IEI Technology Corp.

MODEL:

AFL-08B-N270

**Panel PC with Touch Screen, Intel® Atom N270
1.6 GHz CPU, Gigabit Ethernet, Wireless LAN, USB 2.0
External SATA, RS-232/422/485, Audio, RoHS Compliant,
IP 64 Protection**

User Manual

Rev. 2.30 – 21 September, 2012

RoHS Lead Free

Revision

Date	Version	Changes
21 September, 2012	2.30	Updated for R23 version Updated audio codec spec Added Section 5: Interface Connectors Added Appendix C: ALC892 Digital Microphone Configuration
22 February, 2012	2.20	Bluetooth function optional
12 July, 2011	2.10	Updated WLAN card to RT3090. Added note to Section 2.9 Driver Installation. Added Section A.1.3 Product Disposal.
29 September, 2009	1.02	Added screw torque warning
22 July, 2009	1.01	Minor edit
12 June, 2009	1.00	Initial release

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Chapter

1

Introduction

1.1 Overview

Figure 1-1: AFL-08B-N270 Panel PC

The AFOLUX AFL-08B-N270 is an Intel® Atom N270 powered all-in-one touch screen panel PC with a rich variety of functions and peripheral connections. It is designed for easy and simplified integration into conference center, home automation, and building control applications.

An Intel® 945GSE graphics memory controller hub (GMCH) coupled with an Intel® ICH7M input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system comes with 1.0 GB of preinstalled DDR2 SDRAM and supports a maximum of 2.0 GB ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Two serial ports, two USB 2.0 ports, and one external SATA port provide simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and two RJ-45 Ethernet connectors ensure uninterrupted connection of the system to an external LAN.

The AFL-08B-N270 panel PC is an elegant yet sophisticated system that is as easily implemented in commercial, industrial, and corporate environments as the home.

1.2 Features

The AFL-08B-N270 features the following:

- Intel® Atom™ processor
- Intel® 945GSE chipset
- 1 GB 533 MHz DDR2 SDRAM preinstalled
- 802.11 b/g/n wireless module
- Two USB 2.0 ports
- One external SATA port
- Watchdog timer that triggers a system reset if the system hangs for some reason
- IP 64 compliant front panel
- AT or ATX power mode
- Touch screen
- RoHS compliance

1.3 External Overview

The stylish AFL-08B-N270 panel PC comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. An I/O interface panel on the bottom panel of the AFL-08B-N270 provides access to external interface connectors.

1.3.1 Front Panel

The front side of the AFL-08B-N270 is a TFT LCD screen surrounded by an ABS/PC plastic frame. The top of the front panel has a digital camera and microphone. A power LED is located on the bottom of the front panel with an integrated IEI logo. Refer to **Figure 1-2**.
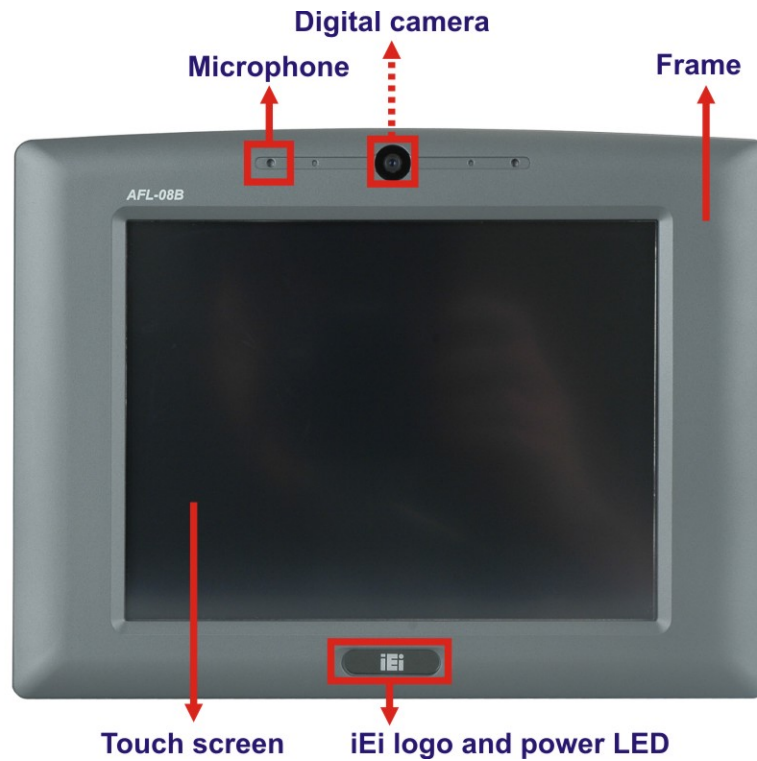
Figure 1-2: AFL-08B-N270 Front View

1.3.2 Rear Panel

The rear panel provides access to the internal components of the AFL-08B-N270 and CF card slot. Refer to **Figure 1-3** for back cover retention screw and VESA mount screw holes.

VESA mount screw holes

Back cover retention screws
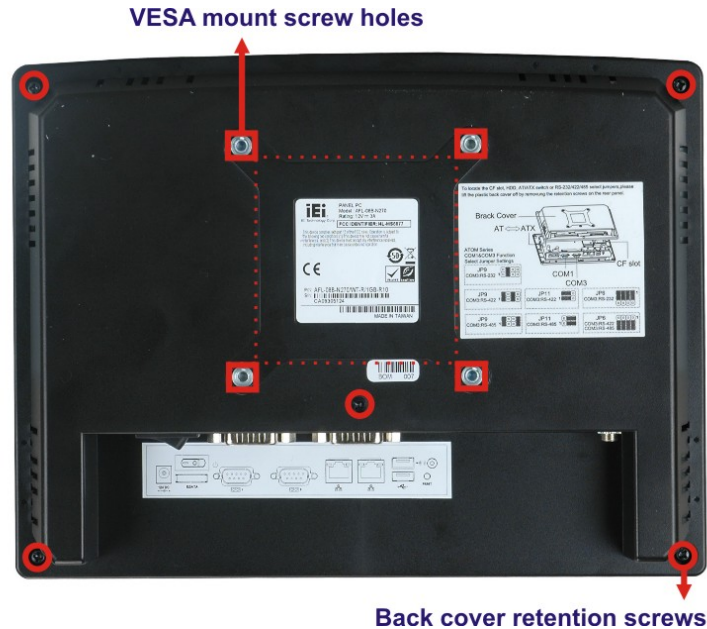
Figure 1-3: AFL-08B-N270 Rear View

1.3.3 I/O Interface Panel

The I/O interface panel located on the bottom of the AFL-08B-N270 has the following I/O interface connectors:

- 1 x 12 V DC-IN connector
- 1 x Audio line-out jack
- 1 x External SATA port
- 1 x Power switch
- 1 x Reset button
- 2 x RJ-45 GbE LAN ports
- 1 x RS-232 serial port
- 1 x RS-232/422/485 serial port
- 2 x USB 2.0 connectors

The external I/O interface connector panel is shown in the following figure.
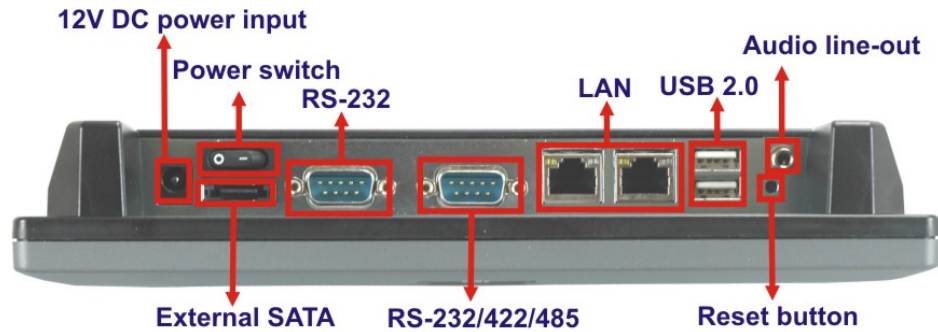
Figure 1-4: AFL-08B-N270 I/O Interface Connector Panel

1.4 Internal Overview

The AFL-08B-N270 has the following components installed internally:

- 1 x Motherboard
- 1 x 1.0 GB 533 MHz DDR2 SDRAM SO-DIMM
- 1 x Wireless LAN module
- 2 x 1.5W speakers
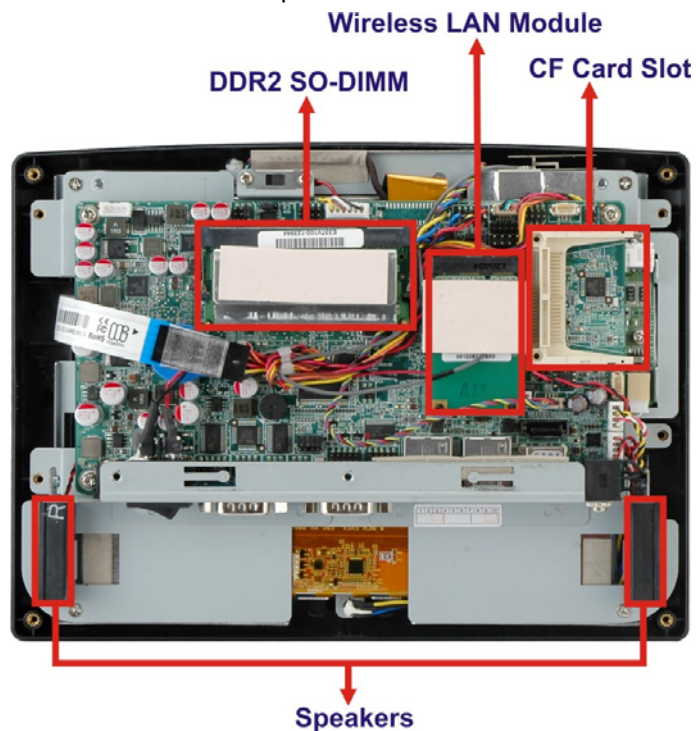
Figure 1-5: Internal Overview

1.5 System Specifications

The technical specifications for the AFL-08B-N270 systems are listed below.

Specifications	AFL-08B-N270
LCD Size	8"
Max Resolution	800 x 600
Brightness (cd/m2)	300
Contrast Ratio	400:1
LCD Color	262K
Pixel Pitch (mm)	0.0675(H) x 0.2025(V)
Viewing Angle (H-V)	130º/120º
Backlight MTBF	30000 hrs
CPU	Intel® Atom™ N270 1.6 GHz CPU
Chipset	Intel 945GSE + ICH7M
RAM	1 GB 533 MHz DDR2 SO-DIMM Supports one 400 MHz or 533 MHz DDR2 SO-DIMM (2 GB Max.)
Audio Codec	Realtek ALC892
I/O Ports and Switches	One 12V DC power jack One Audio line-out jack One External SATA port One Power switch One Reset button Two RJ-45 GbE LAN ports One RS-232 serial port One RS-232/422/485 serial port Two USB 2.0 ports
SSD	CF Type II
Watchdog Timer	Software programmable supports 1~255 sec. System reset

Specifications	AFL-08B-N270
Audio	AMP 1.5 W + 1.5 W internal speakers Digital microphone
Digital Camera	2-megapixel digital camera on the front panel
Wireless LAN	Wireless LAN 802.11 b/g/n PCIe Mini card module
Bluetooth V2.0	Optional
Construction Material	ABS + PC Plastic front frame
LED Function	One power on/off LED on the front panel
Mounting	Panel, Wall, Rack, Arm, Stand (VESA 75mm x 75mm)
Front Panel Color	Grey 7539U
Dimension (W x H x D) (mm)	234 x 177 x 43
Operation Temperature (ºC)	-10ºC~50ºC
Storage Temperature (ºC)	-20ºC~60ºC
Net Weight	0.8 Kg
IP Level	Front Frame IP64
EMC	CE, FCC, CCC
Safety	CB
Touch Screen	Resistive 5-Wire
Power Adapter	36 W power adapter Input: 100 V AC ~ 240 V AC; 50 Hz ~ 60 Hz Output: 12 V DC
Power Requirement	12 V DC
Power Consumption	25 W

Table 1-1: AFL-08B-N270 Specifications

1.6 Dimensions

The AFL-408A/B-N270 dimensions are listed below and shown in the following figure.

- **Width**:   234 mm

▪ **Height**:   177 mm

▪ **Depth**:   43 mm
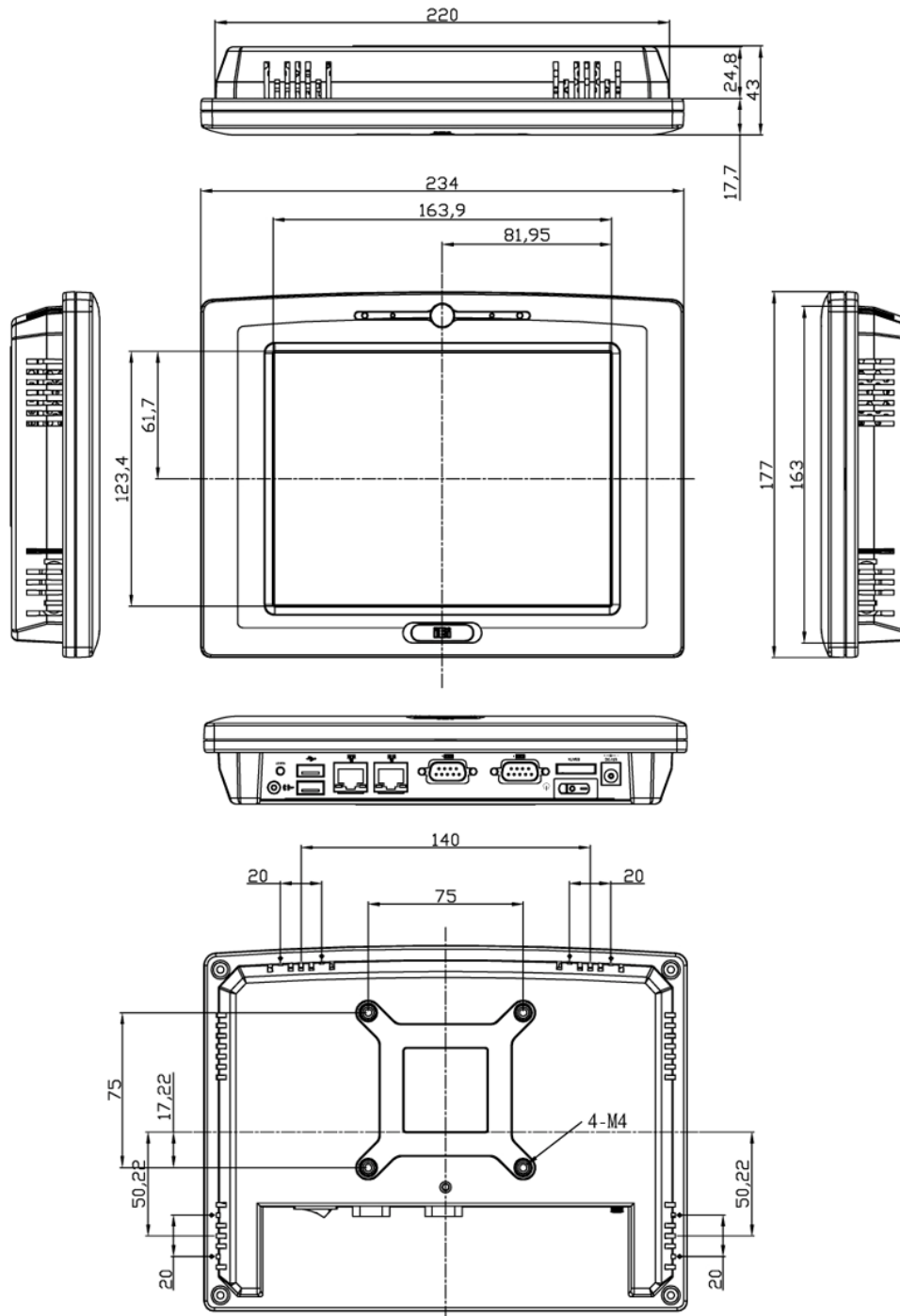
Figure 1-6: AFL-08B-N270 Dimensions (mm)

Chapter

2

Installation

⚠ WARNING:

When installing the AFL-08B-N270, make sure to:

- **Turn the power off**: Chance of electrocution. Turn off the monitor and unplug it from the power supply.
- **Only let certified engineers change the hardware settings**: Incorrect settings can cause irreparable damage to the product.
- **Install the monitor with assistance**: The product is very heavy and may be damaged by drops and bumps. Two or more people should install the panel PC.
- **Take anti-static precautions**: Electrostatic discharge can destroy electrical components and injure the user. Users must ground themselves using an anti-static wristband or similar device.

