IEI Technology Corp.

MODEL:

IBX-530B-N270

Fanless Intel® Atom™ Embedded System
Two Gigabit Ethernet, Four USB, RS-232/422/485, VGA, External SATA, CF Slot, RoHS Compliant

User Manual

Rev. 2.10 6 May, 2011

RoHS Lead Free

Revision

Date	Version	Changes
6 May, 2011	2.10	Updated for R21 version
17 March, 2009	1.01	Changed model name
17 December, 2008	1.00	Initial release

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Introduction

1.1 IBX-530B-N270 Embedded System Overview

Figure 1-1: IBX-530B-N270 Embedded System

The IBX-530B-N270 is a 1.6 GHz Intel® Atom™ N270 based embedded solution. The fanless motherboard has been optimized for multimedia applications that require minimum installation space. The AFLMB-945GSE main board supports a full range of functions for an AT/ATX-compatible industrial computer.

1.1.1 IBX-530B-N270 Benefits

The IBX-530B-N270 embedded system has the following benefits:

- Easy installation saves installation time
- Complete integration saves solution development time and cost
- Quick access CF storage card interface
- Compact size saves space
- Powerful preinstalled 1.6 GHz Intel® Atom™ N270 CPU and motherboard ensures rigorous processing needs can be met

1.1.2 IBX-530B-N270 Features

The IBX-530B-N270 has the following features

- RoHS compliant design
- Fanless system
- 1.6 GHz Intel® Atom™ CPU supported
- Dual GbE RJ-45 connectors supported
- One CompactFlash® Type I or Type II card supported

- Optional 802.11b/g/n wireless LAN module
- Wall mount supported

1.2 IBX-530B-N270 Model Variations

There two models of the IBX-530B-N270 series embedded system. Both models have a preinstalled 1.0 GB DDR2 memory module preinstalled. The model variations are listed in **Table 1-1** below.

Model	CPU	Memory	Wireless LAN
IBX-530B-R21/N270/1GB	1.6 GHz Intel® Atom™	1.0 GB DDR2	No
IBX-530BW-R21/N270/1GB	1.6 GHz Intel® Atom™	1.0 GB DDR2	Yes

Table 1-1: Model Variations

1.3 Technical Specifications

The specifications for the Intel based embedded systems are listed below.

	IBX-530B-N270
CPU	1.6 GHz Intel® Atom™ N270 CPU
System Chipset	Northbridge: Intel® 945GSE Southbridge: Intel® ICH7M
System Memory	1.0 GB DDR2 SDRAM SO-DIMM preinstalled
Ethernet	Dual Realtek RTL8111CP PCIe GbE controllers
Display	VGA integrated in Intel® 945GSE
USB	Four USB 2.0 ports supported
Serial Port	One RS-232 port One RS-232/422/485 port
Audio	One audio speaker-out connector
Storage	One external SATA connector One CompactFlash® Type I or Type II card supported
Wireless	802.11b/g/n wireless module (IBX-530BW-R21/N270 only)

Chassis Construction	Aluminum Alloy
Power Supply	External power adapter, input voltage: 100V AC ~ 240V AC @ 50Hz ~ 60Hz, 36W
Operating Temperature	-10ºC ~ 50ºC
Color	Black
Net Weight (NW/GW)	645 g/1.8 kg
Dimensions (W x D x H)	210 mm x 108.2 mm x 39 mm
EMC/Safety	CE, FCC class A

Table 1-2: Technical Specifications

Chapter

2

Mechanical Description

2.1 IBX-530B-N270 Mechanical Overview

The IBX-530B-N270 RoHS compliant, Intel® Atom™ fanless embedded system features industrial grade components that offer longer operating life, high shock/vibration resistance and endurance over a wide temperature range. The IBX-530B-N270 combines these features in an aluminum enclosure designed for space critical applications that require low power consumption. Featuring two GbE, four USB, two serial communication ports, as well as audio, VGA, and external SATA, the IBX-530B-N270 offers system integrators and developers the best selection of robust and high performance computing system platforms. A CompactFlash® slot on the side panel supports one Type I or Type II CF card.

2.2 IBX-530B-N270 Physical Dimensions

The dimensions of the IBX-530B-N270 are listed below and shown in **Figure 2-1**.

- **Height**: 39.00 mm
- **Width**: 210.00 mm
- **Length**: 108.20 mm

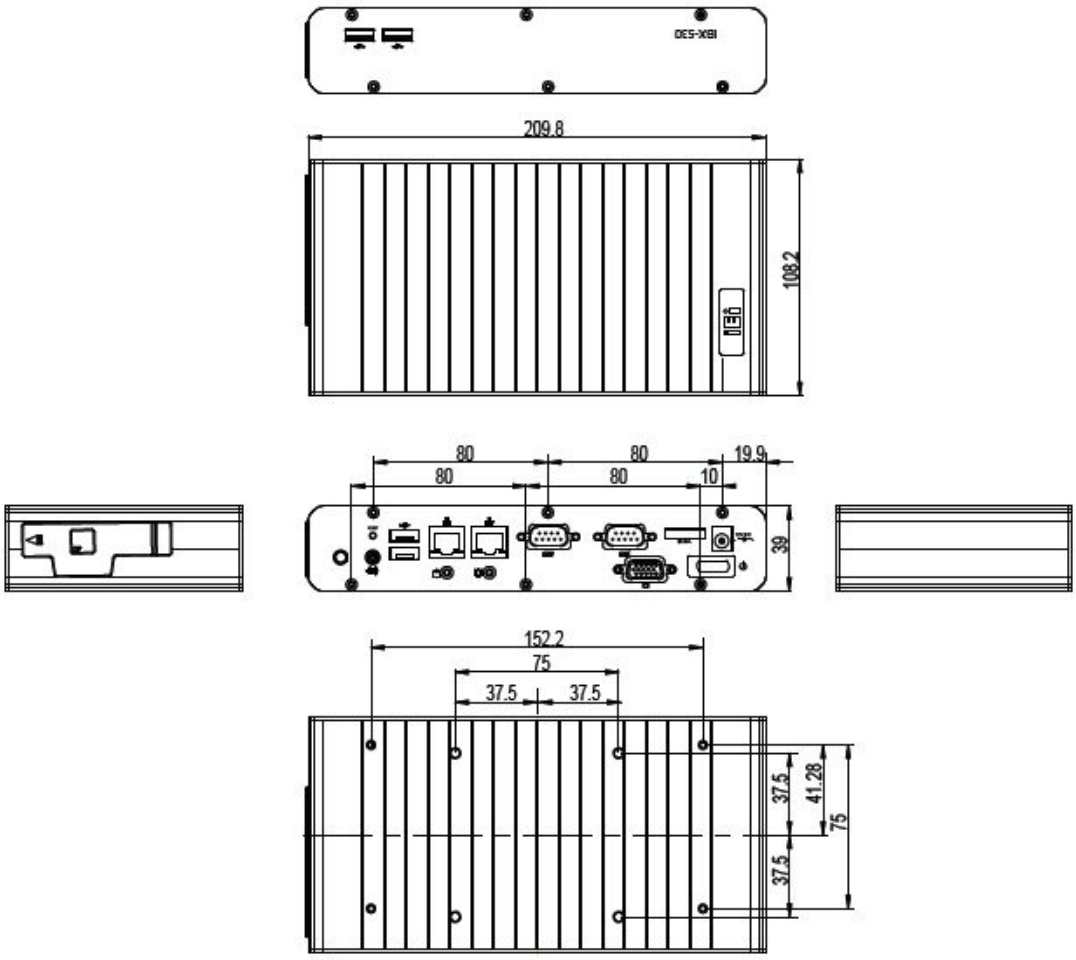


Figure 2-1: IBX-530B-N270 Dimensions (mm)

2.3 External Overview

2.3.1.1 Front Panel Overview

The IBX-530B-N270 contains all the external I/O interface connectors, power connectors, status LEDs and switches. An overview of the front panel is shown in **Figure 2-2** below.

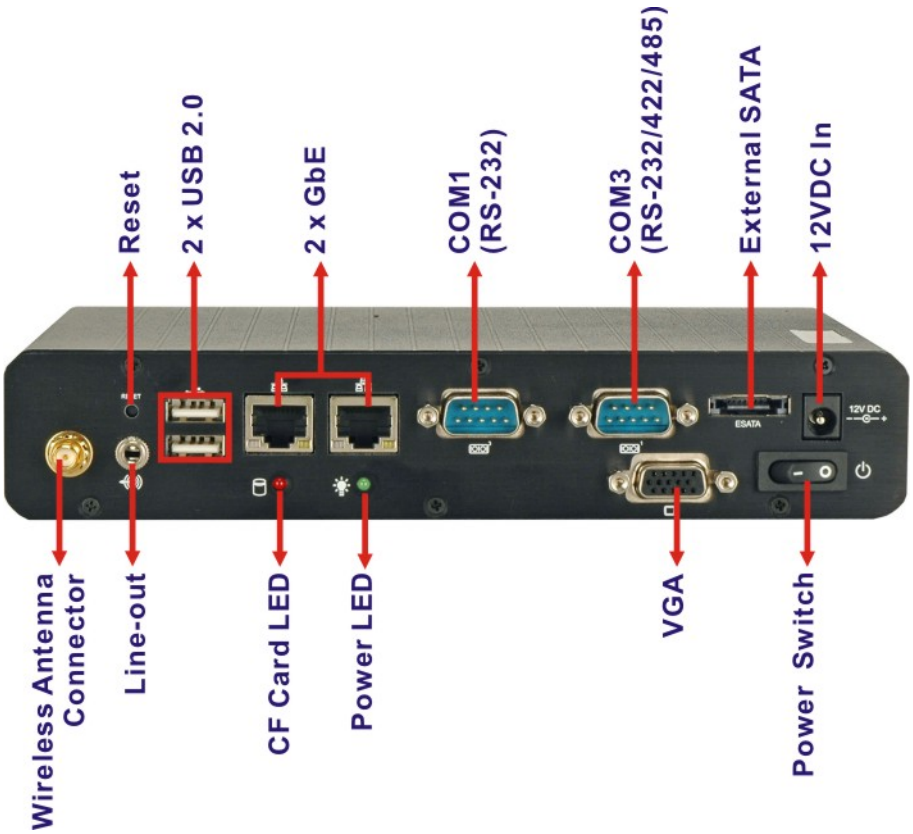


Figure 2-2: IBX-530B-N270 Front Panel

2.3.1.2 Front Panel Connectors and Indicators

The connectors, indicators and switches listed in this section are shown in **Figure 2-2** above. The front panel I/O connectors are listed below:

- 1 x Line-out audio connector
- 1 x Wireless antenna connector (optional)
- 2 x USB 2.0 ports
- 2 x RJ-45 GbE connectors
- 1 x RS-232 serial port connector
- 1 x RS-232/422/485 serial port connector
- 1 x VGA connector
- 1 x External SATA connector
- 1 x 12V DC inlet

The front panel also contains the following button and switch:

- 1 x Reset button
- 1 x Power switch

Status indicator LEDs on the front panel include:

- 1 x Power LED
- 1 x CF card LED

All the front panel items listed above are shown in **Figure 2-2** above.

2.3.2 Rear Panel

There are two additional USB 2.0 ports on the rear panel of the IBX-530B-N270 as shown in **Figure 2-2** below.

Figure 2-3: IBX-530B-N270 Rear Panel

2.3.3 Side Panel

The side panel of the IBX-530B-N270 provides access to a CompactFlash® slot. The CompactFlash® slot is covered with a rubber cover and supports a Type I or Type II CF card. An overview of the side panel is shown in **Figure 2-4**.

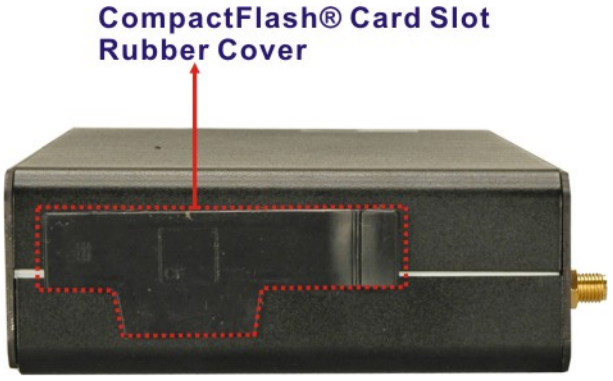


Figure 2-4: IBX-530B-N270 Side Panel

2.3.4 Bottom Surface

The bottom surface of the IBX-530B-N270 contains the retention screw holes for the VESA MIS-D 75 wall-mount kit and foot pads/DIN mount bracket.

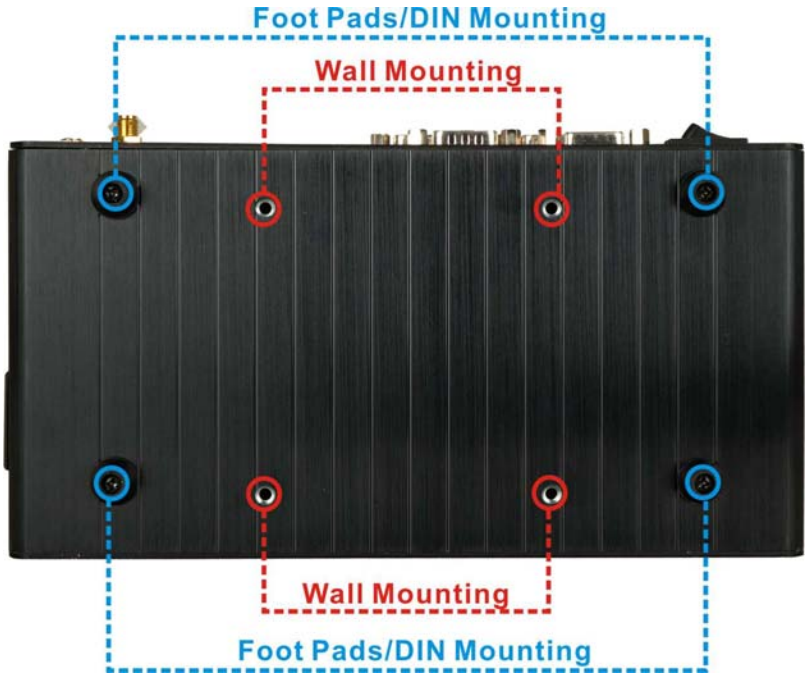


Figure 2-5: Bottom Surface

2.4 Internal Overview

The IBX-530B-N270 internal components are listed below:

- 1 x IEI AFLMB-945GSE motherboard (preinstalled)
- 1 x 1.0 GB DDR2 SO-DIMM module (preinstalled)
- 1 x CF module (provided and installed by the user)
- 1 x Wireless LAN module (optional)

Except for the CF module (CF Type I or CF Type II), all the components are accessed by removing the back cover. The CF module is accessed through the left side panel.

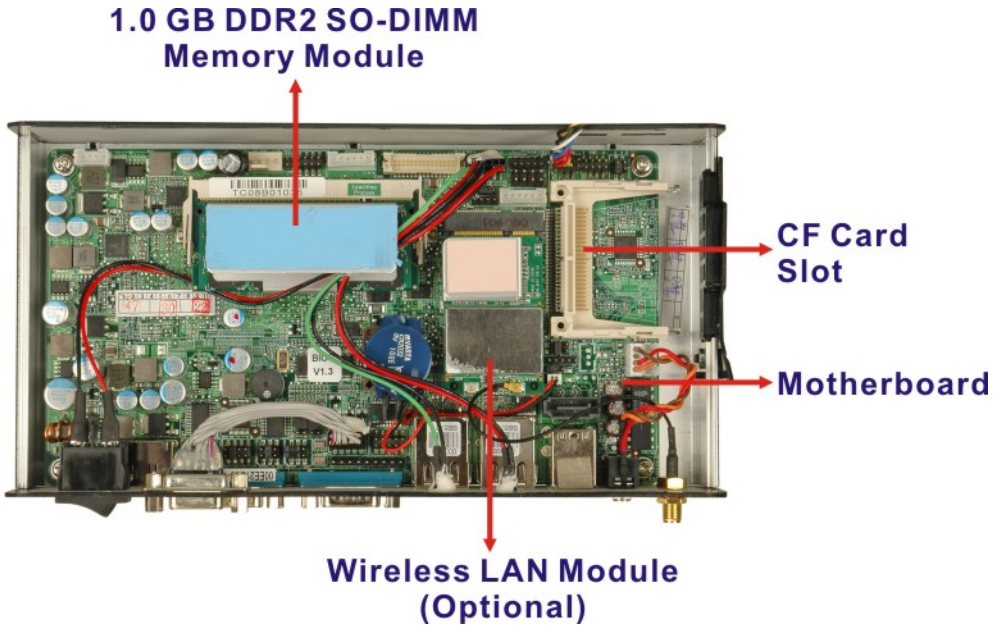


Figure 2-6: Internal Overview

Chapter

3

System Components

3.1 IBX-530B-N270 Embedded System Motherboard

The IBX-530B-N270 embedded system has an AFLMB-945GSE motherboard installed in the system. The following sections describe the relevant components and jumpers on the motherboard.

3.2 CPU Support

NOTE:

The IBX-530B-N270 has a preinstalled 1.6 GHz Intel® Atom™ CPU on-board. If the CPU fails, the motherboard has to be replaced. Please contact the IEI reseller or vendor you purchased the IBX-530B-N270 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The IBX-530B-N270 comes with an embedded 45 nm 1.60 GHz Intel® Atom™ processor N270. The processor supports a 533 MHz FSB and has a 1.6 GHz 512 KB L2 cache. The low power processor has a maximum power of 2.5 W.

