AR-B1831

**Pentium M inside,EPIC form factor ,On Board VGA,LVDS
with DDR SO-DIMM, built in Two LAN,CF Type-II**

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Contents

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Introduction

1.1 Specifications:

CPU : Supports Intel Pentium M, Celeron M CPU.

Chipset : GMCH 855GME and ICH4 82801DB

RAM memory : DDR SDRAM SO-DIMM Socket support to 1GB/333MHz.

Display Controller: Intel 855GME Supports non-interlaced CRT monitors Supports LVDS Encoders.

Ultra DMA 133 IDE Interface : One PCI Enhance IDE channel.

CompactFlash^{TM} interface : Supports CompactFlash^{TM} Type II socket for Compact Flash Disk or IBM Micro Drive.

Series ports : Four high-speed 16C550 compatible UARTs ports.COM4 can also support RS-422/485.

Parallel Port: IEEE-1284 compliant. Supports SPP/EPP/ECP mode.

USB port : Support Six USB 2.0 compatible ports.

Audio Connector: supports Line-in, Line-out, MIC-in.

Digital IO: Supports eight digital-in, and eight digital-out TTL-level I/O ports.

IrDA: Supports Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR)interface.

PS/2 Mouse/Keyboard Connector

Watchdog timer : Time setting form 1 to 255 second / minute System Reset generate when CPU did not periodically trigger the timer.

AR-B1831

Intel LAN Controller: Two ports IEEE 802.3u Auto-Negotiation support for Intel 82551QM 10/100BASE-TX or 82541PI 1000BASE-TX(Optional). Connected to your LAN through RJ45 connector.

Power Consumption : 12V / 3.5A

Operating Temperature : -10° ~ 60° C (CPU needs Cooler)

Dimension: 115mm(W) X 165mm(L)

1.2 What You Have

In addition to this *User's Manual*, the AR-B1831 package includes the following items:

AR-B1831 board

User Manual

Drive CD

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Installation

This chapter describes how to install the AR-B1831. At first, the layout of AR-B1831 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the AR-B1831's configuration

