IEI Technology Corp.

MODEL:

EP-165E-N270 series

Fanless Intel® Atom™ N270 CPU Enrich POS System with VGA for Second Screen, LAN, 802.11a/b/g, PoweredUSB, Powered 5 V/12 V Serial Ports, and AT/ATX Power Support, RoHS Compliant, IP 64

User Manual

Rev. 1.00 – 9 September, 2009

RoHS Lead Free

Revision

Date	Version	Changes
9 September, 2009	1.00	Initial release

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Introduction

1.1 Overview

Figure 1-1: EP-165E-N270

The fanless EP-165E-N270 is a 1.6GHz Intel® Atom™ N270 CPU powered all-in-one POS system with a rich variety of functions and peripherals. The EP-165E-N270 is designed for easy and simplified integration into point-of-sales (POS) 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 512 MB of preinstalled DDR2 SDRAM and supports a maximum of 2.0 GB of DDR2 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Five powered serial ports, 6 USB 2.0 ports and a PoweredUSB port ensure simplified connectivity to a variety of external peripheral devices. A VGA connector enables connectivity to other monitors. Wi-Fi capabilities and an RJ-45 Ethernet connector ensure smooth connection of the system to an external LAN.

1.2 Features

Some of the standard features of the EP-165E-N270 include:

- PoweredUSB
- Powered COM
- Dual-display capabilities
- Wireless LAN
- Ethernet
- Second display support
- AT/ATX power modes
- Fanless design
- IP64 compliant front panel
- RoHS compliant

1.3 External Overview

The stylish EP-165E-N270 POS system comprises of a screen, an aluminum chassis and a sturdy stand. The front screen is surrounded by an ABS/PC plastic hard cover and can be tilted down from the aluminum chassis. The aluminum chassis consists of rear panel, top panel, bottom panel and two side panels (left and right). The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. The I/O interface panels on the rear panel and the bottom panel of the EP-165E-N270 provide access to external interface connectors. The stand supports the EP-165E-N270 and contains two 3 W stereo speakers which are connected to the audio connector on the bottom panel.

1.3.1 Front Panel

The front side of the EP-165E-N270 is a flat panel TFT LCD screen surrounded by an ABS/PC plastic hard cover (**Figure 1-2**). The front panel can be tilted down from the aluminum chassis to adjust the viewing angle (**Figure 1-3**).

Figure 1-2: Front Panel

Figure 1-3: EP-165E-N270 Viewing Angle Adjustment

1.3.2 Rear Panel

The rear panel provides access to retention screw holes that support the VESA MIS-D 100 wall mounting and to the I/O interface panel that enable connection to a wide range of external peripheral devices. The rear panel also has ventilation vents that cool the CPU of the system. Refer to **Figure 1-4**.

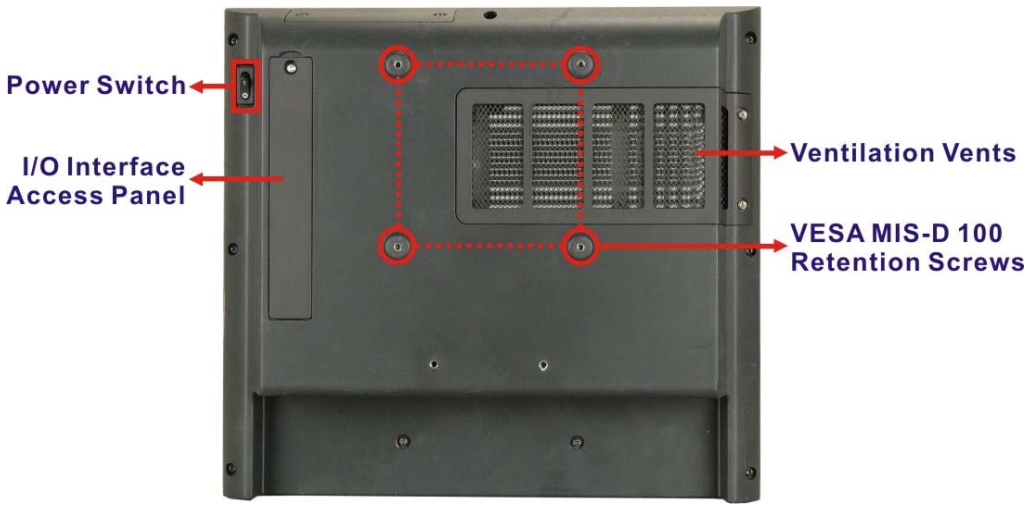


Figure 1-4: EP-165E-N270 Rear View

1.3.3 I/O Interface Rear Access Panel

The I/O interface panel located on the rear side of the EP-165E-N270 (see **Figure 1-4** above) has the following I/O interface connectors:

- 1 x Keyboard/Mouse connector
- 1 x Serial port connector (COM2)
- 1 x 12 V DC Out connector
- 2 x USB 2.0 connectors
- 1 x VGA connector
- 1 x Power switch

The external I/O interface connectors on the rear panel are shown in **Figure 1-5**.

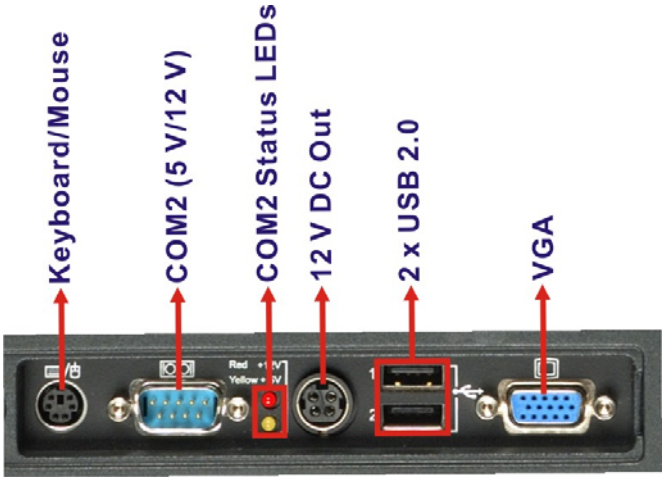


Figure 1-5: I/O Interface Connectors on the Rear Panel

1.3.4 Top Panel

The top panel provides access to the HDD slot (**Figure 1-6**).

Figure 1-6: EP-165E-N270 Top View

1.3.5 Bottom Panel I/O Interface Connectors

The bottom panel has the following slots, buttons and switches (**Figure 1-7**):

- 1 x 12 V PoweredUSB
- 1 x AT/ATX power switch
- 1 x Audio line-out
- 1 x RJ-45 GbE Ethernet
- 1 x Parallel port
- 1 x Power input
- 2 x RJ-11 Cash drawer
- 4 x Powered COM
- 4 x USB 2.0

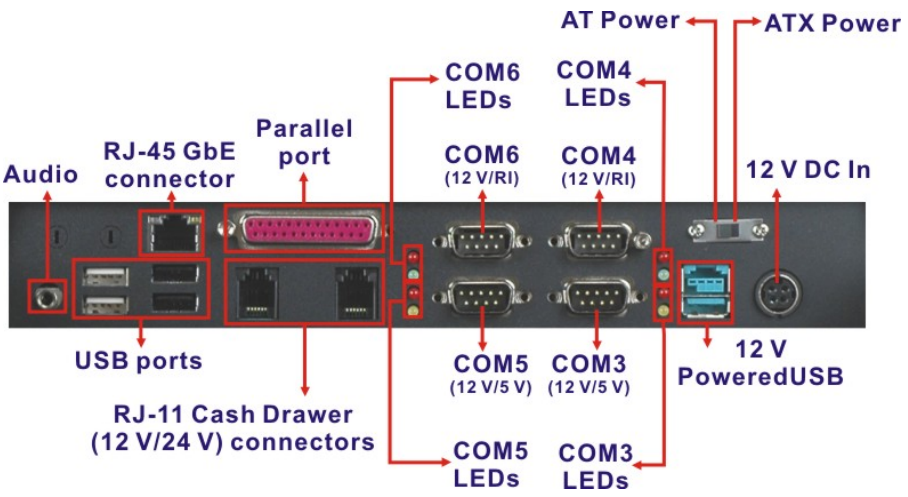


Figure 1-7: Rear Panel Connectors

1.3.6 Right Side Panel

The right side panel of the EP-165E-N270 has a set of buttons to control the LCD brightness and the volume of the speakers. See **Figure 1-8**.

Figure 1-8: EP-165E-N270 Right Side View

1.4 Specifications

The EP-165E-N270 POS system has the following preinstalled components:

- 1 x Motherboard
- 1 x TFT LCD screen
- 1 x Touch screen
- 1 x Inverter
- 1 x Wireless LAN module
- 1 x DDR2 memory module
- 1 x AT/ATX switch

1.4.1 System Specifications

The technical specifications for the EP-165E-N270 system are listed below.

Model	EP-165E-N270
Screen Size	15"
CPU	1.6GHz Intel® Atom™
Chipset	Intel® 945GSE + Intel® ICH7M
Graphics	Integrated
Memory	512 GB installed (supports one 400/533/667 MHz DDR2 DIMM up to 2 GB)
Resolution	1024 x 768
Brightness	250nits
Contrast Ratio	600:1
LCD Colors	16.7M
Pixel Pitch	0.297 mm x 0.297 mm
Viewing Angle (H/V)	160/160
Backlight MTBF	40000 hrs
Touchscreen	Resistive 5-wire through RS-232 (capacitive optional)
HDD	1 x 2.5" SATA bay
SSD	1 x CompactFlash® card slot
Expansion	1 x Mini PCI 1 x Mini PCIe 1 x PCIe x4 slot

Model	EP-165E-N270
Misc. Connectors	1 x VGA 2 x 5 V/12 V powered COM on bottom panel (COM3/COM5) 2 x 12 V/RI powered COM on bottom panel (COM4/COM6) 1 x 5 V/12 V powered COM on rear panel (COM2) 1 x LPT parallel port 1x Audio jack
Cash Drawer	2 x 12/24 V RJ-11
USB Connectors	2 x USB on rear 4 x USB on bottom 1 x 12 V PoweredUSB on bottom
Networking	1 x Gigabit LAN 802.11b/g (optional)
Audio	Two internal 3 W speakers
Power	N/A
Power Input	12 V DC
Operating Temp.	0-35ºC
Dimensions (WxHxD)	386.73 mm x 321.33 mm x 220.86 mm
Net Weight	8.34 kg
EMC and Safety	**CE / EMC / FCC** / CB / UL

Table 1-1: Technical Specifications

1.5 Dimensions

The dimensions of the EP-165E-N270 are shown in **Figure 1-9** and listed below.

- **Width**: 386.73 mm
- **Height**: 321.33 mm
- **Depth**: 220.86 mm

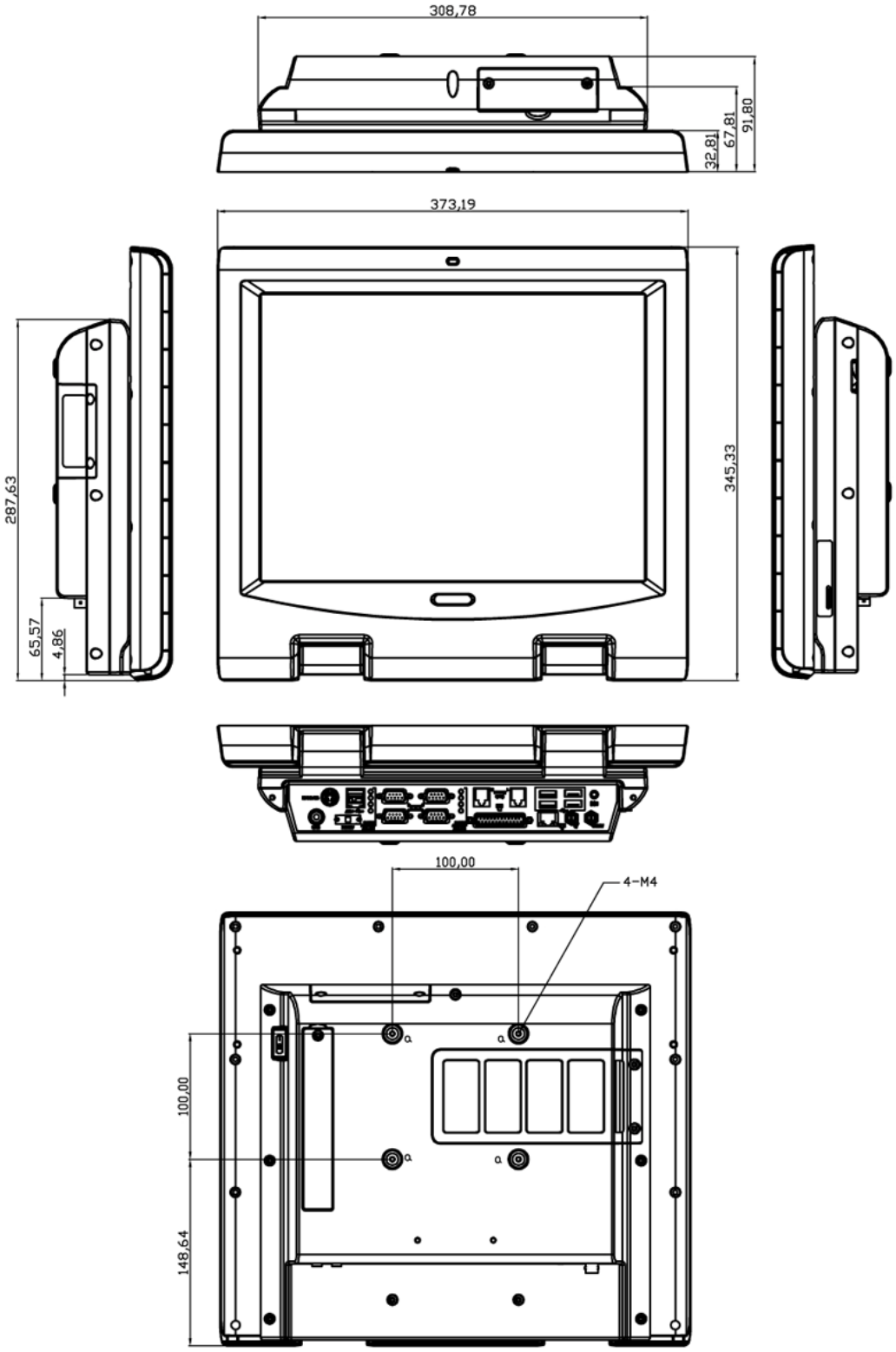


Figure 1-9: 15" Dimensions

Chapter

2

Installation

WARNING:

When installing the EP-165E-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 (See Appendix A.1.2)**: 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 flat panel PC

Step 2: Check all the required parts are included

Step 3: Install a SATA HDD

Step 4: Install a CompactFlash® card

Step 5: Install a Mini PCI card

Step 6: Connect peripheral devices to the bottom panel and side panel

Step 7: Connect the power cable

Step 8: Configure the system

2.1 Unpack the Panel PC

To unpack the flat 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.

2.2 Packing List

The EP-165E-N270 flat panel PC is shipped with the following components:

Quantity	Item	Image
1	EP-165E-N270	
1	Power adapter	
1	Power cord	

Quantity	Item	Image
1	Stand (**P/N:** STAND-EP01)	
1	Screw set (for stand installation)	
1	Touch screen pen	
1	Utility CD	

Table 2-1: Packing List

2.3 Back cover removal

The EP-165E-N270 supports one SATA drive. First remove the cover to install a SATA drive. To remove the back cover, please follow the steps below.

Step 1: Put the front panel of the EP-165E-N270 on a table.

Step 2: **Remove the back cover**. Remove the nine retention screws (**Figure 2-1**) from the rear panel and lift the back cover off the EP-165E-N270.

Figure 2-1: Back Cover Retention Screws

2.4 HDD Installation

The EP series has one HDD slot on the top panel for one 2.5” SATA HDD. To install the HDD, follow the instructions below.

Step 1: **Locate the HDD slot access panel** on the top panel of the EP series.

Step 2: **Remove the HDD slot access panel** by removing the two retention screws. See **Figure 2-2.**

Figure 2-2: HDD Slot Access Panel Retention Screws

Step 3: **Remove the HDD bracket.** The HDD bracket is secured to the HDD slot by one thumb screw. Loose the thumb screw and pull out the HDD bracket.

Step 4: **Place one 2.5” SATA HDD onto the HDD bracket** and make the bottom

surface up as shown in **Figure 2-3**.

Step 5: **Secure the HDD**. Align the four retention screw holes on the both side of the HDD to the retention screw holes of the HDD bracket. Insert four retention screws into the both sides of the HDD bracket to secure the HDD with the HDD bracket. See **Figure 2-3**.

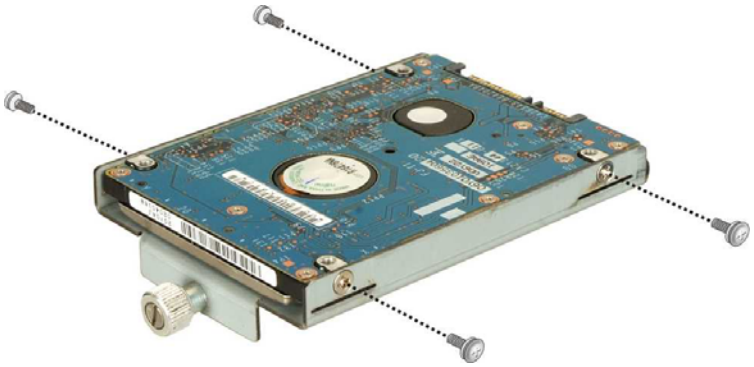


Figure 2-3: Secure the HDD with the HDD Bracket

Step 6: **Install the HDD.** Correctly align the HDD bracket with the slot and insert the HDD into the slot. See **Figure 2-4**.

Figure 2-4: HDD Installation

Step 7: **Secure the thumb screw**.

Step 8: **Reinstall the HDD slot access panel**. Make sure the HDD slot access panel is properly secured with the previously removed retention screws.

2.5 CF Card Installation

The EP series has one CF Type II slot. To install the CF card, follow the instructions below.

Step 1: Tilt down the monitor of the EP-165E-N270 and locate the CF socket access panel.