3.2.1 Intel® Atom™ Specifications

The specifications for the Intel® Atom™ processor are listed below

- On-die, primary 32-kB instructions cache and 24-kB write-back data cache
- 533-MHz source-synchronous front side bus (FSB)
- 2-Threads support
- On-die 512-kB, 8-way L2 cache
- Support for IA 32-bit architecture
- Intel® Streaming SIMD Extensions-2 and -3 (Intel® SSE2 and Intel® SSE3) support and Supplemental Streaming SIMD Extension 3 (SSSE3) support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 and Intel Thermal Monitor 2
- FSB Lane Reversal for flexible routing

- Supports C0/C1(e)/C2(e)/C4(e)
- L2 Dynamic Cache Sizing
- Advanced power management features including Enhanced Intel SpeedStep® Technology
- Execute Disable Bit support for enhanced security

3.3 Intel 945GSE Northbridge Chipset

The Intel® 945GSE Graphics and Memory Controller Hub (GMCH) supports the embedded Intel® Atom™ N270 processor. The Intel® 945GSE is interfaced to the processor through a 533 MHz FSB.

3.3.1 Intel® 945GSE DDR2 Controller

There is one 200-pin DDR2 SO-DIMM socket on the motherboard preinstalled with one 1.0 GB DDR2 SO-DIMM. The socket supports DDR2 SO-DIMM with the following specifications:

- Maximum Memory supported 2 GB
- Support for DDR2 at 400 MHz and 533 MHz
- No support for Dual-Channel Interleaved mode of operation
- Enhanced Addressing support (Swap only)

The SO-DIMM socket is shown in **Figure 3-1** below.

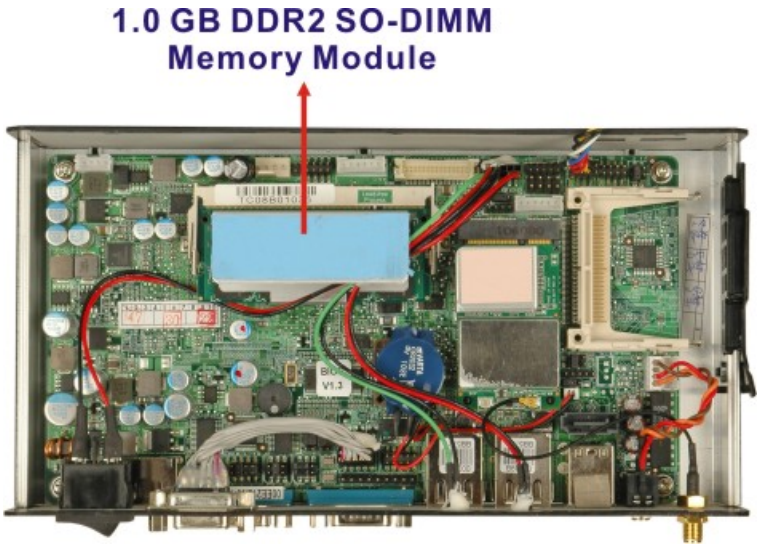


Figure 3-1: DDR2 SO-DIMM

3.3.2 Intel® 945GSE Graphics

The internal graphics engine has the following features:

- Intel® Gen 3.5 Integrated Graphics Engine
- 250-MHz core render clock and 200 MHz core display clock at 1.05-V core voltage
- Dynamic Video Memory Technology (DVMT 3.0)
- Intel® Display Power Saving Technology 2.0 (Intel® DPST 2.0)
- Intel® Smart 2D Display Technology (Intel® S2DDT)
- Intel® Automatic Display Brightness
- Microsoft DirectX* 9.1 operating system

3.3.2.1 Analog CRT Graphics Mode

The analog CRT bus is interfaced to an onboard 10-pin header which is then connected to the external DB-15 female connector of the IBX-530B-N270. Some of the features of the CRT include:

- Integrated 400-MHz RAMDAC
- Analog Monitor Support up to QXGA

- Support for CRT Hot Plug

3.4 Intel® ICH7-M Southbridge Chipset

3.4.1 Intel® ICH7-M Overview

The Intel® ICH7-M chipset is connected to the Intel® 945GSE GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH7-M are listed below.

- Complies with PCI Express Base Specification, Revision 1.0a
- Integrated SATA host controller with DMA operations interfaced to one external SATA connector on the IBX-530B-N270
- Supports the four USB 2.0 devices on the IBX-530B-N270 with four UHCI controllers and one EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Audio Codec ’97 (AC’97) Revision 2.3
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface
- Serial peripheral interface support

3.4.2 Intel® ICH7-M Low Pin Count (LPC) Interface

The ICH7-M LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH7-M is connected to the following components:

- BIOS chipset
- Super I/O chipset

3.4.3 Intel® ICH7-M PCIe Bus

The Intel® ICH7-M southbridge chipset has four PCIe lanes. Two of the four PCIe lanes are interfaced to PCIe GbE controller. A third PCIe lane is interfaced to a PCIe mini socket.

3.4.3.1 PCIe GbE Ethernet

Two PCIe lanes are connected to two Realtek RTL8111C PCIe GbE controllers. The Realtek RTL8111C PCIe GbE controllers combine a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, 32-bit PCIe bus controller, and embedded memory. With state-of-the-art DSP technology and mixed-mode signal technology, they offer high-speed transmission over CAT 5 UTP cable or CAT 3 UTP (10Mbps only) cable. Functions such as Crossover Detection & Auto-Correction, polarity correction, adaptive equalization, cross-talk cancellation, echo cancellation, timing recovery, and error correction are implemented to provide robust transmission and reception capability at high speeds.

Some of the features of the Realtek RTL8111CP PCIe GbE controllers are listed below.

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI Express™ 1.1
- Supports pair swap/polarity/skew correction
- Crossover Detection & & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Microsoft® NDIS5, NDIS6 Checksum Offload (IPv4, IPv6, TCP, UDP) and Segmentation Task-offload (Large send and Giant send) support
- Supports Full Duplex flow control (IEEE 802.3x)
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- Transmit/Receive on-chip buffer support
- Supports power down/link down power saving
- Supports PCI MSI (Message Signaled Interrupt) and MSI-X
- Supports Receive-Side Scaling (RSS)

3.4.3.2 PCIe Mini Expansion Slots

One PCIe x1 lane on the ICH7-M is interfaced directly to the PCIe mini expansion slot. The IBX-530W-945GSE is preinstalled with a PICe mini wireless module in the PCIe mini slot..

3.4.4 Intel® ICH7-M SATA Controller

The integrated SATA controller on the ICH7-M supports two SATA drives with independent DMA operations. Two SATA controllers are connected to two SATA connectors on the AFLMB-945GSE, one on board and one the rear panel. SATA controller specifications are listed below.

- Supports four SATA drives
- Supports 1.5 Gb/s data transfer speeds
- Supports Serial ATA Specification, Revision 1.0a

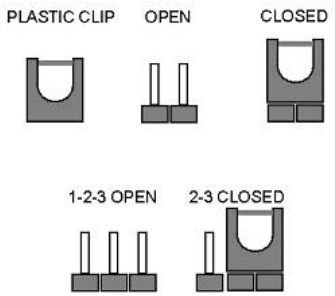
3.4.5 Intel® ICH7-M USB Controller

Up to four high-speed, full-speed or low-speed USB devices are supported by the ICH7-M on the IBX-530B-N270. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH7-M integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH7-M integrated Universal Host Controller Interface (UHCI) controllers.

3.5 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



The following jumpers can be found on the motherboard installed in the IBX-530B-N270. Before the IBX-530B-N270 is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the IBX-530B-N270 motherboard are listed in **Table 3-1**.

Description	Label	Type
AT/ATX mode select	JP4	2-pin header
CF mode select	JCF1	2-pin header
Clear CMOS	J_COMS1	2-pin header
COM1 Pin 9 setting	JP8	10-pin header
COM3 Pin 9 setting	JP10	6-pin header
COM3 RX RS-232/422/485 select	JP9	8-pin header
COM3 TX RS-422/485 select	JP11	6-pin header
COM3 RS-232/422/485 select	JP6	12-pin header

Table 3-1: Jumpers

3.5.1 Access the Jumpers

To access the jumpers, remove the back panel. To remove the back panel, please refer to **Section 4.2.3**.

3.5.2 AT Power Select Jumper Settings

Jumper Label:	**JP4**
Jumper Type:	2-pin header
Jumper Settings:	See **Table 3-2**
Jumper Location:	See **Figure 3-2**

The AT Power Select jumper specifies the systems power mode as AT or ATX. AT Power Select jumper settings are shown in **Table 3-2**.

Setting	Description	
Short	Use ATX power	Default
Open	Use AT power	

Table 3-2: AT Power Select Jumper Settings

The location of the AT Power Select jumper is shown in **Figure 3-2** below.

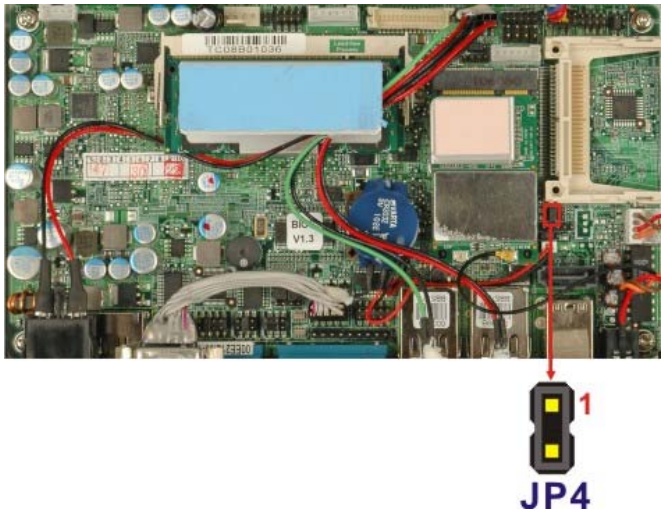


Figure 3-2: AT Power Select Jumper Location

3.5.3 CF Card Setup

Jumper Label: **JCF1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-3**

Jumper Location: See **Figure 3-3**

The CF Card Setup jumper sets the CF Type I card or CF Type II cards as either the slave device or the master device. CF Card Setup jumper settings are shown in **Table 3-3**.

Setting	Description	
Open	Slave	Default
Closed	Master	

Table 3-3: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown in **Figure 3-3**.

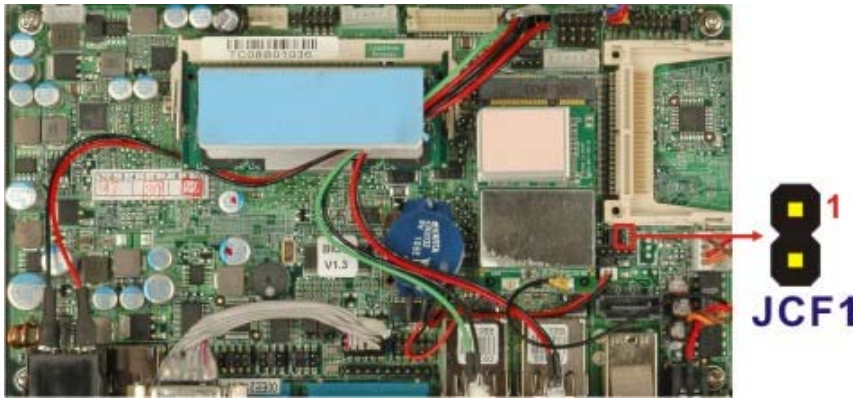


Figure 3-3: CF Card Setup Jumper Location

3.5.4 Clear CMOS Jumper

Jumper Label: **J_CMOS1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-4**

Jumper Location: See **Figure 3-4**

If the IBX-530B-N270 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close the pins for a few seconds then remove the jumper clip.

If the "CMOS Settings Wrong" message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 3-4**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 3-4: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 3-4** below.

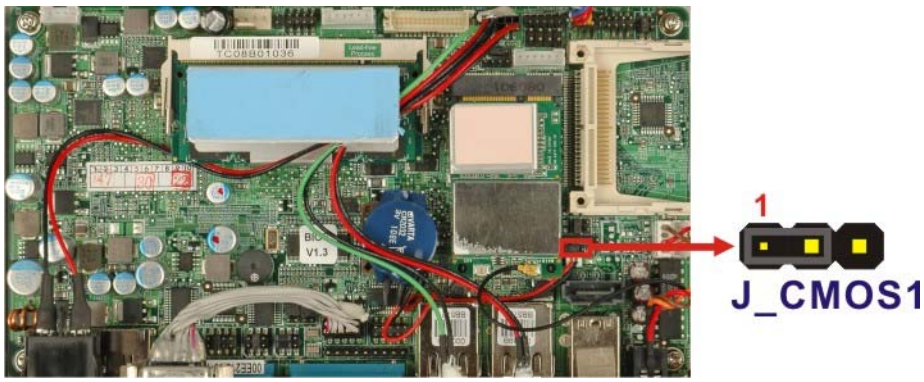


Figure 3-4: Clear CMOS Jumper

3.5.5 COM Port Pin 9 Select

Jumper Label: **JP8** and **JP10**

Jumper Settings: See **Table 3-5**

Jumper Location: See **Figure 3-5**

Two jumpers (JP8 and JP10) configure pin 9 on COM1 and COM3 DB-9 connectors. Pin 9 on the COM1 and the COM3 DB-9 connectors can be set as the ring (RI) signal, +5 V or +12 V. The COM1 and COM3 Pin 9 Setting jumper selection options are shown in **Table 3-5**.

JP8	Description	
Short 1-3	COM1 RI Pin use +12 V	
Short 5-7	COM1 RI Pin use +5 V	
Short 7-9	COM1 RI Pin use RI	Default

Table 3-5: COM1 Pin 9 Setting Jumper Settings

JP10	Description	
Short 1-2	COM3 RI Pin use +12 V	
Short 3-4	COM3 RI Pin use RI	Default
Short 5-6	COM3 RI Pin use +5 V	

Table 3-6: COM3 Pin 9 Setting Jumper Settings

The COM1 and COM3 Pin 9 Setting jumper locations are shown in **Figure 3-5** below.

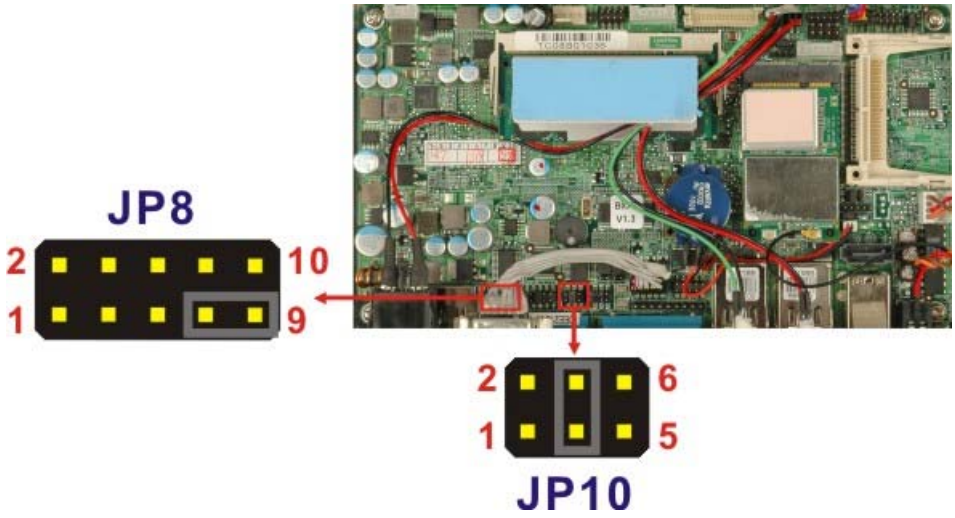


Figure 3-5: COM1 and COM3 Pin 9 Setting Jumper Locations

3.5.5.1 COM3 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 3 are detailed below.

COM 3	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 3-7: RS-422 Pinouts

COM 3	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 3-8: RS-485 Pinouts

3.5.6 COM3 RX Function Select Jumper

Jumper Label:	**JP9**
Jumper Type:	8-pin header
Jumper Settings:	See **Table 3-9**
Jumper Location:	See **Figure 3-6**

The COM3 RX Function Select jumper sets the communication protocol used by the RX serial communications port COM3 as RS-232, RS-422 or RS-485. The COM3 RX Function Select jumper settings are shown in **Table 3-9**.

COM3 RX Function Select	Description	
Short 3-4	RS-232	Default
Short 1-2, 5-6	RS-422	
Short 1-2, 7-8	RS-485	

Table 3-9: COM3 RX Function Select Jumper Settings

The COM3 RX Function Select jumper location is shown in **Figure 3-6**.

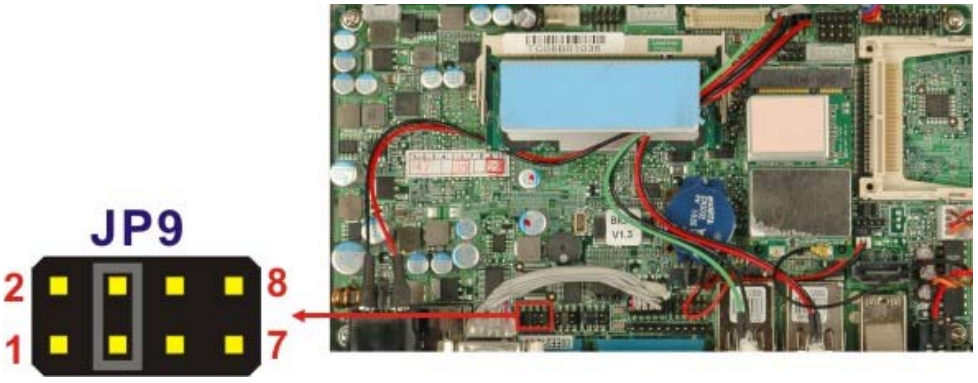


Figure 3-6: COM3 RX Function Select Jumper Location

3.5.7 COM3 TX Function Select Jumper

Jumper Label:	**JP11**
Jumper Type:	6-pin header
Jumper Settings:	See **Table 3-10**
Jumper Location:	See **Figure 3-7**

The COM3 TX Function Select jumper configures the TX pin on COM3 serial port connector as RS-422 as an RS-485. The COM3 TX Function Select jumper selection options are shown in **Table 3-10**.

