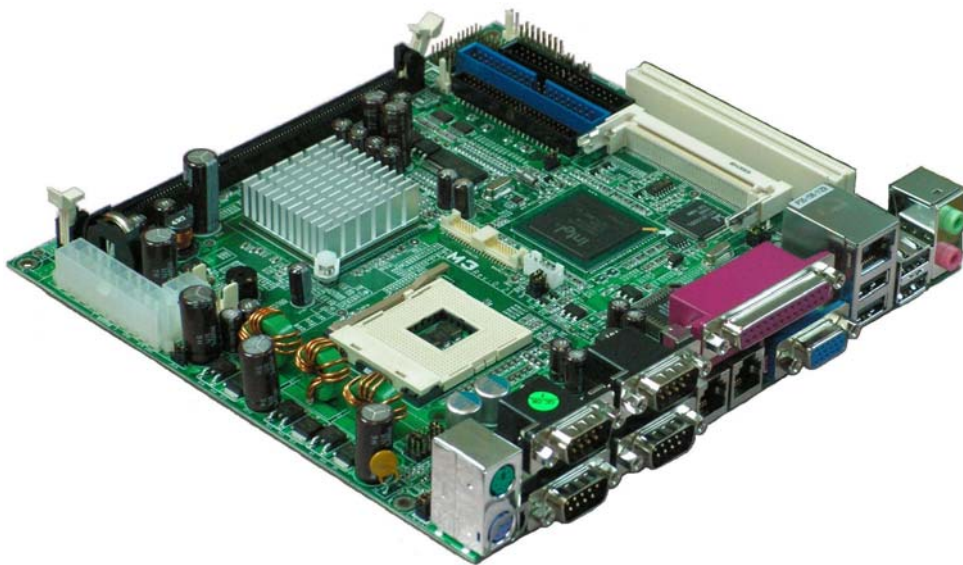


# EMB-M3

## INDUSTRIAL MOTHERBOARD



## User`s Manual

Version 1.2

---

## Copyright Notice

This publication is protected by copyright and all rights are reserved. No part of it may be reproduced or transmitted by any means or in any form, without prior consent of the original manufacturer.

The information in this document has been carefully checked and is believed to be accurate. However, the original manufacturer assumes no responsibility for any inaccuracies that may appear in this manual. In no event will the original manufacturer be liable for direct, indirect, special, exemplary, incidental, incidental or consequential damages resulting from any defect or omission in this manual, even if advised of possibility of such damages. The material contained herein is for informational purposes only.

## Acknowledgments

Award is a registered trademark of Award Software International, Inc. IBM, PS/2 are trademarks of International Business Machines Corporation.

Intel, Pentium4 are registered trademarks of Intel Corporation.

Microsoft Windows is a registered trademark of Microsoft Corporation.

All other product names or trademarks are properties of their respective owners.

# Contents

<b>Introduction .....</b>	<b>1</b>
<b>Chapter 1 Features &amp; Specifications .....</b>	<b>2</b>
Features .....	3
Specifications.....	4
<b>Chapter 2 Jumper setting &amp; Connectors.....</b>	<b>9</b>
<b>Jumpers on the M3 .....</b>	<b>10</b>
Jumper Locations on the M3 .....	11
JP1, JP2, JP4, JP5, JP13, JP14: COM Power Selection .....	12
JP3: RJ12 Output Voltage Selection .....	12
JP6: On-Board LAN Enable/Disable Selection.....	12
JP7: Inverter Power Jumper.....	12
JP8: LCD PANEL Power Selection .....	13
JP9: Clear CMOS RAM Data.....	13
JP15: CF Card Mode Selection .....	13
JP16: Power Supply Mode Selection.....	14
JP17: WDT Time Out Reset Selection .....	14
COM4MODE1: COM4 RS232/RS422/RS485 Selection ..	14
<b>Connectors on the M3 .....</b>	<b>15</b>
Connector Locations on the M3 .....	16
<b>Front Panel Connector .....</b>	<b>17</b>
BACKLIGHT Connector .....	20
RJ12 Connector .....	20
EIDE Connectors.....	21
Floppy Drive Connector .....	23
COM1~3 Serial Ports .....	24
COM4 Serial Ports .....	24
COM5, COM6 Serial Ports .....	25
INT_KBMS Connector .....	25
LPT Port .....	26
PS/2 Keyboard & Mouse Connector .....	27
VGA Connector.....	27
CPU Fan Power Connector .....	28
System FAN Power Connector.....	28
DRVPWR1, DRVPWR2 Connectors.....	28

USB34 Connectors.....	29
USB56 Connectors.....	29
ATX Power Connector.....	30
ATX_12V Power Connector.....	31
LANRJ45+USBx2 Connectors .....	31
LAN- RJ45 Connectors.....	32
Audio Connectors.....	32
CD_IN Connector .....	32
LVDS LCD Connector.....	33
DIO1 and DIO2 Connectors.....	34
AUDIO_INT Connector.....	34
<b>Chapter 3 BIOS Setup .....</b>	<b>35</b>
<b>BIOS Introduction.....</b>	<b>36</b>
Starting Setup .....	36
Using Setup .....	37
Getting Help .....	38
In Case of Problems .....	38
<b>Main Menu.....</b>	<b>39</b>
<i>Standard CMOS Features .....</i>	<i>39</i>
<i>Advanced BIOS Features .....</i>	<i>39</i>
<i>Advanced Chipset Features.....</i>	<i>40</i>
<i>Integrated Peripherals .....</i>	<i>40</i>
<i>Power Management Setup.....</i>	<i>40</i>
<i>PnP / PCI Configuration.....</i>	<i>40</i>
<i>PC Health Status .....</i>	<i>40</i>
<i>Frequency/Voltage Control.....</i>	<i>40</i>
<i>Load Fail-Safe Defaults .....</i>	<i>40</i>
<i>Load Optimized Defaults.....</i>	<i>40</i>
<i>Supervisor / User Password.....</i>	<i>40</i>
<i>Save &amp; Exit Setup.....</i>	<i>40</i>
<i>Exit Without Save .....</i>	<i>40</i>
<b>Standard CMOS Setup .....</b>	<b>41</b>
Primary HDDs / Secondary HDDs .....	43
Drive A / Drive B.....	45
Video .....	45
Halt On.....	45
<b>Advanced BIOS Features .....</b>	<b>46</b>
<b>CPU Feature .....</b>	<b>47</b>
Thermal Management .....	47
Limit CPUID MaxVal.....	47
Virus Warning.....	47