The installation steps below should be followed in order.

Step 1:   Unpack the panel PC

Step 2:   Check all the required parts are included

Step 3:   Install the CompactFlash® card

Step 4:   Mount the panel PC

Step 5:   Connect peripheral devices to the bottom panel of the panel PC

Step 6:   Connect the power cable

Step 7:   Configure the system

2.1 Unpack the Panel PC

To unpack the panel PC, follow the steps below:

⚠ **WARNING!**

Only remove the protective plastic cover stuck to the front screen after installation. The plastic layer protects the monitor surface during installation process.

Step 1: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 2: Open the outside box.

Step 3: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 4: Open the inside box.

Step 5: Lift the monitor out of the boxes.

Step 6: Remove the peripheral parts box from the main box.

2.1.1 Packing List

The AFL-08B-N270 panel PC is shipped with the following components:

Quantity	Item	Image
1	AFL-08B-N270 panel PC	
1	Power adapter (**P/N**: 63000-FSP036RAB608-RS)	

1	Power cord (**P/N**: 32702-000400-100-RS)	
1	Power transfer cord (**P/N**: 32702-000300-100-RS)	
4	Screw kit (M4*6) (**P/N**: 44403-040061-RS)	
1	Touch pen (**P/N**: 43125-0002C0-00-RS)	
1	User manual CD and driver CD	

Optional	
WIN CE 6.0 ALFCF-W10-N270-CE060	
WIN XPE ALFCF-W10-N270-XPE	
Linux ALFCF-W10-N270-LNX-R10	
Panel mounting kit (**P/N**: AFLPK-12)	
Wall mounting kit (**P/N**: AFLWK-12)	

Rack mounting kit (**P/N**: AFLRK-08)	
VSTAND: (**P/N**: VSTAND-A10)	
Stand (**P/N**:STAND-A08)	
Stand (**P/N**:STAND-100-RS)	
Stand (**P/N**: STAND-150-RS)	
Arm (**P/N**: ARM-11-RS)	
Arm (**P/N**: ARM-31-RS)	

Hybrid card reader (**P/N**: AFLP-08AMSI-U)	
Magnetic stripe reader (**P/N**: AFLP-08AMSR-U)	
60 W DC/DC 9-30 VDC input vehicle power adapter: IDD-930160-KIT	
DC 12 V Input UPS AUPS-A10-R10	
DC 9-36V Input UPS AUPS-A20-R10	

Make sure all the components listed in the packing list are present. If any of these items are missing or damaged, contact the distributor or sales representative immediately.

2.2 Removing the Rear Panel

To access the AFL-08B-N270 internally the rear panel must be removed. To remove the rear panel, please follow the steps below.

Step 1: Remove the retention screws (**Figure 2-1**).

Back cover retention screws

Figure 2-1: Back Cover Retention Screws

Step 2: Lift the cover and pull down the cover a bit to make it possible to fully remove it. More strength is required to separate the cover from the chassis.

WARNING:

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

WARNING:

Over-tightening rear cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

2.3 CF Card Installation

The AFL-08B-N270 has one CF Type II slot inside the rear panel cover. The slot can be accessed after removing the back cover. To install the CF card, follow the instructions below.

Step 1: Locate the CF slot cover. Remove the retention screw and CF slot cover (**Figure 2-2**).
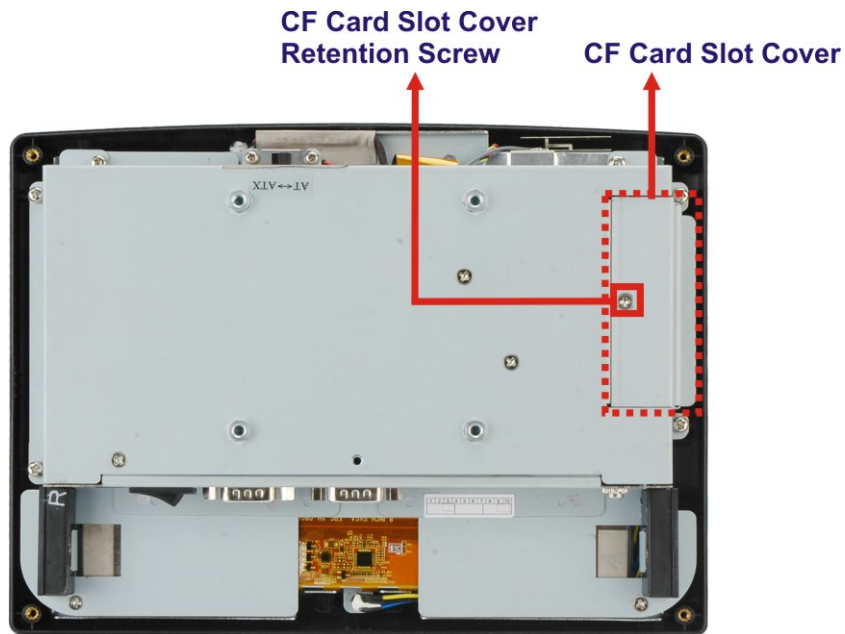
Figure 2-2: CF card slot location

Step 2: Insert a CF card into the slot (**Figure 2-3**).
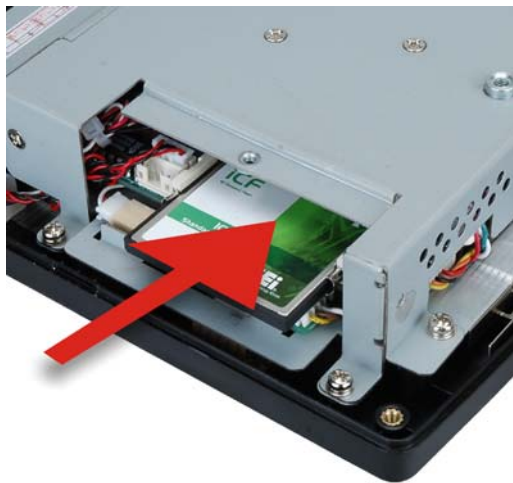
Figure 2-3: CF Card Location

Step 3: Replace the CF card slot cover.

Step 4: Reinsert retention screw.

2.4 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFL-08B-N270. The selection is made through an AT/ATX switch on the top edge of the inner aluminum cover (**Figure 2-4**). To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the top edge of the aluminum cover (**Figure 2-4**).

Figure 2-4: AT/ATX Switch Location

Step 2: Adjust the AT/ATX switch.

2.4.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL-08B-N270 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

2.4.2 ATX Power Mode

With the ATX mode selected, the AFL-08B-N270 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode.   Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- ▪ Security surveillance
- ▪ Point-of-Sale (POS)
- ▪ Advertising terminal

2.5 Jumper Settings

![NOTE icon] **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.	
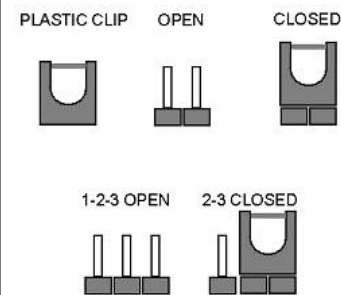
The following jumpers and switches can be changed after removing the rear cover.

Description	Label	Type
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

| CompactFlash® setup | JCF1 | 2-pin header |

Table 2-1: Jumpers

2.5.1 Access the Jumpers

To access the jumpers, remove the back cover. To remove the back cover, please refer to **Section 3.3**.

2.5.2 Preconfigured Jumpers

 WARNING:

Do not change the settings on the jumpers in described here. Doing so may disable or damage the system.

The following jumpers are preconfigured for the AFL-08B-N270. Users should not change these jumpers (**Table 2-2**). The jumper settings of the preconfigured jumpers are listed in Chapter 5 for reference.

Jumper Name	Label	Type
Backlight voltage selection	J_BL1	3-pin header
Inverter power selection	JP12	6-pin header
LVDS voltage selection	J_VLVDS1	3-pin header
MCU LCD type selection	JP14	4-pin header
MCU PWM power selection	JP13	3-pin header
Panel type and resolution	J_LCD_TYPE1	10-pin header
Touchscreen selection	J1	4-pin header
USB2 and USB4 power selection	JP15	6-pin header

Table 2-2: Preconfigured Jumpers

2.5.3 Clear CMOS Jumper

Jumper Label:	**J_CMOS1**
Jumper Type:	2-pin header
Jumper Settings:	See **Table 2-3**
Jumper Location:	See **Figure 2-5**

If the AFL-08B-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 2-3**.

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

Table 2-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 2-5** below.
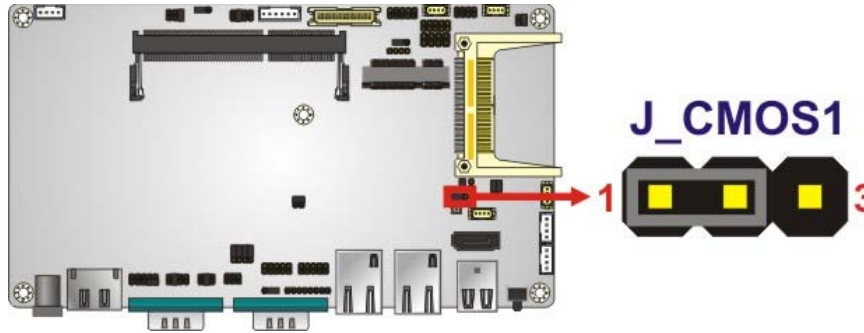
Figure 2-5: Clear CMOS Jumper

2.5.4 COM Port Pin 9 Select

Jumper Label:	**JP8** and **JP10**
Jumper Settings:	See **Table 2-4**
Jumper Location:	See **Figure 2-6**

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 2-4**.

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

Table 2-4: 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 2-5: COM3 Pin 9 Setting Jumper Settings

The COM1 and COM3 Pin 9 Setting jumper locations are shown in **Figure 2-6** below.
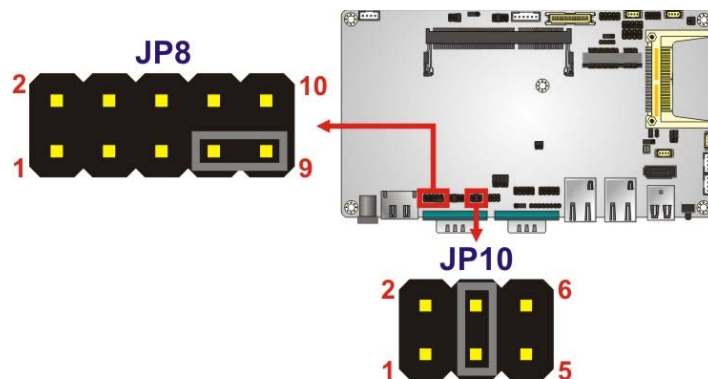
Figure 2-6: COM1 and COM3 Pin 9 Setting Jumper Locations

2.5.4.1 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 2-6: RS-422 Pinouts

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

Table 2-7: RS-485 Pinouts

2.5.5 COM3 RX Function Select Jumper

Jumper Label:	**JP9**
Jumper Type:	8-pin header
Jumper Settings:	See **Table 2-8**
Jumper Location:	See **Figure 2-7**

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 2-8**.

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

Table 2-8: COM3 RX Function Select Jumper Settings

The COM3 RX Function Select jumper location is shown in **Figure 2-7**.
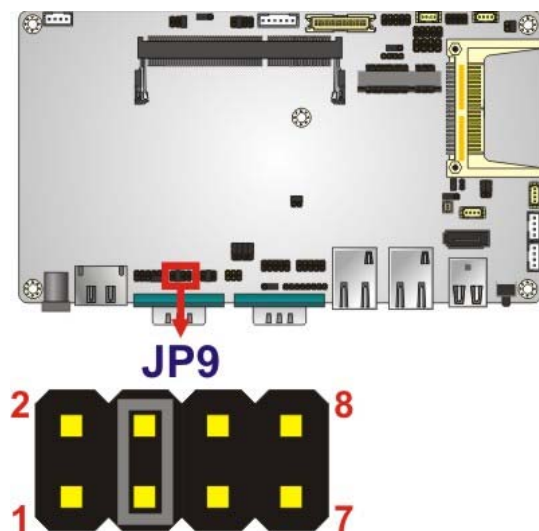
Figure 2-7: COM3 RX Function Select Jumper Location

2.5.6 COM3 TX Function Select Jumper

Jumper Label: JP11

Jumper Type: 6-pin header

Jumper Settings: See **Table 2-9**

Jumper Location: See **Figure 2-8**

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 2-9**.