2.1 AR-B1831's Layout
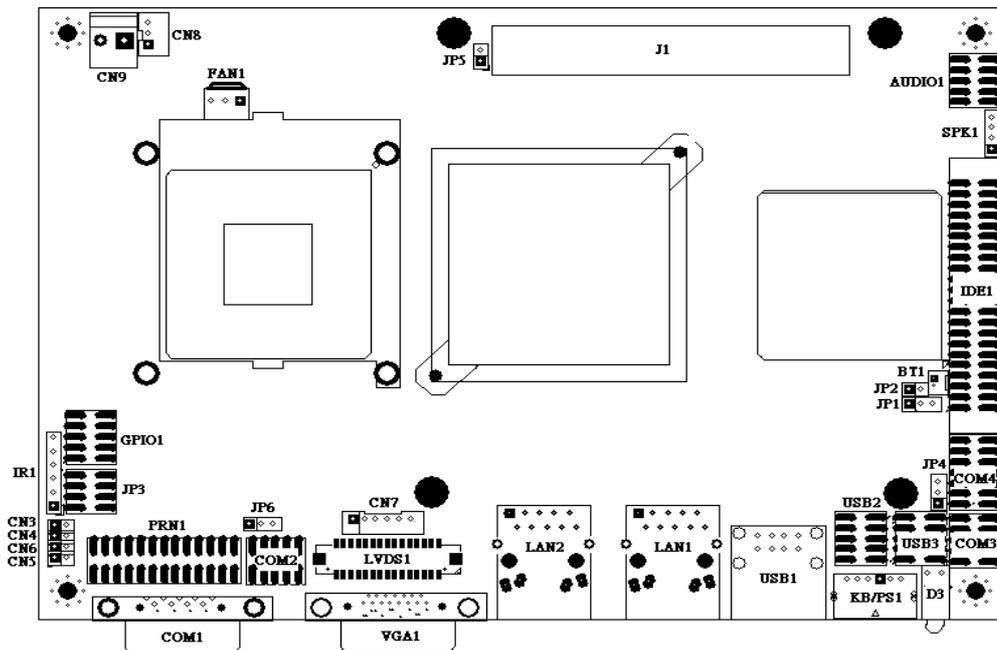
Top Placement
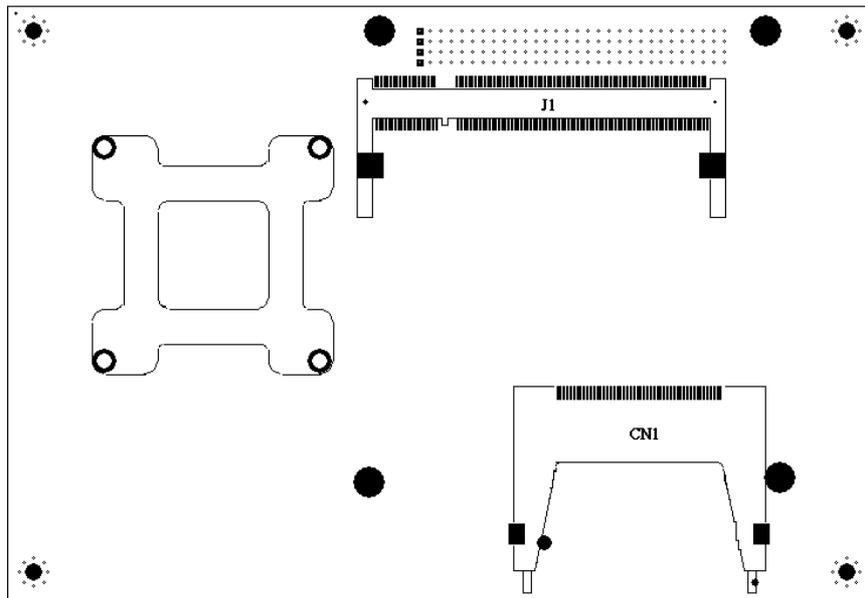
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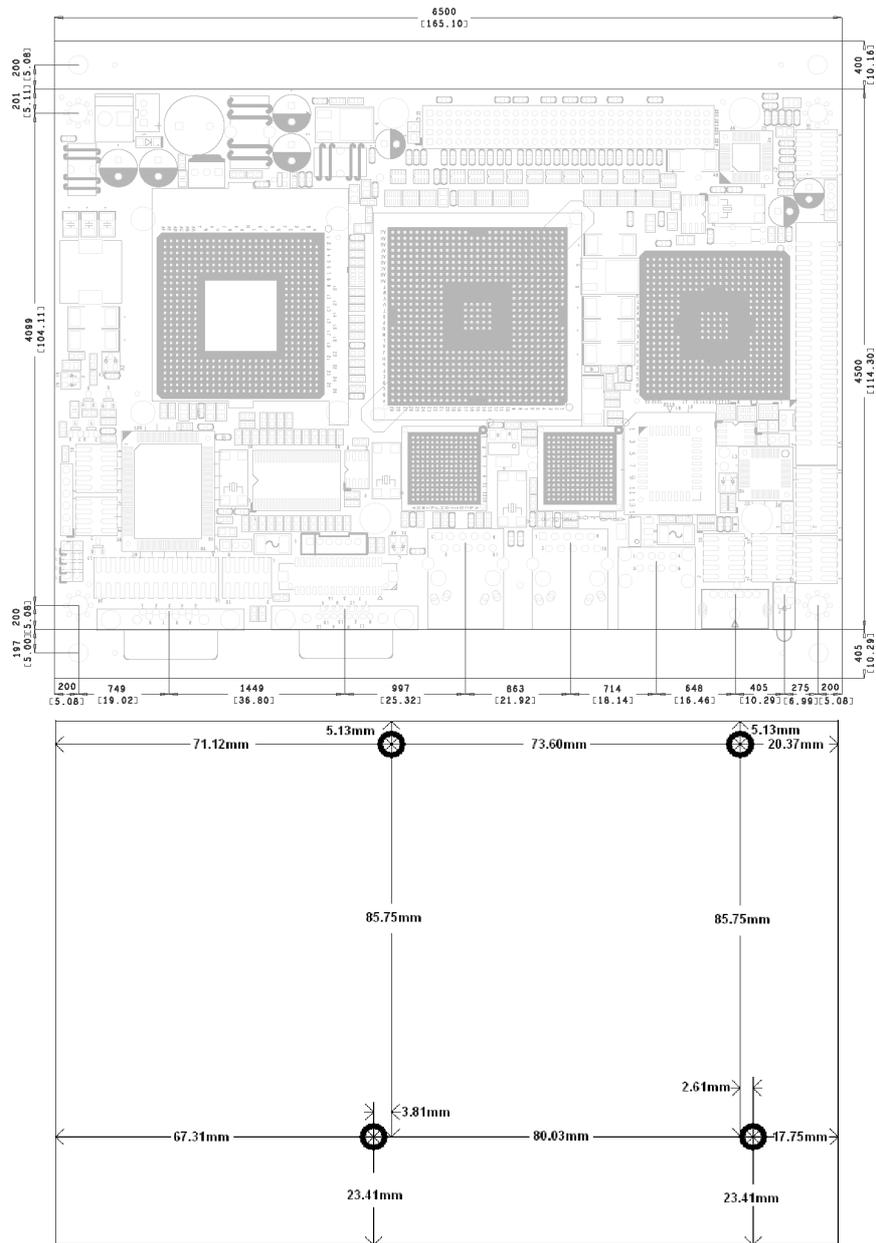
2.2 Power Button Setting

● **CN9 : Power Connector**

Pin	DESCRIPTION
1	+12V
2	GND
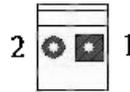
● **CN5 : Power Button Connector**

