SBC82820 Series

All-In-One Half-Size CPU Card
With DualView Display and SATA

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.

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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.

Trademarks Acknowledgments

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Chapter 1
Introduction

SBC80820 is a PICMG v1.1 compliant half-size PCI bus CPU card supports Socket 478 for Intel® Pentium® M and Celeron® M processors at FSB 400/533MHz, onboard ULV C-M 600/512KB, ULV C-M 1GHz/0KB, ULV 373 C-M 1GHz/512KB, LV 738 P-M 1.4GHz/2MB, Banias and Dothan core. The board integrates Intel® 915GM + ICH*6M chipsets that support LVDS + CRT, Gigabit/Fast Ethernet and AC'97 Codec Audio all in one single board. It is equipped with two DDR2 SODIMM sockets, maximum up to 2GB system memory capacity, and 2 serial ports (1 x RS-232 and 1 x RS-232/422/485), one IrDA through pin header, two SATA ports, and four USB 2.0 ports. 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 478 embedded board SBC84822 Series is virtually ultimate one-step solution for embedded system applications.

1.1 Specifications

- **CPU: Socket 478 for Intel® Pentium® M/Celeron® M, onboard ULV C-M 600/512KB, ULV C-M 1GHz/0KB, ULV 373 C-M 1GHz/512KB, LV 738 P-M 1.4GHz/2MB, Banias and Dothan core processors**

Processor	FSB
Intel® Pentium® M/ Celeon® M	400/533MHz
ULV C-M 600	512KB
ULV C-M	1GHz/0KB
ULV 373 C-M	1GHz/512KB
LV 738 P-M	1.4GHz/2MB

- **System Chipset: Intel® 915GM & ICH*6M**
- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - PXE Ethernet Boot ROM
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - Two 200-pin DDR2 SODIMM sockets
  - Maximum to 2GB DDR2 memory
- **Onboard IDE**
  - 1* PATA-100 with 40-pin box-header
  - 2 channels of SATA-150 with IDE mode supported
- **Compact Flash Socket**
  - One Compact Flash Type II Socket
- **Onboard Multi-I/O**
  - One floppy port (26-pin 2.0 pitch box header)
  - One SPP/EPP/ECP parallel port (26-pin 2.0 box header)
  - Two 16550 UARTs compatible serial ports with +5V power output in pin 1 or pin 9 via jumper setting
    - 2 x 10-pin 2.0 pitch box-header (COM 1/2)

- 1x RS-232/422/485 box header and selectable via jumper setting(COM2)

- **Graphics**
  - 1st LVDS port via SDVO port-B with CH7308B for 1* 40-pin connectors, DVI via SDVOC port-C with Chrontel CH7307 + CRT from DAC port as DVI-I for rear I/O edge
- **Expansion Interface**
  - 32-bit PCI golden figures with PICMG compliant
- **USB Interface**
  - Four USB in compliance with USB Spec. Rev. 2.0
- **Watchdog Timer**
  - 0~255 seconds; up to 255 levels
- **Ethernet**
  - 2 * RTL8111B (RTL8111C co-layout for FE), 10/100/1000 Base-T via PCI-Expres X1; 2 single deck RJ-45 on the rear I/O edge
- **Audio**
  - AC'97 Audio with 10-pin 2.0 pitch box-header with amplify feature
- **Power Management**
  - ACPI (Advanced Configuration and Power Interface) /APM
- **Form Factor**
  - **Half-Size form factor**

