

# 华北工控®


EMB-3850

3.5" Embedded SBC

USER' Manual V1.1

## USER' Manual



**Industrial & Communication Computer** 

# EMB-3850

3.5" Embedded SBC

USER' Manual V1.1

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# Declaration of conformity



**Shenzhen NORCO Intelligent Technology CO.,LTD.**

declares that the product

**EMB-3850 3.5” Embedded Single Board Computer**

(reference to the specification under which conformity is declared in accordance with 89/336 EEC-EMC Directive)

- EN 55022 Limits and methods of measurements of radio disturbance  
Characteristics of information technology equipment
- EN 50081-1 Generic emission standard Part 1:  
Residential, commercial and light industry
- EN 50082-1 Generic immunity standard Part 1:  
Residential, commercial and light industry

**European Representative:**

**Shenzhen NORCO Intelligent Technology CO.,LTD.**

Signature:  \_\_\_\_\_

Place/Data: HONG KONG/2009

Printed Name: Anders Cheung

Position/Title: President

# Declaration of conformity



Trade Name : Shenzhen NORCO Intelligent Technology CO.,LTD.

Model Name : EMB-3850

Responsible Party : Shenzhen NORCO Intelligent Technology CO.,LTD.

Equipment Classification : FCC Class B Subassembly

Type of Product : 3.5" Embedded Single Board Computer

Manufacturer : Shenzhen NORCO Intelligent Technology CO.,LTD.

## **Supplementary Information:**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Signature: \_\_\_\_\_

A handwritten signature in black ink, appearing to be 'A. K. G.', written over a horizontal line.

Date: 2009

## Copyright

With the exception of showing the accessories of product configuration, this manual do not create any commitment of our company. We retained the rights to change it without prior notice. We will not be responsible for any installation, the result of improper use of direct, indirect, intentional or unintentional damage or hidden dangers.

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## Common Sense in Safety Application

1. Before using this product, be sure to read carefully this user's manual;
2. Any plate cards not ready to be installed shall be kept in the anti-static protective bags;
3. Before taking out the plate cards from the anti-static protective bags, first place hands on the grounding metal object for a while (e.g. 10 seconds) so as to release static electricity in body and hands;
4. While fetching plate cards, you should wear static protective gloves and have the habit of contacting brims of them;
5. In order to prevent bodily electric shock or damage to products, first turn off the AC power or unplug the power cord out of power sockets while inserting main boards or plate cards or configuring again;
6. Before it is necessary to move plate cards or the unit, be sure to unplug the AC power cords out of the power sockets;
7. Be sure to unplug AC power cords when there is an increase/decrease in plate cards for this product;
8. Before you connect or unplug any equipment, be sure to determine whether all power cords are unplugged in advance;
9. To prevent any unnecessary injuries to products due to frequent power on/off to the products, after the unit is shut down, you must wait at least 30 seconds before you restart up the unit.
- 10: If anything unexpected exists during Equipment used, please contact the professionals.

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## Packing List

Thank you very much for choosing our products. Please check your package completely as the following item checklist first, if you find any components lost or damaged, please contact your retailer.

■EMB-3850 Motherboard	1pcs
■User's Manual	1pcs
■Drive Disk	1pcs
■Jumpers	4pcs
■PS/2 Keyboard&mouse Cable	1pcs
■Serial ports convert Cable	2pcs
■USB convert Cable	1pcs
■SATA Data Cable	2pcs
■SATA HD Power Cable	1pcs
■Audio Cable	1pcs



## Chapter 1

# General Information

## Chapter1 General Information

### 1.1 Introduction

EMB-3850 is an fanless high performance, low power embedded motherboard based on Intel®945GSE+ICH7M chipset. EMB-3850 has an onboard 533MHz FSB Intel®Atom N270 CPU ( 1.6GHz, L2 512KB). EMB-3850 provides one 200 pin DDRII SODIMM slot support upto 2GB DDR II 400/533MHz memory.

EMB-3850 also provides Intel®GMA 950 integrated display controller from Intel®945GSE. EMB-3850 provides VGA, HDMI, LVDS interface. VGA and HDMI/LVDS can provide dual independent display.

EMB-3850 provide 2 SATA ports, one group 2x5 header high definition audio output and four serial ports(the 2<sup>nd</sup> serial port supports RS232/422/485 selectable), eight USB 2.0 ports, one GbE PCIE\_1X Ethernet and one Mini PCIE port. EMB-3850also provides other advanced functions such as one programmable I/O port, one PC104+ port, IrDA, Watchdog Timer etc.

EMB-3850 is distinguish itself as a compact, low power and extensive I/O interface etc for all kinds of applications. It is widely used in the communication control, media broad casting, advertisement, LCD large screen, industrial control, traffic control, information system, finance, kiosk, automobile, digital signage, interactive terminal, military and all kinds of systems.

### 1.2 Specifications

#### Configuration Standard

- 3.5" Embedded Single Board Computer

#### Dimensions

- 145mm X 102mm (L×W)

#### Processor

- Onboard Intel Atom N270 1.6G processor, L2 for 512KB,Power consumption is only 2.5W.Support FSB for 533MHz
- Support EM64T

#### Chipset

# EMB-3850 3.5" Embedded Motherboard with Intel ATOM CPU

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- North Bridge: Intel®945GSE (TDP 5.5~6W)
- South Bridge: Intel®ICH7M

## RAM

- 1x 200Pin dual channels SODIMM Memory socket
- Support DDR II 400/533MHz memory Up to 2GB

## Display Function

- VGA: Integrated Intel® GMA950 display controller, standard DB15 interface, support upto 2048x1536
- HDMI: based on SiI1392, use SDVO signal to convert to HDMI signal through standard HDMI connector compatible with DVI display(through HDMI to DVI converter), support upto 1080P FULL HD playbacks(1920x1080@60Hz)
- LVDS: dual 18 Bit LVDS LCD support
- Dual display: CRT+HDMI, HDMI+CRT support simultaneous display and dual independent display

## Storage

- 2x Serial ATA II Ports, The transfer speed is up to 300MB/s, provide one 5PIN power supply 3.3V/5V/12V
- Compact Flash: 50Pin Socket (Support DMA Mode)

## USB

- 8x USB2.0 ports. The transfer speed is up to 480Mb/s
- Back panel double USB ports
- 3 group 2x5Header ports, can convert to 6x standard USB ports

## Audio

- Chipset: ALC888
- Audio Controller: Supports AC97 Audio stereo sound
- Audio Interface: Line-out, MIC-IN

## LAN

# EMB-3850 3.5" Embedded Motherboard with Intel ATOM CPU

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- Chipset: REALTEK 8111C
- Speed: 10/100/1000Mbps
- Interface:1x RJ45 Port

## **I/O Functions**

- I/O Chipset: Winbond W83627HG I/O Chip
- 4×Serial Ports, COM1 is standard DB9 interface, support RS232, COM2/3/4 are of 2x5 header pins (COM2 supports RS232/485/422 selectable)
- Keyboard&Mouse Port: 2x4 Header
- GPIO: provides 5V 8bit Digital I/O(4-bit Input, 4-bit output), 2x5 header pins

## **PC104+**

- 1x PC104+ provides 4xPCI sources (long stylus and short stylus)
- IRQ: A/B/C/D;
- IDSEL:AD31/AD30/AD29/AD28

## **Power support**

- Single power input (+12V)

## **BIOS**

- 8M-bit SPI BIOS

## **Watchdog**

- Support H/W reset function

## **Environmental**

- Operate Temp: -20-60℃
- Operating Humidity: 0%-90%



## Chapter 2

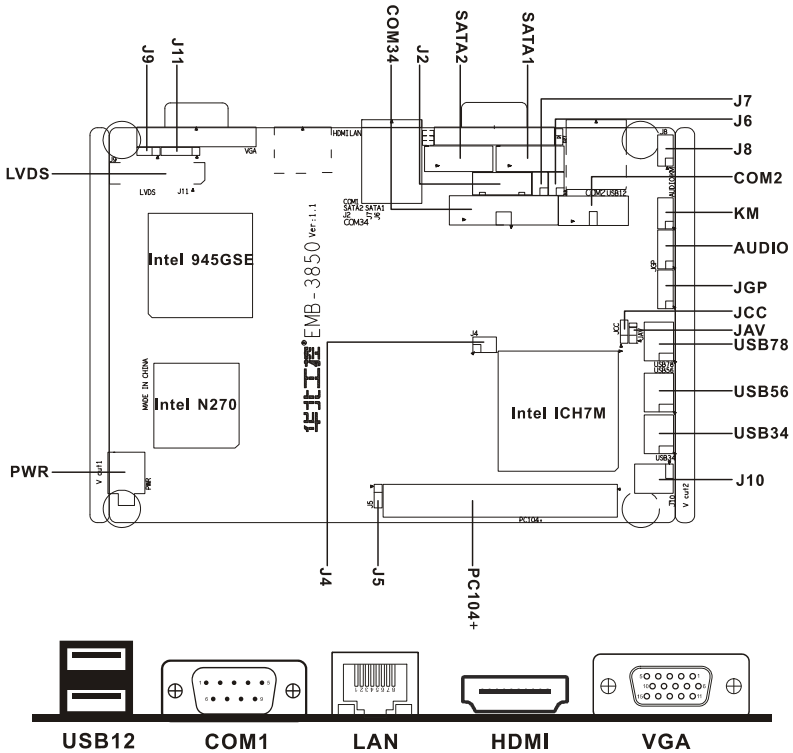
# Installation Instructions

## Chapter2 Installation Instructions

### 2.1 Connector Locations

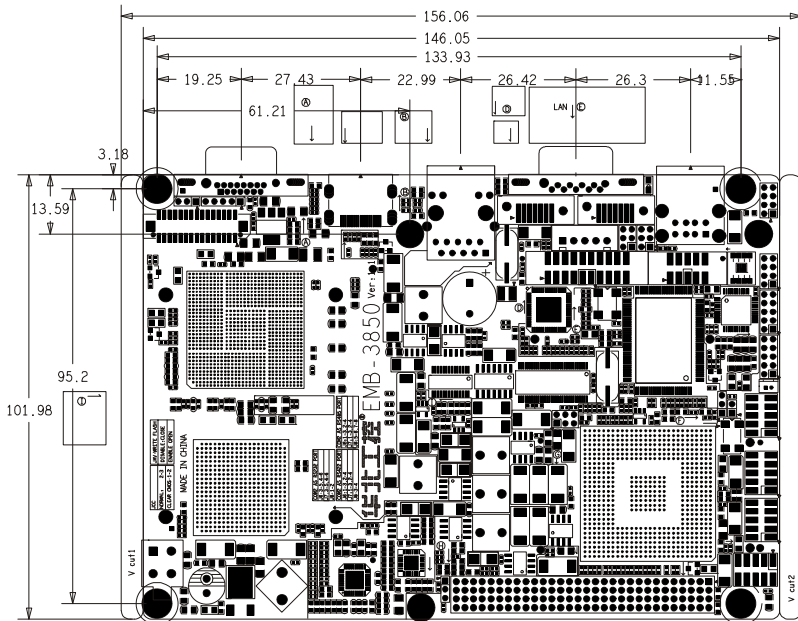
The following picture is interface index for EMB-3850, when you install your devices, please consult it and read the following guide. During installation please care: for some devices, if incorrectly install, it will not work normally.