---

CPU L1 & L2 Cache .....	48
Quick Power On Self Test.....	48
First/Second/Third/Other Boot Device.....	48
Swap Floppy Drive.....	48
Boot Up Floppy Seek .....	48
Boot Up NumLock Status .....	48
Gate A20 Option.....	49
Typematic Rate Setting .....	49
Typematic Rate (Chars/Sec).....	49
Typematic Delay (Msec) .....	49
Security Option.....	49
APIC Mode.....	50
MPS Version Control For OS.....	50
OS Select For DRAM > 64MB .....	50
Report No FDD For WIN 95 .....	50
<b>Advanced Chipset Features .....</b>	<b>51</b>
DRAM Settings .....	51
DRAM Timing Selectable .....	52
CAS Latency Time .....	52
Active to Precharge Delay .....	52
DRAM RAS# to CAS# Delay .....	52
DRAM RAS# Precharge .....	52
DRAM Data Integrity Mode.....	53
System BIOS Cacheable.....	53
Video BIOS Cacheable.....	53
Memory Hole at 15MB - 16MB .....	53
AGP Aperture Size (MB) .....	53
On-Chip VGA Setting .....	54
<i>On-Chip VGA</i> .....	54
<i>On-Chip Frame Buffer Size</i> .....	54
<i>Boot Display</i> .....	54
<i>Panel Number</i> .....	54
<b>Integrated Peripherals.....</b>	<b>55</b>
<b>OnChip IDE Device .....</b>	<b>55</b>
On-Chip Primary PCI IDE .....	56
On-Chip Secondary PCI IDE .....	56
IDE Primary/Secondary Master/Slave PIO .....	56
IDE Primary/Secondary Master/Slave UDMA .....	56
IDE HDD Block Mode .....	56
<b>Onboard Device .....</b>	<b>57</b>
USB Controller .....	57

---

USB 2.0 Controller.....	57
USB Keyboard Support.....	57
USB Mouse Support .....	58
AC97 Audio .....	58
Init Display First .....	58
<b>SuperIO Device.....</b>	<b>58</b>
Onboard FDC Controller.....	58
Onboard Serial Port 1/Port 2 .....	58
Onboard Parallel Port.....	59
Parallel Port Mode.....	59
EPP Mode Select.....	59
ECP Mode Use DMA.....	59
PWRON After PWR-Fail.....	59
Onboard Serial Port 3/Port 4/Port 5/Port 6.....	59
Serial Port 3/Port 4/Port 5/Port 6 Use IRQ .....	59
Watch Dog Timer Select.....	59
<b>Power Management Setup.....</b>	<b>60</b>
Power-Supply Type.....	60
ACPI Function .....	61
Power Management.....	61
Video Off Method .....	61
Video Off In Suspend.....	62
Suspend Mode.....	62
HDD Power Down .....	62
Soft-Off by PWR-BTTN.....	62
CPU THRM-Throttling .....	62
Wake-Up by PCI card .....	62
Power On By Ring .....	62
Wake Up On LAN .....	62
Resume by Alarm.....	63
Reload Global Timer Events .....	63
<i>Primary/Secondary IDE 0/1 .....</i>	<i>63</i>
<i>FDD, LPT &amp; COM.....</i>	<i>63</i>
<i>PCI PIRQ[A-D]#.....</i>	<i>63</i>
<b>PnP/PCI Configuration Setup.....</b>	<b>64</b>
Reset Configuration Data .....	64
Resources controlled by .....	65
IRQ Resources .....	65
PCI/VGA Palette Snoop.....	65
<b>PC Health Status .....</b>	<b>66</b>
CPU Warning Temperature.....	66

---

Current System Temperature.....	66
Current CPUDIE Temperature .....	66
Current Board Temperature.....	66
CPU FAN Speed.....	67
System FAN Speed.....	67
Vcore/1.5V/3.3V/5V/12V/-12V/-5V/VBAT/5VSB Voltages .....	67
CPU FAN .....	67
SYSTEM FAN .....	67
<b>Frequency/Voltage Control.....</b>	<b>68</b>
Spread Spectrum.....	68
<b>Load Fail-Safe Defaults .....</b>	<b>69</b>
<b>Load Optimized Defaults .....</b>	<b>69</b>
<b>Supervisor/User Password Setting .....</b>	<b>70</b>
<b>Exit Selecting .....</b>	<b>71</b>
Save & Exit Setup .....	71
Exit Without Saving .....	71
<b>CHAPTER 4 Appendix.....</b>	<b>72</b>
<b>A. I/O Port Address Map .....</b>	<b>73</b>
<b>B. Interrupt Request Lines (IRQ) .....</b>	<b>74</b>
<b>C. POST Beep.....</b>	<b>75</b>

---

# Introduction

This manual is designed to give you information on the M3 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 .....	3
Specifications.....	4

---

## **Features**

- Intel Pentium4 Main Board supports Socket478 with customized Heat sink kit ready.
- Compact design for Panel PC, POS, Thin-client, Network PC and Terminals.
- Flexible design support both Desktop P4 and Mobile P4 CPU.
- AC97 Audio Codec support 5.1 Channels 3D Surrounding audio.
- Multiple I/O support, up to 6 x USBs, 6x COM ports and 16-bits DIO.