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

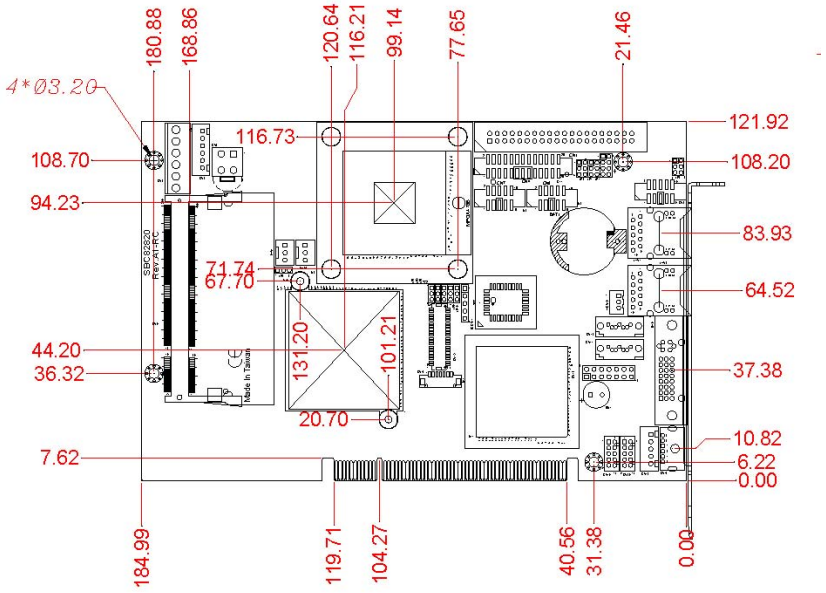
1.2 Utilities Supported

- Chipset Driver
- VGA Driver
- LAN Driver
- Audio Driver

MEMO

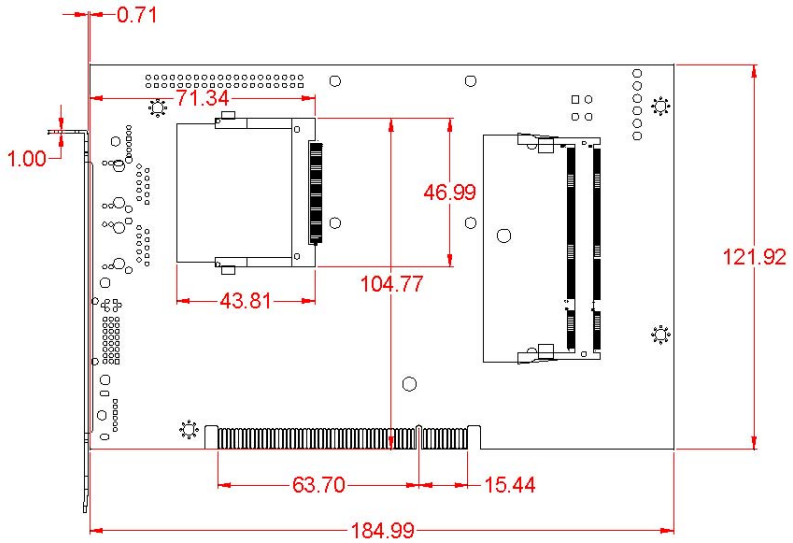
Chapter 2
Jumpers and Connectors

2.1 Board Layout and Fixing Holes



Component Side

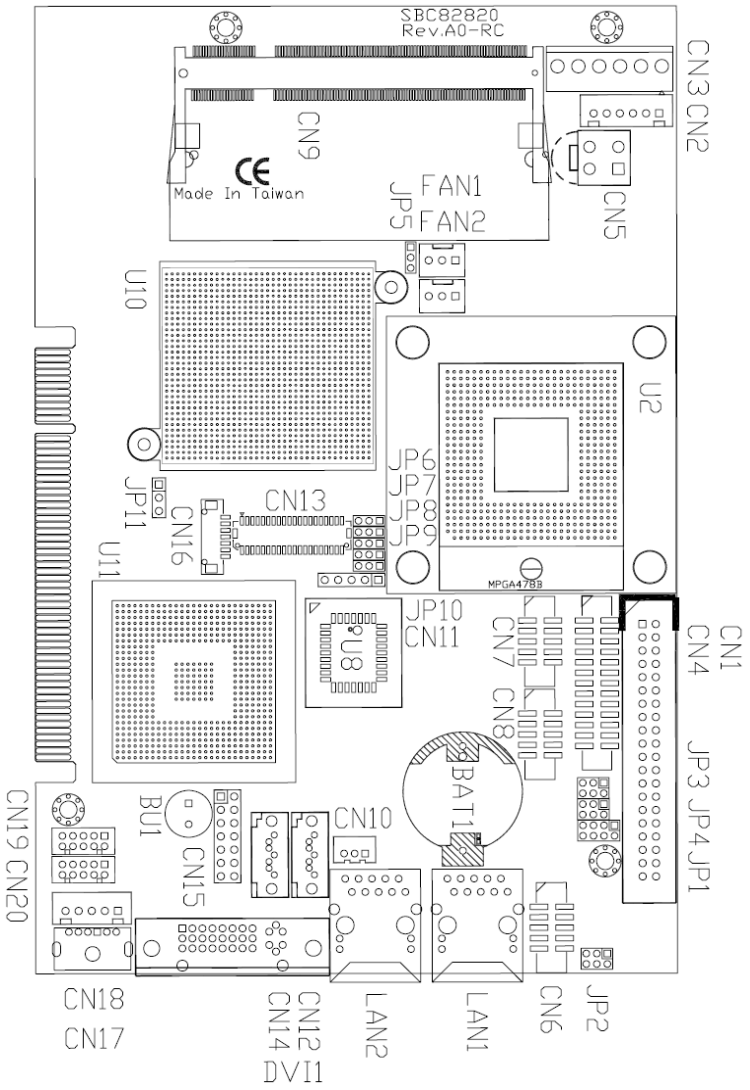
Note: *The Limited Height of Component Side is 30 mm.*



Solder Side

Note: *The Limited Height of Solder Side is 9 mm.*

2.2 Placement



Component Side

2.3 Jumper Settings

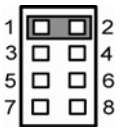
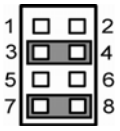
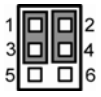
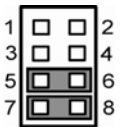
Proper jumer settings configure the **SBC80820** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Here is a list of jumper settings：

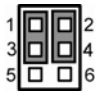
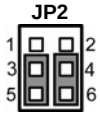
Jumper	Default Setting	Jumper Setting
JP1	COM2 Mode Select: RS-232	Short 1-2
JP2	Audio Line Out/Speaker Out: Line Out	Short 1-3, 2-4
JP3	COM2 Mode Select: RS-232	Short 3-5,4-6
JP4	COM2 Mode Select: RS-232	Short 3-5,4-6
JP5	CPU Voltage Select : Dothan (1.5V) **<Only Socket Version>**	Short 1-2
JP6	CPU Clock Select : Auto **<Only Socket Version>**	Short 1-2
JP7	CPU Type Select : Dothan A	Short 1-2
JP8	Compact Flash Select : Slave	Short 1-2
JP9	Compact Flash Voltage Selection Default: 5V	Short 2-3
JP10	Clear CMOS Setting: Normal	Short 1-2
JP11	Flat Panel Power Selection: Default: 3.3V	Short 1-2

2.3.1 COM2 Mode Selection for Type Jumpers: JP1, JP3, JP4

These jumpers select the COM2 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting
COM2	RS-232 (Default)	JP1  JP3  JP4 
	RS-422	JP1  JP3  JP4 
	RS-485	JP1  JP3  JP4 

2.3.2 Audio Output Jumper: JP2

Description	Function	Jumper Setting
Audio Output	Line Out (Default)	JP2 
	Speaker Out	JP2 

2.3.3 CPU Analog Voltage Select Jumper: JP5

Use this jumper to select the CPU analog voltage.

Description	Function	Jumper Setting
CPU Analog Voltage Select	Dothan 1.5V (Default)	JP5 1 2 3
	Banias 1.8V	JP5 1 2 3

2.3.4 CPU Clock Select Jumper: JP6

Use this jumper to select the CPU clock.

Description	Function	Jumper Setting
CPU Clock Select	Auto (Default)	JP6 1 2 3
	100 MHz	JP6 1 2 3
	133 MHz	JP6 1 2 3

2.3.5 CPU Type Select Jumper: JP7

Use this jumper to select the CPU type.

Description	Function	Jumper Setting
CPU Type Select	Dothan A (Default)	JP7 
	Dothan B/ Yonah	JP7 

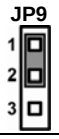
2.3.6 Compact Flash Setting Jumper: JP8

Use this jumper to set Master/Slave Compact Flash interface.

Description	Function	Jumper Setting
Compact Flash Master/Slave Selection	Master	JP8 
	Slave (Default)	JP8 

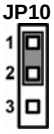
2.3.7 Compact Flash Power Selection Jumper: JP9

This jumper is to select the voltage for Compact Flash interface.

Description	Function	Jumper Setting
Compact Flash Power Select	3.3V (Default)	
	5V	

2.3.8 CMOS Clear Jumper: JP10

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)	
	Clear CMOS	

2.3.9 Flat Panel Connector (LVDS) Voltage Selection: JP11

The board supports 3.3V or +5V flat panel displays. Configure the jumper **JP11** to the appropriate voltage of the flat panel.

Description	Function	Jumper Setting
Flat Panel Connector (LVDS) Voltage Selection	3.3V (Default)	**JP11** 
	5V	**JP11** 

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 SBC80820 Series.

