AXIOMTEK

EP830 Series

Intel® Yonah & Merom Core™ Duo and Core™ Solo
All-In-One EPIC SBC
With DVI-I/LCD and EPIC Express

User's Manual

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.

- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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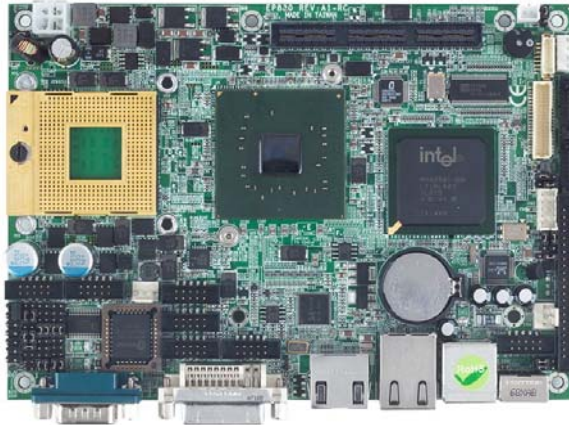
Table of Contents

MEMO

C h a p t e r   1
Introduction

The All-In-One EPIC board **EP830 Series** supports Socket M (478) for Intel$^®$ Yonah & Merom Core^{TM} Duo and Core^{TM} Solo processors with FSB533/667MHz. The board integrates Intel$^®$ 945GME and ICH*7M chipsets that support one 200-pin DDR2 SDRAM with maximum 2GB system memory, DVI-I interface for both CRT and DVI external display devices, dual Gigabit /optional Fast Ethernet via PCI-Express x1 and AC'97 Codec Audio all in one single board. Additionally, it provides you with unique embedded features, such as 4 serial COM ports (RS-232), 4 USB2.0 ports for high speed peripherals, 2 IEEE 1394a ports and PCI Express expansion. It can achieve the best stability and reliability that makes your system perform the most endurable operation in any critical environments. The built-in Watchdog Timer has enhanced the system reliability that achieves a unique feature to distinguish itself from other boards.

Designed for the professional embedded developers, the Socket M (478) embedded board **EP830 Series** is virtually ultimate one-step solution for embedded system applications.

1.1   Specifications

- **CPU: Socket M (478) for Intel$^®$ Yonach & Merom Core^{TM} Duo and Core^{TM} Solo processors**

- **CPU Frequency: FSB533/667MHz**

- **System Chipset: Intel$^®$ 945GME and ICH*7M**

- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - PXE Ethernet Boot ROM
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - RPL/PXE Ethernet Boot ROM
  - "Load Optimized Default" customized Setting in the BIOS flash chip to prevent from CMOS battery fail

- **System Memory**
  - One x 200-pin DDR2 SODIMM socket
  - Maximum to 2GB DDR2 memory

- **L2 Cache: integrated in CPU**

- **Onboard IDE**
  - One PATA-100 with 44-pin 2.0 pitch box-header
  - Two SATA-150 connectors
  - Two IEEE 1394a ports

- **CompactFlash Socket**
  - One CompactFlash Type II Socket

- **Onboard Multi-I/O**
  - 4 COM ports (RS-232)

- **USB Interface**
  - Four USB ports with fuse protection and complies with USB Spec. Rev. 2.0

- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Graphics**
  - 1 * CRT output @ rear I/O together with DVI output via CH7307 through SDVO-B
  - 1 * 40-pin JST (SHDR-40V-S-B) connector for dual channel LVDS from LFP port and 1 * 7-pin inverter connector

- **Expansion Interface**
  - EPIC Express socket supported

- **Ethernet**
  - 2 * RTL8111B (RTL8111C co-layout for FE), 10/100/1000 Base-T via PCI-Expres X1
  - 2 single deck RJ-45

- **Audio**
  - AC'97 codec audio
  - Line-in, Line-out and MIC-in,

- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)

- **Form Factor**
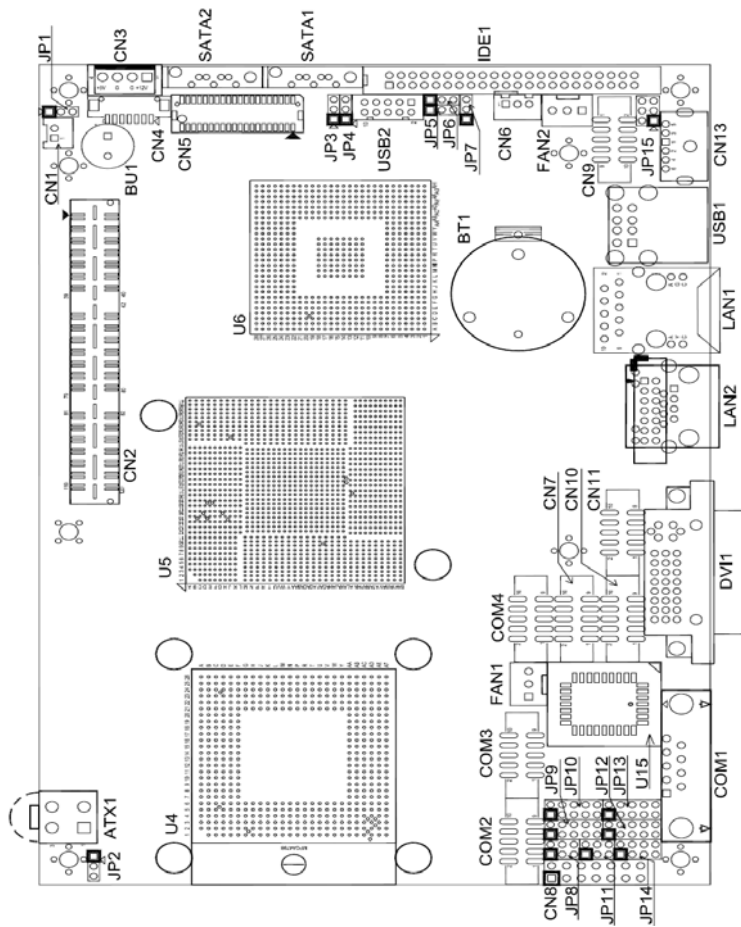 - EPIC form factor

NOTE: *All specifications and images are subject to change without notice.*

1.2   Utilities Supported

- Chipset Driver
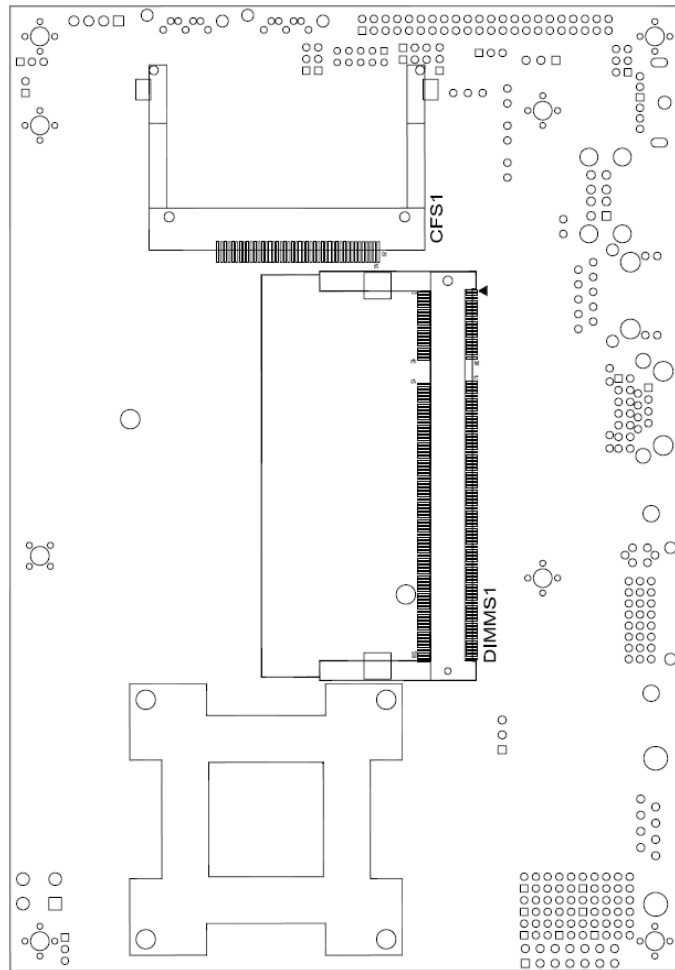- VGA Driver
- Ethernet Driver
- Audio Driver

