EMB-M3M

INDUSTRIAL MOTHERBOARD

User`s Manual

Version 1.0

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Contents

Introduction

This manual is designed to give you information on the M3M Industrial MainBoard. The topics covered in this manual are as follows:

- ✓ **Features**

- ✓ **Specification**

- ✓ **Jumper setting and Connectors**

- ✓ **BIOS Setup**

- ✓ **Appendix**

Chapter 1
Features & Specifications

Features

- Intel Pentium-M Main Board supports Socket479 with customized Heat sink kit ready.

- Compact design for Panel PC, POS, Thin-client, Network PC and Terminals.

- Flexible design supports both Banias (0.13um process) and Dorthan (90nm process) CPU.

- AC97 Audio Codec supports 5.1 Channels 3D Surrounding audio.

- Multiple I/O support, up to 6 x USB ports, 6x COM ports and 16-bits DIO.

Specifications

- **Processor Support:**
  - One Socket 479 supports single Intel® Pentium-M ® series processors
    - ✓ Intel® Pentium-M ® based on 0.13 μ core, 400MHz FSB, up to 1.70GHz.
    - ✓ Intel® Celeron-M ® based on 0.13 μ core, 400MHz FSB, up to 1.50GHz.
    - ✓ Intel® Pentium-M ® based on 90nm core, 400MHz FSB, up to 2.10 GHz.
    - ✓ Intel® Celeron-M ® based on 90nm core, 400MHz FSB, up to 1.70 GHz.
    - ✓ Intel® Pentium-M ® based on 90nm core, 400MHz FSB, up to 2.26 GHz.

- **System Memory:**
  - One DDR DIMM 184-pins Socket supports DDR 266/333 unregistered non-ECC up to 1.0 GB.

- **Video Controller:**
  - 855GME Integrated Graphic Engine.
  - One 15-Pins D-Sub Female connector for CRT Display.
  - One 40-pins 1.25mm pitch connector for Dual 18/24-bits LVDS LCD displays.
  - One 5-pins JST connector for LCD panel Backlight Inverter power supports.

- **Super I/O:**
  - Winbond 83627HF LPC I/F Super I/O chip.
  - Four RS-232 Serial ports as COM1~COM4 in D-Sub 9-pins male connector on rear panel. Pin9 can be powered with 5V or 12V or as Ring-in, selected by jumpers. COM4 is RS232/422/485 selectable.
  - One Parallel port supports SPP/ECP/EPP mode in D-Sub 25-Pins Female connector on rear panel.
  - Two USB2.0 ports in 2x5-pins pin-header for front panel or internal USB devices.
  - Four USB2.0 ports on rear for external USB devices.
  - One Floppy connector supports up to two floppy devices.
  - 1 x PS2 Keyboard and 1 x Mouse connector on a stack-up Dual Mini-DIN connector.
  - Two Internal RS-232 ports, COM5~COM6 are in

2x5/10-pins/2mm/pin-header. Pin9 can be powered by either 5V or 12V with a 3-pins jumper.

- **Hardware Monitor:**
    - 83627HF integrated hardware monitor chip to monitor Voltages, Temperatures and FAN speeds.
    - Temperature Monitor: CPU remote diode, one thermister close to CPU socket, one thermister close to 83627HF chip.
    - One CPU FAN close to CPU socket. One System FAN close to 83627HF chip.

- **10/100M Ethernet:**
    - One RTL8101L for 10/100M LAN.RJ45 connector with Link/Act and Speed LED integrated.
    - Support Wake-on-LAN while ATX power supply is attached.
    - The LAN connector is RJ45+USBx2 combo connector on rear panel.

- **PIDE:**
    - PIDE controller build in ICH4 supports up to UltraDAM100.
    - One 40-pins Box header (2.54mm pitch) to supports 3.5" HDD, CDROM or DVD player.
    - One 44-pins Box-header (2mm pitch) supports 2.5" ATA devices, Slim CD-ROM or DOM FlashDisk.
    - One CompactFlash-II socket on backside, shared with Secondary IDE Channel. One 3-pins jumper/2mm to select as Master or Slave device.

- **Watchdog Timer:**
    - The timeout interval and disable/enable selection can be programmed in BIOS setup.
    - The timeout event will generate the RESET.

- **CMOS:**
    - On-board RTC with 242 bytes of Battery-back CMOS RAM.
    - One 3-pins Jumper to clear CMOS data.

- **Audio:**
    - RealTek ALC655 AC97 Audio chip on-board.
    - Two stack-up 3.5mm Audio-Jack on rear for Audio Line-Out and Mic.
    - One CD-ROM Audio-In 4-pins connector on-board.
    - One 2x10-pins 2mm pin-header supports internal audio connection. The Signals include Line-Out, Mic and Surrounding sound, SPDIF I/O.

- **DIO and Cash Drawer Control:**
  - Use 83627HF GPIO port for Digital I/O control. Supports 8-In and 8-out.
  - Supports Cash Drawer control on the rear panel with two RJ12 phone Jack. The voltage can be either 12V or 24V.

- **BIOS**:
  - Award Standard PnP Flash BIOS 6.0.
  - 4Mbit FlashROM with BootBlock for Fail-safe.
  - BIOS utility for field update.
  - 855GME VBIOS integrated.
  - 32-pins PLCC type socket. Use Firmware-Hub chip wired to ICH4.

- **PCI Expansion Slot:**
  - One PCI 120-pins connector with 3 sets of REQ/GNT/Clock signals integrated to support up to 3 PCI cards.
  - One 124-pins Type-III Mini-PCI socket supports Wireless LAN card or other Mini-PCI modules.

- **Power Connector:**
  - One ATX 20-pins Power connector.
  - Two 2-pins power connectors with +5V/GND for peripheral devices.

- **Software Compatibility:**
  - Microsoft windows: NT4.0, Win XP, Win 2K Prof, Win2K Server, Win2003(.NET).
  - Linux RedHat 7.2, 7.3, 8.0,9.0.
  - DOS 6.22.
  - QNX v6.2.

- **Cooling:**
  - One CPU cooling FAN connector close to CPU socket.
  - One System cooling FAN connector for Chassis FAN.
  - Flat Heat-sink on top of 855GME chipset.
  - Customized Cooler kit for Pentium-M or Celeron-M CPU.
  - CPU cooling FAN and System cooling FAN can be controlled and turn on temperature on 40 degree.

- **Others:**
  - One Buzzer on-board for beep message.

- **Operating Temperature:**
  - 5~55°C Operation Rage.
  - Relative Humility: 5~95%, non-condensing.