COM3 TX Function Select	Description	
Short 1 – 3	RS-422 TX-	Default
Short 2 – 4	RS-422 TX+	Default
Short 3 – 5	RS-485 D-	
Short 4 – 6	RS-485 D+	

Table 3-10: COM3 TX Function Select Jumper Settings

The COM3 TX Function Select jumper location is shown in **Figure 3-7** below.

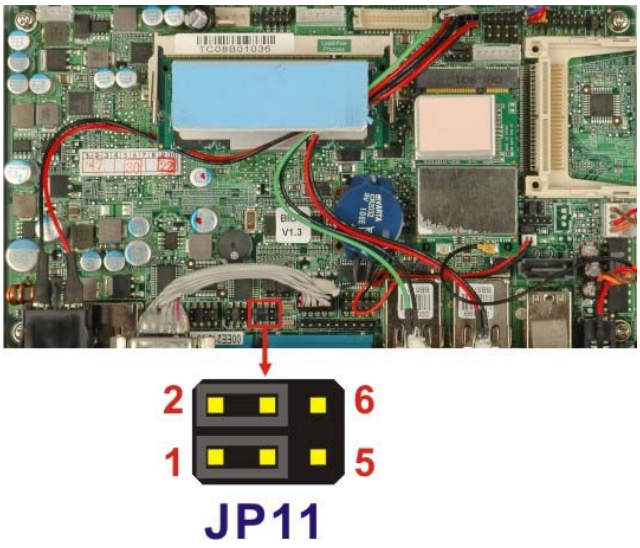


Figure 3-7: COM3 TX Function Select Jumper Pinout Locations

3.5.8 COM3 RS-232/422/485 Serial Port Select Jumper

Jumper Label:	**JP6**
Jumper Type:	12-pin header (four 3-pin headers combined)
Jumper Settings:	See **Table 3-11**
Jumper Location:	See **Figure 3-8**

The COM3 RS-232/422/485 Serial Port Select jumper sets the communication protocol used by the second serial communications port (COM3) as RS-232, RS-422 or RS-485. The COM3 RS-232/422/485 Serial Port Select settings are shown in **Table 3-11**.

RS-232/485 Select	Description	
Short 1-2	RS-232	Default
Short 4-5	RS-232	Default
Short 7-8	RS-232	Default
Short 10-11	RS-232	Default
Short 2-3	RS-422/485	
Short 5-6	RS-422/485	
Short 8-9	RS-422/485	
Short 11-12	RS-422/485	

Table 3-11: COM3 RS-232/422/485 Serial Port Select Jumper Settings

The COM3 RS-232/422/485 Serial Port Select jumper location is shown in **Figure 3-8**.

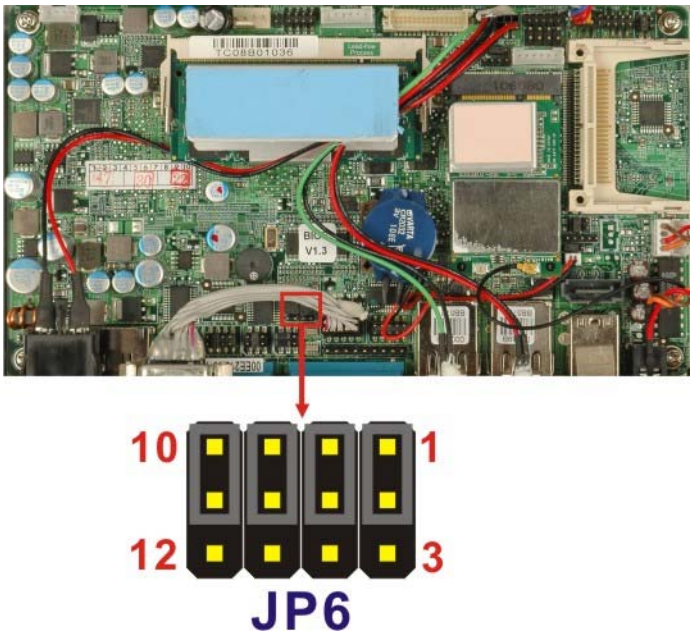


Figure 3-8: COM3 RS-232/422/485 Serial Port Select Jumper Location

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

If the following anti-static precautions are not followed, a user may be injured and the system irreparably damaged.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFLMB-945GSE motherboard and the power module. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the IBX-530B-N270 is opened and any electrical component handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.

4.2 Installation Procedure

4.2.1 Installation Procedure Overview

To properly install the IBX-530B-N270, the following steps must be followed. Detailed descriptions of these instructions are listed in the sections that follow.

Step 1: Unpacking

Step 2: Configure the jumper settings

Step 3: Install the CF card

Step 4: Install the four foot pads/Mount the IBX-530B-N270

Step 5: Connect the front panel peripheral connectors

Step 6: Power the system up

4.2.2 Unpacking

After the IBX-530B-N270 is received make sure the following components are included in the package. If any of these components are missing, please contact the IBX-530B-N270 reseller or vendor where it was purchased or contact an IEI sales representative immediately.

Quantity	Item	Image
1	IBX-530B-N270 embedded system	
1	36 W 12 V power adaptor with ERP and PSE certificates	
1	Power cord	
1	Screw set	
4	Foot pads	
1	Wall mount kit	
1	Driver and manual CD	
1	Wireless antenna (optional)	
1	DIN mount kit (optional)	

1	128MB CompactFlash® card with Windows CE 6.0 pre-installed (**P/N**: IBXCF-530-945GSE-CE060) (optional)	
1	1GB CompactFlash® card with Windows XPE pre-installed (**P/N**: IBXCF-530-945GSE-XPE) (optional)	

Table 4-1: Package List Contents

CAUTION:

This symbol warns the user that the part has this symbol is hot. Therefore, it is dangerous to make any kind of contact with this part.

4.2.3 Bottom Cover Removal

Before the jumper settings can be configured, the bottom cover must be removed. To remove the bottom cover, please follow the steps below:

Step 1: Turn the IBX-530B-N270 over.

Step 2: Remove the bottom cover retention screws. The bottom cover is secured to the front pane and the rear panel with six retention screws, three in the front panel (**Figure 4-1**) and three in the rear panel (**Figure 4-2**). All six screws must be removed.

Figure 4-1: Bottom Cover Retention Screws (Front Panel)

Figure 4-2: Bottom Cover Retention Screws (Rear Panel)

Step 3: Gently remove the bottom cover from the IBX-530B-N270.

4.2.4 Configure the Jumper Settings

To configure the jumper settings, please follow the steps below.

Step 1: Remove the bottom cover. See **Section 4.2.3**.

Step 2: Locate the jumper settings on the embedded motherboard. See **Section 3.5**.

Step 3: Make the jumper settings in accordance with the settings described and defined in **Section 3.5**.

4.2.5 CompactFlash® Card Installation

The IBX-530B-N270 embedded system has one CF slot on left side panel. To install the CF card, follow the instructions below.

Step 1: Locate the CF card slot rubber cover on the left side panel.

Step 2: Remove CF card slot rubber cover.

Step 3: Insert the CF card into the slot. (**Figure 4-3**).

Figure 4-3: CF Card Installation

Step 4: Replace the CF card slot cover.

4.2.6 Foot Pad Installation

The IBX-530B-N270 embedded system is shipped with four foot pads. To install the foot pads, follow the instructions below.

Step 1: Turn the IBX-530B-N270 embedded system over.

Step 2: Locate the four retention screw holes for the food pad in the bottom surface.

Step 3: Align the hole of the foot pad with the retention screw holes on the bottom surface.

Step 4: Secure the foot pad to the chassis by inserting the retention screw. (**Figure 4-4**).

Figure 4-4: Foot Pads Installation

4.2.7 Mounting the System with Wall Mount Kit

To mount the embedded system onto a wall using the VESA MIS-D 75 wall mount kit, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four bracket screw holes on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-5**).

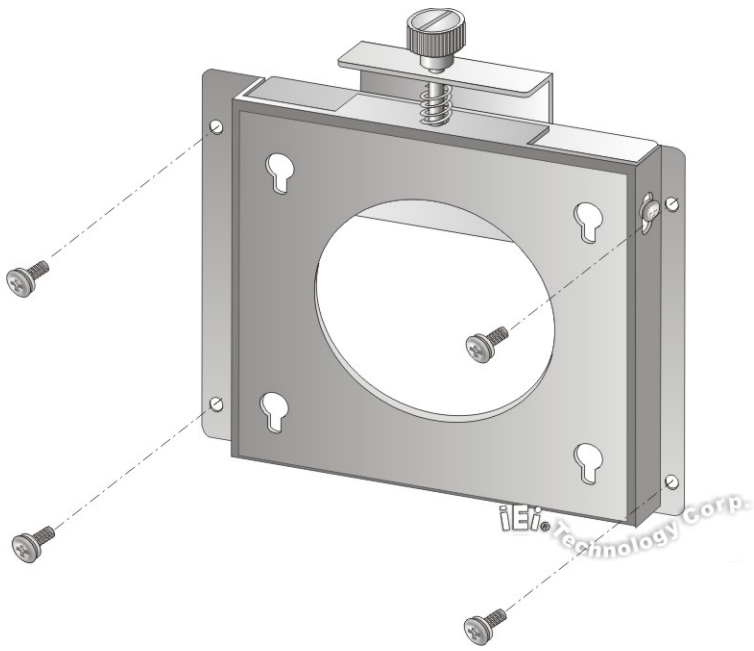


Figure 4-5: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the bottom panel of the system and tighten until the screw shank is secured against the bottom panel (**Figure 4-6**).

Step 7: Align the mounting screws on the IBX-530B-N270 bottom panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the IBX-530B-N270 rests securely in the slotted holes (**Figure 4-6**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.

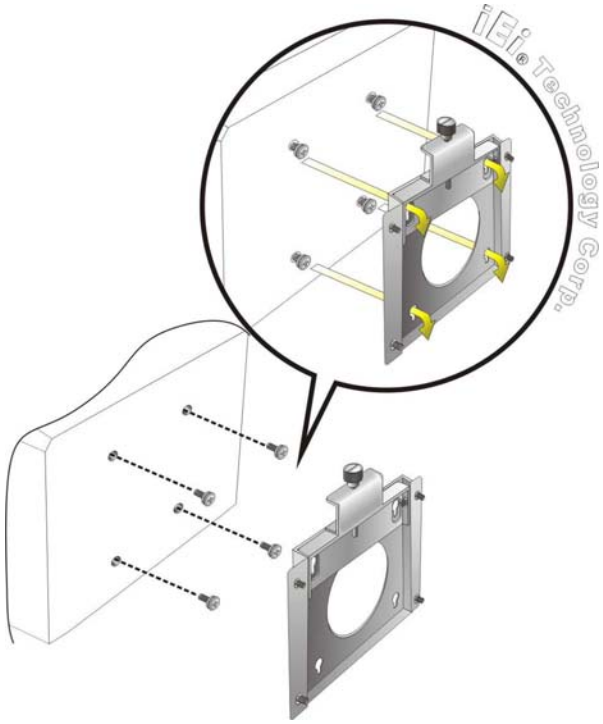


Figure 4-6: Mount the Embedded System

Step 9: Secure the embedded system by fastening the retention screw of the wall-mounting bracket. (**Figure 4-7**).

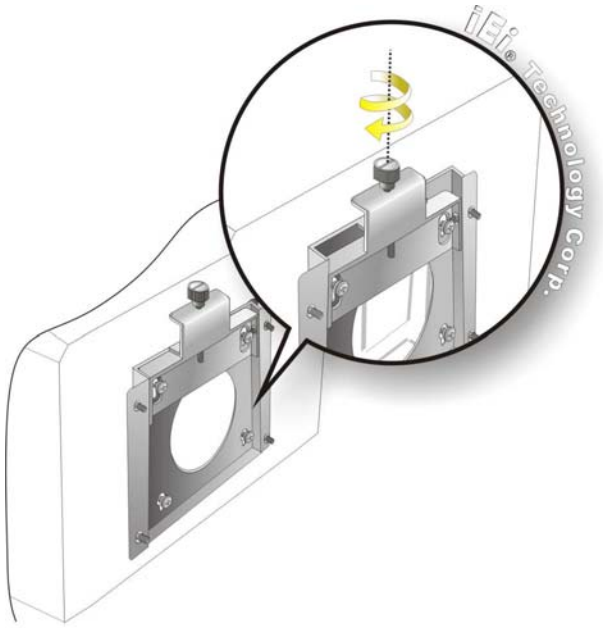


Figure 4-7: Secure the Embedded System

4.2.8 DIN Mounting (Optional)

To mount the IBX-530B-N270 embedded system onto a DIN rail, please follow the steps below.

Step 1: Attach the DIN rail mounting bracket to the bottom panel of the embedded system. Secure the bracket to the embedded system with the supplied retention screws (**Figure 4-8**).

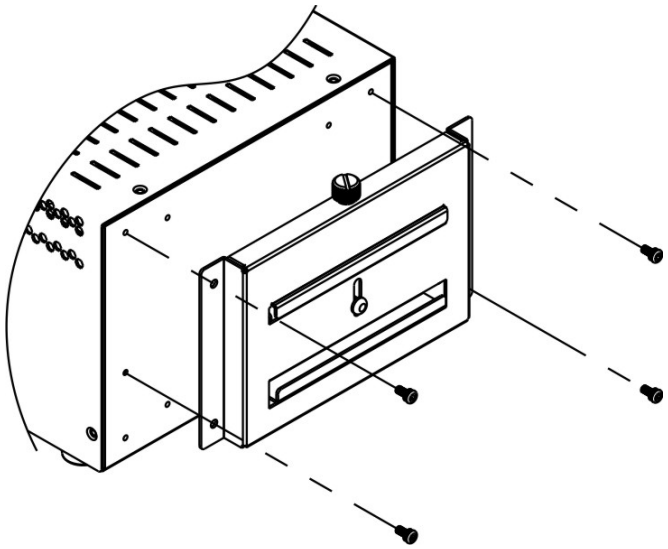


Figure 4-8: DIN Rail Mounting Bracket

Step 2: Make sure the inserted screw in the center of the bracket is at the lowest position of the elongated hole (**Figure 4-9**).

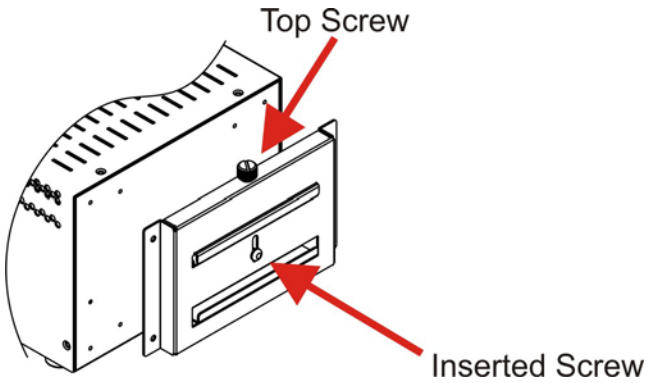


Figure 4-9: Screw Locations

Step 3: Place the DIN rail flush against the back of the mounting bracket making sure the edges of the rail are between the upper and lower clamps (**Figure 4-10**).

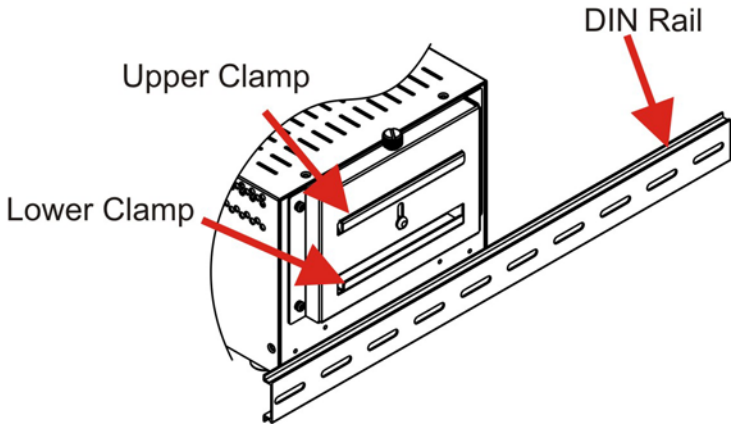


Figure 4-10: Mounting the DIN RAIL

Step 4: Secure the DIN rail to the mounting bracket by turning the top screw clockwise. This draws the lower clamp up and secures the embedded system to the DIN rail (**Figure 4-11**).

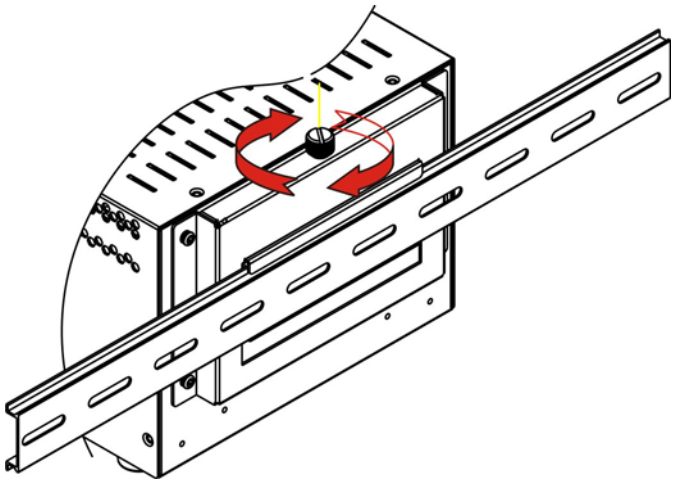


Figure 4-11: Secure the Assembly to the DIN Rail

4.2.9 Cable Connections

Once the system has been mounted on the wall, the following connectors can be connected to the system.