Pin	DESCRIPTION
1	+5VSB
2	Power ON

● **D3 : Power LED / HDD LED**

LED	DESCRIPTION
GREEN	POWER LED
YELLOW	HDD LED

● **CN6 : Reset Button Connector**

Pin	DESCRIPTION
Open	Normal
Short	Reset System

● **CN8 : Power ON Pin Header**

Pin	DESCRIPTION
1	GND
2	PS_ON
3	5VSB

2.3 CMOS Reset

● **JP1 : CMOS pin header**

JP1	DESCRIPTION
1-2	Norr al Operation
2-3	Clear CMOS

2.4 Jumper description

● **JP2 : Select CF Master or Slave mode**

JP2	Description
Short	Master
Open	Slave

● **CN3 : Keyboard Lock**

CN3	Description
Open	Unloc
Short	Lock

● **JP3 : COM1/2 Select RI is 12V or signal**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	NRIA	2	NRIA_12V
3	+12V	4	NRIA_12V
5	NRIB	6	NRIB_12V
7	+12V	8	NRIB_12V

● **JP4 : Select COM4 is RS232 or RS422/485**

JP4	Description
1-2	RS23 2
2-3	RS422/485

● **CN4 : Case Open**

CN4	Description
Open	Norm al
Short	Power off

● **JP5 : If Short SERIRQ Connect to PC104+ Pin B1**

JP5	Description
1	J2 Pin B1
2	SERIRQ

● **IR1 : Infrared Pin Header**

PIN	Description
1	+5V
2	NC
3	RX
4	GND
5	TX
6	VCC2
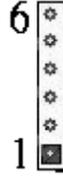
● **JP6 : Select LCD Voltage**

JP6	Description
1-2	+3.3V
2-3	+5V

● **CN7 : Inverter Power Connector**

PIN NO.	DESCRIPTION
1	+12V
2	+12V
3	GND
4	BKLTEN
5	GND
6	BKLTCTL

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the AR-B1831 board.

3.1 Ultra ATA33/66/100 IDE Disk Drive Connector(IDE1)

You can attach two IDE(Integrated Device Electronics) hard disk drives to the AR-B1831 IDE controller.

IDE 1 : Secondary IDE Connector (44 Pins)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
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	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V LOGIC	42	+5V MOTOR
43	GROUND	44	TYPE
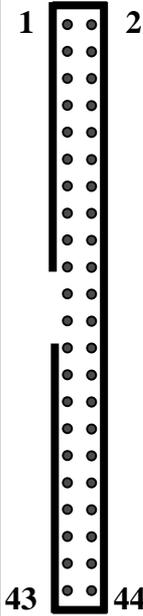
3.2 Serial Ports(COM1~4)

The AR-B1831 offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

- **COM1 : RS-232 Serial port**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	-DCD	2	RXD
3	TXD	4	-DTR
5	GND	6	-DSR
7	-RTS	8	-CTS
9	-RI	10	NC
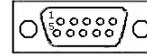
- **COM2/3 : RS-232 Serial port (Pin Header)**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	-DCD	2	-DSR
3	RXD	4	-RTS
5	TXD	6	-CTS
7	-DTR	8	-RI
9	GND	10	NC
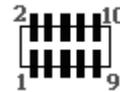
- **COM4 : RS-232 with RS-422/485 Serial port(Pin Header)**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	-DCD	2	-DSR
3	RXD	4	-RTS
5	TXD	6	-CTS
7	-DTR	8	-RI
9	GND	10	GND
11	TX+	12	TX-
13	RX+	14	RX-

3.3 Keyboard / Mouse Connector(MS_KB1)

A PS/2 type connector(MS_KB1)is for easy connection to a keyboard and PS/2 mouse. The board comes with a Y split PS/2 cable for keyboard and mouse connection.

● **MS_KB1 : Keyboard Mouse PS2 Port**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KB_DAT	2	MS_DAT
3	GND	4	+5V
5	KB_CLK	6	MS_CLK
7	GND	8	GND
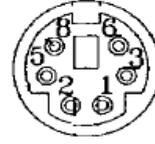
3.4 USB Port Connector(USB1~4)

The AR-B1831 provides six USB port, four pin header, two connectors .

● **USB1 : USB Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	VCC
3	USB3/4_0-	4	USB3/4_1-
5	USB3/4_0+	6	USB3/4_1+
7	GND	8	GND
9	USB_GND	10	USB_GND

● **USB2/3 : USB Connector(Pin header)**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	VCC
3	USB3/4_0-	4	USB3/4_1-
5	USB3/4_0+	6	USB3/4_1+
7	GND	8	GND
9	USB_GND	10	USB_GND
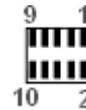
3.5 Fan Connector (FAN1)

The AR-B1831 provides one connectors for CPU cooling fan they can be controlled by Super I/O Chip.

- **FAN1: Fan Connector for CPU**

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	PWM Signal

3.6 LAN RJ45 Connector (LAN1/2)

AR-B1831 is equipped with built-in 10/100Mbps or 1000Mbps(Option) Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as following:

- **LAN1/2 : LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C
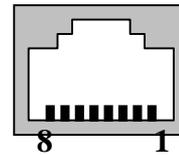
3.7 Compact Flash Storage Card Socket(CF1)

The AR-B1831 configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

- **CF1 : Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	PULL HIGH
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

Note: If IDE2 & CFD1 both in used, CFD1 must be as "Master" & IDE2 is as "Slave".