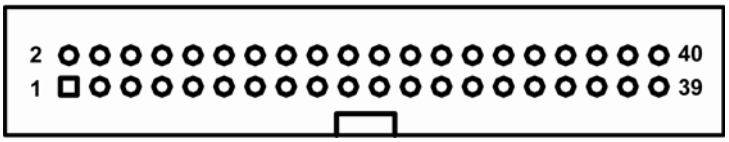
Connectors	Label
Primary IDE Connector	CN1
ACPI Power Connector	CN2
Power Connector	CN3
Printer Port Connector(Default)/ FDD Connector (Optional)	CN4
+12V Power Connector	CN5
Audio Interface Connector	CN6
Serial Port1 Connector	CN7
Serial Port2 Connector	CN8
DDRII SODIMM Socket (Reverse)	CN9
I2C Connector	CN10
IrDA Interface Connector	CN11
Serial ATA1 Connector	CN12
LVDS Connector	CN13
Serial SATA2 Connector	CN14
Flat Panel Bezel Connector	CN15
Inverter Connector	CN16
6-Pin Mini Dim Keyboard/Mouse Connector	CN17
External Keyboard Connector	CN18
External USB1 Connector	CN19
External USB2 Connector	CN20
Compact Flash Connector	CNS1
DDRII SODIMM Socket (Standard)	CNS2
LAN1 Connector	LAN1
LAN2 Connector	LAN2
DVI Connector	DVI1
FAN1Connector	FAN1
FAN2 Connector	FAN2

2.4.1 Enhanced IDE Interface Connector

There are three built-in IDE channels, one parallel ATA-100 and two serial ATA-150, which support up to four IDE devices. **CN1** is a 40-pin IDE interface connector for standard 2.5" IDE device, **CN12** and **CN14** the serial ATA-150 IDE interface for up-to-date hard disk drives.

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
34	No connector	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				

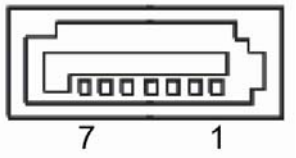
CN1



CN12/CN14: 7-pin SATA Connector Pin Assignment

Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

CN12, CN14

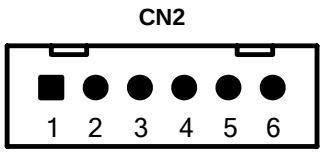


2.4.2 ACPI Connector

Advanced Configuration and Power Interface (ACPI) defines a flexible and extensible interface that allows system designers to select appropriate cost/feature trade-offs for power management. The interface enables and supports reliable power management through improved hardware and operating system coordination. The specification enables new power management technology to evolve independently in operating systems and hardware while ensuring that they continue to work together.

CN2 is a 6-pin header connector that provides ACPI interface.

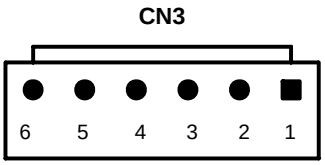
Pin	Description
1	EXTSMI
2	GND
3	PW_BN
4	GND
5	PW_ON
6	SB5V



2.4.3 Standalone Power Connector

CN3: Standalone 6-pin Power Connector Pin Assignment

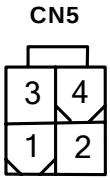
Pin	Description
1	+5V
2	GND
3	+12V
4	SB5V
5	GND
6	+5V



2.4.4 Extra Power Connector

CN5: 12V ATX Connector Pin Assignment

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



2.4.5 Parallel Port Interface

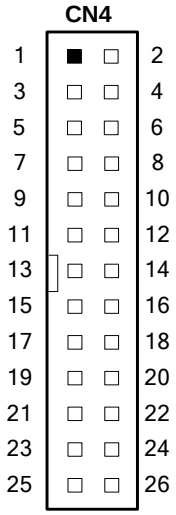
The board has one onboard parallel port, LPT1. LPT1 has one 26-pin header connector. The onboard PRN of the board is a multi-mode parallel port supporting:

1. **Standard mode:**
   IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port
2. **Enhanced mode:**
   Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
3. **High speed mode:**
   Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address selection of the onboard parallel port, in LPT1 (378H) or disabled, is configured within the BIOS CMOS setup utility.

CN4: Parallel Port (Box Header) Connector Pin Assignment

Pin	Description	Pin	Description
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC

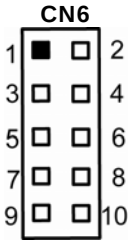


2.4.6 Audio Connector

The board is equipped with a 10pin-header connector **CN6** to support the audio interface.

CN6: Audio Connector Pin Assignment

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



2.4.7 Serial Port Interface

The board has four onboard serial ports COM1 is RS-232, and COM2 RS-232/422/485 jumper selectable with auto flow control features.

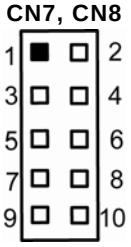
Serial Ports IRQ Selection

IRQ4 or IRQ3 can be selected as COM1 and COM2 IRQ. Both ports can be enabled or disabled through BIOS setting.

CN7/CN8: COM1/COM2 Serial Port 10-pin (Box-header) Connector Pin Assignment

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	No connector

CN7, CN8



The COM2 RS-422/485 pin assignment

Pin	Description	
	R2-422	RS-485
1	TX-	DATA-
2	No connector	No connector
3	TX+	DATA+
4	No connector	No connector
5	RX+	No connector
6	No connector	No connector
7	RX-	No connector
8	No connector	No connector
9	GND	GND
10	No connector	No connector

2.4.8 SMBUS Connector

Connector **CN10** is for SMBUS interface support.

Pin	Description
1	CLOCK
2	DATA
3	GND

CN10

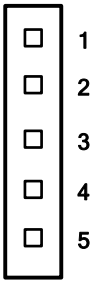
2.4.9 IrDA Connector

The board supports the Infrared data port that allows wireless exchange of information between your system and related devices. Infrared sensor can be used to transfer data to and from your computer and similarly equipped devices.

CN11: IrDA Connector Pin Assignment

Pin	Description
1	+5V
2	NC
3	IRRX
4	GND
5	IRTX

CN11



2.4.10 Display Interface

2.4.10.1 Graphic Controller

The 915GM Graphic Controller is a highly integrated graphics accelerator to deliver high performance 2D, 3D and video capabilities. It provides users with a complete graphics solution through an analog display (CRT port) and a second LVDS LCD interface (via CHRNTEL CH7308 converter). It also provides 2D hardware acceleration for block transfers of data (BLTs). The excellent hardware operation can reduce the CPU load that improves the system performance; meanwhile, the memory interface has a high bandwidth for data access. The 915GM uses Tiling architecture to increase system memory efficiency and thus maximize effective rendering bandwidth.