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

Table 2-9: COM3 TX Function Select Jumper Settings

The COM3 TX Function Select jumper location is shown in **Figure 2-8** below.
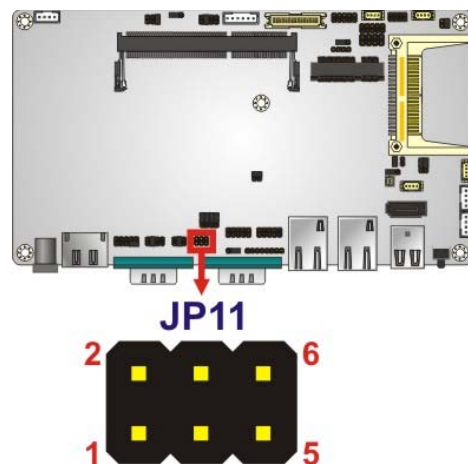
Figure 2-8: COM3 TX Function Select Jumper Pinout Locations

2.5.7 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 2-10**
Jumper Location:	See **Figure 2-9**

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 2-10**.

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 2-10: 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 2-9**.
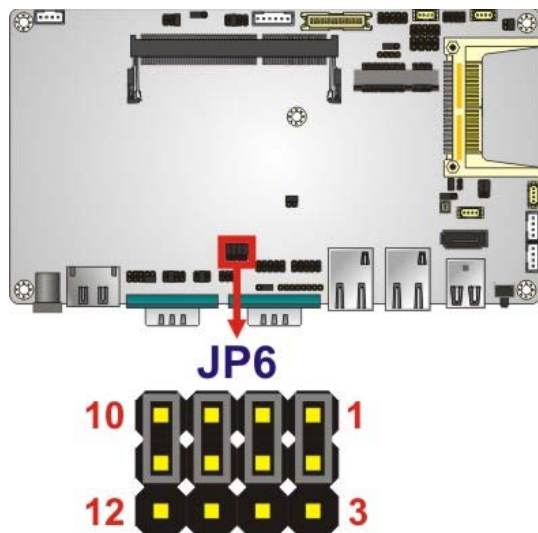
Figure 2-9: COM3 RS-232/422/485 Serial Port Select Jumper Location

2.5.8 CompactFlash® Setup

Jumper Label:	JCF1
Jumper Type:	2-pin header
Jumper Settings:	See Table 2-11
Jumper Location:	See Figure 2-10

The CompactFlash® slot is connected through an IDE connection. This jumper sets the CompactFlash® card as the master or slave IDE device.

Setting	Description
Open	Master (Default)
Short	Slave

Table 2-11: CompactFlash® Setup Jumper Settings
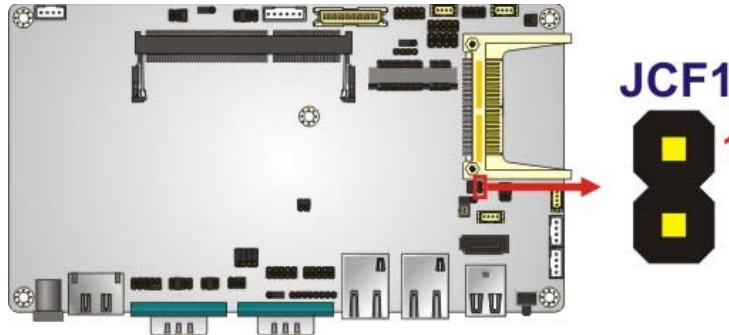
Figure 2-10: CompactFlash® Setup Jumper Location

2.6 Mounting the System

 WARNING!

When mounting the panel PC onto an arm, onto the wall or onto a panel, it is better to have more than one person to help with the installation to make sure the panel PC does not fall down and get damaged.

The four methods of mounting the AFL-08B-N270 are listed below.

- Wall mounting
- Panel mounting
- Arm mounting
- Rack mounting

The four mounting methods are described below.

2.6.1 Wall Mounting

To mount the panel PC onto the wall, 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 screw holes in the bracket 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 2-11**).
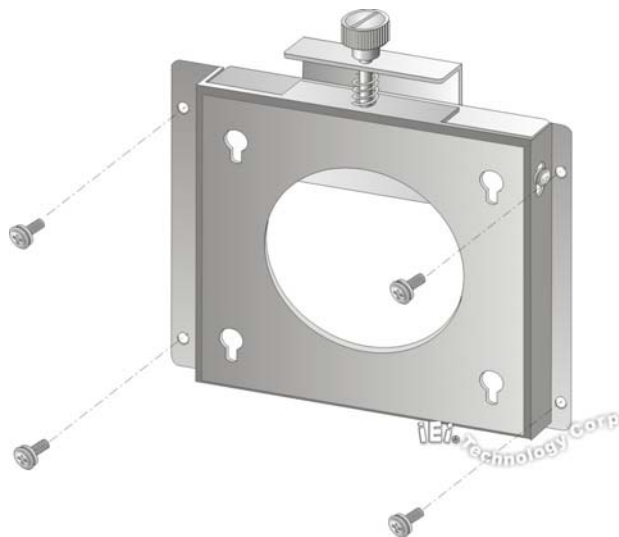
Figure 2-11: Wall-mounting Bracket

Step 6:   Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the panel PC and tighten until the screw shank is secured against the rear panel (**Figure 2-12**).

Step 7:   Align the mounting screws on the monitor rear 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 monitor rests securely in the slotted holes (**Figure 2-12**).

Ensure that all four of the mounting screws fit snuggly into their respective

slotted holes.

![NOTE icon] **NOTE:**

In the diagram below the bracket is already installed on the wall.
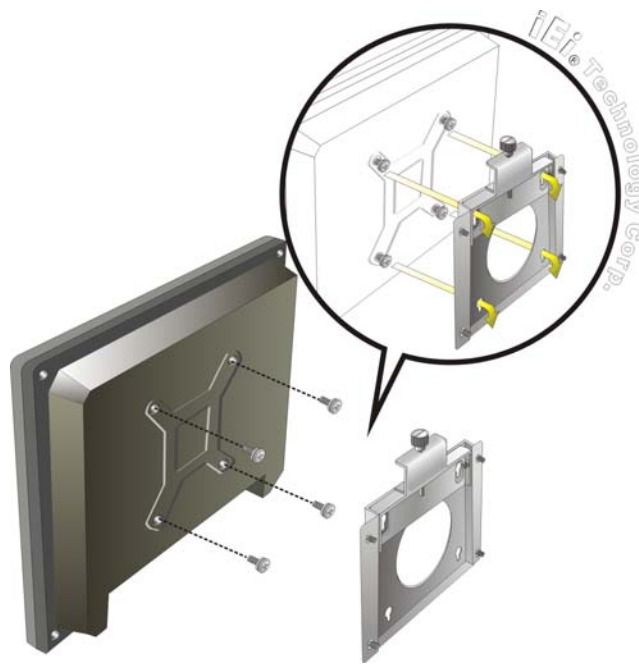
Figure 2-12: Chassis Support Screws

Step 9: Secure the panel PC by fastening the retention screw of the wall-mounting

bracket. (**Figure 2-13**).
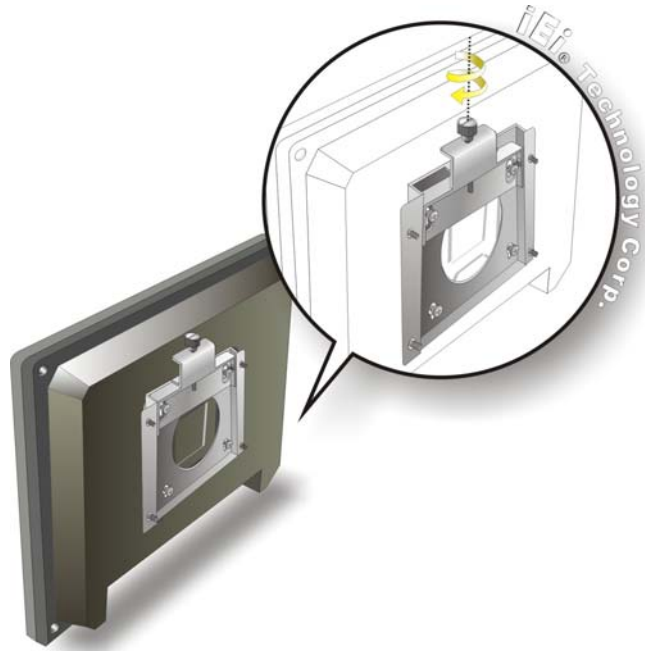
Figure 2-13: Secure the Panel PC

2.6.2 Panel Mounting

To mount the AFL-08B-N270 panel PC into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the panel PC.

Step 2: Cut out a section from the panel that corresponds to the rear panel dimensions of the panel PC. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the panel PC but just large enough for the rear panel of the panel PC to fit through (**Figure 2-14**).
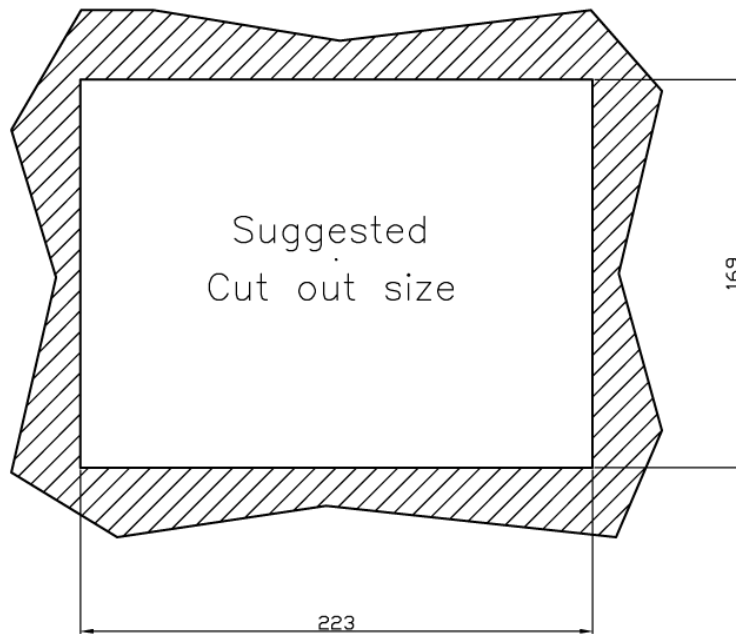
Figure 2-14: AFL-08B-N270 Cutout Dimensions (units in mm)

Step 3: Slide the panel PC through the hole until the aluminum frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the aluminum frame.

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 2-15**).
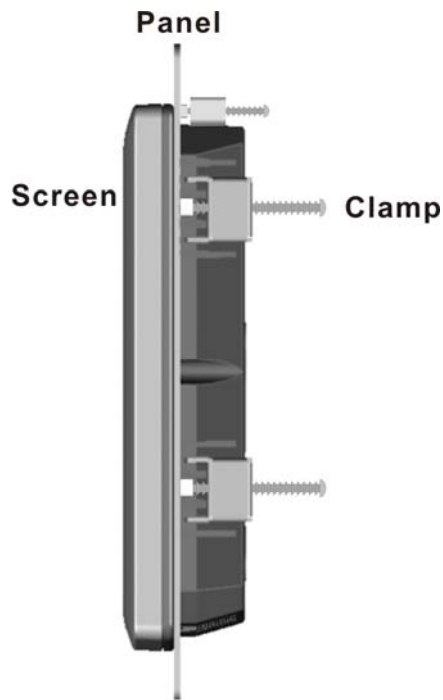
Figure 2-15: Tighten the Panel Mounting Clamp Screws

2.6.3 Cabinet and Rack Installation

The AFL-08B-N270 panel PC can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:

NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the AFL-08B-N270 panel PC and the rack/cabinet into which the AFL-08B-N270 is installed.

Step 1: Slide the rear of the AFL-08B-N270 panel PC through the rack/cabinet bracket until the aluminum frame is flush against the front of the bracket (**Figure 2-16**).
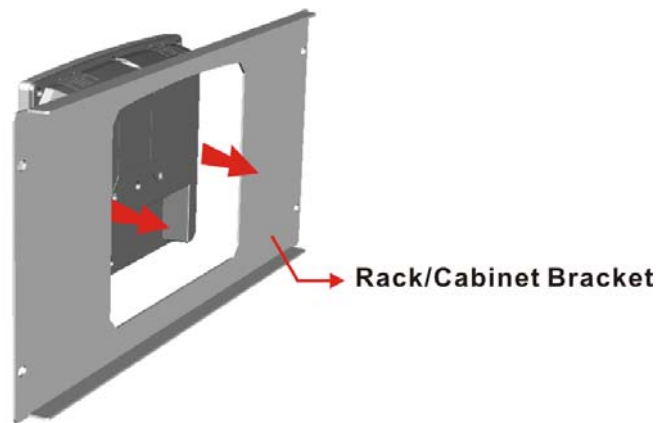
Figure 2-16: The Rack/Cabinet Bracket

Step 2:   Insert the rack mounting clamps into the pre-formed holes along the edges of the panel PC, behind the ABS/PC plastic frame.

Step 3:   Tighten the screws that pass through the rack mounting clamps until the plastic caps at the front of all the screws are firmly secured to the bracket (**Figure 2-17**).
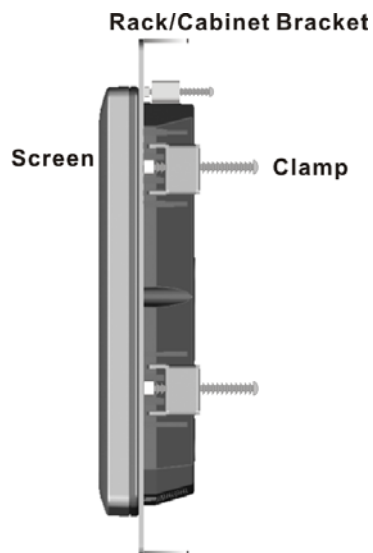
Figure 2-17: Secure the Rack/Cabinet Bracket

Step 4:   Slide the panel PC with the attached rack/cabinet bracket into a rack or cabinet (**Figure 2-18**).
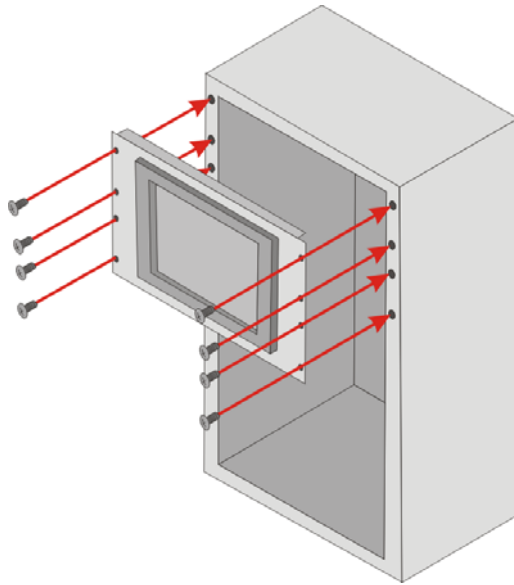
Figure 2-18: Install into a Rack/Cabinet

Step 5: Once the panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 2-18**).

2.6.4 Arm Mounting

The AFL-08B-N270 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75mm interface pad. To mount the panel PC on an arm, please follow the steps below.