**Note:** During installation, in order to protect the part of board, please put on antistatic gloves.



### 2.2 Dimensions

The EMB-3850 is the product outlines: it is intended to show the size, position and scale.



## 2.3 Installation Steps

Please refer to the following steps to install your computer:

- 1: Adjust all Jumpers on the EMB-3850 per this manual.
2. Installing system memory
3. Connect all of the signal line, cable, panel-control circuitry and power supply
4. Finish BIOS setup

### Note:

Key components of this motherboard are Integrated circuit, and these components will be easily damaged by electrostatic influence. So, before installing motherboard, you should always follow the following precautions:

1. Disconnect your Computer from the power supply before handling it.
2. Hold side by the edges; don't touch any component or pins on the board
3. Use a grounded wrist strap while getting in touch with integrated circuit component (like as CPU, RAM).
4. Place components on a grounded antistatic bag that came with the Single Board Computer, when these components are separated from the system.



## 2.4 Installing SO-DIMM

The procedures for installing SODIMM are described below. Please follow these steps carefully. You can install SDRAM memory modules using 200-pin SODIMM (Small Outline Dual In-line Memory Modules).

- 1: Ensure that all power supplies to the system are switched off.
- 2: Tilt the SODIMM card approximately 25° above the board, and move it in the direction of the housing card slot. Make sure that the key in the module and the key in the housing are aligned.
- 3: Push the module into the socket until the module bottoms. There should be a slight insertion force to engage the module into the contacts.

## 2.5 Setting Jumpers

### Note:


Jumpers are located on the motherboard, they represent clear CMOS jumper JCC etc. pin1 for all jumpers are located on the side with a thick white line refer to the motherboard's silkscreen , jumpers with three pins will be shown as 1-2 to represent pin1&pin2 connected and 2-3 to represent pin2&pin3 connected.

### 2.5.1 Clear CMOS (JCC)

This jumper is used to erase CMOS data and reset system BIOS information. The procedure for clearing CMOS is:

1. Turn off the system.
- 2: Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
3. Turn on the system. The BIOS is now reset to its default setting

setting	JCC
1-2	Clear CMOS(BIOS renew to initialization)
2-3	Nomal status(default)

 Do not clear CMOS when power switch on, or it harm to the motherboard.

### 2.5.2 COM2 setting (J6, J7, J8)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode (RS232 for default.). This is done via J6、J7 and J8.


COM2 RS232 (default)		COM2 RS422		COM2 RS485	
J6	3-5 4-6	J6	1-3 2-4	J6	1-3 2-4
J7	3-5 4-6	J7	1-3 2-4	J7	1-3 2-3
J8	1-2	J8	3-4	J8	5-6 7-8

### 2.5.3 PC104+ device operation power voltage jumper settings (J5)

Before use the selected PC104+ device, please check the power supply voltage requirements of this device, and set the J5 pins accordingly.

Setting	J5
OPEN	Default
1-2	3.3V
2-3	5V

## 2.6 External Connector

 Please carefully read this manual when connecting external connector, so as to avoid damage to the motherboard!

### 2.6.1 SATA Connector&SATA Power Connector (SATA1-SATA2, J2)

EMB-3850 supports Serial ATA via two connectors (SATA0, SATA1). Data transfer rates up to 300 MB/s, enabling very fast data and file transfer, and independent DMA operation on two ports.



#### SATA1-2:

Pin	Pin Name
1	GND
2	SATA_TXP
3	SATA_TXN
4	GND
5	SATA_RXN
6	SATA_RXP
7	GND



## J2 (SATA Power Connector) :

Pin	Pin Name
1	+12V
2	GND
3	VCC
4	GND
5	VCC3

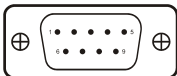
## 2.6.2 CF Card Socket (Compact Flash)

This motherboard provides one 50 pins standard CF slot which supports Type I / II CF cards.

## 2.6.3 Serial Ports (COM1、COM2、COM3-4)

It provides four serial ports, and COM1 provides standard DB9 interface, COM2 is 2 x 5 header pin, and COM3&4 are 2x10 header pins.

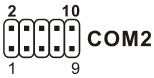
COM2、COM3&4 should be converted to standard DB9 interface before connecting with outside devices. COM1 and COM3&4 support RS 232, and COM2 supports RS 232/RS 422/RS 485. Please refer to the COM2 jumper settings for details



COM1

### COM1:

Pin	Pin Name	Signal description
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 Send
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator



COM2 sets to RS232/RS422/RS485, it's pin definition is:

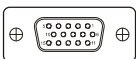
RS485	RS422	RS232	Pin		RS232	RS422	RS485
DATA-	TX-	DCD	1	2	DSR	NC	NC
DATA+	TX+	RXD	3	4	RTS	NC	NC
NC	RX+	TXD	5	6	CTS	NC	NC
NC	RX-	DTR	7	8	RI	NC	NC
GND	GND	GND	9	10	GND	GND	GND



Pin Name	Pin		Pin Name
HD3D3	1	2	HDSR3
HRXD3	3	4	HRTS3
HTXD3	5	6	HCTS3
HDTR3	7	8	HRI3
GND	9	10	GND
HD3D4	11	12	HDSR4
HRXD4	13	14	HRTS4
HTXD4	15	16	HCTS4
HDTR4	17	18	HRI4
GND	19	20	GND

### 2.6.4 Display Interfaces (VGA、LVDS、HDMI)

It provides onboard one standard DB15 VGA interface and one dual 18bit LVDS interface, 1x HDMI interface. CRT+HDMI, HDMI+CRT support simultaneous display and dual independent display



VGA

VGA:

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
-----	----------	-----	----------	-----	----------

1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDA
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	GND	15	5VDDCK



**LVDS**

**LVDS:**

Pin Name	Pin		Pin Name
VDDLVD5	1	2	VDDLVD5
GND	3	4	GND
LA_DATAN0	5	6	LB_DATAN0
LA_DATAP0	7	8	LB_DATAP0
GND	9	10	GND
LA_DATAN1	11	12	LB_DATAN1
LA_DATAN1	13	14	LB_DATAP1
GND	15	16	GND
LA_DATAN2	17	18	LA_DATAN2
LA_DATAP2	19	20	LA_DATAP2
GND	21	22	GND
LA_CLKN	23	24	LB_CLKN
LA_CLKP	25	26	LB_CLKP
GND	27	28	GND
L_DDC_DATA	29	30	L_DDC_CLK



**HDMI**

Pin Name	Pin		Pin Name
D2+	1	2	D2 Shield
D2-	3	4	D1+
D1 Shield	5	6	D1-
D0+	7	8	D0 Shield
D0-	9	10	CK+

CK Shield	11	12	CK-
CE Remote	13	14	NC
DDC CLK	15	16	DDC DATA
GND	17	18	+5V
HP DET	19	20	SHELL0
SHELL1	21	22	SHELL2
SHELL3	23	24	SHELL4
SHELL5	25	26	SHELL6
SHELL7	27	28	SHELL8
SHELL9	29	30	SHELL10
SHELL11	31		

## 2.6.5 LVDS PANEL BACKLIGHT (J11)

J11 is used for LVDS panel backlight control.



**J11:**

Pin	Pin Name
1	+12V
2	L_BKLTEN
3	GND
4	L_BKLTCTL
5	VCC

## 2.6.6 USB Ports (USB12, USB34, USB56, USB78)

This motherboard provides three groups of 2x5 header pin of USB ports and 2 standard USB ports (rear panel)

Three groups of 2x5 header USB interfaces should be converted to standard USB port before they can be used with standard USB jack.

These USB ports are supporting USB2.0 with transferring speed upto 480Mbps.



Pin	Pin Name
1	VCC

2	USB_P+
3	USB_P-
4	GND



USB3-8

Pin Name	Pin		Pin Name
+5V	1	2	GND
USB DATA-	3	4	GND
USB DATA+	5	6	USB DATA+
GND	7	8	USB DATA-
GND	9	10	+5V

### 2.6.7 Audio Connector (AUDIO)

This motherboard provides one 2x5Header AUDIO interface, support Speak out, LINE-IN, MIC-IN and CD-IN



AUDIO:

Pin Name	Pin		Pin Name
GND	1	2	MIC1*R
FRONT*L	3	4	FRONT*R
GND	5	6	CD_GND
CD_IN_L	7	8	CD_IN_R
LINE1*L	9	10	LINE1*R

### 2.6.8 Power Connector (PWR)

The Motherboard provides +12V single power voltage



PWR:

Pin	Pin Name
1	GND

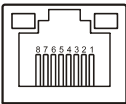
2	GND
3	+12
4	+12V

### 2.6.9 Ethernet Interface (LAN)

This port is onboard 100Mbps/1000Mbps Ethernet port. LILED and ACTLED is the yellow and green LED Ethernet port. They display LAN connectivity and activity status. Please refer to the following LED status descriptions:

ACTLED: Network activity status

LILED: Network connectivity status



#### RJ45 PORT LED state description:

LILED state		Network link status	ACTLED(Yellow) state	Message transfer status
On	Green ( 100Mbps )	effective	On	transferring
	Orang ( 1000Mbps )			
Off		noneffective	Off	No message transferring

### 2.6.10 Keyboard/Mouse connector (KM)

KM is one 2×4Header pins which is the port for mouse and keyboard.

This port should be convert to standard PS2 keyboard and mouse ports before it can be used with standard ports of keyboard and mouse.



#### KM:

Pin Name	Pin		Pin Name
5VSB	1	2	MS_CLK
GND	3	4	MS_DATA
KB_DATA	5	6	GND
MB_CLK	7	8	5VSB



## 2.6.11 GPIO (JGP)

Provide 5V 8bit Digital I/O(4-bit Input, 4-bit output) programmable I/O interface.