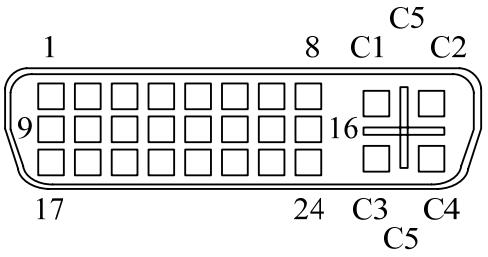
2.4.10.2 DVI/CRT/Flat Panel Connectors

The board has one DVI/CRT connector. **DVI1** is a DVI connector for the DVI/CRT display, The LVDS connector **CN13** on the SBC is a 40-pin connector. The matching connector is strongly recommended to use JST SHDR-40V-S-B.The 7-pin inverter connector **CN16** on the SBC is with Hirose connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

DVI1: DVI/CRT Connector Pin Assignment

Pin	Description	Pin	Description
1	TX2-	2	TX2+
3	Ground	4	CRT_SPD_CLK
5	CRT_SPD DATA	6	DVI_SPD_CLK
7	DVI_SPD DATA	8	CRT-VSYNC
9	TX1-	10	TX1+
11	Ground	12	NC
13	NC	14	VGAVCC
15	Ground	16	FPDETECT
17	TX0-	18	TX0+
19	Ground	20	NC
21	NC	22	Ground
23	TXC+	24	TXC-
C1	CRT-RED	C2	CRT-GREEN
C3	CRT-BLUE	C4	CRT-HSYNC
C5	VGAGND		

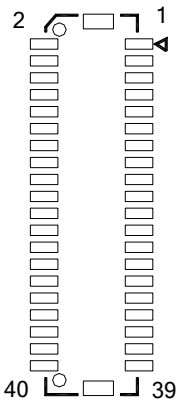
DVI1



CN13: 40 Pin LVDS Connector Pin Assignment

Pin	Deception	Pin	Deception
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

CN13

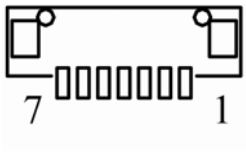


The LVDS interface which is with 40-pin connector supports 18/24-bit single/dual channel type of LCD.

CN16: 7-Pin Inverter Connector Pin Assignment

Pin	Description	Pin	Description
1	VCC12M1	2	VCC12M1
3	VCC	4	BLEN
5	GND	6	GND
7	GND		

CN16



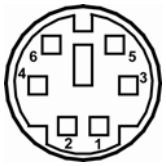
2.4.11 Keyboad and PS/2 Mouse Connector

The board provides a keyboard interface with a 5-pin connector **CN18**. **CN17** is a DIN connector for PS/2 keyboard/Mouse connection.

CN17: Keyboard & Mouse Connector (Mini DIN) Pin Assignment

Pin	Description
1	K/B Data
2	M/S Data
3	GND
4	VCC
5	K/B CLK
6	M/S CLK

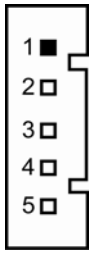
CN17



CN18: Keyboard & Mouse Connector (5Pin Wafer) Pin Assignment

Pin	Description
1	Data
2	NC
3	GND
4	VCC
5	CLK
6	NC

CN18



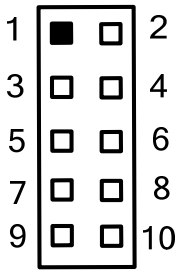
2.4.12 USB Connector

The board features four Universal Serial Bus connectors, USB 2.0 compliant 480Mbps that can be adapted to any USB peripherals, such as monitor, keyboard and mouse etc. There are two box-header connectors (**CN19/20**) on the board.

CN19/20: USB Connector (Box-Header) Pin Assignment

Pin	Description	Pin	Description
1	VCC	2	VCC
3	USB1+	4	USB2+
5	USB1-	6	USB2-
7	GND	8	GND
9	GND	10	GND

CN19, CN20



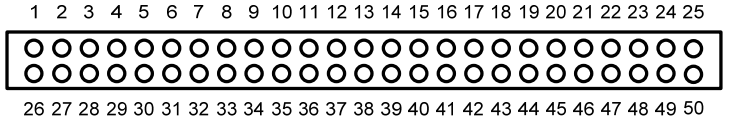
2.4.13 Compact Flash™ Socket

The board is equipped with a Compact Flash disk type-II socket on the solder side that supports the IDE interface Compact Flash disk card with DMA mode supported. The socket is especially designed to avoid any incorrect installation of the Compact Flash disk card.
When installing or removing the Compact Flash disk card, please make sure that the system power is off. The Compact Flash 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#

Pin	Description	Pin	Description
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
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

CNS1

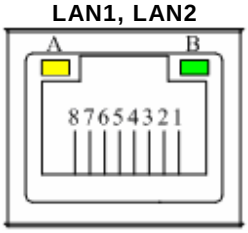


2.4.14 Ethernet RJ-45 Connectors

The RJ-45 connector is for Ethernet. To connect the board to a 100/10 Base-T hub, just plug one end of the cable into **LAN1** and **LAN2**, and connect the other end (phone jack) to a 1000/100/10-Base-T hub.

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

LAN1, LAN2



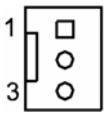
2.4.15 CPU and System Fan Connectors

FAN1 and **FAN2** are System and CPU FAN Connectors. Pentium microprocessors require a fan for heat dispensing. The fan connector is for power supply to the fan.

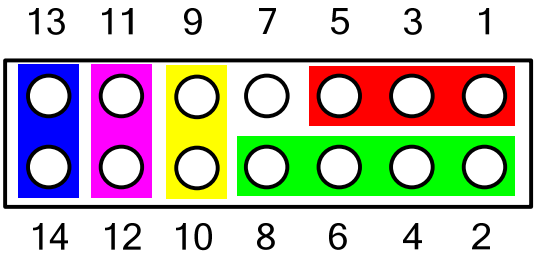
FAN1/FAN2: 3PIN FAN Connector

Pin	Description
1	Ground
2	+12V
3	Rotation Detection

FAN1, FAN2



2.4.16 Flat Panel Bezel Connector: CN15



- **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, not turns 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 +.

MEMO

Chapter 3
Hardware Description

3.1 Microprocessors

The **SBC80820 Series** supports Intel® Pentium® M and Celeron® M processors, which make your system operated under Windows XP and Linux environments. The system performance depends on the onboard microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The **SBC80820 Series** uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

3.3 System Memory

The **SBC80820 Series** industrial CPU card supports two 200-pin DDR2 SODIMM socket for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB and 1GB.

3.4 Input/Output (I/O) Port Address Map (Under WinXP)

[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000073] System CMOS/real time clock
[00000074 - 0000007F] Motherboard resources
[00000080 - 00000090] Direct memory access controller
[00000091 - 00000093] Motherboard resources
[00000094 - 0000009F] Direct memory access controller
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000170 - 00000177] Secondary IDE Channel
[000001F0 - 000001F7] Primary IDE Channel
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[00000294 - 00000297] Motherboard resources
[000002F8 - 000002FF] Communications Port (COM2)
[00000376 - 00000376] Secondary IDE Channel
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family

