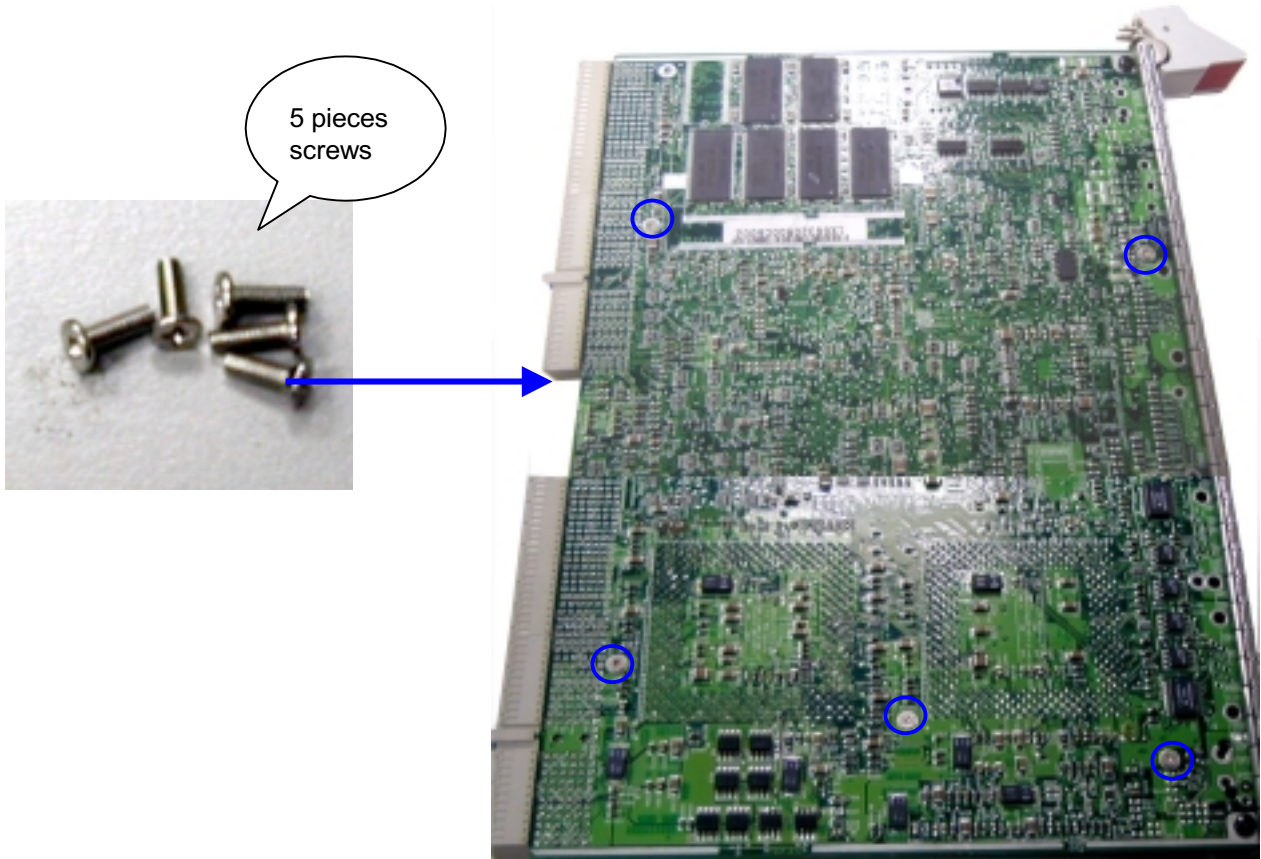
**Step 4**

Place the metal plate on the board, and tighten screws (8 pieces) to it.