**JGP:**

Pin Name	Pin		Pin Name
GPIO17	1	2	VCC
GPIO16	3	4	GPIO13
GPIO15	5	6	GPIO12
GPIO14	7	8	GPIO11
GND	9	10	GPIO10

## 2.6.12 Front Panel connector (J10)

J10 use to connect function button or LED on front panel.



Pin Name	Pin		Pin Name
GRELED+	1	2	GND
HDD_LED+	3	4	HDD_LED-
BUZZ-	5	6	VCC
RSTBTN	7	8	GND
POWERSW	9	10	5VSB

Particular connection as below, according to the table above, advert to their polarity; When relevant polarity connected wrong, relevant function won't work normally.

POWER LED
IDE LED
Buzzer
RESET BUTTON

### 1) System Power LED Pins (No. 1 and 2 pin is PWLED)

Connecting system power LED cable and these pins, (pin 1 is LED anode),when system power switch on, power LED on: When system power switches off, power LED off.

### 2) HD LED Pins (No. 3 and 4 pin is HDD LED)

As a rule, there is a HD LED on the panel of chassis, while HD device (like hard Disk) is reading or writing (no matter which HD device), LED will flash, shows that HDD device is running. Connect HDD LED on chassis panel and these pins (pin3 is LED anode).

### 3) External beeper header pins( No. 5 and 6 pin is Buzzer)

External speaker pins. It is the users' option to connect this port or not because there is a onboard beeper.

### 4) Reset Button Pins(No. 7 and 8 pin is for RESET )

Connect this pins and RESET switch on panel of chassis with cable. When system can not work on, reset can make system restart, without turning on/off the power, thereby it can prolong system serviceable life.

### 5) Power On/Off Control Pins (No. 9 and 10 pin is POWER BUTTON)

Connect these two pins with bounce switch on panel of chassis, can switch-on or switch-off power.

### 2.6.13 RAM Slot (SODIMM)

EMB-3850 has One 200 Pin SO-DIMM DDRII 400/533MHz socket support system memory max. upto 2GB.

### 2.6.14 Mini PCIE Slot (MINI\_PCIE、J4)

The Motherboard provides one standard mini-PCIE slot on the back side which can be used to host the wireless Ethernet mini-PCIE card.

After wireless Ethernet card is inserted, the users can connect the J4 to check the type of the wireless network.

Pin Name	Pin		Pin Name
LED_WWAN#	1	2	V3.3SB
LED_WPAN#	3	4	V3.3SB
LED_WLAN	5	6	V3.3SB

### 2.6.15 PC104+ Slot (PC104+)

This motherboard provides one PC104+ slot, and the users can install the PC104+ device

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according to their requirements.

Please setting J6 for the rated voltage before install the devices referring to “2.5.3 PC104+ device operation power voltage jumper settings (J5)”

Pin	Pin Name	Pin	Pin Name	Pin	Pin Name	Pin	Pin Name
A1	GND/5V	B1	NC	C1	+5V_4	D1	AD00
A2	VI/O_0	B2	AD02	C2	AD01	D2	+5V_7
A3	AD05	B3	GND_6	C3	AD04	D3	AD03
A4	C/BE#0	B4	AD07	C4	GND_11	D4	AD06
A5	GND_0	B5	AD09	C5	AD08	D5	GND_17
A6	AD11	B6	VI/O_1	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND_12	D7	AD12
A8	+3.3V_0	B8	C/BE#1	C8	AD15	D8	+3.3V_7
A9	SERR#	B9	GND_7	C9	SB#0	D9	PAR
A10	GND_1	B10	PERR#	C10	+3.3V_5	D10	SDONE
A11	STOP#	B11	+3.3V_3	C11	LOCK#	D11	GND_18
A12	+3.3V_1	B12	TRDY#	C12	GND_13	D12	DEVSEL
A13	FRAME#	B13	GND_8	C13	IRDY#	D13	+3.3V_8
A14	GND_2	B14	AD16	C14	+3.3V_6	D14	C/BE#2
A15	AD18	B15	+3.3V_4	C15	AD17	D15	GND_19
A16	AD21	B16	AD20	C16	GND_14	D16	AD19
A17	+3.3V_2	B17	AD23	C17	AD22	D17	+3.3V_9
A18	IDSEL0	B18	GND_9	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	C/BE#3	C19	VI/O_3	D19	IDSEL3
A20	GND_3	B20	AD26	C20	AD25	D20	GND_20
A21	AD29	B21	+5V_2	C21	AD28	D21	AD27
A22	+5V_0	B22	AD30	C22	GND_15	D22	AD31
A23	REQ#0	B23	GND_10	C23	REQ#1	D23	VI/O_4
A24	GND_4	B24	REQ#2	C24	+5V_5	D24	GNT#0
A25	GNT#1	B25	VI/O_2	C25	GNT#2	D25	GND_21
A26	+5V_1	B26	CLK0	C26	GND_16	D26	CLK1

## EMB-3850 3.5" Embedded Motherboard with Intel ATOM CPU

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A27	CLK2	B27	+5V_3	C27	CLK3	D27	GND_22
A28	GND_5	B28	INTD#	C28	+5V_6	D28	RST#
A29	+12V	B29	INTA#	C29	INTB#	D29	INTC#
A30	-12V	B30	NC	C30	NC	D30	GND



## Chapter 3

### BIOS Setup

## Chapter3 BIOS Setup

### **Award BIOS upgrade:**

It is true that hardware and software are upgrading all the time. When your IPC can not support the newest processor (for example), you should upgrade the BIOS to try to keep up with the latest technology. Upgrading (or flashing) the BIOS is not an easy attempt. To make sure upgrade succeed, please follow the instruction below:

AWDFLASH.EXE is the program for BIOS to modify and upgrade, need to be run in DOS mode.

Use boot disk load DOS, run Amiflash.exe and write the newest file:XXXX.ROM into the Flash IC.

**Order format:** A:\Awdflash XXXX.bin

If you need to add other parameters, please add <space>/? after the order format.

Example: Awdflash 3850I100.bin /P /B /C /N /X

Remarks:

1. Upgrading BISO may cause your system crash, so please operate carefully.
2. Please use the upgrading program in the CD-ROM provided by us
3. Please do not power off or reboot the system when upgrading, otherwise, the BIOS maybe be damaged.
4. Please backup your BIOS before upgrading

### **Award BIOS Description:**

Awards BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed memory (CMOS RAM) so that it retains the setup information when the power is turned off

### **Award BIOS Setup**

Power on your computer, when this information display in your screen: Del->SETUP please press "DEL", then it will enter BIOS setup interface.

1. Power on or Reset computer.
2. When "Press <Del> to enter setup" in screen, please press <Del>.
3. Use the "←↑→↓" to choose the option which your want to modify, press <Enter> and show

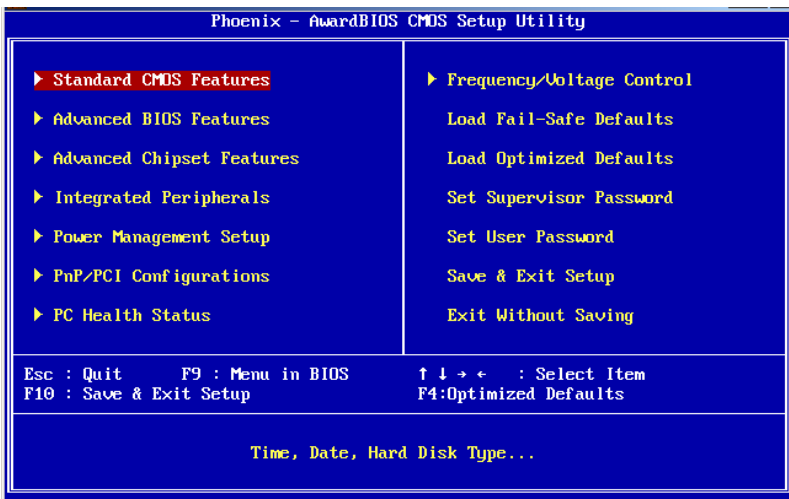
the sub-menu.

4. Use the “←↑→↓”and <Enter> to modify the value.

5. At any time, press<Esc> can back to the father-menu

**Note:** The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

When the SETUP program starts, you can see the CMOS Setup Utility Main screens are as follows:



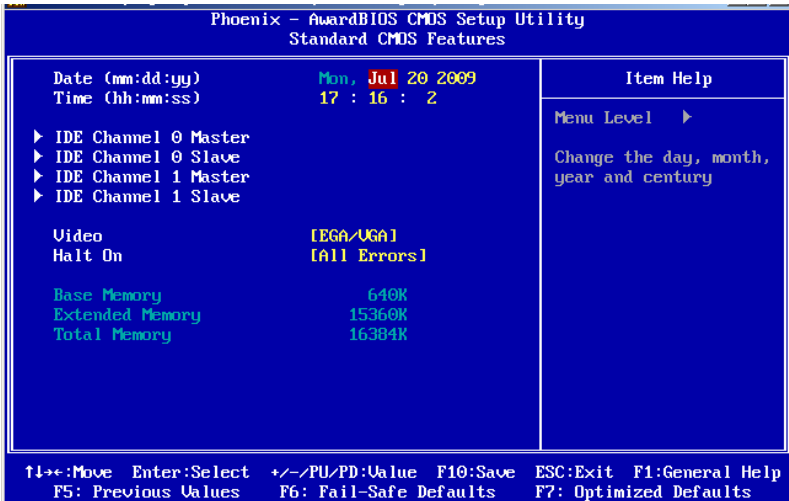
Award BIOS on the map is the main menu. Main Menu 12 set to provide the functions and two out of the way, the user needs according to their own set of corresponding projects. The following BIOS settings will be explained the various items.

## 3.1 Standard CMOS Setup

The CMOS RAM is powered by an onboard button cell battery. When you finish BIOS setup, the data in CMOS RAM will be automatically backed up to Flash ROM. If operation in harsh industrial environments causes a soft error, BIOS will recheck the data in CMOS RAM and automatically restore the original data in Flash ROM to CMOS RAM for booting.

**Note:** If you intend to change the CMOS setting without restoring the previous backup, you have to click on "DEL" within two seconds of the "CMOS checksum error..." display screen

message appearing. Then enter the "Setup" screen to modify the data. If the "CMOS checksum error" Message appears again and again, please check to see if you need to replace the battery in your system.



## Date

Format: Day/Month/Date/Year ;< Day><Month><Date><Year> can be set by user.

