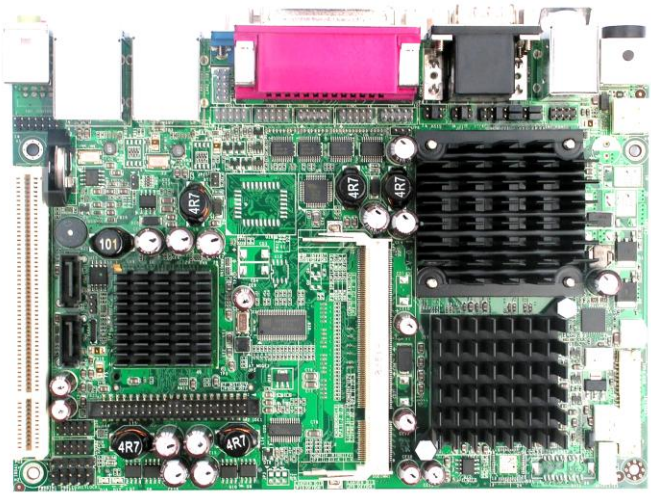
# NASA-M6

**Intel® Atom N270 Embedded Main-Board**



# User's Manual

Version 1.0

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# Contents

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# Introduction

This manual is designed to give you information on the M6 Industrial Main Board.
The topics covered in this manual are as follows:

- ✓ **Features**
- ✓ **Specification**
- ✓ **Jumper setting and Connectors**
- ✓ **BIOS Setup**
- ✓ **Appendix**

# Chapter 1 Features & Specifications

# ❖*Features*

- Intel Atom Processor N270 on board.
- 190x135mm only Compact size design with Rich I/O functions.
- Multiple I/O functions: 8 x USB2.0, 6 x COM ports, 2 x SATA, 1 x IRDA, 1x PIDE, 1x CF, 1x LPT.
- Multiple Display functions: CRT, Dual 24-bits LVDS LCD, TV-OUT and DVI (option).
- Low power consumption for fanless operation.
- Single DC +12V input power with AC/DC adapter.

# ❖Specifications

***Processor***
- Intel Atom processor N270 on board.
- 1.6GHz Core Speed with Hyper-threading support.
- 533MHz front side bus speed.

***BIOS***
- Award Standard PnP Flash BIOS 6.0.
- 8Mbit FlashROM with BootBlock for Fail-safe.

***System Memory***
- One DDR2 SO-DIMM Sockets.
- Supports DDR2-533 non-ECC memory up to 2.0 GB.

***Chipset***
- Intel 945GSE and ICH7M chipset.

***Video***
- Intel 945GSE Integrated GMA950 graphic engine.
- One D-Sub Female connector for CRT displays.
- One 40-pins connector for Dual 18/24-bits LVDS LCD.
- One 20-pins connector for DVI displays (option).
- One Mini-DIN 7-pins connector to support TV-OUT
- Support dual Independent display, Display devices can be selectable by BIOS or graphic drivers.

***10/100M/1000M Ethernet***
- Two Realtek RT8111C on board for Dual Gigabit LAN support.

***On Board I/O***
- Winbond 83627HF LPC I/F Super I/O chip.
- Six serial ports as COM1~COM6. COM2 is RS232/422/485 selectable by jumper.
- COM1 and COM2 are D-Sub 9-pins male on rear panel. Pin9 is powered with either +5V or +12V by jumper.
- COM3~COM6 are pin-headers for internal connections.
- One Parallel port supports SPP/ECP/EPP mode.
- 1 x IrDA port.

***PIDE and SATA***

- PIDE controller built in ICH7M support up to UltraDMA mode 5 or ATA100 speed.
- One standard 44-pins box header to supports 2.5" HDD or DOM Flash Disk.
- Two SATA connectors from ICH7M support SATA-I and SATA-II devices.
- One 50-pins CF-II socket for Compact Flash Card.

***Watchdog Timer***

- Programmable watchdog timer for 1~255 seconds.

***CMOS***

- On-board RTC with 242 bytes of Battery-back CMOS RAM.

***Audio***

- RealTek ALC888 High-Definition Audio chip on-board.
- Two Audio-Jacks on rear for Audio Line-OUT and MIC.

***Power***

- Single DC 12V input with 4-pins Mini-DIN connector.
- Supplies +5V and +12V output power for peripheral devices and LCD panel

***Software Compatibility***

- Microsoft windows: Win2K, Win XP 32-bits, Vista 32-bits.
- Linux 32-bits and DOS 6.22.

***Cooling***

- Two cooling FAN connectors close to CPU for CPU cooler and System FAN.

***Dimensions***

- 190mm (W) x 135mm (L).
- 4 screw holes on four corners.

***Operating Temperature***

- 0 to 60 °C operating Range.
- Relative Humility: 5~95%, non-condensing.

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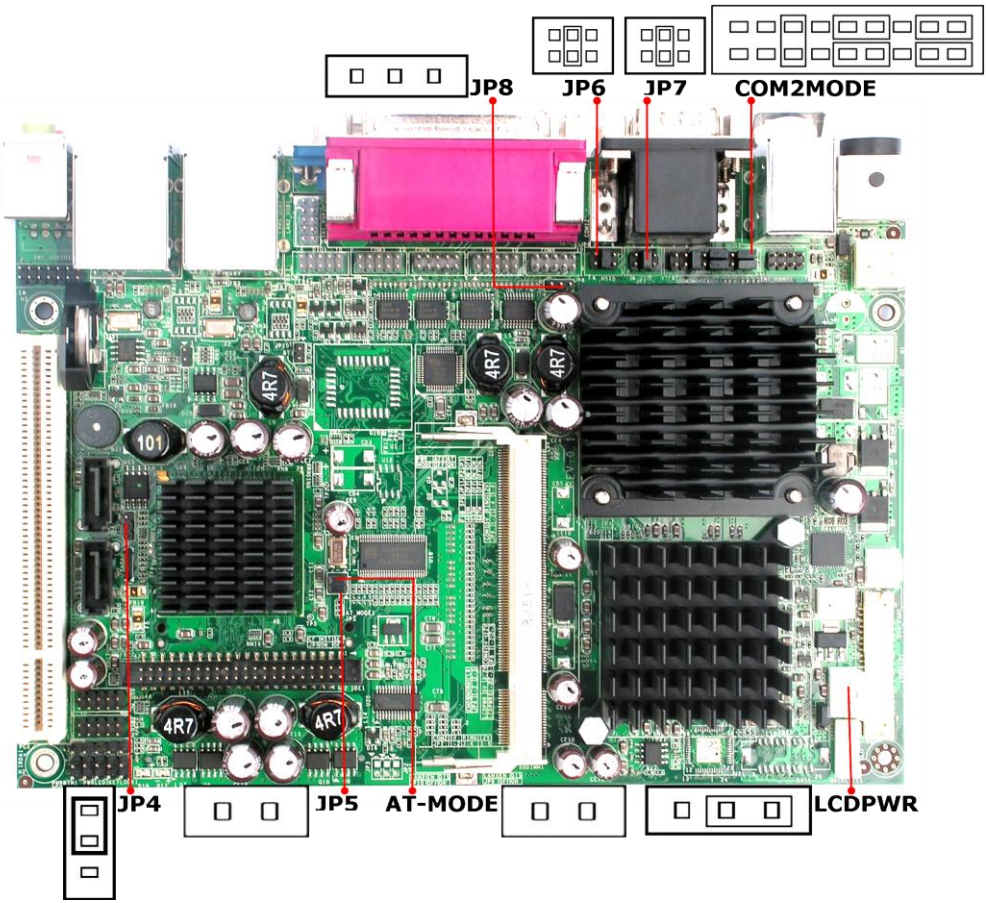
# Chapter 2 Jumper setting & Connectors

# 2.1 Jumpers on the M6

The jumpers on the M6 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 M6 and their respective functions.

## Jumper Locations on the M6



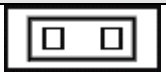
## JP4: Clear CMOS RAM Data

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.

| COMS | NORM | CLR |
|---|---|---|
| JP4 | 1-2  | 2-3  |

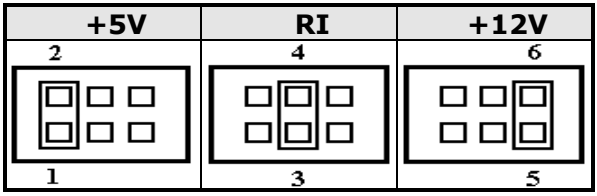
## JP5: CF Card Mode Selection

This Jumper is to select the CF works as Secondary Channel Master device or Slave device.

| Master | Slave |
|---|---|
|  JP5 |  JP5 |

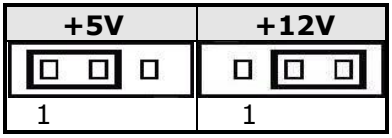
## JP6, JP7: COM Power Selection

JP6, JP7 can be used to select the COM supple power: +5V, Ring-IN or +12V.
JP6: COM1 Pin9 power or Ring-IN
JP7: COM2 pin9 power or Ring-IN



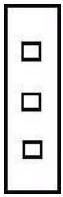

## JP8: COM6 Power Pin (Pin9)

JP8: COM6 Pin9 power.

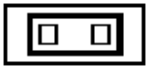
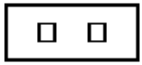


## LCDPWR: LCD PANEL Power Selection

LCDPWR can be used to select the Panel LCD supple power: +3.3V or +5V.The default setting is on +3.3V.User need to check the LCD panel spec and adjust this jumper to make Panel work in specified power rail. This Jumper serves LVDS LCD connector.

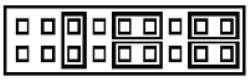
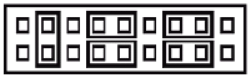
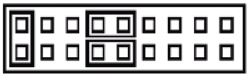
| LCDPWR | +5V | +3.3V |
|---|---|---|
| 1 | 1 | 1 |
|  |  |  |

## AT MODE: AT Mode Selection

| AT Mode | ATX Mode |
|---|---|
|  |  |
| 1 | 1 |

## COM2MODE: RS232/RS422/RS485

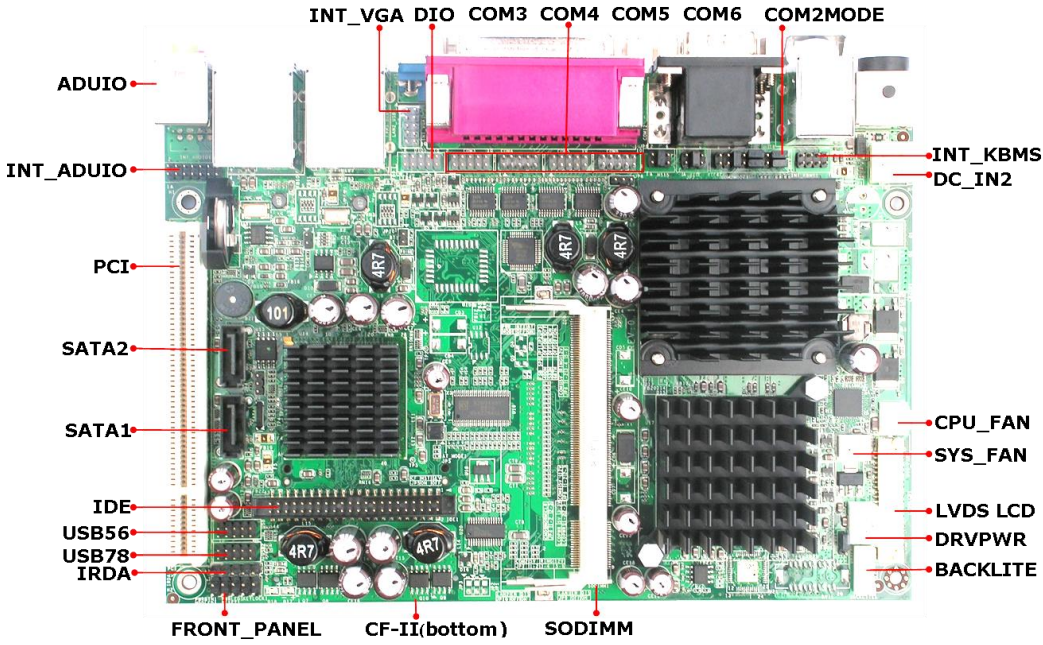
COM2 support multi-protocols include RS232, RS422 and RS485, while COM3, COM4. COM6 and COM6 support diffused RS232 protocol.
The Protocols of COM2 can be set up through jumpers.
COM2MODE: COM2 Protocols selection.
The pin-out for each mode is illustrated on next chapter.