Step 2: **Remove the CF socket access panel** by removing the two retention screws. See **Figure 2-5**

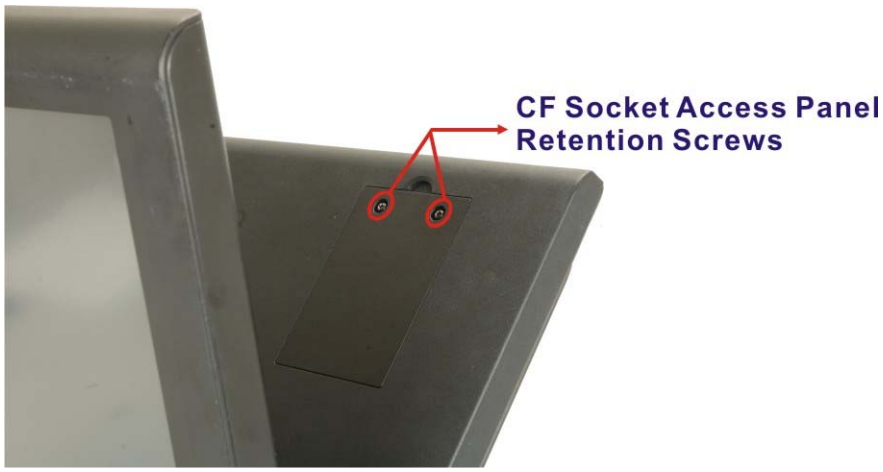


Figure 2-5: CF Socket Access Panel Retention Screws

Step 3: **Install the CF Card**. Locate the CF card socket in the chassis. Correctly align the CF card with the socket and insert the CF card into the socket.

See **Figure 2-6**.

Figure 2-6: CF Card Installation

Step 4: **Reinstall the CF socket access panel**. Make sure the CF socket access panel is properly secured with the previously removed retention screws.

2.6 Mini PCI card Installation

A Mini PCI expansion card can be installed on the EP-165E-N270 using the optional Mini PCI expansion slot. To install a Mini PCI card into the Mini PCI socket, please follow the steps below and refer to **Figure 2-7** and **Figure 2-8**.

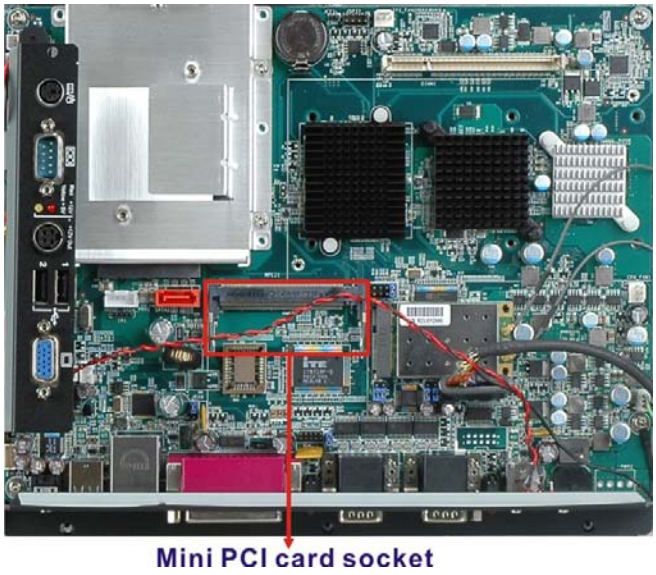


Figure 2-7: Mini PCI Card Socket Location

Step 5: **Locate the Mini PCI socket**. Place the EP-165E-N270 on an anti-static pad with the solder side facing up.

Step 6: **Align the Mini PCI card with the socket**. The Mini PCI card must be oriented in such a way that the notch on the Mini PCI card aligns with the plastic bridge in the socket.

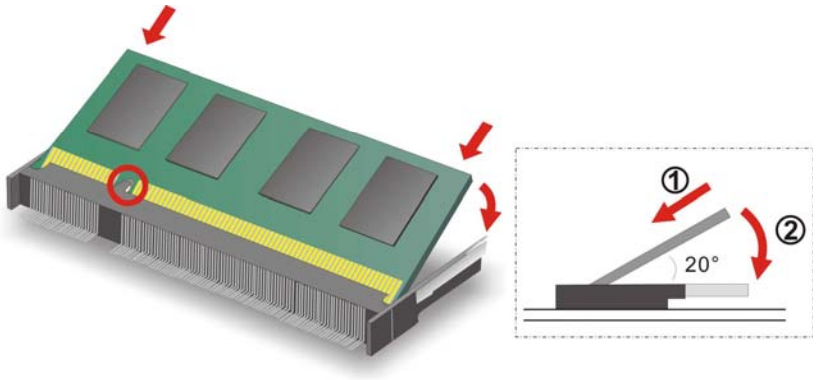


Figure 2-8: Mini PCI Installation

Step 7: **Insert the Mini PCI card**. Push the Mini PCI card into the socket at an angle. (See **Figure 4-3**)

Step 8: **Secure the Mini PCI card**. Push the Mini PCI card down until the two arms clip into place, securing the card in place.

2.7 Jumper Settings

NOTE:

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

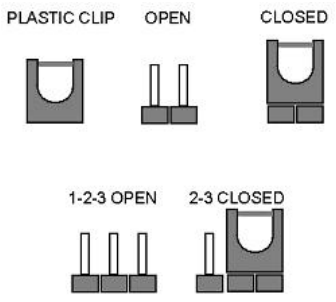


Figure 2-9: Jumper Locations

The following jumpers can be found on the motherboard installed in the EP series. Before the EP series is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the EP-165E-N270 motherboard are listed in **Table 2-2**.

Description	Label	Type
Cash drawer1 voltage select	JP20	3-pin header
Cash drawer2 voltage select	JP21	3-pin header
CompactFlash® Setup	JCF1	2-pin header
Clear CMOS	J_CMOS1	2-pin header
COM2 Pin 9 setting	JP15	3-pin header
COM3 Pin 9 setting	JP16	3-pin header
COM4 Pin 9 setting	JP18	3-pin header
COM5 Pin 9 setting	JP17	3-pin header
COM6 Pin 9 setting	JP19	3-pin header

Table 2-2: Jumpers

2.7.1 Access the Jumpers

To access the jumpers, the back cover must be removed. To remove the back cover, please follow the steps in **Section 2.3**.

2.7.2 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 EP-165E-N270. Users should **NOT** change these jumpers.

Jumper Name	Label	Type
LVDS voltage selection	J_VLVDS1	3-pin header
Panel Type and Resolution	LCD_TYPE1	8-pin header

Table 2-3: Preconfigured Jumpers

2.7.3 Cash Drawer Voltage Select

Jumper Label: **JP20 and JP21**

Jumper Type: 3-pin header

Jumper Settings: See **Table 2-4**

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

The Cash Drawer Voltage select jumpers (JP20 and JP21) configure pin 4 on the RJ-11 cash drawer connectors (CN1). Pin 4 on the RJ-11 cash drawer connector can be set as either +12 V or +24 V. The Cash Drawer Voltage Select jumper selection options are shown in **Table 2-4**.

	Short 1 – 2 (Default)	Short 2 – 3
JP20	+12 V	+24 V
JP21	+12 V	+24 V

Table 2-4: Cash Drawer Voltage Select Jumper Settings

The Cash Drawer Voltage Select jumper location is shown in **Figure 2-10** below.

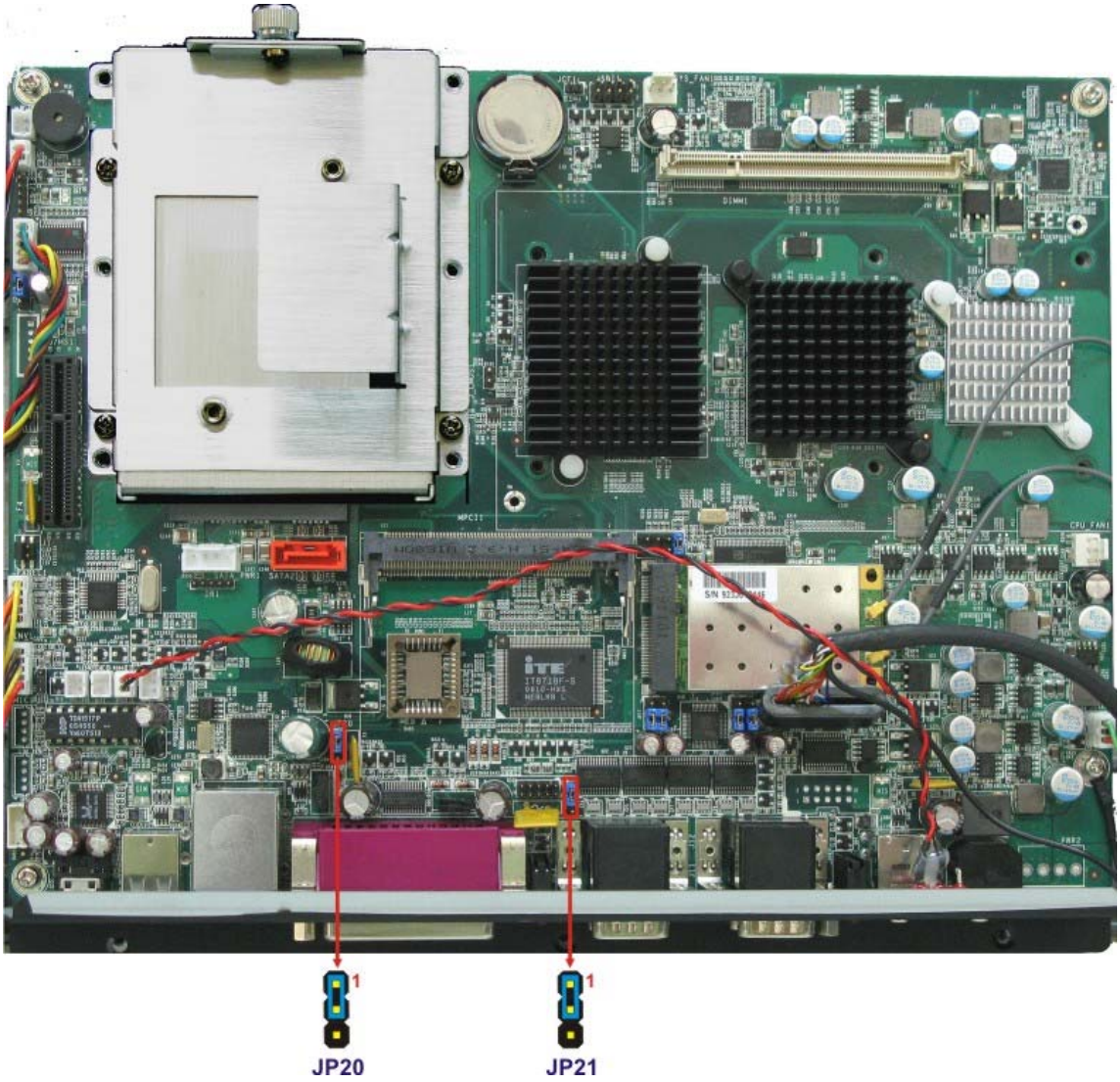


Figure 2-10: Cash Drawer Voltage Select Jumper Location

2.7.4 CompactFlash® Card Setup

Jumper Label:	**JCF1**
Jumper Type:	2-pin header
Jumper Settings:	See **Table 2-5**
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	Slave
Closed	Master

Table 2-5: CompactFlash® Setup Jumper Settings

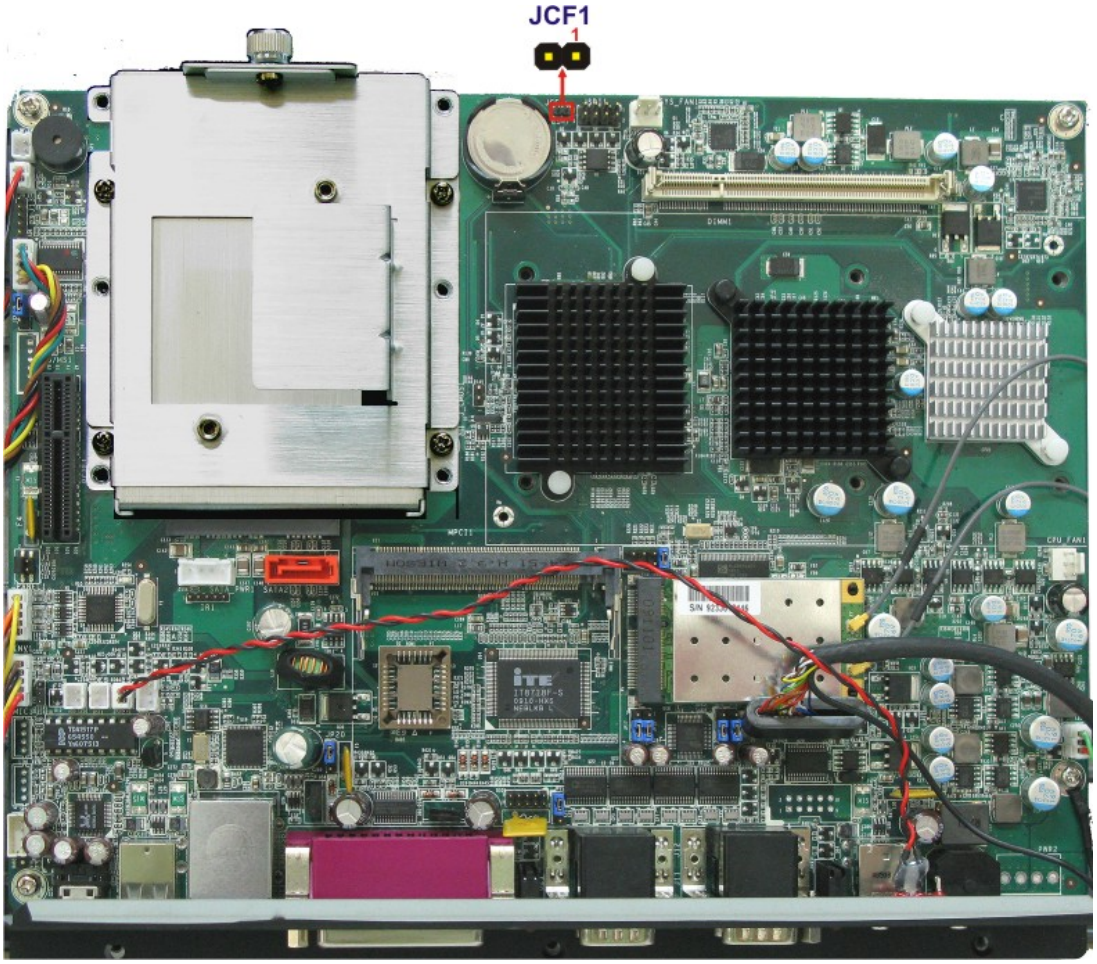


Figure 2-11: CompactFlash® Setup Jumper Location

2.7.5 Clear CMOS Jumper

Jumper Label: **J_CMOS1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 2-6**

Jumper Location: See **Figure 2-12**

If the EP-165E-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 2-6**.

Clear CMOS	Description	
OPEN	Keep CMOS Setup	Default
SHORT	Clear CMOS Setup	

Table 2-6: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 2-12** below.

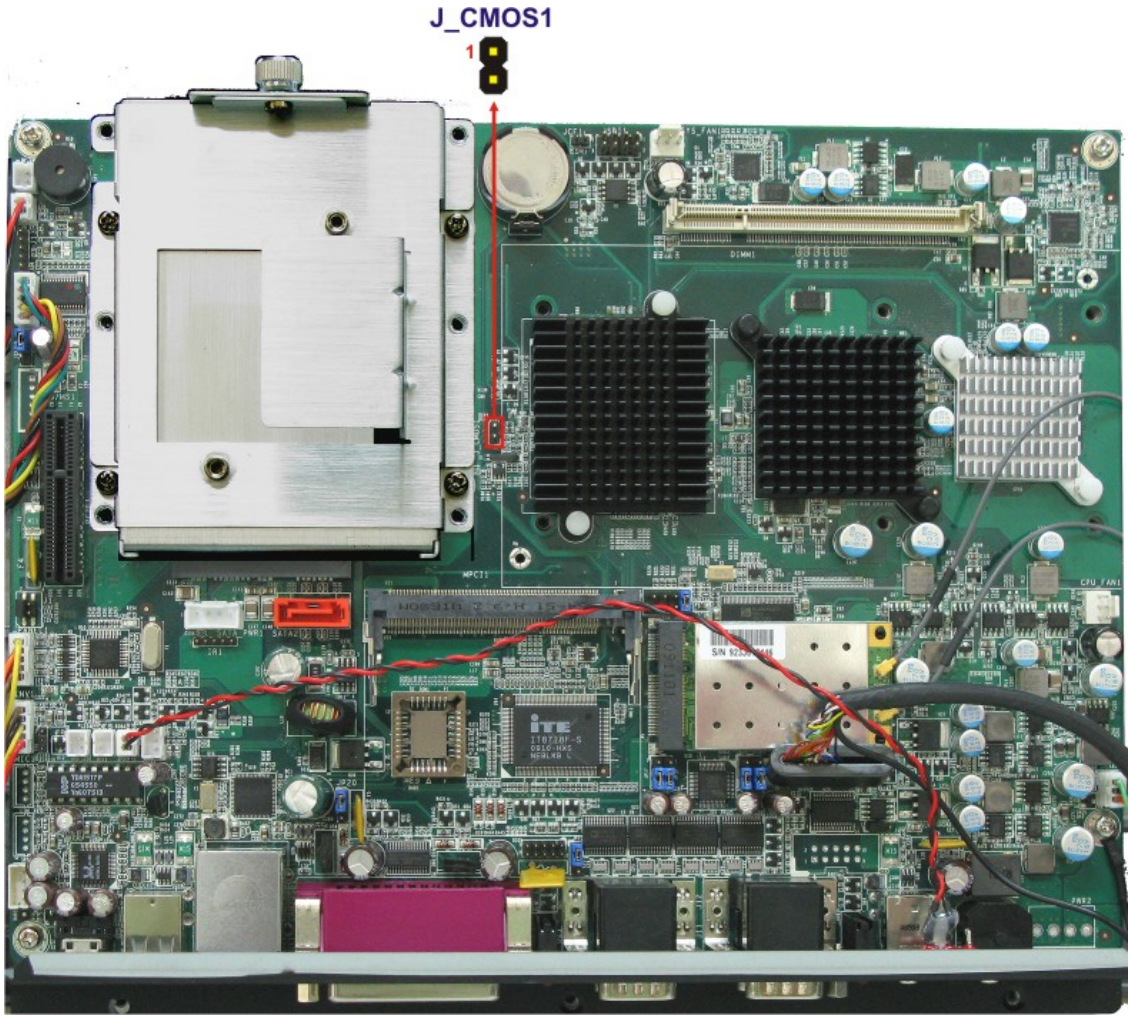


Figure 2-12: Clear CMOS Jumper

2.7.6 COM2, COM3 and COM5 Pin 9 Select

Jumper Label:	**JP15, JP16 and JP17**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 2-7**
Jumper Location:	See **Figure 2-13**

Three jumpers (JP15, JP16 and JP17) configure pin 9 on COM3, COM5 and COM2 DB-9 connectors. Pin 9 on the COM2, COM3 and the COM5 DB-9 connectors can be set as either +5 V or +12 V. The COM2, COM3 and COM5 Pin 9 Setting jumper selection options are shown in **Table 2-7**.