## Time

The times format in <hour> <minute> <second>, base on the 24-hour time

## IDE Channel 0/1 Master/Slave

These 4 options are IDE HDD setting items. Important: Please select the right option for your IDE devices. Please make sure that the specifications of the IDE devices are comply with the content of the device list. If not: the device will be fail. In the main menu, we have another auto detection function item to facilitate the settings.If the HDD interface is SCSI, please select Not Installed.

1. <LBA/Large>: HDD LBA/Large mode On/Off mode switch. Currently, HDD that size is bigger than 540MB should turn on this Option. But in some Novell Netware 3.xx or 4.xx etc version netbased OS need it be Off.
2. <Block Mode>: Turn this option to be On will help the R/W speed of HDD to be faster. But some of the old HDD don't support this mode, and this option should be Off in this case.



3. <PIO Mode>: Support PIO Mode0~Mode5(DMA/33)。 Use BIOS program to auto check the HDD, this option of PIO mode will be set.

Important: If your system installed an IDE device (i.e. HDD, CD-ROM Driver), you should go to the BIOS setting, and let the system auto detect the device. If you are using swapable HDD, you can change the type to Auto, or set the Primary and Secondary to Auto. Here, Primary means the first IDE interface: IDE0 on the motherboard; and Secondary means the second IDE device, and it refers to the IDE1 interface on the motherboard.

Every IDE device can have two IDE devices as Master/Slave.

### **Video**

Select EGA or VGA display.option item: <EGA/VGA>, <CGA 40>, <CGA 80>, <MONO>.

### **Halt On**

The item determines whether the computer will stop if an error is detected during power up.

<No Errors>: The system boot will not stop for any error.

<All Errors>: Whenever the BIOS detects a non-fatal error the system will be stopped

<All, But Keyboard>: The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)

### **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

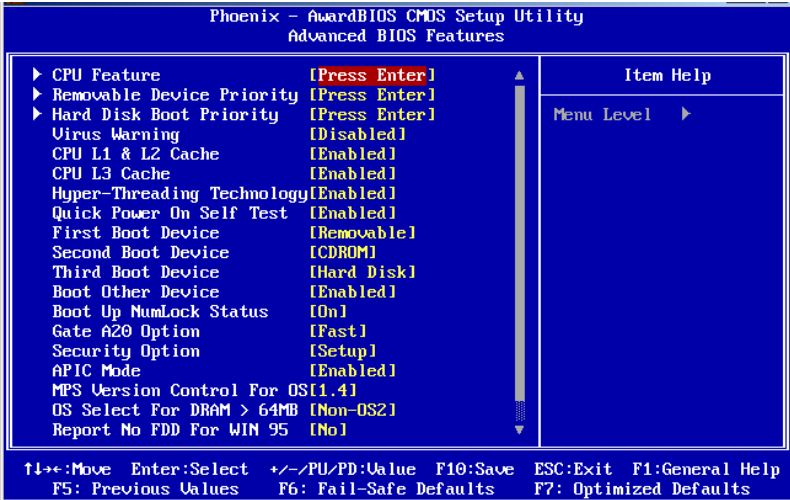
### **Extended Memory**

The BIOS POST will determine the amount of extended memory (above 1 MB in CPU's memory address map) installed in the system.

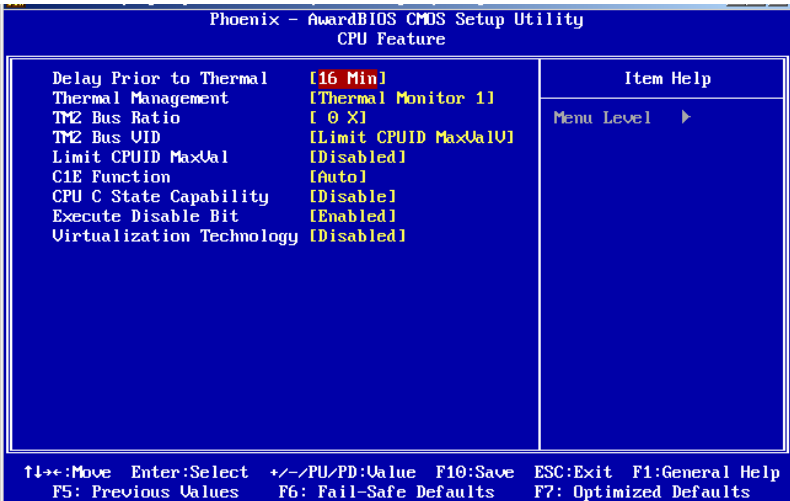
### **Total Memory**

This item displays the total system memory size.

### 3.2 Advanced BIOS Features



#### 3.2.1 CPU Feature



#### Delay Prior to Thermal

When the temperature of CPU has reached the preset temperature by the factory, the clock of the motherboard will be delayed. The temperature device is activated, and the detector inside the CPU is also activated to maintain the limit of temperature of CPU. This can be set to <4 Min>, <8 Min>, <16 Min>, <32 Min>.

### **Thermal Management**

Choice of thermal management monitor. option: <Thermal Management 1(default)>, <Thermal Management 2>.

### **TM2 Bus Ratio**

Performance Management bus will be activated when the hard mode detector turn hot from cool. Min=0 Max= 255 Input DEC code = Option :< 0X (Default)>.

### **TM2 Bus VID**

Performance Management bus voltage will be activated when the hard mode detector turn hot from cool.Option: <0.8375 V (Default)>, <0.8375-1.6000>.

### **Limit CPUID Maxval**

Set CPU ID MaxVal, Max is 3. In WinXP, it is set as<Disabled>. Option: <Disabled (Default)>, <Enabled>.

### **C1E Function**

CPU C1E Funcion option. Option: <Auto (default)>.

### **CPU C State Capability**

CPU C state status selection. Options: <Disable(default)>,<C2>,<C3>,<C4>,<Deep C4>,<C6>.

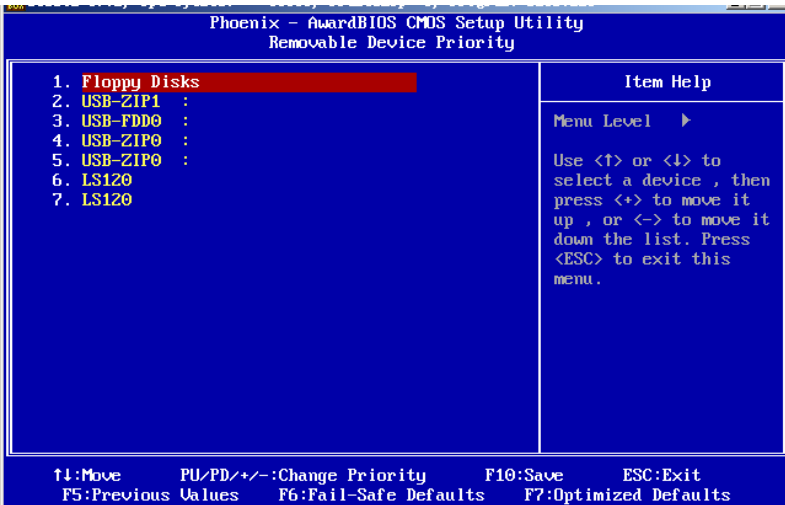
### **Execute Disable Bit**

Set if the CPU is protected by hardware antivirus Option: <Disabled>, <Enabled(Default)>.

### **Virtualization Technology**

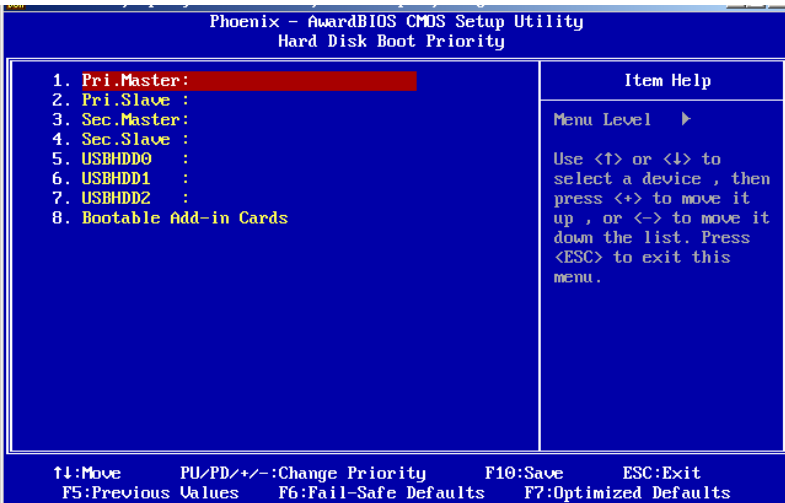
Set if use the additional hardware function provided by Vanderpool technology. Option: <Disabled>, <Enabled(Default)>.

### 3.2.2 Removable Device Priority



The above-mentioned items are the order of boot devices, can not be amendment.

### 3.2.3 Hard Disk Boot Priority



The above-mentioned items are the order of boot devices, can not be amendment.

### **Virus Warning**

If enabled, a warning message and alarm beep activates if someone attempts to write here. The commands are <Enabled> or <Disabled>.

### **CPU L1&2 Cache**

This item allows the user to <Enabled (default)>/<Disable> CPU L1&L2 cache.

### **CPU L3 Cache**

This item allows the user to <Enabled (default)>/<Disable> CPU L3 cache.

### **Hyper-Threading Technology**

This item allows the user to Enabled/Disabled Hyper-threading support for the Intel® Pentium® 4 processor with HT Technology. The Choices :< Enabled (default)>,<Disabled>.

### **Quick Power On Self Test**

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, the computer conducts normal POST procedures

### **First/Second/Third Boot Device**

The BIOS tries to load the OS with the devices in the sequence selected. Choices are: <Floppy>, <LS/ZIP>, <HDD>, <SCSI>, <CDROM>, <LAN>, and <Disabled>.

### **Boot Other Device**

If this option is set as [Enabled], system can be booted from other devices if it is fail to boot from the first, second or third device. Options: <Disabled (Prohibited)>; <Enabled (Default)>.

### **Boot Up NumLock Status**

This item allows the user to activate the Number Lock key at system boot. The Choices :< On (Default)>, <Off>

### **Gate A20 Option**

<Normal>: A pin in keyboard controller controls GateA20

<Fast (Default)>: Chipset controls GateA20

The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are "Enabled" or "Disabled." Enabling allows the typematic rate and delay to be selected.