**Step 5**

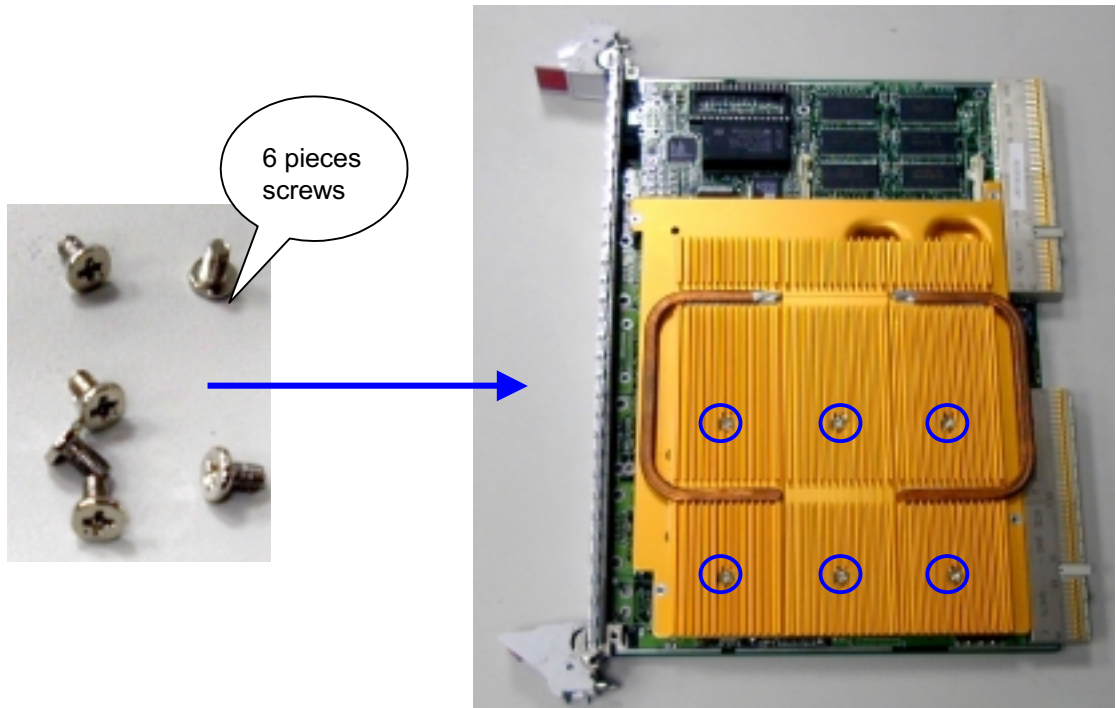
Turn over the board, and then tighten the screws (5 pieces) to the below positions on the board.



**Step 6**

Take out the Heat Sinks (3 pieces), position them and use the screws (6 pieces) to tighten them.

Note the sequence of the heat sink must in the correct position.



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## 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.

### 4-1 BIOS Setup

#### **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**






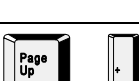
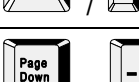









**PRESS <CTRL-ALT-ESC> OR <DEL> KEY**

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 will appear on the below 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.

ROM PCI/ISA BIOS (M66320-W) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
<b>STANDARD CMOS SETUP</b>  <b>BIOS FEATURES SETUP</b>  <b>CHIPSET FEATURES SETUP</b>  <b>POWER MANAGEMENT SETUP</b>  <b>PNP/PCI CONFIGURATION</b>  <b>LOAD BIOS DEFAULTS</b>  <b>LOAD SETUP DEFAULTS</b>	<b>INTEGRATED PERIPHERALS</b>  <b>SUPERVISOR PASSWORD</b>  <b>USER PASSWORD</b>  <b>IDE HDD AUTO DETECTION</b>  <b>SAVE &amp; EXIT SETUP</b>  <b>EXIT WITHOUT SAVING</b>
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift)F2 : Change Color

### **Standard CMOS Features**

Use this menu for basic system configuration. See Page 4-6 for details.

### **BIOS Features**

Use this menu to set the Advanced Features available on your system. See Page 4-9 for details.

### **Chipset features Setup**

Use this menu to change the values in the chipset registers and optimize your system's performance. See Page 4-14 for details.

### **Power Management setup**

Use this menu to specify your settings for power management. See Page 4-18 for details.

### **PNP/PCI Configuration**

This entry appears if your system supports PnP / PCI. See Page 4-22 for details.