- **Dimensions:**
  - 200mm(W) x 190 mm(L).

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Chapter 2
Jumper setting & Connectors

Jumpers on the M3M

The jumpers on the M3M allow you to configure your Main Board according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the jumpers on M3M and their respective functions.

Jumper Locations on the M3M

JP1, JP2, JP4, JP5, JP13, JP14: COM Power Selection

JP1, JP2, JP4, JP5, JP13, JP14 can be used to select the COM supply power: +5V, Ring-IN or +12V.
JP1: COM3, JP2: COM2, JP4: COM4, JP5: COM1, JP13: COM5, JP14: COM6.

+5V	RI	+12V
1	3	5
2	4	6
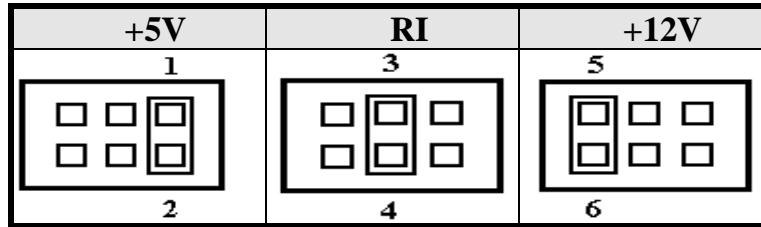
JP3: RJ12 Output Voltage Selection

+12V	+24V
1	1
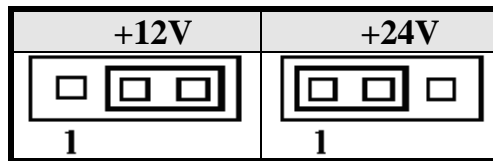
JP6: On-Board LAN Enable/Disable Selection

On-Board Fast Ethernet LAN chip can be disabled by shorting the JP6 jumper.

Port #	Disable	Enable
LAN	1 JP6	1 JP6
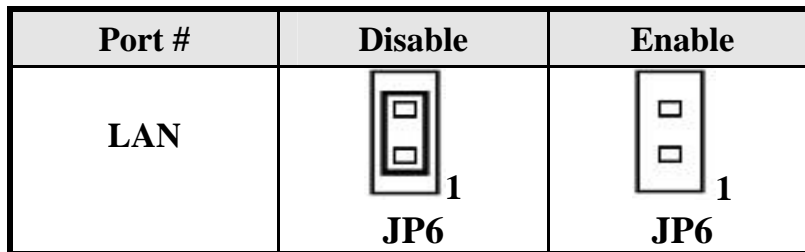
JP7: Inverter Power Jumper

+5V	+12V
1	1
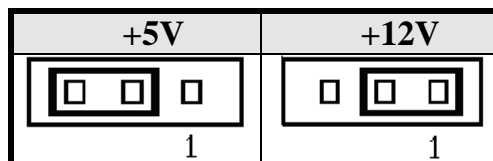
JP8: LCD PANEL Power Selection

JP8 can be used to select the Panel LCD supply power: +3.3V or +5V. The default setting is on +3.3V. User needs to check the LCD panel spec and adjust this jumper and make Panel work in specified power rail.

+3.3V	+5V
1	1
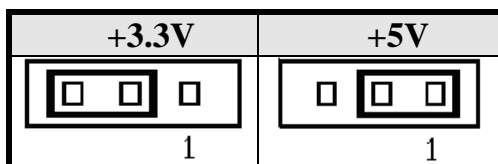
JP9: Clear CMOS RAM Data

This 3-pins Jumper allows the user to disconnect the built-in 3V battery power to clear the information stored in the CMOS RAM. To clear the CMOS data: (1) Turn off the system power, (2) Remove Jumper cap from pin1& pin2, (3) Short the pin2 and pin3 for three seconds, (4) Put Jumper cap back to pin1& 2. (5) Turn on your computer, (6) Hold Down <Delete> during boot up and enter BIOS setup to enter your preferences.

JP9	Setting	Function
1	Pin 1-2 Short/Closed	Normal Operation (default)
1	Pin 2-3 Short/Closed	Clear CMOS Content
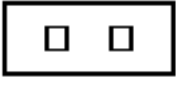
JP10: CPU Frequency Selector

JP10 allows users to select the CPU FSA speed. It can be 100MT/s or 133MT/s. User should selects the correct FSA speed to make their CPU runs on correct speed and ensure the system runs stably.

100MHz	133MHz
1	1
JP10	JP10
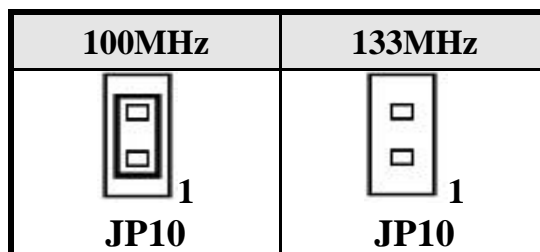
JP15: CF Card Mode Selection

This Jumper is to select the CF works on Secondary Channel master device or Slave device.

Master	Slave
1 JP15	1 JP15

JP16: Power Supply Mode Selection

AT Mode	ATX Mode
1 JP16	1 JP16
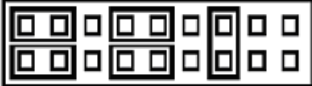
JP17: WDT Time Out Reset Selection

Disable	Enable
1 JP17	1 JP17

JP18: VCCA Voltage Selection

+1.5V	+1.8V
1 **JP18**	1 **JP18**

COM4MODE1: COM4 RS232/RS422/RS485 Selection

COM4MODE	I/F TYPE
17 1 18 2	**RS-232**
17 1 18 2	**RS-422**
17 1 18 2	**RS-485**

Connectors on the M3M

The connectors on the M3M allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on M3M and their respective page number.