### **Security Option**

This field allows you to limit access to the System and Setup. The default value is Setup. When you select System, the system prompts for the User Password every time you boot up. When you select Setup, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

### **APIC Mode**

APIC stands for Advanced Programmable Interrupt Controller. The default setting is <Enabled>.

### **MPS Version Control For OS**

This option specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is < 1.4 >.

### **OS Select For DRAM > 64MB**

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is <Non-OS/2>.

### **Report NO FDD For WIN95**

If you are using Windows 95/98 without a floppy disk drive, select Enabled to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there's no floppy drive in the system. If you set this feature to Disabled, the BIOS will not report the missing floppy drive to Win95/98.

### **Full Screen LOGO Show**

The splash screen can display the company LOGO. Option: <Enabled>, <Disabled>.

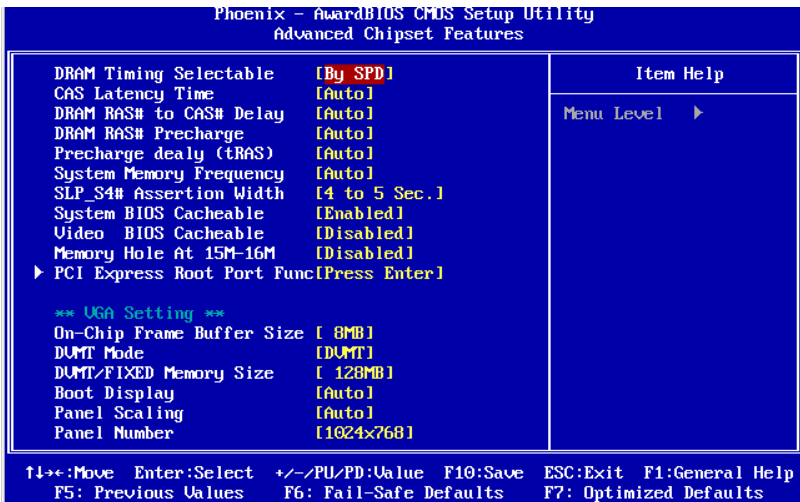
**Small Logo(EPA) Show**

The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is < Enabled>.

**Summary Screen Show**

This item allows you to open or close the screen shows a summary. Option: <Disabled (default)>, <Enabled>.

**3.3 Advanced Chipset Features**



**DRAM Timing Selectable**

This option refers to the method by which the DRAM timing is selected. The default is <By SPD>.

**CAS Latency Time**

You can configure CAS latency time in HCLKs as 2 or 2.5 or 3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. The default is <Auto>.

**DRMA RAS# to CAS# Delay**

This option allows you to insert a delay between the RAS (Row Address Strobe) and CAS

(Column Address Strobe) signals. This delay occurs when the DRAM is written to, read from or refreshed. Reducing the delay improves the performance of the DRAM. The choices : [2], [3], [4], [5], [6], [Auto: default].

### **DRAM RAS# Precharge**

This option sets the number of cycles required for the RAS to accumulate its charge before the DRAM refreshes. The choices : [2], [3], [4], [5], [6], [Auto]. The default setting for the Active to Precharge Delay is <3>.

### **Precharge dealy (tRAS)**

This item allows user to adjust memory precharge time. The choices: [4], [5], [6], [7], [8], [9], [10], [Auto].

### **System Memory Frequency**

This item allows user to adjust memory frequency to improvement performance.

### **SLP\_S4# Assertion Width**

This item allow user to set the SLP\_S4# Assertion Width . The choices : <4---5 Sec(default)>, <3 to 4 Sec>, <2 to 3 Sec>, <1 to 2Sec>.

### **System BIOS Cacheable**

The setting of 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.

### **Video BIOS Cacheable**

The Setting Enabled allows caching of the video BIOS ROM at C0000h-C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

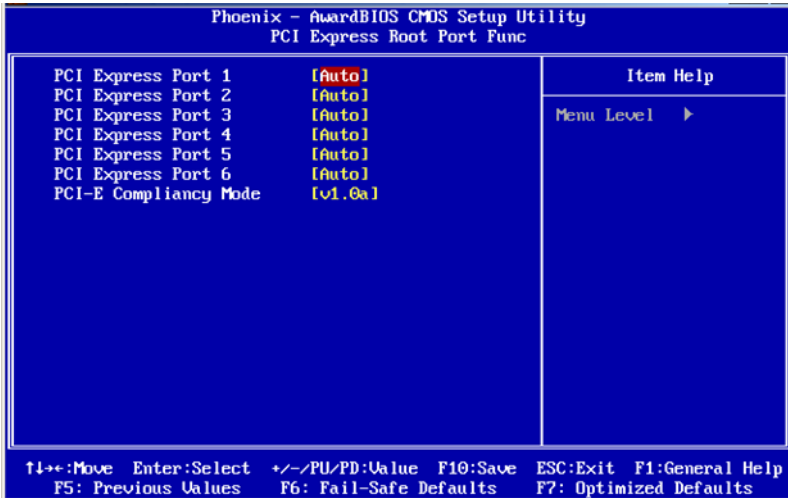
### **Memory Hole At 15M-16M**

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. The choices are



<Enabled> and <Disabled>.

## PCI Express Root Port Func



## PCI Express port 1-6

Set whether use PCI-E 1-6 port. The choices: <Auto(default)>, <Disabled>, <Enabled>.

## PCI-E Compliancy Mode

This option allows you to choose the PCI-E Compliancy Mode. The choices: <v1.0a (default)>, <v1.0>.

## VGA Setting

### On-Chip Frame Buffer Size

This item allows the user to adjust on-chip graphics of memory buffer. The choices: <1MB>, <8MB(default)>.

### DVMT Mode

This item allows the user to adjust Intel's Dynamic Video Memory Technology (DVMT). Bios provides three options to choose (DVMT, FIXED and Both).

### DVMT/FIXED Memory Size

This item allows the user to adjust DVMT/FIXED graphics memory size.

## Boot Display

This item allows the user to decide that display mode. The choices:[Auto], [CRT], [LVDS], <CRT+LVDS>, <HDMI>, <CRT+HDMI>.

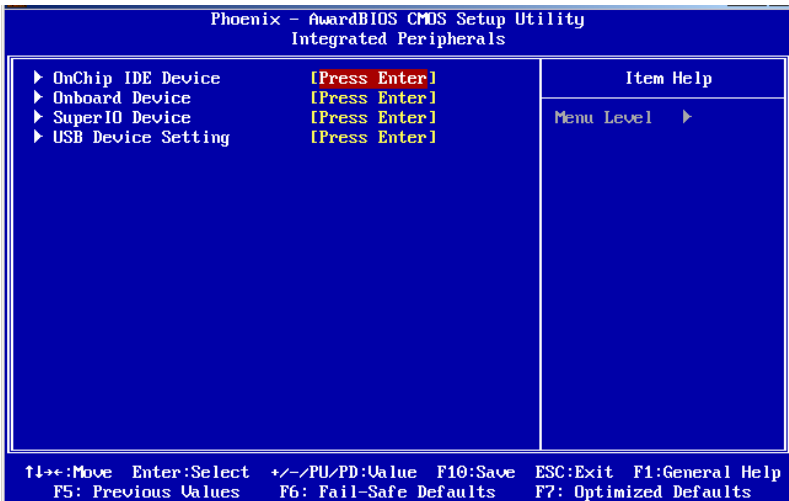
## Panel Scaling

Set Panel Scaling function. The choices:<Auto (default) >,<On>,<Of>.

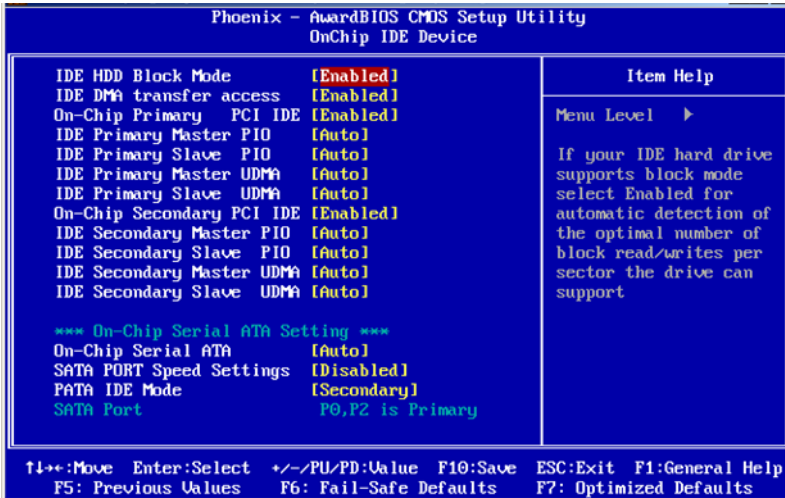
## Panel Number

These fields allow you to select the LCD Panel type. The setting values for these ports are: <1024 x 768>,<1280 x 1024 >,<1400 x 1050>,<1600 x 1200 >.

## 3.4 Integrated peripherals



### 3.4.1 OnChip IDE Device



#### IDE HDD Block Mode

You can enable the Primary IDE channel and/or the Secondary IDE channel. Any channel not enabled is disabled. This field is for systems with only SCSI drives.

#### IDE DMA transfer access

DMA transfer access, The choices: <Disabled>, <Enabled(default)>.

#### On-Chip Primary/Secondary PCI IDE

Some UDMA cables use a hole in the ribbon cable as a cable detect mechanism to determine if a UDMA IDE or standard IDE cable is installed. The default setting is <Enabled>.

#### IDE Primary/Secondary Master/Slave PIO

Four IDE PIO (Programable Input and Output) options can allow you to assign PIO mode(1-4) for each IDE device. Mode 0 to 4 provides the increasing performance. In Auto mode, the system will auto detect the best working mode. The choices: <Auto>, <Mode 0>, <Mode 1>, <Mode 2>, <Mode 3>, <Mode 4>.

#### On-Chip Secondary PCI IDE

Default is [Enabled]. Options are: <Disabled >, <Enabled >.

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

Ultra DMA/33/66/100 can be used when your IDE HDD support this kind of function. In the meantime, the OS includes a DMA driver (Windows 95 OSR2 or third-party IDE BUS control and driving programmed). If your HDD and your OS can support Ultra DMA/33, Ultra DMA/66 or Ultra DMA/100, Select Auto to enable BIOS support. Options: [Auto], [Disabled].

### **On-Chip Serial ATA Setting**

#### **On-Chip Serial ATA**

This can be set to [Disabled: SATA Prohibited], [Auto: Detect SATA device by BIOS], [Combined Mode: Simulate the IDE setting], [Enhanced Mode: Allow to use all IDE and SATA connection interface], [SATA Only: use SATA only].