- VGA cable connector
- Serial port connectors
- RJ-45 connectors
- USB devices can be connected to the system.

The cable connection locations are shown in **Figure 2-2**.

4.3 Power-On Procedure

4.3.1 Installation Checklist

WARNING:

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

To power on the embedded system please make sure of the following:

- The memory module is installed
- The wireless LAN module is installed
- The CF module is installed
- The bottom cover is installed
- All peripheral devices (VGA monitor, serial communications devices etc.) are connected
- The power cables are plugged in
- The system is securely mounted

4.3.2 Power-on Procedure

To power-on the IBX-530B-N270 please follow the steps below:

Step 1: Turn on the power switch.

Step 2: Once turned on, the green power LED should be turned on. See **Figure 4-12**.

Figure 4-12: Power Switch and Power LED

Chapter

5

AMI BIOS Setup

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

5.1.2 Using Setup

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. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main 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
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 5**.

5.1.5 BIOS Menu Bar

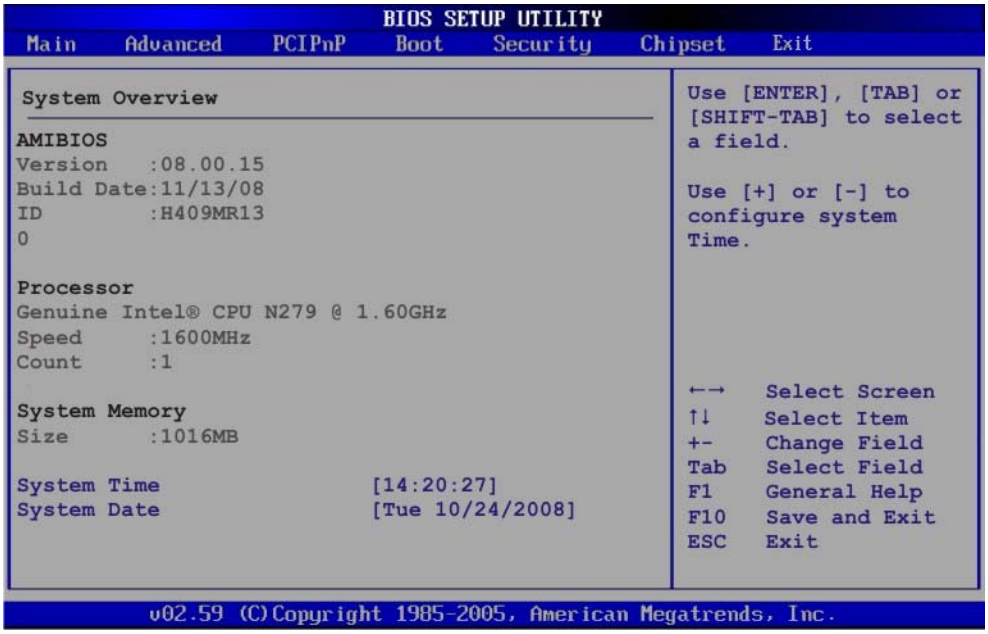
The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- **AMI BIOS**: Displays auto-detected BIOS information
  - Version: Current BIOS version
  - Build Date: Date the current BIOS version was made
  - ID: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - Type: Names the currently installed processor
  - Speed: Lists the processor speed
  - Count: The number of CPUs on the CPU card
- **System Memory**: Displays the auto-detected system memory.
  - Size: Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

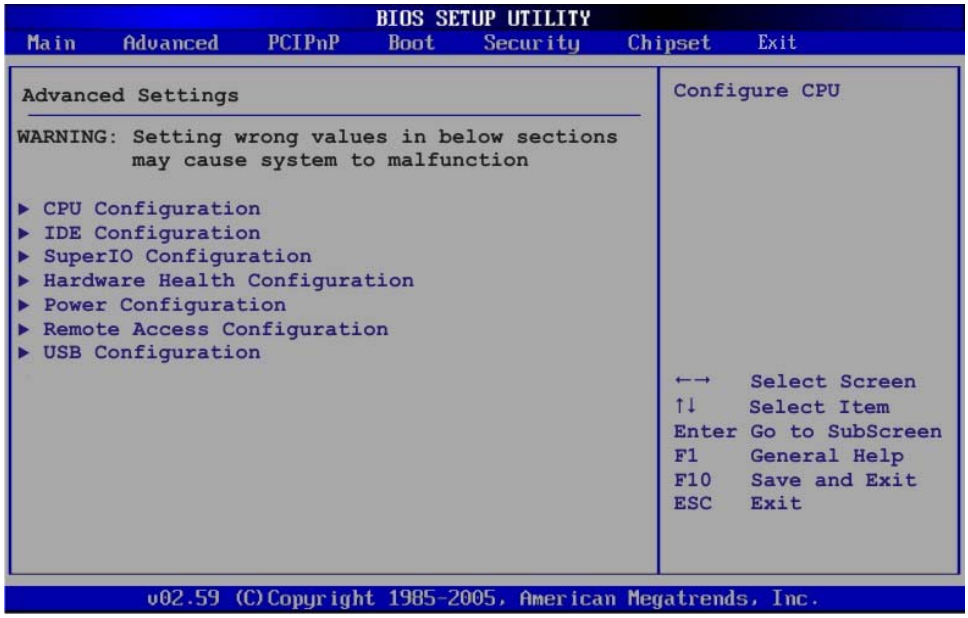
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

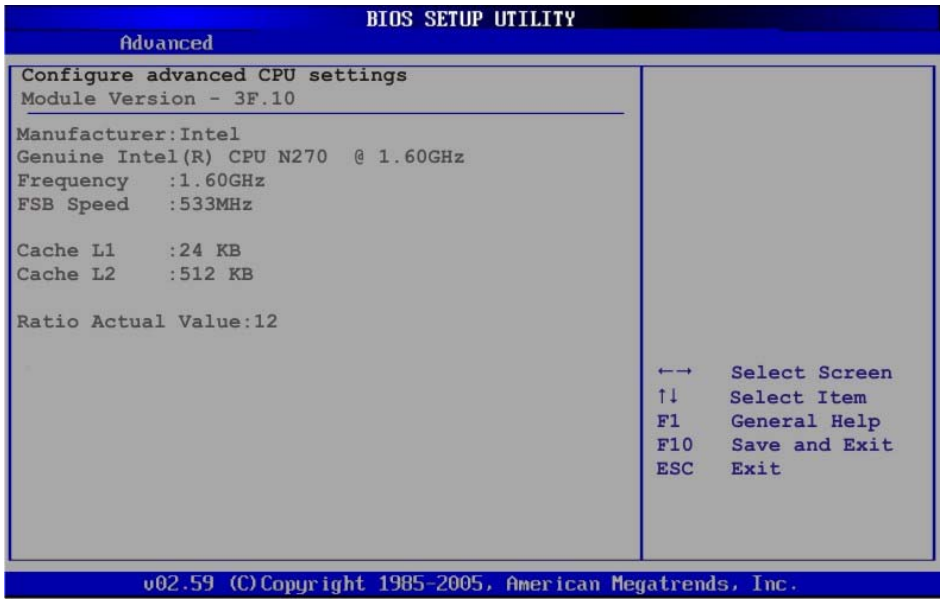
- CPU Configuration (see **Section 5.3.1**)
- IDE Configuration (see **Section 5.3.2**)
- SuperIO Configuration (see **Section 5.3.3**)
- Hardware Health Configuration (see **Section 5.3.4**)
- Power Configuration (see **Section 5.3.5**)
- Remote Access Configuration (see **Section 5.3.5.2**)
- USB Configuration (see **Section 5.3.7**)



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



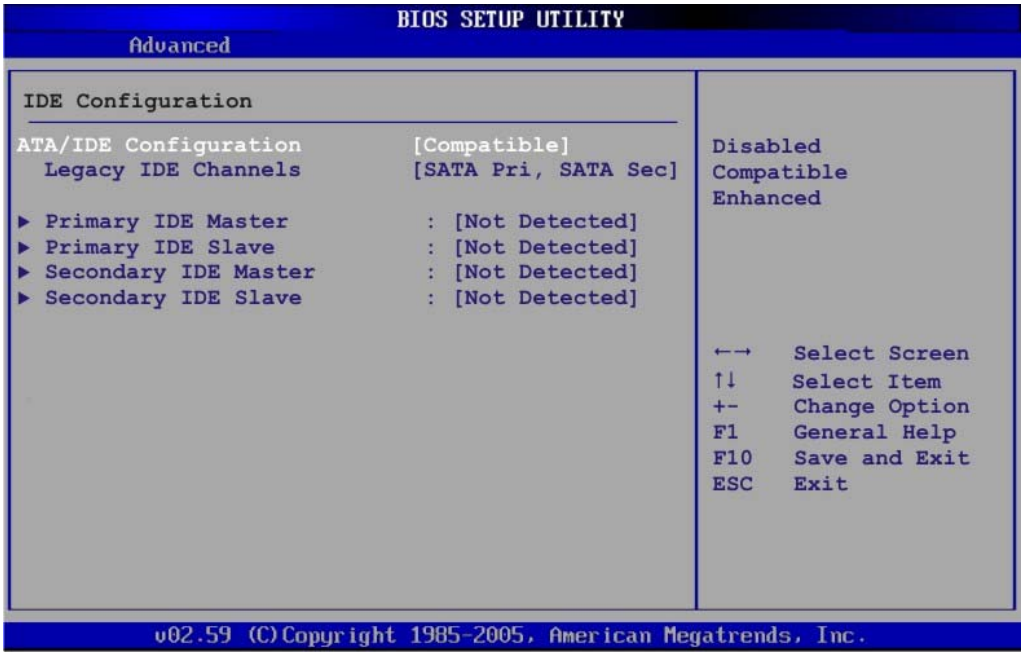
BIOS Menu 3: CPU Configuration

The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size

5.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration

➔ **ATA/IDE Configurations [Compatible]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔ **Disabled** Disables the on-board ATA/IDE controller.

➔ **Compatible** **DEFAULT** Configures the on-board ATA/IDE controller to be in

compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **Legacy IDE Channels [PATA Pri, SATA Sec]**

➔ **SATA Only** Only the SATA drives are enabled.

➔ **SATA Pri, PATA Sec** **DEFAULT** The IDE drives are enabled on the Primary IDE channel. The SATA drives are enabled on the Secondary IDE channel.

➔ **PATA Only** The IDE drives are enabled on the primary and secondary IDE channels. SATA drives are disabled.

➔ **IDE Master and IDE Slave**

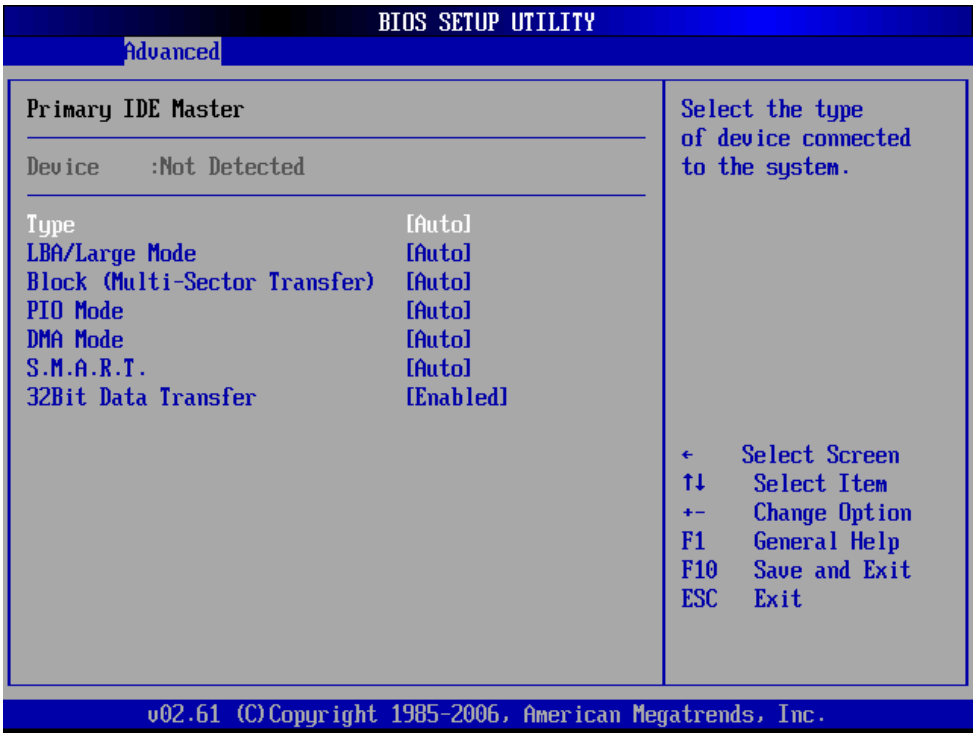
When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The "grayed-out" items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **Vendor**: Lists the device manufacturer
- **Size**: List the storage capacity of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.

- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed** BIOS is prevented from searching for an IDE disk drive on the specified channel.

➔ **Auto** **DEFAULT** The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.

➔ **CD/DVD** The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

➔ **ARMD** This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

- ➔ **ZIP**
- ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled**		BIOS is prevented from using the LBA mode control on the specified channel.
➔ **Auto**	**DEFAULT**	BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled**		BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
➔ **Auto**	**DEFAULT**	BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto**	**DEFAULT**	BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
➔ **0**		PIO mode 0 selected with a maximum transfer rate of 3.3MBps
➔ **1**		PIO mode 1 selected with a maximum transfer rate of 5.2MBps
➔ **2**		PIO mode 2 selected with a maximum transfer rate of 8.3MBps

- **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps

  (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

DMA Mode [Auto]

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer

rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

- ➔ **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- ➔ **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

- ➔ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- ➔ **Disabled** Prevents BIOS from using the HDD SMART feature.
- ➔ **Enabled** Allows BIOS to use the HDD SMART feature

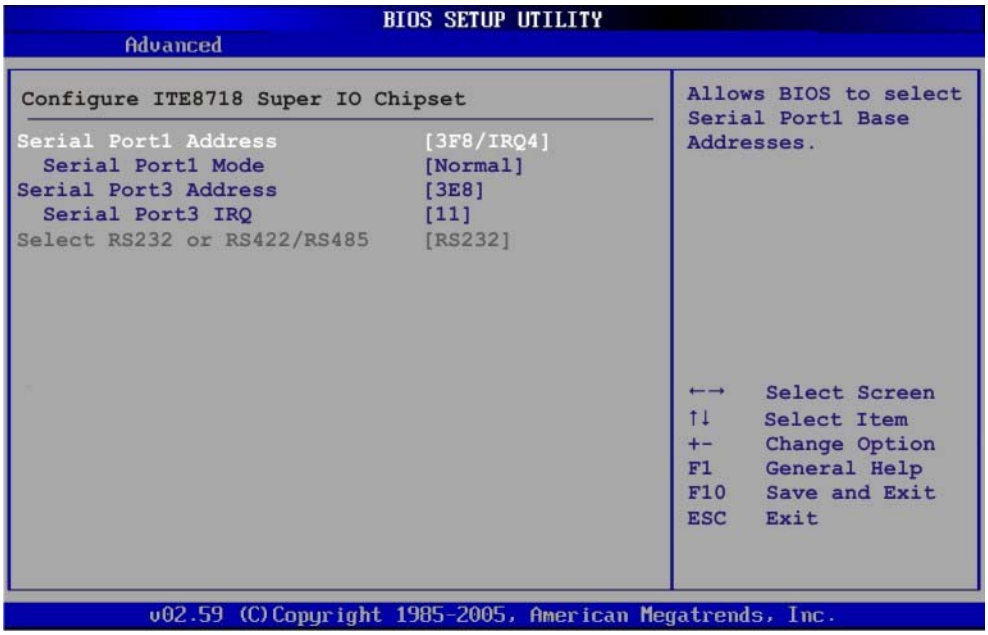
➔ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

- ➔ **Disabled** Prevents the BIOS from using 32-bit data transfers.
- ➔ **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 6: Super IO Configuration

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

➔ **Disabled**		No base address is assigned to Serial Port 1
➔ **3F8/IRQ4**	**DEFAULT**	Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
➔ **2F8/IRQ3**		Serial Port 1 I/O port address is 2F8 and the interrupt address is IRQ3
➔ **3E8/IRQ4**		Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
➔ **2E8/IRQ3**		Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

- ➔ **Normal** **DEFAULT** Serial Port 1 mode is normal
- ➔ **IrDA** Serial Port 1 mode is IrDA
- ➔ **ASK IR** Serial Port 1 mode is ASK IR

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the Serial Port 3 base address.