Connector Locations on the M3M

（**1**）

（**2**）
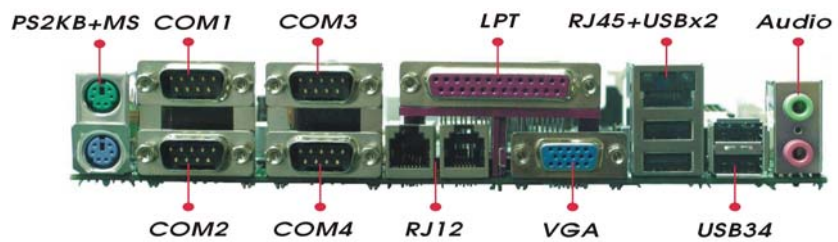
Front Panel Connector

The front panel of the case has a control panel, which provides light indication of the computer activities and switches to change the computer status.

```
┌─────────┐
│ □  □ │ SPEEDLED
│ □  □ │ LNKACTLED
│ □  □ │ PWRBTN
│ □  □ │ HDDLED
│ □  □ │ PWRLED
│ □  □ │ RESET
│ □  □ │ KEYLOCK
└─────────┘
   2   1
```
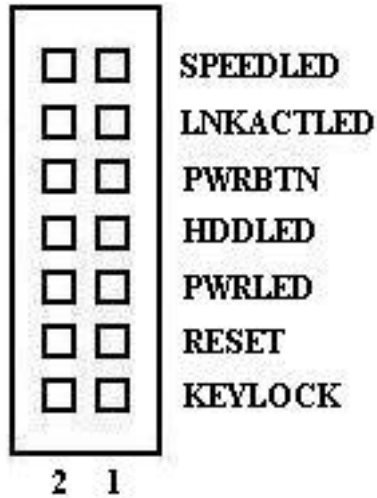
➢ **Keylock**
   For security or other purpose, short these two pins together will disable the keyboard functions.

```
┌──────┐
│ □ □ │
│ □ □ │
│ □ □ │
│ □ □ │
│ □ □ │
│ □ □ │
│ □ □ │ KEYLOCK
└──────┘
  2  1
```
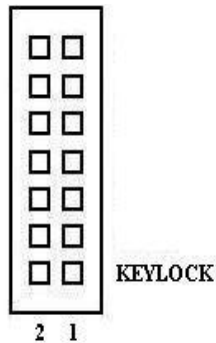
Keylock Pin #	Signal Name
1	Keylock-
2	GND

> **RESET Switch**
> The reset switch allows the user to reset the system without turning the main power switch Off and then On. Orientation is not required when making a connection to this header.
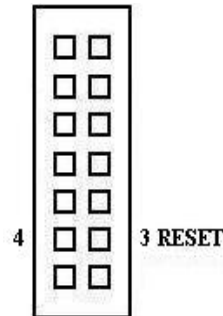
RESET Pin #	Signal Name
3	Reset
4	Ground

> **Power-On LED**
> This connector allows users to connect to Front Panel Power indicator.
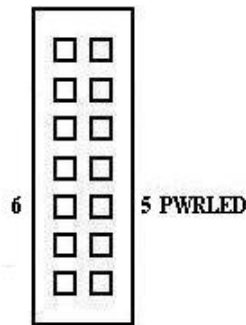
PWR LED Pin #	Signal Name
5	+5V
6	Ground

> **IDE Hard Disk LED Connector**
> This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.
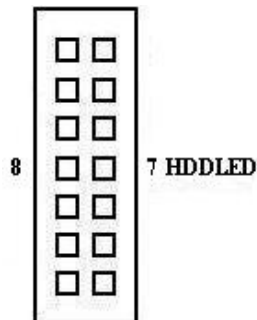
IDE LED Pin #	Signal Name
7	IDE_ACT
8	Ground

➢ ATX Power ON/OFF Button

This 2-pin connector acts as the "Power Supply On/Off Switch" on the MB. When pressed, the switch will force the MB card to power on. When pressed again, it will force the MB card to power off.
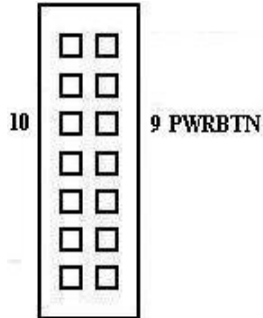
PWR BTN Pin #	Signal Name
9	PWR-BTN
10	GND

➢ LNKACTLED
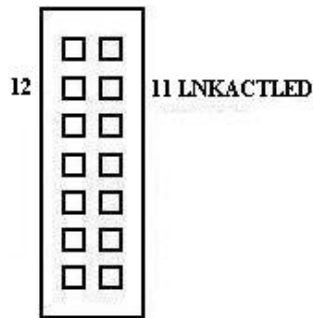
LNKACT LED Pin #	Signal Name
11	ACTLED-
12	LNKLED-

➢ SPEEDLED
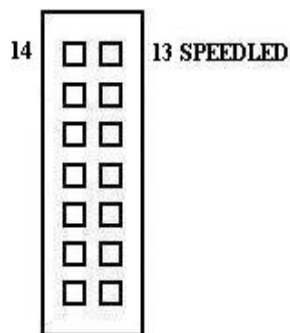
SPEED LED Pin #	Signal Name
13	SPDLED+
14	SPDLED-

BACKLIGHT Connector
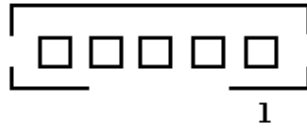
Pin #	Signal Name
1	+12V or 5V
2	GND
3	Brightness
4	ON/OFF
5	GND

RJ12 Connector

RJ122　　**RJ121**
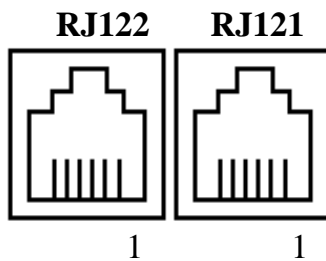
Pin #	Signal Name
1	GND
2	GND
3	Sensor_IN
4	24V/12V
5	NC
6	Sensor_IN

EIDE Connectors

Primary IDE Connector
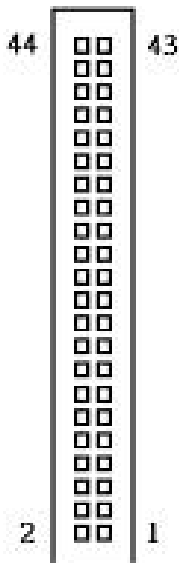
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	P66DET
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
+5V	41	42	+5V
GND	43	44	No connect

Secondary IDE Connector
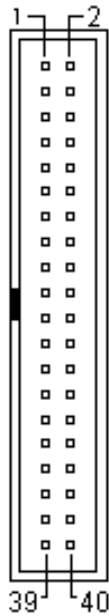
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ1	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
IRQ15	31	32	No connect
Address 1	33	34	S66DET
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

Floppy Drive Connector

Floppy connector is a 34-pin header and supports up to 2.88MB floppy drives.
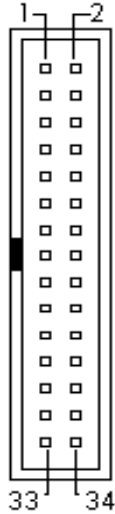
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