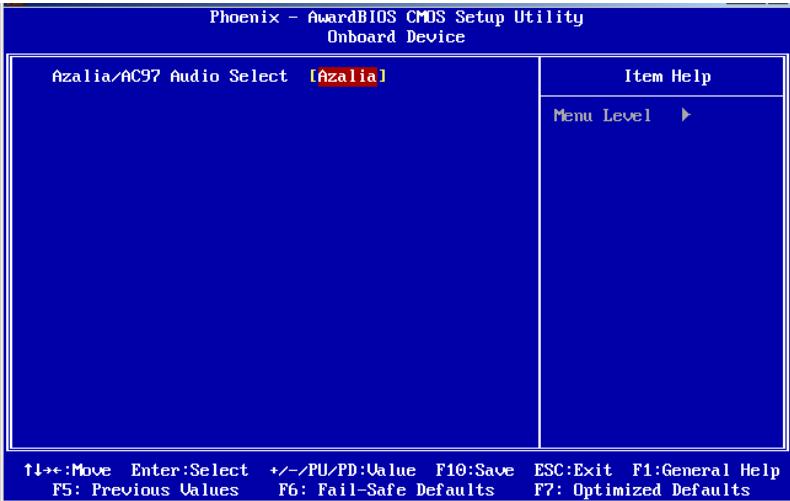
### **SATA PORT Speed Setting**

This option is used to set the speed of SATA ports. The choices: <Disabled>, <Force GED I >, <Force GED II >.

### **PATA IDE Mode**

Select this option to set the mode of the parallel IDE interface. Default setting for [Secondary].

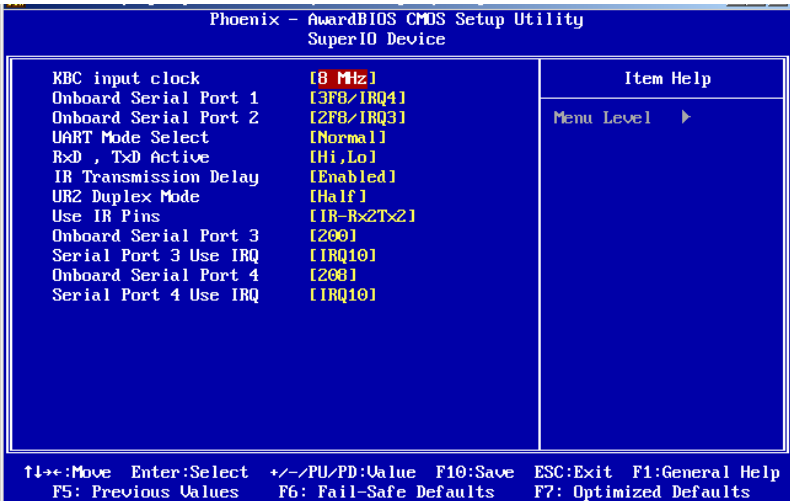
### **3.4.2 Onboard Device**



**Azalia/AC97 Audio Select**

Select <Disabled> if you do not want to use AC-97 audio/Modem. The choices: <Auto >,< Azalia (default)>, <Disabled>.

**3.4.3 Super IO Device**



**KBC input clock**

Select KBC ( KeyBroad Control) 's clock. The faster the clock, thefaster the speed: The choices: <8MHz>, <12MHz>, <16MHz>.

### **Onboard Serial Port 1/2**

For settings reference the Appendix for the serial resource allocation, and Disabled for the onboard serial connector. The choices: [Auto], [3F8/IRQ4], [2F8/IRQ3], [3E8/COM4], [2E8/COM3], [Disabled].

### **UART Mode Select**

This item allows you to select UART mode. The choices: <IrDA>, <ASKIR>, <Normal>.

### **RxD,TxD Active**

This item allows you to determine the active of RxD, TxD. The Choices: <Hi, Hi,>, <Lo, Lo,>, <Lo,Hi,>, <Hi, Lo.>.

### **IR Transmission Delay**

This item allows you to enable/disable IR transmission delay. The choices :< Enabled>, <Disabled>.

### **UR2 Duplex Mode**

This item allows you to select the IR half/full duplex function. The choices :< Half>,<Full>.

### **Use IR Pins**

Please refer to your IR equipment, setting the correct signal TxD and RxD. Option: <RxD2>, <TxD2>, <IR-Rx2Tx2>.

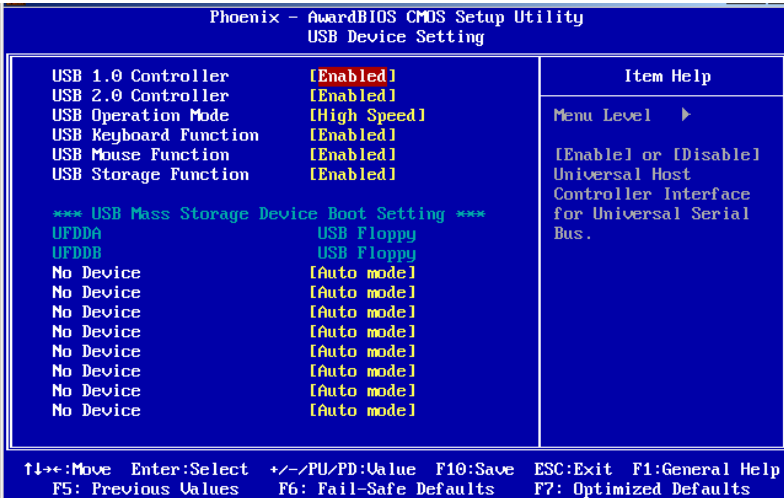
### **Onboard Serial Port 3/4**

For settings reference the Appendix for the serial resource allocation, and Disabled for the onboard serial connector. The choices: [200], [208], [210], [218], [Disabled]

### **Serial Port 3/4 Use IRQ**

This item is to set IO IRQ of the serial port 3 and 4 (COM3/4), options are: [IRQ3], [IRQ4], [IRQ5], [IRQ9], [IRQ10], [IRQ11].

### 3.4.4 USB Device Setting



#### USB 1.0 Controller

Select Enabled, if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices are <Enabled> and <Disabled>.

#### USB 2.0 Controller

This entry is used to disable/enable the USB 2.0 controller only. The BIOS itself may or may not have high-speed USB support. If the BIOS has high speed USB support built in, the support will automatically turn on when a high speed device is attached. The choices are <Enabled> or <Disabled>.

#### USB Operation Mode

Set the USB 2.0 controller to <Hi Speed (480 Mbps)> or <Full Speed (12 Mbps)>.

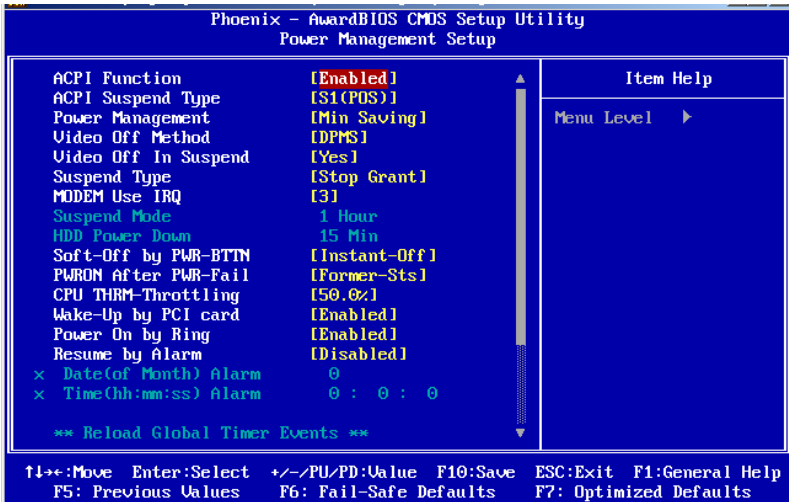
#### USB Keyboard/Mouse Function

Select <Enabled> if you plan to use a USB keyboard/Mouse. The choices are <Enabled> and <Disabled>.

#### USB Storage Function

Select <Enabled> if you plan to use an external USB storage device to boot system under DOS mode. The choices are <Enabled> and <Disabled>.

### 3.5 Power Management Setup



#### ACPI Function (ACPI)

This is item to activate the ACPI function. If you OS support ACPI-aware, For example: Windows 98SE/2000/ME, choice <Enabled>.Option: <Enabled>, <Disabled>.

#### ACPI Suspend Type

This item allows user to select sleep state when in suspend.

<S1 (POS)>: The suspend mode is equivalent to a software power down;

<S3 (STR) (default)>: The system shuts down with the exception of a refresh current to the system memory.

#### 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 four selections for Power Management, three of which have fixed mode settings <User Define(default)>: Allows you to set each mode individually.When not disabled,each of the ranges are from 1 min.to1 hour. except for HDD Power Down which ranges from 1 min.to 15 min.and disable



<Min Saving>: Minimum power management, Suspend Time Out = 1 Hour, HDDPower Down = 15 Min

<Max Saving>: Maximum power management, Suspend Time Out = 1 Min, HDDPower Down = 1Min

### **Video Off Method**

This item allows user to determine the manner in which the monitor is blanked.

V/H SYNC+Blank: This option will cause system to turn off vertical and horizontal synchronization ports and write blanks to the video buffer.

<Blank Screen>: This option only writes blanks to the video buffer.

<DPMS (default)> :Initial display power management signaling.

### **Video Off In Suspend**

This item allows users to turn off video when system is in suspend mode. option item: <No>, <Yes (default)>.

### **Suspend Type**

This item allows users to determine the suspend type. option item: <Stop Grant(default)>,<PwrOn Suspend>.

### **MODEM Use IRQ**

This determines the IRQ in which the MODEM can use. The choices: <3(default)>, <4>, <5>, <7>, <9>, <10>, <11>, <NA>.

### **Soft-Off by PER-BTIN**

If you choose "Instant-Off", then pushing the ATX soft power switch button once will switch the system to "system off" power mode. You can choose "Delay 4 sec." If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to "suspend" mode. The choices: <Instant-off (default)>, <Delav 4 Sec>.

### **CPU THRM-Throttling**

This field allows you to select the CPU THRM-Throttling rate. The choices:< 25.0%>, <50.0%>, <75.0%>.

### **Wake-Up by PCI Card**

Select [Enabled] when the incident occurred in any PCI cards, PCI cards will be issued by PME signal so that the boot system back to full status. The choices :< <Enabled>、<Disabled(default)>.