3.8 VGA Connector(VGA1)

The AR-B1831 has a built-in 15-pin VGA connector accepting the CRT monitor

- **VGA1 : 15-pin D-Sub Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	L_RED	2	L_GREEN
3	L_BLUE	4	MON2PU
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	MONOPU	12	5VDDCDA
13	HSYNC	14	VSYNC
15	5VDDCCL		
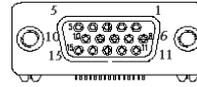
3.9 AUDIO Connector(AUDIO1)

- **AUDIO1 : Audio Pin Header**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	LINE_OUT_R	2	LINE_OUT_L
3	GND	4	GND
5	LINE_IN_R	6	LINE_IN_L
7	MIC_IN	8	GND
9	GND	10	GND
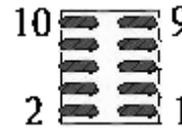
3.10 DDR SODIMM Socket (J1)

There are two 200-pin DDR SDRAM DIMM slots to accept 2.5V non_buffered DDR SDRAM. The max Memory size is 2GB.

- **J1 : DDR SODIMM Socket**
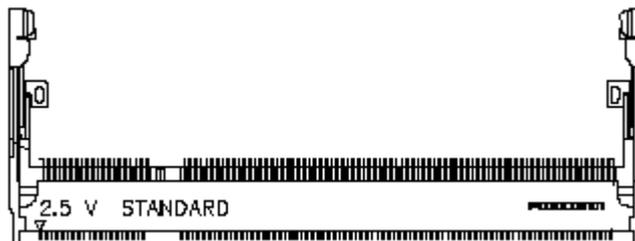
3.11 8-BIT GPIO Connector(GPIO1)

- **GPIO1: 8 BIT GPIO Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GP10	2	GP11
3	GP12	4	GP13
5	GP14	6	GP15
7	GP16	8	GP17
9	GND	10	VCC
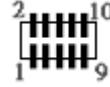
3.12 Parallel port(PRN1)

This port is usually connected to a printer. The AR-B1831 includes an on-board parallel port.

- **PRN1: Parallel Port Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STB-	14	AFD-
2	PD0	15	ERR-
3	PD1	16	INIT-
4	PD2	17	SLIN-
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK-	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	X
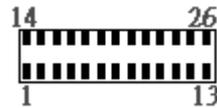
3.13 LVDS Connector(LVDS1)

- **LVDS1 : LVDS Interface Connector**

PIN	DESCRIPTION	PIN	DESCRIPTION
2	GND	1	LVDS_PWR
4	LVDS_CLKBP	3	LVDS_CLKBM
6	LVDS_YBM2	5	GND
8	GND	7	LVDS_YBP2
10	LVDS_YBP1	9	LVDS_YBM1
12	LVDS_YBM3	11	LVDS_YBP3
14	LVDS_YBM0	13	LVDS_YBP0
16	LVDS_CLKAP	15	GND
18	GND	17	LVDS_CLKAM
20	LVDS_YAM2	19	LVDS_YAP2
22	LVDS_YAP1	21	DDCPCLK_X
24	DDCPDATA_X	23	LVDS_YAM1
26	LVDS_YAM0	25	LVDS_YAP0
28	LVDS_YAM3	27	LVDS_YAP3
30	LVDS_PWR	29	LVDS_PWR
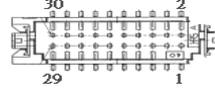
3.14 Speak Connector(SPK1)

- **SPK1 : Speak out Connector(through Amplifier)**

PIN NO.	DESCRIPTION
1	SPKR
2	GND
3	SPKL
4	GND

4
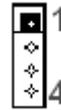
Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program built into the BIOS. The Setup program allows users to configure the system. This configuration is then stored in battery-backed CMOS RAM so that it retains the Setup information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:
1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

   Press DEL to enter SETUP.
If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...
   PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, you can use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Exit Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main 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.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
       Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit

          Date (mm:dd:yy)          Wed, Nov 24 1999        Item Help
          Time (hh:mm:ss)          10 : 26 : 10
                                                      Menu Level    ►
        ► IDE Primary Master       [ None]
        ► IDE Primary Slave                            Change the day, month,
        ► IDE Secondary Master                         year and century
        ► IDE Secondary Slave

          Drive A                  [1.44M, 3.5 in.]
          Drive B                  [None]

          Video                    [EGA/VGA]
          Halt On                  [All , But Keyboard]

          Base Memory                   640K
          Extended Memory                 1K
          Total Memory                 1024K


      ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values    F6:Fail-Safe Defaults     F7:Optimized Defaults
```

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE	Options are in its sub	Press <Enter> to enter

Secondary Slave	menu (described in Table 3)	the sub menu of detailed options
Drive A & Drive B	None 360K, 5.25 in 1.2M, 5.25 in 1.720K, 3.5 in 1.44K, 3.5 in 2.88K, 3.5 in	Select what kind of floppy type you install
Video	EGA / VGA CGA 40 CGA 80 Mono	Select what type of Display you use
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 1 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.
Figure 2 shows the IDE primary master sub menu.

IDE HDD Auto-Detection[Press Enter]

IDE Primary Master[Auto]
Access Mode [Auto]
Capacity0MB

Cylinder0
Head0
Precomp0
Landing Zone0
Sector0

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 2 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 2 Hard disk selections

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation.