C h a p t e r 2
Jumpers and Connectors

2.1 Board Layout and Fixing Holes

Component Side

Solder Side

2.2   Board Dimensions
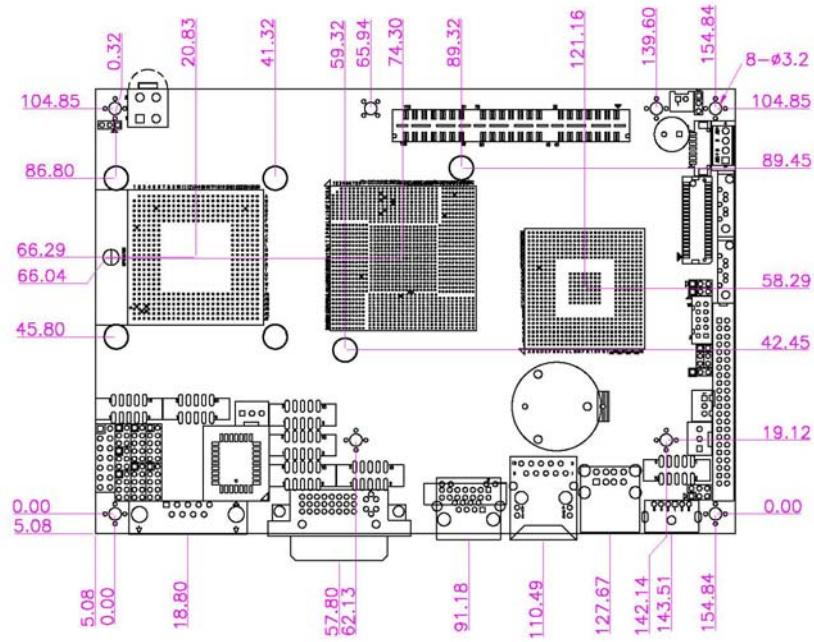
Component Side
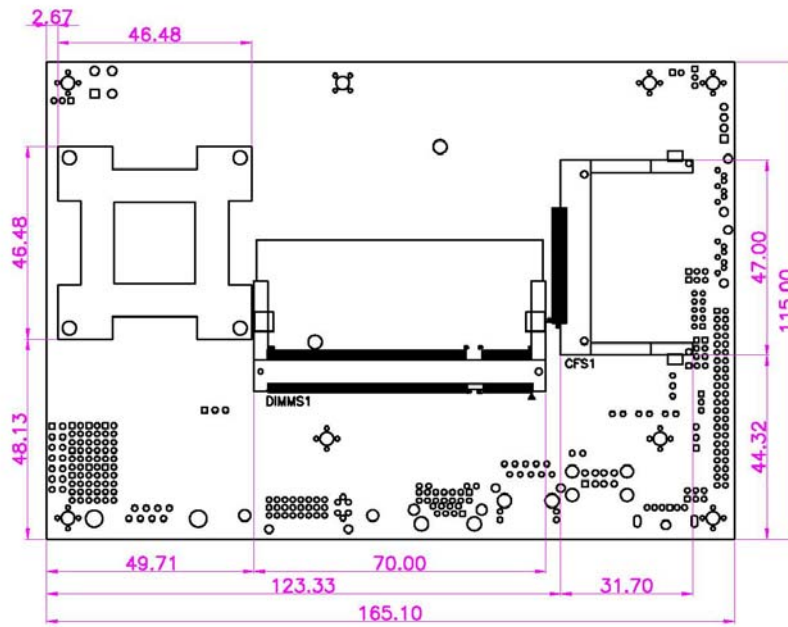
Solder Side

2.3   Jumper Settings

Proper jumer settings configure the **EP830** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Here is a list of jumper settings：
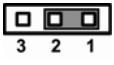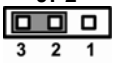
Jumper	Default Setting		Jumper Setting
JP1	CompactFlash Mode Selection : Slave		Short 1-2
JP2	Power AT or ATX Select :ATX		Short 1-2
JP3	LVDS Voltage select : 3.3V		Short 1-2
JP4	USB2 Voltage select : 5V		Short 2-3
JP5	Clear CMOS Setting : Normal		Short 1-2
JP6	Compact Flash Power Select : 3.3V		Short 1-2
JP7	USB1 Voltage select : 5V		Short 2-3
JP8	COM1 Mode Select: RS-232		Short 3-5, 4-6
JP11	COM1 Mode Select: RS-232		Short 3-5, 4-6
JP14	COM1 Mode Select: RS-232		Short 1-2
JP12	COM1 Mode Select	COM1 Pin 1: DCD	Short 7-9
		COM1 Pin 9: RI	Short 8-10
JP9	COM2 Mode Select	COM2 Pin 1: DCD	Short 7-9
		COM2 Pin 8: RI	Short 8-10
JP10	COM3 Mode Select	COM3 Pin 1: DCD	Short 7-9
		COM3 Pin 8: RI	Short 8-10
JP13	COM4 Mode Select	COM4 Pin 1: DCD	Short 7-9
		COM4 Pin 8: RI	Short 8-10
JP15	Audio Line Out/Speaker Out: Line Out		Short 1-3, 2-4

2.3.1 CompactFlash Mode Selection Jumper: JP1

Description	Function	Jumper Setting
CompactFlash Mode Selection	Slave (Default)	**JP1**
	Master	**JP1**
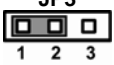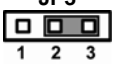
2.3.2 Power AT or ATX Selection Jumper: JP2

This jumper let you select either AT or ATX power supply.

Description	Function	Jumper Setting
Power Supply Selection	ATX POWER (Default)	**JP2**
	AT POWER	**JP2**
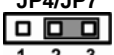
2.3.3 LVDS Voltage Selection Jumper: JP3

This jumper is to select the voltage for LVDS interface.

Description	Function	Jumper Setting
LVDS Voltage Selection	3.3V (Default)	**JP3**
	5V	**JP3**

2.3.4   USB Voltage Selection Jumpers: JP4, JP7

This jumper is to select the voltage for USB interface.

Description	Function	Jumper Setting
USB Voltage Selection	5V_SBY	**JP4/JP7**
	5V (Default)	**JP4/JP7**

2.3.5   CMOS Clear Jumper: JP5

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	**JP5**
	Clear CMOS	**JP5**

2.3.6   CompactFlash Voltage Selection Jumper: JP6

This jumper is to select the voltage for CompactFlash interface.

Description	Function	Jumper Setting
CompactFlash Voltage Selection	3.3V (Default)	**JP6**
	5V	**JP6**

2.3.7   COM1 Mode Selection Jumpers: JP8, JP11, JP14
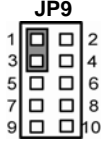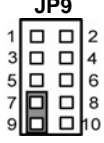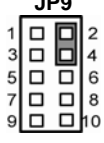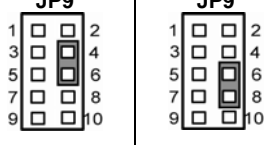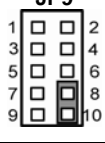
These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.
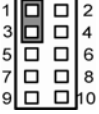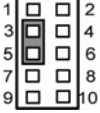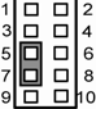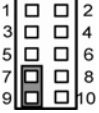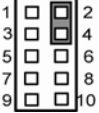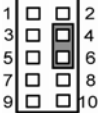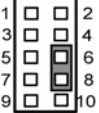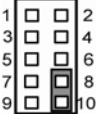
Description	Function	Jumper Setting
COM1	RS-232 (Default)	JP14 JP8 JP11
	RS-422	JP14 JP8 JP11
	RS-485	JP14 JP8 JP11
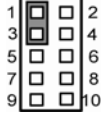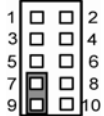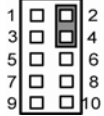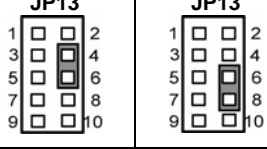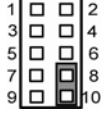
2.3.8 COM1~4 Mode Selection Jumpers: JP9, JP10, JP12, JP13

These jumpers select the COM1, COM2, COM3, COM4 ports' DCD and RI mode.