---

## Specifications

- **Processor Support:**
  - One Socket 478 supports single Intel® Pentium® 4 series processors
    - ✓ Intel® Celeron® based on 0.13  $\mu$  core, 400MHz FSB, up to 1.80GHz.
    - ✓ Intel® Celeron® based on 90nm core, 400MHz FSB, up to 2.80GHz.
    - ✓ Intel® Pentium® 4 based on 0.13  $\mu$  core, 512KB L2, 400MHz FSB, with HT Technology, up to 2.80 GHz.
    - ✓ Intel® Pentium® 4 based on 90nm  $\mu$  core, 1MB L2, 400MHz FSB, with HT Technology, up to 2.80 GHz.
    - ✓ Intel® Pentium4-Mobile 1.2GHz on 90nm  $\mu$  core, 256KB L2, 400MHz FSB.
  - VRD 10.2 specification Complaint design.
  - Support Intel Mobile Pentium4 CPU.
  
- **System Memory:**
  - One DDR DIMM 184-pins Sockets support DDR 200/266 unregistered non-ECC up to 1.0 GB.
  
- **Video Controller:**
  - 852GM 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 support.
  
- **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 a Jumper. 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 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-pin/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 speed.
    - 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 RTL8100BL 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:**
    - P IDE controller build in ICH4 support up to UltraDAM100.
    - One 40-pins Box header (2.54mm pitch) to support 3.5" HDD, CDROM or DVD player.
    - One 44-pins Box-header (2m/m pitch) support 2.5" ATA devices, Slim CD-ROM or DOM FlashDisk.
    - One CompactFlash-II socket on back side, 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 ALC201A 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 2mm pin-header to support 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. Support 8-In and 8-out.
    - Support 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.
    - 852GM 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 124pins Type-III Mini-PCI socket to support Wireless LAN card or other Mini-PCI modules.
  - **Power Connector:**
    - One ATX 20-pins Power connector.
    - Two 2-pins power connector 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 852GM chipset.
    - Customized Cooler kit for Pentium4 or Mobile Pentium4 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 Range.
    - Relative Humidity: 5~95%, non-condensing.
  
  - **Dimensions:**
    - 200mm(W) x 190 mm(L).

---

This page is intentionally left blank.

---

# Chapter 2

## Jumper setting & Connectors

<b>Jumpers on the M3 .....</b>	<b>10</b>
<b>Connectors on the M3 .....</b>	<b>15</b>



## Jumpers on the M3

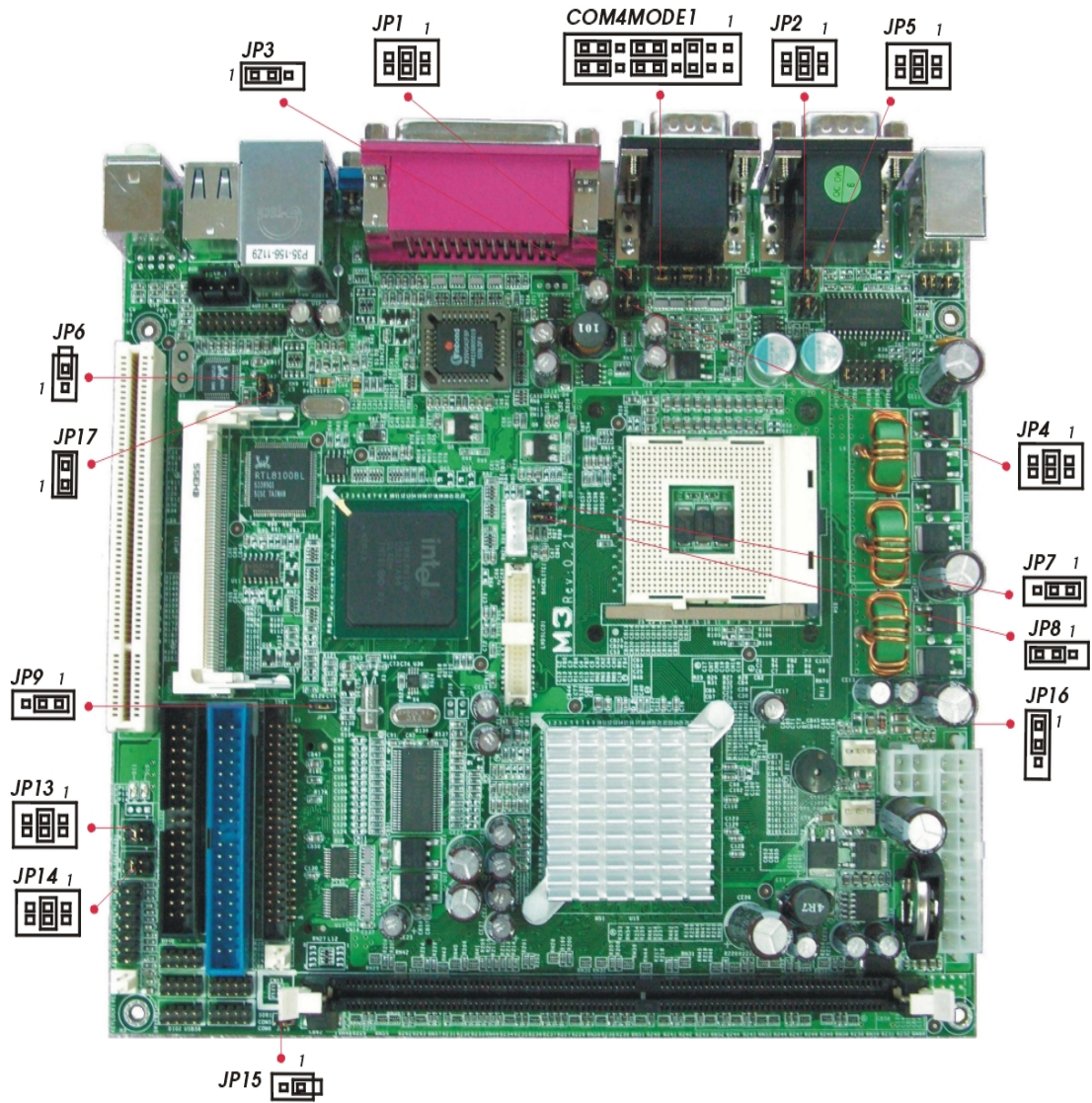
The jumpers on the M3 allow you to configure your Main Board according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the jumpers on M3 and their respective functions.