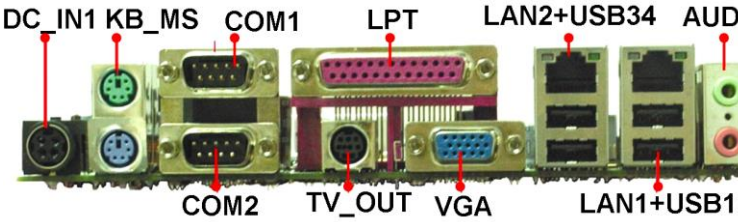
| COM2MODE1 | I/F TYPE |
|---|---|
| 2 18<br>  <br>1 17 | RS-232 |
| 2 18<br>  <br>1 17 | RS-422 |
| 2 18<br>  <br>1 17 | RS-485 |

# 2.2 Connectors on the M6

The connector on the M6 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers and etc. The following table lists the connectors on M6 and their respective page number.

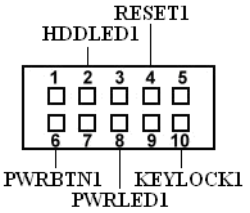
## Connector Locations on the M6



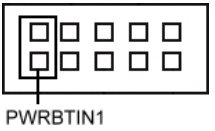



## Front Panel Connector

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.

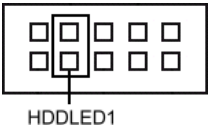



- **ATX Power ON/OFF Button**
  This 2-pin connector acts as the "Power Supply On/Off Switch" on the M6 main board. When pressed, the switch will force the Main board to power on. When pressed again, it will force the main board to power off.



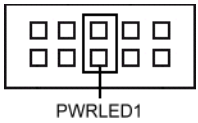

| PWR BTN Pin # | Signal Name |
|---|---|
| 1 | PWR-BTN |
| 6 | GND |

- **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.



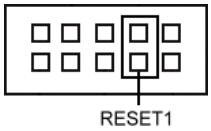

| IDE LED Pin # | Signal Name |
|---|---|
| 2 | VCC |
| 7 | HDDLED |

- **Power-On LED**
  This connector allows users to connect to Front Panel Power indicator.



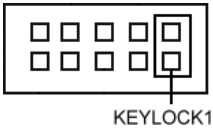

| PWR LED Pin # | Signal Name |
|---|---|
| 3 | VCC |
| 8 | GND |

- **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 |
|---|---|
| 4 | Reset |
| 9 | GND |

- **KEYLOCK Switch**
  The keylock switch, when closed, will disable the keyboard function.

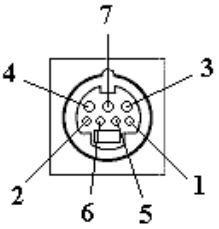



| RESET Pin # | Signal Name |
|---|---|
| 5 | KEYLOCK |
| 10 | GND |

## BACKLIGHT Connector


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

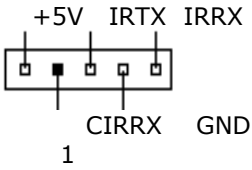
## TV-OUT Connector




| Pin # | Signal Name |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | LUMA |
| 4 | CHOMA |
| 5 | CVBS |
| 6 | GND |
| 7 | NC |

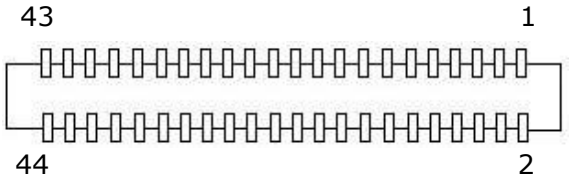
## IRDA Connector

This connector is used for an IRDA connector for wireless communication.




| IrDA Pin # | Signal Name |
|---|---|
| 1 | +5V |
| 2 | FIR |
| 3 | IR-RX |
| 4 | GND |
| 5 | IR-TX |

## IDE Connectors

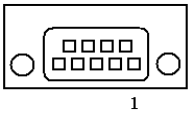



**Primary IDE Connector**

| 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 |
| DRQ | 21 | 22 | Ground |
| Host IOW | 23 | 24 | Ground |
| Host IOR | 25 | 26 | Ground |
| IOCHRDY | 27 | 28 | Host PU 0 |
| DACK | 29 | 30 | Ground |
| IRQ14 | 31 | 32 | No connect |
| Address 1 | 33 | 34 | P66DET |
| Address 0 | 35 | 36 | Address 2 |
| Chip select 1 | 37 | 38 | Chip select 3 |
| Activity LED | 39 | 40 | GND |
| VCC | 41 | 42 | VCC |
| GND | 43 | 44 | NC |

## COM1 Serial Ports

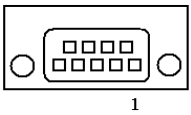
COM1, a 9-pin D-Sub male connector, is the onboard COM1 serial port of the M6. The following table shows its pin assignments.




| 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 |

## COM2 Serial Ports

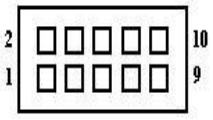
COM2, a 9-pin D-Sub male connector, is the onboard COM2 serial port of the M6. The following table shows its pin assignments.




| 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. |

## COM3, COM4,COM5 Serial Ports

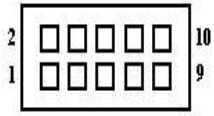
COM3, COM4, COM5 a 10-pin header connector, is the onboard COM3, COM4, COM5 serial port of the M6. The following table shows its pin assignments.




| 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 | Ring-IN |
| 10 | NC |

## COM6 Serial Ports

COM6, a 10-pin header connector, is the onboard COM6 serial port of the M6. The following table shows its pin assignments.

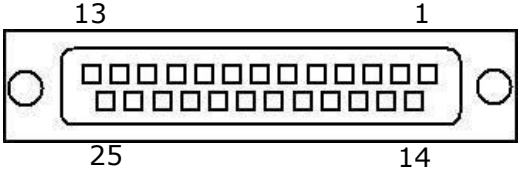



| Pin # | RS232 Mode Signal Name |
|---|---|
| 1 | DCD, Data carrier detect |
| 2 | RXD, Receive data |
| 3 | TXD, Transmit data |
| 4 | DTR, Data terminal ready |
| 5 | GND, ground |
| 6 | DSR, Data set ready |
| 7 | RTS, Request to send |
| 8 | CTS, Clear to send |
| 9 | +5V, +12V |
| 10 | NC |

Pin9 is power pin to support devices required power. The voltage can be selected by jumper JP8.

## LPT Port

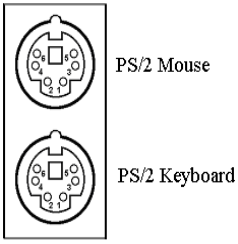
The LPT parallel port is a standard DSUB 25-pins Female connector. It can be configured as EPP or ECP or SPP mode.




| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| Strobe | 1 | 14 | AUTOFD |
| DATA0 | 2 | 15 | ERROR |
| DATA1 | 3 | 16 | INIT |
| DATA2 | 4 | 17 | SLIN |
| DATA3 | 5 | 18 | GND |
| DATA4 | 6 | 19 | GND |
| DATA5 | 7 | 20 | GND |
| DATA6 | 8 | 21 | GND |
| DATA7 | 9 | 22 | GND |
| ACK | 10 | 23 | GND |
| BUSY | 11 | 24 | GND |
| PE | 12 | 25 | GND |
| SLCT | 13 | | |

## PS/2 Keyboard & Mouse Connector

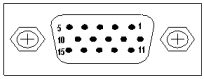
The following table describes the pin assignment of PS/2 Keyboard and Mouse connector.




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

## VGA Connector

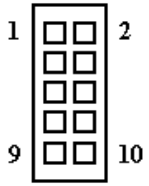
The pin assignments of VGA CRT connector are as follows:



| 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 | DDC_DATA |
| HSYNC | 13 | 14 | VSYNC |
| DDC_CLK | 15 | | |

## INT_VGA Connector

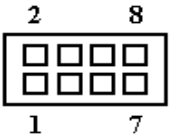
INT_VGA is for internal Video A/D board connection. The pin out is listed as below:




| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| RED | 1 | 2 | GND |
| GREEN | 3 | 4 | GND |
| BLUE | 5 | 6 | GND |
| HSYNC | 7 | 8 | DDC_DATA |
| VSYNC | 9 | 10 | DDC_CLK |

## INT_KBMS Connector

KBMS is for internal input devices or MSR connection. The pin out is listed as below:




| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| VCC | 1 | 2 | GND |
| KBDAT | 3 | 4 | MSCLK |
| KBCLK | 5 | 6 | MSDAT |
| GND | 7 | 8 | VCC |

## DC_IN1 Connector

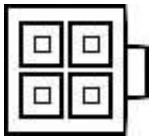
DC_IN1 is for external power input connection to supply system power. It needs to be +12V input from AC/DC adapter within 5% tolerance.
Users should calculate the total system power required and use sufficient rating adapter.

DC_IN1

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

## DC_IN2 Power Connector

The CD_IN2 power connector is for internal connection to +12V input power. If you already have external +12V power input connected on DC_IN1, please leave DC_IN2 unconnected.



DC_IN2

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

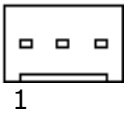
## CPU Fan Power Connector

This is a 3-pin header for the CPU fan.


| Pin # | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | CPUPWM |

## System FAN Power Connector

This is a 3-pin header for the system fan.




| Pin # | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | SYSPWM |

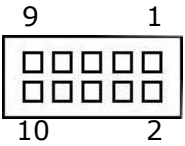
## DRVPWR Connector

DRVPWR is output power connector to supply power required for peripheral device like Hard Disk, DOM, CDROM and etc.
The pin out is listed as below:


| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| +5V | 1 | 2 | GND |
| GND | 3 | 4 | +12V |

## USB56 USB78 Connectors

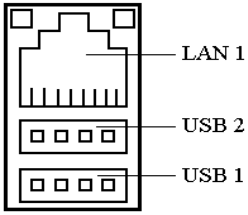
The following table shows the pin outs of the USB56 USB78 connectors.

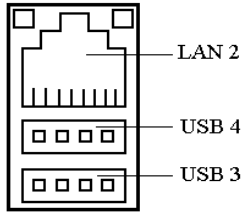



| USB5,USB6 USB7,USB8 Pin# | | Signal Name |
|---|---|---|
| 10 | 1 | N.C. |
| 2 | 9 | +5V |
| 8 | 3 | Ground |
| 4 | 7 | USB- |
| 6 | 5 | USB+ |

## LANGbE+USBx2 Connectors

Below pictures show the location of LAN GbE ports and USB Type-A ports on the Combo GbE + USB connector.

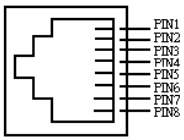



Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker and etc., Have a standard USB interface. Also make sure your OS supports USB controller.
If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.

## LAN- GBE Connectors

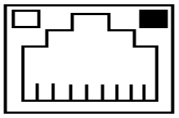
This connector is for the 10/100/1000Mbps Ethernet capability. The figure below shows the pin out assignments of this connector and its corresponding input jack.



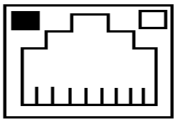

| Pin # | Signal Name |
|---|---|
| 1 | MDI0+ |
| 2 | MDI0- |
| 3 | MDI1+ |
| 4 | MDI1- |
| 5 | MDI2+ |
| 6 | MDI2- |
| 7 | MDI3+ |
| 8 | MDI3- |

## LAN RJ45 LED1, 2

The LAN_LEDs on top of RJ45 are to display the current network connection status. The green color LED on the right-hand side shows the link status and TX/RX activity. The Orange/Green Dual color LED on the left-hand side indicates the operation mode, i.e. 10Base-T, 100Base-T or 1000Base-T.



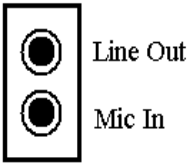
| LNK/ACT | STATUS |
|---|---|
| YELLOW | Link |
| OFF | Disconnected |
| FLASH | Packets TX/RX |



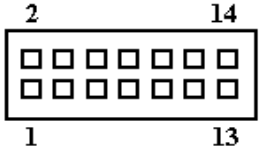
| SPEED | MODE |
|---|---|
| ORANGE | 1000 Mbps |
| GREEN | 100 Mbps |
| OFF | 10 Mbps |

## Audio Connectors

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



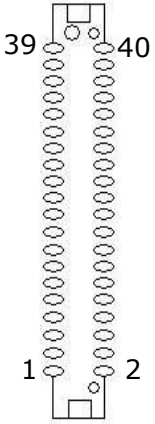
## INT_AUDIO Connector




| Pin # | Signal Name |
|---|---|
| 1 | LINE-IN-L |
| 2 | LINE-IN-R |
| 3 | GND |
| 4 | GND |
| 5 | LINEOUT-L |
| 6 | LINEOUT-R |
| 7 | GND |
| 8 | GND |
| 9 | MIC1-IN-L |
| 10 | MIC1-IN-R |
| 11 | LFE OUT |
| 12 | CENTER OUT |
| 13 | SURR OUTL |
| 14 | SURR OUTR |

## LVDS LCD Connector

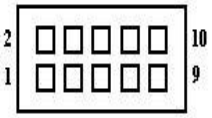
The LCD panel, inverter for LCD LAMP, Touch-screen Serial Interface must be connected to this LVDS header, using the below described connector:




| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| +12V | 2 | 1 | +12V |
| GND | 4 | 3 | GND |
| LCDVDD 5V/3.3V | 6 | 5 | LCDVDD 5V/3.3V |
| GND | 8 | 7 | GND |
| BCKLITE_ON | 10 | 9 | BRIGHTNES |
| LVDS_GND | 12 | 11 | LVDS_GND |
| CHB_TX0+ | 14 | 13 | CHA_TX0+ |
| CHB_TX0- | 16 | 15 | CHA_TX0- |
| LVDS_GND | 18 | 17 | LVDS_GND |
| CHB_TX1+ | 20 | 19 | CHA_TX1+ |
| CHB_TX1- | 22 | 21 | CHA_TX1- |
| LVDS_GND | 24 | 23 | LVDS_GND |
| CHB_TX2+ | 26 | 25 | CHA_TX2+ |
| CHB_TX2- | 28 | 27 | CHA_TX2- |
| LVDS_GND | 30 | 29 | LVDS_GND |
| CHB_TXC+ | 32 | 31 | CHA_TXC+ |
| CHB_TXC- | 34 | 33 | CHA_TXC- |
| LVDS_GND | 36 | 35 | LVDS_GND |
| CHB_TX3+ | 38 | 37 | CHA_TX3+ |
| CHB_TX3- | 40 | 39 | CHA_TX3- |

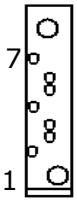
## DIO Connector

DIO port supports 8 digital I/O bits. Each bit can be configured as Input or output individually. All bits are 5V tolerant.