Description	Function	Jumper Setting
COM1	Pin 1=12V	**JP12**
	Pin 1=5V	**JP12** **JP12**
	*Pin 1=DCD (Default)	**JP12**
	Pin 9=12V	**JP12**
	Pin 9=5V	**JP12** **JP12**
	*Pin 9=RI (Default)	**JP12**

Description	Function	Jumper Setting
COM2	Pin 1=12V	**JP9**
	Pin 1=5V	**JP9** **JP9**
	*Pin 1=DCD (Default)	**JP9**
	Pin 8=12V	**JP9**
	Pin 8=5V	**JP9** **JP9**
	*Pin 8=RI (Default)	**JP9**

Description	Function	Jumper Setting
COM3	Pin 1=12V	**JP10**
	Pin 1=5V	**JP10** **JP10**
	*Pin 1=DCD (Default)	**JP10**
	Pin 8=12V	**JP10**
	Pin 8=5V	**JP10** **JP10**
	*Pin 8=RI (Default)	**JP10**

Description	Function	Jumper Setting
COM4	Pin 1=12V	**JP13**
	Pin 1=5V	**JP13** **JP13**
	*Pin 1=DCD (Default)	**JP13**
	Pin 8=12V	**JP13**
	Pin 8=5V	**JP13** **JP13**
	*Pin 8=RI (Default)	**JP13**

2.3.9   Audio Line Out/Speaker Out Jumper: JP15

Description	Function	Jumper Setting
Audio Line Out/ Speaker Out	Line Out (Default)	**JP15**
	Speak Out	**JP15**

2.4   Connectors
Connectors connect the CPU card with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the **EP830 Series**.

Connectors	Label
Power Control Connector	CN1
EPIC EXPRESS Slot	CN2
Power Output Connector	CN3
LVDS Backlight Connector	CN4
LVDS1 Connector	CN5
SM BUS Connector	CN6
IEEE1394a Connector	CN7
Front Panel Bezel Connector	CN8
Audio Connector	CN9
IEEE1394a Connector	CN10
Digital I/O Connector	CN11
LAN2 Connector (Optional)	CN12
6-Pin Mini Dim Keyboard / Mouse Connector	CN13
+12V-IN Power Connector	ATX1
Serial Port1 Connector	COM1
Serial Port2 Connector	COM2
Serial Port3 Connector	COM3
Serial Port4 Connector	COM4
CompactFlash^{TM} Socket	CFS1
DDRII SO-DIMM	DIMMS1
Digital Visual Interface (DVI) Connector	DVI1
CPU FAN Connector	FAN1
System FAN Connector	FAN2
Parallel IDE Connector	IDE1
LAN1 Connector	LAN1
LAN2 Connector	LAN2
USB Port0 & Port1 Connector	USB1
USB Port2 & Port3 Connector	USB2
SATA Connector	SATA1
SATA Connector	SATA2

2.4.1 Power Control Connector: CN1

Pin	Description
1	PWR_PSON-
2	GND

CN1
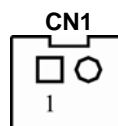
2.4.2 EPIC EXPRESS Slot: CN2
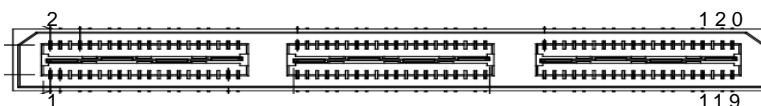
Pin	Description	Pin	Description
1	A_PE_TXP_0	2	A_PE_RXP_0
3	A_PE_TXN_0	4	A_PE_RXN_0
7	B_PE_TXP_0	8	B_PE_RXP_0
9	B_PE_TXN_0	10	B_PE_RXN_0
13	C_PE_TXP_0	14	C_PE_RXP_0
15	C_PE_TXN_0	16	C_PE_RXN_0
19	D_PE_TXP_0	20	D_PE_RXP_0
21	D_PE_TXN_0	22	D_PE_RXN_0
25	PERST-	26	A_CLKP
27	+3.3V_SBY	28	A_CLKN
31	+5V	32	B_CLKP
33	+5V	34	B_CLKN
37	+5V	34	C_CLKP
39	+5V	40	C_CLKN
41	+5V	42	D_CLKP
43	+5V	44	D_CLKN
47	+5V	48	+12V
49	+5V	50	-12V
53	+5V	54	E_CLKP
55	+5V	56	E_CLKN
59	+5V	60	F_CLKP
61	+5V	62	F_CLKN
65	RESERVED	66	E_PE_TXP_0
67	RESERVED	68	E_PE_TXN_0

Pin	Description	Pin	Description
71	RESERVED	72	F_PE_TXP_0
73	RESERVED	74	F_PE_TXN_0
77	RESERVED	78	E_PE_RXP_0
79	RESERVED	80	E_PE_RXN_0
81	RESERVED	82	F_PE_RXP_0
83	RESERVED	84	F_PE_RXN_0
87	F_PE_RXN_3	88	E_PE_TXP_1
89	F_PE_RXP_3	90	E_PE_TXN_1
93	E_PE_RXN_3	94	F_PE_TXP_1
95	E_PE_RXP_3	96	F_PE_TXN_1
99	F_PE_TXN_3	100	E_PE_RXP_1
101	F_PE_TXP_3	102	E_PE_RXN_1
105	E_PE_TXN_3	106	F_PE_RXP_1
107	E_PE_TXP_3	108	F_PE_RXN_1
111	F_PE_RXP_2	112	E_PE_TXP_2
113	F_PE_RXN_2	114	E_PE_TXN_2
117	E_PE_RXP_2	118	F_PE_TXP_2
119	E_PE_RXN_2	120	F_PE_TXN_2

-- End of EPIC EXPRESS Slot Pin Assignment Table --

2.4.3   Power Output Connector: CN3

Pin	Description
1	+12V
2	GND
3	GND
4	+5V

CN3
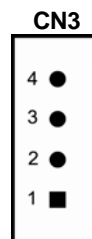
2.4.4   LVDS Backlight Connector: CN4

The 7-pin inverter connector on the EP830 is with Hirose connector.
The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

Pin	Description
1	12V
2	12V
3	5V
4	ENABLE
5	GND
6	GND
7	GND
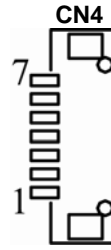
2.4.5   JST Connector for LVDS Flat Panel: CN5

Pin	Description	Pin	Description
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND
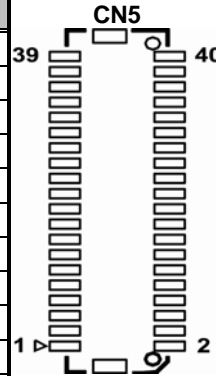
2.4.6   SMBUS Connector: CN6

Connector **CN6** is for SMBUS interface support.

Pin	Description
1	CLOCK
2	DATA
3	GND

CN6

2.4.7   IEEE 1394 Connectors: CN7/CN10

Pin	Description
1	XTPA1P
2	XTPA1N
3	GND
4	GND
5	XTPB1P
6	XTPB1N
7	+12V
8	+12V
9	N.C.
10	GND

CN7, CN10
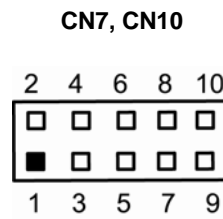
2.4.8   Flat Panel Bezel Connector: CN8
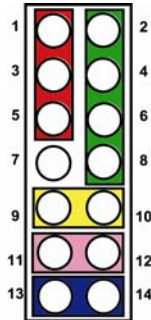
- **Power LED**
  This 3-pin connector named as Pin 1 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**
  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**
  This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**
  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**
  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.9   Audio Connector: CN9

CN9 is a 10-pin connector to support the audio interface.