### **Load BIOS defaults**

BIOS defaults indicate 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 indicate 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 section page includes all the items of IDE hard drive and Programmed Input / Output features. See Page 4-24 for details.

**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 4-27 for details.

**IDE HDD auto detection**

Automatically configure hard disk parameters. See Page 4-28 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 Features

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.

```

ROM PCI/ISA BIOS (M66320-W)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, JUL 26 2000
Time (hh:mm:ss) : 17 : 8 : 50

Drive C : 0 ( 0Mb)  CYLS.  HEADS  PRECOMP  LANDZONE  SECTORS  MODE
Drive D : 0 ( 0Mb)  0      0      0        0          0        AUTO
Drive A : 1.44M, 3.5 in.
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

```

## Main Menu Selections

### 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 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

**LCD & CRT**

This Field may appear as an alternative to the Video field. Select your video display device:

LCD	Notebook liquid crystal display
CRT	Auxiliary monitor
AUTO	The BIOS autosenses the device in use (this value lets you switch between devices without being left "in the dark")
LCD&CRT	Display on both devices

**Halt On**

During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

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

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

ROM PCI/ISA BIOS (M66320-W)  
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 Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Disabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: 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		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled	ESC : Quit	↑↓←→ : Select Item
MPS Version Control For OS	: 1.1	F1 : Help	PU/PD/+/- : Modify
OS Select For DRAM > 64MB	: Non-OS2	F5 : Old Values (Shift)F2 : Color	
HDD S.M.A.R.T. capability	: Disabled	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.

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 will appear when anything attempts to access the boot sector or hard disk partition table.

**! WARNING!**

Disk boot sector is to be modified

Type "Y" to accept write or "N" to abort write

Award Software, Inc.

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.

The Choice: Enable/Disable

**CPU L2 Cache ECC Checking**

This category could turn on the ECC of Pentium II L2 Cache or just disable it.

The Choice: Enable/Disable

**Processor Number Feature**

Intel included a serial number in their Pentium III processors as a unique system identifier. For privacy reasons, you can disable this setting to prevent the release of this identifier.

The Choice: Enable/Disable

**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.

The Choice: Enable/Disable

**Boot Sequence**

This field configures the boot sequence of drive devices.

Options Description

<b>A, C, SCSI (*)</b>	System will first try to boot from floppy drive, then master IDE disk drive on primary channel, and then SCSI disk drive
<b>C, A, SCSI</b>	Master IDE disk drive on primary channel, floppy drive, SCSI disk driver
<b>C, CDROM, A</b>	Master IDE disk drive on primary channel, ATAPI CDROM drive, floppy drive
<b>CDROM, C, A</b>	ATAPI CDROM drive, master IDE disk drive on primary channel, floppy drive
<b>D, A, SCSI</b>	Slave IDE disk drive on primary channel, floppy drive, SCSI disk drive
<b>SCSI, A, C</b>	SCSI disk drive, floppy drive, ATAPI CD-ROM drive
<b>SCSI, C, A</b>	SCSI disk drive, master IDE disk drive on primary channel, floppy drive
<b>C only</b>	Master IDE disk drive on primary channel only
<b>LS/ZIP, C</b>	LS-120 or ZIP drive, master IDE disk drive on primary channel

**Boot Other Device**

When enabled, floppy drives A and B will be exchanged without the user physically changing the cable.

The choice: Enabled/Disabled.

**Boot Up Floppy Seek**

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

**Boot Up NumLock Status**

Select power on state for NumLock.

The choice: Enabled/Disabled.

**Gate A20 Option**

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

**Typematic Rate Setting**

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

**Typematic Rate (Chars/Sec)**

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30

**Typematic Delay (Msec)**

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000.

**Security Option**

Select whether the password is required every time the system boots or only when you enter 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.

**MPS Version control For OS**

This field specifies the version of MPS used by the motherboard.

The choice: 1.1, 1.4

**OS Select for DRAM > 64MB**

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2

**HDD S.M.A.R.T. Capability**

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology developed to manage the reliability of the hard disk by predicting future device failures. The hard disk needs to be S.M.A.R.T. capable. The settings for this option are Disabled or Enabled.