[000003C0 - 000003DF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000003F0 - 000003F5] Standard floppy disk controller
[000003F6 - 000003F6] Primary IDE Channel
[000003F7 - 000003F7] Standard floppy disk controller
[000003F8 - 000003FF] Communications Port (COM1)
[000004D0 - 000004D1] Motherboard resources
[00000778 - 0000077B] Printer Port (LPT1)
[00000800 - 0000087F] Motherboard resources
[00000880 - 0000088F] Motherboard resources
[00000A78 - 00000A7B] Motherboard resources
[00000B78 - 00000B7B] Motherboard resources
[00000BBC - 00000BBF] Motherboard resources
[00000D00 - 0000FFFF] PCI bus
[00000E78 - 00000E7B] Motherboard resources
[00000F78 - 00000F7B] Motherboard resources
[00000FBC - 00000FBF] Motherboard resources
[00004000 - 000040BF] Motherboard resources
[00005000 - 0000501F] Intel(R) 82801FB/FBM SMBus Controller - 266A
[0000B000 - 0000B0FF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC
[0000B000 - 0000BFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[0000C000 - 0000C0FF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC #2
[0000C000 - 0000CFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2662
[0000D000 - 0000D0FF] Realtek AC'97 Audio
[0000D800 - 0000D81F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
[0000D900 - 0000D91F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
[0000DA00 - 0000DA1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
[0000DB00 - 0000DB07] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[0000DC00 - 0000DC3F] Realtek AC'97 Audio
[0000DD00 - 0000DD1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
[0000F000 - 0000F00F] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653

-- Input/Output (I/O) Map under XP OS --

3.5 Interrupt Request (IRQ) Map (Under WinXP)

(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 6	Standard floppy disk controller
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 12	PS/2 Compatible Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 11	Intel(R) 82801FB/FBM SMBus Controller - 266A
(PCI) 16	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
(PCI) 16	Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
(PCI) 16	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
(PCI) 16	Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC
(PCI) 17	Intel(R) 82801FB/FBM PCI Express Root Port - 2662
(PCI) 17	Realtek AC'97 Audio
(PCI) 17	Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC #2
(PCI) 18	Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
(PCI) 19	Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
(PCI) 23	Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
(PCI) 23	Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C

-- Interrupt Request (IRQ) Map under XP OS --

3.6 Memory Map (Under WinXP)

[00000000 - 0009FFFF] System board
[000A0000 - 000BFFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000A0000 - 000BFFFF] PCI bus
[000C0000 - 000DFFFF] PCI bus
[000D2000 - 000D3FFF] System board
[000E0000 - 000EFFFF] System board
[000F0000 - 000F7FFF] System board
[000F8000 - 000FBFFF] System board
[000FC000 - 000FFFFF] System board
[00100000 - 0F6DFFFF] System board
[0F6E0000 - 0F6FFFFF] System board
[0F700000 - FEBFFFFF] PCI bus
[C0000000 - CFFFFFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0000000 - D00FFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[D0020000 - D0020FFF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC
[D0100000 - D01FFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2662
[D0120000 - D0120FFF] Realtek RTL8168/8111 PCI-E Gigabit Ethernet NIC #2
[D0200000 - D027FFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0280000 - D02FFFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0300000 - D033FFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0340000 - D03403FF] Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
[D0341000 - D03411FF] Realtek AC'97 Audio
[D0342000 - D03420FF] Realtek AC'97 Audio
[E0000000 - EFFFFFFF] Motherboard resources
[FEC00000 - FEC00FFF] System board
[FED13000 - FED1DFFF] System board
[FED20000 - FED8FFFF] System board
[FEE00000 - FEE00FFF] System board
[FFB00000 - FFB7FFFF] System board
[FFB80000 - FFBFFFFF] Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF] System board

-- Memory Map under XP OS --

Chapter 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).

TO ENTER SETUP PRESS DEL KEY

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

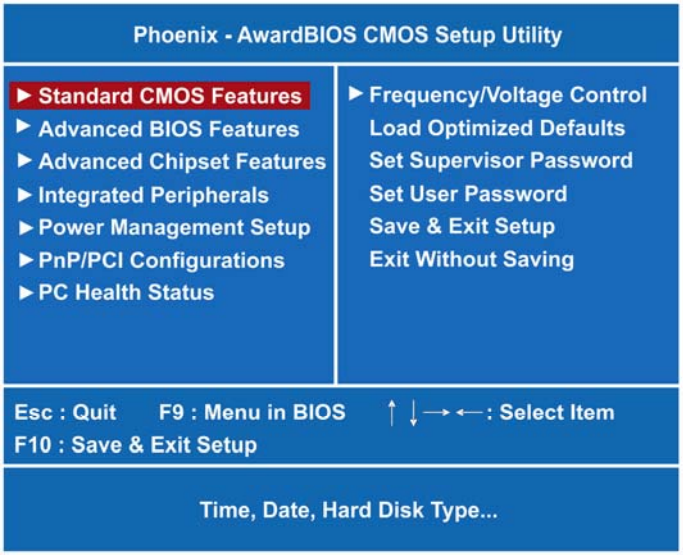
Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current 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.

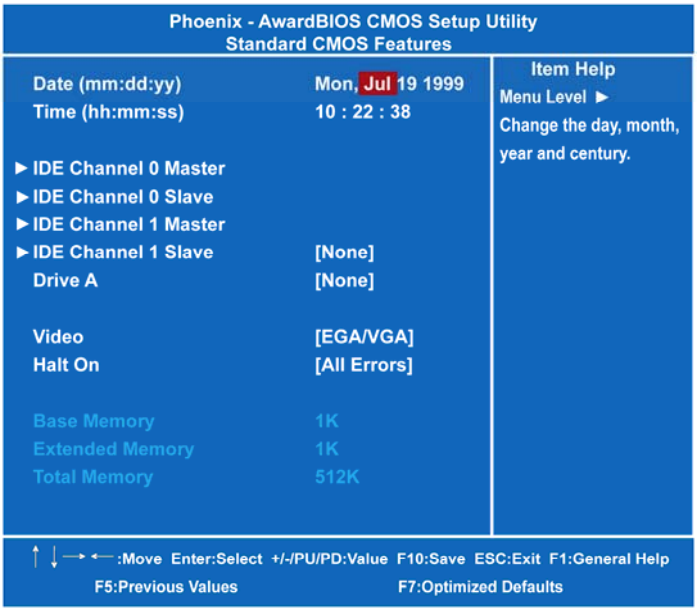


NOTE: *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

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



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

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**
  The time format is <hour> <minute> <second> accepting either functions key or numerical key. 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 Salve**
  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>.

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

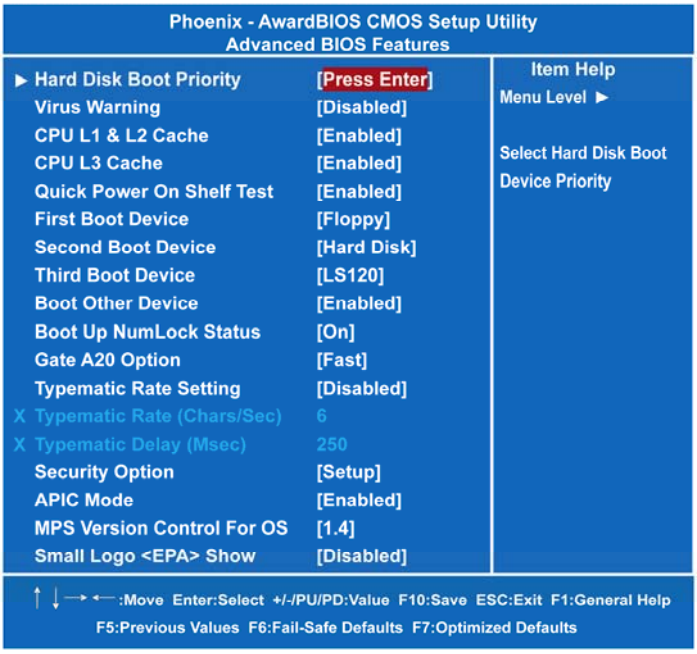
No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detect a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.