### **Power On by Ring**

When Enabled an input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices :< Enabled (default)>, <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 choices :< Enabled>, <Disabled (default)>.

### **Primary and 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 choices :< Enabled>, <Disabled>.

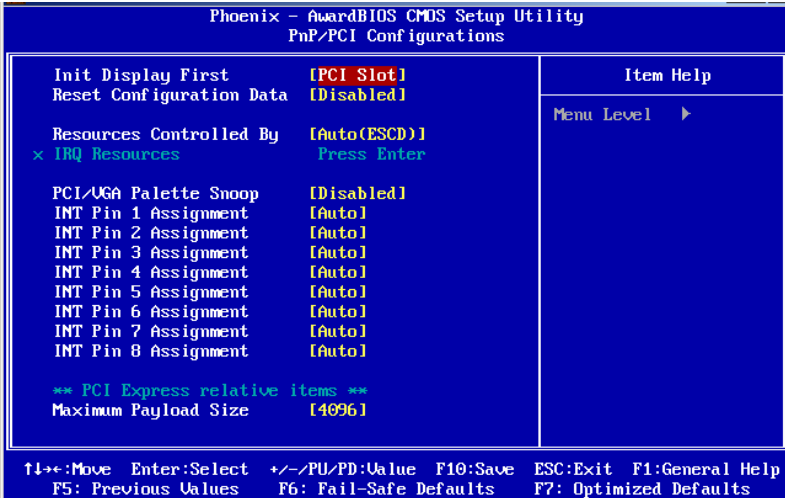
### **FDD, COM, LPT Port**

When Enabled, the system will resume from suspend mode if FDD, COM port, or LPT port is active. The choices :< Enabled>, <Disabled>.

### **PCI PIRQ[A-D]#**

When Enabled, the system will resume from suspend mode if interrupt occurs. The choices :< Enabled>, <Disabled>.

### 3.6 PnP/PCI Configurations



#### Init Display First

This option has two options: [PCI slot]/[AGP], and you can use the options to select the sequence of display card when boot up. If you use AGP display card, you can set to [AGP]; If you are using the PCI display card, you can set it to [PCI slot].

It is recommended using the [AGP] display card, and the graphic performance will be increase dramatically.

#### Reset Configuration Data

Default is <Disable>. Select Enable to reset Extended System Configuration Data (ESCD) if you have installed a new add-on and system configuration has caused such a conflict that OS cannot boot.

#### Resources Controlled By

The commands here are <Auto>or <Manual>.Choosing <manual> requires you to choose resources from each following sub-menu. <Auto> automatically configures all of the boot and Plug and Play devices but you must be using Windows 95 or above.

#### PCI/VGA Palette Snoop

When set to <Enabled>, various VGA devices which are working on different bus can handle data from CPU on different color palette of different video device. Stored in the 5th bit in

the PCI device command cache is the VGA color palette (0 is disabled). For example: if there are two VGA devices (one is PCI and the other is ISA), the setting should be like: if any ISA adaptor installed in the system require VGA color palette, this item should be set to <Enabled>.

### INT Pin1-8 Assignment

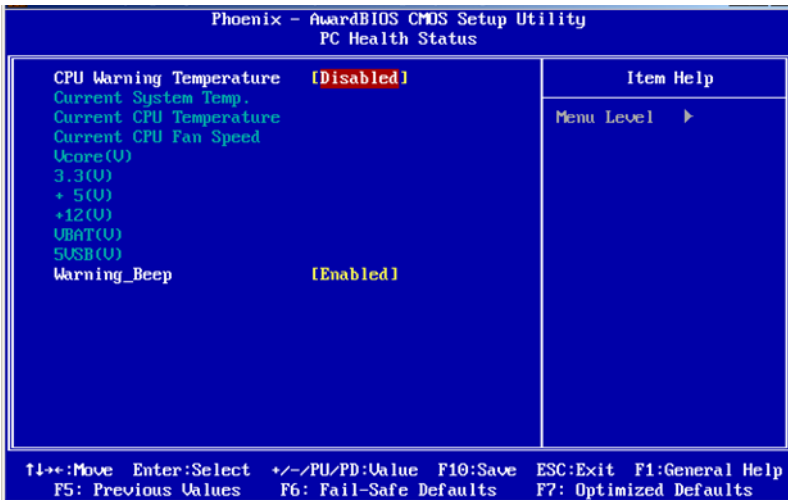
The option to connect to the computer's motherboard, a PCI interface device designated IRQ allocation, The choice: <AUTO>, <3>, <4>, <5>, <7>, <9>, <10>, <11>.

### Maximum Payload Size

This allows you to set the PCI Express devices largest TLP (Transport Layer Packet) payload value. The choice: <128>, <256>, <512>, <1024>, <2048>, <4096>.

## 3.7 PC Health Status

Annotate: (Green shows the following numerical values for the read-only)



### CPU Warning Temperature

The system will give an automatic warning if the CPU temperature goes over the selected setting. default setting :<disabled>.

### Current SYS Temperature, VCore, V1.8, 5V, 12V, Fan Speed

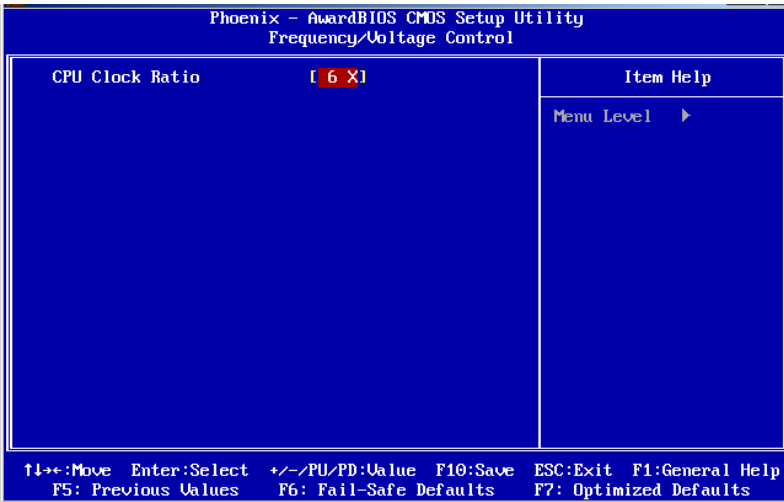
This shows the current monitoring of all hardware devices / components such as CPU

voltage state, temperature and speed of all fans.

## Warning\_Beep

This allows you to decide, if your system chassis temperature is too high or when the invasion occurred whether or not to issue a beep sound. Option: [Enabled], [Disabled].

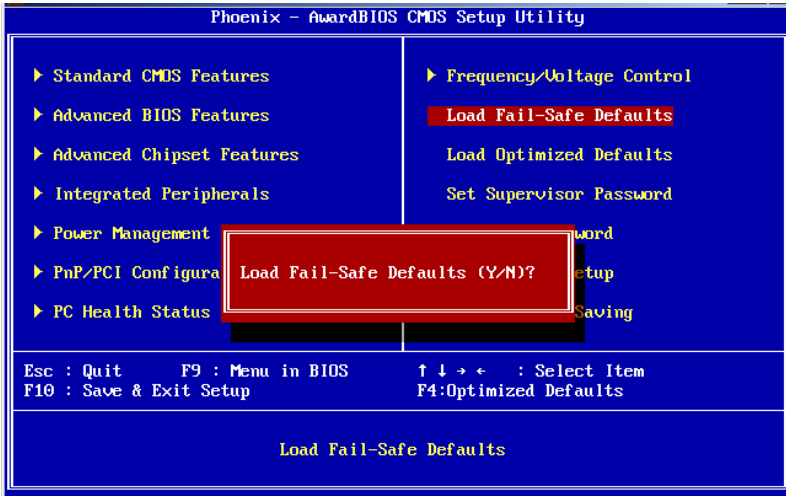
## 3.8 Frequency/Voltage Control



### CPU Clock Ratio

If the CPU clock ratio is not set, you probably need to set the ratio of the CPU clock before the system can display properly. If you are using the CPU which clock is locked, you needn't to set CPU clock ratio and the system can be work.

### 3.9 Load Fail-Safe Defaults



If the system is not stable after installation, this function can be helpful. In this case, the system will cancel some of the function which enhances the system, and the system will run in very strict status. So, it is easy to find the safe value and remove errors from the motherboard. When this option is selected, the host windows will prompt:

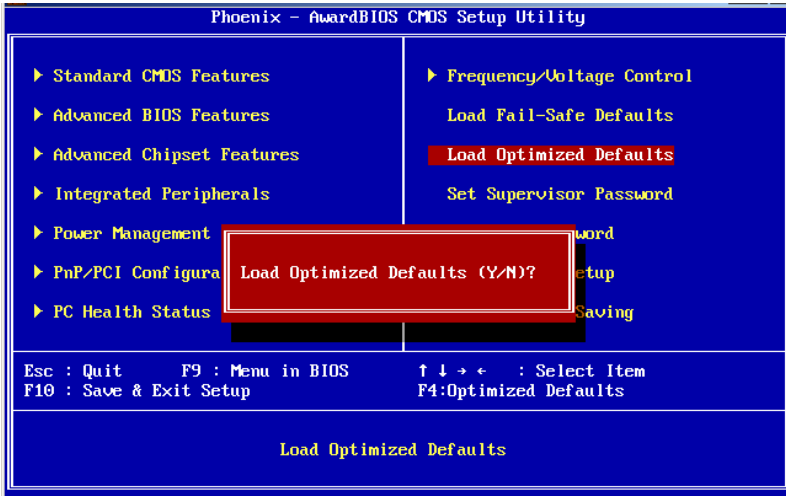
Load BIOS Defaults (Y/N) ?

Keyin "Y", and press Enter to execute this function.