\* Note: S.M.A.R.T. cannot predict all future device failures. S.M.A.R.T. should be used as a warning tool, not as a tool to predict the device reliability.

The choice: Enabled/Disabled.

### **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 (M66320-W)  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.

Auto Configuration	: Disabled	CPU Warning Temperature	:120
EDO CAS# MA Wait State	: 1	Current CPU1 Temperature	:
EDO RAS# Wait State	: 1	Current CPU2 Temperature	:
SDRAM RAS-to-CAS Delay	: 3	Current CUFAN1 Speed	:
SDRAM RAS Precharge Time	: 3	Current CUFAN2 Speed	:
SDRAM CAS latency Time	: 2	Vcore2 :	Vtt :
SDRAM Precharge Control	: Disabled	+ 3.3V :	+ 5 V :
DRAM Data Integrity Mode	: Non-ECC	+12 V :	-12 V :-
System BIOS Cacheable	: Disabled	Vcore1 :	
Video BIOS Cacheable	: Disabled	Warning Temp. Beep	: Enabled
8 Bit I/O Recovery Time	: NA	ESC :	Quit
16 Bit I/O Recovery Time	: NA	F1 :	Help
Memory Hole At 15M-16M	: Disabled	F5 :	Old Values (Shift)
Passive Release	: Disabled	F6 :	Load BIOS Defaults
Delayed Transaction	: Disabled	F7 :	Load Setup Defaults
AGP Aperture Size (MB)	: 4	↑↓↔ :	Select Item
		PU/PD/+/- :	Modify
		(Shift)F2 :	Color

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

### 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, Disabled.

**EDO CASx# MA Wait State**

You could select the timing control type of EDO DRAM CAS MA (memory address bus).

The choice: 1, 2.

**EDO RASx# MA Wait State**

You could select the timing control type of EDO DRAM RAS MA (memory address bus).

The choice: 1, 2.

**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. The choice: 2, 3.

**SDARAM Precharge Control**

When Enabled, all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

The Choice: Enabled, Disabled.

**DRAM Data Integrity Mode**

Select Parity or ECC (error-correcting code), according to the type of installed DRAM.

The Choice: Non-ECC, ECC.

**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.

The Choice: Enabled, Disabled

**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.

The Choice: Enabled, Disabled

**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 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 from NA, 1 to 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.

The Choice: Enabled, Disabled

Enabled	Memory hole supported.
Disabled	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.

**Delayed 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.

The choice: Enabled, Disabled.

**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**

This item will prevent CPU from overheating.

The choice: 30-120.

**Power Management Setup**

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS (M66320-W)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

ACPI function : Enabled Power Management : User Define PM Control by APM : No Video Off Method : Blank Screen Video Off After : NA Doze Mode : Disable Standby Mode : Disable Suspend Mode : Disable HDD Power Down : Disable Throttle Duty Cycle : 12.5% PCI/VGA Act-Monitor : Disabled IRQ 8 Break Suspend : Disabled	** Reload Global Timer Events ** IRQ[3-7,9-15],NMI : Disabled Primary IDE 0 : Disabled Primary IDE 1 : Disabled  Floppy Disk : Disabled Serial Port : Disabled 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	

**ACPI Function**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

**Power Management**

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

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

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

Disable (default)	No power management. Disables 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	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 Defined	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**

If Advanced Power Management (APM) is installed on your system, selecting **Yes** will give better power savings.

### **Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	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**

This determines the manner in which the monitor is blanked.

Options Doze, Standby, Suspend / NA

### **Doze Mode**

This determines the time the system enters Doze Mode. It is available only when the Power Management item set to User Define.

The choice: Disable, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour

### **Standby Mode**

This determines the time the system enters Standby Mode. It is available only when the Power Management item is set to User Define.

The choice: Disable, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour

### **Suspend Mode**

This determines the time the system enters power saving mode. It is available only when the Power Management item is set to User Define.