	Short 1 – 2 (Default)	Short 2 – 3
JP15	COM3 Pin 9 use +5 V	COM3 Pin 9 use +12 V
JP16	COM5 Pin 9 use +5 V	COM5 Pin 9 use +12 V
JP17	COM2 Pin 9 use +5 V	COM2 Pin 9 use +12 V

Table 2-7: COM2, COM3 and COM5 Pin 9 Setting Jumper Settings

The COM2, COM3 and COM5 Pin 9 Setting jumper location are shown in **Figure 2-13** below.

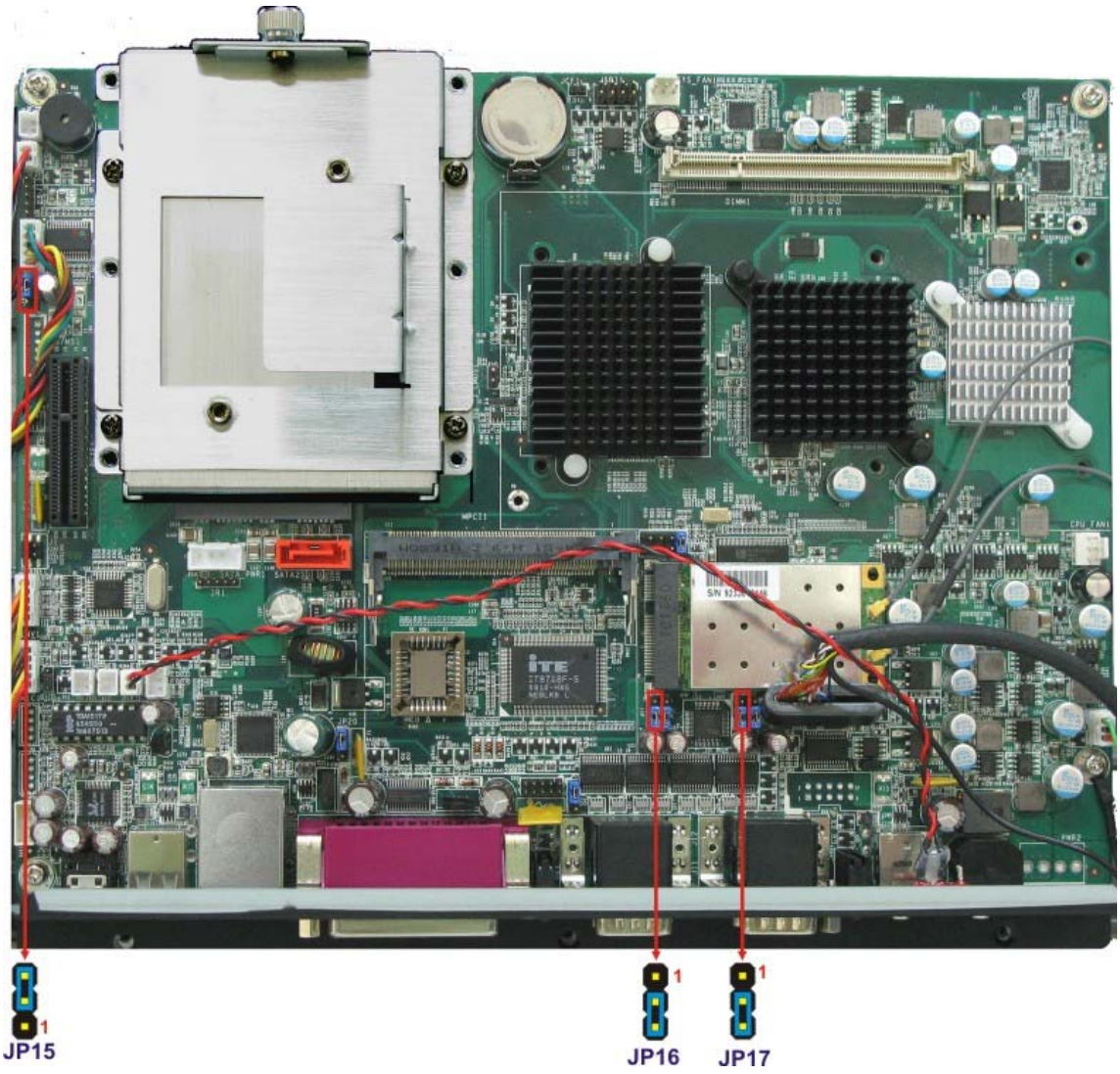


Figure 2-13: COM2, COM3 and COM5 Pin 9 Setting Jumper Locations

2.7.7 COM4 and COM6 Pin 9 Select

Jumper Label:	**JP18 and JP19**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 2-8**
Jumper Location:	See **Figure 2-14**

Three jumpers (JP18 and JP19) configure pin 9 on COM4 and COM6 DB-9 connectors. Pin 9 on the COM4 and COM6 DB-9 connectors can be set as either +12 V or as the ring

(RI) signal. The COM4 and COM6 Pin 9 Setting jumper selection options are shown in **Table 2-8**.

	Short 1 – 2 (Default)	Short 2 – 3
JP18	COM4 Pin 9 use RI	COM4 Pin 9 use +12 V
JP19	COM6 Pin 9 use RI	COM6 Pin 9 use +12 V

Table 2-8: COM4 and COM6 Pin 9 Setting Jumper Settings

The COM4 and COM6 Pin 9 Setting jumper location are shown in **Figure 2-14** below.

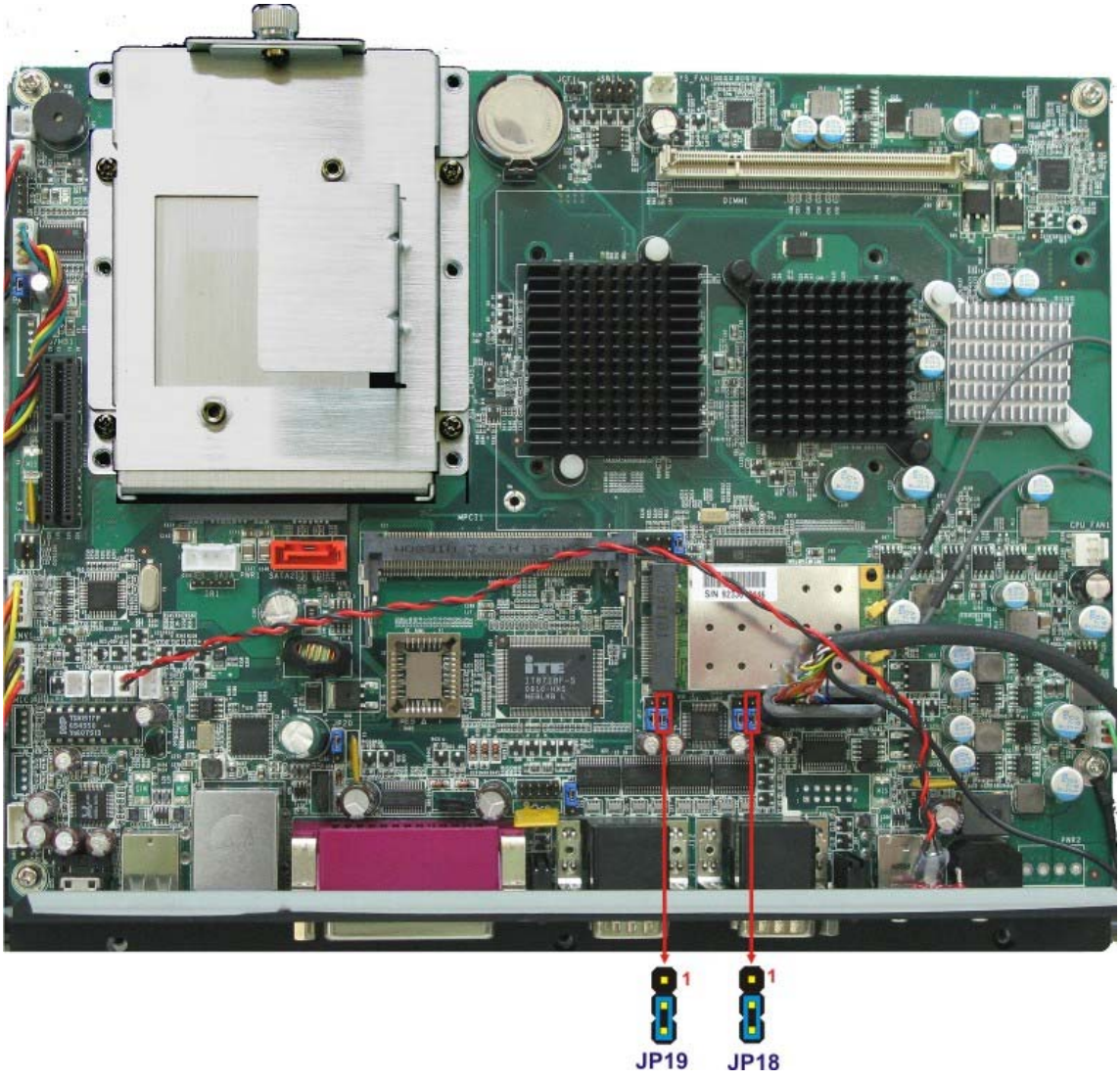


Figure 2-14: COM4 and COM6 Pin 9 Setting Jumper Locations

2.8 Installing the System

WARNING!

System failure can occur if the air vents are covered and the system overheats

The system must be installed on a flat surface. Make sure nothing blocks the air vents that allow cool air into the system.

2.9 Mounting the System

2.9.1 Stand Installation

To mount the POS system onto the stand that comes with the EP-165E-N270, please follow the steps below.

Step 1: Place the front panel of the EP-165E-N270 on a table.

Step 2: Align the four retention screw holes on the stand with the retention screw holes on the rear and bottom panel of the EP-165E-N270. See **Figure 2-15**.

Step 3: Insert the four retention screws to secure the stand with the EP-165E-N270. See **Figure 2-15**.

Figure 2-15: Stand Retention Screws

Step 4: Connect the audio cable on the stand to the audio jack on the bottom panel of the EP-165E-N270. See **Figure 2-16**.

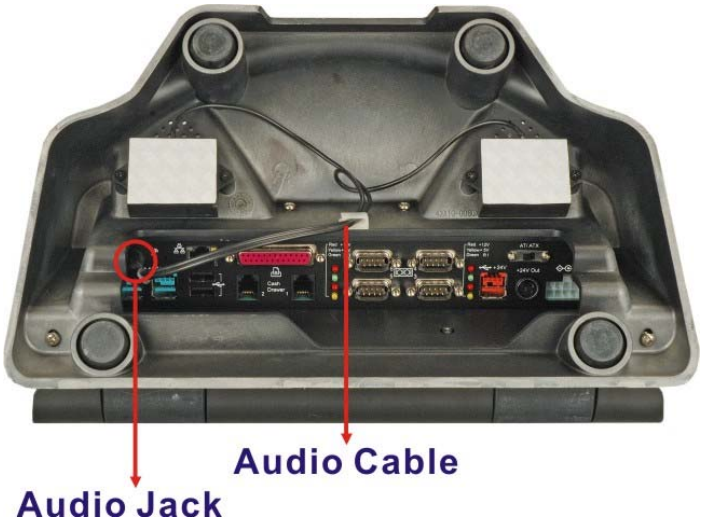


Figure 2-16: Audio Cable Connection

2.9.2 Wall Mounting (Optional)

WARNING!

When mounting the POS system onto the wall, it is better to have more than one person to help with the installation to make sure the POS system does not fall down and get damaged.

To mount the POS system 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 2-17**).

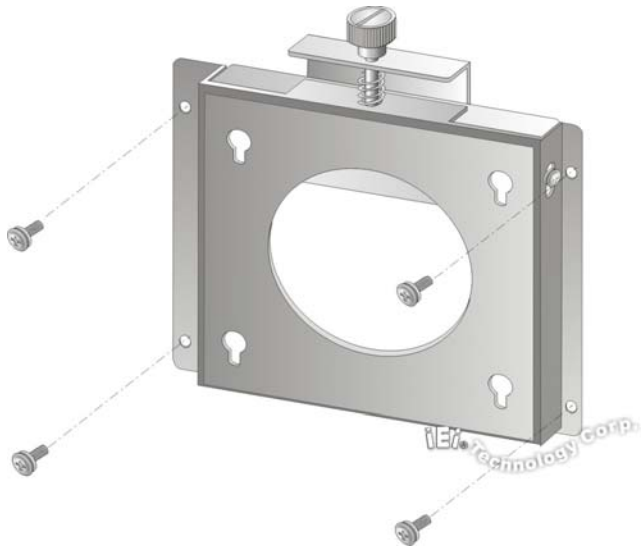


Figure 2-17: Wall-mounting Bracket

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 POS system and tighten until the screw shank is secured against the rear panel (**Figure 2-18**).

Step 7: Align the mounting screws on the 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 POS system rests securely in the slotted holes (**Figure 2-18**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

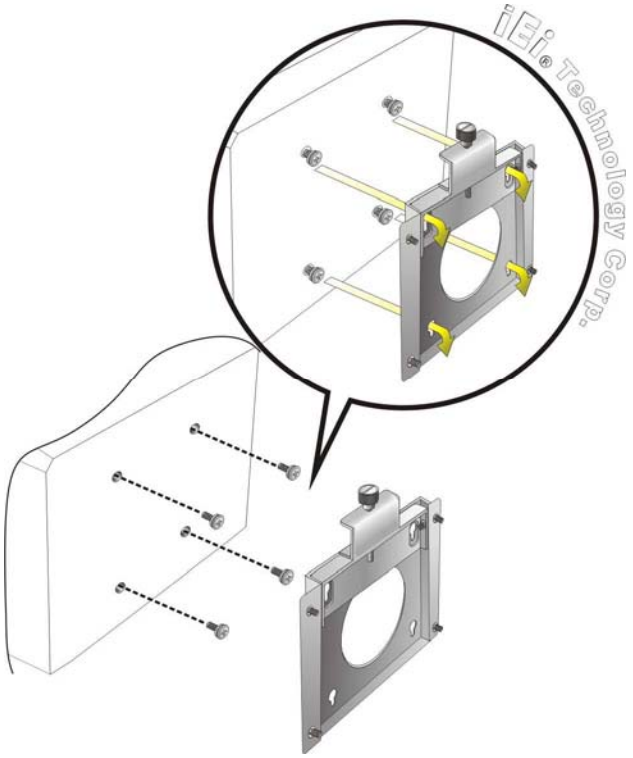


Figure 2-18: Chassis Support Screws

NOTE:

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

Step 9: Secure the POS system by fastening the retention screw of the wall-mounting bracket. (**Figure 2-19**).

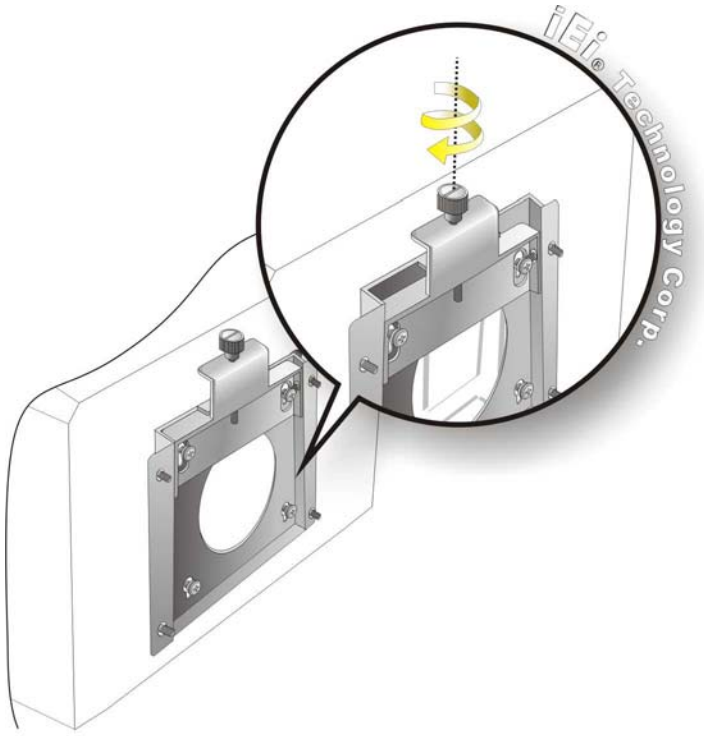


Figure 2-19: Secure the POS System

2.10 I/O Interface Connectors

The rear panel connectors extend the capabilities of the panel PC but are not essential for operation (except power).