All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

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

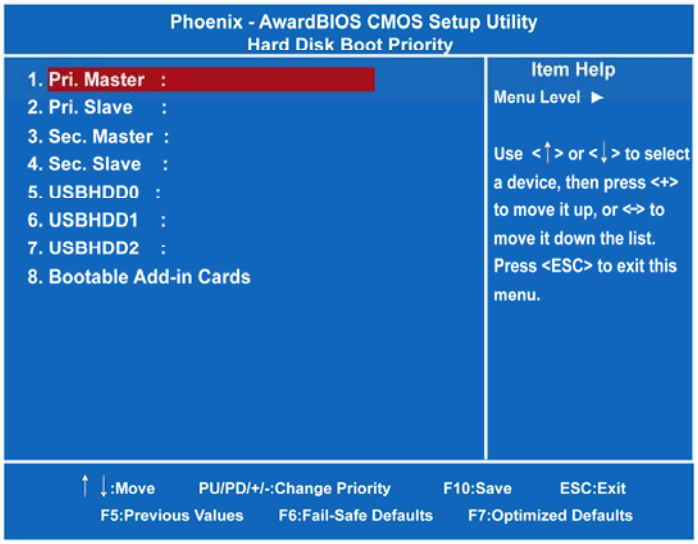
4.6 Advanced BIOS Features

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



- **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

- **CPU L3 Cache**
  Use this item to enable L3 cache only for the CPUs with such a function.
- **CPU L2 Cache ECC Checking**
  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is "*Enabled*".

- **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 allow the selection of 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"*.

- **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"*.

Typematic Rate (Char/Sec)

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

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

- **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.
- **Memory Hole At 15M-16M**
  You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

***** VGA Setting *****

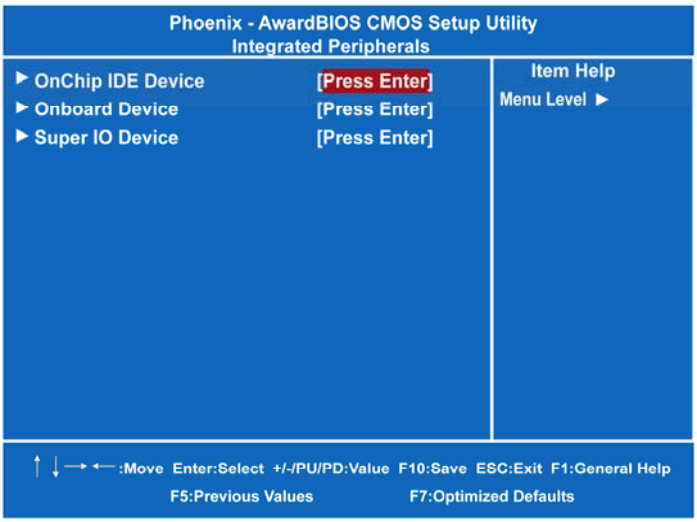
- **PEG/Onchip VGA Control**
  Use this item to choose the primary display card.
- **PEG Force X1**
  Use this item to select PCI Express X1 forcedly.
- **On-Chip Frame Buffer Size**
  Use this item to set the VGA frame buffer size.
- **DVMT Mode**
  DVMT (Dynamic Video Memory Technology) helps you select 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.

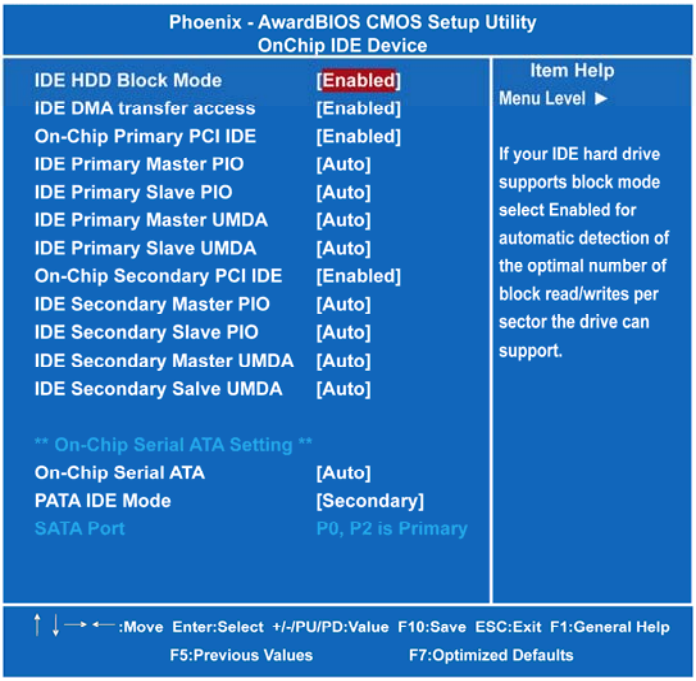
4.8 Integrated Peripherals

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.

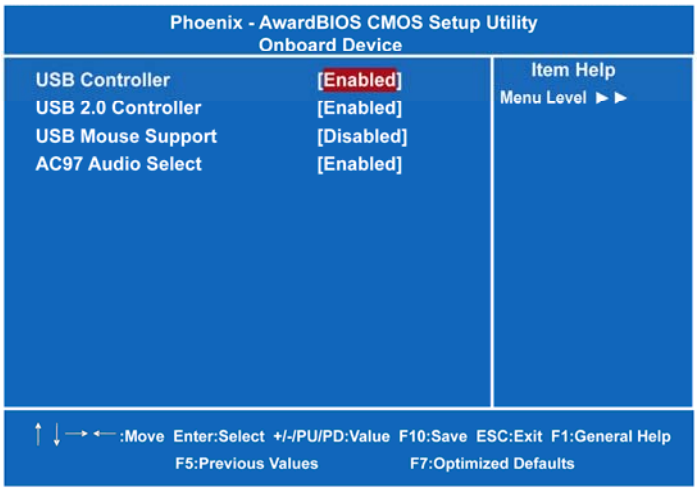
***** On-Chip Serial ATA Setting *****

- **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.