The choice: Disable, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour

### **HDD Power Down**

This determines the time the system enters HDD power down. It is available only when the Power Management item is set to User Define.

The choice: Disable, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min

### **Throttle Duty Cycle**

This determines system performance when system is in suspend mode. The more performance required, less energy saved.

The Choice: 12.5, 25%, 37.5, 50%, 62.5%, 75%

### **PCI/VGA Act-Monitor**

If enabled, the system goes into power saving mode if there's no activity on the monitor screen.

If disabled, the system goes into power saving mode, whether or not there is activity on the monitor screen.

The Choice: Enabled, Disabled

### **IRQ 8 Break Suspend**

When disabled, this feature allows the system to go into suspend mode. When enabled, IRQ 8 (RTC) is broken, and the system cannot go into suspend mode.

The Choice: Enabled, Disabled

### **Reload Global Timer Events**

#### **IRQ [3-7, 9-15], NMI**

Choose enabled, timer restarts whenever any of these interrupts occurs.

The Choice: Enabled, Disabled

#### **Primary IDE 0/1**

Choose enabled, timer restarts whenever the master/slave disk of the primary IDE channel is active.

The Choice: Enabled, Disabled

#### **Floppy Disk**

Choose enabled, timer restarts whenever the floppy disk is active.

The Choice: Enabled, Disabled

#### **Serial Port**

Choose enabled, timer restarts whenever the serial port is active.

The Choice: Enabled, Disabled

#### **Parallel Port**

Choose enabled, timer restarts whenever the parallel port is active.

The Choice: Enabled, Disabled

## **PnP/PCI Configuration**

This section describes how to configure the PCI bus system. PCI, or Peripheral Component Interconnect, is a system that allows I/O devices to operate at speeds near the speed the CPU itself used 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 (M66320-W)  
PNP/PCI CONFIGURATION  
AWARD SOFTWARE, INC.

PNP OS Installed	: No	Assign IRQ For VGA	: Disabled
Resources Controlled By	: Manual	Slot 1 Use IRQ No.	: Auto
Reset Configuration Data	: Disabled	Slot 2 Use IRQ No.	: Auto
IRQ-3 assigned to	: PCI/ISA PnP	Slot 3 Use IRQ No.	: Auto
IRQ-4 assigned to	: PCI/ISA PnP	Slot 4 Use IRQ No.	: Auto
IRQ-5 assigned to	: PCI/ISA PnP	Used MEM base addr	: N/A
IRQ-7 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Disabled
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	ESC : Quit	↑↓++ : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)	F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	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.

### **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®95/98/NT. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field.

The choice: Auto, Manual.

### **Reset Configuration Data**

This item allows you to determine reset the configuration data or not.

Choices are Enabled and Disabled

### **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*.

**Used MEM Base Addr**

Some add-in cards ask for a specific address space in the system memory. This field specifies the memory base (start address) of the reserved memory space.

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

**Used MEM Length**

This item is available only when the Used MEM Base Addr has been assigned a base address. It specifies the memory size for the add-in card used.

The Choice: 8K, 16K, 32K, 64K

**Assign IRQ For USB**

Enable/Disable to assign a IRQ for USB.

Choices are Enabled, Disabled.

## Integrated Peripherals

ROM PCI/ISA BIOS (M66320-W)  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	
IDE Primary Master UDMA	: Disabled	
IDE Primary Slave UDMA	: Disabled	
On-Chip Primary PCI IDE	: Disabled	
USB Keyboard Support	: Disabled	
Init Display First	: PCI Slot	
Onboard FDC Controller	: Enabled	
Onboard Serial Port 1	: Disabled	
Onboard Serial Port 2	:	
UART Mode Select	:	
UART2 Duplex Mode	: Full	
RxD , TxD Active	: Hi,Hi	
IR Transmission delay	: Disabled	
Onboard Parallel Port	:	
Parallel Port Mode	:	
ECP Mode Use DMA	: 3	
EPP Mode Select	: EPP1.7	
		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

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled

### 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, Disabled.

### On-Chip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

The choice: Enabled, Disabled.