- ➔ **Disabled** No base address is assigned to Serial Port 3
- ➔ **3E8** **DEFAULT** Serial Port 3 I/O port address is 3E8
- ➔ **2E8** Serial Port 3 I/O port address is 2E8
- ➔ **2F0** Serial Port 3 I/O port address is 2F0
- ➔ **2E0** Serial Port 3 I/O port address is 2E0

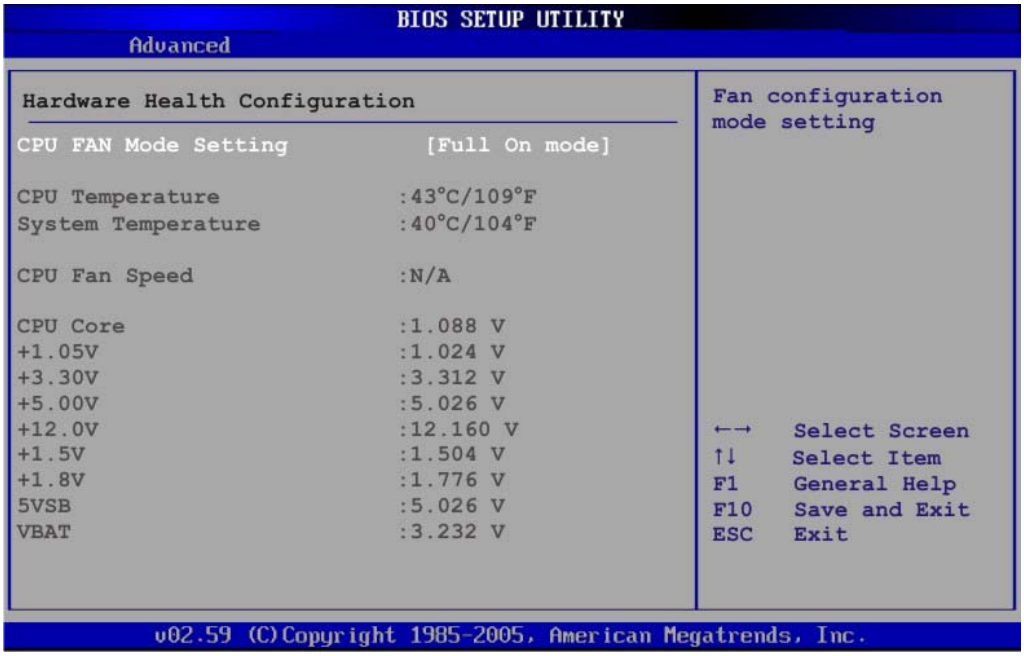
➔ **Serial Port3 IRQ [11]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

- ➔ **10** Serial port 3 IRQ address is 10
- ➔ **11** **DEFAULT** Serial port 3 IRQ address is 11

5.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 7: Hardware Health Configuration

➔ **CPU FAN Mode Setting [Full On Mode]**

Use the **CPU FAN Mode Setting** option to configure the second fan.

➔ **Full On Mode**	**DEFAULT**	Fan is on all the time
➔ **Automatic mode**		Fan is off when the temperature is low enough. Parameters must be set by the user.
➔ **PWM Manual mode**		Pulse width modulation set manually

When the **CPU FAN Mode Setting** option is in the **Automatic Mode**, the following parameters can be set.

- CPU Temp. Limit of OFF

- CPU Temp. Limit of Start
- CPU Fan Start PWM
- Slope PWM

When the **CPU FAN Mode Setting** option is in the **PWM Manual Mode**, the following parameters can be set.

- CPU Fan PWM control

➔ **CPU Temp. Limit of OFF [000]**

WARNING:

Setting this value too high may cause the fan to stop when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of OFF** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of OFF** option to select the CPU temperature at which the cooling fan should automatically turn off. To select a value, select the **CPU Temp. Limit of OFF** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **CPU Temp. Limit of Start [020]**

WARNING:

Setting this value too high may cause the fan to start only when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of Start** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of Start** option to select the CPU temperature at which the cooling fan should automatically turn on. When the fan starts, it rotates using the starting pulse width modulation (PWM) specified in the **Fan 3 Start PWM** option below. To select a value, select the **CPU Temp. Limit of Start** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **CPU Fan Start PWM [070]**

The **Fan 3 Start PWM** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Fan 3 Start PWM** option to select the PWM mode the fan starts to rotate with after the temperature specified in the **Temperature 3 Limit of Start** is exceeded. The Super I/O chipset supports 128 PWM modes. To select a value, select the **Fan 3 Start PWM** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- PWM Minimum Mode: 0
- PWM Maximum Mode: 127

➔ **Slope PWM [0.5 PWM]**

The **Slope PWM 1** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Slope PWM 1** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

- 0.125 PWM
- 0.25 PWM
- 0.5 PWM
- 1 PWM
- 2 PWM
- 4 PWM
- 8 PWM

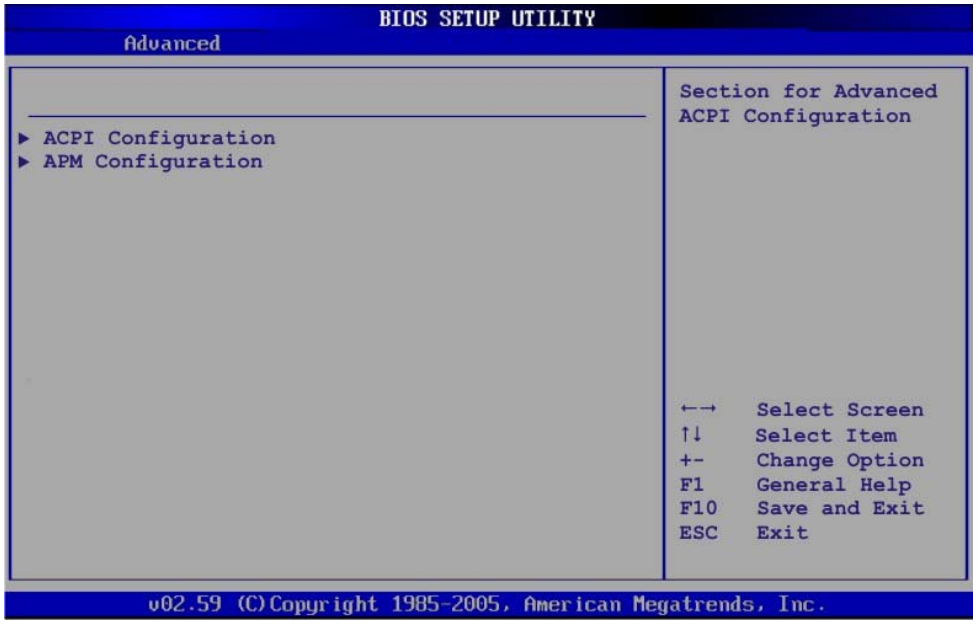
- 15 PWM

The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - CPU Temperature
  - System Temperature
- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - CPU Fan Speed
- **Voltages**: The following system voltages are monitored
  - CPU Core
  - +1.05V
  - +3.30V
  - +5.00V
  - +12.0 V
  - +1.5V
  - +1.8V
  - 5VSB
  - VBAT

5.3.5 Power Configuration

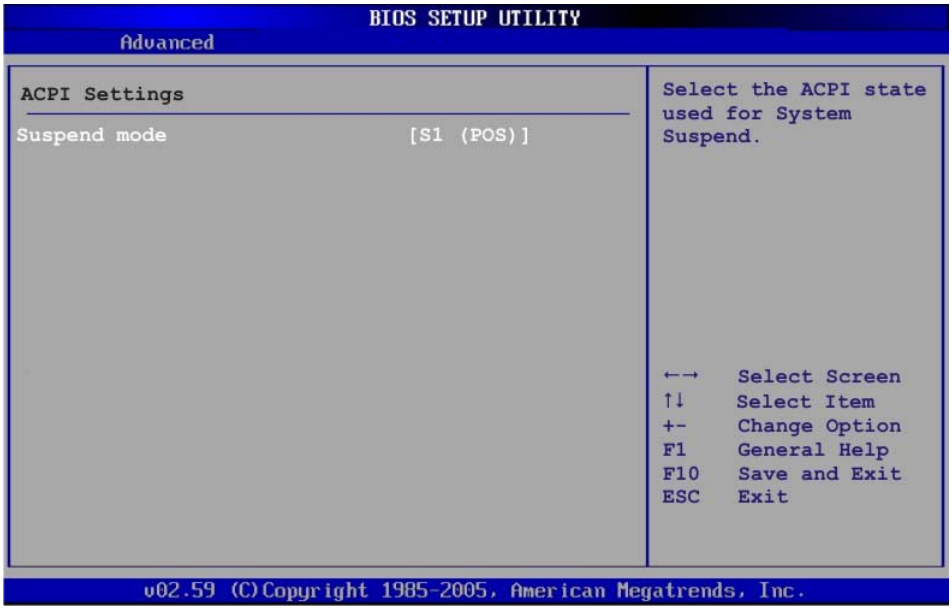
The **Power Configuration** menu (**BIOS Menu 8**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 8: Power Configuration

5.3.5.1 ACPI configuration

The **ACPI Configuration** menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI).



BIOS Menu 9: ACPI Configuration

➔ **Suspend Mode [S1(POS)]**

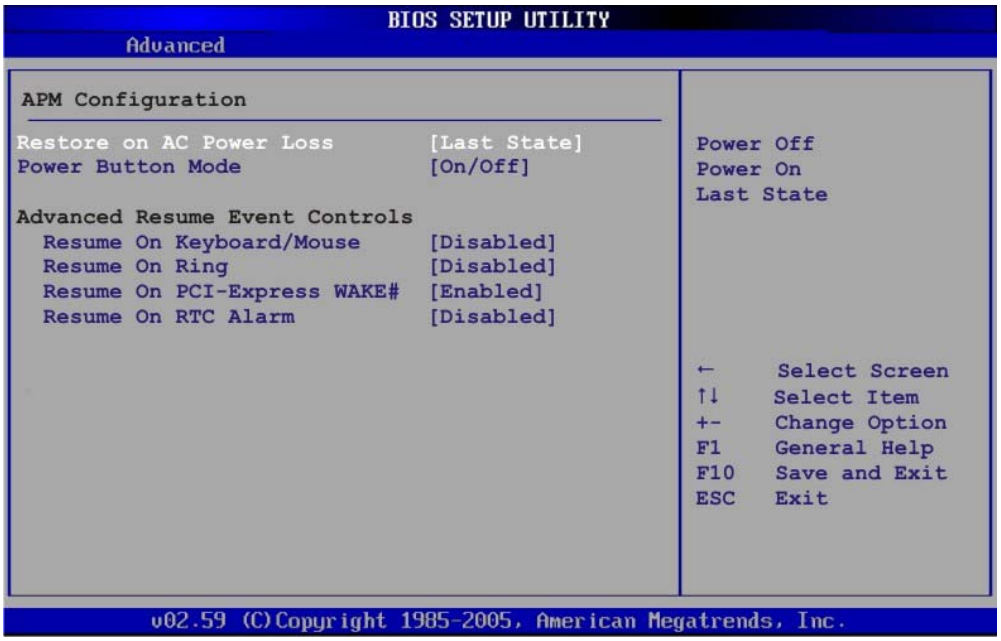
Use the **Suspend Mode** BIOS option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** **DEFAULT** System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

➔ **S3 (STR)** System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.

5.3.5.2 APM Configuration

The **APM Configuration** menu (**BIOS Menu 10**) allows the advanced power management options to be configured.



BIOS Menu 10: Advanced Power Management Configuration

➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off** The system remains turned off

➔ **Power On** The system turns on

➔ **Last State** **DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Power Button Mode [On/Off]**

Use the **Power Button Mode** BIOS to specify how the power button functions.

- ➔ **On/Off** **DEFAULT** When the power button is pressed the system is either turned on or off
- ➔ **Suspend** When the power button is pressed the system goes into suspend mode

➔ **Resume on Keyboard/Mouse [Disabled]**

Use the **Resume on Keyboard/Mouse** BIOS option to enable activity on either the keyboard or mouse to rouse the system from a suspend or standby state. That is, the system is roused when the mouse is moved or a button on the keyboard is pressed.

- ➔ **Disabled** **DEFAULT** Wake event not generated by activity on the keyboard or mouse
- ➔ **Resume On KeyBoard** Wake event not generated by activity on the keyboard
- ➔ **Resume On Mouse** Wake event not generated by activity on the mouse
- ➔ **Enabled** Wake event generated by activity on the keyboard or mouse

➔ **Resume on Ring [Disabled]**

Use the **Resume on Ring** BIOS option to enable activity on the RI (ring in) modem line to rouse the system from a suspend or standby state. That is, the system will be roused by an incoming call on a modem.

- ➔ **Disabled** **DEFAULT** Wake event not generated by an incoming call
- ➔ **Enabled** Wake event generated by an incoming call

➔ **Resume on PCI-Express WAKE# [Enabled]**

Use the **Resume PCI-Express WAKE#** BIOS option to enable activity on the PCI-Express WAKE# signal to rouse the system from a suspend or standby state.

- ➔ **Disabled** Wake event not generated by PCI-Express WAKE#

signal activity

➔ **Enabled** **DEFAULT** Wake event generated by PCI-Express WAKE# signal activity

➔ **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be roused from a suspended state.

➔ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event

➔ **Enabled** If selected, the following appears with values that can be selected:

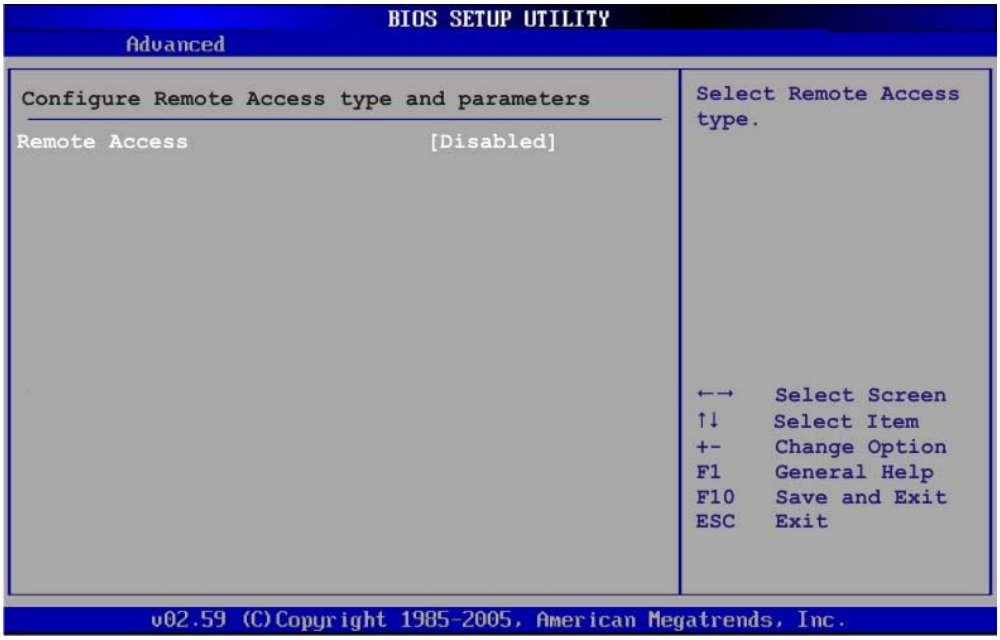
➔ **RTC Alarm Date (Days)**

➔ **System Time**

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.6 Remote Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 11**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 11: Remote Access Configuration [Advanced]

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** **DEFAULT** Remote access is disabled.

➔ **Enabled** Remote access configuration options shown below appear:

- ➔ **Serial Port Number**
- ➔ **Serial Port Mode**
- ➔ **Redirection after BIOS POST**
- ➔ **Terminal Type**

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows to select the serial port used for remote access.

➔ **COM1** **DEFAULT** System is remotely accessed through COM1

➔ **COM2** System is remotely accessed through COM2

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Base Address, IRQ [3F8h,4]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

➔ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

➔ **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

➔ **Disabled** The console is not redirected after POST

➔ **Boot Loader** Redirection is active during POST and during Boot Loader

➔ **Always** **DEFAULT** Redirection is always active (Some OSes may not work if set to Always)

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

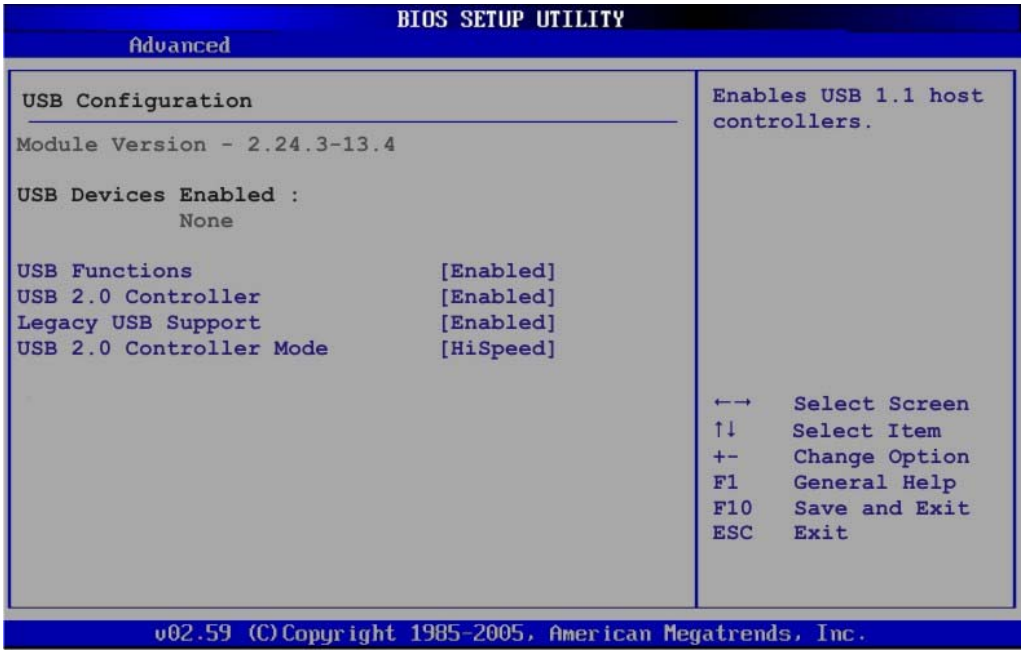
➔ **ANSI** **DEFAULT** The target terminal type is ANSI

➔ **VT100** The target terminal type is VT100

➔ **VT-UTF8** The target terminal type is VT-UTF8

5.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 12**) to read USB configuration information and configure the USB settings.



BIOS Menu 12: USB Configuration

➔ **USB Functions [Enabled]**

Use the **USB Function** option to enable or disable the USB controllers.