```
              Phoenix - AwardBIOS CMOS Setup Utility
    Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit

      APIC Mode                    [Enabled]          │      Item Help
      Quick Power On Self Test     [Enabled]          │
      Full Screen LOGO Show        [Disabled]         │   Menu Level   ►
      USB Keyboard Support         [Disabled]         │
      PS/2 Mouse Function          [Enabled]          │
                                                      │
      Init Display First           [Onboard/AGP]      │
      Intel VGA Share Memory       [32MB]             │
      Boot Display                 [CRT]              │
    x Panel Type                    640x480           │
                                                      │
      ACPI Function                [Disabled]         │
    x ACPI Suspend Type             S1(POS)           │
      PWRON After PWR-Fail         [Last State]       │
      Power-Supply Type            [AT]               │
                                                      │
                                                      │

    ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Figure 3 Advanced menu

APIC Mode
This item allows use Advanced Programmable Interrupt Controller feature.

The Choice: Enabled, Disabled.

Quick Power On Self Test
This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

| Enabled | Enable quick POST |
| Disabled | Normal POST |

Full Screen LOGO Show
This item allows you to enable or disable show full screen LOGO.
The Choice: Enabled, Disabled.

USB Keyboard Support
This item allows you to enable or disable USB keyboard support.
The Choice: Enabled, Disabled.

PS/2 Mouse Function
Disabled-prevents any installed PS/2 mouse from functioning but frees up IRQ12.Enabled-allows the operating system to determine whether to enable or disable the mouse. Choice: Enabled, Disabled.

Init Display First
This item allows you to choose which Display to be first detected.
The Choice: PCI Slot, On Board / AGP.

Intel VGA Share Memory
This item allows you to Choose the Frame Buffer size for Display.
The Choice: 1MB, 4MB, 8MB, 16MB, 32MB.

Boot Display
This item allows you to choose display interface.
The Choice: Vbios default, CRT, EFP, TV, CRT + EFP, CRT + TV.

Panel Type
This item allows you to choose display panel type and resolution.
The Choice: 640x480,800x600,1024x768.

ACPI Function
This item allows you to enable or disable Advanced Configuration and Power Management (ACPI) function.
The Choice: Enabled, Disabled.

ACPI Suspend Type
This item allows you to Choose Suspend Type for ACPI function.
The Choice: S1(Pos), S3(STR), S1 & S3.

Power Supply Type
This item allows you to choose the Type of Power Supply in use.
The Choice: AT, ATX.

PWRON After Power-Fail
This item allows you to choose the Option of Power Status after Power Fail by ATX Power Supply.
The Choice: Former-STS, On, Off.

4.6 PnP/PCI Configuration Setup

```
                    Phoenix - AwardBIOS CMOS Setup Utility
        Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit

        Reset Configuration Data    [Disabled]              Item Help

        Resources Controlled By     [Auto(ESCD)]    Menu Level    ►
      x IRQ Resources
                                                    Default is Disabled.
                                                    Select Enabled to
                                                    reset Extended System
                                                    Configuration Data
                                                    ESCD) when you exit
                                                    Setup if you have
                                                    installed a new add-on
                                                    and the system
                                                    reconfiguration has
                                                    caused such a serious
                                                    conflict that the OS
                                                    cannot boot

     ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```
Figure 4 PnP/PCI menu

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").
The choice: Auto(ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
 The Choice: PCI Device, Reserved.

4.7 Peripheral

```
               Phoenix - AwardBIOS CMOS Setup Utility
    Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit

    Onboard Serial Port 1       [3F8/IRQ4]              Item Help
    Onboard Serial Port 2       [2F8/IRQ3]
    UART Mode Select            [Normal]         Menu Level    ►
    RxD , TxD Active            [Hi,Lo]
    IR Transmission Delay       [Enabled]
    UR2 Duplex Mode             [Half]
    Use IR Pins                 [IR-Rx2Tx2]
    Onboard Serial Port 3       [3E8/IRQ11]
    Onboard Serial Port 4       [2E8/IRQ10]

    Onboard Parallel Port       [378/IRQ7]
    Parallel Port Mode          [SPP]
    EPP Mode Select             [EPP1.7]
    ECP Mode Use DMA            [3]

    Onboard FDC Controller      [Enabled]
    USB Controller              [Enabled]
    USB 2.0 Controller          [Enabled]
    AC97 Audio                  [Auto]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Figure 5 Peripheral menu

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto

---

UART Mode Select

Select the Function Mode for UART.
The choice: IrDA, ASKIR, Normal

Onboard Serial Port 3/Port 4

Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto

---

Onboard Parallel Port

Select 3BC/IRQ7 to enable On Board Parallel Port as first Parallel Interface.
The choice: Disable, 378/IRQ7, 278/IRQ5, 3BC/IRQ7.

USB Controller

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

USB 2.0 Controller

This Entry is for disable / enable EHCI controller only. The Bios itself may / may not have high speed USB support. If the Bios has high speed USB support built in, the support will be automatically turn on when high speed device were attached.
The Choice: Enabled, Disabled.

AC97 AUDIO
The Choice: Auto, Disabled.