Jumper Locations on the M3 .....	11
JP1, JP2, JP4, JP5, JP13, JP14: COM Power Selection .....	12
JP3: RJ12 Output Voltage Selection .....	12
JP6: On-Board LAN Enable/Disable Selection .....	12
JP7: Inverter Power Jumper .....	12
JP8: LCD PANEL Power Selection .....	13
JP9: Clear CMOS RAM Data .....	13
JP15: CF Card Mode Selection .....	13
JP16: Power Supply Mode Selection .....	14
JP17: WDT Time Out Reset Selection.....	14
COM4MODE1:COM4 RS232/RS422/RS485 Selection ...	14

---

## Jumper Locations on the M3

---



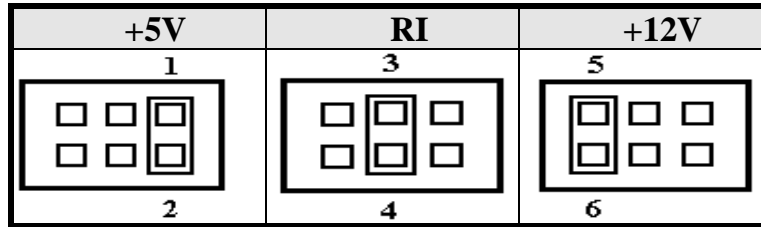
---

### 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.

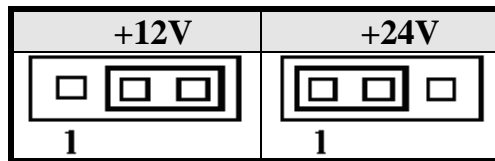
JP1: COM3, JP2: COM2, JP4: COM4, JP5: COM1, JP13: COM5, JP14: COM6.



---

### JP3: RJ12 Output Voltage Selection

---



---

### JP6: On-Board LAN Enable/Disable Selection

---

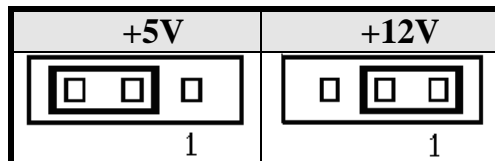
On-Board Fast Ethernet LAN chips can be disabled by shorting the JP6 jumper.

Port #	Disable	Enable
LAN	<p>1 JP6</p>	<p>1 JP6</p>

---

### JP7: Inverter Power Jumper

---

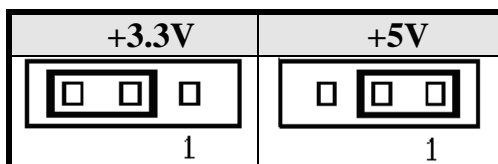


---

### 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 need to check the LCD panel spec and adjust this jumper and make Panel work in specified power rail.



### JP9: Clear CMOS RAM Data

---

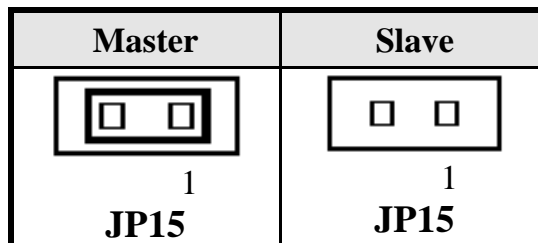
This 3-pin Jumper allows the user to disconnect the built-in 3V battery power to clear the information stored in the CMOS RAM. To clear the CMOS data: (1) Turn off the system power, (2) Remove Jumper cap from pin1&2, (3) Short the pin2 and pin3 for three seconds, (4) Put Jumper cap back to pin1& 2. (5) 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

### JP15: CF Card Mode Selection

---

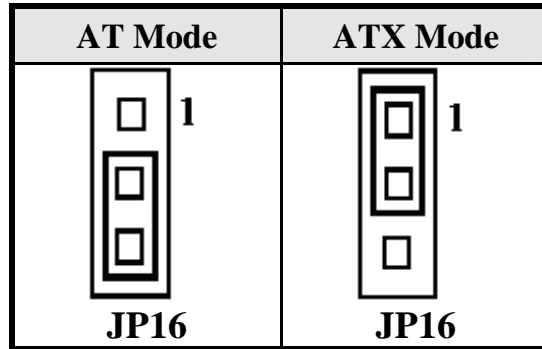
This Jumper is to select the CF works on Secondary Channel master device or Slave device.