➔ **Disabled**		USB controllers are enabled
➔ **Enabled**	**DEFAULT**	USB controllers are disabled

➔ **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** BIOS option enables or disables the USB 2.0 controller

➔ **Enabled**	**DEFAULT**	USB function enabled
➔ **Disabled**		USB function disabled

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**		Legacy USB support disabled
➔ **Enabled**	**DEFAULT**	Legacy USB support enabled
➔ **Auto**		Legacy USB support disabled if no USB devices are connected

➔ **USB2.0 Controller Mode [HiSpeed]**

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

➔ **FullSpeed**	The controller is capable of operating at full speed 12 Mb/s

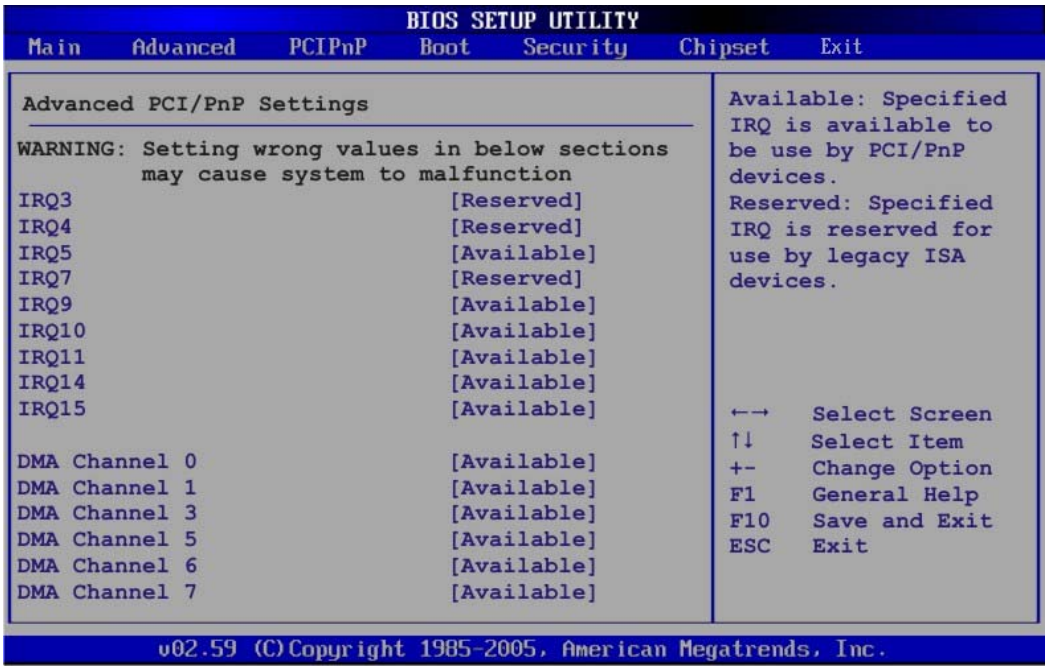
➔ **HiSpeed** **DEFAULT** The controller is capable of operating at high speed 480 Mb/s

5.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 13**) to configure advanced PCI and PnP settings.

WARNING:

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.



BIOS Menu 13: PCI/PnP Configuration

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available** **DEFAULT** The specified DMA is available to be used by PCI/PnP devices

➔ **Reserved** The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

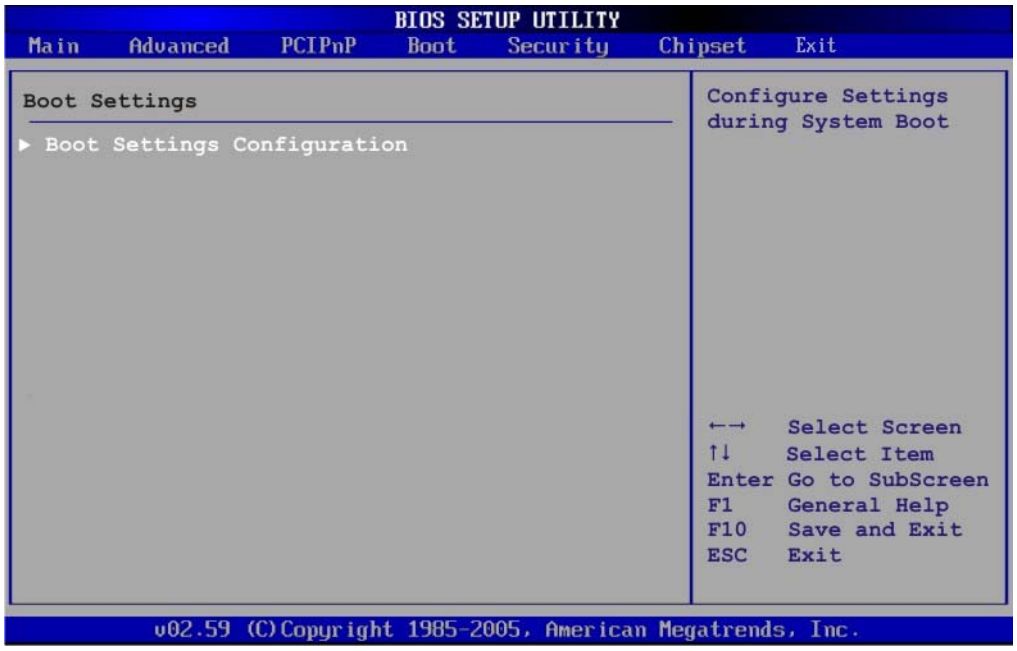
➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔	**Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔	**16K**		16KB reserved for legacy ISA devices
➔	**32K**		32KB reserved for legacy ISA devices
➔	**64K**		54KB reserved for legacy ISA devices

5.5 Boot

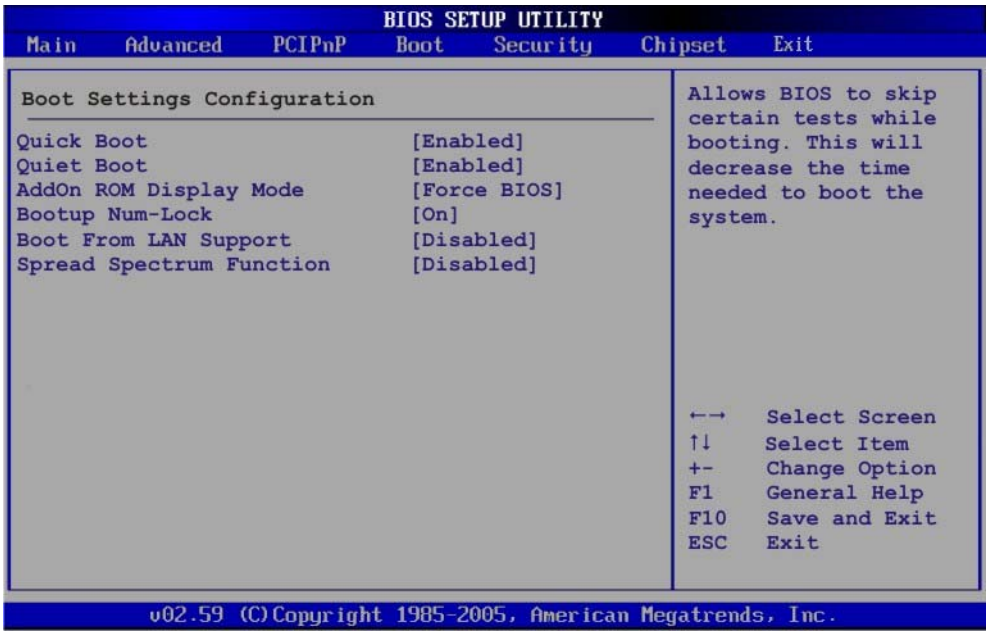
Use the Boot menu (**BIOS Menu 14**) to configure system boot options.



BIOS Menu 14: Boot

5.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (**BIOS Menu 15**) to configure advanced system boot options.



BIOS Menu 15: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	Allows the computer system to force a third party BIOS to display during system boot.
➔ **Keep Current**		Allows the computer system to display the information during system boot.

➔ **Bootup Num-Lock [On]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

➔ **Off**		Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
➔ **On**	**DEFAULT**	Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

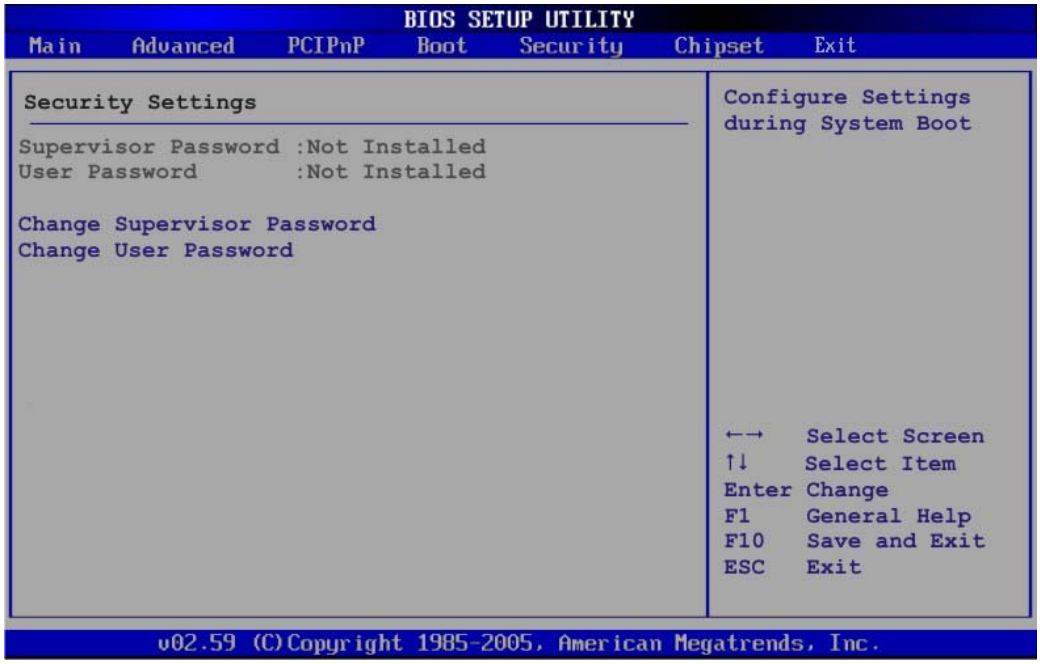
➔ **Boot From LAN Support [Disabled]**

The **BOOT From LAN Support** option enables the system to be booted from a remote system.

➔ **Enabled**		Can be booted from a remote system through the LAN
➔ **Disabled**	**DEFAULT**	Cannot be booted from a remote system through the LAN

5.6 Security

Use the Security menu (**BIOS Menu 16**) to set system and user passwords.



BIOS Menu 16: Security

➔ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

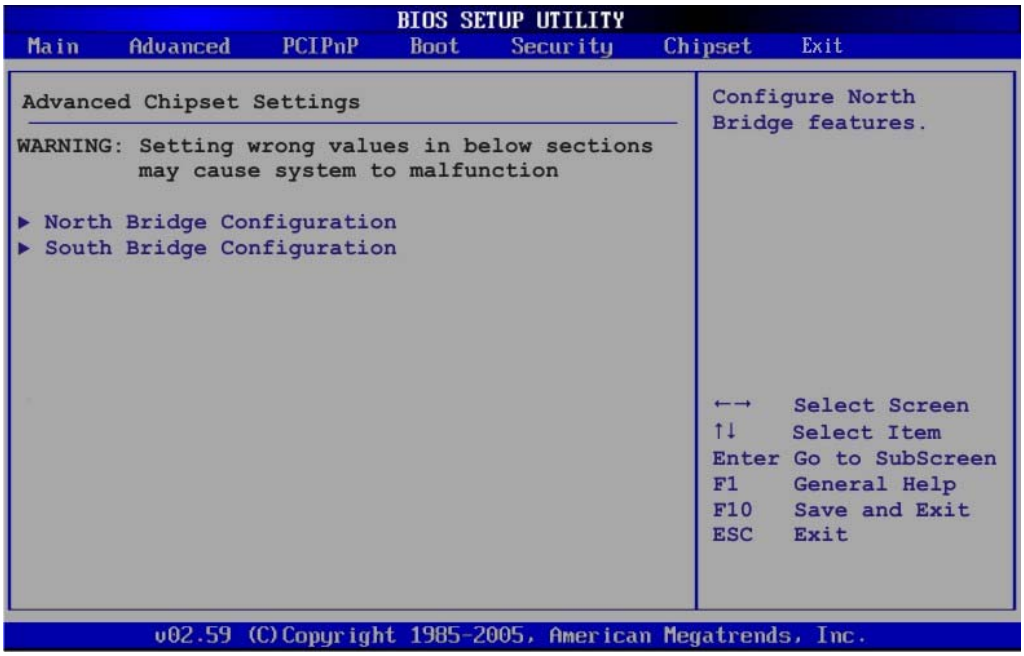
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the NorthBridge and SouthBridge configuration menus

WARNING!

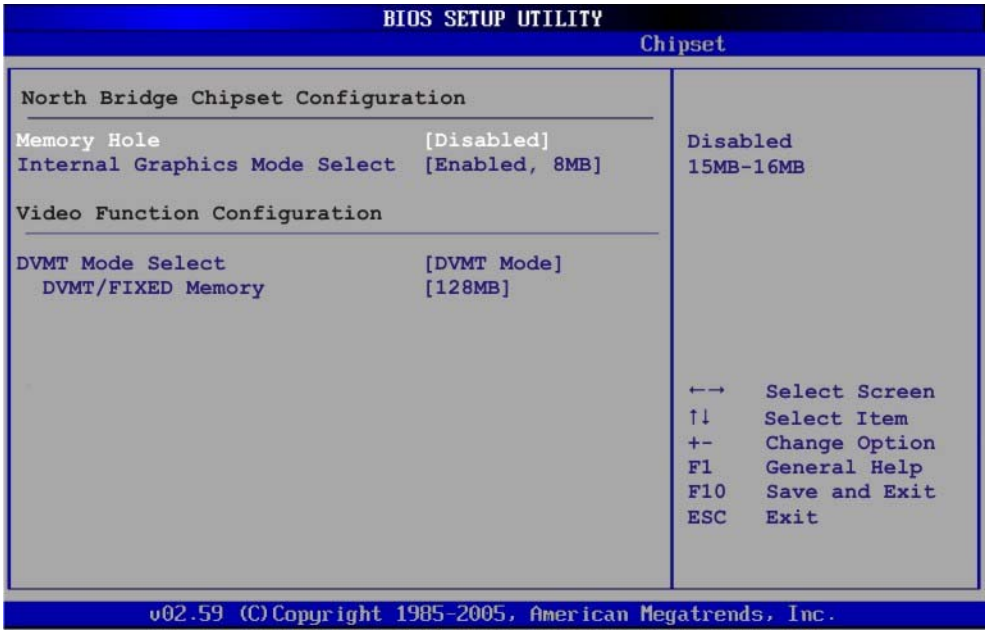
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 17: Chipset

5.7.1 North Bridge Chipset Configuration

Use the **North Bridge Chipset Configuration** menu (**BIOS Menu 18**) to configure the Northbridge chipset settings.



BIOS Menu 18:North Bridge Chipset Configuration

➔ **Memory Hole [Disabled]**

The **Memory Hole** reserves the memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔	**Disabled**	**DEFAULT**	Memory is not reserved for ISA expansion cards
➔	**Enabled**		Memory is reserved for ISA expansion cards

➔ **Internal Graphics Mode Select [Enable, 8MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**

➔ **Enable, 1MB** 1MB of memory used by internal graphics device

➔ **Enable, 8MB** **DEFAULT** 8MB of memory used by internal graphics device

➔ **DVMT Mode Select [DVMT Mode]**

Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

➔ **Fixed Mode** A fixed portion of graphics memory is reserved as graphics memory.

➔ **DVMT Mode** **DEFAULT** Graphics memory is dynamically allocated according to the system and graphics needs.

➔ **Combo Mode** A fixed portion of graphics memory is reserved as graphics memory. If more memory is needed, graphics memory is dynamically allocated according to the system and graphics needs.

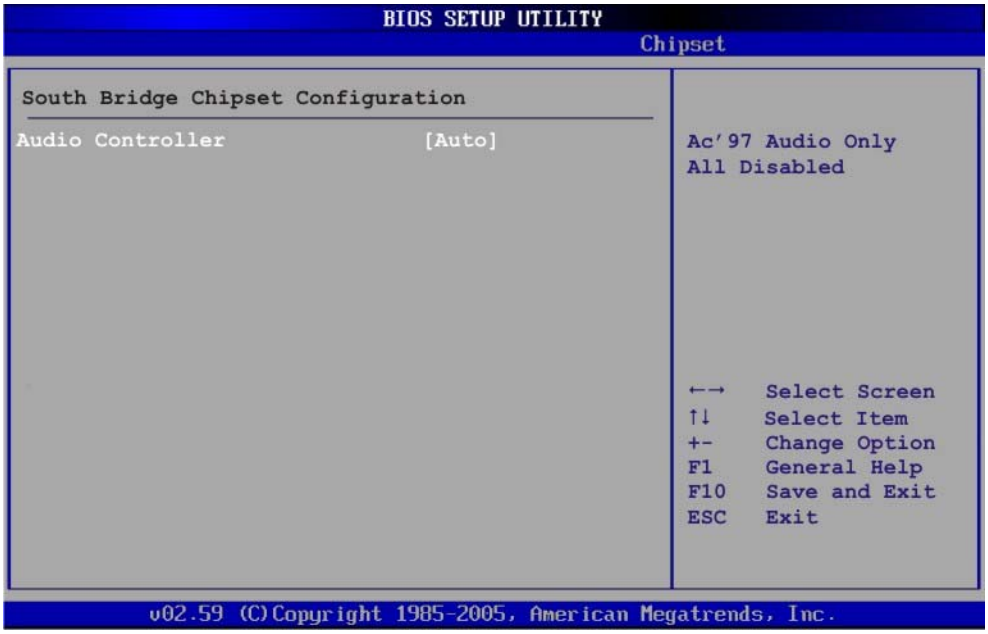
➔ **DVMT/FIXED Memory**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. This option can only be configured for if **DVMT Mode** or **Fixed Mode** is selected in the **DVMT Mode Select** option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128MB. Configuration options are listed below.