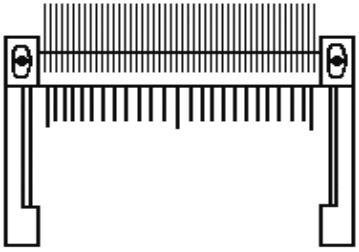

| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| GND | 1 | 2 | +5V |
| DIO_0 | 3 | 4 | DIO_4 |
| DIO_1 | 5 | 6 | DIO_5 |
| DIO_2 | 7 | 8 | DIO_6 |
| DIO_3 | 9 | 10 | DIO_7 |

## SATA1, SATA2 Connectors




| Pin # | Signal Name |
|---|---|
| 1 | GND |
| 2 | SATATX+ |
| 3 | SATATX- |
| 4 | GND |
| 5 | SATARX- |
| 6 | SATARX+ |
| 7 | GND |

## CF-II Connector



| Signal Name | Pin # | Pin # | Signal Name |
|---|---|---|---|
| GND | 1 | 2 | PDD3 |
| PDD4 | 3 | 4 | PDD5 |
| PDD6 | 5 | 6 | PDD7 |
| PCS1- | 7 | 8 | GND |
| GND | 9 | 10 | GND |
| GND | 11 | 12 | GND |
| VCC | 13 | 14 | GND |
| GND | 15 | 16 | GND |
| GND | 17 | 18 | PDA2 |
| PDA1 | 19 | 20 | PDA0 |
| PDD0 | 21 | 22 | PDD1 |
| PDD2 | 23 | 24 | N.C. |
| N.C. | 25 | 26 | N.C. |
| PDD11 | 27 | 28 | PDD12 |
| PDD13 | 29 | 30 | PDD14 |
| PDD15 | 31 | 32 | PCS3- |
| N.C. | 33 | 34 | PDIOR- |
| PDIOW- | 35 | 36 | VCC |
| IRQ14 | 37 | 38 | VCC |
| MST#_SLV | 39 | 40 | N.C. |
| PST1- | 41 | 42 | PIORDY |
| PDDREQ | 43 | 44 | PDDACK- |
| CF_LED- | 45 | 46 | N.C. |
| PDD8 | 47 | 48 | PDD9 |
| PDD10 | 49 | 50 | GND |

# Chapter 3 BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the M6 CPU card. The topics covered in this chapter are as follows:

## BIOS Introduction

This Chapter discusses Award™ Setup program built into the M6 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 M6 is a custom version of an industry standard BIOS. This means that it supports Intel Core 2 Duo 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<br>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<br>Status Page Setup Menu and Option Page Setup Menu<br>-- 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.

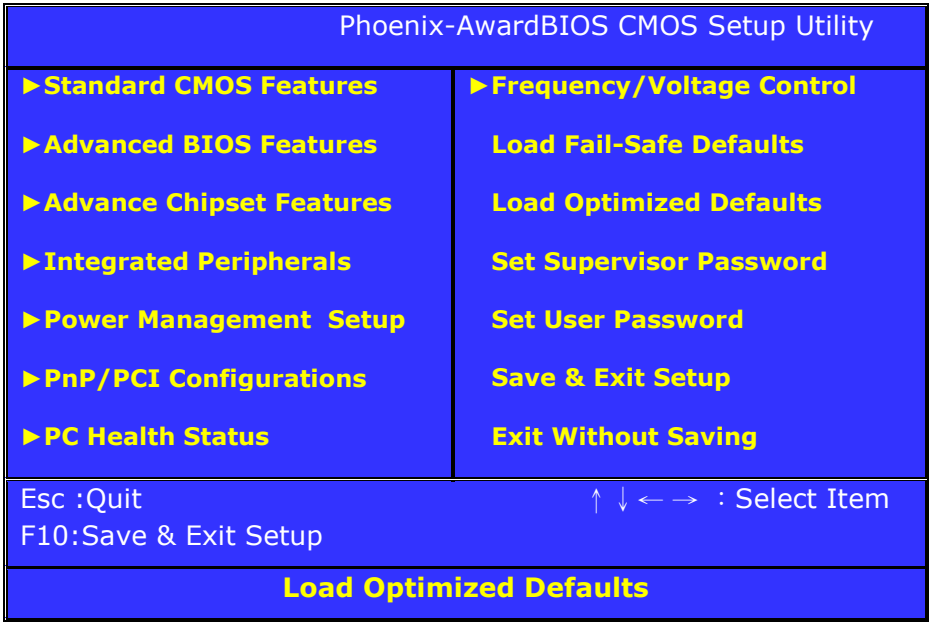
## Getting Help

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 M6 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.

# 3.1 Main Menu




**(Figure 1)**
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.

## ➢ Advance 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 Configurations

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.

## ➢ Set Supervisor/ User Password

Use this menu to set User and Supervisor Passwords.

## ➢ Save & Exit Setup

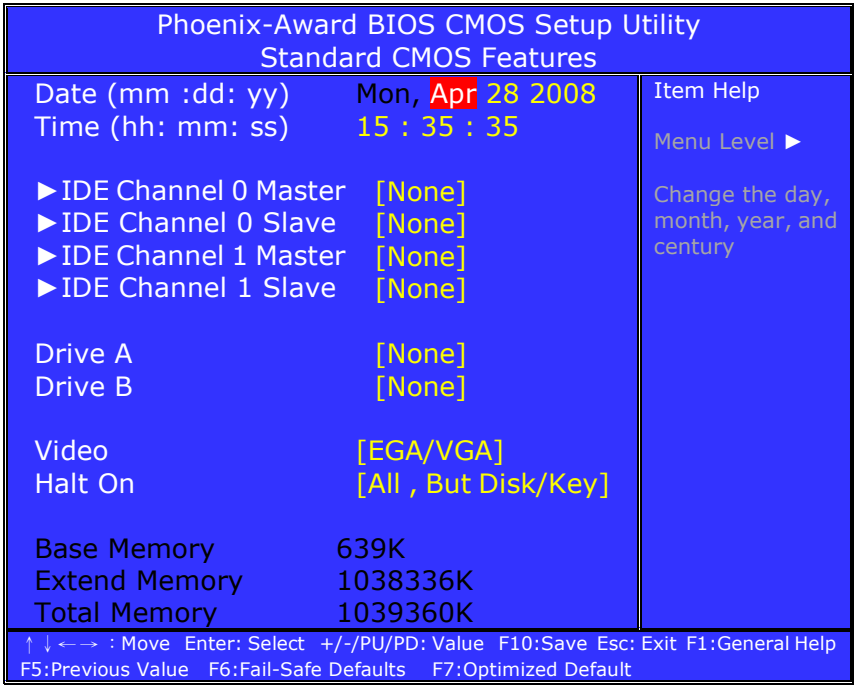
Save CMOS value changes to CMOS and exit setup.

## ➢ Exit Without Saving

Abandon all CMOS value changes and exit setup.

# 3.2 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <Pg Dn> keys to select the value you want in each item.



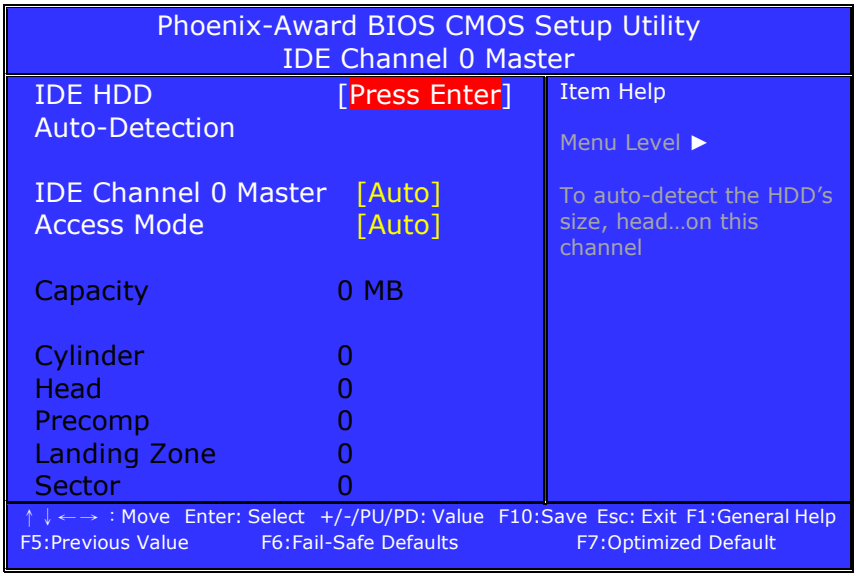

**(Figure 2)**

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 Channel 0 Master | Options are in its sub menu | Press <Enter> to enter the sub menu of detailed options |
| IDE Channel 0 Slave | Options are in its sub menu | Press <Enter> to enter the sub menu of detailed options |
| IDE Channel 1 Master | Options are in its sub menu | Press <Enter> to enter the sub menu of detailed options |
| IDE Channel 1 Slave | Options are in its sub menu | Press <Enter> to enter the sub menu of detailed options |
| Drive A<br>Drive B | None<br>360K, 5.25 in<br>1.2M, 5.25 in<br>720K, 3.5 in<br>1.44M, 3.5 in<br>2.88M, 3.5 in | Select the type of floppy disk drive installed in your system |
| Video | EGA/VGA<br>CGA 40<br>CGA 80<br>MONO | Select the default video device |
| Halt On | All Errors<br>No Errors<br>All, but Keyboard<br>All, but Diskette<br>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 |

## IDE Channel 0, 1 Master/ Slave

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive. Figure 3 shows the IDE Channel 0 / Channel 1 master sub menu.




**(Figure 3)**

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 Channel 0 Master | None<br>Auto<br>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.<br>Note: PRECOMP=65535 means NONE ! |
| Access Mode | CHS<br>LBA<br>Large<br>Auto | Choose the access mode for this hard disk |
| Capacity | Auto<br>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. |
| The following options are selectable only if the 'IDE Channel 0 Master' item is set to 'Manual' | | |
| Cylinder | Min = 0<br>Max = 65535 | Set the number of cylinders for this hard disk. |
| Head | Min = 0<br>Max = 255 | Set the number of read/write heads |
| Precomp | Min = 0<br>Max = 65535 | **** Warning: Setting a value of 65535 means no hard disk |
| Landing zone | Min = 0<br>Max = 65535 | **** |
| Sector | Min = 0<br>Max = 255 | Number of sectors per track |

## Drive A/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:

None**(default)** 360K 5.25 in. 1.2M 5.25 in. 720K 3.5 in. 1.44M 3.5 in. 2.88M 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.

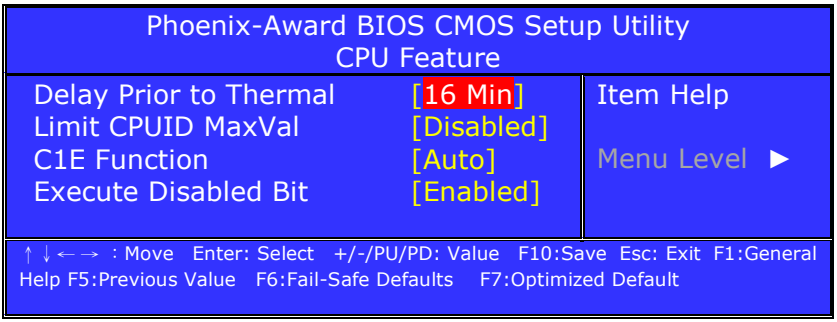
| | |
|---|---|
| All errors | Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted. |
| No errors | The system boot will not be halted for any error that may be detected. |
| All, But Keyboard | The system boot will not be halted for a keyboard error; it will stop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

# 3.3 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.


**(Figure 4)**

## ➢CPU Feature




**(Figure 5)**

**Delay Prior to Thermal**

Delay Prior To Thermal is set at 16 minutes as default, which means the board will wait 16 minutes before it activates the processor's integrated thermal control circuit.