Step 1: Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the mounting arm please ensure that it is VESA compliant and that the arm has a 75 mm interface pad. If it is not VESA compliant, it cannot be used to support the AFL-08B-N270 panel PC.

Step 2: Once the mounting arm has been firmly attached to the surface, lift the panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the panel PC. The arm mount retention screw holes are shown in **Figure 2-19**.
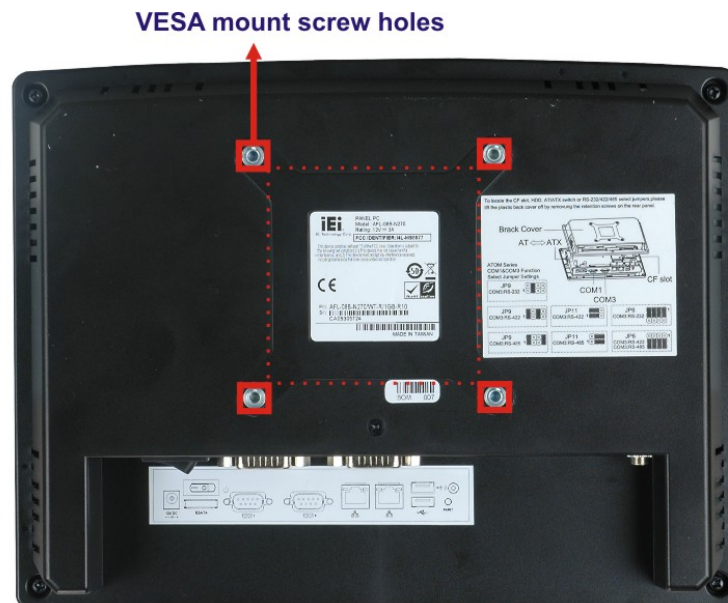
Figure 2-19:AFL-08B-N270 Arm Mounting Retention Screw Holes

Step 4: Secure the panel PC to the interface pad by inserting the retention screws through the bottom of the mounting arm interface pad and into the panel PC.

2.7 Bottom Panel Connectors

All I/O interface connections of the AFL-08B-N270 are found on the bottom panel.

2.7.1 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors** on the bottom panel of the AFL-08B-N270

Series.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with one of

the RJ-45 connectors on the bottom panel of the AFL-08B-N270. See **Figure**

2-20.
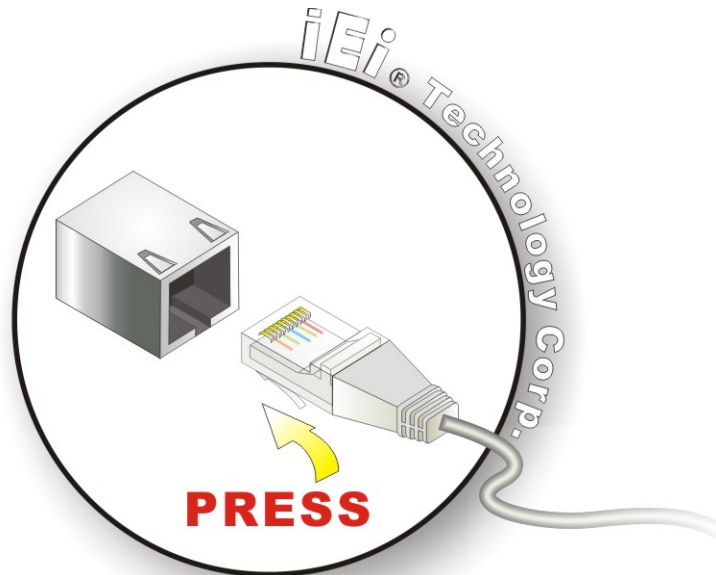
Figure 2-20: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN

cable RJ-45 connector into the onboard RJ-45 connector.

2.7.2 Serial Device Connection and RS-422/485 Pinouts

The AFL-08B-N270 has two DB-9 connectors for connecting to RS-232 and RS-422/485
serial devices on the bottom panel. Follow the steps below to connect a serial device to
the panel PC.   Please see **Section 2.7.2.1** below for the RS-422 and RS-485 pinouts of
Serial Port COM3.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in

Chapter 3.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into

the DB-9 connector on the external peripheral interface. See **Figure 2-21**.
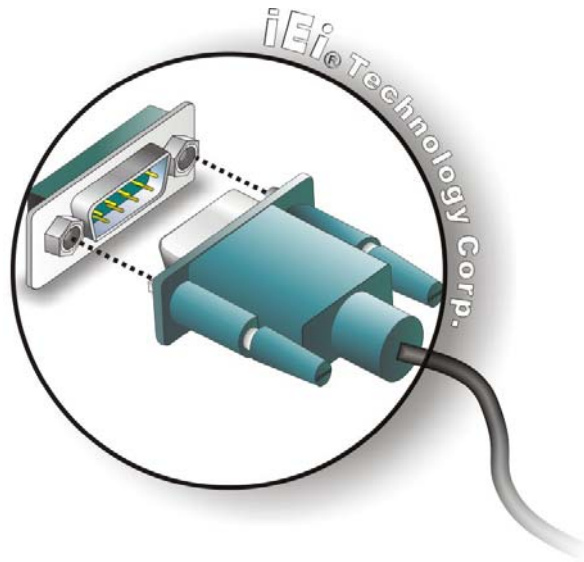
Figure 2-21: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external

interface by tightening the two retention screws on either side of the connector.

2.7.2.1 COM3 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM3 are detailed
below.

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

Table 2-12: RS-422 Pinouts

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

Table 2-13: RS-485 Pinouts

2.7.3 USB Device Connection

There are two external USB 2.0 connectors. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 2**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 2-22**.
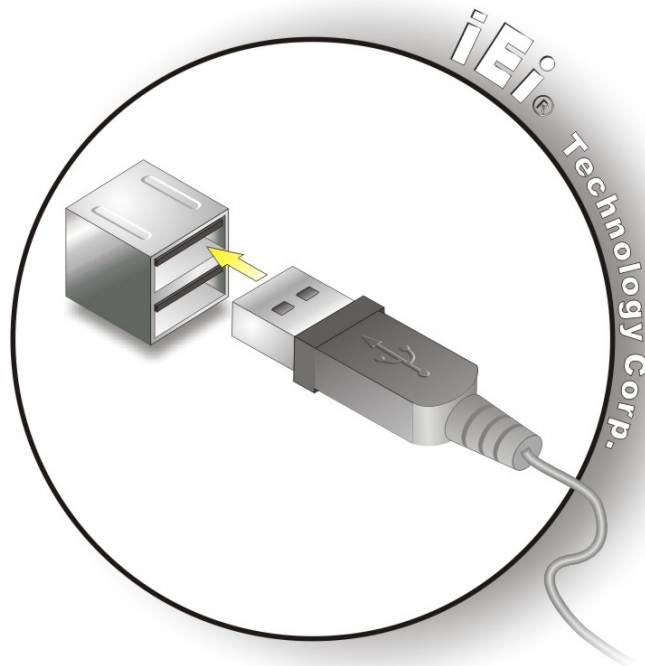
Figure 2-22: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

2.8 Power Connection

The power cable connects the power adapter to the power outlet. The power adapter and power cable are required for operation of the panel PC.

Step 1: Connect the power adapter to the panel PC.

Step 2: Connect the power cable to the included power adapter.

Step 3: Connect the power cable to the power outlet.

2.9 Driver Installation

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; each driver is in its own directory on the driver CD:

- Chipset driver
- Graphics driver
- LAN driver
- Audio driver
- Touch panel driver
- Wireless LAN card driver
- Bluetooth driver (optional)

NOTE:

When installing the Wireless LAN card driver, make sure to select the **RT3090** folder which indicates the WLAN card model installed on the system.

Chapter

3

System Maintenance

3.1 System Maintenance Introduction

⚠️ **WARNING!**

Turn off the power before removing the back cover. Risk of electrocution. Severe damage to the product and injury to the body may occur if internal parts are touched while the power is still on.

⚠️ **WARNING!**

Take antistatic precautions when working on the internal components. Some internal components are easily damaged or destroyed by electrostatic discharge. Take antistatic precautions to prevent electrostatic discharge.

If the components of the AFL-08B-N270 fail they must be replaced. Components that can be replaced include (see **Figure 3-1**):

- CF Module
- Wireless LAN module
- SO-DIMM module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL-08B-N270 are described below.
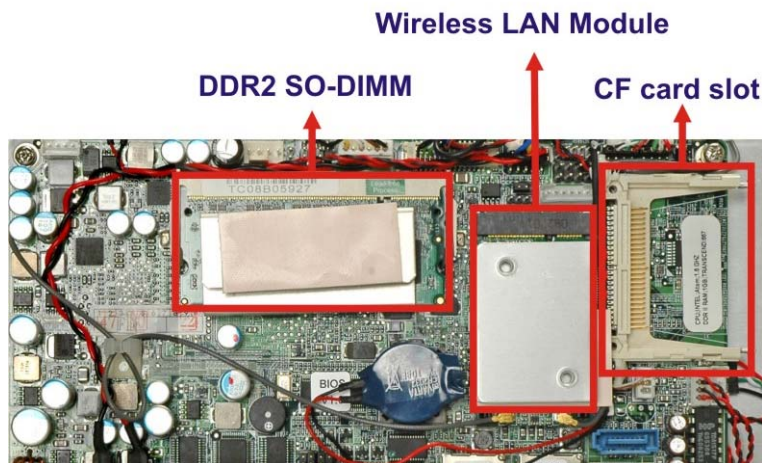
Figure 3-1: Replaceable Components

3.2 Motherboard Replacement

In the case of motherboard failure, please contact an IEI sales representative, reseller or system vendor. The motherboard is accessible after opening the rear cover.

3.3 Cover Removal

To access the AFL-08B-N270 internally the back panel must be removed. To remove the back panel, please follow the steps below.

Step 1: Follow all anti-static procedures. See Section A.1.2.

Step 2: **Turn off the power**. See **Section 3.1**.

Step 3: **Remove the retention screws on the back**. Remove the retention screws

(**Figure 3-2**) from the rear panel.

Back cover retention screws

Figure 3-2: Back Cover Retention Screws

Step 4: Lift the cover and pull down the cover a bit to make it possible to fully remove it. More strength is required to separate the cover from the chassis.

Step 5: Remove the retention screws indicated by the arrows and circles in **Figure 3-3** from the aluminum cover.

Figure 3-3: Aluminum Cover Retention Screws

Step 6: Lift off the cover.

3.4 Memory Module Replacement

The panel PC is preinstalled with a 1 GB DDR2 memory module. If the memory module is fail, follow the instructions below to replace the memory module.

Step 1: Remove the aluminum back cover. See **Section 3.3** above.

Step 2: Locate the DDR2 SO-DIMM on the motherboard (**Figure 3-4**).

Figure 3-4:AFL-08B-N270 SO-DIMM Socket Location

Step 3: Remove the SO-DIMM by pulling both the spring retainer clips outward from the socket.

Step 4: Grasp the SO-DIMM by the edges and carefully pull it out of the socket.

Step 5: Install the new SO-DIMM by pushing it into the socket at an angle (**Figure 3-5**).

Step 6: Push the SO-DIMM down. The spring retainer clips on the SO-DIMM socket clip into place and secure the SO-DIMM in the socket.
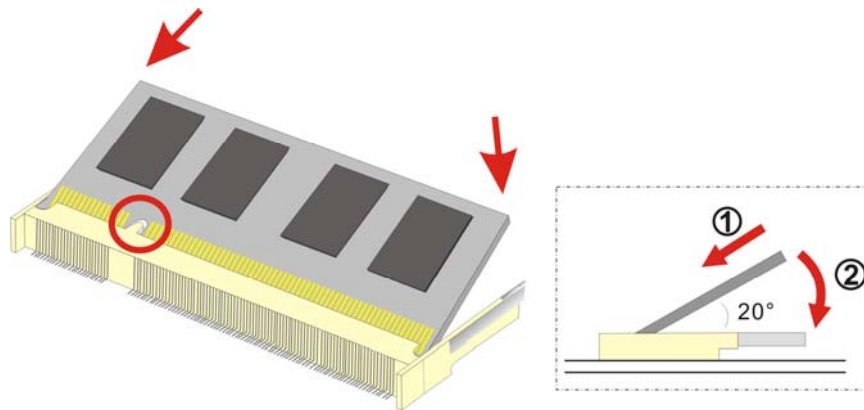
Figure 3-5: DDR2 SO-DIMM Module Installation

3.5 CF Card Replacement

The AFL-08B-N270 has one CF Type II slot. Follow the instructions below to replace the CF card.

Step 1: **Follow all anti-static procedures**. See **Section A.1.2**.

Step 2: **Turn off the power**. See **Section 3.1**.

Step 3: **Follow the instruction listed in Section 2.3 to replace the CF card.**

3.6 Reinstalling the Covers

WARNING:

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

WARNING:

Over-tightening rear cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

When maintenance procedures are complete, please make sure all the covers are replaced, including the following:

- Aluminum cover
- CF card slot cover
- Plastic rear cover

Chapter

4

BIOS Options

4.1 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.

4.1.1 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.

4.1.2 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 4-1: BIOS Navigation Keys

4.1.3 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.

4.1.4 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**.

4.1.5 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.

4.2 Main

The **Main** menu gives an overview of the basic system information.

```
                        BIOS SETUP UTILITY
    Main    Advanced    PCIPNP    Boot    Security  Chipset    Exit

 System Overview
 _____

 AMIBIOS
 Version    :08.00.15
 Build Date :10/22/09
 ID:        :H731MR11

 Processor
 Intel® Atom CPU N270 @ 1.60GHz
 Speed      :1600MHz
 Count      :1
                                              ←→    Select Screen
                                              ↑ ↓   Select Item
 System Memory                                Enter Go to SubScreen
 Size       :1016MB                           F1    General Help
                                              F10   Save and Exit
 System Time                 [14:20:27]       ESC   Exit
 System Time                 [Tue 05/06/2008]

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```

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 motherboard
- 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.

4.3 Advanced

Use the **Advanced** menu 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.