- 64MB
- 128MB **DEFAULT**
- Maximum DVMT

5.7.2 SouthBridge Configuration

The **SouthBridge Configuration** menu (**BIOS Menu 19**) the southbridge chipset to be configured.



BIOS Menu 19: SouthBridge Chipset Configuration

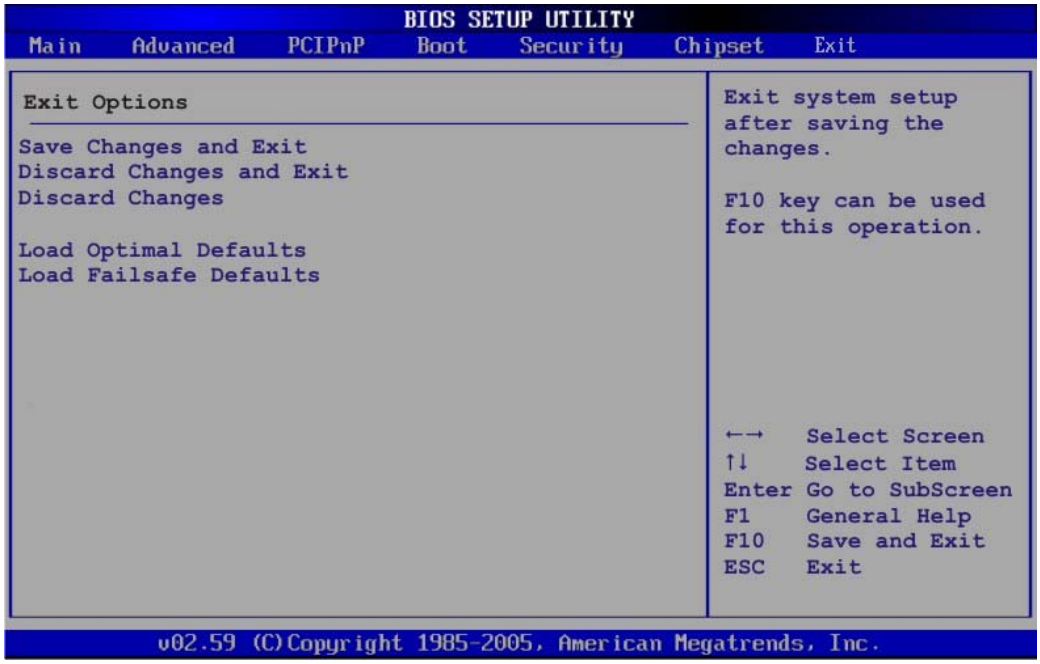
- **Audio Controller [AC'97 Audio Only]**

The **Audio Controller** option enables or disables the audio controller.

➔	**Auto**	**DEFAULT**	The onboard audio codec automatically detected and enabled
➔	**Azalia**		The High Definition Audio controller is enabled
➔	**AC'97 Audio Only**		The on-board AC'97 audio controller is enabled.
➔	**All Disabled**		The on-board audio controller is disabled.

5.8 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 20:Exit

➔ Save Changes and Exit

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ Discard Changes and Exit

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ Discard Changes

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

6

Driver Installation

NOTE:

The drivers of the IBX-530B-N270 components are already embedded in the optional 128 MB or 1 GB CF card (with Windows® CE 6.0 or Windows® XP Embedded OS) provided by IEI. The following section is only for those users who didn't purchase the IEI CF card.

6.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Chipset
- VGA
- Audio
- LAN
- Wireless (IBX-530BW only)

Installation instructions are given below.

6.2 Chipset Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver CD list.

Step 2: Click "**Chipset**" and double click "**Setup.exe**".

Step 3: The setup files are extracted as shown in **Figure 6-1**.

Figure 6-1: Chipset Driver Screen

Step 4: When the setup files are completely extracted the **Welcome Screen** in **Figure 6-2** appears.

Figure 6-2: Chipset Driver Welcome Screen

Step 5: Click **Next** to continue.

Step 6: The license agreement in **Figure 6-3** appears.

Step 7: Read the **License Agreement**.

Step 8: Click the **Yes** icon to continue.

Figure 6-3: Chipset Driver License Agreement

Step 9: The Read Me file in **Figure 6-4** appears.

Step 10: Click **Next** to continue.

Figure 6-4: Chipset Driver Read Me File

Step 11: **Setup Operations** are performed as shown in **Figure 6-5**.

Figure 6-5: Chipset Driver Setup Operations

Step 12: Once the **Setup Operations** are complete, click the **Next** icon to continue.

Step 13: The **Finish** screen appears.

Step 14: Select "**Yes, I want to restart the computer now**" and click the **Finish** icon.

See **Figure 6-6**.

Figure 6-6: Chipset Driver Installation Finish Screen

6.3 VGA Driver Installation

To install the VGA driver, please do the following.

Step 1: Access the driver CD list.

Step 2: Click "**VGA**" and double click the "**win2k_xp14324.exe**" file.

Step 3: The VGA Read Me file in **Figure 6-7** appears.

Step 4: Click **Next** to continue.

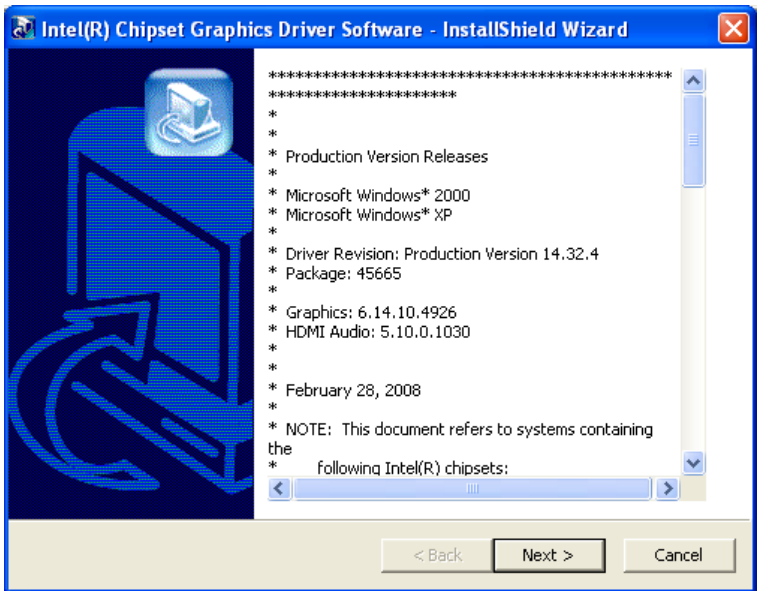


Figure 6-7: VGA Driver Read Me File

Step 5: The installation files are extracted. See **Figure 6-8**.

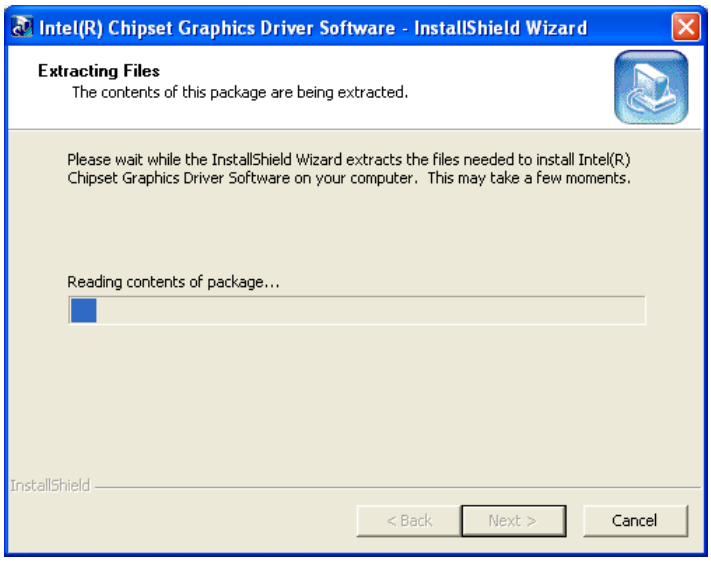


Figure 6-8: VGA Driver Setup Files Extracted

Step 6: The **Welcome Screen** in **Figure 6-9** appears.

Figure 6-9: VGA Driver Welcome Screen

Step 7: Click **Next** to continue.

Step 8: The license agreement in **Figure 6-10** appears.

Step 9: Read the **License Agreement**.

Step 10: Click the **Yes** icon to continue.

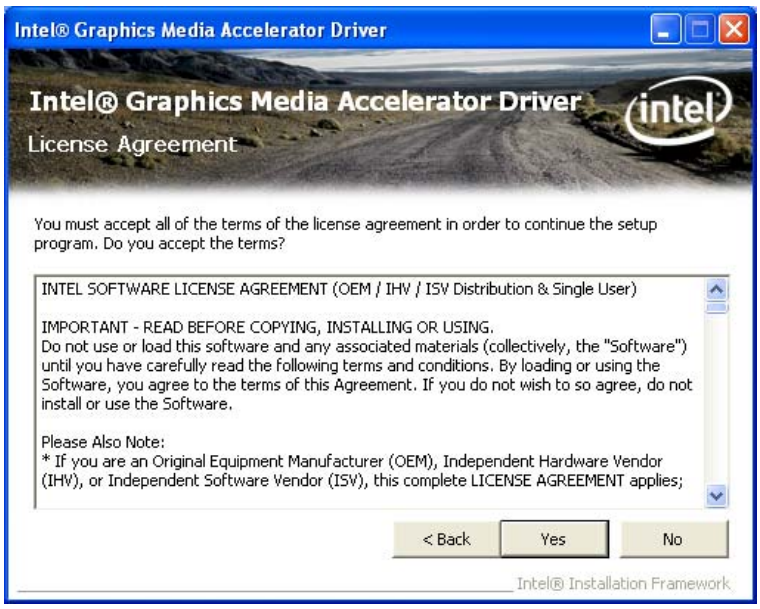


Figure 6-10: VGA Driver License Agreement

Step 11: The Read Me file in **Figure 6-11** appears.

Step 12: Click **Next** to continue.

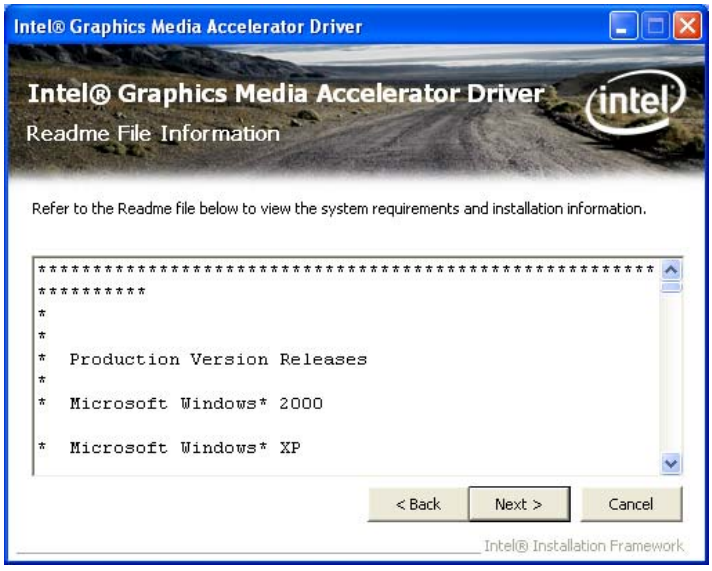


Figure 6-11: VGA Driver Read Me File

Step 13: **Setup Operations** are performed as shown in **Figure 6-12**.

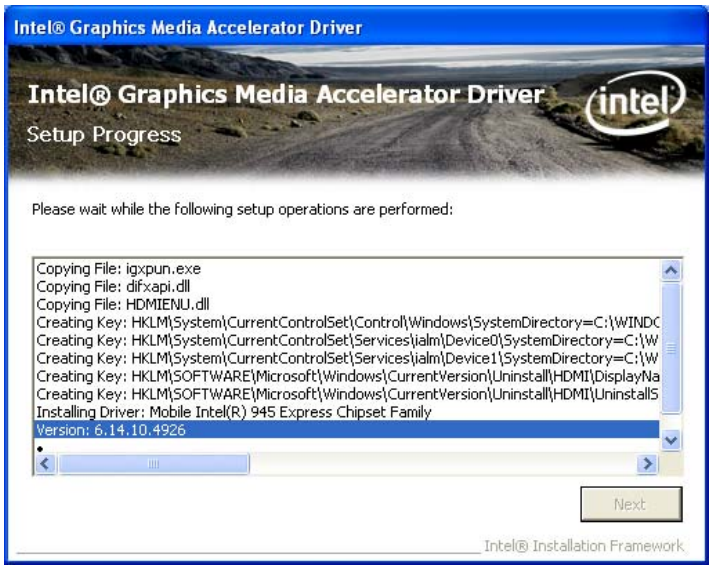


Figure 6-12: VGA Driver Setup Operations

Step 14: Once the **Setup Operations** are complete, click the **Next** icon to continue.

Step 15: The **Finish** screen appears.

Step 16: Select "**Yes, I want to restart the computer now**" and click the **Finish** icon.

See **Figure 6-13**.

Figure 6-13: VGA Driver Installation Finish Screen

6.4 Audio Driver Installation

To install the audio driver, please do the following.

Step 1: Access the driver CD list.

Step 2: Click "**Audio**"

Step 3: The screen in **Figure 6-14** appears. Double click the "WDM_A404" folder.

Figure 6-14: Audio Driver Options

Step 4: Click the **setup.exe** icon.

Step 5: The AC'97 Driver Installation screen in **Figure 6-15** appears.

Step 6: Click **Next** to continue.

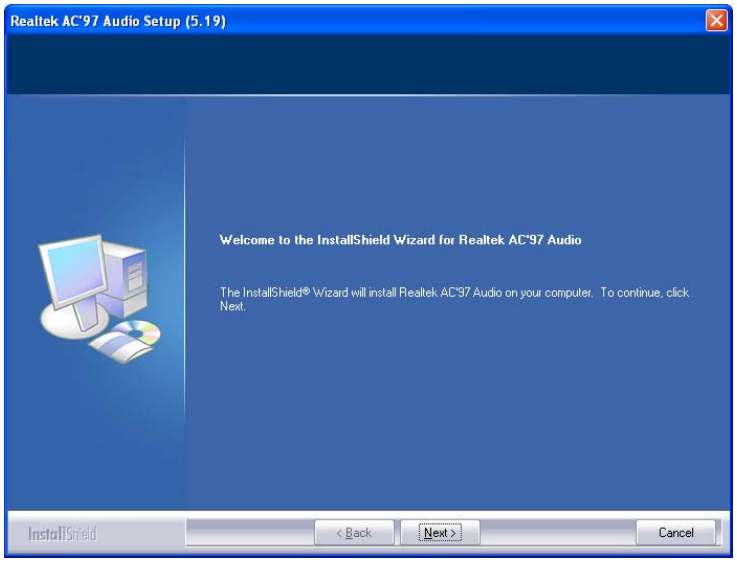


Figure 6-15: AC'97 Driver Installation Welcome Screen

Step 7: The Verification window in **Figure 6-16** may appear.

Step 8: Click "**Continue Anyway**."

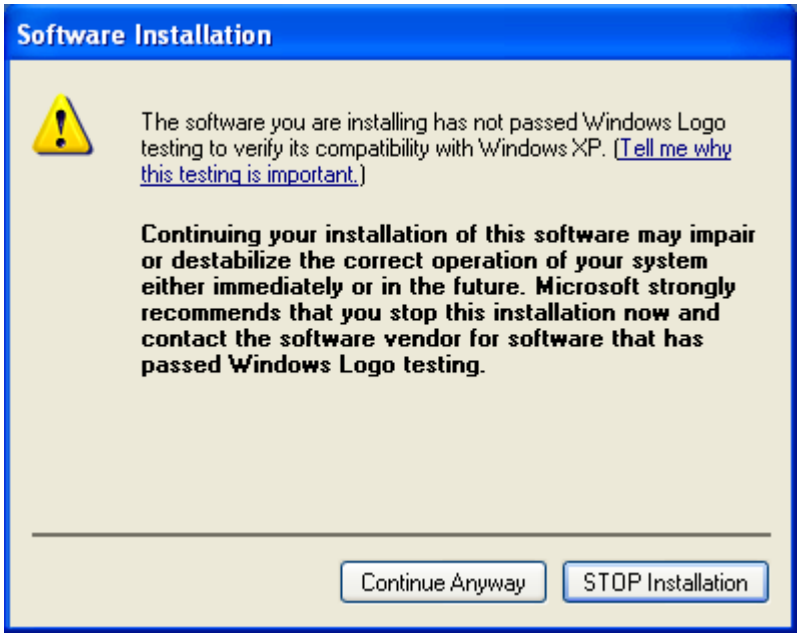


Figure 6-16: AC'97 Driver Installation Verification

Step 9: The driver installation begins. See **Figure 6-17**.

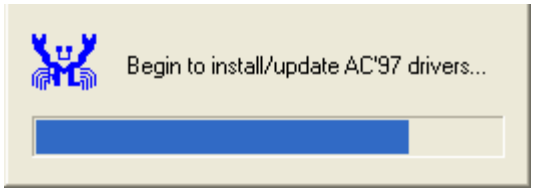


Figure 6-17: AC'97 Driver Installation

Step 10: When the driver is installed, the driver installation finish screen in **Figure 6-18** appears.