The choice: 4 Min , 8 Min, 16 Min **(default)**, 32 Min.

**Limit CPUID Max Val**

The choice: Enabled, Disabled **(default).**

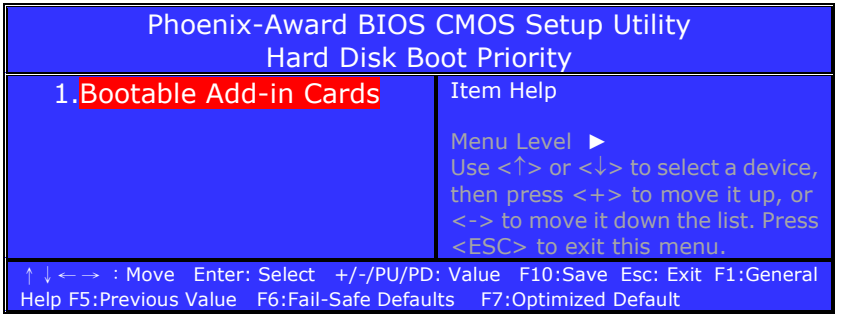
**C1E Function**

The choice: Auto **(default)**, Disabled

**Execute Disabled Bit**

The choice: Enabled **(default)**, Disabled

## ➢Hard Disk Boot Priority




**(Figure 6)**

### Bootable Add-in Cards

This is for setting the priority of the hard disk boot order when the
"Hard Disk" option is selected in the "[First/Second/Third] Boot Device "menu item.

## 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. **(default)** |

## CPU L1 & L2 Cache

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

| | |
|---|---|
| Enabled | Enable cache**(default)** |
| Disabled | Disable cache |

## CPU L3 Cache

This field is used to enable or disable the CPU's L3 cache. The choice: Enabled **(default)**, Disabled.

## 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**(default)** |
| Disabled | Normal POST |

## First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
The Choice: Floppy, LS120, Hard-Disk, ZIP100, CDROM, Disabled, USB-FDD, USB-ZIP, USB-CDROM, Legacy LAN.

| Item | Default |
|---|---|
| First Boot Device | Hard-Disk |
| Second Boot Device | CDROM |
| Third Boot Device | LS120 |

## Boot Other Device

When enabled, BIOS will try to load the operating system from other device when it failed to load from the three devices above.
The choice: Enabled **(default)**, Disabled.

## Swap Floppy Drive

If the system has two floppy drives, choose "Enabled" to assign physical drive B to logical drive A and vice-versa.
The choice: Enabled, Disabled **(default)**.

## Boot Up Floppy Seek

Selection of the command .Disabled. will speed the boot up. Selection of .Enabled. Searches disk drives during boot up.
The choice: Enabled **(default)**, Disabled

## Boot Up Num Lock Status

Selects power on state for Num Lock.
The choice: On, Off **(default)**.

## Gate A20 Option

The choice:
Normal: A pin in the keyboard controller controls GateA20.
Fast **(default)**: Lets chipset control GateA20.

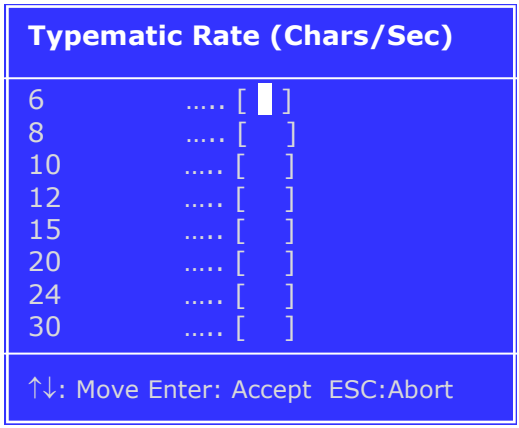
## Typematic Rate Setting

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 **(default)**.

**If Typematic Rate Setting is [Enabled] can choice Rate and Delay:**

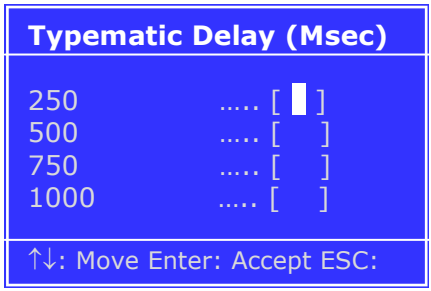
## Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a keystroke when you hold the key down.
The choice: 6 **(default)**, 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 **(default)**, 500, 750, and 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. **(default)** |

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

This setting allows to enable the APIC mode.
The choice: Enabled **(default)**, Disabled

## MPS Version Control For OS

The BIOS supports version 1.1 and 1.4 of the Intel multiprocessor specification.
Select version supported by the operation system running on this computer.
The choice: 1.1, 1.4 **(default)**.

## OS Select For DRAM > 64MB

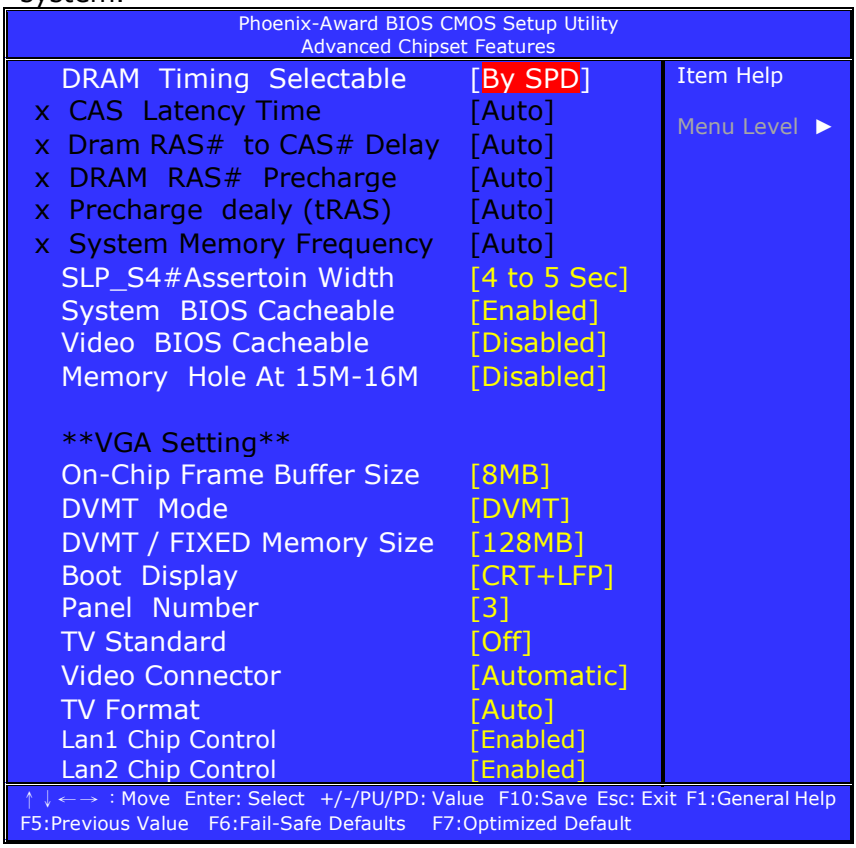
Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.
The choice: Non-OS2 **(default)**, OS2.

## Report No FDD For WIN 95

The choice: No **(default)**, Yes.

# 3.4 Advanced Chipset Features

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.




**(Figure 7)**

## DRAM Timing Selectable

The choice: Manual, By SPD **(default)**.

**If DRAM Timing Selectable is [Manual], can choice these Items:**

►CAS Latency Time
►Dram RAS# to CAS# Delay
►DRAM RAS# Precharge
►Precharge dealy (tRAS)
►System Memory Frequency

## CAS Latency Time

This controls the latency between DDR RAM read command and the time that the data actually becomes available.
Leave this on the default setting.
The choice: 5, 4, 3, 6, Auto **(default)**.

## DRAM RAS# to CAS# Delay

In order to improve performance, certain space in memory is reserved for PISA cards.
This memory must be mapped into the memory space below 16MB.
The choice: 2, 3, 4, 5, 6, Auto **(default)**.

## DRAM RAS# Precharge

This controls the idle clocks after issuing a precharge command to DRAM.
Leave this on the default setting.
The choice: Auto **(default)**, 2, 3,4,5,6.

## Precharge dealy (tRAS)

The choice: Auto **(default)**,
4,5,6,7,8,9,10,11,12,13,14,15.

## System Memory Frequency

The choice: Auto **(default)**, 533MHz, 667MHz

## SLP_S4#Assertoin Width

Set SLP_S4# pin.
The choice: 4 to5 Sec **(default)**, 3 to 4Sec, 2to 3Sec, 1to2Sec.

## System BIOS Cacheable

Selecting the "Enabled" option allows caching of the system BIOS ROM at F0000h-FFFFFh, which is able to improve the system performance. However, any programs that attempts to write to this memory block will cause conflicts and result in system errors.
The choice: Enabled (**default)**, Disabled.

## Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may occur.
The choice: Enabled, Disabled **(default)**

## Memory Hole At 15M-16M

Enabling this feature reserves 15 MB to 16 MB memory address space for ISA expansion cards that specifically require this setting. This makes memory from 15 MB and up unavailable to the system. Expansion cards can only access memory up to 16 MB.
The choice: Enabled, Disabled **(default)**

## On-Chip Frame Buffer Size

User can select frame buffer size.
The choice: 1MB, 8MB **(default)**.

## DVMT Mode

This field shows the current DVMT mode.
The choice: FIXED, DVMT **(default)**, BOTH

## DVMT / FIXED Memory Size

This field is used to select the graphics memory size used by DVMT/ Fixed mode.
The choice: 64MB, 128MB **(default)**, 224MB

## Boot Display

This field is used to select the type of display to use when the system boots.
The choice:

| | | | |
|---|---|---|---|
| Auto | CRT | TV | EFP |
| LFP | CRT+LFP **(default)** | EFP+LFP | |

## Panel Number

The choice: 1,2,3 **(default)**,4,5,6,7,8,9,10,11,12,13,14,15,16

## TV Standard

The choice: Off **(default)**, NTSC, PAL, SECAM.

## Video Connector

The choice: Automatic **(default)**, Composite, Component, Both.

## TV Format

The choice:

| | | |
|---|---|---|
| Auto**(default)** | NTSC_M | NTSC_M_J |
| NTSC_433 | NTSC_N | PAL_B |
| PAL_G | PAL_D | PAL_H |
| PAL_I | PAL_M | PAL_N |
| PAL_60 | SECAM_L | SECAM_L1 |
| SECAN_B | SECAN_D | SECAN_G |
| SECAN_H | SECAN_K | SECAN_K1 |

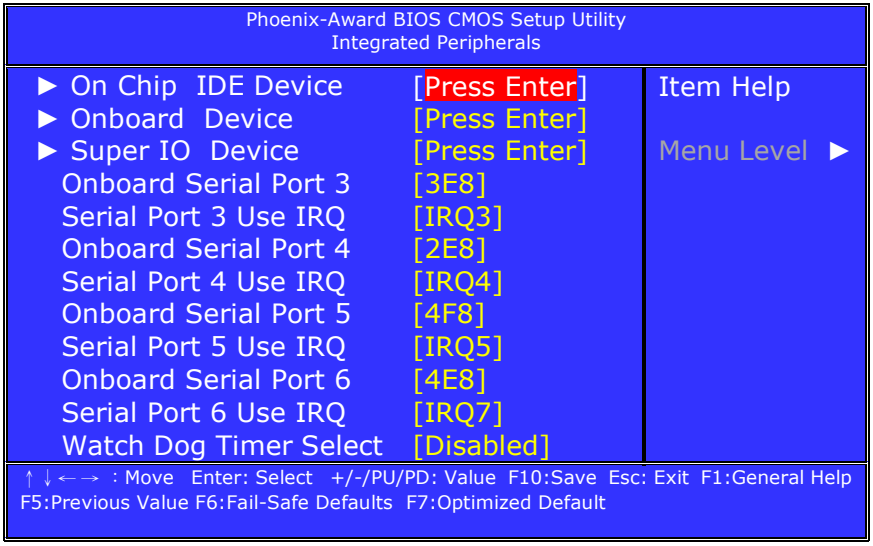
## Lan1 Chip Control

The choice: Enabled **(default)**, Disabled.