### 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.

**Init Display First**

This item allows you to decide to active whether PCI Slot or on-chip VGA first

The choice: PCI Slot, Onboard.

**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.

The choice: Enabled, Disabled.

**Onboard Serial Port 1/Port 2**

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

**UART Mode Select**

This item allows you to select UART mode.

The choice: Enabled, Disabled.

**UART2 Duplex Mode**

This item allows you to select the IR half/full duplex function.

The choice: Half, Full.

**RxD, TxD Polarity Active**

This item allows you to determine the active of RxD, TxD.

The Choice: "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

**IR Transmission delay**

This item allows you to select IR transmission delay.

The choice: Enabled, Disabled.

**Onboard Parallel Port**

This item allows you to determine access onboard parallel port controller with which I/O address.

The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.

**Parallel Port Mode**

Select an operating mode for the onboard parallel (printer) port. Select *Normal*, *Compatible*, or *SPP* unless you are certain your hardware and software both support one of the other available modes.

The choice: SPP, EPP, ECP, ECP+EPP.

**ECP Mode Use DMA**

Select a DMA channel for the parallel port for use during ECP mode.

The choice: 3, 1.

**EPP Mode Select**

When the Parallel Port Mode field is configured as EPP, ECP+EPP mode, the EPP version needs to be specified. Please check the EPP specifications before selecting field.

The choice: EPP1.7, EPP 1.9

### **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 only 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 3). 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 you try to enter Setup.

## **IDE HDD Auto Detection**

The Enhance IDE features are 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.

#### **<II> Standard CMOS Setup**

		<u>CYLS</u>	<u>Heads</u>	<u>Precomp</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 with neither the BIOS nor the IDE controller will make transformations during access.

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)
<u>x no. per sector</u>	<u>( 512)</u>
	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 is to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

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

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

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

**LARGE mode**

Extended HDD access mode supported by Award Software.

For 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.	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) by dividing the number of cylinders by 2 and make is less than 1024. 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:

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

**3. Remarks**

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

### *Power-On Boot*

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

Upon restart the system, immediately press **<Insert>** to load BIOS default CMOS value for boot up.

## 4-2 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.

#### **BIOS ROM checksum error-System halted.**

The checksum of ROM address F0000H-FFFFFH is bad.

#### **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 is no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

**FLOOPY DISK(S) fail (80)**

Unable to reset floppy subsystem.

**FLOOPY DISK(S) fail (40)**

Floppy Type mismatch.

**Hard Disk(s) fail (80)**

HDD reset failed

**Hard Disk(s) fail (40)**

HDD controller diagnostics failed.

**Hard Disk(s) fail (20)**

HDD initialization error.

**Hard Disk(s) fail (10)**

Unable to recalibrate fixed disk.

**Hard Disk(s) fail (08)**

Sector Verify failed.

**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.

**Keyboard is locked out-Unlock the key**

BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

**Manufacturing POST loop**

System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

**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 test fail**

BIOS reports the memory test failure if the onboard memory is tested error.

**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.

### 4-3 BIOS Reference - POST Codes

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000

POST (hex)	Description
	for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	<ol style="list-style-type: none"> <li>1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.</li> <li>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.</li> <li>3. Prepare BIOS resource map for PCI &amp; PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.</li> <li>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots.</li> <li>5. Early PCI initialization: <ul style="list-style-type: none"> <li>-Enumerate PCI bus number</li> <li>-Assign memory &amp; I/O resource</li> <li>-Search for a valid VGA device &amp; VGA BIOS, and put it into C000:0.</li> </ul> </li> </ol>

POST (hex)	Description
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	<ol style="list-style-type: none"> <li>1. Program CPU internal MTRR (P6 &amp; PII) for 0-640K memory address.</li> <li>2. Initialize the APIC for Pentium class CPU.</li> <li>3. Program early chipset according to CMOS setup. Example: onboard IDE controller.</li> <li>4. Measure CPU speed.</li> <li>5. Invoke video BIOS.</li> </ol>
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	<ol style="list-style-type: none"> <li>1. Initialize multi-language</li> <li>2. Put information on screen display, including Award title, CPU type, CPU speed ....</li> </ol>
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved

POST (hex)	Description
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo. 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.