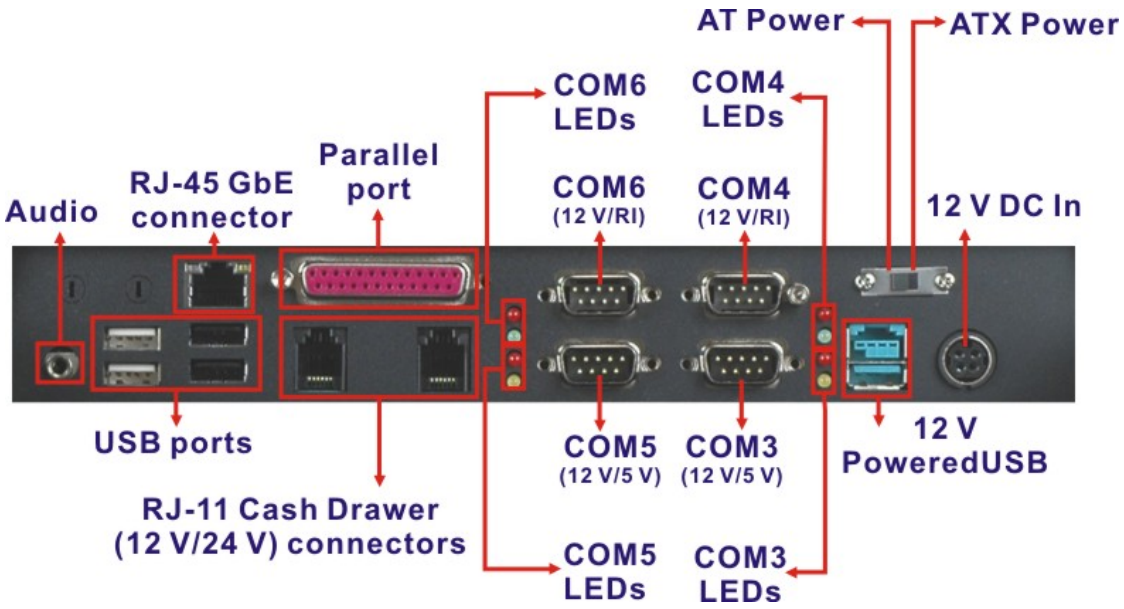


Figure 2-20: I/O Bottom Panel Connectors

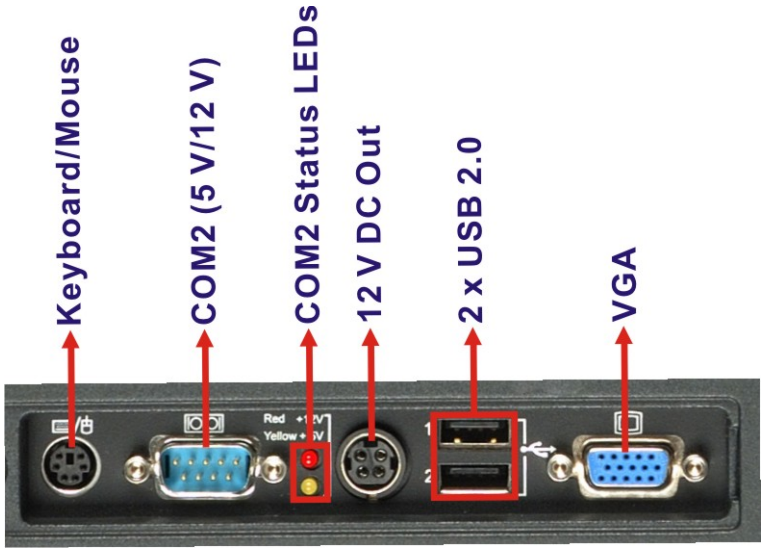


Figure 2-21: I/O Rear Access Panel Connectors

2.10.1 LAN Connection Cable

The RJ-45 connectors enable 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 connector** on the bottom panel.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel. See **Figure 2-22**.

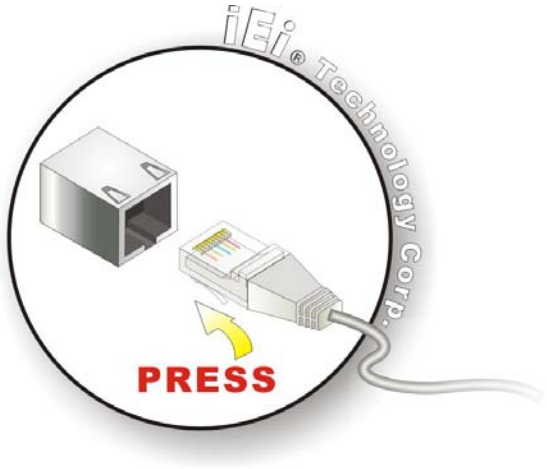


Figure 2-22: LAN Connection

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

2.10.2 USB Device Cable

To connect USB devices, 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 2-23**.

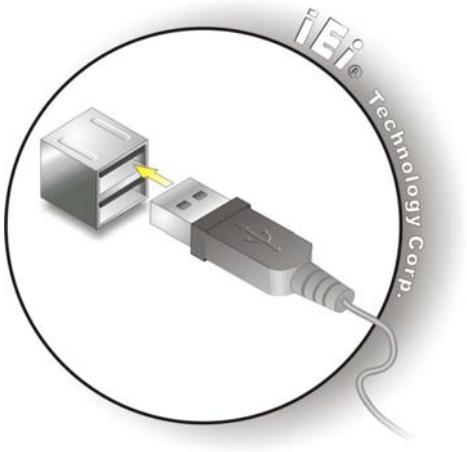


Figure 2-23: USB Device Connection

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

2.10.3 Parallel Device Connection

The EP-165E-N270 has a single female DB-25 connector on the external peripheral interface panel for parallel devices. Follow the steps below to connect a parallel device to the EP-165E-N270.

Step 1: **Locate the DB-25 connector**. The location of the DB-25 connector is shown in **Chapter 3**.

Step 2: **Insert the DB-25 connector**. Insert the DB-25 connector of a parallel device into the DB-25 connector on the external peripheral interface. See **Figure 2-24**.

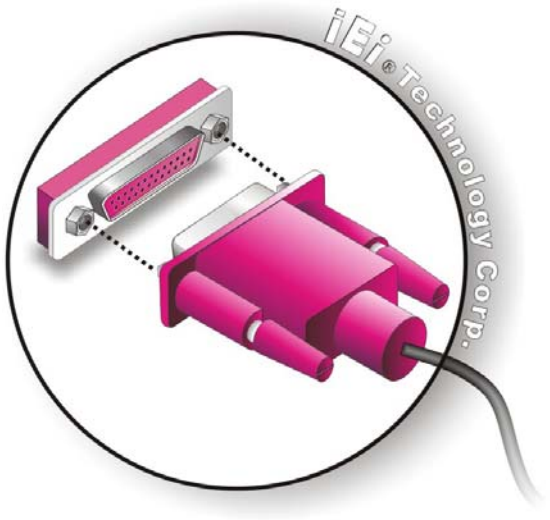


Figure 2-24: Parallel Device Connector

Step 3: **Secure the connector**. Secure the DB-25 connector to the external interface by tightening the two retention screws on either side of the connector.

2.10.4 PoweredUSB Cable

To connect the PoweredUSB cable, follow the steps and diagram below.

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

Step 2: **Align the connectors.** Align the cable with the connector on the device. **Figure 2-23**.

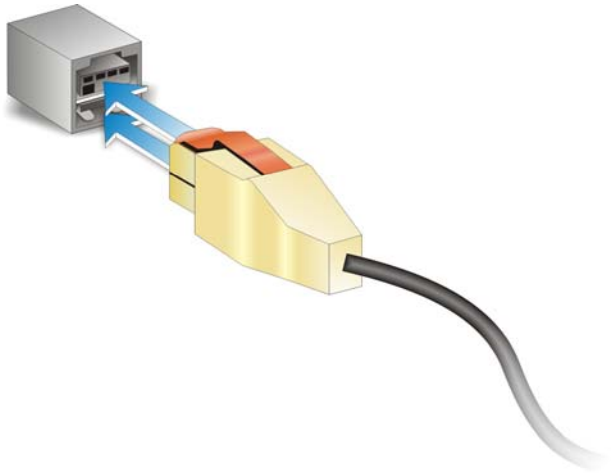


Figure 2-25: PoweredUSB Device Connection

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

2.10.5 PS/2 Keyboard and Mouse Connection

The EP-165E-N270 has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the EP-165E-N270.

Step 1: **Locate the dual PS/2 connector**. The location of the dual PS/2 connector is shown in **Chapter 3**.

Step 2: **Insert the keyboard/mouse connector**. Insert a PS/2 keyboard or mouse connector into the appropriate PS/2 connector on the external peripheral interface connector. See **Figure 2-26**.

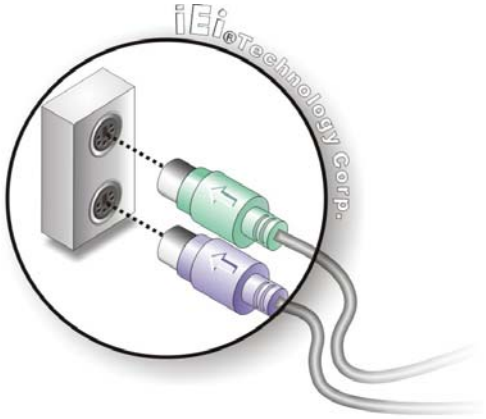


Figure 2-26: PS/2 Keyboard/Mouse Connector

2.10.6 RJ-11 Connectors for Cash Drawer Power

Two RJ-11 connectors on the bottom panel interface can provide 24 V or 12 V of power to a cash drawer. The cash drawer control can be controlled through the digital I/O and monitored through the Intelligent System Management Module (iSMM).

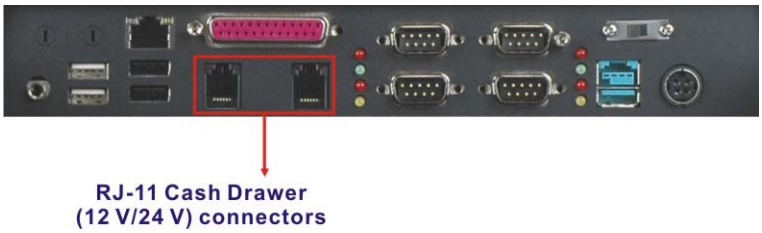


Figure 2-27: RJ-11 Connectors

2.10.7 Serial Device Connection

The EP-165E-N270 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the EP-165E-N270.

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 2-28**.

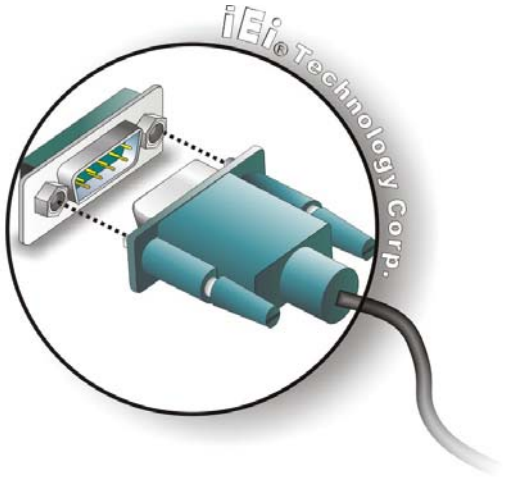


Figure 2-28: Serial Device Connector

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.

2.10.8 VGA Monitor Connection

The EP-165E-N270 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the EP-165E-N270, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the EP-165E-N270. See **Figure 2-29**.

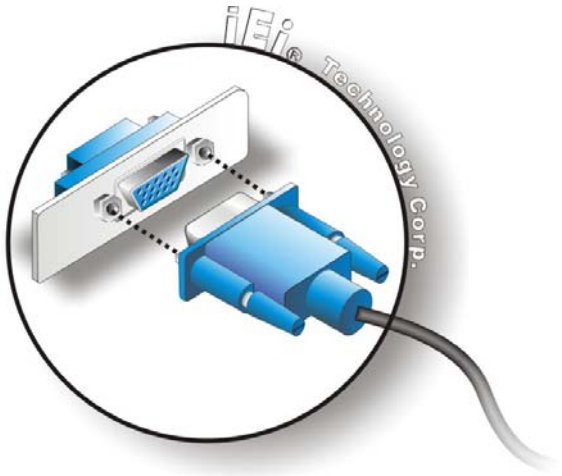


Figure 2-29: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

2.11 System Power

2.11.1 Power Mode

The POS system can be run in the AT power mode or the ATX power mode. Both these power modes are described below.

2.11.1.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The EP-165E-N270 POS system turns on automatically when the power is connected. The AT mode can benefit a big retail store by controlling multiple POS systems from a central management center.

2.11.1.2 ATX Power Mode

With the ATX mode selected, the EP-165E-N270 POS system goes in a standby mode when it is turned off. The POS system can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for POS applications since the POS system can be set individually and controlled remotely.

2.11.2 Power Supply

The system is shipped with a 100 V to 240 V IEI AC power supply unit (PSU) that has a maximum power output of 150 W. The PSU has one 12 V DC output connectors.

2.11.3 Power Connectors

There are two power connectors on the EP-165E-N270 POS system. There is a 12 V power input connector on the bottom panel. The remaining power connector is located on the rear panel and supports 12 V DC output. These connectors are shown in **Figure 2-30** below.

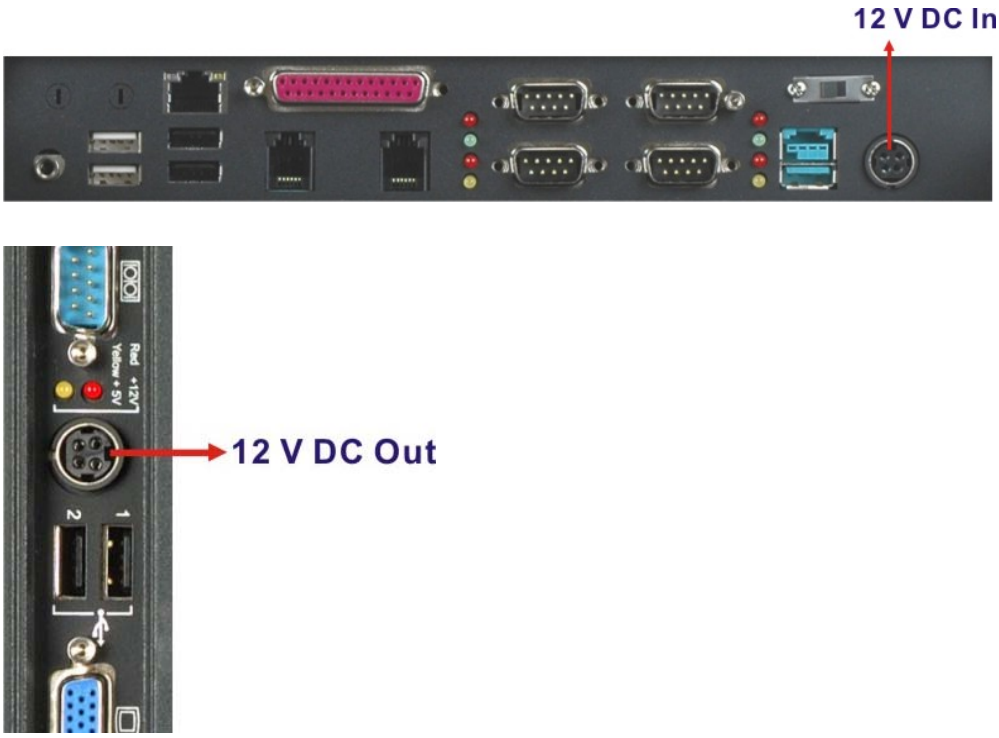


Figure 2-30: Power Connectors

2.11.3.1 Power Input Connector

A standard 6-pin connector on the connector interface panel is connected to the power supply and can input 12 V or 24 V of direct current into the system.

2.11.3.2 Power Output Connector

A standard 4-pin connector on the connector interface panel is provides 24 V of direct current to an external peripheral device such as a thermal printer.

2.12 Driver Installation

NOTE:

The contents 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.

Connect an optical drive to the EP-165E-N270. Load the installation CD into the optical drive. The driver program should automatically run. For correct operation, install all the drivers on the installation CD onto the EP-165E-N270.

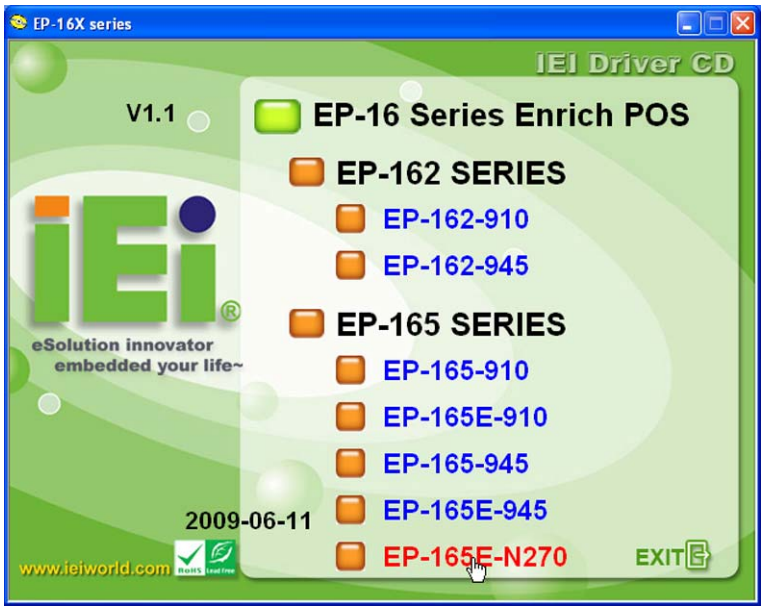


Figure 2–31: Driver Main Menu

The second screen is identical for all models (except for the model name).

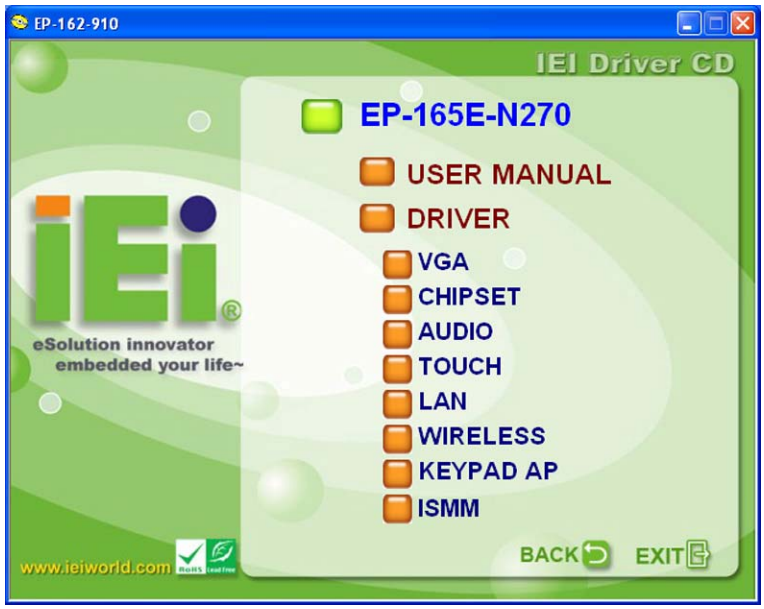


Figure 2–32: Driver Submenu

Chapter

3

BIOS Setup

3.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

3.1.1 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.

3.1.2 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
Plus & Minus	Changes the value
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
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

Key	Function
F10 key	Save all the CMOS changes, only for Main Menu

Table 3-1: BIOS Navigation Keys

3.1.3 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.

3.1.4 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**.