## Lan2 Chip Control

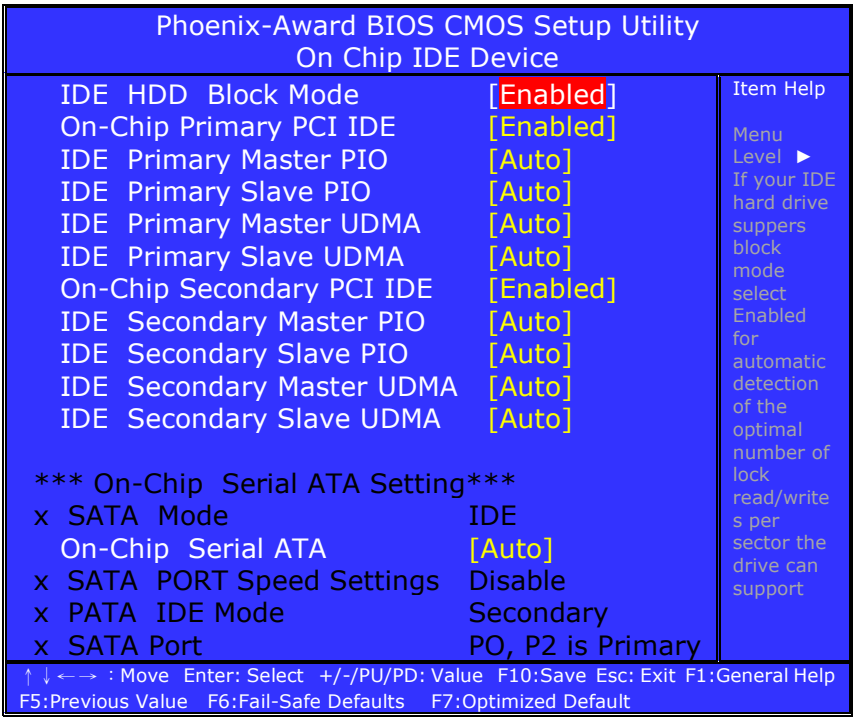
The choice: Enabled **(default)**, Disabled.

# 3.5 Integrated Peripherals




**(Figure 8)**

## ➢On Chip IDE Device




**(Figure 9)**

### IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sectors read / write.

If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block mode (most new drives do), select

Enabled for automatic detection of the optimal number of block read /write per sector where the drive can support.

The choice: Enabled **(default)**, Disabled

**On-Chip Primary PCI IDE**

This field allows you to enable or disable the primary and secondary IDE controller.
Select disabled if you want to add a different hard drive controller.
The choice: Enabled **(default)**, Disabled

**IDE Primary/Secondary, Master/Slave PIO**

The choice: Auto **(default)**, Mode0, Mode1, Mode2, Mode3, Mode4

 Caution: Do not use the wrong setting or you will have drive errors

PIO means Programmed Input/output.
Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves.
Your system supports five modes, 0 (default) to 4, which primarily differ in timing.
When Auto is selected, the BIOS will select the best available mode after checking your drive.

| | |
|---|---|
| Auto | The BIOS will automatically set the system according to your hard disk drive's timing **(default)**. |
| Mode 0-4 | You can select a mode that matches your hard disk drive's timing. |

**IDE Primary/Secondary, Master/ Slave UDMA**

The choice: Disabled, Auto **(default)**

**On-Chip Secondary PCI IDE**

These fields allow you to enable or disable the primary and secondary IDE controller.
Select disabled if you want to add a different hard drive controller.
The choice: Enabled **(default)**, Disabled.

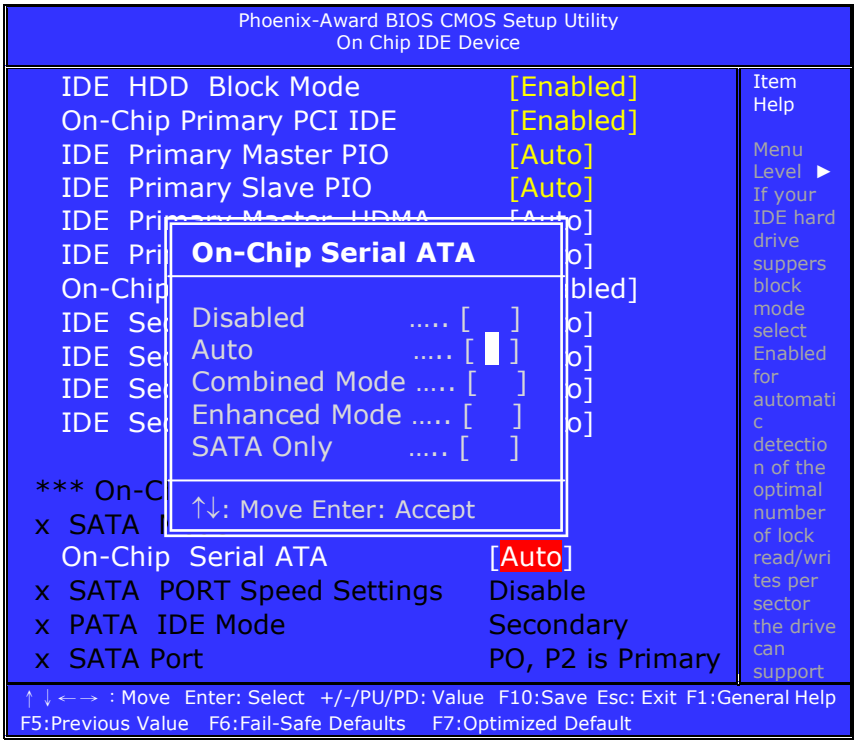
**On-Chip Serial ATA**

Choose the status of serial ATA, the default setting is "**Auto**" which let system to arrange all parallel and serial

| | |
|---|---|
| Disabled | Will disable SATA controller. **(Figure11)** |
| Combined Mode | Will combine PATA and SATA, and max of 2 IDE drives in each channel. **(Figure 12)** |
| Enhanced Mode | Will enable both SATA and PATA, and max of 6 IDE drives is supported. **(Figure 13)** |
| SATA Only | Means SATA is operating in legacy mode.**(Figure 14)** |
| Auto | This is the default setting. |

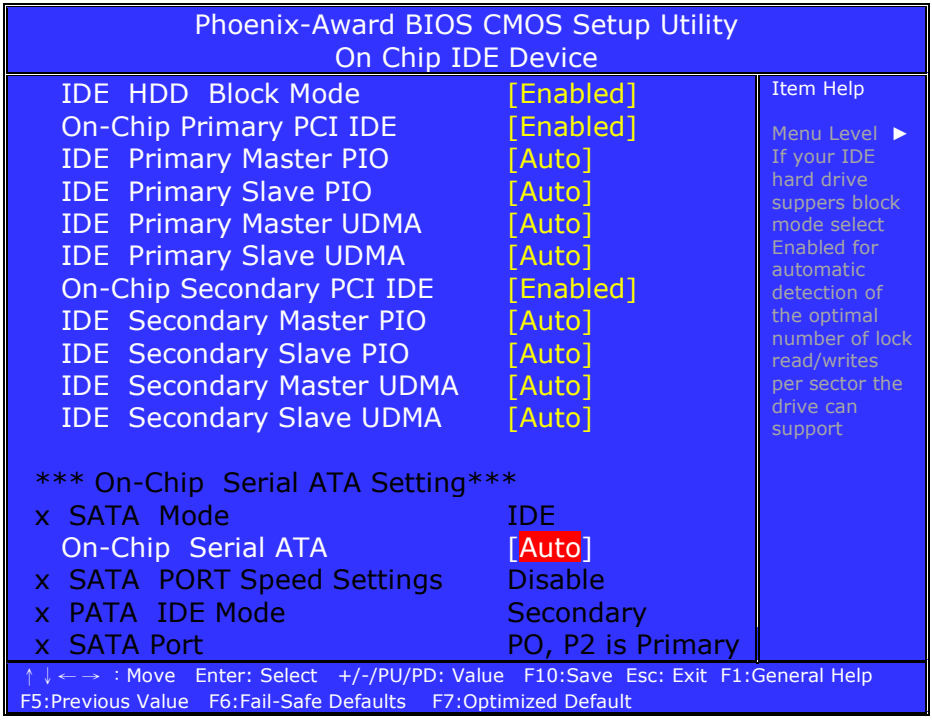
ATA resource automatically.

The choice: Disabled, Auto **(default)**, Combined Mode, Enhanced Mode, SATA Only.



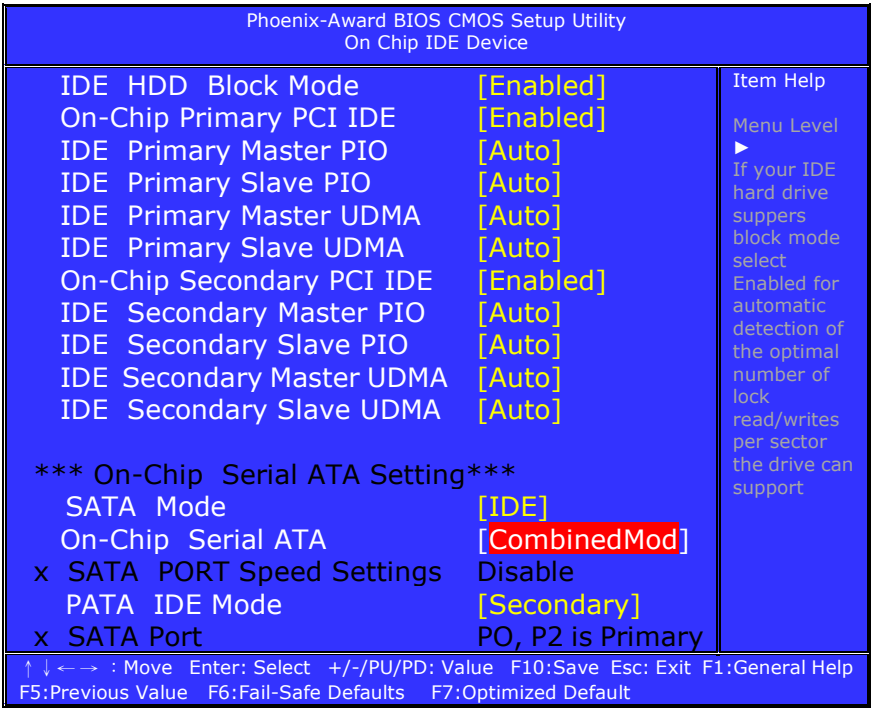

**(Figure 10)**

**When you press [Disabled] or [Auto] on this item will show: [Auto] is the default choice.**




**(Figure11)**

**When you press [Combined Mode] on this item will show:**




**(Figure12)**

### SATA Mode

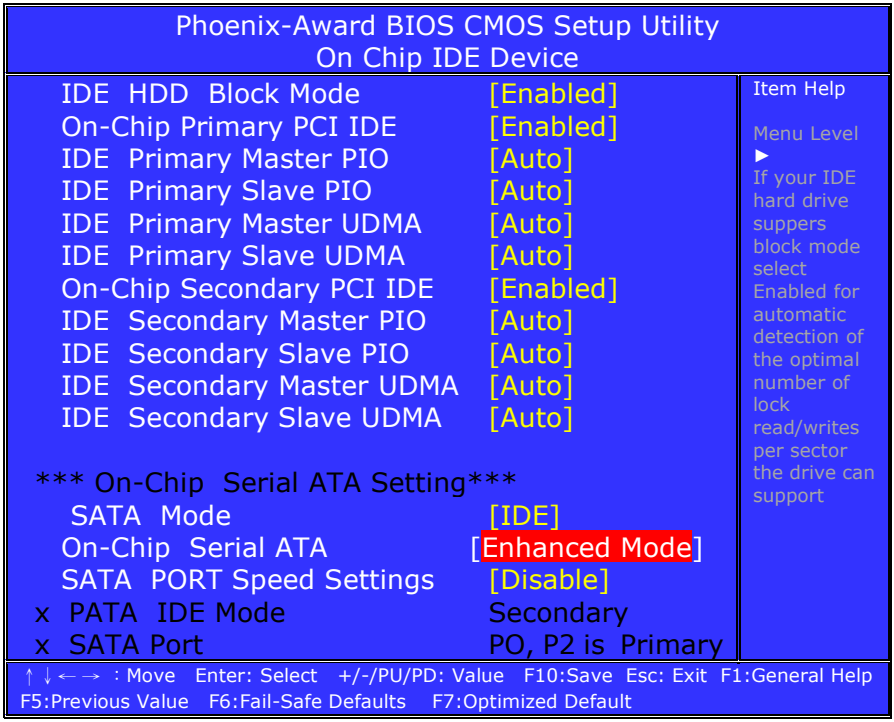
Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

### PATA IDE Mode

This field is used to select the function mode of the IDE connector.
The only choice:

Secondary: IDE serves as Secondary Master and Secondary Slave channel. SATA 1 and SATA 2 serve as Primary Master and Primary Slave channel.