POST (hex)	Description
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature)

POST (hex)	Description
	Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: 2. Clear EPA or customization logo.
80h	Reserved
81h	Reserved
<b>E8POST.ASM starts</b>	
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM

POST (hex)	Description
	8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none"> <li>1. Enable L2 cache</li> <li>2. Program boot up speed</li> <li>3. Chipset final initialization.</li> <li>4. Power management final initialization</li> <li>5. Clear screen &amp; display summary table</li> <li>6. Program K6 write allocation</li> <li>7. Program P6 class write combining</li> </ol>
95h	<ol style="list-style-type: none"> <li>1. Program daylight saving</li> <li>2. Update keyboard LED &amp; typematic rate</li> </ol>
96h	<ol style="list-style-type: none"> <li>1. Build MP table</li> <li>2. Build &amp; update ESCD</li> <li>3. Set CMOS century to 20h or 19h</li> <li>4. Load CMOS time into DOS timer tick</li> <li>5. Build MSIRQ routing table.</li> </ol>
FFh	Boot attempt (INT 19h)

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## **Appendix**

### ***Appendix A 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).

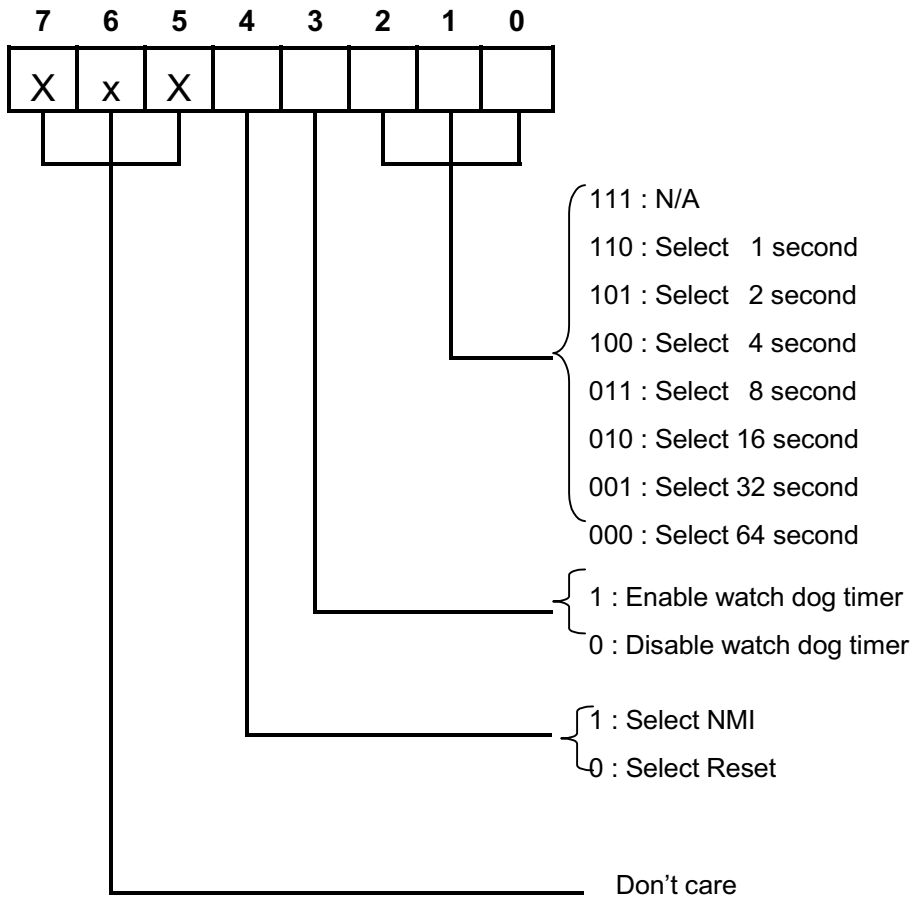
#### **Watch Dog Timer character and function**

WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled	1. Default at disabled
	Enabled	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.