COM1~3 Serial Ports

COM1~3, a 9-pin D-Sub male connector, are the onboard COM1~3 serial ports of the M3M. The following table shows its pin assignments.
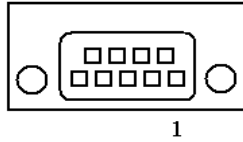
Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V,Ring-IN or +12V

COM4 Serial Port

COM4, a 9-pin D-Sub male connector, is the onboard COM4 port of the M3M. The following table shows its pin assignments.
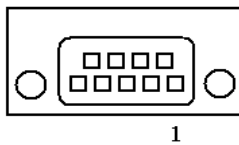
Pin #	RS232 Mode Signal Name	RS422/RS485 Mode Signal Name
1	DCD, Data carrier detect	TX- (422/485)
2	RXD, Receive data	TX+ (422/485)
3	TXD, Transmit data	RX+ (422)
4	DTR, Data terminal ready	RX- (422)
5	GND, ground	GND
6	DSR, Data set ready	N.C.
7	RTS, Request to send	N.C.
8	CTS, Clear to send	N.C.
9	+5V,Ring-IN or +12V	N.C.

COM5, COM6 Serial Ports

COM5~COM6, a 10-pins pin-header connector, are the onboard COM5~COM6 serial ports of the M3M. The following table shows its pin assignments.
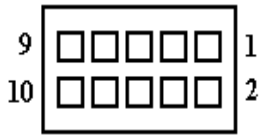
Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V,Ring-IN or +12V
10	NC

INT_KBMS Connector

The following table shows the pin outs of the INT_KBMS connector.
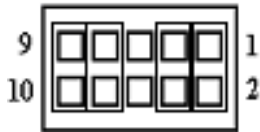
Signal Name	Pin	Pin	Signal Name
JPKBDAT	1	2	KBDAT
JPKBCLK	3	4	KBCLK
BKBVCC	5	6	GND
JPMSDAT	7	8	MSDAT
JPMSCLK	9	10	MSCLK

LPT Port

The LPT parallel port is a Standard DSUB 25-pins Female connector .
It can be configured as EPP or ECP or SPP mode.
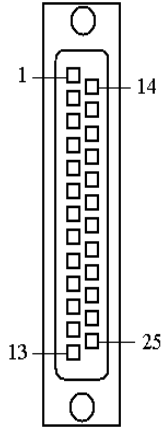
Signal Name	Pin #	Pin #	Signal Name
Strobe	1	2	DATA0
DATA1	3	4	DATA2
DATA3	5	6	DATA4
DATA5	7	8	DATA6
DATA7	9	10	/ACK
BUSY	11	12	PE
SLCT	13	14	/AUTOFD
/ERROR	15	16	/INIT
SELIN	17	18	GND
GND	19	20	GND
GND	21	22	GND
GND	23	24	GND
GND	25		

PS/2 Keyboard & Mouse Connector

The following table describes the pin assignment of PS/2 Keyboard and Mouse connector.

PS/2 Mouse
PS/2 Keyboard
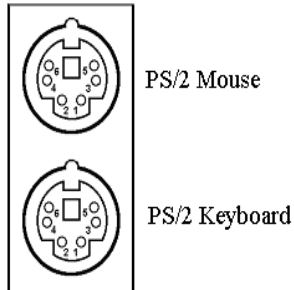
Pin #	Signal Name
1	Keyboard/Mouse data
2	NC
3	GND
4	5V
5	Keyboard/Mouse clock
6	GND

VGA Connector

The pin assignments of VGA CRT connector are as follows:
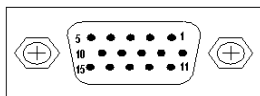
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	5VCDA
HSYNC	13	14	VSYNC
5VCLK	15		

CPU Fan Power Connector

This is a 3-pin header for the CPU Fan. The fan must be a 12V Fan.

```
  ┌──────────┐
  │ □   □   □ │
  └──────────┘
   3   2   1
```
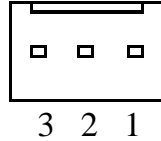
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation

System FAN Power Connector

This is a 3-pin header for the System Fan. The fan must be a 12V Fan.

```
  ┌──────────┐
  │ □   □   □ │
  └──────────┘
   3   2   1
```
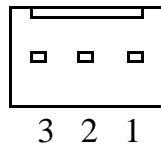
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation

DRVPWR1, DRVPWR2 Connectors

This is a 2-pins header for the DRVPWR1, 2. The connectors must be a 5V.

```
  ┌──────────┐
  │ □    □   │
  └──────────┘
        1
```
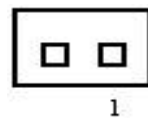
Pin #	Signal Name
1	+5V
2	Ground

USB34 Connectors

The following table shows the pin outs of the USB34 connectors.
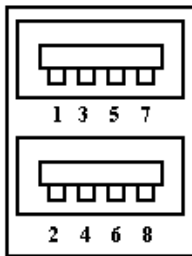
Signal Name	Pin #	Pin #	Signal Name
+5V	1	2	+5V
RUSB-	3	4	RUSB-
RUSB+	5	6	RUSB+
GND	7	8	GND

USB56 Connectors

The following table shows the pin outs of the USB56 connectors.
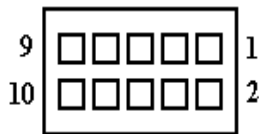
USB6 Pin#	USB5 Pin #	Signal Name
10	1	N.C.
2	9	+5V
8	3	Ground
4	7	USB-
6	5	USB+

ATX Power Connector

The ATX power connector supplies power to the whole Main board.
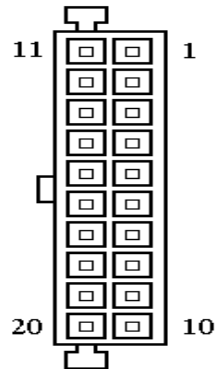
Pin #	Signal Name
1	3.3V
2	3.3V
3	GND
4	VCC
5	GND
6	VCC
7	GND
8	Power Good
9	5VSB(stand by +5V)
10	+12V
11	3.3V
12	-12V
13	GND
14	PS_ON(softOn/Off)
15	GND
16	GND
17	GND
18	-5V
19	VCC
20	VCC

ATX_12V Power Connector

The ATX_12V power connector mainly supplies power to the CPU.
Caution!
If the ATX_12V power connector is not connected, the system will not
start.
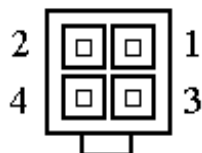
Pin #	Signal Name
1	GND
2	GND
3	+12V
4	+12V

ATX_12V

LANRJ45+USBx2 Connectors

Below picture shows the location of LAN RJ45 ports and USB Type-A ports
on the Combo RJ45+ USB connector.
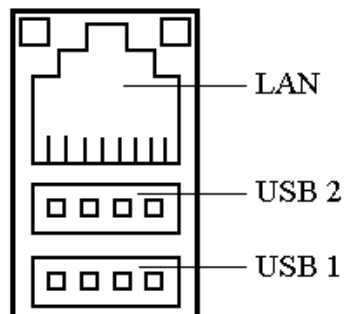
Before you connect your device(s) into USB connector(s), please make
sure your device(s) such as USB keyboard, mouse, scanner, zip,
speaker etc. Have a standard USB interface. Also make sure your OS
supports USB controller.
If your OS does not support USB controller, please contact OS vendor
for possible patch or driver upgrade. For more information please
contact your OS or device(s) vendors.