Pin	Description	Pin	Description
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND

CN9

```
9  7  5  3  1
□  □  □  □  ■
□  □  □  □  □
10 8  6  4  2
```

2.4.10   Digital I/O Port (DIO) Connector: CN11

The board is equipped an 8-channel digital I/O connector **CN11** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Description	Pin	Description
1	Digital Output 0	2	Digital Output 4
3	Digital Output 1	4	Digital Input 0
5	Digital Output 2	6	Digital Input 1
7	Digital Output 3	8	Digital Input 2
9	GND	10	GND

CN11

```
2  4  6  8  10
□  □  □  □  □
■  □  □  □  □
1  3  5  7  9
```

2.4.11   LAN Connectors: CN12, LAN1, LAN2

The board is equipped with a RJ-45 connector for Gigabit LAN. To connect the board to a 1000/100/10 Base-T hub, just plug one end of the cable into **LAN1**, and connect the other end to a 1000/100/10 Base-T hub. **CN12** and **LAN2** share the same channel of signal; however, only one of them can be selected. **LAN2** is the default setting.

Pin	Description
1	MDI3-
2	MDI3+
3	MDI2-
4	MDI2+
5	MDI1-
6	MDI1+
7	MDI0-
8	MDI0+
9	N.C.
10	GND
11	+3.3V
12	Active LED
13	100 LAN LED
14	1000 LAN LED
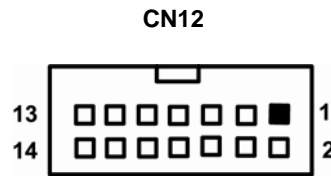
CN12

Pin	Description
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI2+
5	MDI2-
6	MDI1-
7	MDI3+
8	MDI3-
A	Active LED
B	100/1000 LAN LED

LAN2 (Default)

Pin	Description
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI2+
5	MDI2-
6	MDI1-
7	MDI3+
8	MDI3-
A	Active LED
B	100/1000 LAN LED

LAN1
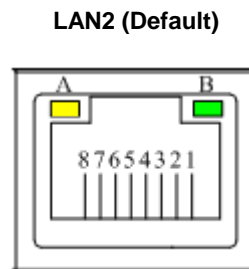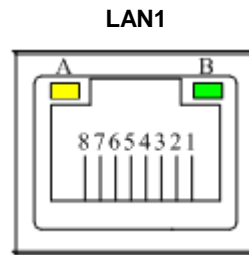
2.4.12   Keyboard and PS/2 Mouse Connector: CN13
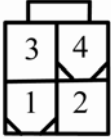
The board provides a keyboard and Mouse interface. **CN13** is a DIM connector for PS/2 keyboard Connection VIA "Y" Cable.

Pin	Signal
1	Keyboard Data
2	Mouse Data
3	GND
4	+5V
5	Keyboard CLK
6	Mouse CLK

CN13
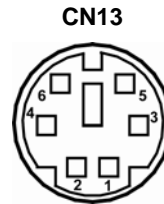
2.4.13 +12V-IN Power Connector: ATX1

Connect the power cable to **ATX1** for +12V ATX power supply, which mainly supplies power to the CPU. If the **ATX1** power connector is not connected, the system will not start.

Pin	Description
1	GND
2	GND
3	+12V
4	+12V

ATX1

2.4.14 Serial Port Interface Connectors: COM1, COM2, COM3, COM4

The board has one onboard serial port COM1 RS-232/422/485, and three extensive serial ports COM2 ~ 4 RS-232, jumper selectable with auto flow control features. The +5V/12V power can be used on DCD and RI for these four ports, depending on the jumper setting.

Pin	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 Ready
7	RTS, Request To Send
8	CTS, Clear To Send
9	RI, Ring Indicator

COM1
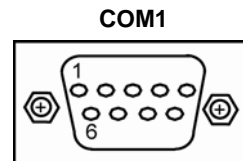
Pin	Description	Pin	Description
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC

COM2, COM3, COM4
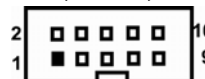
2.4.15 Digital Visual Interface (DVI) Connector: DVI1

The **EP830 Series** has one connector that supports DVI/CRT. **DVI1** is a DVI connector for the DVI/CRT display.

DVI1: DVI-CRT VGA Connector

Pin	Description	Pin	Description
1	TMDS Data 2-	2	TMDS Data 2+
3	GND	4	CRT_SPD_Clock
5	CRT_SPD_Data	6	DVI_SPD_Clock
7	DVI_SPD_Data	8	Analog Vsync
9	TMDS Data 1-	10	TMDS Data 1+
11	GND	12	N.C.
13	N.C.	14	+5V
15	GND	16	Hot Plug Detect
17	TMDS Data 0-	18	TMDS Data 0+
19	GND	20	N.C.
21	N.C.	22	GND
23	TMDS Clock-	24	TMDS Clock+
C1	Analog RED	C2	Analog Green
C3	Analog Blue	C4	Analog Hsync
C5	GND		
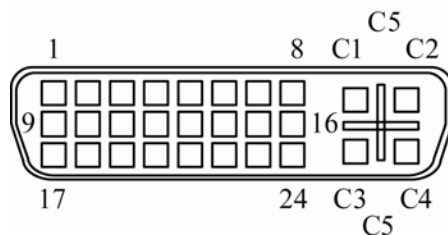
2.4.16   CPU & System Fan Connectors: FAN1, FAN2

Fan1 is a fan connector for CPU, and **FAN2** for system. Pentium microprocessors require a fan for heat dispensing. The CPU/System fan connectors respectively provide power to the CPU/System fans.

Pin	Description
1	Ground
2	+12V
3	Sensor

FAN1

FAN2
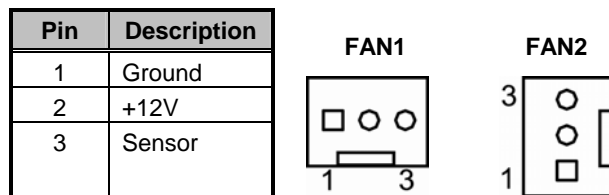
2.4.17   CompactFlash^{TM} Socket: CFS1

The board is equipped with a CompactFlash^{TM} disk type-II socket on the solder side to support an IDE interface CompactFlash^{TM} disk card with DMA mode supported. The socket is especially designed to avoid incorrect installation of the CompactFlash^{TM} disk card. When installing or removing the CompactFlash^{TM} disk card, please make sure the system power is off. The CompactFlash^{TM} disk card is defaulted as the C: or D: disk drive in your PC system.

Pin	Description	Pin	Description
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0-	32	CS1-
8	Address 10	33	VS1-
9	ATASEL	34	IORD-
10	Address 9	35	IOWR-
11	Address 8	36	WE#
12	Address 7	37	INTR
13	+5V	38	+5V
14	Address 6	39	CSEL-

Pin	Description	Pin	Description
15	Address 5	40	VS2-
16	Address 4	41	RESET-
17	Address 3	42	IORDY-
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP-
21	Data 0	46	PDIAG-
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16-	49	Data 10
25	CD2-	50	GND

CFS1
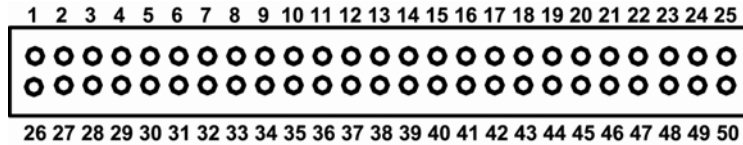
2.4.18 Parallel IDE Connector: IDE1

There is one built-in IDE channel (1 parallel ATA-100) to support up to three IDE devices. **IDE1** is a 44-pin IDE interface connector for standard 2.5" IDE device.