**When you press [Enhanced Mode] on this item will show:**




**(Figure13)**

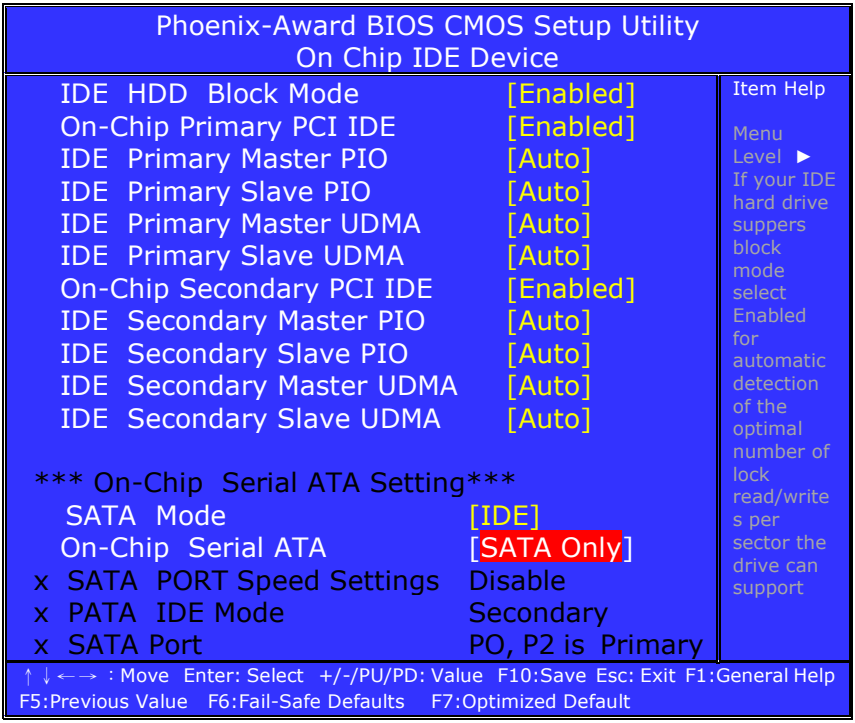
### SATA Mode

Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

### SATA Port Speed Settings

Select SATA speed.
The choice: Disabled **(default)**, Force GEN I, Force GEN II.

**When you press [SATA Only] on this item will show:**

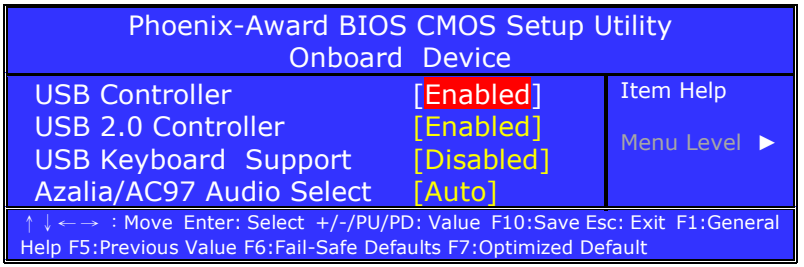



**(Figure14)**

**SATA Mode**

Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

## ➢On board Device




### USB Controller

Select enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The choice: Enabled **(default)**, Disabled.

### USB 2.0 Controller

This entry is for disable/enable USB2.0 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 **(default)**, Disabled

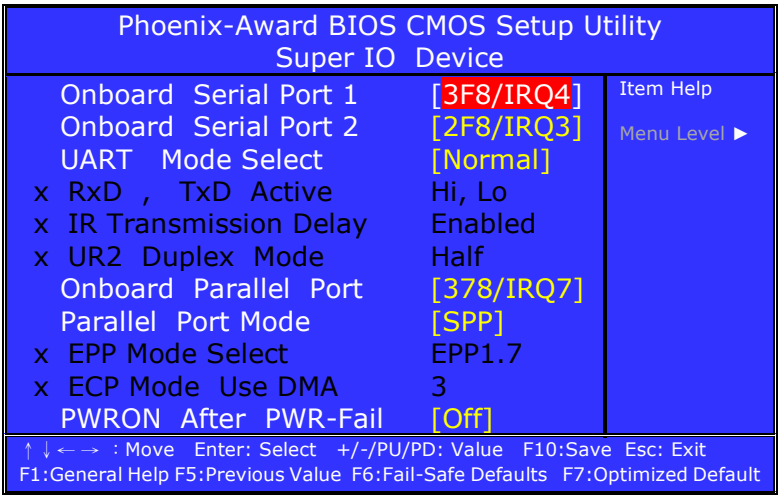
### USB Keyboard Support

Select enabled if user plan to use an USB keyboard.
The choice: Enabled, Disabled **(default)**.

### Azalia/AC97 Audio Select

The choice: Auto **(default)**, Azalia, AC97 Audio and Modem, AC97 Audio only, AC97 Modem only, ALL Disabled.

## ➢Super IO Device




### Onboard Serial Port 1

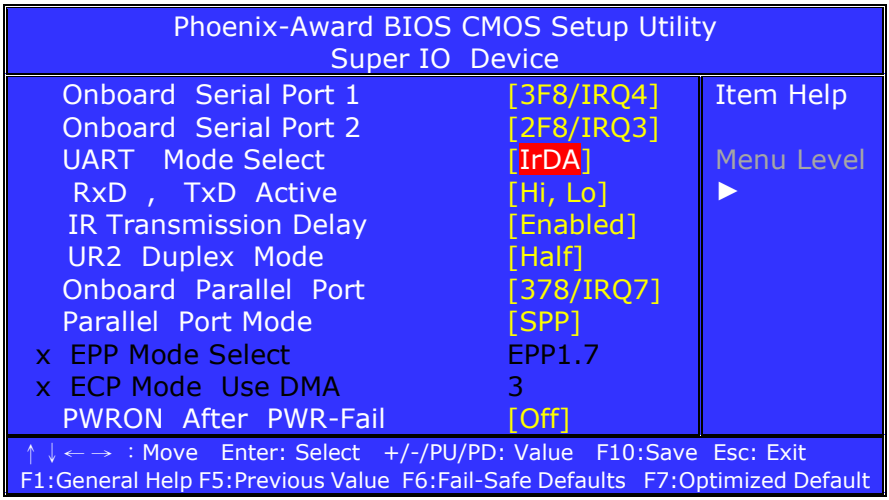
Select an address and corresponding interrupt for the first serial ports.
The choice: Disable, 3F8/IRQ4 **(default)**, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto.

### Onboard Serial Port 2

Select an address and corresponding interrupt for the second serial ports.
The choice: Disable, 3F8/IRQ4, 2F8/IRQ3 **(default)**, 3E8/IRQ4, 2E8/IRQ3, Auto.

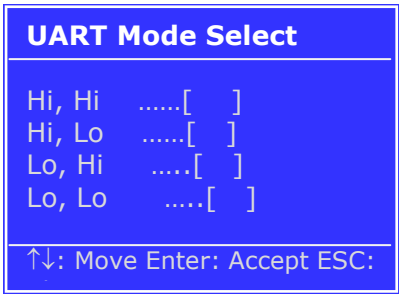
### UART Mode Select

This item allows you to select which mode for the Onboard Serial Port 2.
The choice: IrDA, ASKIR, Normal **(default)**
**If UART Mode Select is IrDA and ASKIR will show:**




### RxD, TxD Active

The choice:




### IR Transmission Delay

The choice: Disabled, Enabled **(default)**.

### UR2 Duplex Mode

The choice: Full, Half **(default)**.

## Onboard Parallel Port

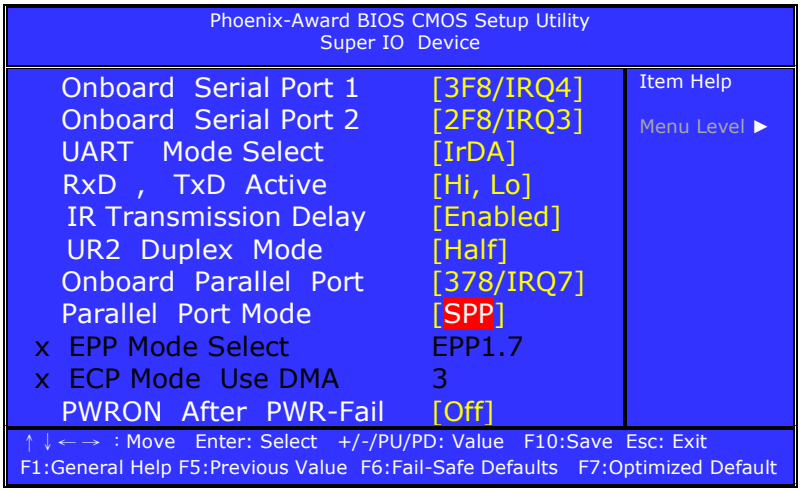
This item allows you to determine onboard parallel port controller I/O address setting.
The choice: 378/IRQ7 **(default)**, 278/IRQ5, 3BC/IRQ7, Disabled.

## Parallel Port Mode

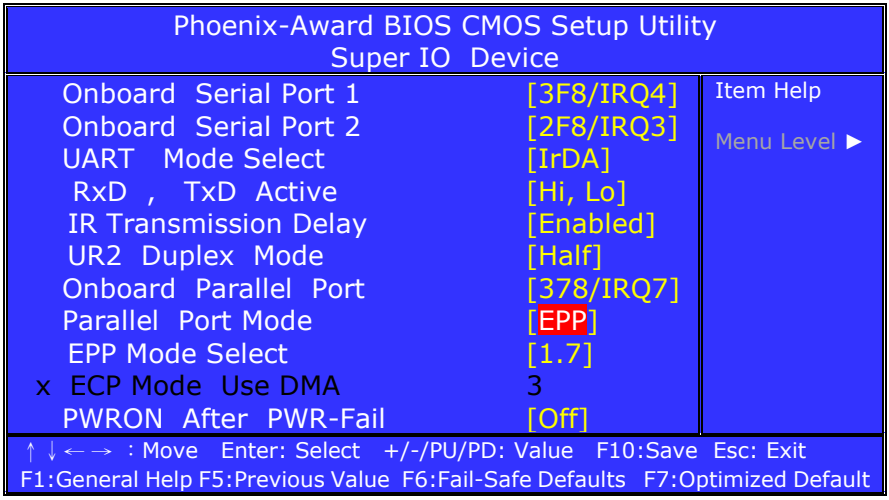
The choice: SPP **(default)**, EPP, ECP, ECP+EPP, Normal.

| | |
|---|---|
| SPP | Sets the parallel port to function as a Standard Parallel Port. This is the default (and slowest) option. |
| EPP | Sets the parallel port to Enhanced Parallel Port mode. Sometimes also called "Bi-directional" |
| ECP | Sets the parallel port up as an Enhanced Capabilities Port. This setting requires the use of a DMA channel |

**If Parallel Port Mode Select is [SPP] and [Normal] will show:**



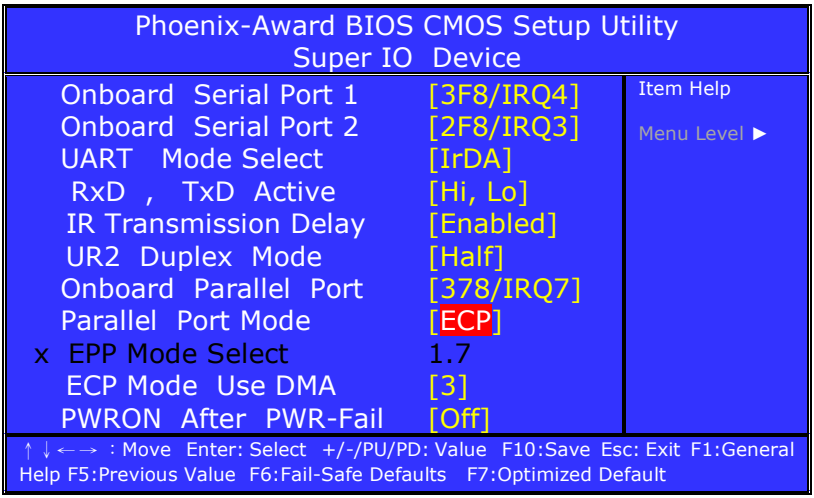
**If Parallel Port Mode Select is [EPP] will show:**




**EPP Mode Select**

Select EPP port type 1.7 or 1.9.
The choice: 1.7 **(default)**, 1.9.

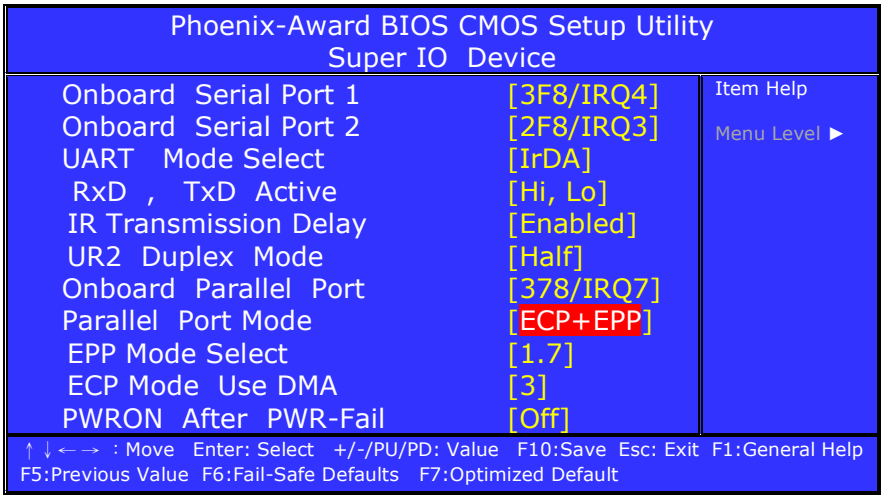
**If Parallel Port Mode Select is [ECP] will show:**




**ECP Mode Use DMA**

If your system supports ECP parallel port mode and you have the port set to use ECP, you must use this setting to assign a DMA channel for use by the port.
The choice: DMA1, DMA3 **(default)**.