---

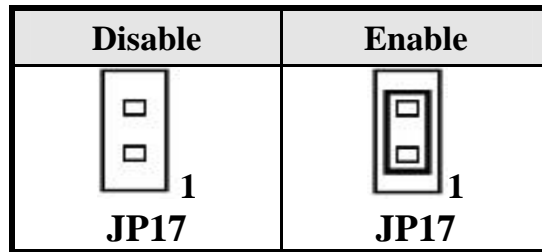
**JP16: Power Supply Mode Selection**

---



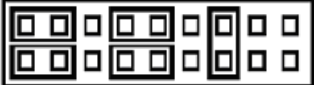

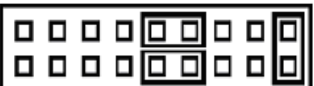
**JP17: WDT Time Out Reset Selection**

---



**COM4MODE1: COM4 RS232/RS422/RS485 Selection**

---

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

---

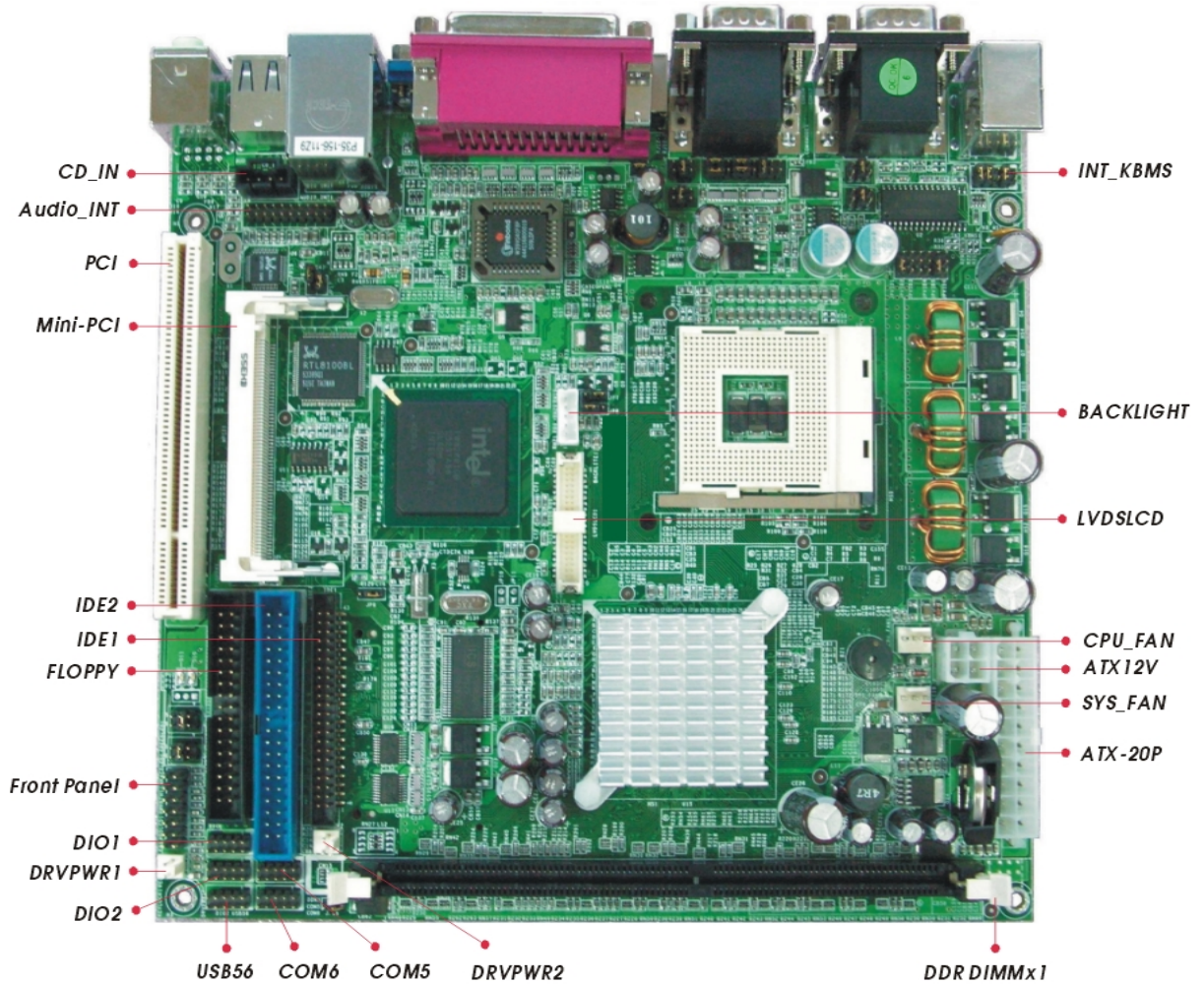
## Connectors on the M3

The connectors on the M3 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on M3 and their respective page number.