Pin	Description	Pin	Description	Pin	Description
1	Reset -	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1
16	Data 14	17	Data 0	18	Data 15
19	GND	20	No connector	21	No connector
22	GND	23	IOW -	24	GND
25	IOR -	26	GND	27	IOCHRDY
28	No connector	29	No connector	30	GND-Default
31	Interrupt	32	No connector	33	SA1

Pin	Description	Pin	Description	Pin	Description
34	No connector	35	SA0	36	SA2
37	HDC CS0 -	38	HDC CS1 -	39	HDD Active -
40	GND	41	+5V	42	+5V
43	GND	44	No connector		

IDE1
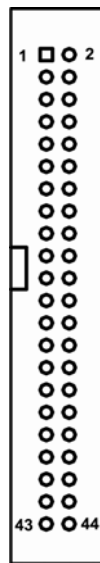
2.4.19 USB Port Connector: USB1

The **EP830 Series** features Universal Serial Bus (USB) connectors, compliant with USB 2.0 (480Mbps) that can be adapted to any USB peripherals, such as monitor, keyboard and mouse.

USB1 is a double-deck USB port connector that consists of two 4-pin standard USB ports.

Pin	Description	Pin	Description
1	+5V	2	USB DO-
3	USB D0+	4	GND
5	+5V	6	USB D1-
7	USB D1+	8	GND

USB1
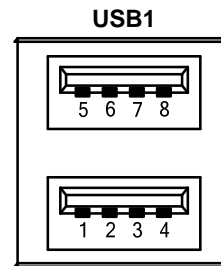
2.4.20 USB Connector: USB2

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. **USB2** is a 10-pin standard onboard USB connector.

Pin	Description	Pin	Description
1	+5V	2	+5V
3	USB D2-	4	USB D3-
5	USB D2+	6	USB D3+
7	GND	8	GND
9	GND	10	GND

USB2
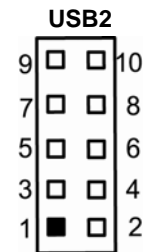
2.4.21 SATA Connectors: SATA1, SATA2

The SATA connectors SATA1 and SATA2 are for high-speed SATA interface port and it can be connected to serial ATA hard disk devices.

Pin	Description	Pin	Description
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND		

SATA1/SATA2

MEMO

C h a p t e r 3
Hardware Description

3.1   Microprocessors

The **EP830 Series** supports Socket M (478) for Intel$^®$ Yonah & Merom Core^{TM} Duo and Core^{TM} Solo processors, which make your system operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2   BIOS

The **EP830 Series** uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

3.3   System Memory

The **EP830 Series** industrial CPU card supports one 200-pin DDR2 SODIMM sockets for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

3.4   I/O Port Address Map

The Intel® Yonah & Merom Core™ Duo and Core™ Solo CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
1F0-1F8	Fixed disk controller
250-25F	HR I/O
300-31F	Prototype card
380-38F	SDLC #2
3A0-3AF	SDLC #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)
3F0-3FF	Super I/O

3.5   Interrupt Controller

The **EP830 Series** is a 100% PC compatible control board. The mapping list under XP OS is shown as the following screen.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

MEMO

C h a p t e r 4
Award BIOS Utility

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1　Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

<div align="center">TO ENTER SETUP PRESS DEL KEY</div>

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2   Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.3   Getting Help

● **Main Menu**
The online description of the highlighted setup function is displayed at the bottom of the screen.

● **Status Page Setup Menu/Option Page Setup Menu**
Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4   The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

```
┌─────────────────────────────────────────────────────────────┐
│          Phoenix - AwardBIOS CMOS Setup Utility              │
│                                                              │
│  ► Standard CMOS Features    │  ► PC Health Status           │
│  ► Advanced BIOS Features    │     Load Optimized Defaults   │
│  ► Advanced Chipset Features │     Set Supervisor Password   │
│  ► Integrated Peripherals    │     Set User Password         │
│  ► Power Management Setup     │     Save & Exit Setup         │
│  ► PnP/PCI Configurations     │     Exit Without Saving       │
│                                                              │
│                                                              │
│  Esc : Quit        F9 : Menu in BIOS   ↑ ↓ → ← : Select Item │
│  F10 : Save & Exit Setup                                     │
│                                                              │
│              Time, Date, Hard Disk Type...                   │
└─────────────────────────────────────────────────────────────┘
```

NOTE: *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5   Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0 Master/IDE Channel 0 Slave/IDE Channel 1 Master/IDE Channel 1 Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.
- **Video**
  Select the display adapter type for your system.

● **Halt On**
This item determines whether the system will halt or not, if an error is detected while powering up.

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

Press <Esc> to return to the Main Menu page.