```
                         BIOS SETUP UTILITY
    Main    Advanced    PCIPNP      Boot    Security  Chipset     Exit

 Advanced Settings
 _____
 WARNING: Setting wrong values in below sections may
 cause system to malfunction

 > CPU Configuration
 > IDE Configuration
 > SuperIO Configuration                    ←→    Select Screen
 > Hardware Health Configuration            ↑↓    Select Item
 > Power Configuration                      Enter Go to SubScreen
 > Remote Access Configuration              F1    General Help
 > USB Configuration                        F10   Save and Exit
                                            ESC   Exit


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```

BIOS Menu 2: Advanced

4.3.1 CPU Configuration

Use the **CPU Configuration** menu to view detailed CPU specifications and configure the CPU.

```
                         BIOS SETUP UTILITY
    Main    Advanced    PCIPNP      Boot    Security  Chipset     Exit

 Configure Advanced CPU Settings
 Module Version:3F.10
 _____
 Manufacturer  :Intel®
 Intel® Atom CPU N270  @ 1.60GHz
 Frequency     :1.60GHz
 FSB Speed     :532MHz
                                            ←→    Select Screen
 Cache L1      : 24KB                       ↑↓    Select Item
 Cache L2      : 512KB                      Enter Go to SubScreen
                                            F1    General Help
 Ratio Actual Value:12                      F10   Save and Exit
                                            ESC   Exit


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```

BIOS Menu 3: CPU Configuration

The CPU Configuration menu 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
- ▪ Ratio Actual Value: the clock multiplier

4.3.2 IDE Configuration

Use the **IDE Configuration** menu to change and/or set the configuration of the IDE devices installed in the system.

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPNP    Boot    Security   Chipset    Exit

 IDE Configuration
 _____
 ATA/IDE Configuration              [Compatible]
   Legacy IDE Channels              [SATA Pri, PATA Sec]

 > Primary IDE Master              : [Not Detected]
 > Primary IDE Slave               : [Not Detected]
 > Secondary IDE Master            : [Not Detected]    ←→   Select Screen
 > Secondary IDE Slave             : [Not Detected]    ↑ ↓   Select Item
                                                       Enter Go to SubScreen
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC   Exit


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```
   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 [SATA Pri, PATA Sec]**

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

➔ **SATA Pri, PATA Sec**　DEFAULT　The SATA drives are enabled on the primary IDE channel, traditional IDE devices are enabled on the secondary channel

➔ **PATA Only**　　　　　　　Only the IDE devices are enabled

➔ **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 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 are shown.

4.3.2.1 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. Almost all settings are set to auto-detect, which will work for all modern drives.

```
                         BIOS SETUP UTILITY
   Main    Advanced   PCIPNP     Boot    Security  Chipset     Exit

  Primary IDE Master
  _____
  Device        :Not Detected

  Type                            [Auto]
  LBA/Large Mode                  [Auto]
  Block (Multi-Sector Transfer)   [Auto]               ←→   Select Screen
  PIO Mode                        [Auto]               ↑ ↓  Select Item
  DMA Mode                        [Auto]               Enter Go to SubScreen
  S.M.A.R.T.                      [Auto]               F1   General Help
  32Bit Data Transfer             [Enabled]            F10  Save and Exit
                                                       ESC  Exit


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```
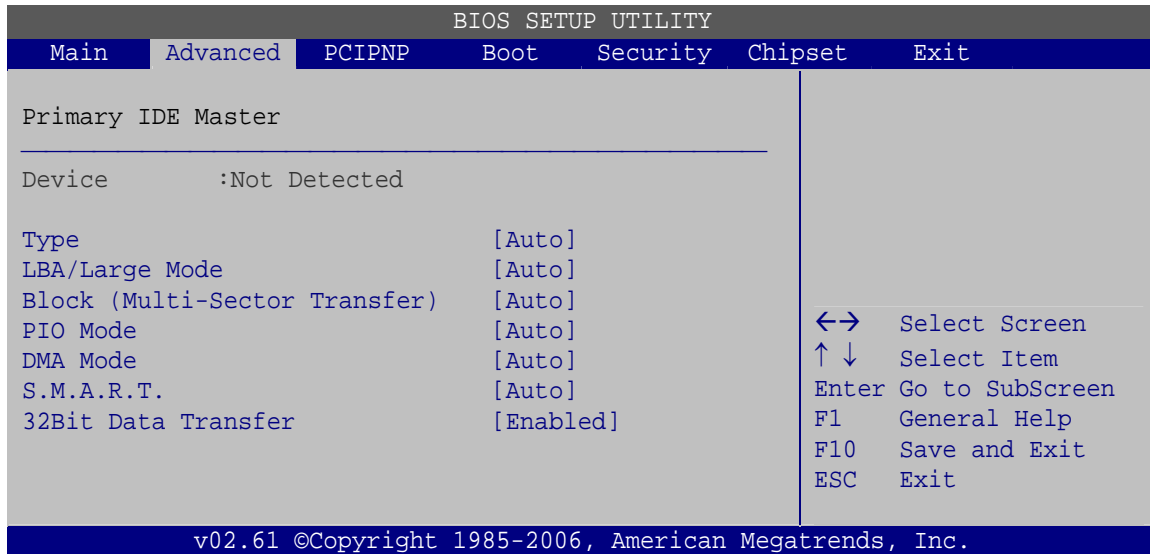
BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **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
- **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.
- **DMA**: Indicates the 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 3.3 MB/s

➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s

➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s

➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s

➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s

(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.

➔ **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.

4.3.3 Super IO Configuration

Use the **Super IO Configuration** menu to set or change the configurations for the FDD controllers, parallel ports and serial ports.
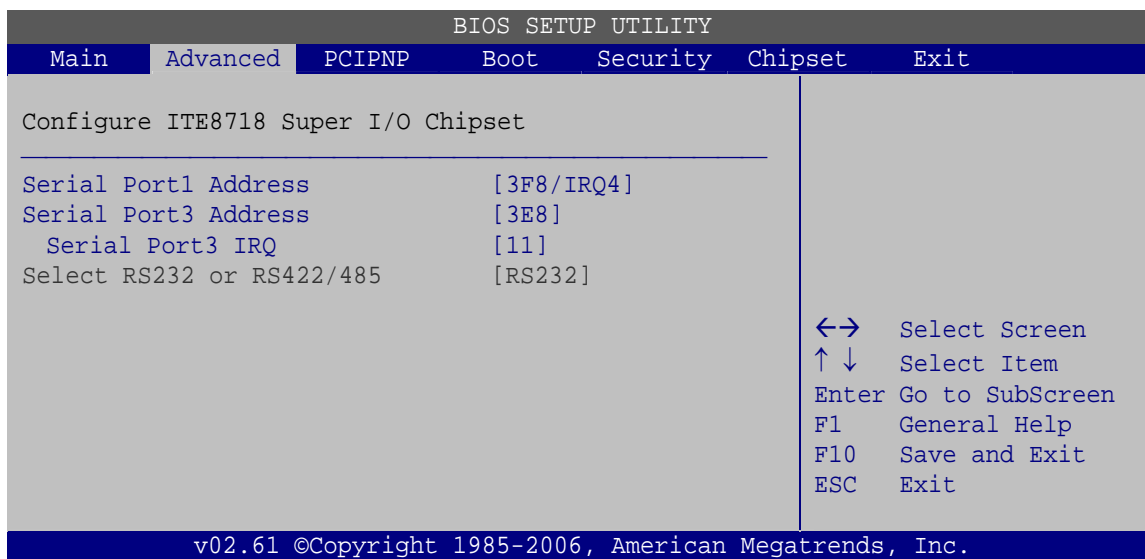
```
                         BIOS SETUP UTILITY
   Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

 Configure ITE8718 Super I/O Chipset
 _____

 Serial Port1 Address             [3F8/IRQ4]
 Serial Port3 Address             [3E8]
  Serial Port3 IRQ                [11]
 Select RS232 or RS422/485        [RS232]

                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 Enter Go to SubScreen
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit

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```
BIOS Menu 6: Super IO Configuration

➔ **Serial Port 1 Address [3F8/IRQ4]**

Sets the port address and IRQ of serial port 1.

- ▪ Disabled
- ▪ 3F8/IRQ4   DEFAULT
- ▪ 2F8/IRQ3
- ▪ 3E8/IRQ4
- ▪ 2E8/IRQ3

➔ **Serial Port 3 Address [3E8]**

Sets the port address of serial port 3.

- ▪ Disabled
- ▪ 3E8   DEFAULT
- ▪ 2E8
- ▪ 2F0
- ▪ 2E0

➔ **Serial Port 3 IRQ [IRQ4]**

Sets the interrupt address of serial port 3.

- ▪ 10
- ▪ 11   DEFAULT

➔ **Select RS232 or RS422/RS485 [RS232]**

Sets the communications protocol for serial port 3. This is set using a hardware jumper inside the system. This option can only be changed if the jumper setting is set to allow it.

- ▪ RS232   DEFAULT
- ▪ RS422/RS485

4.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu shows the operating temperature, fan speeds and system voltages.

```
                            BIOS SETUP UTILITY
     Main     Advanced    PCIPNP    Boot    Security  Chipset    Exit

  Hardware Health Event Monitoring
  _____

  CPU Temperature                    :53ºC/127ºF
  System Temperature                 :42ºC/107F

  CPU Core                           :1.184 V
  +1.05V                             :1.040 V
  +3.30V                             :3.290 V                ←→    Select Screen
  +5.00V                             :4.972 V                ↑ ↓   Select Item
  +12.0V                             :12.224V                Enter Go to SubScreen
  +1.50V                             :1.472 V                F1    General Help
  +1.80V                             :1.792 V                F10   Save and Exit
  5VSB                               :4.919 V                ESC   Exit
  VBAT                               :3.232 V

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```
BIOS Menu 7: Hardware Health Configuration

4.3.5 Power Configuration

The **Power Configuration** menu configures the power related settings.

```
                            BIOS SETUP UTILITY
     Main     Advanced    PCIPNP    Boot    Security  Chipset    Exit

  Auto Power Button Status        [Disabled]

  > ACPI Configuration
  > APM Configuration


                                                           ←→    Select Screen
                                                           ↑ ↓   Select Item
                                                           Enter Go to SubScreen
                                                           F1    General Help
                                                           F10   Save and Exit
                                                           ESC   Exit

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```
BIOS Menu 8: Power Configuration

4.3.5.1 ACPI Configuration

Use the **ACPI Configuration** menu (**BIOS Menu 9**) to select the ACPI state when the system is suspended.

```
                         BIOS SETUP UTILITY
    Main     Advanced   PCIPNP    Boot    Security  Chipset     Exit

  ACPI Settings
  ──────────────────────────────────────────────────────────
  Suspend mode                    [S1 (POS)]


                                                ←→   Select Screen
                                                ↑ ↓  Select Item
                                                Enter Go to SubScreen
                                                F1   General Help
                                                F10  Save and Exit
                                                ESC  Exit

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```

BIOS Menu 9: General ACPI Configuration

➔ **Suspend Mode [S1(POS)]**

Use the **Suspend Mode** 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.

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

4.3.5.2 APM Configuration

The **APM Configuration** menu allows the advanced power management options to be configured.

```
                          BIOS SETUP UTILITY
   Main    Advanced   PCIPNP    Boot    Security  Chipset     Exit

 APM Configuration
 _____

 Restore on AC Power Loss           [Last State]
 Power Button Mode                  [On/Off]

 Advanced Resume Event Controls
   Resume On Ring                   [Disabled]
   Resume on PCI-Express WAKE#      [Enabled]          ←→    Select Screen
   Resume on RTC Alarm              [Disabled]         ↑↓    Select Item
                                                       Enter Go to SubScreen
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC   Exit

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```

BIOS Menu 10: APM 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 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]**

The **Resume on PCI-Express WAKE#** BIOS option specifies if the system is roused from a suspended or standby state when there is activity on the PCI-Express bus.

➔ **Disabled** Wake event not generated by PCI-Express activity

➔ **Enabled** DEFAULT Wake event generated by PCI-Express 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.

4.3.6 Remote Access Configuration

Use the **Remote Access Configuration** menu 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 SETUP UTILITY
   Main     Advanced   PCIPNP    Boot    Security  Chipset      Exit

 Configure Remote Access type and parameters
 _____

 Remote Access                    [Disabled]


                                                    ←→    Select Screen
                                                    ↑↓    Select Item
                                                    Enter Go to SubScreen
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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```
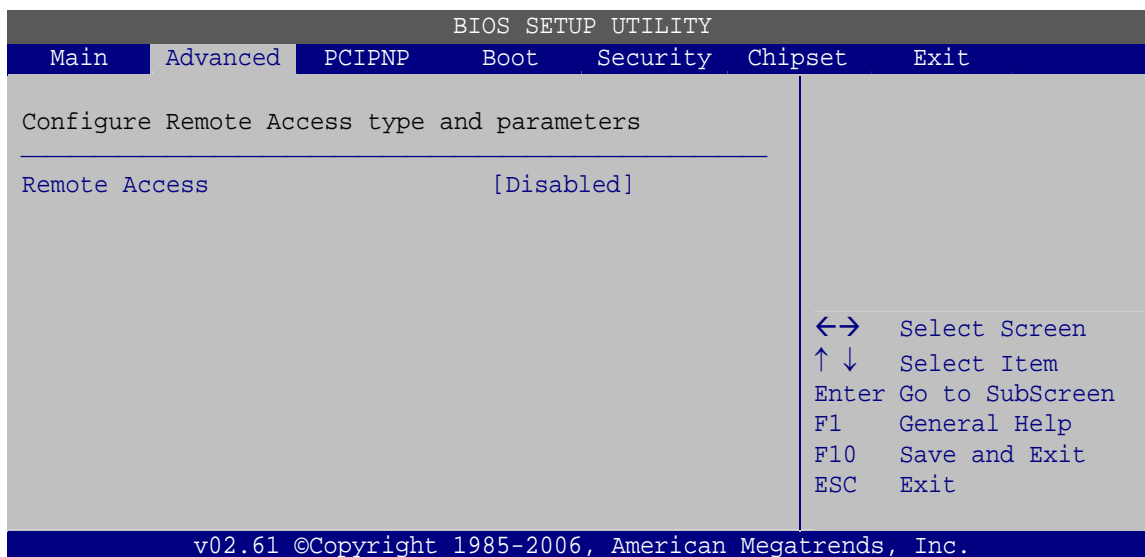
BIOS Menu 11: Remote Access Configuration

➔ **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

➔ **COM3** System is remotely accessed through COM3

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

4.3.7 USB Configuration

Use the **USB Configuration** menu to read USB configuration information and configure the USB settings.