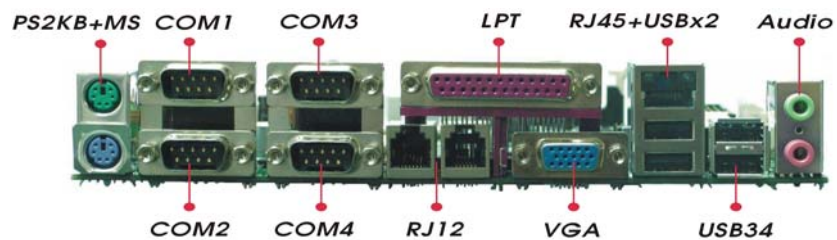
Connector Locations on the M3 .....	16
Front Panel Connector.....	17
BACKLIGHT Connector .....	20
RJ12 Connector.....	20
EIDE Connectors .....	21
Floppy Drive Connector.....	23
COM1~COM3 Serial Ports .....	24
COM4 Serial Ports .....	24
COM5, 6 Serial Ports .....	25
INT_KBMS Connector .....	25
LPT Port.....	26
PS/2 Keyboard & Mouse Connector.....	27
VGA Connector .....	27
CPU Fan Power Connector .....	28
System Fan Power Connector .....	28
DRVPWR1, DRVPWR2 Connectors .....	28
USB34 Connectors.....	29
USB56 Connectors.....	29
ATX Power Connector.....	30
ATX_12V Power Connector.....	31
LANRJ45+USBx2 Connectors .....	31
LAN- RJ45 Connectors.....	32
Audio Connectors .....	32
CD_IN Connector .....	32
LVDSLCD Connectors .....	33
DIO1,2 Connectors .....	34
AUDIO_INT Connector.....	34

## Connector Locations on the M3

(1)

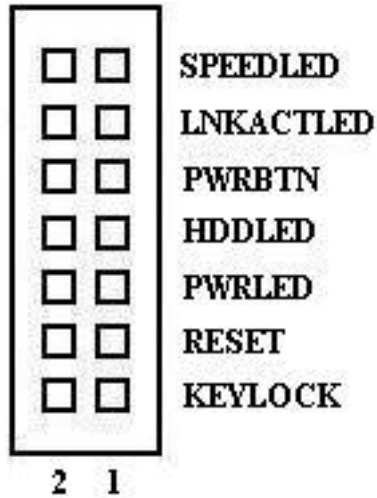


(2)



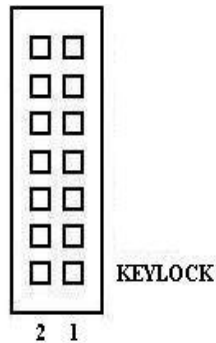
## Front Panel Connector

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.



### ➤ Keylock

For security or other purpose, short these two pins together will disable the keyboard functions.

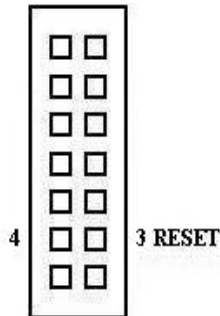


Keylock Pin #	Signal Name
1	Keylock-
2	GND



➤ **RESET Switch**

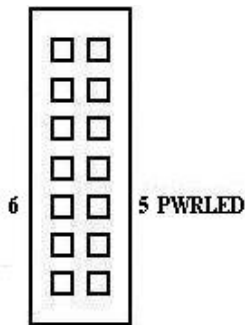
The reset switch allows the user to reset the system without turning the main power switch Off and then On. Orientation is not required when making a connection to this header.



RESET Pin #	Signal Name
3	Reset
4	Ground

➤ **Power-On LED**

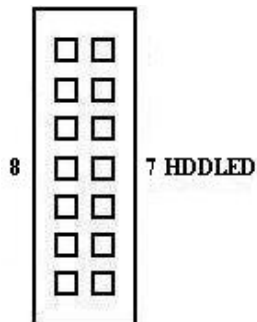
This connector allows users to connect to Front Panel Power indicator.



PWR LED Pin #	Signal Name
5	+5V
6	Ground

➤ **IDE Hard Disk LED Connector**

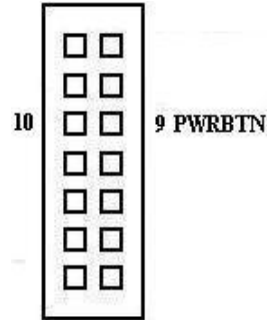
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



IDE LED Pin #	Signal Name
7	IDE_ACT
8	Ground

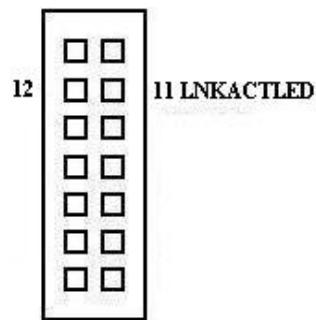
➤ **ATX Power ON/OFF Button**

This 2-pin connector acts as the “Power Supply On/Off Switch” on the SBC card. When pressed, the switch will force the SBC card to power on. When pressed again, it will force the SBC card to power off.