4.6   Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.

```
               Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced BIOS Features

 ► CPU Feature                    [Press Enter]        Item Help
 ► Hard Disk Boot Priority        [Press Enter]      Menu Level  ►
   CPU L1 & L2 Cache              [Enabled]
   Hyper-Threading Technology     [Enabled]
   Quick Power On Shelf Test      [Enabled]
   First Boot Device              [Floppy]
   Second Boot Device             [Hard Disk]
   Third Boot Device              [CDROM]
   Boot Other Device              [Enabled]
   Onboard Lan Boot ROM           [Disabled]
   Boot Up NumLock Status         [On]
   Gate A20 Option                [Fast]
   Typematic Rate Setting         [Disabled]
 X Typematic Rate (Chars/Sec)     6
 X Typematic Delay (Msec)         250
   Security Option                [Setup]
   APIC Mode                      [Enabled]
   MPS Version Control For OS      [1.4]
   Small Logo <EPA> Show          [Disabled]

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

● **CPU Feature**
  Scroll to this item and press <Enter> to view the CPU Feature sub menu.

● **Hard Disk Boot Priority**
  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.
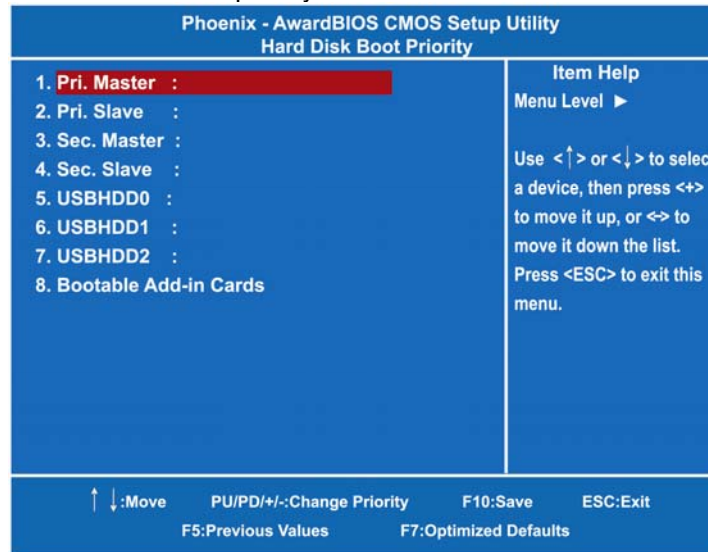
Press <Esc> to return to the Advanced BIOS Features page.

● **CPU L1 & L2 Cache**
   These two options speed up memory access. However, it depends
   on the CPU/chipset design. The default setting is *"Enabled"*.
   CPUs without built-in internal cache will not provide the "CPU
   Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

● **Hyper-Threading Technology**
   Use this item to enable or disable Hyper-Threading Technology,
   which makes a single physical processor perform multi-tasking
   function as two logical ones.

● **Quick Power On Self Test**
   This option speeds up Power on Self Test (POST) after you turn on
   the system power. If set as Enabled, BIOS will shorten or skip
   some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

● **First/Second/Third Boot Device**
   These items let you select the 1st, 2nd, and 3rd devices that the
   system will search for during its boot-up sequence. The wide range
   of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and
   CDROM.

● **Boot Other Device**
   This item allows users to enable or disable the boot device not
   listed in the First/Second/Third boot devices option above. The
   default setting is "*Enabled*".

● **Onboard Lan Boot ROM**
   Use this item to enable or disable the Boot ROM function of the
   onboard LAN chip when the system boots up

● **Boot Up NumLock Status**
   Set the the Num Lock status when the system is powered on.
   The default value is *"On"*.

● **Gate A20 Option**
The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

● **Typematic Rate Setting**
This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard.

● **Typematic Rate (Chars/Sec)**
This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

● **Typematic Delay (Msec)**
This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

● **Security Option**
This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE: *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

● **APIC Mode**
Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.
● **MPS Version Control For OS**
This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.
● **Small Logo <EPA> Show**
If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

Press <Esc> to return to the Main Menu page.

4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.

- **DRAM Timing Selectable**
  Use this item to increase the timing of the memory. This is related to the cooling of memory.
- **CAS Latency Time**
  You can select CAS latency time to HCLKs 2, 3, or Auto. The board designer should have set up these values in accordance with the installed DRAM. Do not change these values unless you have to change the specifications of the installed DRAM or CPU.
- **DRAM RAS# to CAS# Delay**
  When DRAM is refreshed, both rows and columns are addressed separately. This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed.

- **DRAM RAS# Precharge**
  The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.
- **Precharge Delay <tRAS>**
  The precharge time is the number of cycles it takes for DRAM to accumulate its charge before refresh.
- **System Memory Frequency**
  This item helps you set main memory frequency. When using an external graphics card, it can be adjusted to enable the best performance for your system.
- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.
- **Video BIOS Cacheable**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.
- **PCI Express Root Port Func**
  Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.