```
                              BIOS SETUP UTILITY
   Main     Advanced    PCIPNP     Boot     Security   Chipset      Exit

 USB Configuration
 ───────────────────────────────────────────────────
 Module Version – 2.24.0-11.4

 USB Devices Enabled:
          None

 USB Functions                   [Enabled]           ←→     Select Screen
 USB 2.0 Controller              [Enabled]           ↑ ↓    Select Item
 Legacy USB Support              [Enabled]           Enter Go to SubScreen
 USB 2.0 Controller Mode         [HiSpeed]           F1    General Help
                                                     F10   Save and Exit
                                                     ESC   Exit

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```
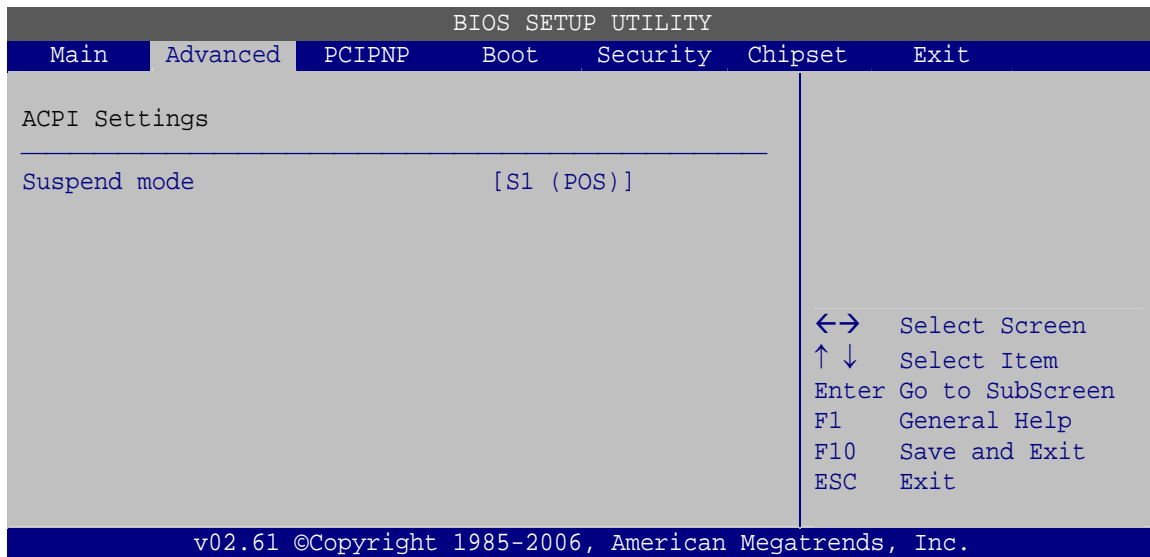
BIOS Menu 12: USB Configuration

➔ **USB Function [Enabled]**

Use the **USB Function** BIOS option to enable or disable USB function support.

➔ **Disabled** USB function support disabled

➔ **Enabled** DEFAULT USB function support enabled

➔ **USB 2.0 Controller [Enabled]**

Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

➔ **Enabled** DEFAULT USB 2.0 controller enabled

➔ **Disabled** USB 2.0 controller 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]**

Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

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

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

4.4 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 SETUP UTILITY
   Main    Advanced    PCIPNP      Boot    Security   Chipset      Exit

  Advanced PCI/PnP Settings
  _____
  WARNING: Setting wrong values in below sections
           may cause system to malfunction
  IRQ3                          [Reserved]
  IRQ4                          [Reserved]
  IRQ5                          [Available]
  IRQ7                          [Available]
  IRQ9                          [Available]
  IRQ10                         [Reserved]
  IRQ11                         [Reserved]
  IRQ14                         [Available]
  IRQ15                         [Available]


  DMA Channel 0                 [Available]
  DMA Channel 1                 [Available]
  DMA Channel 3                 [Available]          ←→   Select Screen
  DMA Channel 5                 [Available]          ↑↓   Select Item
  DMA Channel 6                 [Available]          Enter Go to SubScreen
  DMA Channel 7                 [Available]          F1    General Help
                                                     F10   Save and Exit
  Reserved Memory Size          [Disabled]           ESC   Exit

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```

BIOS Menu 13: PCI/PnP Configuration

➔ **IRQ#**

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

➔ **Available**   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**   16 KB reserved for legacy ISA devices

➔ **32K**   32 KB reserved for legacy ISA devices

➔ **64K**   54 KB reserved for legacy ISA devices

4.5 Boot

Use the **Boot** menu to configure system boot options.

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPNP    Boot    Security   Chipset    Exit

 Boot Settings
 _____

 > Boot Settings Configuration


                                              ←→    Select Screen
                                              ↑ ↓   Select Item
                                              Enter Go to SubScreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```
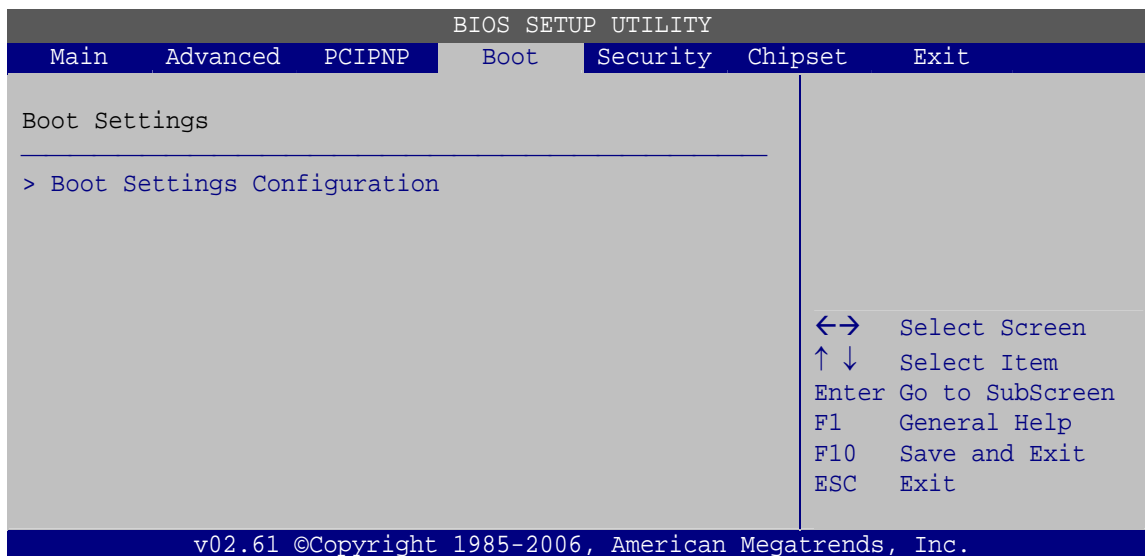
BIOS Menu 14: Boot

4.5.1 Boot Settings Configuration

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

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPNP    Boot    Security   Chipset    Exit

 Boot Settings Configuration
 _____

 Quick Boot                    [Enabled]
 Quiet Boot                    [Enabled]
 AddOn ROM Display Mode        [Force BIOS]
 Bootup Num-Lock               [On]
 Boot From LAN Support         [Disabled]
 Spread Spectrum Function      [Disabled]    ←→    Select Screen
                                              ↑ ↓   Select Item
                                              Enter Go to SubScreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```

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]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS** DEFAULT The system forces third party BIOS to display during system boot.

➔ **Keep Current** The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must 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]**

Use the **BOOT From LAN Support** option to enable 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

➔ **Spread Spectrum Function [Disabled]**

The **Spread Spectrum Function** option can help to improve CPU EMI issues.

➔ **Disabled** DEFAULT   The spread spectrum mode is disabled

➔ **Enabled**   The spread spectrum mode is enabled

4.6 Security

Use the **Security** menu to set system and user passwords.

```
                         BIOS SETUP UTILITY
   Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

 Security Settings
 _____

 Supervisor Password     :Not Installed
 User Password           :Not Installed

 Change Supervisor Password
 Change User Password
                                              ←→    Select Screen
                                              ↑ ↓   Select Item
                                              Enter Go to SubScreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```
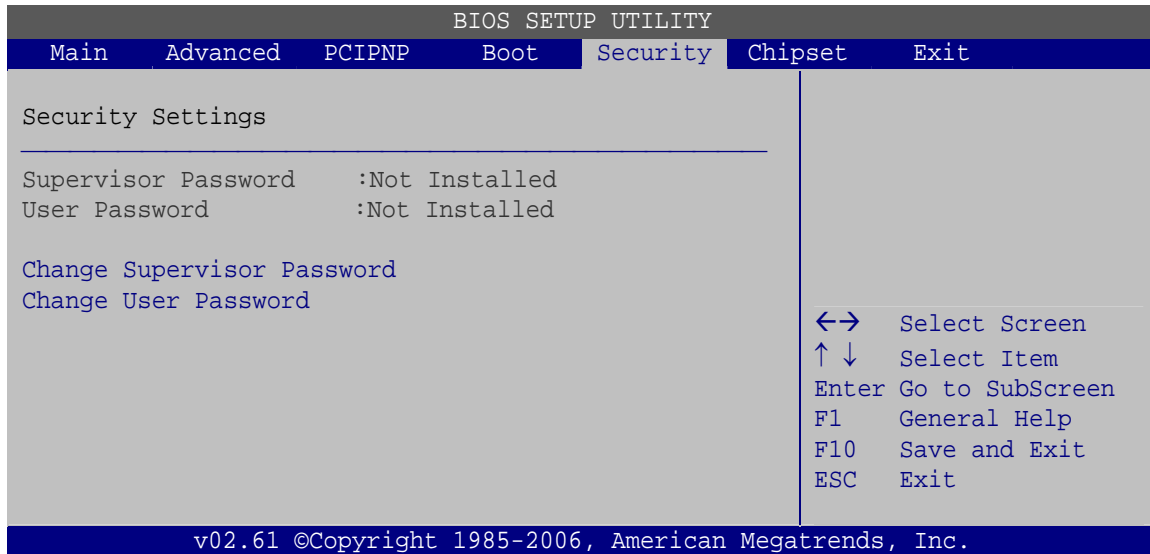
BIOS Menu 16: Security

➔ **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**.

4.7 Chipset

Use the **Chipset** menu to access the Northbridge and Southbridge configuration menus

![WARNING icon] **WARNING!**

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

```
                        BIOS SETUP UTILITY
   Main    Advanced   PCIPNP     Boot    Security  Chipset    Exit

Advanced Chipset Settings
_____

WARNING: Setting wrong values in below section
         may cause system to malfunction.

> North Bridge Configuration
> South Bridge Configuration
                                            ←→    Select Screen
                                            ↑ ↓   Select Item
                                            Enter Go to SubScreen
                                            F1    General Help
                                            F10   Save and Exit
                                            ESC   Exit

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```
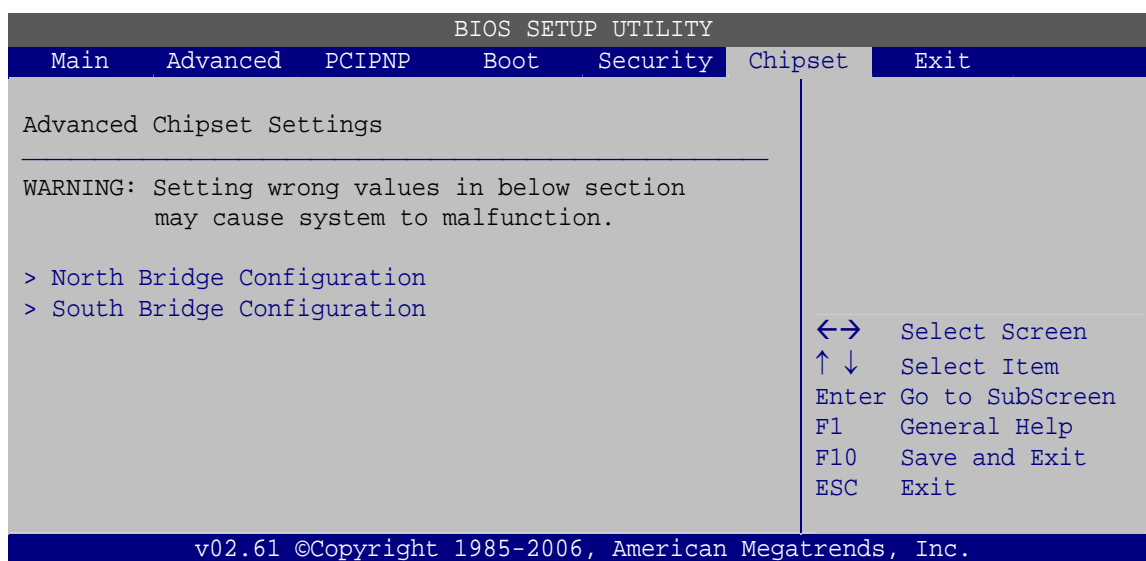
BIOS Menu 17: Chipset

4.7.1 North Bridge Configuration

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

```
                      BIOS SETUP UTILITY
   Main    Advanced   PCIPNP    Boot    Security  Chipset    Exit

 North Bridge Chipset Configuration
 ─────────────────────────────────────────────
 Memory Hole                     [Disabled]
 Internal Graphics Mode Select   [Enabled, 8MB]

 Video Function Configuration
 ─────────────────────────────────────────────
 DVMT Mode Select                [DVMT Mode]        ←→   Select Screen
   DVMT/FIXED Memory             [Maximum DVMT]     ↑ ↓  Select Item
                                                    Enter Go to SubScreen
 LFP Panel Type                  [by H/W]           F1   General Help
 LFP Current Jumper Setting      [1024x600 18b]     F10  Save and Exit
                                                    ESC  Exit

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```
BIOS Menu 18:Northbridge Chipset Configuration

➔ **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15 MB and 16 MB 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

➔ **15 MB–16 MB**   Between 15 MB and 16 MB of memory is reserved for ISA expansion cards

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

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**

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

➔ **Enable, 8 MB**   DEFAULT   8 MB 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 [Maximum DVMT]**

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 128 MB. Configuration options are listed below.

- 64 MB
- 128 MB
- Maximum DVMT   DEFAULT

➔ **LFP Panel Type [by H/W]**

Use the **LFP Panel Type** to determine the LCD panel resolution. Configuration options are listed below:

- 640x480   18b
- 800x480   18b

- 800x600   18b

- 1024x768   18b

- 1280x1024   36b

- 1400x1050   36b

- 1440x900   36b

- 1600x1200   36b

- 1024x600   18b

- by H/W

➔ **LFP Current Jumper Setting [1024x600   18b]**

Displays the resolution setting of the LFP port by the on-board jumper.

4.7.2 South Bridge Configuration

The **South Bridge Configuration** menu the Southbridge chipset to be configured.