4.8 PC Health

```
            Phoenix - AwardBIOS CMOS Setup Utility
  Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit
┌──────────────────────────────────────────┬──────────────────┐
│  CPU Temperature                          │    Item Help     │
│  System Temperature                       │                  │
│                                           │  Menu Level   ▶  │
│  Current CPU FAN Speed                    │                  │
│                                           │                  │
│  VCore(V)                                 │                  │
│  + 3.3 V                                  │                  │
│  + 5 V                                    │                  │
│  +12 V                                    │                  │
│  VBAT(V)                                  │                  │
│  5VSB(V)                                  │                  │
│  Shutdown Temperature        [Disabled]   │                  │
│                                           │                  │
│                                           │                  │
│                                           │                  │
│                                           │                  │
│                                           │                  │
├──────────────────────────────────────────┴──────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5:Previous Values    F6:Fail-Safe Defaults   F7:Optimized Defaults      │
└──────────────────────────────────────────────────────────────┘
```
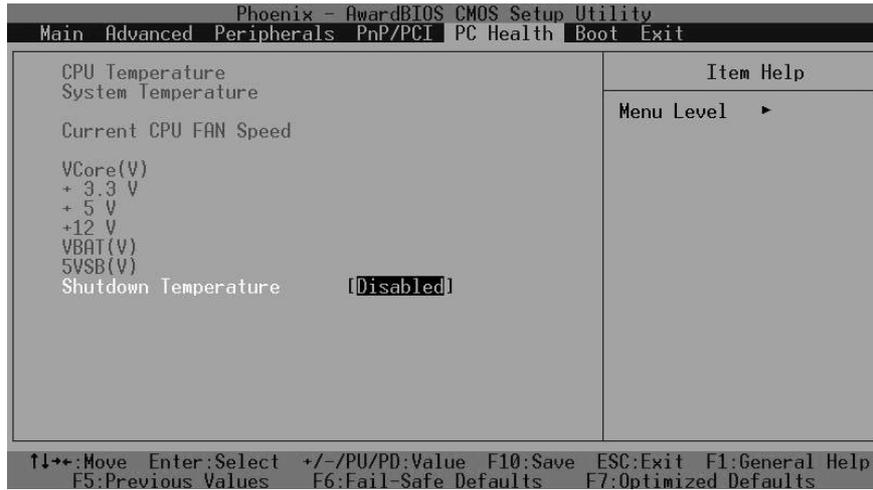
Figure 5 H/W Monitor menu

Shutdown Temperature
This item allows the system to reset when temperature reach the trigger level.
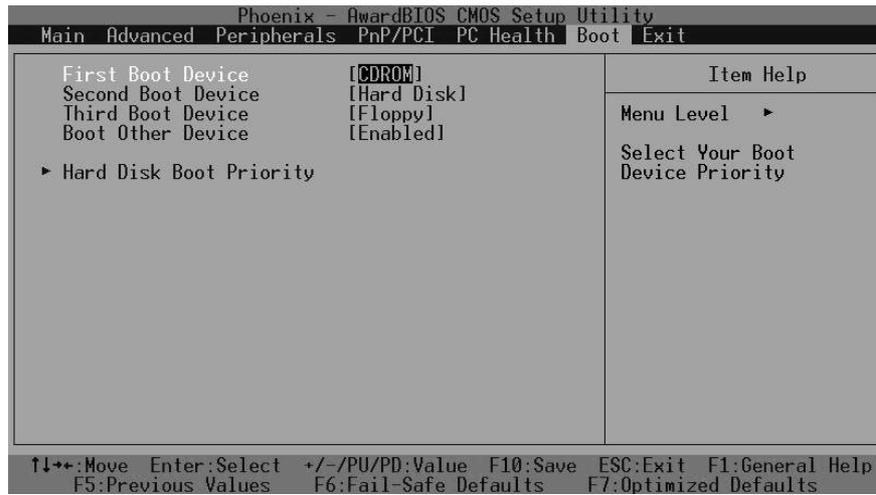The Choice: Disabled, 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F

4.9 Boot

```
                Phoenix - AwardBIOS CMOS Setup Utility
      Main  Advanced  Peripherals  PnP/PCI  PC Health  Boot  Exit

        First Boot Device        [CDROM]              Item Help
        Second Boot Device       [Hard Disk]
        Third Boot Device        [Floppy]          Menu Level    ►
        Boot Other Device        [Enabled]
                                                   Select Your Boot
      ► Hard Disk Boot Priority                    Device Priority




      ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values      F6:Fail-Safe Defaults    F7:Optimized Defaults
```
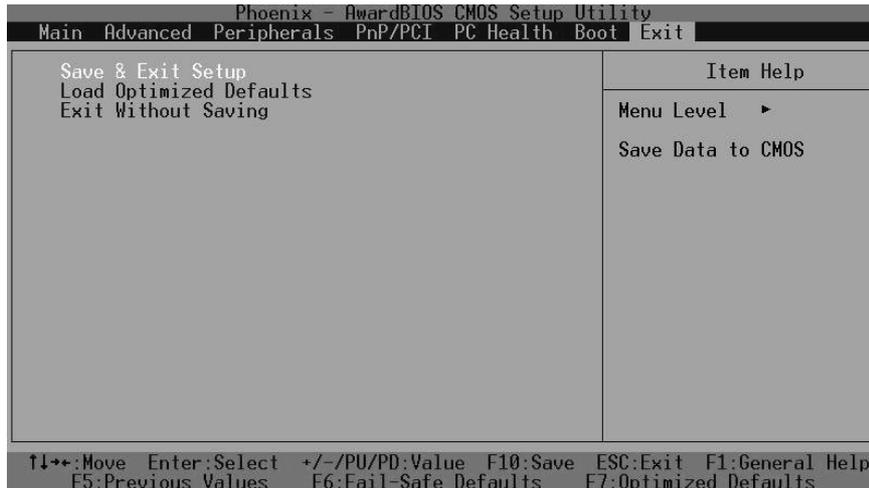
Figure 6 Boot menu