3.1.5 BIOS Menu Bar

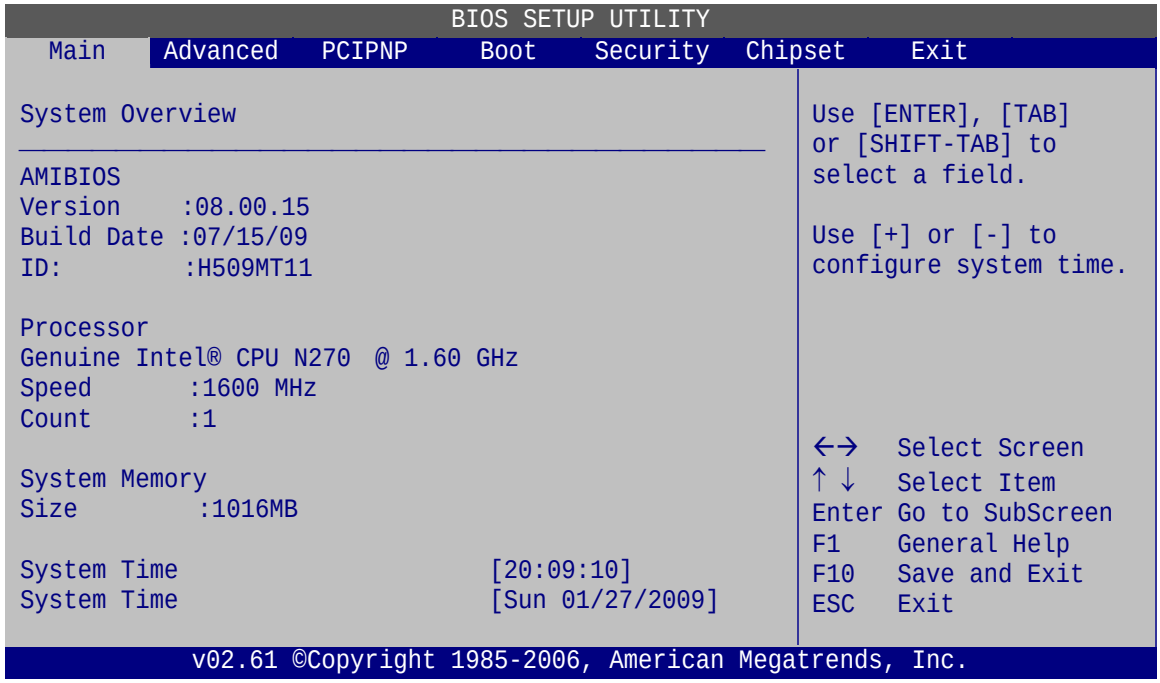
The **menu bar** on top of the BIOS screen has the following main items:

- 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.

3.2 Main

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



BIOS Menu 1: Main

- **System Overview**

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

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

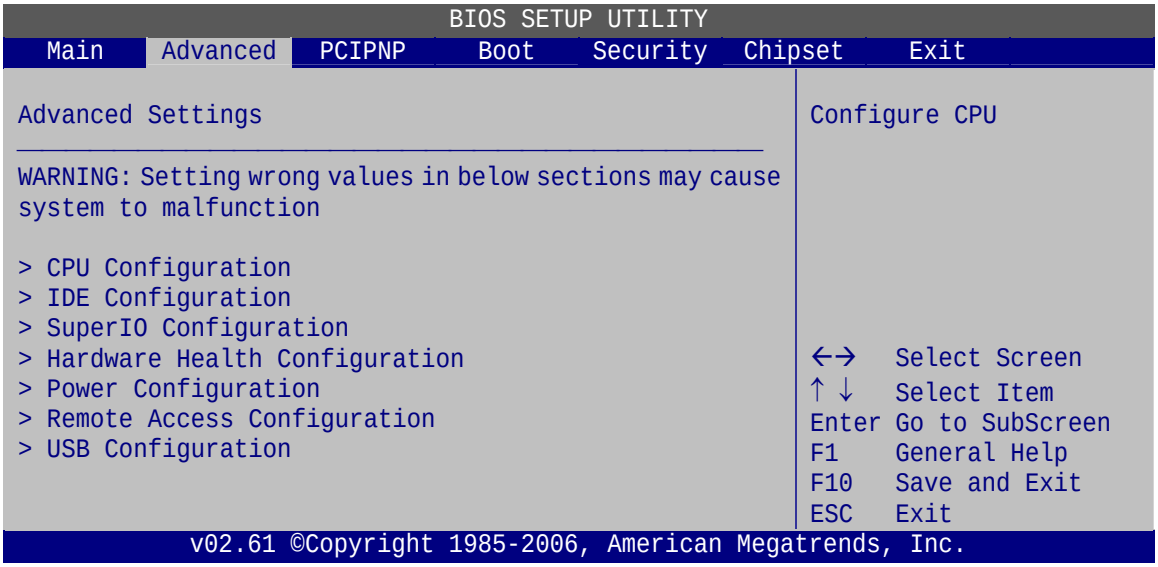
  Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

- **System Date [xx/xx/xx]**

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

3.3 Advanced

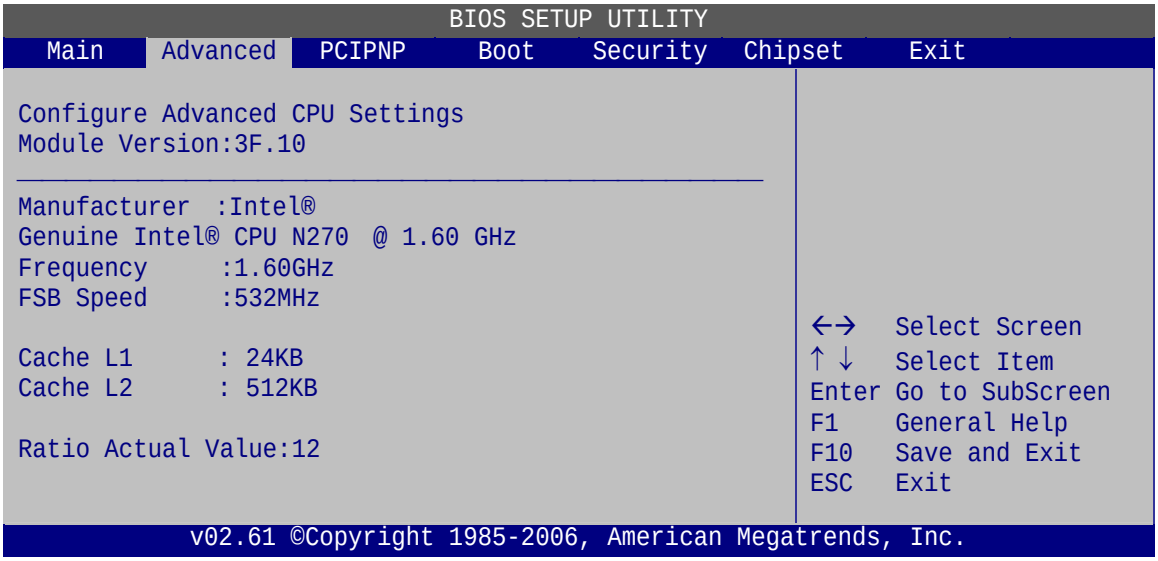
Use the **Advanced** menu (BIOS Menu 2) to configure the CPU and peripheral devices



BIOS Menu 2: Advanced

3.3.1 CPU Configuration

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



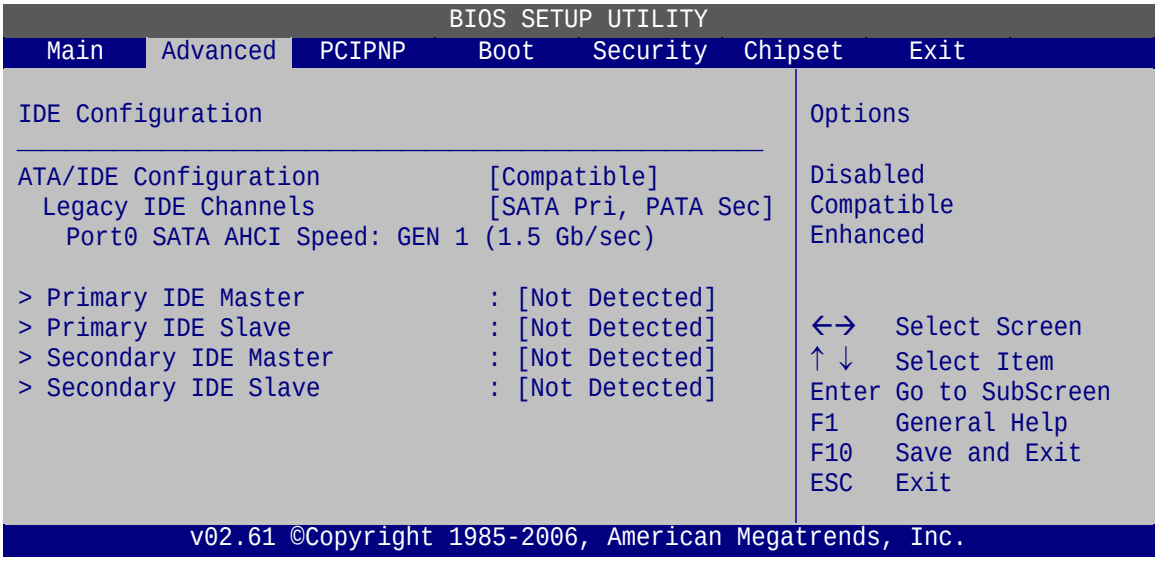
BIOS Menu 3: CPU Configuration

The CPU Configuration menu 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

3.3.2 IDE Configuration

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



BIOS Menu 4: IDE Configuration

- **ATA/IDE Configuration [Compatible]**

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

➔ **Disabled**		Disables the on-board ATA/IDE controller.
➔ **Compatible**	**DEFAULT**	The SATA drive is configured on an IDE channel.
➔ **Enhanced**		Both IDE and SATA channels are configured separately.

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

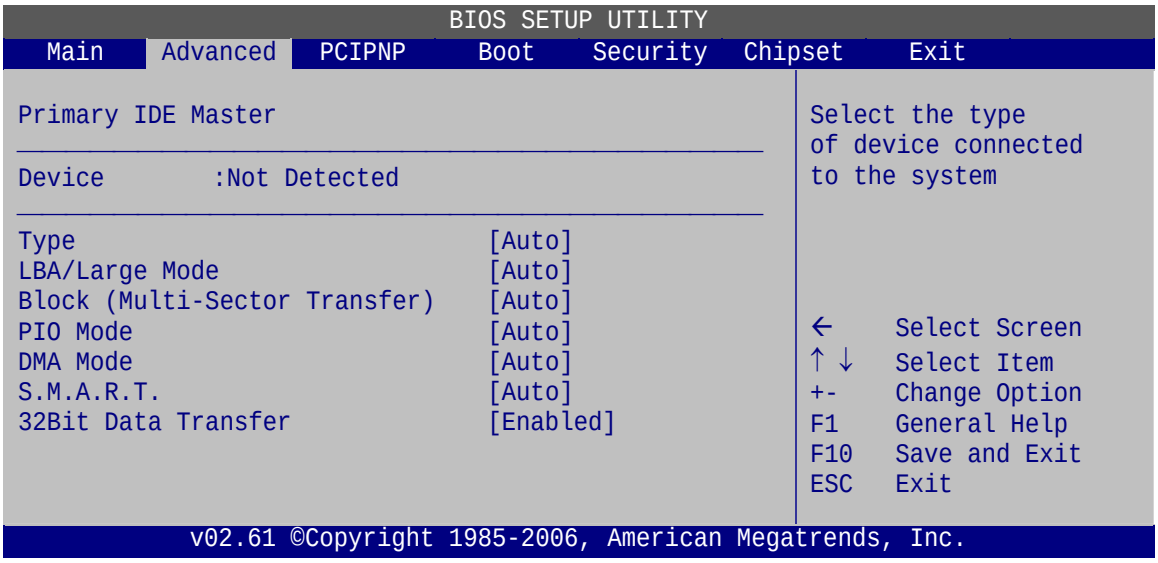
Use the **Legacy IDE Channels** option to configure SATA devices as normal IDE devices.

➔ **SATA Only**		Only SATA drives are on the IDE channels. IDE drives are disabled
➔ **SATA Pri, PATA Sec**	**DEFAULT**	SATA drives are configured on the Primary IDE channel. IDE drives on the Secondary IDE channel

➔ **PATA Only** Only the IDE drives are enabled. SATA drives are disabled

3.3.2.1 IDE Master, IDE Slave

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



BIOS Menu 5: IDE Master and IDE Slave Configuration

- **Auto-Detected Drive Parameters**

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

- Device: Lists the device type (e.g. hard disk, CD-ROM etc.)
- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.
- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per

interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.

- PIO Mode: Indicates the PIO mode of the installed device.
- Async DMA: Indicates the highest Asynchronous DMA Mode that is supported.
- Ultra DMA: Indicates the highest Synchronous DMA Mode that is supported.
- S.M.A.R.T.: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- 32Bit Data Transfer: Enables 32-bit data transfer.

- **Type [Auto]**

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

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ZIP LS-120

- **LBA/Large Mode [Auto]**

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

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

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

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

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

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

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

- **PIO Mode [Auto]**

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

➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3 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.
➔ **SWDMA0**		Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s
➔ **SWDMA1**		Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s
➔ **SWDMA2**		Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s
➔ **MWDMA0**		Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s
➔ **MWDMA1**		Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s
➔ **MWDMA2**		Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s
➔ **UDMA0**		Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6 MB/s
➔ **UDMA1**		Ultra DMA mode 1 selected with a maximum data transfer rate of 25 MB/s
➔ **UDMA2**		Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3 MB/s

➔ **UDMA3**		Ultra DMA mode 3 selected with a maximum data transfer rate of 44 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
➔ **UDMA4**		Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
➔ **UDMA5**		Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

- **S.M.A.R.T [Auto]**

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

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

- **32Bit Data Transfer [Enabled]**

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

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

3.3.3 Super IO Configuration

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

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

Configure Super I/O Chipset                          Allows BIOS to select
                                                     Serial Port1 Base
Parallel Port Address              [378]             Addresses
  Parallel Port Mode               [Normal]
  Parallel Port IRQ                [IRQ7]
Serial Port1 Address               [3F8/IRQ4]
Serial Port2 Address               [2F8/IRQ3]
  Serial Port2 Mode                [Normal]
  RI# output voltage is:5V
Serial Port3 Address               [3E8]
  Serial Port3 IRQ                 [11]              ←→   Select Screen
  RI# output voltage is:12V                          ↑ ↓  Select Item
Serial Port4 Address               [2E8]             Enter Go to SubScreen
  Serial Port4 IRQ                 [10]              F1    General Help
  RI# output voltage is:RI#                          F10   Save and Exit
Serial Port5 Address               [2F0]             ESC   Exit
  Serial Port5 IRQ                 [11]
  RI# output voltage is:5V
Serial Port6 Address               [2E0]
  Serial Port6 IRQ                 [11]
  RI# output voltage is:RI#

          V02.61 ©Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 6: Super IO Configuration

- **Parallel Port Address [Disabled]**

Use the **Parallel Port Address** option to select the parallel port base address.

➔ **Disabled**		No base address is assigned to the Parallel Port
➔ **378**	**DEFAULT**	Parallel Port I/O port address is 378
➔ **278**		Parallel Port I/O port address is 278
➔ **3BC**		Parallel Port I/O port address is 3BC

- **Parallel Port Mode [Normal]**

Use the **Parallel Port Mode** option to select the mode the parallel port operates in.

➔ **Normal**	**DEFAULT**	The normal parallel port mode is the standard mode for parallel port operation.
➔ **Bi-directional**		Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.
➔ **EPP**		The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
➔ **ECP+EPP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode The parallel port is also be compatible with EPP devices described above

- **Parallel Port IRQ [IRQ7]**

Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.

➔ **IRQ5**		IRQ5 is assigned as the parallel port interrupt address
➔ **IRQ7**	**DEFAULT**	IRQ7 is assigned as the parallel port interrupt address

- **Serial Port1 Address [3F8/IRQ4]**

Selects the serial port base address.

➔ **Disabled**		No base address
➔ **3F8/IRQ4**	**DEFAULT**	I/O address 3F8 and interrupt address IRQ4

➔ **3E8/IRQ4** I/O address 3E8 and interrupt address IRQ4

➔ **2E8/IRQ3** I/O address 2E8 and interrupt address IRQ3

- **RI# output voltage is:**

Lists the voltage of the power supplied through pin9 on the serial port.

- 12 V **DEFAULT**
- 5 V

➔ **Normal** **DEFAULT** Normal mode

➔ **IrDA** IrDA mode

➔ **ASK IR** ASKIR mode

- **Serial Port3 Address [3E8]**

Selects the serial port base address.

➔ **Disabled** No base address

➔ **3E8** **DEFAULT** I/O address 3E8

➔ **2E8** I/O address 2E8

➔ **2F0** I/O address 2F0

➔ **2E0** I/O address 2E0

- **Serial Port3 IRQ [11]**

Selects the serial port interrupt address.

➔ **10** IRQ address 10

➔ **11** **DEFAULT** IRQ address 11

- **RI# output voltage is:**

Lists the voltage of the power supplied through pin9 on the serial port.

- 12 V

- 5 V **DEFAULT**

- **Serial Port4 Address [2E8]**

  Selects the serial port base address.

  - ➔ **Disabled** No base address
  - ➔ **3E8** I/O address 3E8
  - ➔ **2E8** **DEFAULT** I/O address 2E8
  - ➔ **2F0** I/O address 2F0
  - ➔ **2E0** I/O address 2E0

- **Serial Port4 IRQ [10]**

  Selects the serial port interrupt address.

  - ➔ **10** IRQ address 10
  - ➔ **11** **DEFAULT** IRQ address 11

- **RI# output voltage is:**

  Lists the voltage of the power supplied through pin9 on the serial port.

  - 12 V
  - 5 V **DEFAULT**

- **Serial Port5 Address [2F0]**

  Selects the serial port base address.

  - ➔ **Disabled** No base address
  - ➔ **3E8** I/O address 3E8
  - ➔ **2E8** I/O address 2E8
  - ➔ **2F0** **DEFAULT** I/O address 2F0
  - ➔ **2E0** I/O address 2E0

- **Serial Port5 IRQ [10]**

  Selects the serial port interrupt address.

  ➔ **10** IRQ address 10

  ➔ **11** **DEFAULT** IRQ address 11

- **RI# output voltage is:**

  Lists the voltage of the power supplied through pin9 on the serial port.