LAN- RJ45 Connector

This connector is for the 10/100Mbps Ethernet capability. The figure below shows the pin out assignments of this connector and its corresponding input jack.
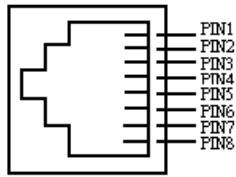
Pin #	Signal Name
1	TX+
2	TX-
3	RX+
4	RX-
5	NC
6	NC
7	NC
8	NC

Audio Connector

After install onboard audio driver, you may connect speaker to Lin-Out jack, microphone to MIC-In jack.

Line Out

Mic In
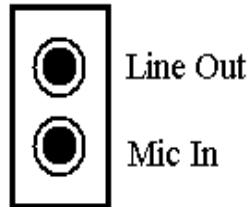
CD_IN Connector

CD_IN connector is designed for wire the CD_ROM audio signals to the on-board Audio CODEC.
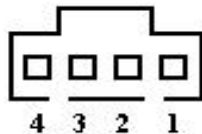
Pin #	Signal Name
1	CD_Left
2	CD_AGND
3	CD_AGND
4	CD_Right

LVDS LCD Connector

The LCD panel, inverter for LCD LAMP, Touch-screen Serial Interface must be connected to this LVDS header, using the below described connector:
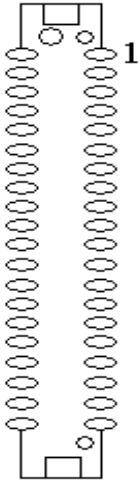
Signal Name	Pin #	Pin #	Signal Name
+12V/+5V	1	2	+12V/+5V
GND	3	4	GND
LCDVDD_5V/3.3V	5	6	LCDVDD_5V/3.3V
GND	7	8	GND
BRIGHTNES	9	10	BCKLITE_ON
LVDS_GND	11	12	LVDS_GND
CHA_TX0+	13	14	CHB_TX0+
CHA_TX0-	15	16	CHB_TX0-
LVDS_GND	17	18	LVDS_GND
CHA_TX1+	19	20	CHB_TX1+
CHA_TX1-	21	22	CHB_TX1-
LVDS_GND	23	24	LVDS_GND
CHA_TX2+	25	26	CHB_TX2+
CHA_TX2-	27	28	CHB_TX2-
LVDS_GND	29	30	LVDS_GND
CHA_TXC+	31	32	CHB_TXC+
CHA_TXC-	33	34	CHB_TXC-
LVDS_GND	35	36	LVDS_GND
CHA_TX3+	37	38	CHB_TX3+
CHA_TX3-	39	40	CHB_TX3-

DIO1 and DIO2 Connectors

DIO port supports 8 digital I/O bits. Each bit can be configured as Input or output individually. All bits are 5V tolerant.
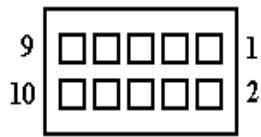
Signal Name	Pin #	Pin #	Signal Name
DIO_0	1	2	DIO_1
DIO_2	3	4	DIO_3
DIO_4	5	6	DIO_5
DIO_6	7	8	DIO_7
GND	9	10	+5V

AUDIO_INT Connector
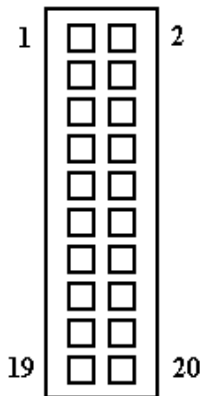
Signal Name	Pin #	Pin #	Signal Name
LINE-IN-L	1	2	LINE-IN-R
GND	3	4	GND
LINE-OUT-L	5	6	LINE-OUT-R
GND	7	8	GND
MIC1-IN	9	10	MIC2-IN
GND	11	12	GND
LFE-OUT	13	14	CENTER-OUT
SURR-OUT-L	15	16	SURR-OUT-R
GND	17	18	GND
SPDIF-OUT	19	20	SPDIF-IN

Chapter 3 BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the M3M CPU card. The topics covered in this chapter are as follows:

BIOS Introduction

This Chapter discusses Award™ Setup program built into the M3M BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The AwardBIOS™ installed in M3M MB is a custom version of an industry standard BIOS. This means that it supports Intel Pentium-M in a standard IBM-AT compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

It also adds non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or

2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

   Press DEL to enter SETUP.

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, DEL TO ENTER SETUP

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
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
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

Navigating through the menu bar
Use the left and right arrow keys to choose the menu you want to be in.

To display a sub menu
Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

Getting Help

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 <Esc> or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings that you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and M3M manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Phoenix – AwardBIOS CMOS Setup Utility

➢ Standard CMOS Features	➢ Frequency/Voltage Control
➢ Advanced BIOS Features	Load Fail-Safe Defaults
➢ Advanced Chipset Features	Load Optimized Defaults
➢ Integrated Peripherals	Set Supervisor Password
➢ Power Management Setup	Set User Password
➢ PnP/PCI Configurations	Save & Exit Setup
➢ PC Health Status	Exit Without Saving

Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	

Time, Date, Hard Disk Type….

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories.

Standard CMOS Features
Use this menu for basic system configuration.

Advanced BIOS Features
Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP / PCI Configuration
Use this menu to set up the PnP/PCI configuration.

PC Health Status
Use this menu to display the CPU temperature, FAN speed and voltages.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

Load Fail-Safe Defaults
Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults
Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Supervisor / User Password
Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.

Exit Without Save
Abandon   all   CMOS   value   changes   and   exit   setup.