Step 11: Select "**Yes, I wish to restart my computer now**" And click **Finish**

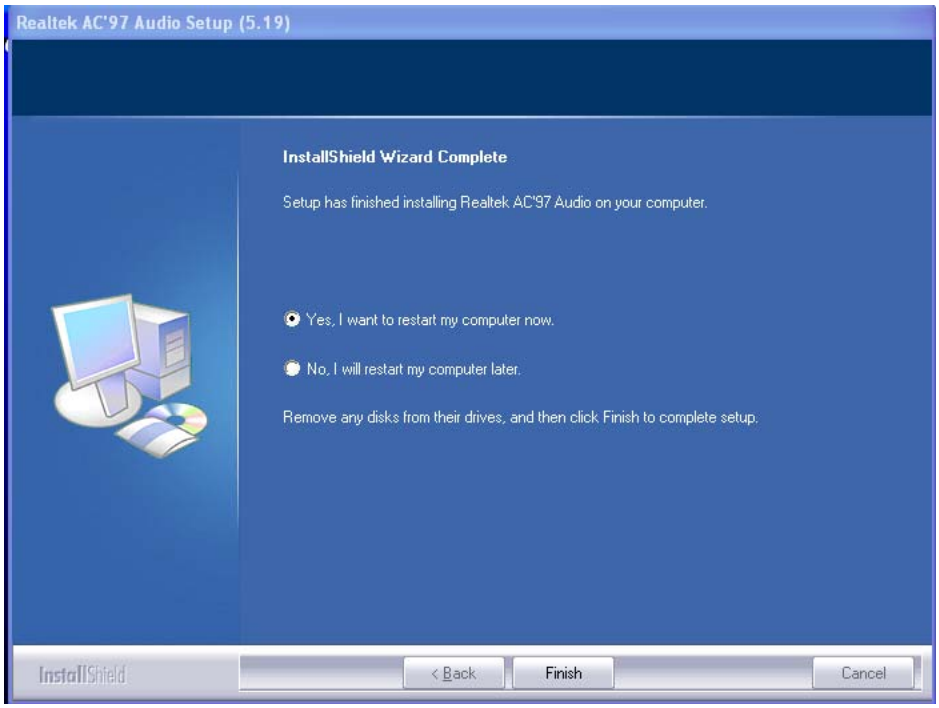


Figure 6-18: AC'97 Driver Installation Complete

Step 12: The system reboots.

6.5 LAN Driver Installation

To install the LAN driver, please do the following.

Step 1: Access the driver CD list.

Step 2: Click "**LAN**" and locate the **setup.exe**. Double click the setup.exe file to start installing the LAN driver.

Step 3: The **Welcome** screen in **Figure 6-19** appears.

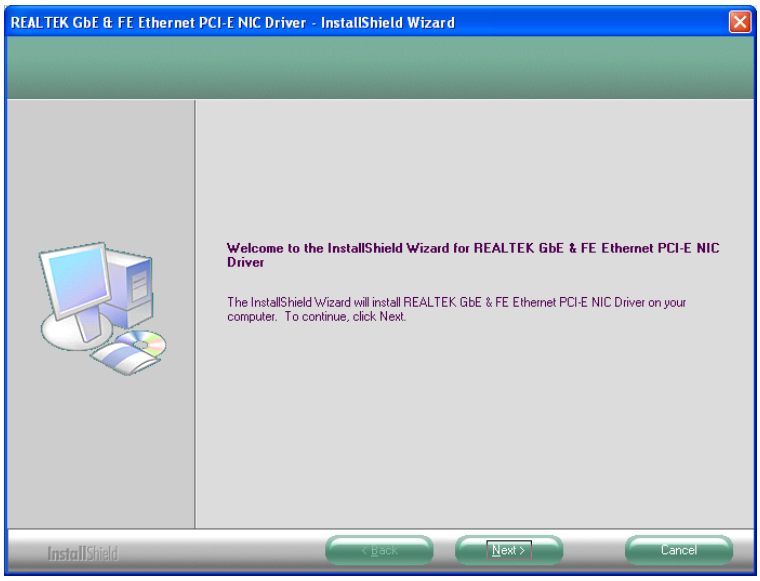


Figure 6-19: LAN Driver Welcome Screen

Step 4: Click **Next** to continue.

Step 5: The **Ready to Install** screen in **Figure 6-20** appears.

Step 6: Click **Next** to proceed with the installation.

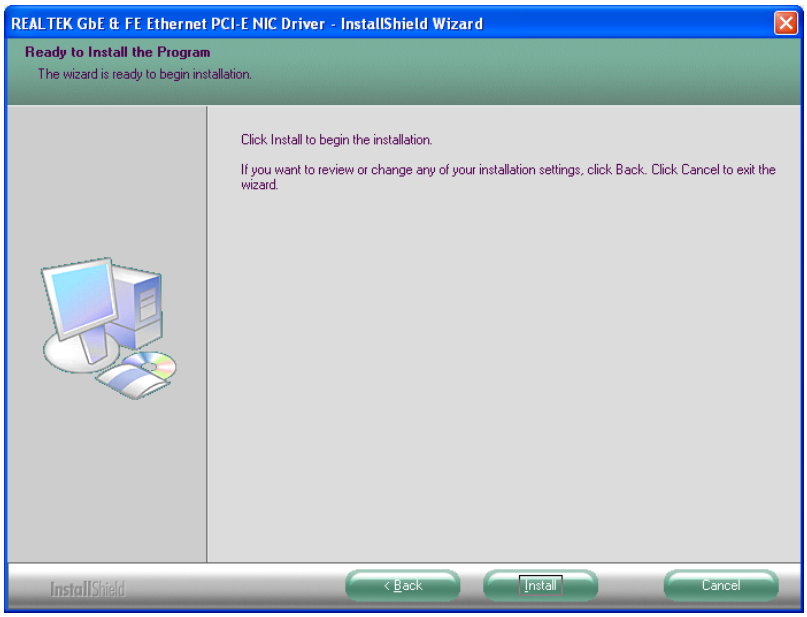


Figure 6-20: LAN Driver Welcome Screen

Step 7: The program begins to install.

Step 8: The installation progress can be monitored in the progress bar shown in **Figure 6-21**.

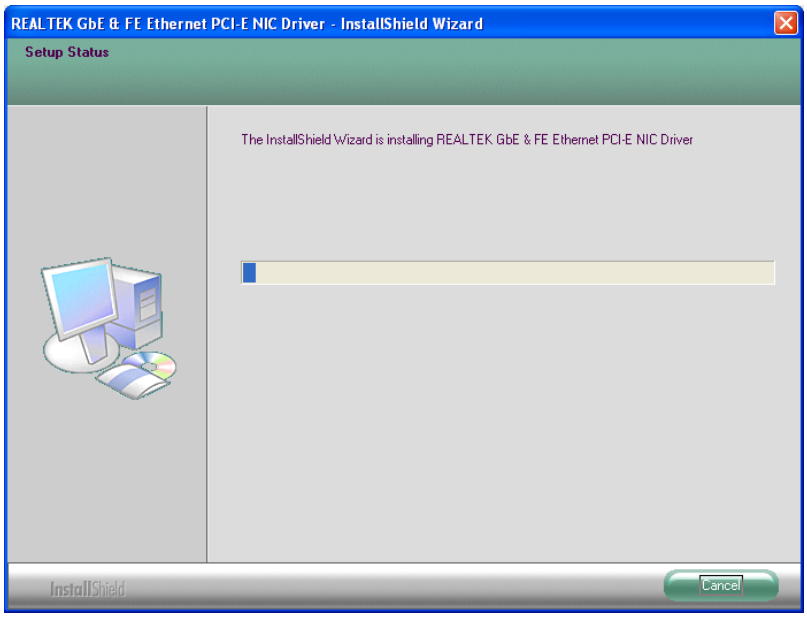


Figure 6-21: LAN Driver Installation

Step 9: When the driver installation is complete, the screen in **Figure 6-22** appears.

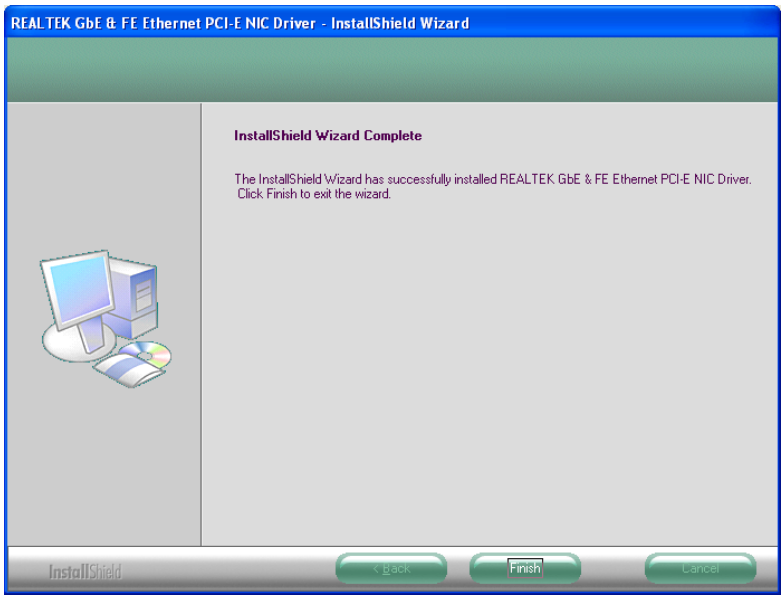


Figure 6-22: LAN Driver Installation Complete

6.6 Wireless Driver (IBX-530BW Only)

To install the wireless driver, please follow the steps below.

Step 1: Select **Wireless** from the driver CD list.

Step 2: A new window opens (**Figure 6-23**). Select an OS folder. Double click the **Setup.exe** to install the LAN driver.

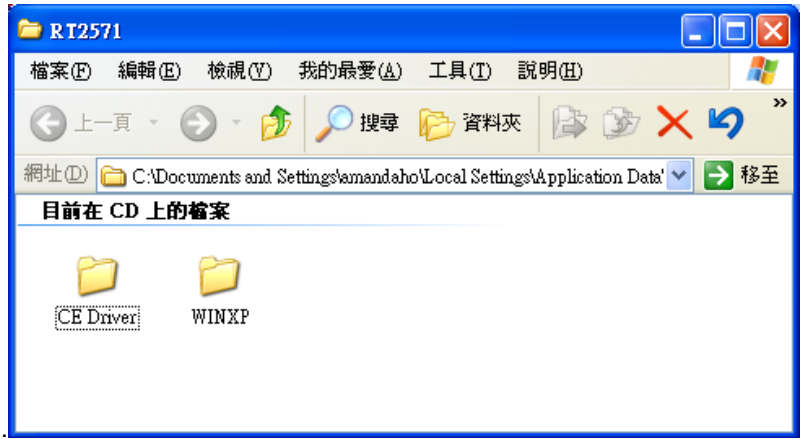


Figure 6-23: Wireless Driver OS Folders

Step 3: The license agreement in **Figure 6-24** appears.

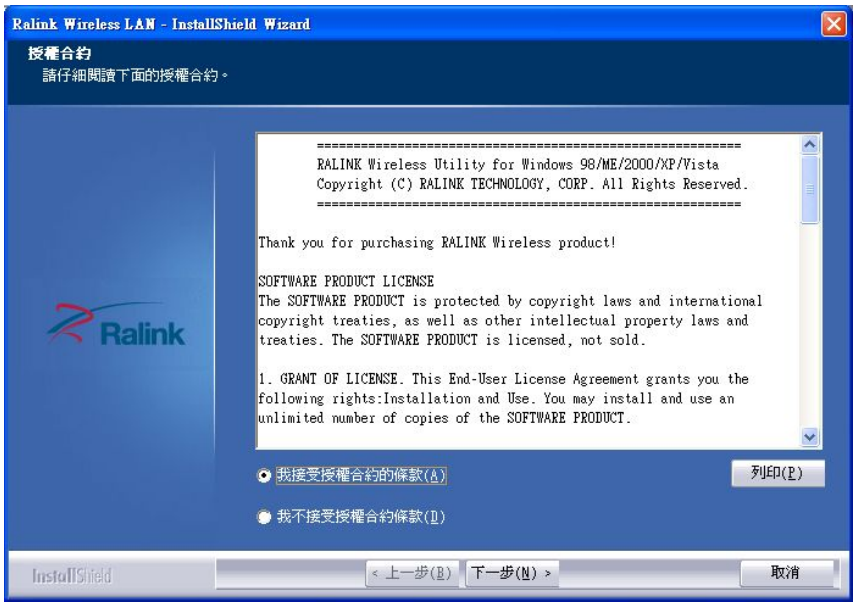


Figure 6-24: Wireless Driver License Agreement

Step 4: Accept the conditions of the license agreement and click **NEXT** to continue.

Step 5: The **Configuration Tool Options** screen in **Figure 6-25** appears next.

Figure 6-25: Wireless Driver Configuration Tool Options

Step 6: Select configuration tool in **Figure 6-25** and click **NEXT** to continue.

Step 7: The **Wireless Mode Options** window in **Figure 6-26** appears.

Figure 6-26: Wireless Mode Select Window

Step 8: Click **NEXT** in **Figure 6-26**.

Step 9: Click **INSTALL** in **Figure 6-27** to start to install the driver.

Figure 6-27: Wireless Driver Installation

Step 10: When the installation is finished. Click **FINISH** in the termination screen.

Appendix

A

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the IBX-530B-N270.

A.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the IBX-530B-N270 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the IBX-530B-N270 is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the IBX-530B-N270 chassis is opened when the IBX-530B-N270 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the IBX-530B-N270.
- ***If considerable amounts of dust, water, or fluids enter the IBX-530B-N270***, turn off the power supply immediately, unplug the power cord, and contact the IBX-530B-N270 vendor.
- **DO NOT**:
  - Drop the IBX-530B-N270 against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the IBX-530B-N270 may result in permanent damage to the IBX-530B-N270 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IBX-530B-N270. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IBX-530B-N270 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

A.1.3 Explanation of Graphical Symbols

This symbol warns the user that the part has this symbol is hot. Therefore, it is dangerous to make any kind of contact with this part.

This symbol alerts the user that important information concerning the operation and maintenance of this unit has been included. Therefore, the information should be read carefully in order to avoid any problems.

This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

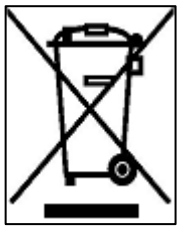
A.1.4 Product Disposal

CAUTION:

Risk of explosion if battery is replaced by and incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the IBX-530B-N270, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the IBX-530B-N270, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the IBX-530B-N270 does not require cleaning. Keep fluids away from the IBX-530B-N270 interior.
- Be cautious of all small removable components when vacuuming the IBX-530B-N270.
- Turn the IBX-530B-N270 off before cleaning the IBX-530B-N270.
- Never drop any objects or liquids through the openings of the IBX-530B-N270.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the IBX-530B-N270.
- Avoid eating, drinking and smoking within vicinity of the IBX-530B-N270.

A.2.2 Cleaning Tools

Some components in the IBX-530B-N270 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the IBX-530B-N270.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the IBX-530B-N270.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the IBX-530B-N270.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the IBX-530B-N270 as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the IBX-530B-N270. Dust and dirt can restrict the airflow in the IBX-530B-N270 and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

Interface Connectors

B.1 Peripheral Interface Connectors

NOTE:

The jumpers and connectors shown in the section below are those jumpers and connectors that are relevant to the configuration and installation of the embedded system.

The IBX-530B-N270 embedded system motherboard, the AFLMB-945GSE comes with a number of peripheral interface connectors. The pinouts for the connectors that are used in the IBX-530B-N270 are listed below:

PIN NO.	DESCRIPTION
1	Battery +3.3V
2	GND

Table B-1: Battery Connector Pinouts (BT1)

Pin No.	Description	Pin No.	Description
1	GROUND	26	CD1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CE	32	CE2
8	A10	33	VS1
9	OE	34	IOR
10	A9	35	IOW
11	A8	36	WE
12	A7	37	IRQ
13	VCC1	38	VCC
14	A6	39	CSEL
15	A5	40	VS2
16	A4	41	RESET

17	A3	42	WAIT
18	A2	43	INPACK
19	A1	44	REG
20	A0	45	BVD2
21	D0	46	BVD1
22	D1	47	D8
23	D2	48	D9
24	IOCS16	49	D10
25	CD2	50	GND

Table B-2: CFII Socket Pinouts (CF1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	2	RX1
3	TX1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	COM_RI1	10	GND

Table B-3: COM1 Connector Pinouts (COM1, D-SUB)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCDB	2	NRXDB
3	NTX3	4	NDTR3
5	GND	6	NDSRB
7	NRTSB	8	NCTS3
9	COM_RI3	10	GND

Table B-4: COM3 Connector Pinouts (COM3, D-SUB)

Pin No.	Description
1	GND
2	GND
3	VCC12_IN

Table B-5: 12V DC Power Connector Pinouts (CN5)

Pin No.	Description	Pin No.	Description
1	DACR_RED	2	SPD2
3	DACG_GREEN	4	SPCLK2
5	DACB_BLUE	6	V_GND

7	H_SYNC	8	V_GND
9	V_SYNC	10	V_GND

Table B-6: CRT Connector Pinouts (CN4)

Pin No.	Description
1	AUD_OUTL
2	AGND_AMP
3	LINEOUT_JD
4	AUD_OUTR

Table B-7: Audio Line-Out Connector Pinouts (CN3)

PIN NO.	DESCRIPTION
1	GND
2	STXP_0
3	STXN_0
4	GND
5	SRXN_0
6	SRXP_0
7	GND
8	GND
9	GND

Table B-8: External SATA Connector Pinouts (SATA2)

Pin	Description	Pin	Description
1	PW_LED +5V	2	+5V
3	GND	4	HD_LED
5	SUS PWR LED +5V	6	RST_SW
7	GND	8	GND
9	PW_BN	10	GND

Table B-9: System Panel Connector Pinouts (JP2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5Vsus	2	GND
3	D0F-	4	D1F+
5	D0F+	6	D1F-
7	GND	8	+5Vsus

Table B-10: USB Connector Pinouts (USB1)

Appendix

C

BIOS Menu Options

C.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 5**.

Appendix

D

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is the application over?
        JNE      W_LOOP         ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

Appendix

E

Hazardous Materials Disclosure

E.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。