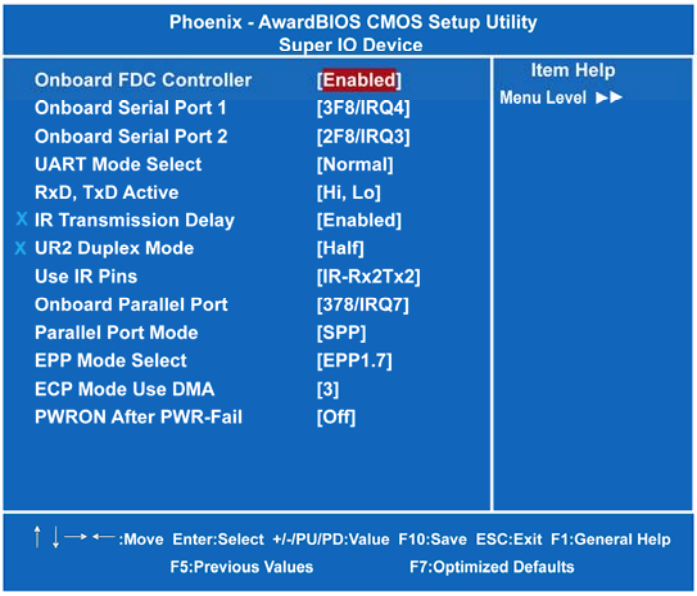


  - **USB Controller**
    Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system
  - **USB Mouse Support**
    Enable this item to boot the hard drive by a USB mouse.
  - **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 FDC Controller**
    Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.
  - **Onboard Serial Port 1 / 2**
    Select an address and corresponding interrupt for the serial port. Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
  - **URAT Mode Select**
    When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmittion delay will appear.

- **RxD, TxD Active**
  When the IR transmission is enabled, you can set up speeds of reception (RxD) and transmission (TxD).
- **IR Transmission Delay**
  Enable or disable this item to decide if the IR transmission delay function will be set or not while transferring to the reception mode.
- **UAR2 Duplex Mode**
  The second serial port offers these infrared interface modes:
  1. IrDA
  2. ASKIR IrDA-compliant serial infrared port
  3. Normalo (default value)

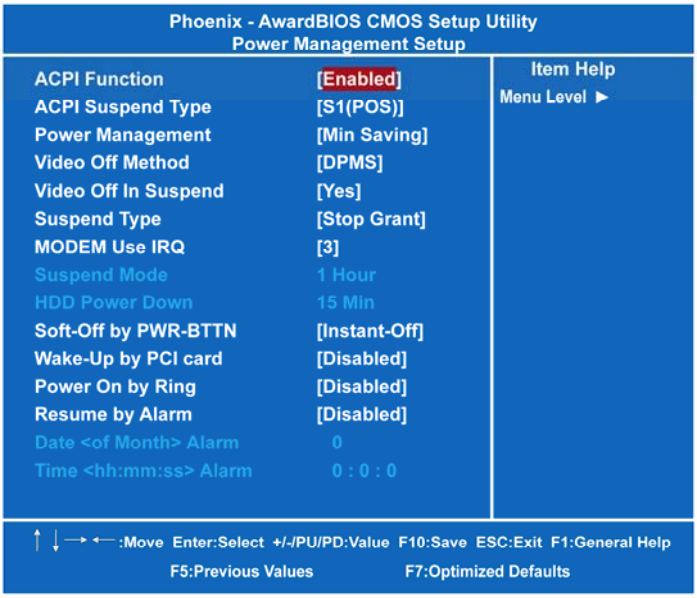
NOTE: *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

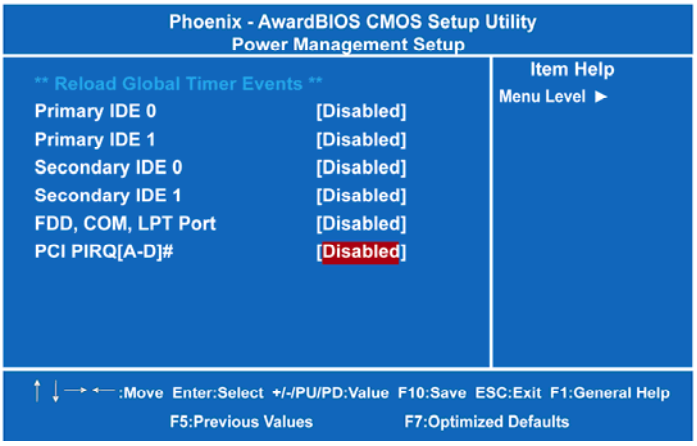
- **Use IR Pins**
  Use this item to set up IR devices based on the IR pin definitions.
- **Onboard Paralellel Port**
  This item allows you to determine access onboard parallel port controller with which I/O address. The options available are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.
- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.
- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.
- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port for use during ECP mode.
- **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 context.
  [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 of power Management.
- **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 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.

- **Wake-Up by PCI card**
  If enable this item, the system can automatically resume when the PCI Modem or PCI LAN card receives an incoming call.
- **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).

- **Date (of Month)**
  When ***RTC Alarm Resume*** is set to [Enabled], the field specifies the month for it.
- **Resume Time (hh:mm:ss)**
  You can choose what hour, minute and second the system will boot up.

**** Reload Global Timer Events ****

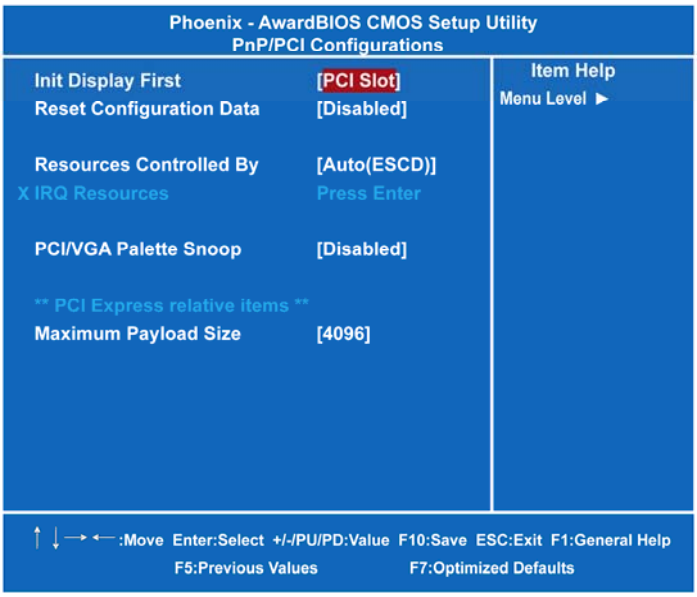
Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

- **Primary/Secondary IDE 0/1**
  Use this item to configure the IDE devices monitored by the system.
- **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 configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



- **Init Display First**
  This item allows you to decide whether PCI Slot or AGP to be the first primary display card.
- **Reset Configuration Data**
  Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all

the 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 as one of the following types, depending on the type of device 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.