Standard CMOS Setup

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.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                    Standard CMOS Features
┌──────────────────────────────────────────┬──────────────────────┐
│                                           │      Item Help       │
│     Date(mm:dd:yy):      Mon, Feb  8 2004 │                      │
│     Time(hh:mm:ss)       16 : 19 : 20     │                      │
│                                           │  Menu Level   ➢      │
│  ➢  IDE Primary Master   [None]           │                      │
│  ➢  IDE Primary Slave    [None]           │  Change the day, month,│
│  ➢  IDE Secondary Master [None]           │  year and century    │
│  ➢  IDE Secondary Slave  [None]           │                      │
│                                           │                      │
│     Drive A              [1.44M, 3.5in.]  │                      │
│     Drive B               [None]          │                      │
│                                           │                      │
│     Video                [EGA/VGA]        │                      │
│     Halt On              [All , But Keyboard]│                   │
│                                           │                      │
│     Base Memory              640K         │                      │
│     Extended Memory       228352K         │                      │
│     Total Memory          229376K         │                      │
├──────────────────────────────────────────┴──────────────────────┤
│ ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help│
│   F5:Previous Values   F6:Fail-safe defaults     F7:Optimized Defaults │
└──────────────────────────────────────────────────────────────────┘
```

This table shows the selections that you can make on the Standard CMOS Menu

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Primary HDDs / Secondary HDDs

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive. Figure 2 shows the IDE primary master sub menu.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                        IDE Primary Master

                                                     Item Help

  IDE HDD Auto-Detection         [Press Enter]

  IDE Primary Master             [Auto]        Menu Level    ➢➢
  Access Mode                    [Auto]
                                              To auto-detect the HDD's
  Capacity                       0 MB         size, head... on this channel

  Cylinder                       0
  Head                           0
  Precomp                        0
  Landing Zone                   0
  Sector                         0




  ↑↓←→: Move Enter: Select +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5:Previous Values    F6:Fail-safe defaults        F7:Optimized Defaults
```

Use the legend keys to navigate through this menu and exit to the main menu. Use the Table listed below to configure the hard disk**.**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Channel 0 Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

Non	360KB	1.2MB	720KB	1.44MB	2.88MB
	5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether the system will halt if an error is detected during power up.

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

Advanced BIOS Features

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.

```
             Phoenix – AwardBIOS CMOS Setup Utility
                     Advanced BIOS Features
 ➢ CPU Feature                    [Press Enter]  │    Item Help
   Virus Warning                  [Disabled]     │
   CPU L1 & L2 Cache              [Enabled]      │ Menu Level    ➢
   Quick Power On Self Test       [Enabled]      │
   First Boot Device              [Floppy]       │ Allows you to choose the
   Second Boot Device             [HDD-0]        │ VIRUS warning feature for
   Third Boot Device              [USB-HDD]      │ IDE Hard Disk boot sector
   Boot Other Device              [Enabled]      │ protection.  If this function is
   Swap Floppy Drive              [Disabled]     │ enabled and someone
   Boot Up Floppy Seek            [Disabled]     │ attempt to write data into
   Boot Up NumLock Status         [Off]          │ this area, BIOS will show a
   Gate A20 Option                [Fast]         │ warning message on screen
   Typematic Rate Setting         [Disabled]     │ and alarm beep
 x Typematic Rate (Chars/Sec)      6             │
 x Typematic Delay (Msec)          250           │
   Security Option                [Setup]        │
   APIC Mode                      [Enabled]      │
   MPS Version Control For OS      [1.4]         │
   OS Select For DRAM > 64MB      [Non-OS2]      │
   Report No FDD For WIN 95       [No]           │

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
   F5:Previous Values   F6:Fail-safe defaults      F7:Optimized Defaults
```

CPU Feature

```
                Phoenix – AwardBIOS CMOS Setup Utility
                              CPU Feature
 Thermal Management        Thermal Monitor 1  │  Item Help
 Limit CPUID MaxVal          [Disabled]       │
                                              │  Menu Level    ➢
                                              │
                                              │  Limit CPUID MaxVal select
                                              │
                                              │
                                              │
                                              │
                                              │
 ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
   F5:Previous Values   F6:Fail-safe defaults     F7:Optimized Defaults
```

Thermal Management

Limit CPUID MaxVal

Limit CPUID MaxVal Select

The choice: Disabled, Enabled.

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

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.

CPU L1 & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, ZIP100, HDD-0, HDD-1, HDD-2, HDD-3, CDROM, Disabled, Enabled, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, SCSI.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical drive B to logical drive A and vice-versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Selects power on state for NumLock.

The choice: On/Off.

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

Keystrokes 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 keystroke 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.

APIC Mode

The choice: Enabled, Disabled.

MPS Version Control For OS

The choice: 1.1, 1.4.

OS Select For DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD For WIN 95

The choice: No, Yes.

Advanced Chipset Features

```
                Phoenix – AwardBIOS CMOS Setup Utility
                     Advanced Chipset Features
    DRAM Timing Selectable      [By SPD]      |      Item Help
  x CAS Latency Time             2.5          |
  x Active to Precharge Delay    5            |  Menu Level    ➢
  x DRAM RAS# to CAS# Delay      3            |
  x DRAM RAS# Precharge          3            |
    DRAM Data Integrity Mode     Non-ECC      |
    System BIOS Cacheable       [Enabled]     |
    Video BIOS Cacheable        [Disabled]    |
    Memory Hole At 15M-16M      [Disabled]    |
    AGP Aperture Size (MB)      [64]          |
                                              |
  ***On-Chip VGA Setting***                   |
    On-Chip VGA                 [Enabled]     |
    On-Chip Frame Buffer Size   [32MB]        |
    Boot Display                [CRT+LFP]     |
    Panel Number                [3]           |

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
  F5:Previous Values    F6:Fail-safe defaults    F7:Optimized Defaults
```

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.

DRAM Settings
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.

DRAM Timing Selectable

This item allows you to select the DRAM timing determined by the timing information stored in SPD or set by the User manually. The default is By SPD. When this field is set as By SPD, the DRAM Timing items below will become read-only.

The choice: By SPD, Manual.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

The choice: 3, 2.5, 2, 1.5.

Active to Precharge Delay

This item allows you to set the Active to Precharge Delay of DRAM timing. Do not reset this field from the default value specified by the system designer.

The choice: 5.

DRAM RAS# to CAS# Delay

When DRAM is refreshed, both rows and columns are addressed separately. This field allows you to determine the timing of transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

The choice: 3, 2.

DRAM RAS# Precharge

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

The choice: 3, 2.

DRAM Data Integrity Mode

The choice: Non-ECC.

System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, 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

Selecting *Enabled* allows caching of the Video BIOS ROM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Memory Hole at 15MB - 16MB

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. The default of this field is set to **Disabled**.