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice:

- ➢ Floppy……….[ ]
- ➢ LS120……….[ ]
- ➢ Hard Disk ….[ ]
- ➢ CDROM……….[ ]
- ➢ ZIP100   ……….[ ]
- ➢ USB-FDD ……..[ ]
- ➢ USB-ZIP ……..[ ]
- ➢ USB-CDROM ..[.]
- ➢ On Board LAN…[ ]
- ➢ Disabled…..……[ ]

4.10 Exit Selecting

- ➢ Save & Exit Setup
- ➢ Load Optimized Defaults
- ➢ Exit Without Saving
- ➢ Load Fail-Save Default

Figure 8 Exit menu

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

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

Load Optimized Defaults (Y/N) ? N

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

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values that are factory settings for safety system operations.

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

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for Fail-Safe system operations.

Appendix A. Watchdog Timer

The WDT(Watch Dog Timer)is used to generate a variety of output signals after a user programmable cont. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

WATCHDOG TIMER SETTING
The watchdog timer is a circuit that maybe be used from your program software to detect crash or hang up. The watchdog timer is automatically disabled after reset. Once you enabled the watchdog timer, your program should trigger the watchdog timer every time before it times out. After you trigger the watchdogtimer, the timer will be set to zero and start to count again. If your program fails to trigger the watchdog timer before times out, it will generate a reset pulse to reset the system or trigger the IRQ9 signal in order to tell your system that the watchdog time is out.

User could test watch dog function under 'Debug.exe' program as follows:

WDT Example	Description
o 2e 87	;Extended Functions Enable Register
o 2e 87	;Extended Functions Enable Register
o 2e 07	;EFIR=EFER(Extended Function Index Register)point to Logical Device Number Reg.
o 2f 08	;EFDR=EFIR+1, select logical device 8
o 2e 30	;select CR30
o 2f 01	;update CR30 with value 01H
o 2e f6	;select CRF6
o 2f 08	;update CRF6 with value 08H,(8sec reset)
g	;go

Appendix B: Digital I/O

One characteristic of digital circuit is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. Digital Input and Output, generally, are control signals. You can use these signals to control external devices that needs On/Off circuit or TTL devices. You can read or write data to the selected address to enable the function of digital IO.

Users could test GPIO function under 'Debug.exe' program as follow:

GPO Example	Description
O 2E 87	;Eetended Functions Enable Register
O 2E 87	;Eetended Functions Enable Register
O 2E 2A	;Select CR2A
O 2F FC	;(Define the PINs as GPIO or Game Port 1) "FC" Pin 121~128 set as GPIO
O 2E 07	;EFIR=EFER(Extended Functions Index Register)point to Logical Device Number Reg.
O 2F 07	;EFDR=EFIR+1(select logical device 7,GPIO in logical device 7)
O 2E 30	;select CR30(Active or inactive)
O 2F 01	;set 01(Active), 00(inactive)
O 2E F0	;select CRF0(Set the PINs be GPO or GPI Function)
O 2F 00	;set the PINs be GPO
O 2E F2	;select CRF2(Output High/Low)
O 2F 00	;set the PINs be all Low Level(FF=all High Level)
O 2E F1	;select CRF1
O 2F FF	;set the Output to be FF(all High)
O 2E AA	;exit EFER
Q	;quit debug

GPI Example	Description
O 2E 87	;Extended Functions Enable Register
O 2E 87	;Extended Functions Enable Register
O 2E 2A	;select CR2A
O 2F FC	;(Define the PINs as GPIO or Game Port1)"FC"Pin121~128 set as GPIO
O 2E 07	;EFIR=EFER(Extended Functions Index Register)point to Logical Device Number Reg.
O 2F 07	;EFDR=EFIR+1(select logical device 7,GPIO in logical device7)
O 2E 30	;select CR30(Active or inactive)
O 2F 01	;set 01(Active) , 00(Inactive)
O 2E F0	;select CRF0(Set the PINs be GPO or GPI Funciton)
O 2F FF	;set the PINs be GPI
O 2E F1	;select CRF1(Set the PINs be Read only)
I 2F	;Show the PINs Value
Q	;Quit debug