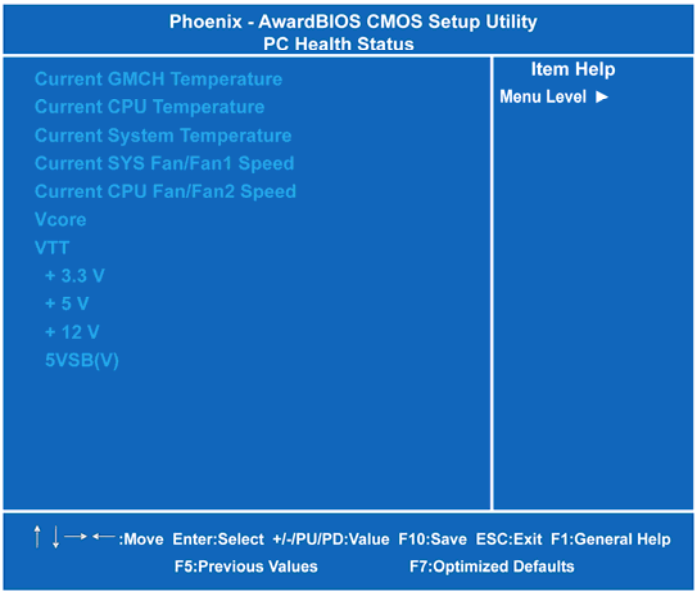
**** PCI Express relative items ****

- **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.

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.



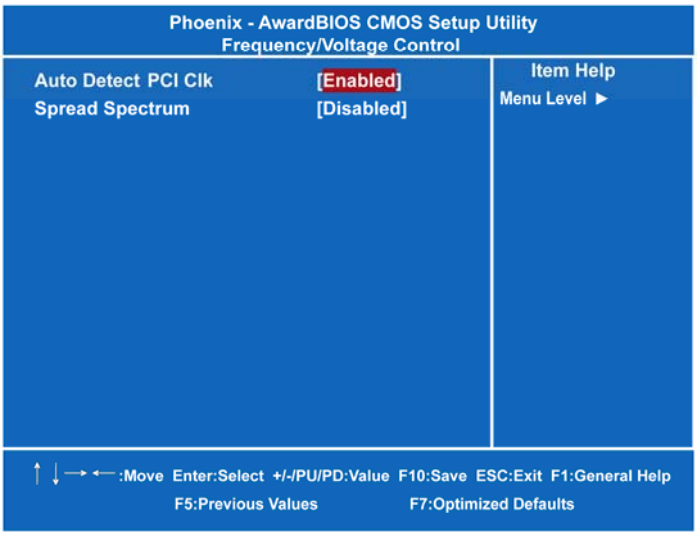
- **Current GMCH Temperature**
  The current GMCH temperature will be automatically detected by the system.
- **Current CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.
- **Current SYSTEM Temperature**
  Show you the current system1 temperature.
- **Current SYSTEM FAN1 Speed**
  Show you the current system fan1 temperature.
- **Current SYSTEM FAN2 Speed**
  Show you the current system fan2 temperature.

- **Current CPU FAN Speed**
  These optional and read-only items show current speeds in RPM (Revolution Per Minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
  Show you the voltage of +3.3V/+5V/+12V.

Press <Esc> to return to the Main Menu.

4.12 Frequency/Voltage Control

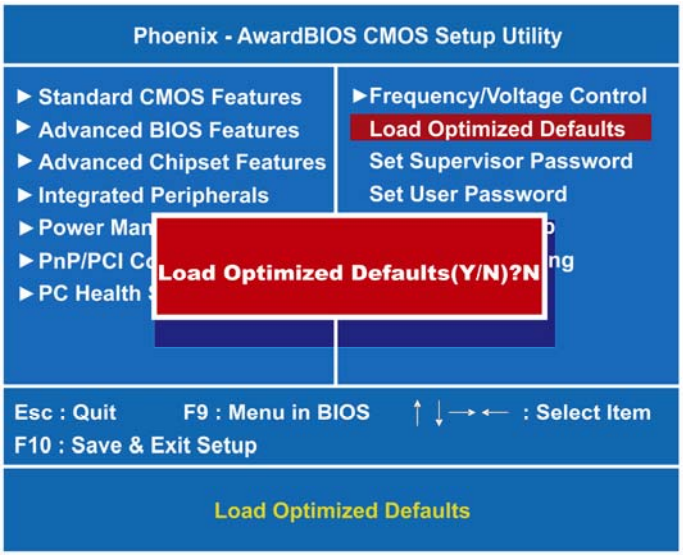
This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.



- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot which does not have a module in it, reducing EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.
  set the CPU operating frequency.

4.13 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

4.14 Set Supervisor/User Password

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

1. **Supervisor password:** can enter and change the options of the setup menus.
2. **User password:** just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

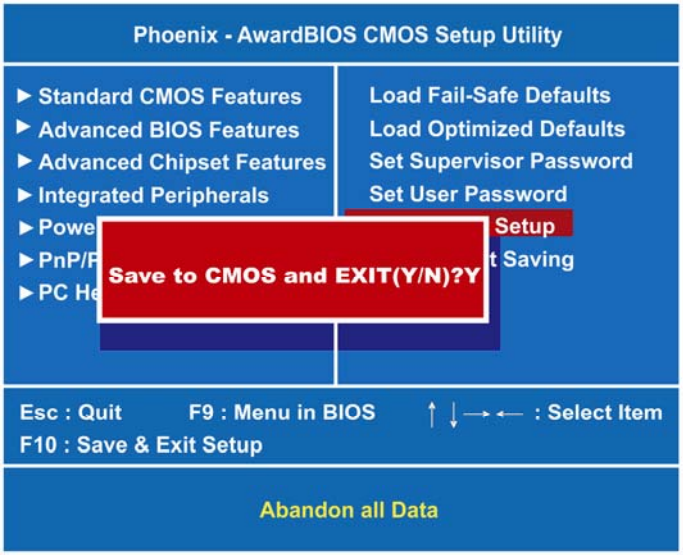
When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

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 determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

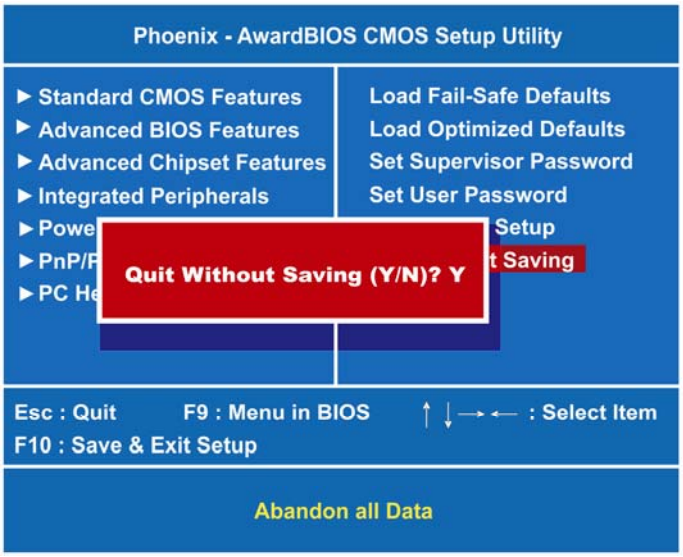
4.15 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.



4.16 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



A p p e n d i x
Watch Dog Timer

Watchdog Timer Setting
(From Super I/O W83627HG)

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