  - 12 V
  - 5 V **DEFAULT**

3.3.4 Hardware Health Configuration

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

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

Hardware Health Event Monitoring                  Fan configuration
                                                  mode setting
FAN 1 Mode Setting              [Full On mode]
FAN 2 Mode Setting              [Full On mode]

CPU Temperature                 :57°C/132°F
System Temperature              :47°C/116°F

Fan1 Speed                      :N/A
Fan2 Speed                      :N/A

CPU Core                        :1.120 V
+1.05V                          :1.040 V
+3.30V                          :3.396 V
+5.00V                          :4.919 V          ←→  Select Screen
+12.0V                          :11.904 V         ↑ ↓  Select Item
+1.50V                          :1.488 V          Enter Go to SubScreen
+1.80V                          :1.792 V          F1   General Help
5VSB                            :4.919 V          F10  Save and Exit
VBAT                            :3.184 V          ESC  Exit

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```

BIOS Menu 7: Hardware Health Configuration

- **Mode Setting [Full On Mode]**

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

➔ **Full On Mode**	**DEFAULT**	Fan is on all the time
➔ **Automatic mode**		The fan adjusts its speed using these settings: Temp. Limit of OFF Temp. Limit of Start Fan Start PWM Slope PWM 1
➔ **PWM Manual mode**		The fan spins at the speed set in: Fan PWM control

- **Temp. Limit of OFF [000]**

WARNING:

CPU failure can result if this value is set too high

The fan will turn off if the temperature falls below this value.

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

- **Temp. Limit of Start [020]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

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

- **Start PWM [070]**

  This is the initial speed of the fan when it first starts spinning.

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

- **Slope PWM [1 PWM]**

  A greater value will increase the fan speed in large amounts. A smaller value will increase the speed more gradually.

  - 0 PWM
  - 1 PWM
  - 2 PWM
  - 4 PWM
  - 8 PWM
  - 16 PWM
  - 32 PWM
  - 64 PWM

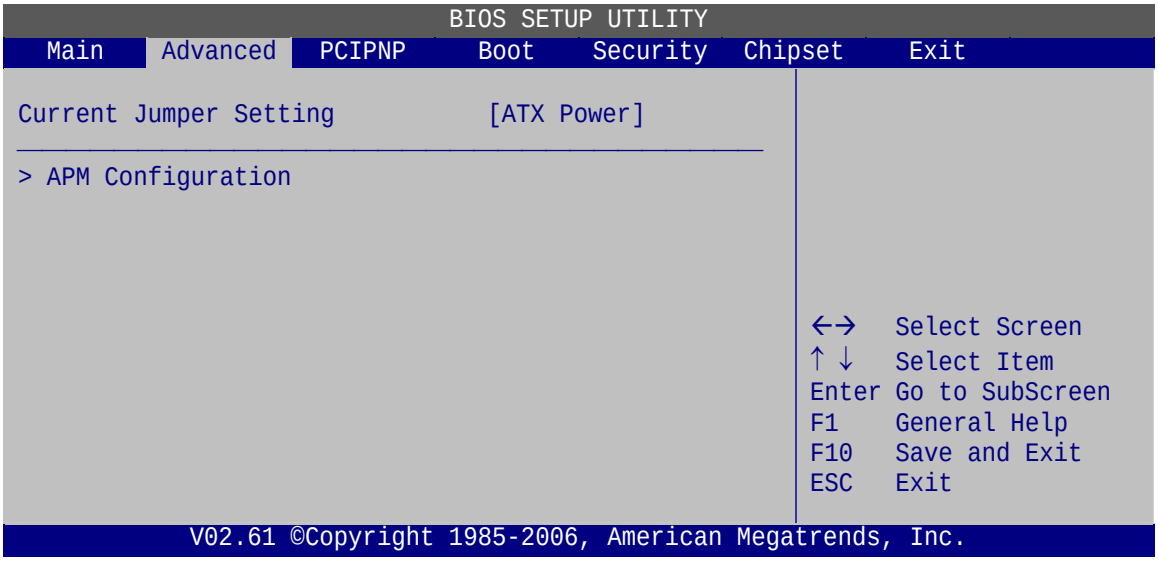
- **CPU Fan PWM Control [070]**

  This value specifies the speed of the fan.

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

3.3.5 Power Configuration

The **Power Configuration** menu (BIOS Menu 8) allows the advanced power management options to be configured.



BIOS Menu 8: APM Configuration

- **Current Jumper Setting [AT Power]**

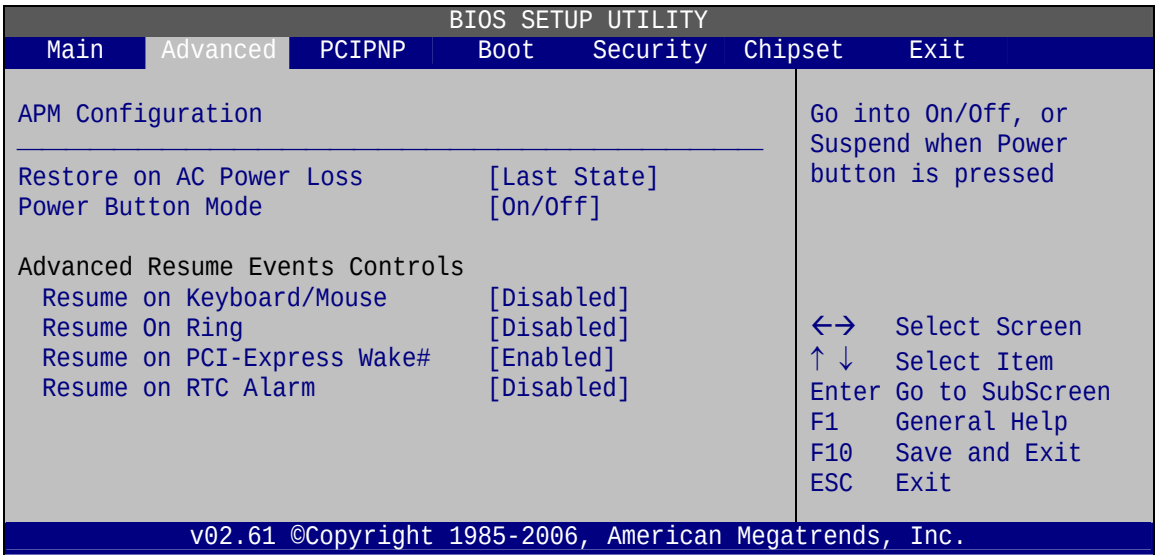
Shows the current setting of the power mode selection jumper.

➔ **AT Power** **DEFAULT** The system turns off immediately when the power is turned off, the computer does not go into a standby mode, and cannot be turned on remotely over a network

➔ **ATX Power** The system retains a limited amount of power to allow the system to be turned on remotely using the network connection

3.3.6 APM Configuration

The **APM Configuration** menu (**BIOS Menu 9**) allows the advanced power management options to be configured.



BIOS Menu 9: 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 Keyboard/Mouse [Disabled]**

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

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

- **Resume on Ring [Disabled]**

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

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

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

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

➔	**Disabled**		Wake event not generated by PCI-Express WAKE# signal activity
➔	**Enabled**	**DEFAULT**	Wake event generated by PCI-Express WAKE# signal activity

- **Resume On RTC Alarm [Disabled]**

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

➔ **Disabled**	**DEFAULT**	The real time clock (RTC) cannot generate a wake event
➔ **Enabled**		If selected, the following appears with values that can be selected: ▪ **RTC Alarm Date (Days)** ▪ **System Time** After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

3.3.7 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 10**) 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]

Serial port number               [COM1]
     Base Address, IRQ           [3F8H, 4]
Serial Port Mode                 [115200 8,n,1]
Redirection After BIOS POST      [Always]
Terminal Type                    [ANSI]

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

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```

BIOS Menu 10: 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 Flow Control Redirection after BIOS POST Terminal Type VT-UTF8 Combo Key Support These configuration options are discussed below.

- **Serial Port Number [COM1]**

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

➔ **COM1**	**DEFAULT**	System is remotely accessed through COM1
➔ **COM2**		System is remotely accessed through COM2

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

- **Base Address, IRQ [2F8h,3]**

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

- **Flow Control [None]**

Use the **Flow Control** option to report the flow control method for the console redirection application.

➔	**None**	**DEFAULT**	No control flow,
➔	**Hardware**		Hardware is set as the console redirection
➔	**Software**		Software is set as the console redirection

- **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

- **VT-UTF8 Combo Key Support [Disabled]**

Use the **VT-UFT8 Combo Key Support** option to enable additional keys that are not provided by VT100 for the PC 101 keyboard.

The VT100 Terminal Definition is the standard convention used to configure and conduct emergency management tasks with UNIX-based servers. VT100 does not support all keys on the standard PC 101-key layout, however. The VT-UTF8 convention makes available additional keys that are not provided by VT100 for the PC 101 keyboard.

➔	**Disabled**	**DEFAULT**	Disables the VT-UTF8 terminal keys
➔	**Enabled**		Enables the VT-UTF8 combination key. Support for ANSI/VT100 terminals

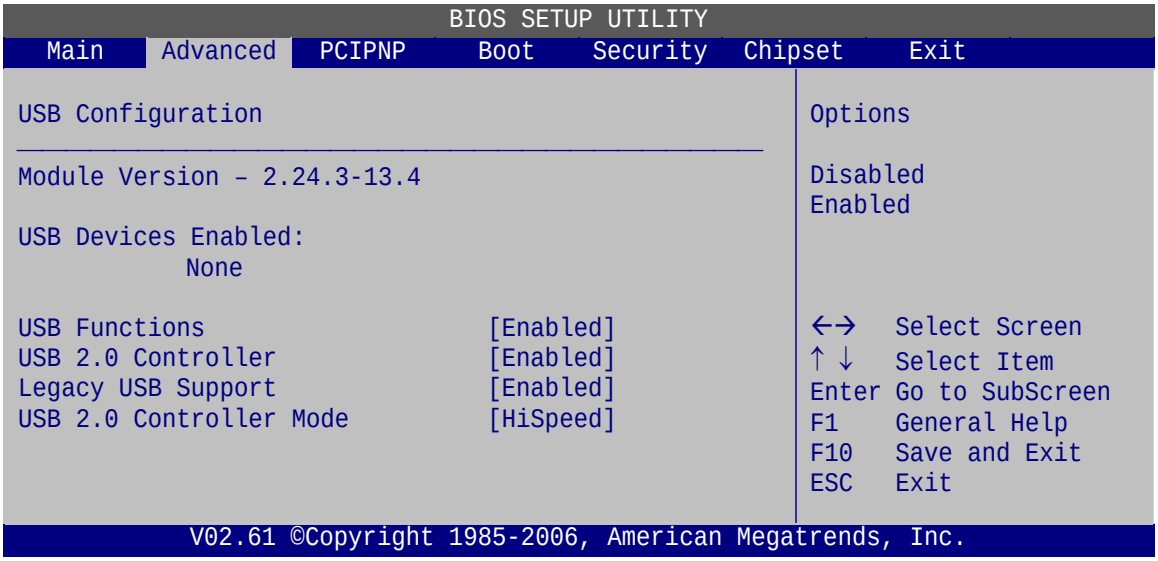
- **Sredir Memory Display Delay [Disabled]**

Use the **Sredir Memory Display Delay** option to select the delay before memory information is displayed. Configuration options are listed below

- No Delay DEFAULT
- Delay 1 sec
- Delay 2 sec
- Delay 4 sec

3.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 11**) to read USB configuration information and configure the USB settings.



BIOS Menu 11: USB Configuration

- **USB Configuration**

The **USB Configuration** field shows the system USB configuration. The items listed are:

  - Module Version: x.xxxxx.xxxxx

- **USB Devices Enabled**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

- **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

➔	**Disabled**		USB 2.0 controller disabled
➔	**Enabled**	**DEFAULT**	USB 2.0 controller enabled

- **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

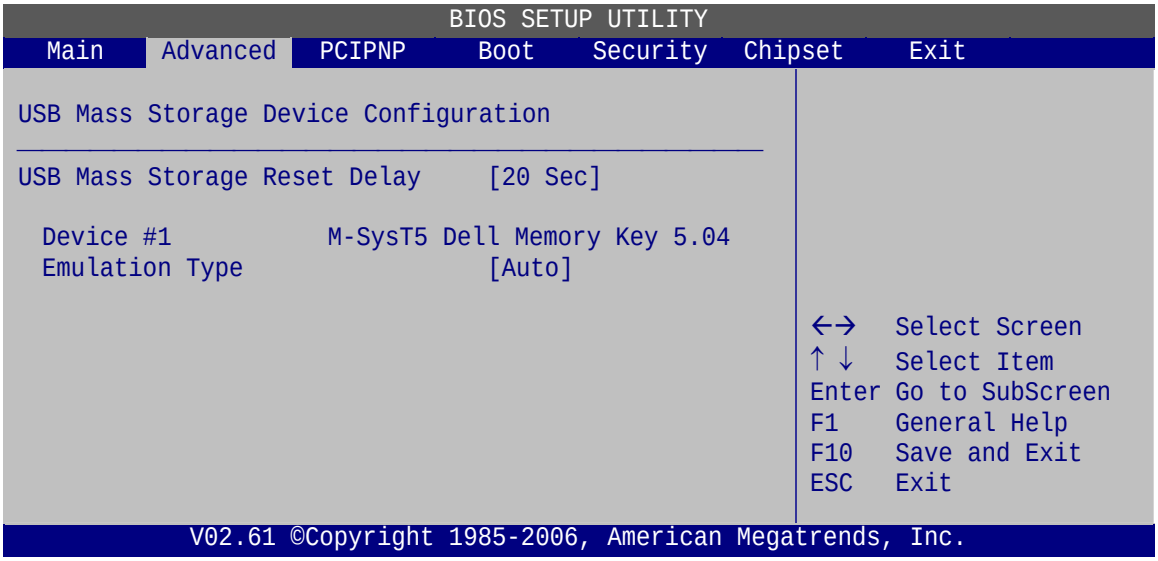
- **USB2.0 Controller Mode [HiSpeed]**

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

3.3.8.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (**BIOS Menu 12**) to configure USB mass storage class devices.



BIOS Menu 12: USB Mass Storage Device Configuration

- **USB Mass Storage Reset Delay [20 Sec]**

Use the **USB Mass Storage Reset Delay** option to set the number of seconds POST waits for the USB mass storage device after the start unit command.

➔ **10 Sec**		POST waits 10 seconds for the USB mass storage device after the start unit command.
➔ **20 Sec**	**DEFAULT**	POST waits 20 seconds for the USB mass storage device after the start unit command.
➔ **30 Sec**		POST waits 30 seconds for the USB mass storage device after the start unit command.
➔ **40 Sec**		POST waits 40 seconds for the USB mass storage device after the start unit command.

- **Device ##**

The **Device##** field lists the USB devices that are connected to the system.

- **Emulation Type [Auto]**

Use the **Emulation Type** BIOS option to specify the type of emulation BIOS has to provide for the USB device.

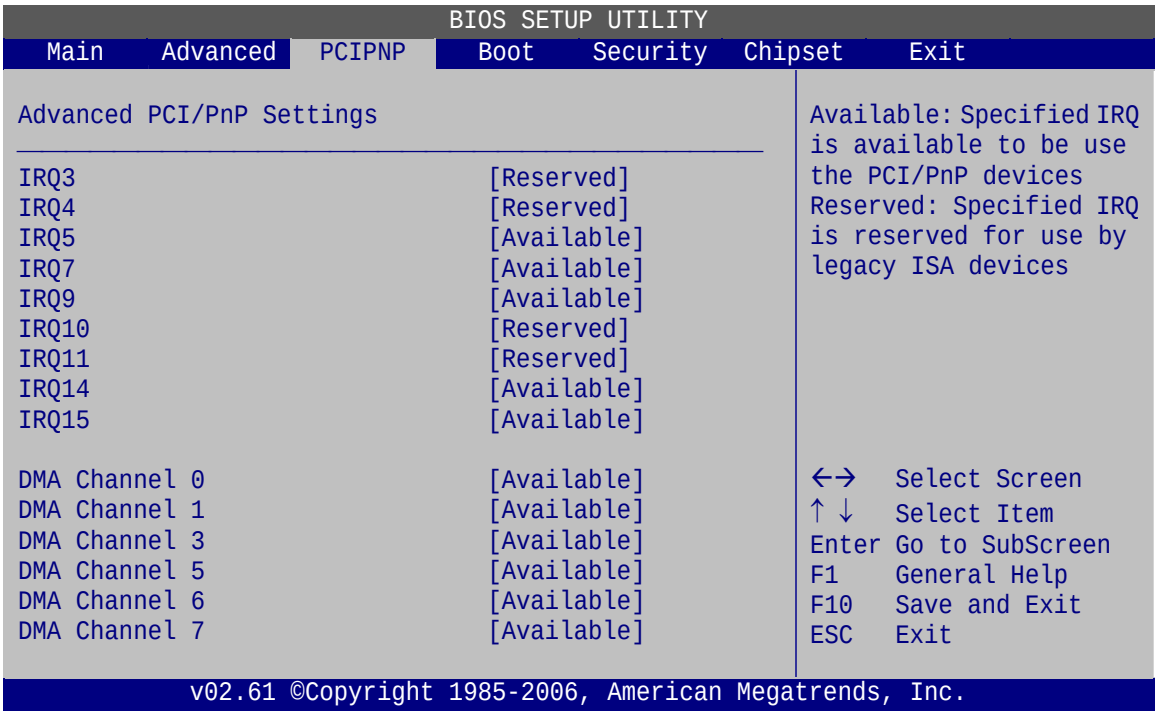
➔ **Auto**	**DEFAULT**	BIOS auto-detects the current USB.
➔ **Floppy**		The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.
➔ **Forced FDD**		Allows a hard disk image to be connected as a floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.
➔ **Hard Disk**		Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.
➔ **CDROM**		Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this option.

3.4 PCI/PnP

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

WARNING!