Appendix C: I/O Address Map

I/O ADDRESS MAP

I/O ADDRESS MAP	DESCRIPTION
00000000-0000000F	DMA Controller
00000000-00000CF7	PCI Bus
00000010-0000001F	Mainboard Resource
00000020-00000021	Programable Interrupt Controller
00000022-0000003F	Mainboard Resource
00000040-00000043	System Timer
00000044-0000005F	Mainboard Resource
00000060-00000060	Standard 101/102 keyboard Controller
00000061-00000061	System Speaker
00000062-00000063	Mainboard Resource
00000064-00000064	Standard 101/102 keyboard Controller
00000065-0000006F	Mainboard Resource
00000070-00000073	System CMOS/RTC
00000074-0000007F	Mainboard Resource
00000080-00000090	DMA Controller
00000091-00000093	Mainboard Resource
00000094-0000009F	DMA Controller
000000A0-000000A1	Programable interrupt controller
000000A2-000000BF	Mainboard Resource
000000C0-000000DF	DMA Controller
000000E0-000000EF	Mainboard Resource
000000F0-000000FF	Math Coprocessor
00000170-00000177	Secondary IDE Channel
000001F0-000001F7	Primary IDE Channel
00000274-00000277	ISAPNP Read Data Port
00000279-00000279	ISAPNP Read Data Port
00000294-00000297	Mainboard Resource
000002E8-000002EF	COM4
000002F8-000002FF	COM2
00000376-00000376	Secondray IDE Channel
00000378-0000037F	LPT

000003B0-000003BB	Graphics Controller
000003C0-000003DF	Graphics Controller
000003E8-000003EF	COM3
000003F6-000003F6	Primary IDE Channel
000003F8-000003FF	COM1
00000400-000004BF	Mainboard Resource
000004D0-000004D1	Mainboard Resource
00000500-0000051F	SMBus
00000778-0000077B	LPT
00000A78-00000A7B	Mainboard Resource
00000B78-00000B7B	Mainboard Resource
00000BBC-00000BBF	Mainboard Resource
00000D00-0000FFFF	PCI Bus
00000E78-00000E7B	Mainboard Resource
00000F78-00000F7B	Mainboard Resource
00000FBC-00000FBF	Mainboard Resource
0000D000-0000D03F	100M Network Connection
0000D100-0000D13F	100M Network Connection #2
0000E000-0000E0FF	AC'97 Audio
0000E800-0000E81F	USB Universal Host Controller
0000E900-0000E907	Graphics Controller
0000EB00-0000EB1F	USB Universal Host Controller
0000EC00-0000EC3F	AC'97 Audio
0000ED00-0000ED1F	USB Universal Host Controller
0000F000-0000F00F	Ultra ATA Storage Controller

1ST MB MEMORY ADDRESS MAP

MEMORY ADDRESS	DESCRIPTION
00000000-0009FFFF	System Mainboard
000A0000-000BFFFF	Graphics Controller
000A0000-000BFFFF	PCI Bus
000C0000-000DFFFF	PCI Bus
000CCA00-000CFFFF	System Mainboard
000E0000-000EFFFF	System Mainboard
000F0000-000F7FFF	System Mainboard
000F8000-000FBFFF	System Mainboard

000FC000-000FFFFF	System Mainboard
00100000-1DFEFFFF	System Mainboard
1DFF0000-1DFFFFFF	System Mainboard
1E000000-FEBFFFFF	PCI Bus
D8000000-DFFFFFFF	Graphics Controller
E0000000-E7FFFFFF	Graphics Controller
E8000000-E801FFFF	100M Network connection
E8020000-E803FFFF	100M Network connection #2
E8050000-E8050FFF	100M Network connection
E8051000-E8051FFF	100M Network connection #2
E8100000-E817FFFF	Graphics Controller
E8180000-E81FFFFF	Graphics Controller
E8200000-E82003FF	USB2 Enhanced Host Controller
E8201000-E82011FF	AC'97 Audio
E8202000-E82020FF	AC'97 Audio
FEBFFC00-FEBFFFFF	Ultra ATA Storage Controller
FEC00000-FECFFFFF	System Mainboard
FEE00000-FEEFFFFF	System Mainboard
FFB00000-FFB7FFFF	System Mainboard
FFB00000-FFBFFFFF	Firmware Hub Device
FFF80000-FFFFFFFF	System Mainboard

IRQ Mapping Chart

IRQ0(ISA)	System Timer	IRQ15(ISA)	Secondary IDE
IRQ1(ISA)	Keyboard	IRQ9(PCI)	SMBus
IRQ3(ISA)	COM2	IRQ16(PCI)	USB Universal
IRQ4(ISA)	COM1	IRQ16(PCI)	Graphics
IRQ8(ISA)	System CMOS/RTC	IRQ17(PCI)	AC'97
IRQ9I(ISA)	ACPI-Compliant	IRQ18(PCI)	USB Universal
IRQ10(ISA)	COM4	IRQ19(PCI)	USB Universal
IRQ11(ISA)	COM3	IRQ20(PCI)	Network #2
IRQ12(ISA)	Mouse	IRQ21(PCI)	Network
IRQ13(ISA)	Math Coprocessor	IRQ23(PCI)	USB2 Enhanced
IRQ14(ISA)	Primary IDE		

DMA Channel Assignments

CHANNEL	FUNCTION
0	Available
1	Available
2	Available
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available