The choice: Enabled, Disabled.

AGP Aperture Size (MB)

Select the size of 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.

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

On-Chip VGA Setting

On-Chip VGA

The choice: Enabled, Disabled.

On-Chip Frame Buffer Size

The choice: 1MB, 4MB, 8MB, 16MB, 32MB.

Boot Display

The choice: CRT, LFP, CRT+LFP, EFP, TV, CRT+EFP, CRT+TV, VBIOS Default.

Panel Number
The choice: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

Integrated Peripherals

```
          Phoenix – AwardBIOS CMOS Setup Utility
                    Integrated Peripherals

➢OnChip IDE Device            [Press Enter]      ┌──────────────────┐
➢Onboard Device               [Press Enter]      │    Item Help     │
➢SuperIO Device               [Press Enter]      │                  │
 Onboard Serial Port 3        [3E8]              │ Menu Level   ➢   │
 Serial Port 3 Use IRQ        [IRQ4]             │                  │
 Onboard Serial Port 4        [2E8]              │                  │
 Serial Port 4 Use IRQ        [IRQ3]             │                  │
 Onboard Serial Port 5        [4F8]              │                  │
 Serial Port 5 Use IRQ        [IRQ4]             │                  │
 Onboard Serial Port 6        [4E8]              │                  │
 Serial Port 6 Use IRQ        [IRQ3]             │                  │
 Watch Dog Timer Select       [Disabled]         │                  │
                                                 └──────────────────┘

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
   F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults
```

OnChip IDE Device

```
          Phoenix – AwardBIOS CMOS Setup Utility
                     OnChip IDE Device

 On-Chip Primary  PCI  IDE     [Enabled]         ┌──────────────────┐
 IDE Primary Master PIO        [Auto]            │    Item Help     │
 IDE Primary Slave PIO         [Auto]            │                  │
 IDE Primary Master UDMA       [Auto]            │ Menu Level   ➢   │
 IDE Primary Slave UDMA        [Auto]            │                  │
 On-Chip Secondary PCI IDE     [Enabled]         │                  │
 IDE Secondary Master PIO      [Auto]            │                  │
 IDE Secondary Slave PIO       [Auto]            │                  │
 IDE Secondary Master UDMA     [Auto]            │                  │
 IDE Secondary Slave  UDMA     [Auto]            │                  │
                                                 │                  │
 IDE HDD Block Mode            [Enabled]         │                  │
                                                 └──────────────────┘

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
   F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults
```

On-Chip Primary 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.

On-Chip Secondary PCI IDE

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

The choice: Enabled, Disabled.

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.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive and cable supports it and the operating environment includes a UDMA driver If your hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support. The System BIOS will also check the IDE cable. Only if the 80-way ATA66/100 cable is installed, the ATA66/100 models can be enabled by the OS driver. Otherwise, the system will be limited to run up to ATA33 mode.

The choice: Auto, Disabled.

IDE HDD Block Mode

If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Onboard Device

```
          Phoenix – AwardBIOS CMOS Setup Utility
                      Onboard Device
  USB Controller                [Enabled]        │     Item Help
  USB 2.0 Controller            [Enabled]        │
  USB Keyboard Support          [Disabled]       │
  USB Mouse Support             [Disabled]       │  Menu Level    ➢
  AC97 Audio                    [Auto]           │
  Init Display First            [PCI Slot]       │
                                                 │
                                                 │
                                                 │
                                                 │
                                                 │
                                                 │
                                                 │
  ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
    F5:Previous Values   F6:Fail-safe defaults     F7:Optimized Defaults
```

USB Controller

This should be enabled if your system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The choice: Enabled, Disabled.

USB 2.0 Controller

This entry is for disable/enable EHCI controller only. The BIOS itself may/may not have high speed USB support. If the BIOS has high speed USB support built in, the support will be automatically turn on when high speed device were attached.

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.

USB Mouse Support

The choice: Enabled, Disabled.

AC97 Audio

The choice: Auto, Disabled.

Init Display First

The choice: PCI Slot, Onboard/AGP.

SuperIO Device

```
          Phoenix – AwardBIOS CMOS Setup Utility
                      SuperIO Device
  Onboard FDC Controller       [Enabled]        │    Item Help
  Onboard Serial Port 1        [3F8/IRQ4]        │
  Onboard Serial Port 2        [2F8/IRQ3]        │
  Onboard Parallel Port        [378/IRQ7]        │  Menu Level    ➢
  Parallel Port Mode           [SPP]             │
x EPP Mode Select               EPP1.7           │
x ECP Mode Use DMA              3                │
  PWRON After PWR-Fail         [Off]             │
                                                 │
                                                 │
                                                 │
                                                 │
  ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
    F5:Previous Values    F6:Fail-safe defaults      F7:Optimized Defaults
```

Onboard FDC Controller

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, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled, Auto.

Onboard Parallel Port

This item allows you to determine onboard parallel port controller I/O address setting.

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

EPP Mode Select

Select EPP port type 1.7 or 1.9.

The choice: EPP1.7, 1.9.

ECP Mode Use DMA

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

The choice: 3, 1.

PWRON After PWR-Fail

The choice: Off, On, Former-Sts.

Onboard Serial Port 3/Port 4/Port 5/Port 6

The choice: 4F8, 3F8, 2F8, 4E8, 3E8, 2E8, Disabled.

Serial Port 3/Port 4/Port 5/Port 6 Use IRQ

The choice: IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10.

Watch Dog Timer Select

The choice: Enable, Disabled.