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



BIOS Menu 13: PCI/PnP Configuration

- **IRQ# [Available]**

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

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

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

Available IRQ addresses are:

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

- IRQ 14
- IRQ 15

- **DMA Channel# [Available]**

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

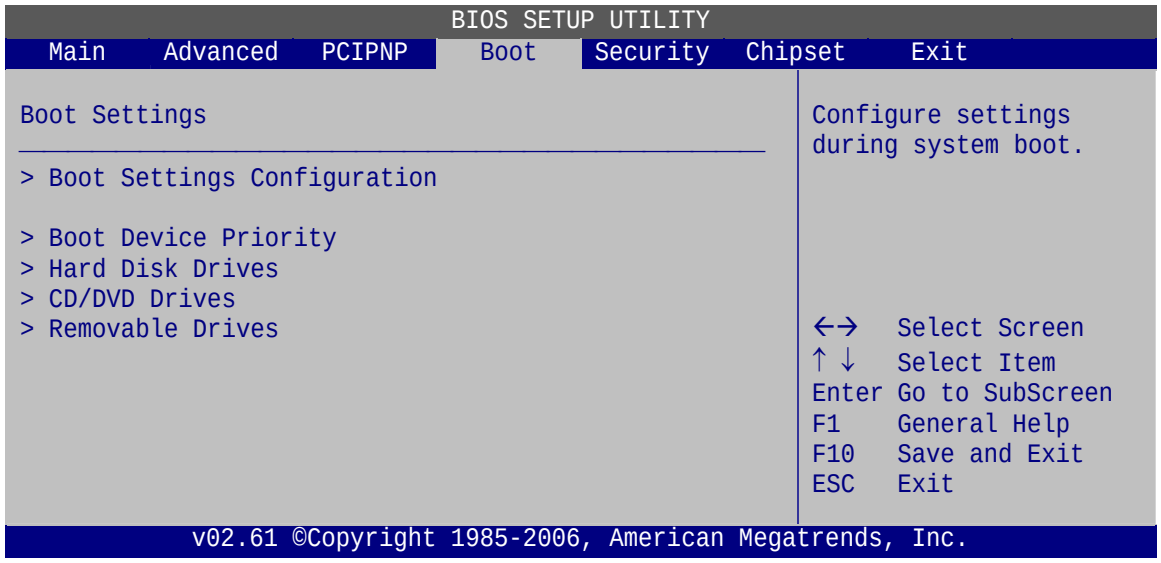
➔ **Available**	**DEFAULT**	The specified DMA is available to be used by PCI/PnP devices
➔ **Reserved**		The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

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

3.5 Boot

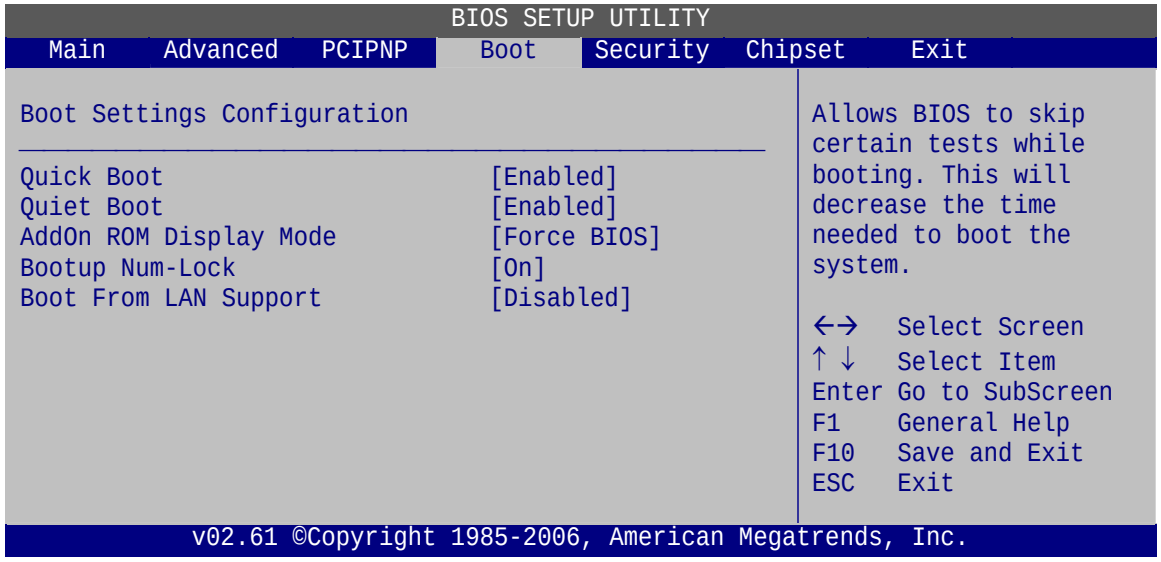
Use the **Boot** menu (**BIOS Menu 14**) to configure system boot options.



BIOS Menu 14: Boot

3.5.1 Boot Settings Configuration

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



BIOS Menu 15: Boot Settings Configuration

- **Quick Boot [Enabled]**

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

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

- **Quiet Boot [Enabled]**

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

➔ **Disabled**	**DEFAULT**	Normal POST messages displayed
➔ **Enabled**		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.

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

➔ **Enabled** **DEFAULT** Can be booted from a remote system through the LAN

3.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 16**) to specify the boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

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

Boot Device Priority                          Specifies the boot
-------------------------------------------   sequence from the
> 1st Boot Device              [1st Boot Device]  available devices.
> 2nd Boot Device              [2nd Boot Device]
> 3rd Boot Device              [3rd Boot Device]


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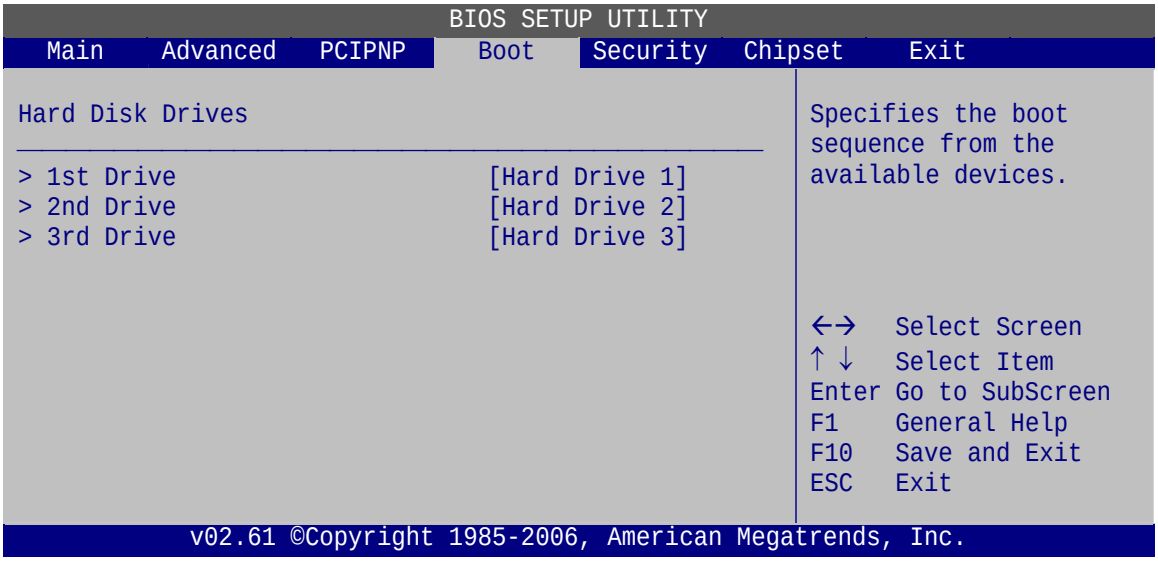

BIOS Menu 16: Boot Device Priority Settings

3.5.3 Hard Disk Drives

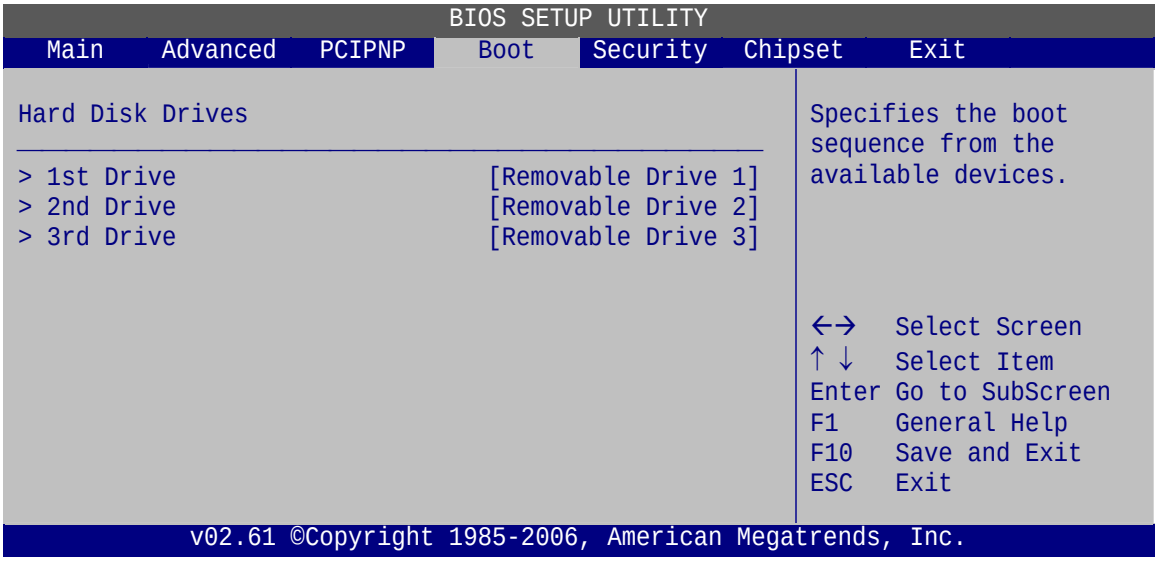
Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. Only installed hard drives are shown.



BIOS Menu 17: Hard Disk Drives

3.5.4 Removable Drives

Use the **Removable Drives** menu (**BIOS Menu 18**) to specify the boot sequence of the removable drives. Only connected drives are shown.



BIOS Menu 18: Removable Drives

3.5.5 CD/DVD Drives

Use the **CD/DVD Drives** menu to specify the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 1st Drive [CD/DVD: PM-(part ID)]
- 2nd Drive [HDD: PS-(part ID)]
- 3rd Drive [HDD: SM-(part ID)]
- 4th Drive [HDD: SM-(part ID)]

NOTE:

Only the drives connected to the system are shown. For example, if only two CDs or DVDs are connected only "**1st Drive**" and "**2nd Drive**" are listed.

The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available CD/DVD drives is shown. Select the first CD/DVD drive the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.

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

Hard Disk Drives                                  Specifies the boot
                                                  sequence from the
> 1st Drive                    [CD/DVD 1]         available devices.
> 2nd Drive                    [CD/DVD 2]
> 3rd Drive                    [CD/DVD 3]


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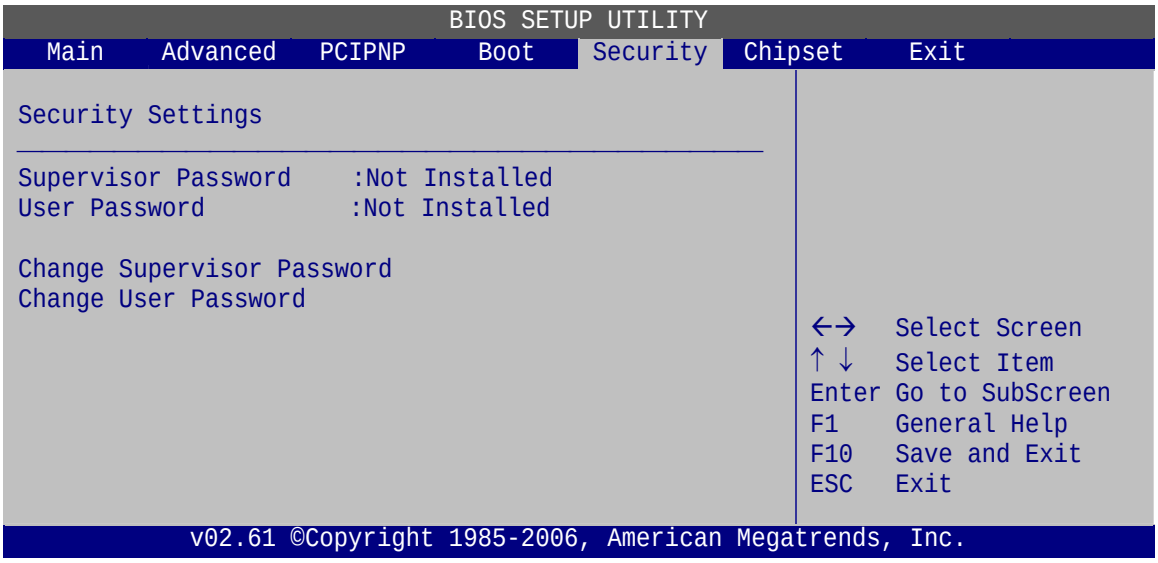

BIOS Menu 19: CD/DVD Drives

3.6 Security

Use the **Security** menu (**BIOS Menu 20**) to set system and user passwords.



BIOS Menu 20: 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**

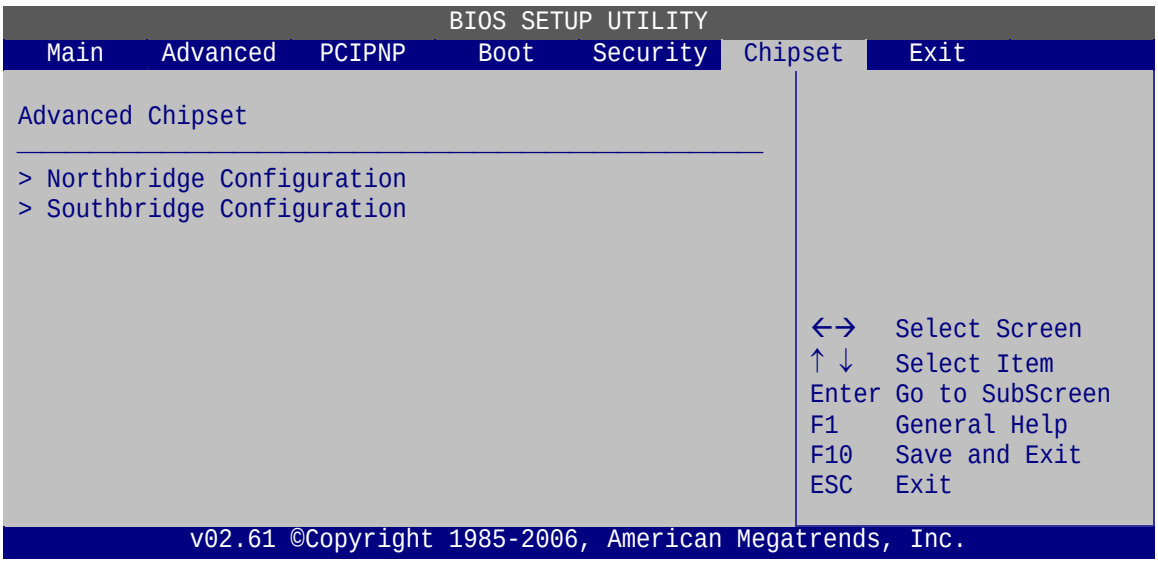
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

3.7 Chipset

Use the **Chipset** menu (**BIOS Menu 21**) to access the Northbridge and Southbridge configuration menus

WARNING!

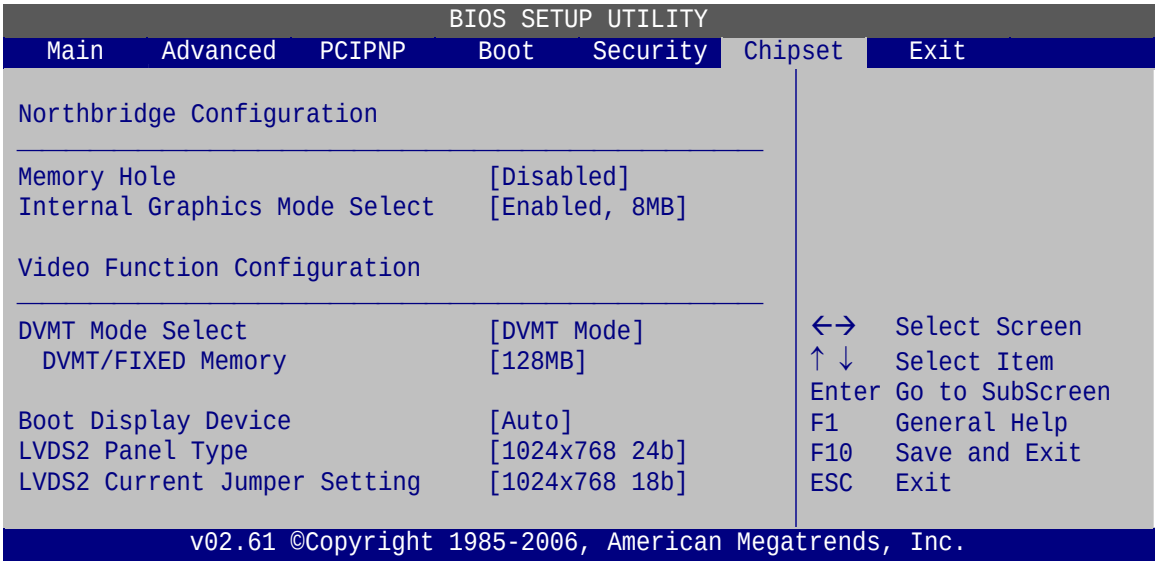
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 21: Chipset

3.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 22**) to configure the Northbridge chipset.



BIOS Menu 22: 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**	Disabled the onboard graphics

➔ **Enable, 1 MB** Dedicates 1 MB of main memory for graphics

➔ **Enable, 8 MB** **DEFAULT** Dedicated 8 MB of main memory for graphics

- **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 [128 MB]**

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 Selec**t option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128 MB. Configuration options are listed below.

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

- **Boot Display Device [Auto]**

Selects which graphics output to use first after the system is turned on. Auto selects the first available device.

- Auto **DEFAULT**
- CRT

- LVDS

- **LVDS2 Panel Type [by H/W]**

Use the **LVDS2 Panel Type** to determine the LCD panel resolution. Configuration options are listed below:

- 1024x768 18b
- 1024x768 24b
- 1280x1024 36b
- 1280x1024 48b
- By H/W **DEFAULT**

- **Current Jumper Setting**

Shows current value of the hardware jumper setting for the LVDS resolution. This is the value used when "by H/W" is selected in the setting above.

3.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (**BIOS Menu 23**) configures the Southbridge chipset.

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

 Southbridge Configuration                          Options
 ___________________________________________________
 Audio Controller                 [Enabled]         Enabled
 Cashdraw control                 [Enabled]         Disabled
 Spread Spectrum Function         [Disabled]

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

           v02.61 ©Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 23:Southbridge Chipset Configuration

- **Audio Controller [Enabled]**

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

➔	**Enabled**	**DEFAULT**	All audio ports are activated and can be used
➔	**Disabled**		All audio ports are disabled

- **Cashdraw Control [Enabled]**

Use the **Cashdraw Control** option to enable or disable the port that controls the cashdraw.