```
                          BIOS SETUP UTILITY
   Main     Advanced    PCIPNP      Boot    Security  Chipset    Exit

 South Bridge Chipset Configuration
 _____
 Audio Controller                   [Auto]



                                            ←→   Select Screen
                                            ↑ ↓  Select Item
                                            Enter Go to SubScreen
                                            F1   General Help
                                            F10  Save and Exit
                                            ESC  Exit

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```
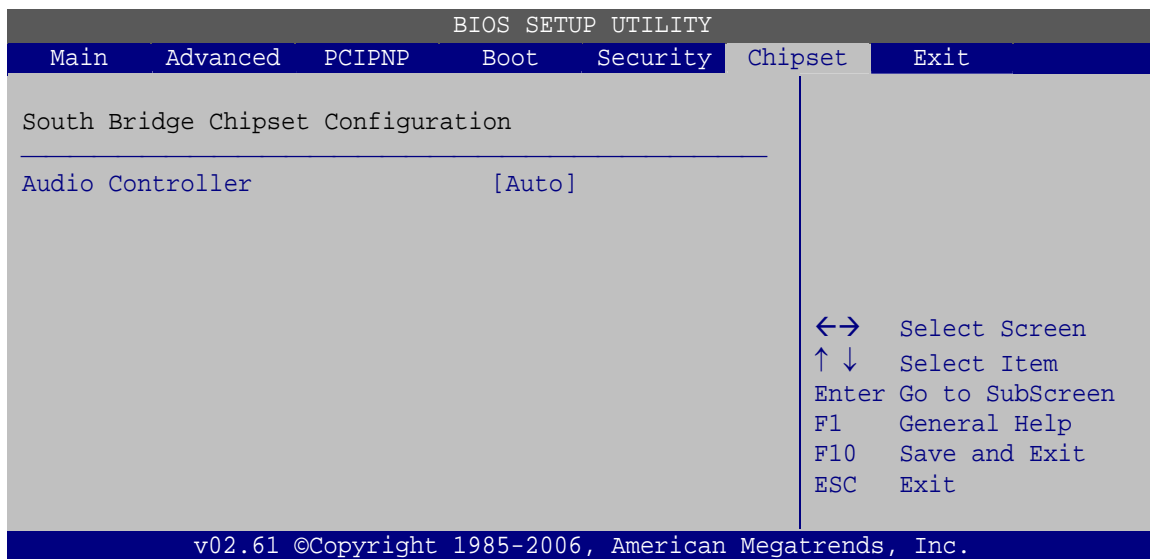
BIOS Menu 19:South Bridge Chipset Configuration

➔ **Audio Controller [Auto]**

Use the **Audio Controller** option to enable or disable the onboard audio.