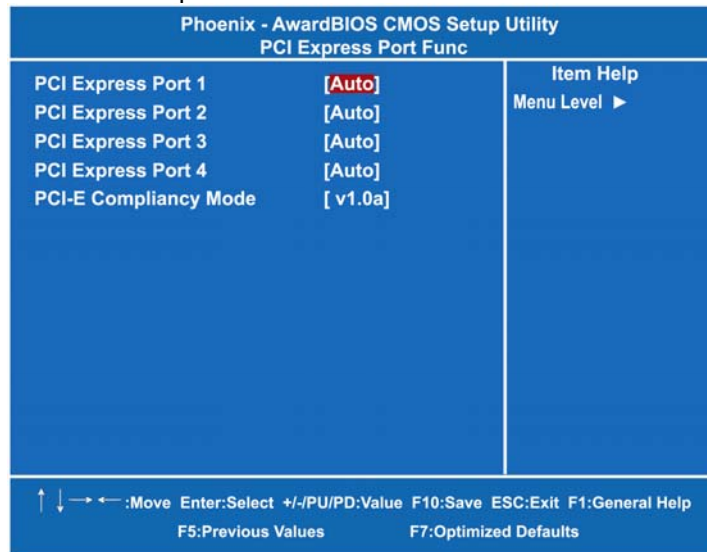
Press <Esc> to return to the Advanced Chipset Featurs page, and press it again, return to the Main Menu page.

*** VGA Setting ***

- **On-Chip Frame Buffer Size**
  Use this item to set the VGA frame buffer size.
- **DVMT Mode**
  DVMT (Dynamic Video Memory Technology) helps you select the video mode.
- **DVMT/Fixed Memory Size**
  DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.
- **Boot Display**
  This item is for Intel define ADD card only.

Press <Esc> to return to the Main Menu page.

4.8   Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE
Function and Onboard Device.
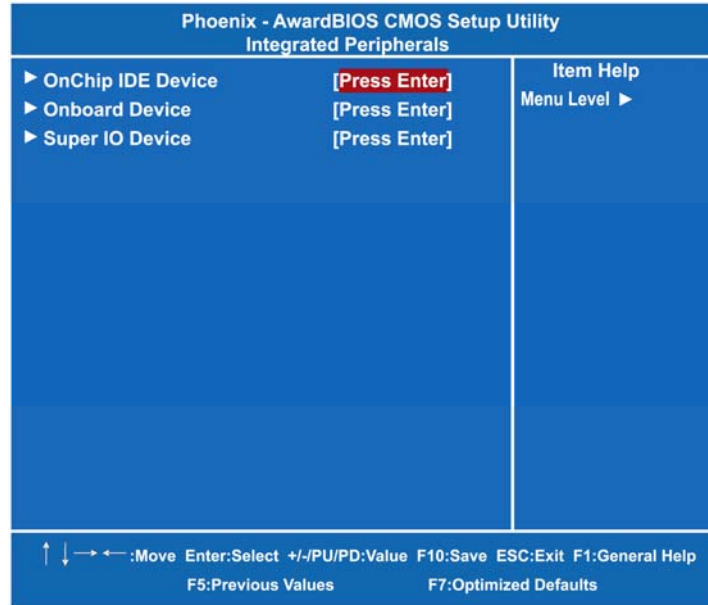
● **OnChip IDE Device**

Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.
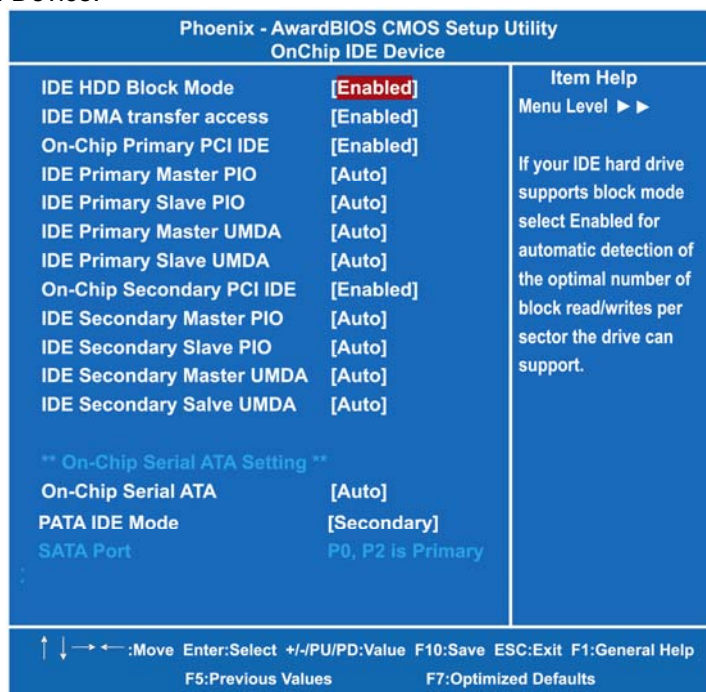
> **IDE HDD Block Mode**
  Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

> **IDE DMA transfer access**
  Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.

> **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

  NOTE: Choosing Disabled for these options will

> *automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

➢ **IDE Primary/Secondary Master/Slave PIO**
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

➢ **IDE Primary/Secondary Master/Slave UDMA**
Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

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

➢ **On-Chip Serial ATA**
Use this item to enable or disable the built-in on-chip serial ATA.

➢ **PATA IDE Mode**
Use this item to set the PATA IDE mode. When set to Primary, P1 and P3 are Secondary; on the other hand, when set to Secondary, P0 and P2 are Primary.

➢ **SATA Port**
If the "PATA IDE Mode" is Primary, it will show " P1, P3 is Secondary" which means SATA 2 and SATA 4 are Secondary. If the "PATA IDE Mode " is Secondary, it will show " P0, P2 is Primary " which means SATA 1 and SATA 3 are Primary.

Press <Esc> to return to the Integrated Peripherals page.

● **Onboard Device**

Scroll to this item and press <Enter> to view the sub menu Onboard Device.
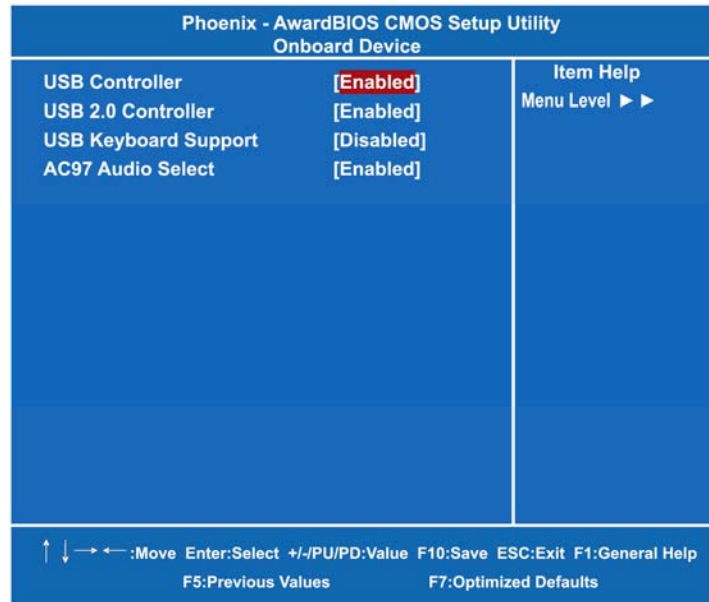
➤ **USB Controller**
Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
➤ **USB 2.0 Controller**
Enable this item if you are using the EHCI (USB2.0) controller in the system.
➤ **USB Keyboard Support**
Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
➤ **AC'97 Audio Select**
Use this item to enable or disable the onboard AC'97 Audio function.

Press <Esc> to return to the Integrated Peripherals page.

● **Super IO Device**
Scroll to this item and press <Enter> to view the sub menu Super IO Device.
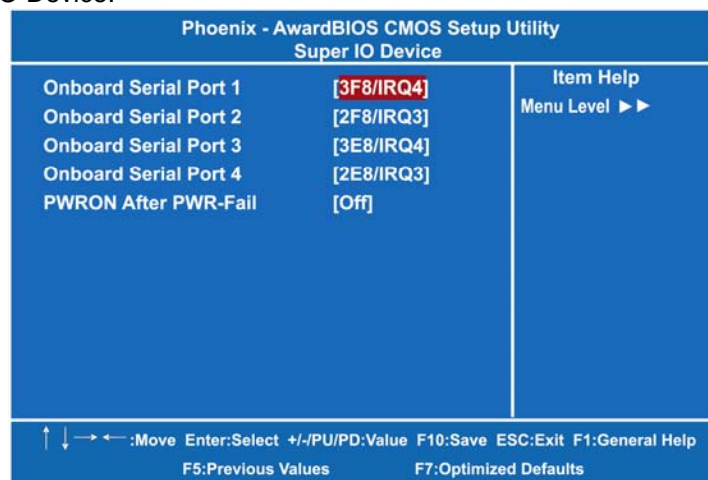
> **Onboard Serial Port 1/2/3/4**
> Select an address and corresponding interrupt for the serial port. Options: *3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ10, 2E8/IRQ11, 338/IRQ5, 238/IRQ7, Auto* and *Disabled*.
> **PWRON After PWR-Fail**
> This item enables your computer to automatically restart or return to its operating status.

Press <Esc> to return to the Integrated Peripherals page, and press it again to the Main Menu.

4.9   Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.
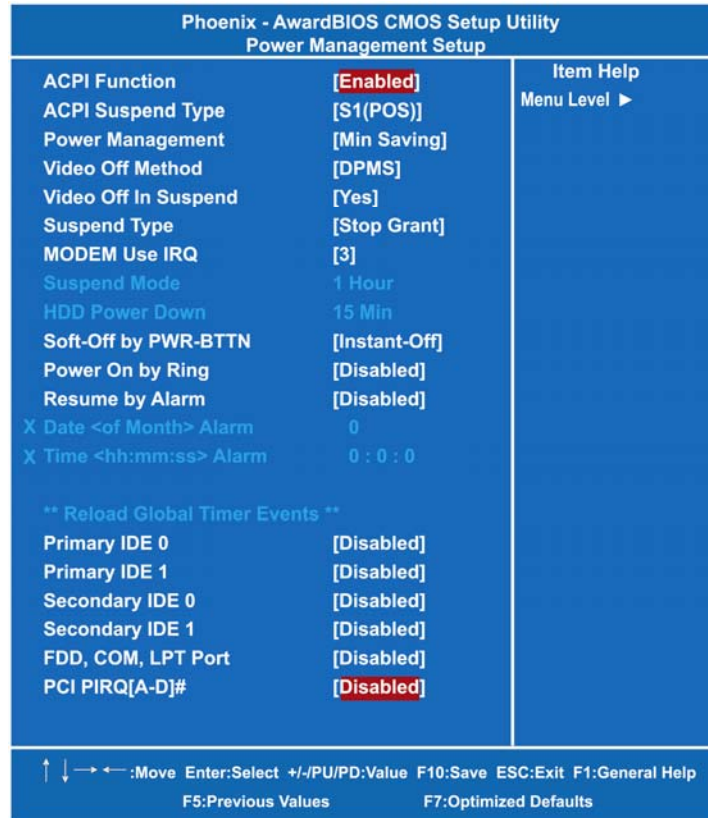
- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".
- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.
[S3 (STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

● **Power Management**
This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	It is maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	It sets each mode. Select time-out periods in the PM Timers section.
Min Saving	It is minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	Default value

● **Video Off Method**
This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

● **Video Off In Suspend**
This item defines if the video is powered down when the system is put into suspend mode.

● **Suspend Type**
If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

⚫ **Moden Use IRQ**
   If you want an incoming call on a modem to automatically resume the system from a powersaving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for working this feature.

⚫ **Suspend Mode**
   After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

⚫ **HDD Power Down**
   If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.

⚫ **Suspend Mode**
   After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/30/40 Min/1 Hr	It defines continuous idle time before the system entering the SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

⚫ **HDD Power Down**
   If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

● **Soft-Off by PWR-BTTN**
   This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF.
Delay 4 Sec.	Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

● **Power On by Ring**