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.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                       Power Management Setup
┌──────────────────────────────────────────────────┬─────────────────────┐
│  Power-Supply Type              [ATX]             │      Item Help      │
│  ACPI Function                  [Enabled]         │                     │
│   Power Management              [User Define]     │   Menu Level   ➢    │
│  Video Off Method               [DPMS]            │                     │
│  Video Off In Suspend           [Yes]             │                     │
│  Suspend Mode                   [Disabled]        │                     │
│  HDD Power Down                 [Disabled]        │                     │
│  Soft-Off by PWR-BTTN           [Instant-Off]     │                     │
│  CPU THRM-Throttling            [50.0%]           │                     │
│  Wake-Up by PCI Card            [Disabled]        │                     │
│  Power On by Ring               [Disabled]        │                     │
│  Wake Up On LAN                 [Disabled]        │                     │
│  Resume by Alarm                [Disabled]        │                     │
│ x  Date (of Month) Alarm        0                 │                     │
│ x  Time (hh:mm:ss) Alarm         0 : 0  : 0       │                     │
│                                                   │                     │
│  ** Reload Global Timer Events **                 │                     │
│  Primary IDE 0                  [Disabled]        │                     │
│  Primary IDE 1                  [Disabled]        │                     │
│  Secondary IDE 0                [Disabled]        │                     │
│  Secondary IDE 1                [Disabled]        │                     │
│  FDD, COM, LPT Port             [Disabled]        │                     │
│  PCI PIRQ[A-D]#                 [Disabled]        │                     │
├──────────────────────────────────────────────────┴─────────────────────┤
│ ↑↓←→: Move  Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help│
│   F5:Previous Values   F6:Fail-safe defaults     F7:Optimized Defaults  │
└─────────────────────────────────────────────────────────────────────────┘
```

Power-Supply Type

This should be AT if you use AT power supply or ATX power supply but force to AT mode. This selection help BIOS provide the information to OS what kind power-supply the system use. The correct information provide to OS can avoid the Windows Shutdown issue.

The choice: AT, ATX.

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. Suspend Mode

There are three 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. Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Define	Allows you to set each mode individually. The Suspend mode ranges are from 1 min. to 1 hr. The HDD Power Down ranges are from 1 min. to 15 min. and disable.

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. Allows the BIOS to control video display card if it supports the DPMS feature.

Video Off In Suspend

This determines the if the turn off the video display when system enter suspend mode.

The choice: Yes, No.

Suspend Mode

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

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.

The choice: Disabled, 1 min, 2 min, 4 min, ….. 15 min.

Soft-Off by PWR-BTTN

The choice: Instant-Off, Delay 4 Sec.

CPU THRM-Throttling

The choice: 87.5%, 75.0%, 62.5%, 50.0%, 37.5%, 25.0%, 12.5%.

Wake-Up by PCI card

The choice: Enabled, Disabled.

Power On By Ring

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

The choice: Enabled, Disabled.

Wake Up On LAN

The choice: Enabled, Disabled.

Resume by Alarm

When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The choice: Enabled, Disabled.

Reload Global Timer Events

PM events are I/O events whose occurrence can prevent the system from entering a suspend mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled*, even when the system is in a Suspend down mode.

Primary/Secondary IDE 0/1
When *Enabled,* any activity from one of the listed system peripheral devices or IRQs wakes up the system.

The choice: Enabled, Disabled.

FDD, LPT & COM
When Enabled, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

The choice: Enabled, Disabled.

PCI PIRQ[A-D]#
When Enabled, any activity from one of the listed PCI IRQ signals wakes up the system.

The choice: Enabled, Disabled.

PnP/PCI Configuration Setup

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

```
┌─────────────────────────────────────────────────────────────────────┐
│          Phoenix – AwardBIOS CMOS Setup Utility                       │
│               PnP/PCI Configurations                                  │
├───────────────────────────────────────────┬───────────────────────────┤
│  Reset Configuration Data    [Disabled]    │        Item Help          │
│                                            │                           │
│  Resources Controlled By    [Auto(ESCD)]   │  Menu Level    ➢          │
│ x  IRQ Resources             Press Enter   │                           │
│                                            │  Default is Disabled. Select │
│  PCI/VGA Palette Snoop       [Disabled]    │  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 OS cannot │
│                                            │  boot                      │
├───────────────────────────────────────────┴───────────────────────────┤
│ ↑↓←→: Move  Enter: Select  +/-/PU/PD: Value  F10:Save  ESC: Exit F1:General Help │
│    F5:Previous Values    F6:Fail-safe defaults      F7:Optimized Defaults │
└─────────────────────────────────────────────────────────────────────┘
```

Reset Configuration Data

Default is 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 OS cannot boot.

The choice: Enabled, Disabled.

Resources controlled by

BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: Legacy ISA and PCI/ISA PnP.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

Choices are Enabled, Disabled.

PC Health Status

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

```
          Phoenix – AwardBIOS CMOS Setup Utility
                      PC Health Status
 CPU Warning Temperature        [Disabled]      |   Item Help
 Current System Temperature     31°C / 87°F     |
 Current CPUDIE Temperature     30°C / 86°F     | Menu Level  ➢
 Current Board Temperature      31°C / 87°F     |
 CPU FAN Speed                  0 RPM           |
 System FAN Speed               0 RPM           |
 Vcore                          1.12V           |
 +1.5V                          1.53V           |
 +3.3V                          3.48V           |
 +5V                            5.21V           |
 +12V                           12.46V          |
 -12V                           -11.62V         |
 -5V                            -5.20V          |
 VBAT(V)                        3.37V           |
 5VSB(V)                        5.18V           |
 CPU FAN                        [Enabled]       |
 SYSTEM FAN                     [Enabled]       |
 ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
    F5:Previous Values   F6:Fail-safe defaults    F7:Optimized Defaults
```

CPU Warning Temperature

Select the CPU over-heated warning temperature.

The choice: Disabled, 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°F, 63°C/145°F, 66°C/151°F, 70°C/158°F.

Current System Temperature

Show System Temperature.

Current CPUDIE Temperature

Shows CPUDIE Temperature.

Current Board Temperature

Shows Board Temperature.

CPU FAN Speed

Shows CPU FAN speed.

System FAN Speed

Shows System FAN speed.

Vcore/1.5V/3.3V/5V/12V/-12V/-5V/VBAT/5VSB Voltages

Shows Power rails voltage.

CPU FAN

The choice: Disabled, Enabled.

SYSTEM FAN

The choice: Disabled, Enabled.

Frequency/Voltage Control

```
                Phoenix – AwardBIOS CMOS Setup Utility
                         Frequency/Voltage Control
 ┌──────────────────────────────────────────┬────────────────────────┐
 │ Spread Spectrum                 [Enabled] │      Item Help         │
 │                                           │                        │
 │                                           │  Menu Level  ➢         │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 │                                           │                        │
 └──────────────────────────────────────────┴────────────────────────┘
 ↑↓←→: Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help
    F5:Previous Values    F6:Fail-safe defaults      F7:Optimized Defaults
```

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulation.
The spread spectrum technology also helps to alleviate the EMI.

The choice: Enabled, Disabled.

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. 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. 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.

Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? `Y`

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? `N`

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

CHAPTER 4 Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. There are a total of 1K port address space available. The following table lists the I/O port addresses used on the Industrial CPU Card.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial CPU Card. Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the Industrial CPU Card.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. POST Beep

Currently there are two kinds of beep codes 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.

The other code indicates that your **DRAM error** has occurred. This beep code consists of a single long beep repeatedly.