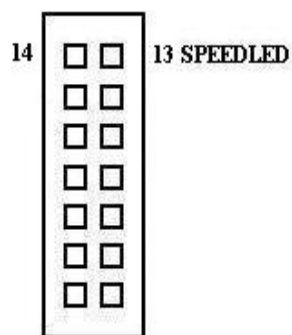
PWR BTN Pin #	Signal Name
9	PWR-BTN
10	GND

➤ **LNKACTLED**



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

➤ **SPEEDLED**

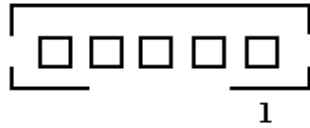


SPEED LED Pin #	Signal Name
13	SPDLED+
14	SPDLED-

---

## BACKLIGHT Connector

---

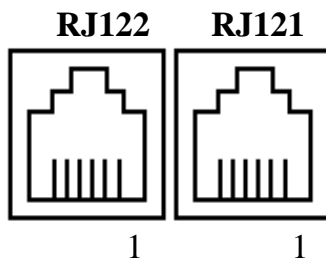


Pin #	Signal Name
1	+12V or 5V
2	GND
3	Brightness
4	ON/OFF
5	GND

---

## RJ12 Connector

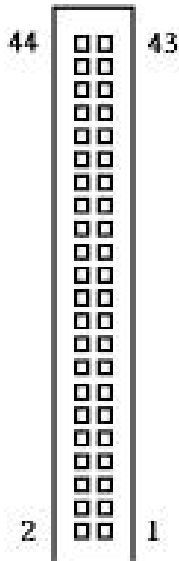
---



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

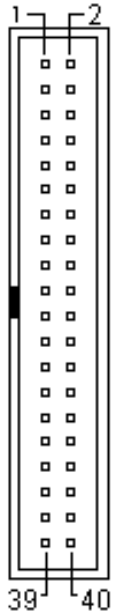
## EIDE Connectors

### 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

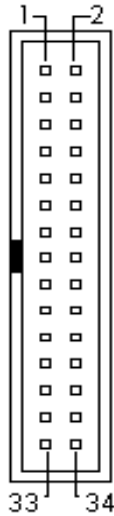
### Secondary IDE Connector



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 will support up to 2.88MB floppy drives.



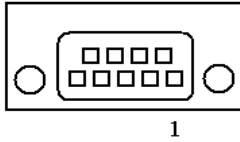
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	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, is the onboard COM1~3 serial port of the M3. The following table shows its pin assignments.

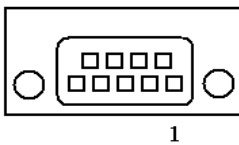


Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V, Ring-IN or +12V

## COM4 Serial Ports

---

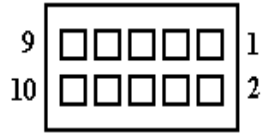
COM4, a 9-pin D-Sub male connector, is the onboard COM4 serial port of the M3. The following table shows its pin assignments.



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

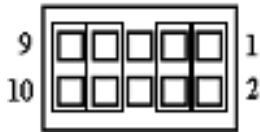
COM5, COM6, a 10-pin header connector, is the onboard COM5, COM6 serial port of the M3. The following table shows its pin assignments.



Pin #	RS232 Mode 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 connectors.

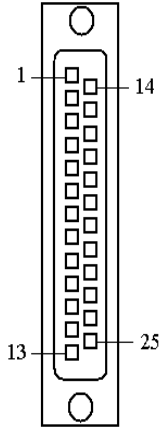


Signal Name	Pin	Pin	Signal Name
JPKBDAT	1	2	KBDAT
JPKBCLK	3	4	KBCLK
BKBVCC	5	6	GND
JPMSDAT	7	8	MSDAT
JPMSCLK	9	10	MSCLK



## LPT Port

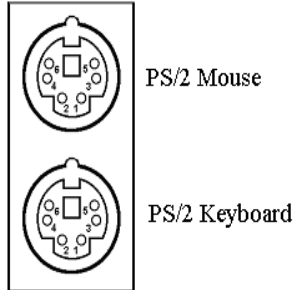
The LPT parallel port is a standard DSUB 25-pins Female connector . It can be configured as EPP or ECP or SPP mode.



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

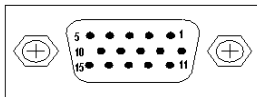
The following table describes the pin assignment of PS/2 Keyboard and Mouse connector.



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:



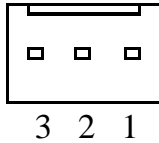
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	5VCDA
HSYNC	13	14	VSYNC
5VCLK	15		

---

## CPU Fan Power Connector

---

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

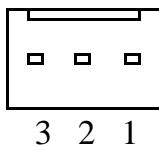


Pin #	Signal Name
1	Ground
2	+12V
3	Rotation

## System FAN Power Connector

---

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

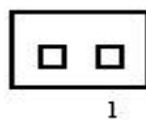


Pin #	Signal Name
1	Ground
2	+12V
3	Rotation

## DRVPWR1, DRVPWR2 Connectors

---

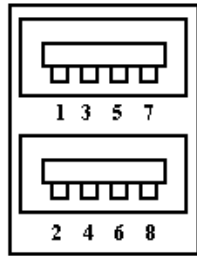
This is a 2-pin header for the DRVPWR1, 2. The connectors must be a 5V.



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.



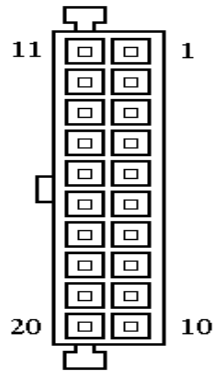
USB6 Pin#	USB5 Pin #	Signal Name
10	1	N.C.
2	9	+5V
8	3	Ground
4	7	USB-
6	5	USB+

---

## 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

---

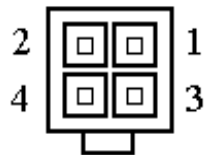
## ATX\_12V Power Connector

---

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.



ATX\_12V

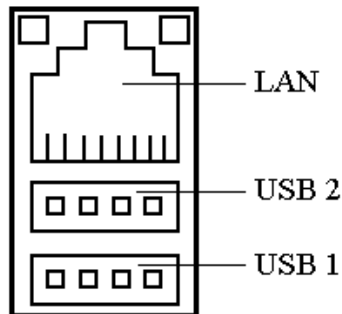
Pin #	Signal Name
1	GND
2	GND
3	+12V
4	+12V

---

## LANRJ45+USBx2 Connectors

---

Below pictures show 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.