   This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is "Enabled".

● **Resume by Alarm**
   If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

** Reload Global Timer Events **
Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

● **Primary/Secondary IDE 0/1**
   Use this item to configure the IDE devices monitored by the system.

● **COM Port**
   Use this item to configure the COM ports monitored by the system.

● **FDD, COM, LPT Port**
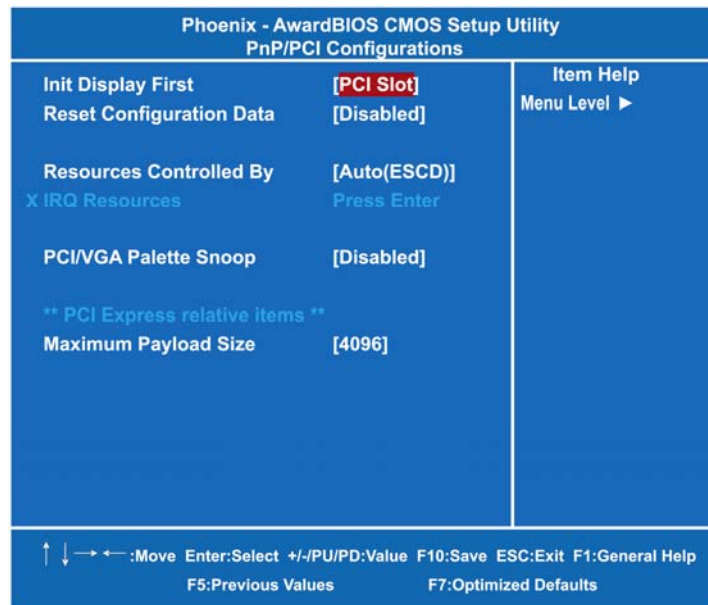   Use this item to configure the FDD, COM and LPT ports monitored by the system.

● **PCI PIRQ[A-D]#**
   This item can be used to detect PCI device activities; if no activity, the system will enter the sleep mode.

Press <Esc> to return to the Main Menu page.

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   PnP/PCI Configurations

  Init Display First          [PCI Slot]         Item Help
  Reset Configuration Data     [Disabled]      Menu Level ▶

  Resources Controlled By     [Auto(ESCD)]
X IRQ Resources               Press Enter

  PCI/VGA Palette Snoop       [Disabled]

** PCI Express relative items **
  Maximum Payload Size        [4096]


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

- **Init Display First**
  This item allows you to decide to active whether PCI Slot or AGP first. The options available are *PCI Slot, AGP*.
- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: *Enabled, Disabled*.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

● **IRQ Resources**
   When resources are controlled manually, assign each system
   interrupt to one of the following types in accordance with the type
   of devices using the interrupt:

   1. Legacy ISA Devices compliant with the original PC AT bus
      specification, requiring a specific interrupt (such as IRQ4 for serial port
      1).
   2. PCI/ISA PnP Devices compliant with the Plug and Play standard,
      whether designed for PCI or ISA bus architecture.
   The default value is "*PCI/ISA PnP*".

● **PCI/VGA Palette Snoop**
   Some non-standard VGA display cards may not show colors
   properly. This item allows you to set whether MPEG ISA/VESA
   VGA Cards can work with PCI/VGA or not. When enabled, a
   PCI/VGA can work with a MPEG ISA/VESA VGA card; when
   disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.


** PCI Express relative items **
● **Maximum Payload Size**
   When using DDR SDRAM and Buffer size selection, another
   consideration in designing a payload memory is the size of the
   buffer for data storage. Maximum Payload Size defines the
   maximum TLP (Transaction Layer Packet) data payload size for
   the device.

Press <Esc> to return to the Main Menu page.

4.11 PC Health Status

This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.
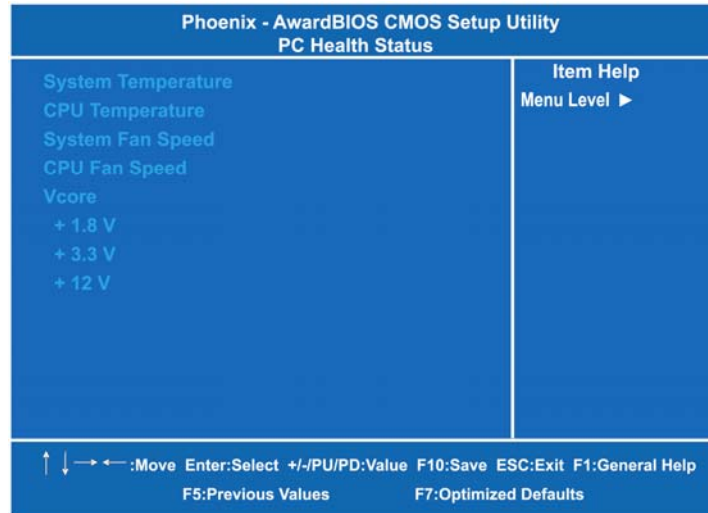
- ● **SYSTEM Temperature**
  Show you the current system temperature.

- ● **CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.

Press <Esc> to return to the Main Menu page.

4.12 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.
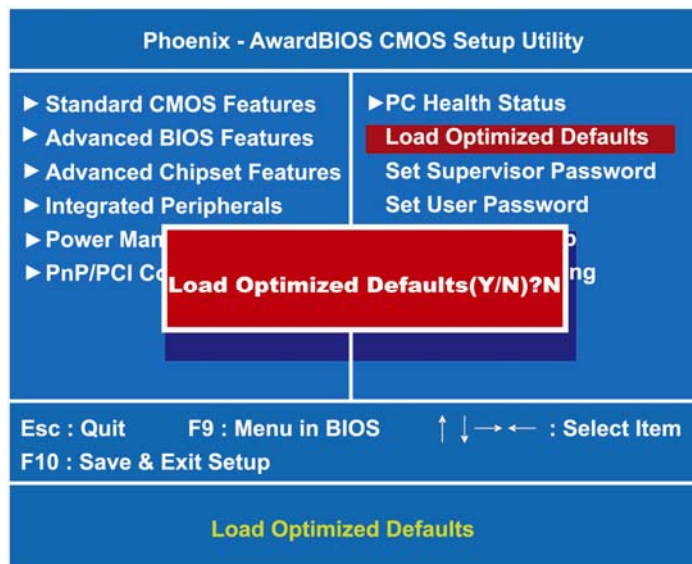
To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.13 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

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 a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

4.14 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.
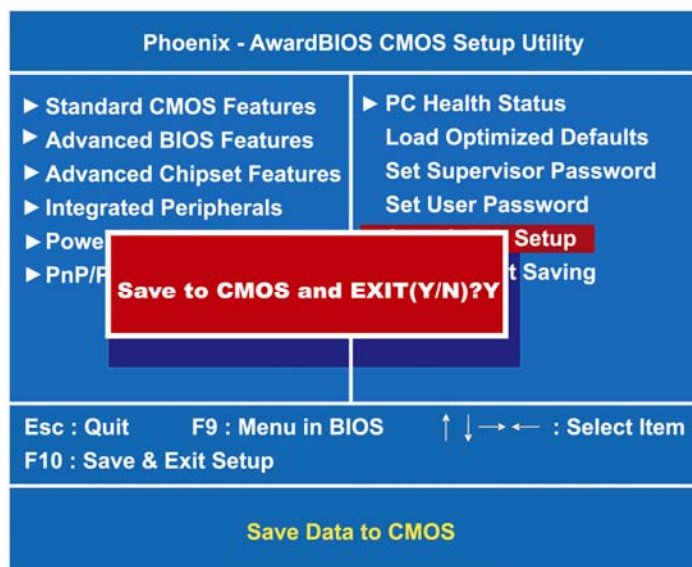
4.15 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.
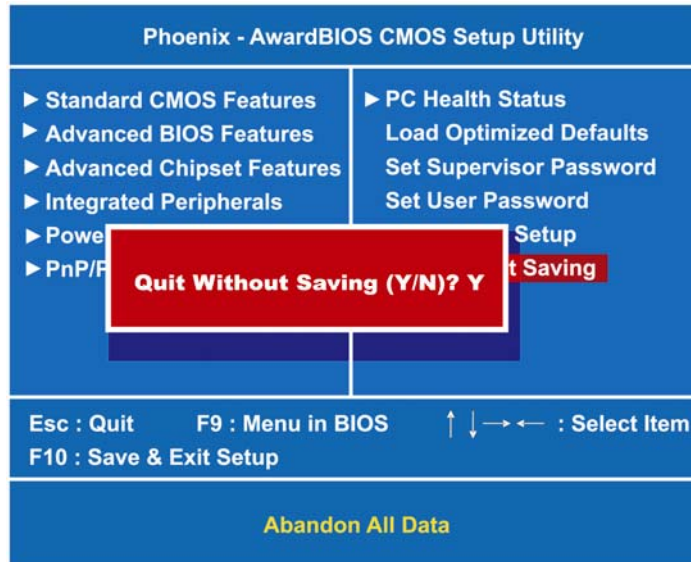
A p p e n d i x A

Watchdog Timer

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT:

      O 2E 87 ; Un-lock super I/O
      O 2E 87 ; Un-lock super I/O

↓
Select Logic device:

      O 2E 07
      O 2F 08

↓
Activate WDT:

      O 2E 30
      O 2F 01

↓
Set Second or Minute :

      O 2E F5
      O 2F N   N=00 or 08(See below table)

↓
Set base timer :

      O 2E F6
      O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255

↓

WDT counting re-set timer :

      O 2E F6
      O 2F M ; M=00,01,02,…FF(See below table)

; IF to disable WDT:

      O 2E 30
      O 2F 00 ; Can be disable at any time

- Timeout Value Range
  - 1 to 255
  - Minute / Second
- Program Sample

  Watchdog Timer can be set to system reset after 5-second timeout.

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value M = 00 ~ FF

A p p e n d i x B
Digital I/O

Digital I/O Software Programing

- GPI program sample:

O 2E 87	
O 2E 87	
O 2E 07	
O 2F 08	Select Device 8
O 2E 30	
O 2F F2	Activate GPIO5
O 2E E0	
O 2F FF	GPIO5 pins are programmed as input pins.
O 2E E1	Read only from pin
I 2F	Display input read value

● GPO program sample:

O 2E 87	
O 2E 87	
O 2E 07	
O 2F 08	Select Device 7
O 2E 30	
O 2F F2	Activate GPIO5
O 2E E0	
O 2F 00	GPIO5 pins are programmed as output
O 2E E1	
O 2F FF	GPIO5 port output HI