**If Parallel Port Mode Select is [ECP+EPP] will show:**




### EPP Mode Select

Select EPP port type 1.7 or 1.9.
The choice: 1.7 **(default)**, 1.9.

### ECP Mode Use DMA

If your system supports ECP parallel port mode and you have the port set to use ECP, you must use this setting to assign a DMA channel for use by the port.
The choice: DMA1, DMA3 **(default)**.

### PWRON After PWR-Fail

When power fails, you can select power ON or Off or Former status.
The choice: Off **(default)**, On, Former-Sts.

## Onboard Serial Port 3

This is used to select an I/O address for the onboard serial port 3.
The choice: Disabled, 3F8, 2F8, 3E8 **(default)**, 2E8

## Serial Port 3 Use IRQ

This is used to select an IRQ for the onboard serial port 3.
The choice: IRQ3 **(default)**, IRQ4, IRQ5, IRQ7, IRQ10, IRQ11.

## Onboard Serial Port 4

This is used to select an I/O address for the onboard serial port 4.
The choice: Disabled, 3F8, 2F8, 3E8, 2E8 **(default).**

## Serial Port 4 Use IRQ

This is used to select an IRQ for the onboard serial port 4.
The choice: IRQ3, IRQ4 **(default)**, IRQ5, IRQ7, IRQ10, IRQ11.

## Onboard Serial Port 5

This is used to select an I/O address for the onboard serial port 5
The choice: Disabled, 4F8 **(default)**, 4E8**.**

## Serial Port 5 Use IRQ

This is used to select an IRQ for the onboard serial port 5.
The choice: IRQ3, IRQ4, IRQ5 **(default)**, IRQ7, IRQ10, IRQ11.

## Onboard Serial Port 6

This is used to select an I/O address for the onboard serial port 6.
The choice: Disabled, 4F8, 4E8 **(default).**

## Serial Port 6 Use IRQ

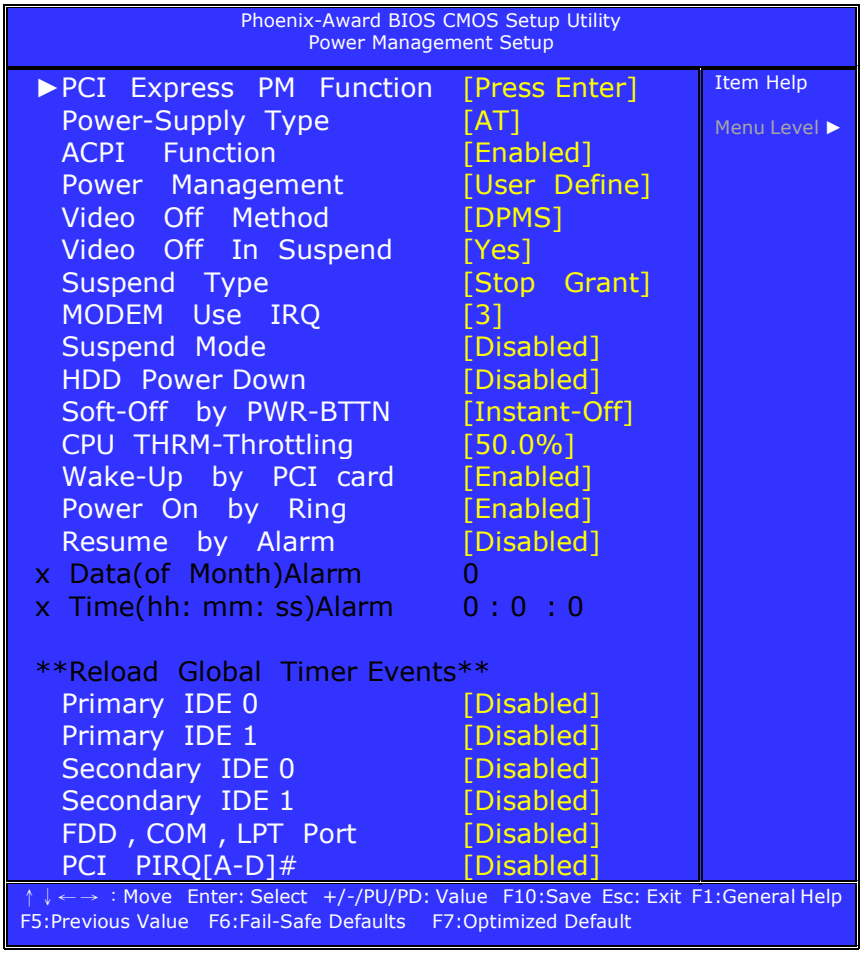
This is used to select an IRQ for the onboard serial port 6. The choice: IRQ3, IRQ4, IRQ5, IRQ7 **(default)**, IRQ10, IRQ11

## Watch Dog Timer Select

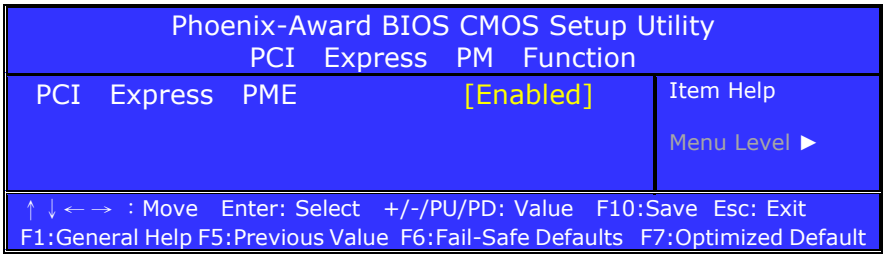
The choice: Disabled **(default)**, Enable

# 3.6 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.



## ➢PCI Express PM Function




### PCI Express PME

The choice: Enabled **(default)**, Disabled.

### Power-Supply Type

The choice: AT **(default)**, ATX

### ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).
The choice: Enabled **(default)**, Disabled.

### Power Management

The choice: User Define **(default)**, Min Saving, Max Saving.

| | |
|---|---|
| Max Saving | Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode. |
| User Define | Set each mode individually. Select time-out periods in the section for each mode, below. |
| Min Saving | Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive). |

## Video off Method

This determines the manner in which the monitor is blanked.
This specifies the power saving state that the VGA video subsystem enters after the specified period of display inactivity has expired.
The choice: Blank Screen, V/H SYNC+ Blank, DPMS **(default).**

| | |
|---|---|
| Blank Screen | The BIOS will only black the screen when the system gets into power management mode and writes blanks to the video buffer. |
| V/H SYNC + Blank | Writes blanks to the video buffer, and turns off the vertical and horizontal scanning. |
| DPMS | Allows the BIOS to control the video display card if it supports the DPMS feature **(default).** |

## Video Off In Suspend

This field is used to activate the video off feature when the system enters the Suspend mode.
The choice: No, Yes **(default)**.

## Suspend Type

The choice: Stop Grant **(default)**,PwrOn Suspend

## MODEM Use IRQ

This field is used to set an IRQ channel for the modem installed in your system.
The choice: NA, 3 **(default)**, 4, 5, 7, 9, 10, 11.

## Suspend Mode

This field specifies the length of time of system inactivity while in full power on state before the computer enters suspend mode and motivates the enable 'Wake up Events in Doze & Standby' / 'PM Events'.
The choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min,1Hour, Disable **(default)**.

## HDD Power Down

When enable and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
The choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disable **(default)**.

## Soft-Off by PWR-BTTN

This field defines the power off mode when using an ATX power supply.
The choice: Instant-Off, Delay 4 Sec.

| | |
|---|---|
| Instant-Off | Press power button then Power off instantly .**(default)** |
| Delay 4 Sec | Press power button 4 sec. to Power off. Enter suspend if button is pressed less than 4 sec. |

## CPU THRM-Throttling

This field allows you to select the CPU THRM-Throttling rate.
The choice: 75.0%, 50.0% **(default)**, 25.0%.

## Wake-Up by PCI card

Enable/Disable PCI PME wake up function.
The choice: Enabled **(default)**, Disabled.

## Power On by Ring

Enable/Disable Power On By Ring function.
The choice: Enabled **(default)**, Disabled.

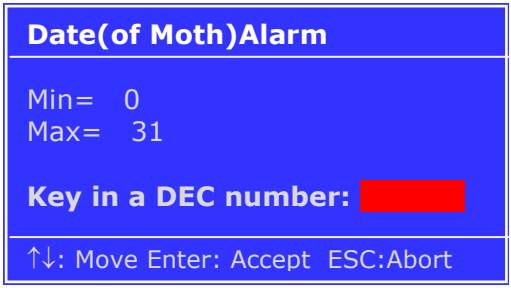
## Resume by Alarm

You can set "Resume by Alarm" item to enabled and key in Date/time to power on system.
The choice: Enabled, Disabled **(default)**

**If Resume by Alarm is [Enabled], can choice Date Alarm and Time Alarm:**

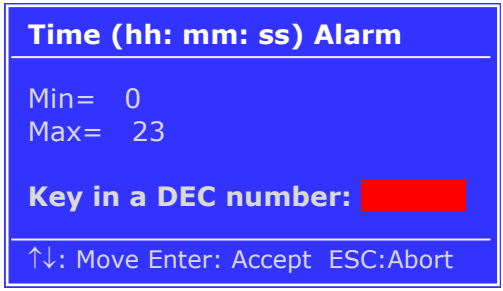
## Date (of Month) Alarm

Every day, 1~31




## Time (hh: mm: ss) Alarm

(0~23): (0~59): (0~59)




## Primary/ Secondary IDE 0/1

When Enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) is active.
The choice: Enabled, Disabled **(default)**

## FDD, COM, LPT Port

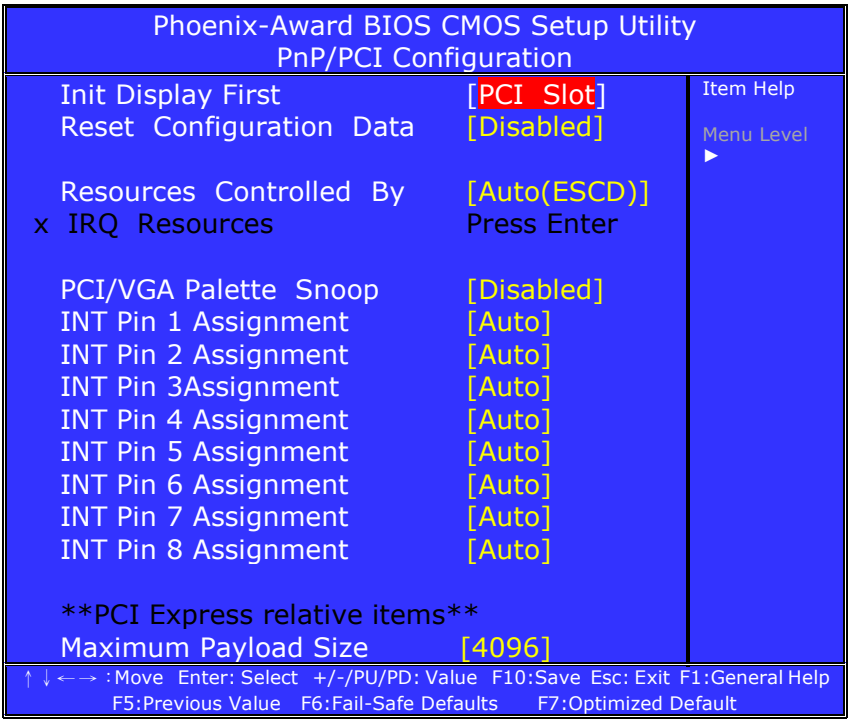
When Enabled, the system will resume from suspend mode if FDD, COM port, or LPT port is active.
The choice: Enabled, Disabled **(default)**.

## PCI PIRQ [A-D] #

When Enabled, the system will resume from suspend mode if interrupt occurs.
The choice: Enabled, Disabled **(default)**.

# 3.7 PnP/PCI Configuration

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.




## Init Display First

This item allows you to choose which one to activate first, PCI Slot or onchip VGA.
The choice: PCI Slot **(default)**, Onboard, PCIEx.