**important:** This function will not influence the [Standard CMOS Setup].

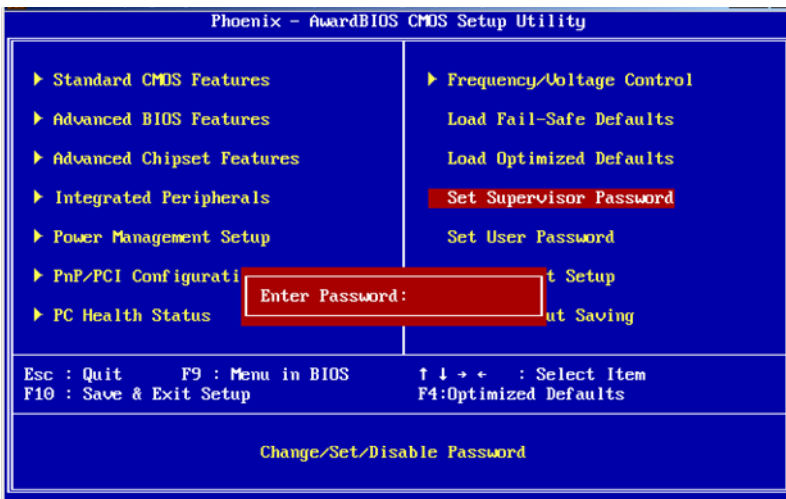
Keyin Supervisor Pass word can input and revise CMOS BIOS's value, and Supervisor Password is set to protect the CMOS against willful revising. If IDE HDD is used by user, function can get the parameters of the HDD and record them to standard CMOS settings. Max four IDE parameters can be get from HDD.

### 3.10 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. Press <Y> to load the default values setting for optimal performance system operations.

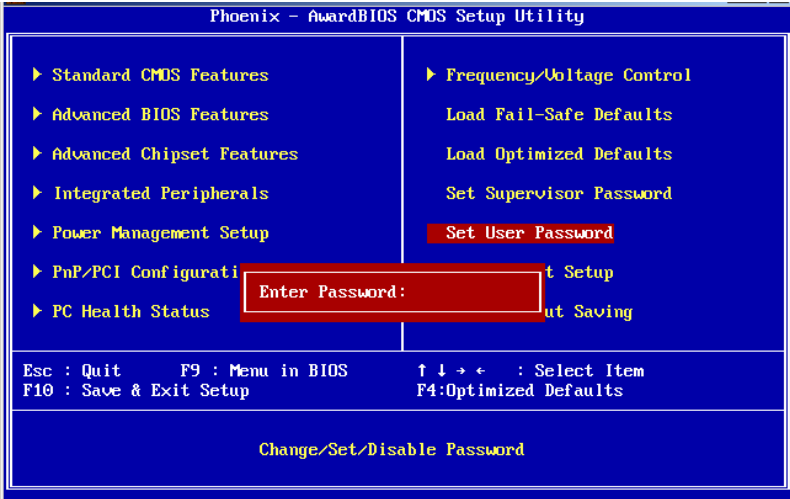
### 3.11 Set Supervisor Password



Supervisor password level is high than users, you can load CMOS, amend setup by supervisor, also can be used to boot PC. If you select this option and press enter ,the

information "ENTER PASSWORD" will be shows on screen, here you can input your password. do not be excess than 8 characters, then press enter, the password you inputted will replace the former one. Press enter again to confirm.

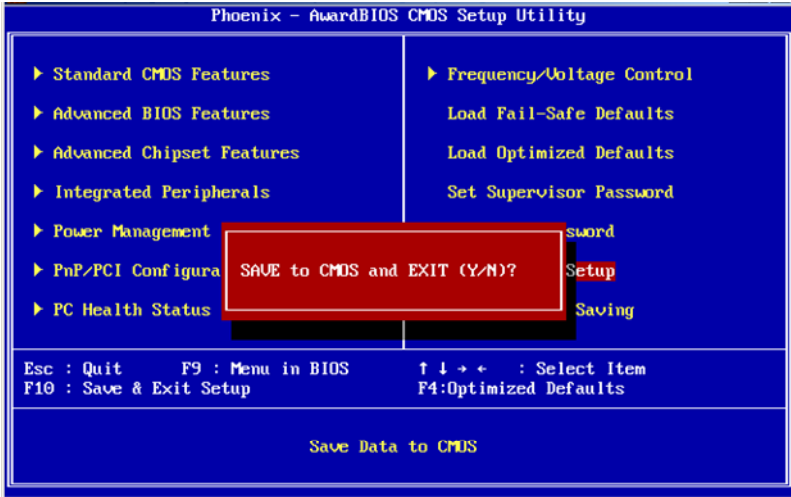
### 3.12 Set User Password



<User Password Setting> function for a setting password. If you want to set the password, first enter the current password to identify your password by y, the screen automatically return to the main screen. Enter the User Password can use the system, but can not modify the contents of CMOS

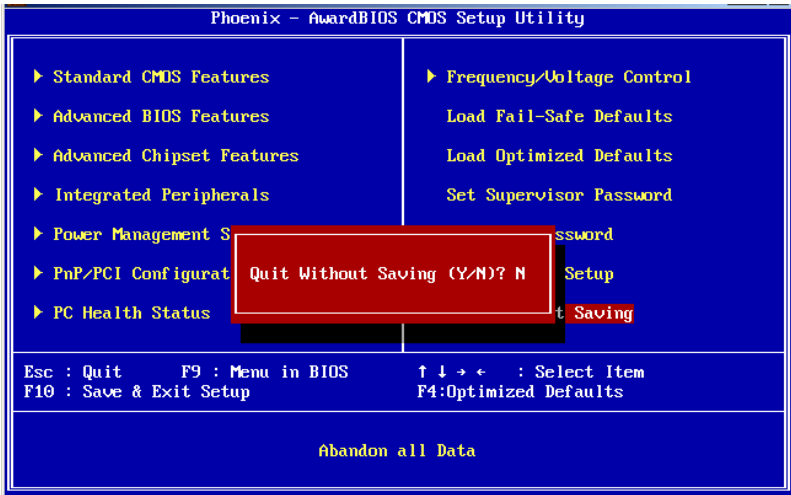
### 3.13 Save&Exit Setup





If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

### 3.14 Exit Without Saving



Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones



## Appendix

## Appendix

### Appendix 1: Driver Installation

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Please install the driver as per the following steps:

Plug programmed disk into CD-ROM, so installation of the driver can be made either automatically or manually. Now manually installation instructions are given as below:

- 1) A variety of options available regarding manually installation, which you can check from Device Manager.
- 2) Right click "my computer ", select "management", and go to "Device Manager"
- 3) Right click "display controller" in the menu of graphic card, select "Properties ", click "Driver", select "update driver".
- 4) Select "Show the list of all drivers which are designated locations so that choices can be made from it ", select "next."
- 5) Select the location of display driver, click "ok"
- 6) Implement the installation, restart the system.

Proceed with the installation of other drivers after restarting the system, till all installations are implemented. Then user can see that it says device is working

## Appendix 2 : Watchdog programmer guide

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watchdog reference code (ASM) :

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Set the port to realize watchdog function through DEBUG order, so that it can carry out Watchdog Timer's various functions.

port instruction:

2EH : Address register

2FH : Data register

**Example:** Set Watchdog Timer for 30 Seconds, DEBUG in DOS:

```
C:\>debug
```

```
-o 2e 87
```

```
-o 2e 87 ; Decode
```

```
-o 2e 2b
```

```
-o 2f e0 ; bit4=0, set pin as watchdog func
```

```
-o 2e 07
```

```
-o 2f 08 ; Choose register
```

```
-o 2e 30
```

```
-o 2f 01 ; Activation logic devices
```

```
-o 2e f5
```

```
-o 2f 00 ; Set timer units as second / (set as min: o 2f 08)
```

```
-o 2e f6
```

```
-o 2f 1E ; Set Timer Count to 30 sec. (Max support FF = 255, when it set as 00
```

Watchdog function stop

```
-o 2fe aa ; locked register
```

```
-q
```

```
C:\>
```

---

## Appendix 3: Glossary

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### **ACPI**

Advanced Configuration and Power Management Interface for short.ACPI specifications allow OS to control most power of computer and its extended devices. Windows 98/98SE, Windows 2000 and Windows ME are all support ACPI, it provide users a flexible system power management.

### **ATX:**

AT extended, a motherboard layout according with modern standard replaced BabyAT. It changes disposal of many components, and do some new high efficiency design, so it is widely used now.

### **BIOS**

Basic in/out system.It's a kind of software including all in/out control code interface in PC. It will do hardware testing while system booting, then system runs, it provides an interface between OS and hardware. BIOS is stored in a ROM chip.

### **BUS**

In a computer system, it's the channels among different parts for exchanging data; it's also a group of hardware line. BUS here means part lines inside CPU and main components of memory.

### **Chipset**

Integrated chips for executing one or more function.Here "Chipset" means system level chipset structured by Southbridge & Northbridge; it decides motherboard's structure and main functions.

### **CMOS**

Complementary Metal-Oxide Semiconductor, a widely used semiconductor with the characteristic of high speed but low power. CMOS we mention here means part of obligate space in on-board CMOS RAM, for saving date, time, system information and system parameter etc.

### **COM**

Computer-Output Microfilmer. A universal serial communication interface, usually adopts normative OB 9 connector.

DIMM: Dual Inline Memory Module. It's a small circuit board with memory chipset, providing 64bit bus width.

### **DRAM**

Dynamic Random Access Memorizer. It's a normal type of memory often with a transistor and a capacitance to store 1 bit. With the development of the technology, more and more types and specification of ORAM exist in computer application. Now: SDRAM, DDR SDRAM and RDRAM are generally used.

### **IDE:**

Driver specification for integrated device electronics, for connecting HDD / CD-ROM device.

### **IRDA:**

Infrared Data Association for short, here means infrared transmit interface, to connect infrared transmit devices. This sort of device transmits data by infrared light-wave without connecting any cables. It has been developed a standard now.

### **LAN**

Network interface. Network grouped by correlative computers in a small area, generally in a company or a building. Local area network is buildup by sever, workstation, some communications links, as a rule. Terminals can access data and devices anywhere through cables, so, many users can share costly device and resource.

### **LED**

Light-Emitting Diode. a semiconductor device that shines when power supply is connected, often use to denote info lightly, for example, to denote power on or HDD work normally.

### **LPT**

Line print terminal. The denomination reserved by DOS, is used to denote universal parallel interface, and connect printer in a general way.

### **POST**

Self-test when power on. While booting, BIOS will do once uninterrupted testing operation to the system, including RAM, keyboard, hard disk driver etc. Check them in normal situation and work well.

### **PS/2**

A keyboard & mouse connective interface specification developed by IBM.PS/2 is a DIN interface with only 6PIN; it also can connect other devices, like modem.

### **USB**

It's Universal Serial Bus for short. A hardware interface adapts to low speed external devices, and is always used to connect keyboard, mouse etc. One PC can connect 127 USB devices Max, providing 12Mbit/s transmit bandwidth; USB supports hot swap and multi- data stream, namely, you can plug USB devices while system is running, system can auto-detect and makes it work on.



敬请参阅

<http://www.norco.com.cn>

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