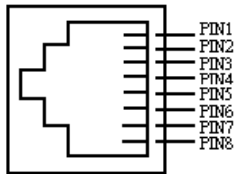
If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.

---

## LAN- RJ45 Connectors

---

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 Connectors

---

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

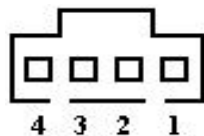


---

## CD\_IN Connector

---

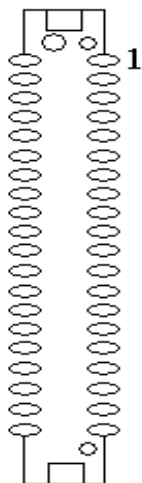
CD\_IN connector is designed for wire the CD\_ROM audio signals to the on-board Audio CODEC.



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:

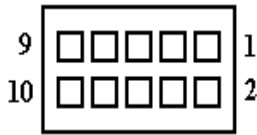


Signal Name	Pin #	Pin #	Signal Name
+12V/+5V	1	2	+12V/+5V
GND	3	4	GND
LCDVDD 5V/3.3V	5	6	LCDVDD 5V/3.3V
GND	7	8	GND
BRIGHTNES	9	10	BCKLITE_ON
LVDS_GND	11	12	LVDS_GND
CHA_TX0+	13	14	CHB_TX0+
CHA_TX0-	15	16	CHB_TX0-
LVDS_GND	17	18	LVDS_GND
CHA_TX1+	19	20	CHB_TX1+
CHA_TX1-	21	22	CHB_TX1-
LVDS_GND	23	24	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-



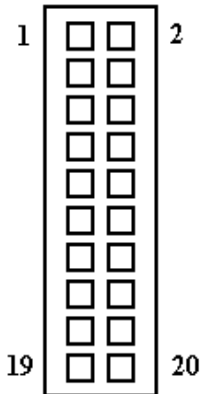
## DIO1 and DIO2 Connectors

DIO port support 8 digital I/O bits. Each bit can be configured as Input or outputs 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 M3 CPU card. The topics covered in this chapter are as follows:

<b>BIOS Introduction .....</b>	<b>36</b>
<b>Main Menu .....</b>	<b>39</b>
<b>Standard CMOS Setup .....</b>	<b>41</b>
<b>Advanced BIOS Features.....</b>	<b>46</b>
<b>Advanced Chipset Features .....</b>	<b>51</b>
<b>Integrated Peripherals.....</b>	<b>55</b>
<b>Power Management Setup .....</b>	<b>60</b>
<b>PnP/PCI Configurations .....</b>	<b>64</b>
<b>PC Health Status.....</b>	<b>66</b>
<b>Frequency/Voltage Control.....</b>	<b>68</b>
<b>Load Fail-Safe Defaults .....</b>	<b>69</b>
<b>Load Optimized Defaults.....</b>	<b>69</b>
<b>Supervisor/User Password Setting.....</b>	<b>70</b>
<b>Exit Selecting .....</b>	<b>71</b>

---

## **BIOS Introduction**

This Chapter discusses Award™ Setup program built into the M3 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 M3 SBC is a custom version of an industry standard BIOS. This means that it supports Intel PentiumIV 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 M3 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.



---

### **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		Item Help
Standard CMOS Features		
Date(mm:dd:yy):	Mon, Feb 8 2004	Menu Level ➤  Change the day, month, year and century
Time(hh:mm:ss)	16 : 19 : 20	
➤ IDE Primary Master	[None]	
➤ IDE Primary Slave	[None]	
➤ IDE Secondary Master	[None]	
➤ 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

<b>Item</b>	<b>Options</b>	<b>Description</b>
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 size, head... on this channel
Capacity	0 MB	
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.

<b>Item</b>	<b>Options</b>	<b>Description</b>
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]	
Second Boot Device	[HDD-0]	Allows you to choose the
Third Boot Device	[USB-HDD]	VIRUS warning feature for
Boot Other Device	[Enabled]	IDE Hard Disk boot sector
Swap Floppy Drive	[Disabled]	protection. If this function is
Boot Up Floppy Seek	[Disabled]	enabled and someone
Boot Up NumLock Status	[Off]	attempt to write data into
Gate A20 Option	[Fast]	this area, BIOS will show a
Typematic Rate Setting	[Disabled]	warning message on screen
x Typematic Rate (Chars/Sec)	6	and alarm beep
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 Limit CPUID MaxVal	Thermal Monitor 1 [Disabled]	Item Help
		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]	Item Help
➤ Onboard Device	[Press Enter]	
➤ 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]	Item Help
IDE Primary Master PIO	[Auto]	
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]	
AC97 Audio	[Auto]	
Init Display First	[PCI Slot]	
		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

---

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

Phoenix – AwardBIOS CMOS Setup Utility PnP/PCI Configurations		
Reset Configuration Data	[Disabled]	Item Help
Resources Controlled By x IRQ Resources	[Auto(ESCD)] Press Enter	Menu Level ➤
PCI/VGA Palette Snoop	[Disabled]	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
↑↓←→: 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	Menu Level >
Current CPUDIE Temperature	30°C / 86°F	
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 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. 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

I/O Port Address Map .....	73
Interrupt Request Lines(IRQ) .....	74
POST Beep .....	75

---

## 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.