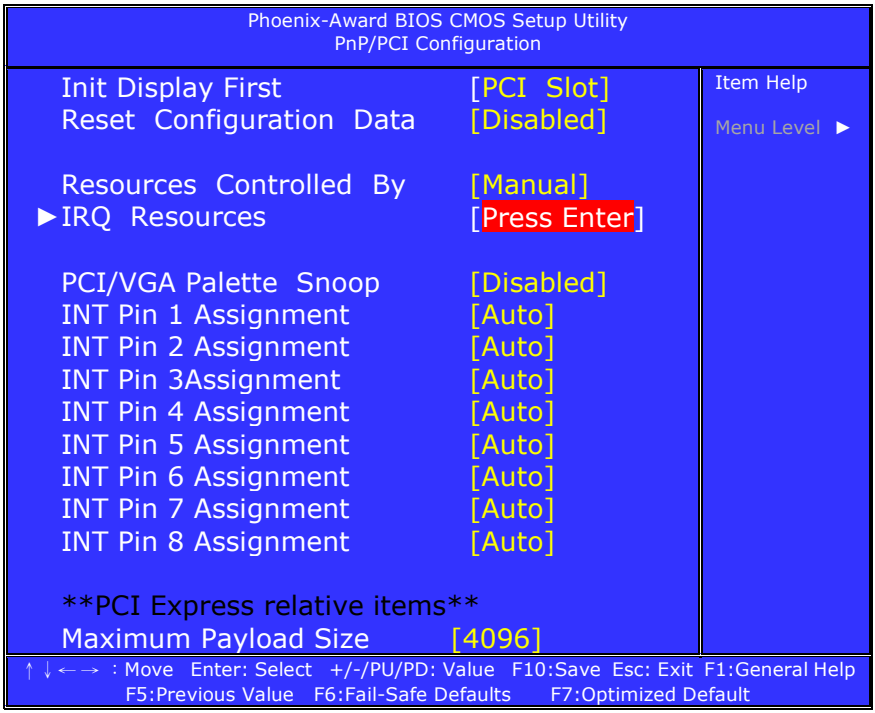
## Reset Configuration Data

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 **(default)**.

## Resources Controlled By

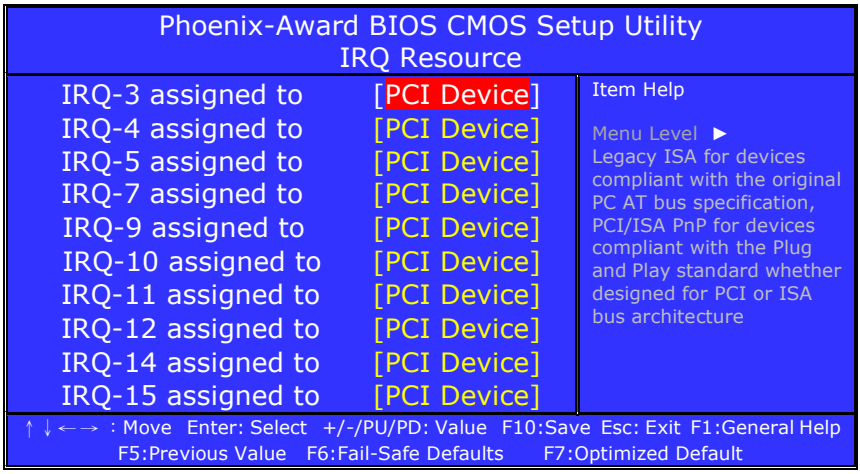
BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.
The choice: Auto (ESCD) **(default)**, Manual.

**If Resources Controlled By is [Manual], can choice IRQ Resource:**

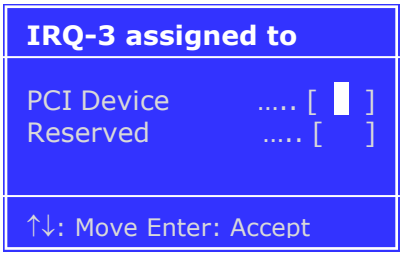


## ➢IRQ Resource

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.




### IRQ-3,4,5,7,9,10,11,12,14,15 assigned to




The choice: PCI Device, Reserved.

## PCI/VGA Palette Snoop

This BIOS feature determines if your graphics card should allow VGA palette snooping by a fixed function display card.
The choice: Enabled, Disabled **(default).**

## INT Pin 1/2/3/4/5/6/7/8 Assignment

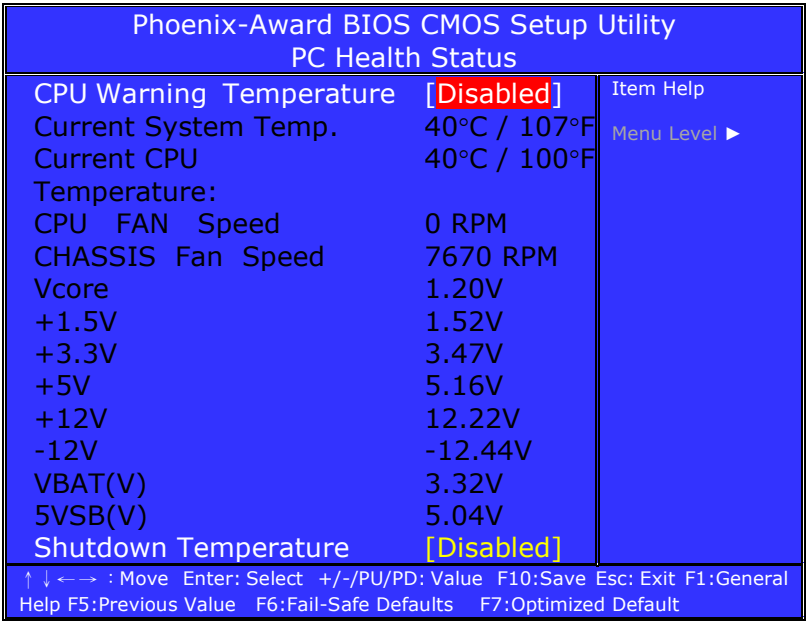
The choice: Auto **(default)**,3,4,5,7,9,10,11,12,14,15.

## Maximum Payload Size

The choice: 128 (**default)**, 256,512,1024,2048,4096.

# 3.8 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.




## CPU Warning Temperature

Select the CPU over-heated warning temperature.
The choice: Disabled **(default)**, 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 Temp

Show System Temperature.

## Current CPU Temperature

Shows Board Temperature

## CPU FAN Speed

Shows CPU Fan speed.

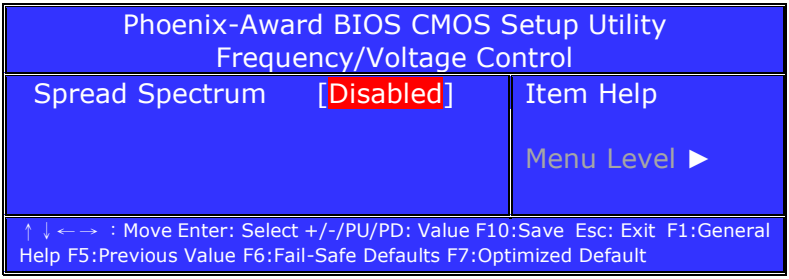
## CHASSIS Fan Speed

Shows CHASSIS Fan speed

## Shutdown Temperature

Select the CPU over-heated shutdown temperature.
The choice: Disabled **(default)**, 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F

# 3.9 Frequency/Voltage Control

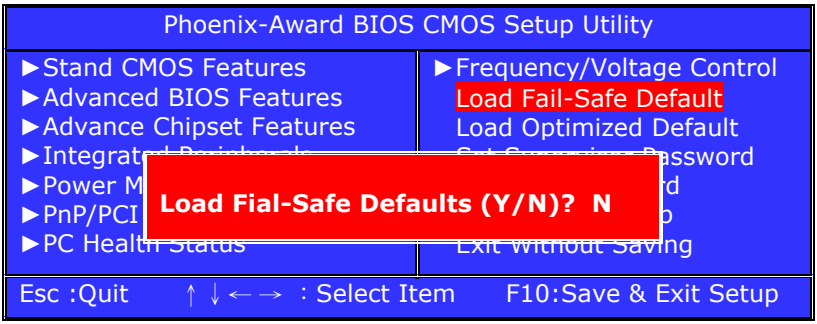



## Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician. The choice: Disabled **(default)**, +/-0.1%, +/-0.2%, +/-0.3%, +/-0.4%, +/-0.5%,+/-0.6%,+/-0.7%,+/-0.8%,+/-0.9%.

# 3.10 Load Fail-Safe Defaults

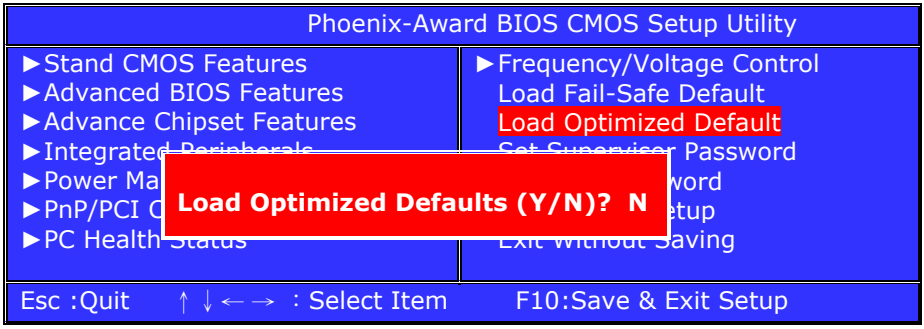
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:




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

## 3.11 Load Optimized Defaults

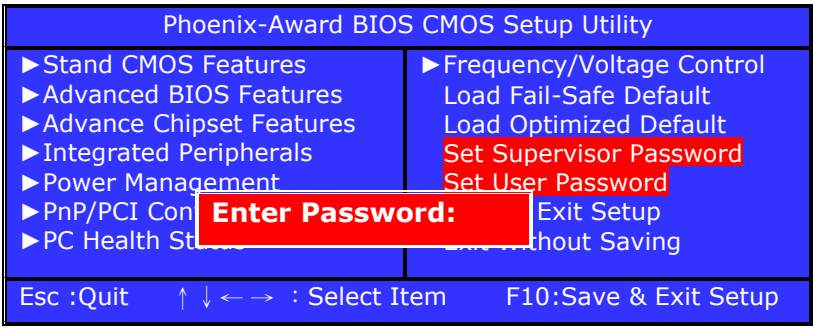
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:




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

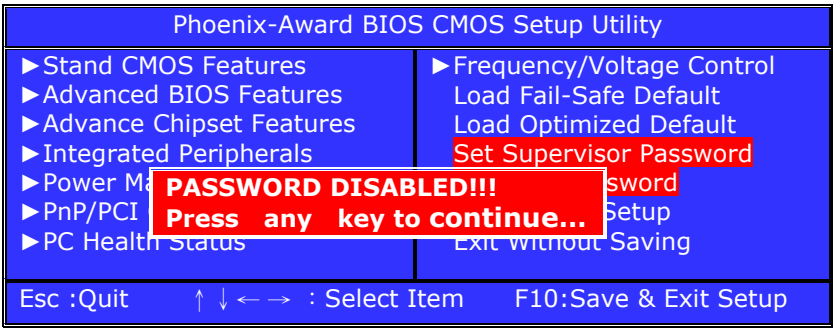
## 3.12 Set Supervisor/User Password

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:**

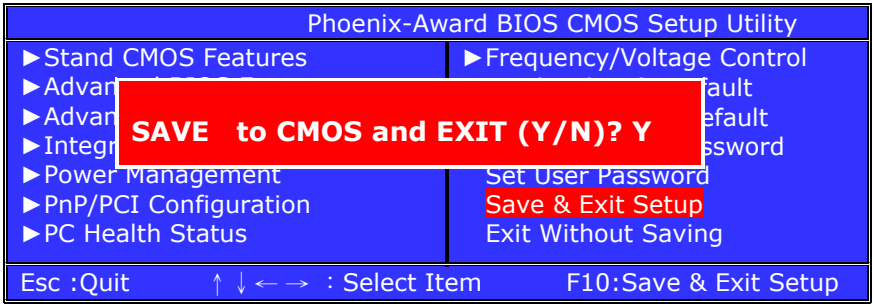
When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

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.

# *3.13 Save & Exit Setup*

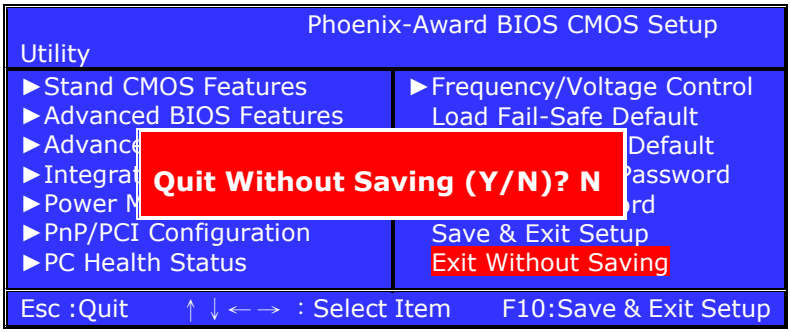
Pressing <Enter> on this item asks for confirmation:




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.

# 3.14 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:




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.

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# 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 is 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.