➔ **Auto**   DEFAULT   The audio chip is activated if detected

➔ **All Disabled**   The audio chip is disabled

4.8 Exit

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

```
                      BIOS SETUP UTILITY
   Main    Advanced    PCIPNP    Boot    Security  Chipset    Exit

 Exit Options
 _____

 Save Changes and Exit
 Discard Changes and Exit
 Discard Changes

 Load Optimal Defaults                        ←→   Select Screen
 Load Failsafe Defaults                       ↑↓   Select Item
                                              Enter Go to SubScreen
                                              F1   General Help
                                              F10  Save and Exit
                                              ESC  Exit

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```
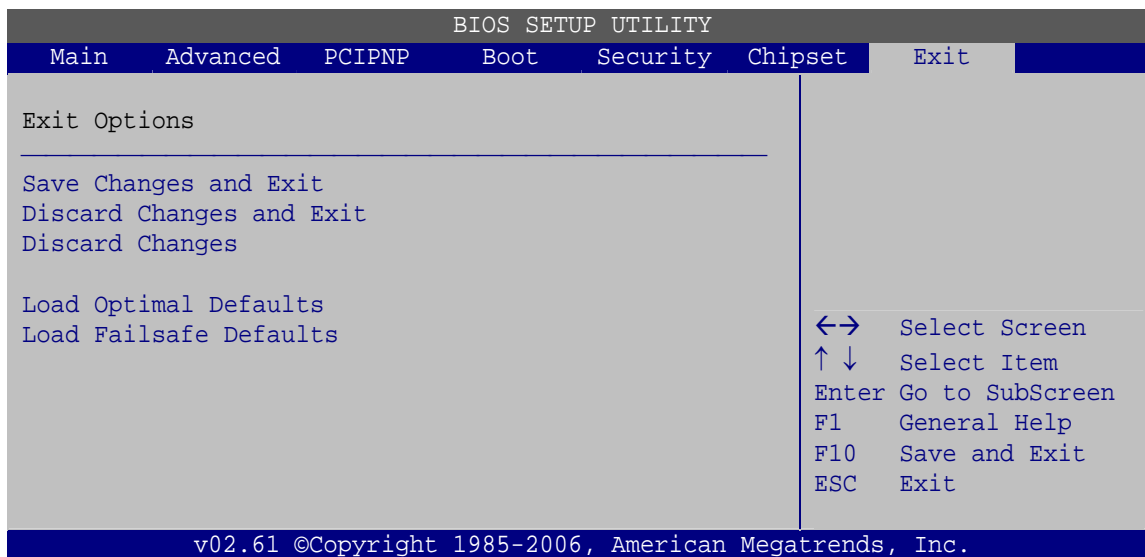
BIOS Menu 20:Exit

➔ **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

5

Interface Connectors

5.1 Peripheral Interface Connectors

The AFL-08B-N270 panel PC motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 6-1**. The Pin 1 locations of the on-board connectors are also indicated in the diagram below. The connector pinouts for these connectors are listed in the following sections.
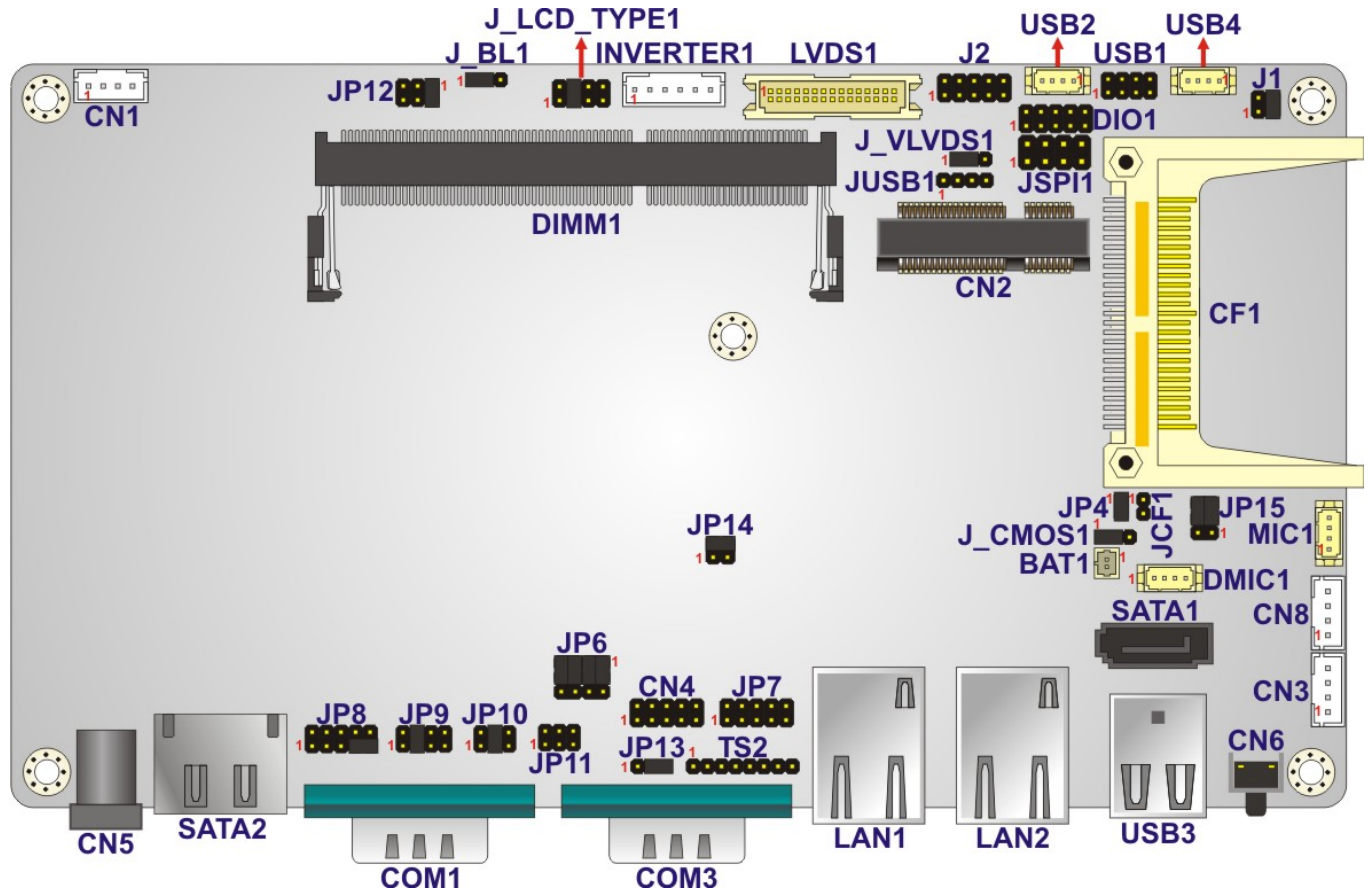
Figure 5-1: Main Board Layout Diagram (Front Side)

Figure 5-2: Main Board Layout Diagram (Solder Side)

5.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the AFL-08B-N270 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
AT/ATX switch connector	2-pin header	JP4
Audio line-out connector	4-pin wafer	CN8
Audio speaker connector	4-pin wafer	CN3
Audio MIC-in connector	4-pin wafer	MIC1
Audio DMIC-in connector	4-pin wafer	DMIC1
Battery connector	2-pin wafer	BT1
CF slot	CF slot	CF1

Connector	Type	Label
CRT connector	10-pin header	CN4
DIO connector	10-pin header	DIO1
HDD power connector	4-pin wafer	CN1
LED indicator and button connector	10-pin header	JP2
LVDS backlight connector	6-pin wafer	INVERTER1
MCU connector	8-pin header 10-pin header	TS2 JP7
PCIe Mini card slot	PCIe Mini card slot	CN2
RFID connector	10-pin header	JP8
SATA connector	SATA connector	SATA1
SO-DIMM connector	SO-DIMM connector	DIMM1
SPI Flash connector	8-pin header	JSPI1
Touch panel connector (solder side)	9-pin wafer	TS1
TTL panel connector (solder side)	40-pin FPC connector	CN7
JUSB connector	4-pin header	JUSB1
USB connector	8-pin header	USB1
USB connector	4-pin wafer	USB2
USB connector	4-pin wafer	USB4

Table 5-1: Peripheral Interface Connectors

5.2.1 Audio Line-out Connector (CN8)

PIN NO.	DESCRIPTION
1	SPK_R
2	AMP_R
3	AMP_L
4	SPK_L

Table 5-2: Audio Line-out Connector (CN8) Pinouts

5.2.2 Audio Speaker-out Connector (CN3)

PIN NO.	DESCRIPTION
1	AMP_L+
2	AMP_L-
3	AMP_R-
4	AMP_R+

Table 5-3: Audio Speaker-out Connector (CN3) Pinouts

5.2.3 Audio MIC-in Connector (MIC1)

PIN NO.	DESCRIPTION
1	MIC_IN_L
2	AGND_AMP
3	MIC_JD
4	MIC1_IN_R

Table 5-4: Audio MIC-in Connector (MIC1) Pinouts

5.2.4 Audio DMIC-in Connector (DMIC1)

PIN NO.	DESCRIPTION
1	DMIC_CLK
2	DMIC_DATA
3	+3.3V
4	GND

Table 5-5: Audio DMIC-in Connector (DMIC1) Pinouts

5.2.5 Battery Connector (BT1)

PIN NO.	DESCRIPTION
1	Battery +3.3V
2	GND

Table 5-6: Battery Connector (BT1) Pinouts

5.2.6 CompactFlash® Type II Slot (CF1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND1	26	CD1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	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	VCC2
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	DATA 0	46	BVD1
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
24	IOCS16	49	DATA 10
25	CD2	50	GROUND2

Table 5-7: CompactFlash® Slot (CF1) Pinouts

5.2.7 CRT Connector (CN4)
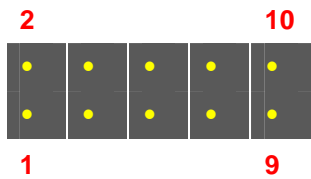
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DACR_RED	2	SPD2
3	DACG_GREEN	4	SPCLK2
5	DACB_BLUE	6	V_GND
7	H_SYNC	8	V_GND
9	V_SYNC	10	V_GND

Table 5-8: CRT Connector (CN4) Pinouts

5.2.8 DIO Connector (DIO1)
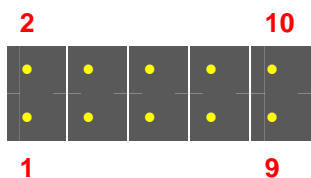
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC_+5V
3	DGPO3	4	DGPO2
5	DGPO1	6	DGPO0
7	DGPI3	8	DGPI2
9	DGPI1	10	DGPI0

Table 5-9: DIO Connector (DIO1) Pinouts

5.2.9 HDD Power Connector (CN1)

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

Table 5-10: HDD Power Connector (CN1) Pinouts

5.2.10 LED Indicator and Button Connector (JP2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PW_LED +5V	2	+5V
3	GND	4	HD_LED
5	SUS PW LED +5V	6	RST_SW
7	GND	8	GND
9	PW_BN	10	GND

Table 5-11: LED Indicator and Button Connector (JP2) Pinouts

5.2.11 LVDS Backlight Connector (INVERTER1)

PIN NO.	DESCRIPTION
1	+12V
2	+12V
3	BLON
4	BRIGHTNESS
5	GND
6	GND

Table 5-12: LVDS Backlight Connector (INVERTER1) Pinouts

5.2.12 MCU Connector (JP7)
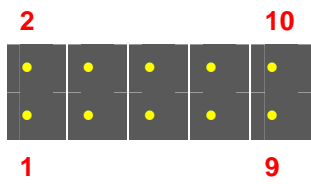
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MCLR	2	+5V
3	+5V	4	MCU_IR
5	ICSPCLK	6	AUTO_CLK
7	ICSPDAT	8	AUTO_DATA
9	GND	10	GND

Table 5-13: MCU Connector (JP7) Pinouts

5.2.13 MCU Connector (TS2)

PIN NO.	DESCRIPTION
1	AUTO_DIMMING
2	LOCK_BUTTON
3	VOL+
4	VOL-
5	BRIGHT+
6	BRIGHT-
7	LCD_ON_OFF
8	GND

Table 5-14: MCU Connector (TS2) Pinouts

5.2.14 PCIe Mini Slot (CN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	VCC3
3	RESERVED	4	GND
5	RESERVED	6	1.5 V
7	CLKREQ#	8	N/C
9	GND	10	N/C
11	REFCLK-	12	N/C
13	REFCLK+	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	PERST#
23	PERn0	24	VCC3_AUX
25	PERp0	26	GND
27	GND	28	1.5 V
29	GND	30	SMBCLK
31	PETn0	32	SMBDATA
33	PETp0	34	GND
35	GND	36	USBD-

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
37	RESERVED	38	USBD+
39	RESERVED	40	GND
41	RESERVED	42	LED_WWAN#
43	RESERVED	44	LED_WLAN#
45	RESERVED	46	LED_WPAN#
47	RESERVED	48	1.5 V
49	RESERVED	50	GND
51	RESERVED	52	VCC3

Table 5-15: PCIe Mini Card Slot (CN2) Pinouts

5.2.15 RFID Connector (JP8)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	For COM1 Pin 9	2	+5V
3	setting	4	GND
5		6	RX2
7		8	TD2
9		10	RFID_INT

2   **10**

1   **9**

Table 5-16: RFID Connector (JP8) Pinouts

5.2.16 SATA Connector (SATA1)

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 5-17: SATA Connector (SATA1) Pinouts

5.2.17 Touch Panel Connector (TS1)

PIN NO.	8-Wire	4-Wire	5-Wire
1	Right Sense	N/A	N/A
2	Left Sense	N/A	N/A
3	Bottom Sense	N/A	N/A
4	Top Sense	N/A	Sense (S)
5	Right Excite	Right	LR (X)
6	Left Excite	Left	LL (L)
7	Bottom Excite	Bottom	UR (Y)
8	Top Excite	Top	UL (Y)
9	GND	GND	GND

Table 5-18: Touch Panel Connector (TS1) Pinouts

5.2.18 TTL Panel Connector (CN7)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	21	TFT_G5
2	GND	22	TFT_G4
3	TTL_VSYNC	23	TFT_G3
4	TTL_VCC3	24	GND
5	TTL_VCC3	25	TFT_G2
6	TTL_VCC3	26	TFT_G1
7	TTL_VCC3	27	TFT_G0
8	TTL_HSYNC	28	GND
9	LCD_EN	29	TFT_R5
10	GND	30	TFT_R4
11	GND	31	TFT_R3
12	GND	32	GND
13	TFT_B5	33	TFT_R2
14	TFT_B4	34	TFT_R1
15	TFT_B3	35	TFT_R0
16	GND	36	GND

17	TFT_B2	37	GND
18	TFT_B1	38	DOTCLK
19	TFT_B0	39	GND
20	GND	40	GND

Table 5-19: TTL Panel Connector (CN7) Pinouts

5.2.19 JUSB Connector (JUSB1)

PIN NO.	DESCRIPTION
1	+5Vsus
2	D6F-
3	D6F+
4	GND

Table 5-20: JUSB Connector (JUSB1) Pinouts

5.2.20 USB Connector (USB1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5Vsus	2	GND
3	D0F-	4	D0F+
5	D0F+	6	D0F-
7	GND	8	+5Vsus
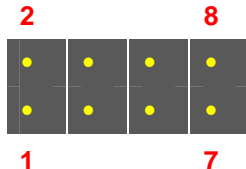
Table 5-21: USB Connector (USB1) Pinouts

5.2.21 USB Connector (USB2)

PIN NO.	DESCRIPTION
1	USB Power (selected by JP15)
2	D2F-
3	D2F+
4	GND

Table 5-22: USB Connector (USB2) Pinouts

5.2.22 USB Connector (USB4)

PIN NO.	DESCRIPTION
1	USB Power (selected by JP15)
2	D3F-
3	D3F+
4	GND

Table 5-23: USB Connector (USB4) Pinouts

5.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the AFL-08B-N270 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Ethernet connector	RJ-45	LAN1, LAN2
Power connector	DIN	CN5
Reset button	Push button	CN6
RS-232 serial ports	DB-9	COM1
RS-232/422/485 serial port	DB-9	COM3
SATA connector	SATA connector	SATA2
USB 2.0 connectors	USB 2.0 port	USB3

Table 5-24: Rear Panel Connectors

5.3.1 Ethernet Connector (LAN1, LAN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LAN1_MDI0+	2	LAN1_MDI0-
3	LAN1_MDI1+	4	LAN1_MDI1-
5	N/A	6	N/A
7	LAN1_MDI2+	8	LAN1_MDI2-
9	LAN1_MDI3+	10	LAN1_MDI3-

11	+3.3Vsus	12	ACT-1
13	LAN1_LINK1000 +3.3Vsus	14	LAN1_LINK100 +3.3Vsus
15	GND	16	GND
17	N/A	18	N/A

Table 5-25: Ethernet Connector (LAN1, LAN2) Pinouts

5.3.2 Power Connector (CN5)

PIN NO.	DESCRIPTION
1	GND
2	GND
3	VCC12_IN

Table 5-26: Power Connector (CN5) Pinouts

5.3.3 RS-232 Serial Ports (COM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD1	2	NRX1
3	NTX1	4	NDTR1
5	GND	6	NDSR1
7	NRTS1	8	NCTS1
9	COM_RI1	10	GND

Table 5-27: RS-232 Serial Ports (COM1) Pinouts

5.3.4 RS-422/485 Serial Port (COM3)

PIN NO.	RS-232	RS-422	RS-485
1	NDCDB	TX-	D-
2	NRXDB	TX+	D+
3	NTX3		

PIN NO.	RS-232	RS-422	RS-485
4	NDTR3		
5	GND		
6	NDSRB	RX-	
7	NRTSB	RX+	
8	NCTS3		
9	COM_RI3		
10	GND		

Table 5-28: COM3 Connector Pinouts

5.3.5 SATA Connector (SATA2)

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

Table 5-29: SATA Connector (SATA2) Pinouts

5.3.6 USB 2.0 Connectors (USB3)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5Vsus	5	+5Vsus
2	D4F-	6	D5F-
3	D4F+	7	D5F+
4	GND	8	GND

Table 5-30: USB 2.0 Connectors (USB3) Pinouts

5.4 Preconfigured Jumper Settings

The following jumpers are preconfigured for the AFL-08B-N270. Users should not change these jumpers (**Table 5-31**). It is only for reference.

Jumper Name	Label	Type
Backlight voltage selection	J_BL1	3-pin header
Inverter power selection	JP12	6-pin header
LVDS voltage selection	J_VLVDS1	3-pin header
MCU LCD type selection	JP14	4-pin header
MCU PWM power selection	JP13	3-pin header
Panel type selection	J_LCD_TYPE1	10-pin header
Touchscreen selection	J1	4-pin header
USB2 and USB4 power selection	JP15	6-pin header

Table 5-31: Preconfigured Jumpers

5.4.1 Backlight Voltage Selection Jumper (J_BL1)

Pin	Description
Short 1-2	+3.3 V (Default)
Short 2-3	+5 V

Table 5-32: Backlight Voltage Selection Jumper (J_BL1) Settings

5.4.2 Inverter Power Selection Jumper (JP12)

Pin	Description
Short 1-2	+12 V (Default)
Short 3-4	+5 V
Short 5-6	+3.3 V

Table 5-33: Inverter Power Selection Jumper (JP12) Settings

5.4.3 LVDS Panel Voltage Selection Jumper (J_VLVDS1)

Pin	Description
Short 1-2	+3.3 V (Default)
Short 2-3	+5 V

Table 5-34: LVDS Voltage Selection Jumper (J_VLVDS1) Settings

5.4.4 MCU LCD Type Selection Jumper (JP14)

Pin	Description
Short 1-3	LCD Panel (Default)
Short 2-4	LED Panel

Table 5-35: MCU LCD Type Selection Jumper (JP14) Settings

5.4.5 MCU PWM Power Selection Jumper (JP13)

Pin	Description
Short 1-2	+5V (Default)
Short 2-3	+3.3V

Table 5-36: MCU PWM Power Selection Jumper (JP13) Settings

5.4.6 Panel Type Selection Jumper (J_LCD_TYPE1)

Pin	Description	Pin	Description
1	PA_DGPI0	2	GND
3	PA_DGPI1	4	GND
5	PA_DGPI2	6	GND
7	PA_DGPI3	8	GND

Table 5-37: Panel Type Selection Jumper (J_LCD_TYPE1) Settings

5.4.7 Touchscreen Selection Jumper (J1)

Pin	Description
Short 1-2	5-wire (Default)
Short 3-4	4-wire

Table 5-38: Touchscreen Selection Jumper (J1) Settings

5.4.8 USB2 and USB4 Power Selection Jumper (JP15)

Pin	Description
Short 1-3	USB4 +3.3V
Short 3-5	USB4 +5V (Default)
Short 2-4	USB2 +3.3V
Short 4-6	USB2 +5V (Default)

Table 5-39: USB2 and USB4 Power Selection Jumper (JP15) Settings

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 AFL-08B-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 AFL-08B-N270 is opened.
- *Make sure the power is turned off and the power cord is disconnected* whenever the AFL-08B-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 AFL-08B-N270 chassis is opened when the AFL-08B-N270 is running.
- *Do not drop or insert any objects* into the ventilation openings of the AFL-08B-N270.
- *If considerable amounts of dust, water, or fluids enter the AFL-08B-N270*, turn off the power supply immediately, unplug the power cord, and contact the AFL-08B-N270 vendor.
- **DO NOT** do the following:
  - ○ **DO NOT** drop the AFL-08B-N270 against a hard surface.
  - ○ **DO NOT** strike or exert excessive force onto the LCD panel.
  - ○ **DO NOT** touch any of the LCD panels with a sharp object
  - ○ **DO NOT** use the AFL-08B-N270 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 AFL-08B-N270 may result in permanent damage to the AFL-08B-N270 and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-08B-N270. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-08B-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 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:
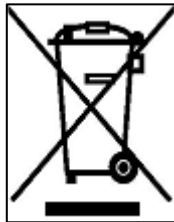
EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need 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 AFL-08B-N270, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL-08B-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 does not require cleaning. Keep fluids away from the interior.
- Be careful not to damage the small, removable components inside.
- Turn off before cleaning.
- Never drop any objects or liquids through the openings.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
- Avoid eating, drinking and smoking nearby.

A.2.2 Cleaning Tools

Some components 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 for cleaning.

- *Cloth* – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.
- *Water or rubbing alcohol* – A cloth moistened with water or rubbing alcohol should be used.
- *Using solvents* – The use of solvents is not recommended as they may damage the plastic parts.
- *Vacuum cleaner* – Using a vacuum specifically designed for computers is one of the best methods of cleaning. Dust and dirt can restrict the airflow and cause 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

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

C

ALC892 Digital Microphone Configuration

C.1 ALC892 Digital Microphone Configuration

To enable the ALC892 digital microphone function, follow the steps below.

Step 1: Make sure the Realtek ALC892 high definition audio driver has been installed on the system. If the audio driver has not been installed on the system, please refer to **Section 2.9**.

Step 2: To launch the Realtek ALC892 HD Audio Manager, double click either:

- The Realtek HD Audio Manager icon in the Notification Area of the system task bar (**Figure C-1**), or
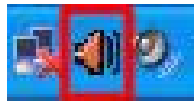- The Realtek HD Audio Manager icon in the Control Panel.

Figure C-1: Realtek HD Audio Manager Icon [Task Bar]

Step 3: The Realtek HD Audio Manager appears (**Figure C-2**).

Figure C-2: Realtek HD Audio Manager

Step 4: Click the **Mixer** tab.

Step 5: Click the **Mixer ToolBox** icon in the **Record** section (**Figure C-3**)

Figure C-3: Mixer Screen

Step 6: The following screen appears (**Figure C-4**). Check the **Enable recording multi-streaming** box, and then click **OK**.

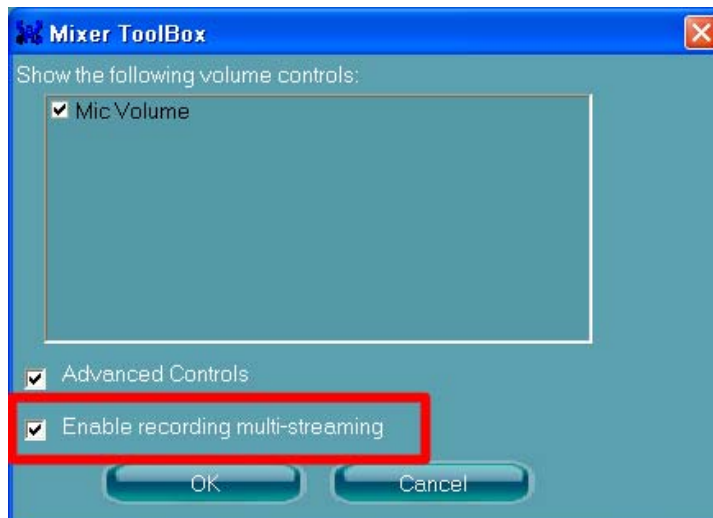**Figure C-4: Mixer ToolBox Screen**

Step 7: From the dropdown list box in the **Record** section, select **Mic in at front panel**

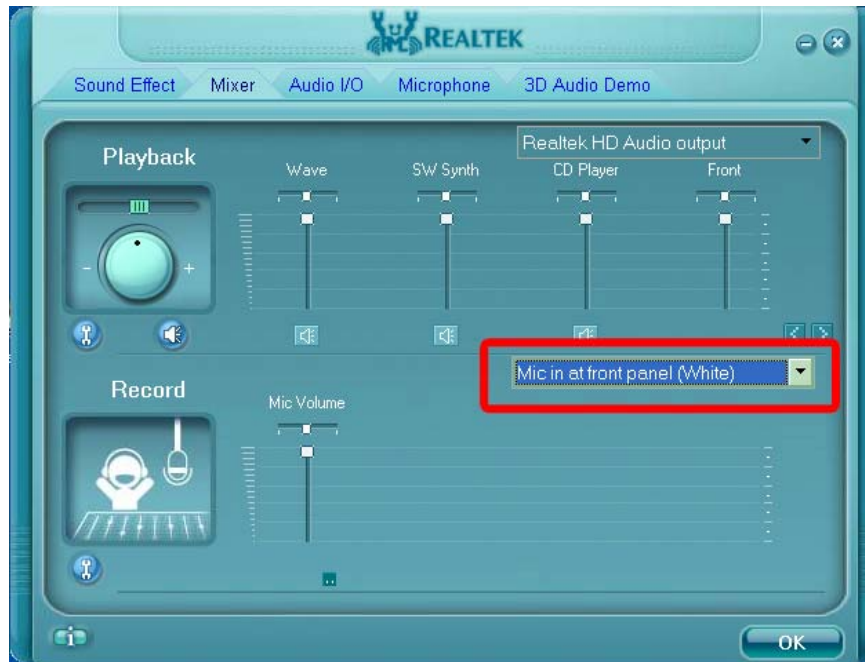(White) (**Figure C-5**).

The digital microphone function is now enabled.

Figure C-5: Enabling the Digital Microphone Function

Appendix

D

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

DIMM   Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.

EHCI   The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.

EIDE   Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.

EIST   Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.

FSB   The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.

GbE   Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.

HDD   Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.

ICH   The Input/Ouput Control Hub (ICH) is an Intel® Southbridge chipset.

IrDA   Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.

L1 Cache   The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.

L2 Cache   The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD   Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

LVDS   Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.

POST   The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.

RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

E

Watchdog Timer

![NOTE icon]   **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 EMIs 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 E-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. When 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** ;

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Appendix

F

Hazardous Materials

Disclosure

F.1 Hazardous Materials 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。						