- Enabled **DEFAULT**
- Disabled

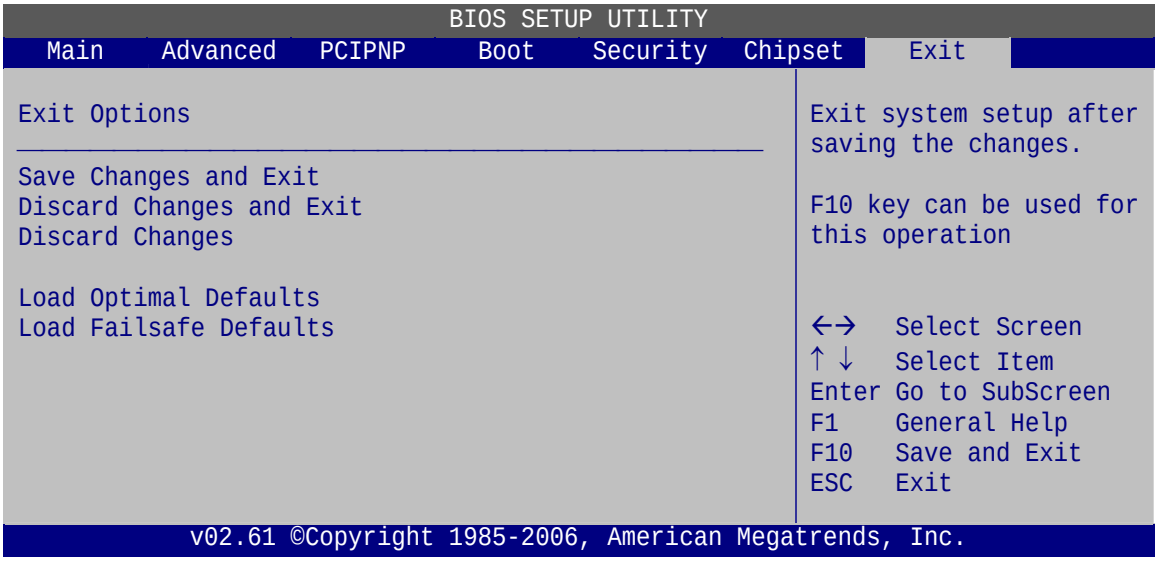
- **Spread Spectrum Mode [Disabled]**

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

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

3.8 Exit

Use the **Exit** menu (**BIOS Menu 24**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 24: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

4

System Maintenance

4.1 System Maintenance Introduction

If the components of the EP-165E-N270 fail they must be replaced, such as the wireless LAN module or the motherboard. Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions and jumper settings for the EP-165E-N270 are described below.

4.2 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.

4.3 Cover Removal

WARNING!

Turn off the power before removing the bottom 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.

The bottom cover of the EP-165E-N270 must be removed. To remove the bottom cover, remove the screws then lift the cover off.

Figure 4-1: Bottom Cover Retention Screws

4.4 Memory Module Replacement

The flat panel PC has a preinstalled memory module. If the memory module fails, take the steps below to replace it.

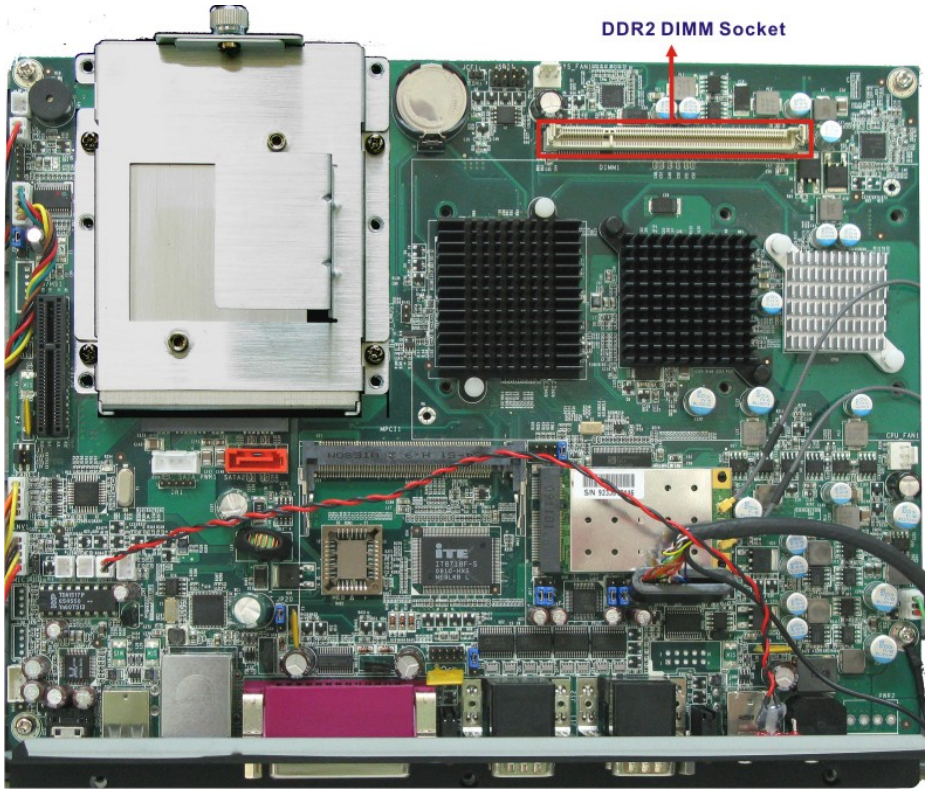


Figure 4-2: DDR2 DIMM Socket Location

Step 1: Remove the bottom cover.

Step 2: Locate the memory module on the motherboard.

Step 3: Remove the memory module by unclipping the side retention clips then pulling the memory out.

Step 4: Push the new memory module into the slot, until the clip click into place.

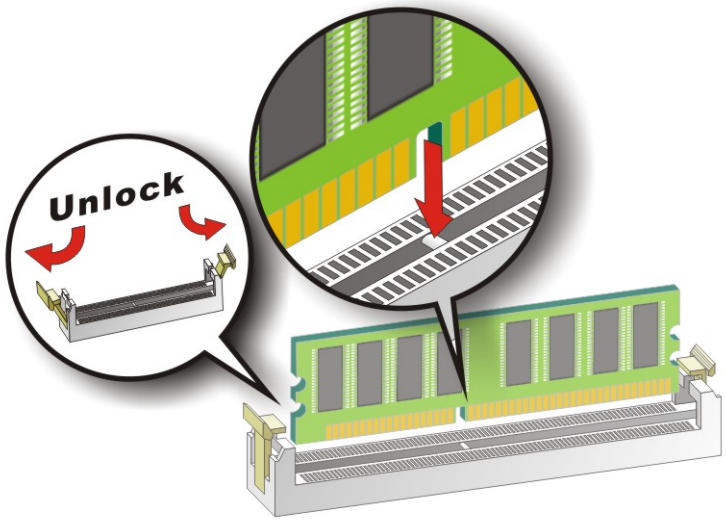


Figure 4-3: DDR DIMM Module Installation

4.5 Hard Drive and CompactFlash® Replacement

To replace the hard drive or CompactFlash® card, please refer to the hard drive (**Section 2.4**) and CompactFlash® installation (**Section 2.5**) sections.

Chapter

5

iSMM

5.1 iSMM Introduction

The IEI Intelligent System Management Module (iSMM) application monitors and shows the voltage, fan speed, temperature, and watchdog time, DIO and cash drawer information of the system. The users can control the setting in the following pages:

- Voltage Page
- Fan Page
- Temperature Page
- DIO Page
- WDT Page
- Cashdrawer Page

5.2 iSMM Installation

Follow the steps below to install the iSMM application.

Step 1: Insert the utility CD that came with the EP-165E-N270 into a CD drive connected to the system.

Step 2: Click the **setup.exe** in the IEI iSMM folder.

Step 3: The welcome screen in **Figure 5-1** appears.

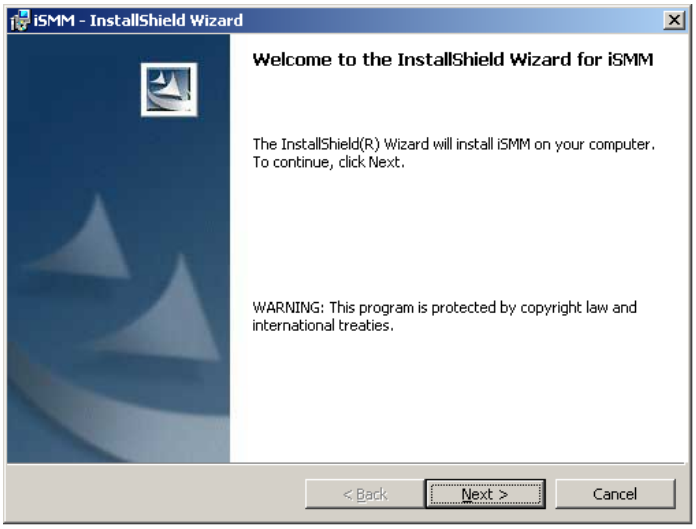


Figure 5-1: iSMM Installation Welcome Screen

Step 4: Click **NEXT** to continue the installation process.

Step 5: The customer information in **Figure 5-2** appears.

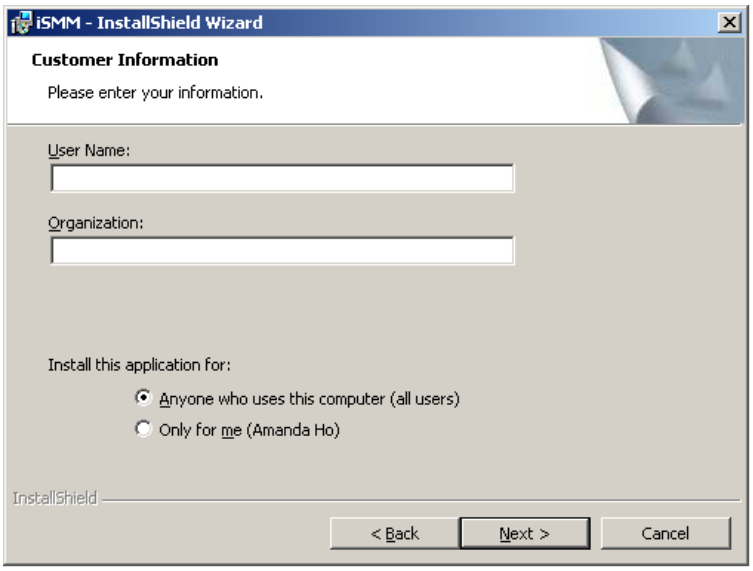


Figure 5-2: iSMM Installation Customer Information

Step 6: Fill out the information and click **NEXT**.

Step 7: The Ready to Install the Program in **Figure 5-3** appears.

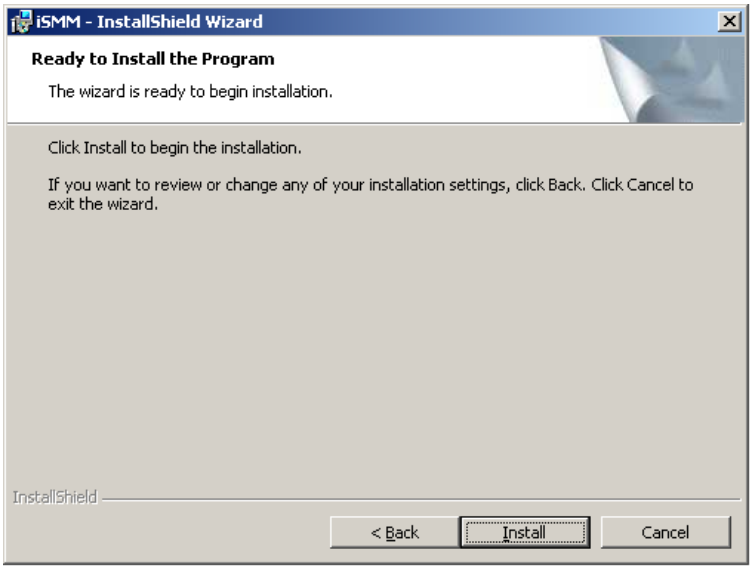


Figure 5-3: Ready to Install the Program Window

Step 8: Click **NEXT** to start the software installation.

Step 9: After the driver installation process is complete, a confirmation screen appears.

Step 10: Click **FINISH** to complete the software installation.

5.3 Voltage Page

The IEI iSMM application monitors and shows the current system voltages on the Voltage Page (**Figure 5-4**). The following sections describe the Voltage Page in details.

Figure 5-4: Voltage Page

5.3.1 Refresh Time Setting

The iSMM refreshes the voltage values according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Voltage Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-5**).

Step 3: Click **apply** (**Figure 5-5**).

Figure 5-5: Voltage Refresh Time Setting

5.3.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each voltage can be set by the user. When the voltage is greater than the high limit value or smaller than the low limit value, the voltage value are displayed in red. For example, the VBAT voltage (3.22V) shows in red in **Figure 5-4** since the current VBAT voltage is greater than the high limit value (3.2V).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-6**).

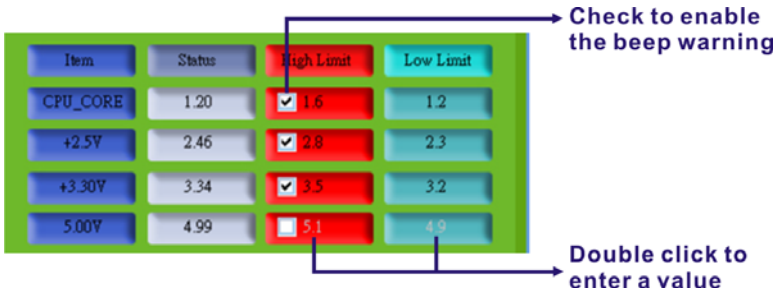


Figure 5-6: Voltage Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified system voltage is greater or smaller than the high limit or low limit (**Figure 5-6**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**)

5.4 Fan Page

The IEI iSMM application monitors and shows the fan speeds on the Fan Page (**Figure 5-7**). The following sections describe the Fan Page in details.

Figure 5-7: Fan Page

5.4.1 Refresh Time Setting

The iSMM refreshes the fan speed values according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Fan Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-8**).

Step 3: Click **apply** (**Figure 5-8**).

Figure 5-8: Fan Speed Refresh Time Setting

5.4.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each fan speed can be set by the user. When the fan speed is greater than the high limit value or smaller than the low limit value, the fan speed value are displayed in red. For example, the CPU fan speed (1920) shows in red in **Figure 5-7** since the current CPU speed is lower than the low limit value (2000).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-9**).

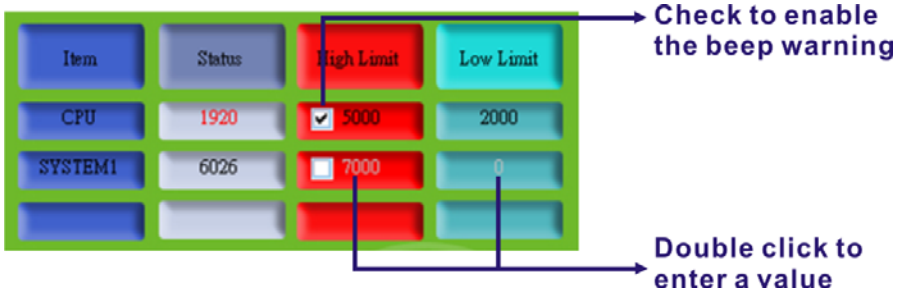


Figure 5-9: Fan Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified fan speed is greater or smaller than the high limit or low limit (**Figure 5-9**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**)

5.4.3 Smart Fan Setting

The Smart Fan Setting page is for advanced fan setting. The user can enable or disable the specific fan. When the fan is enabled, the user can control the fan in three different modes (On/Off Mode, PWM Mode and Automatic Mode).

5.4.3.1 On/Off Mode

In the On/Off Mode, choose **Off** or **On** to turn off or turn on the fan. Click **apply** or **ok** when finished.

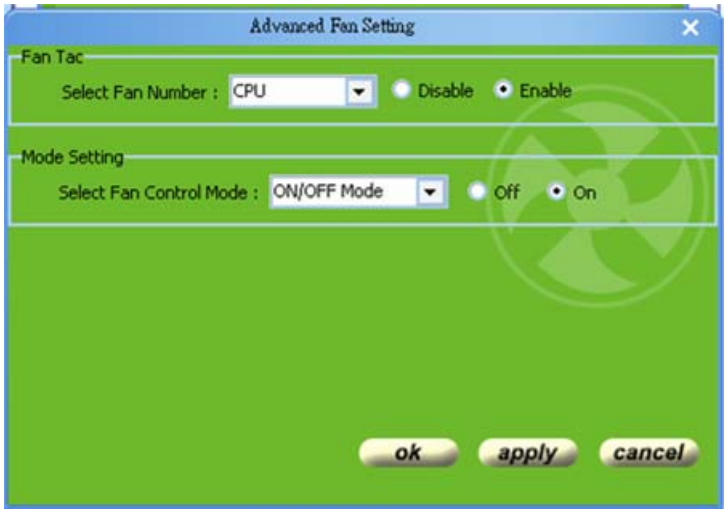


Figure 5-10: Smart Fan Setting – On/Off Mode

5.4.3.2 PWM Mode

In the PWM Mode, the user can set the PWM value from 0 to 127 by entering a value (**Figure 5-11**). To set the value, double click the number and enter a new value. Click **apply** or **ok** when finished.

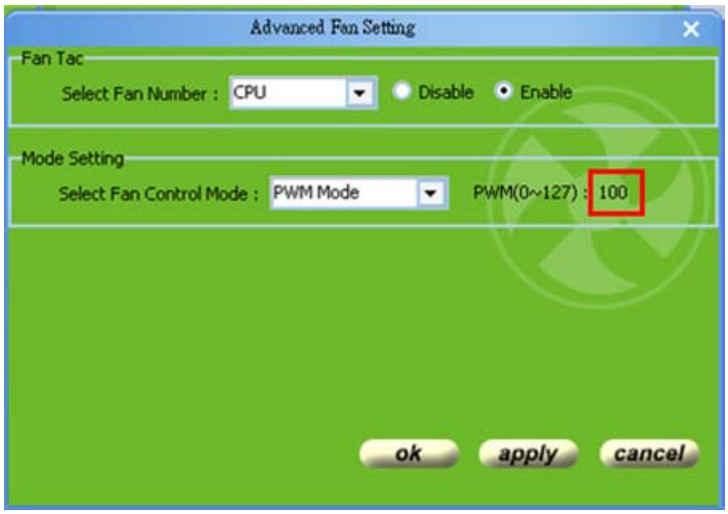


Figure 5-11: Smart Fan Setting – PWM Mode

5.4.3.3 Automatic Mode

In the Automatic Mode, the user can set the temperature that decides the fan activity. The following value can be set (**Figure 5-12**):

- Fan Start (°C): the fan starts when the temperature reaches the set value
- Fan Off (°C): the fan turns off when the temperature reaches the set value
- Full Speed (°C): the fan runs at full speed when the temperature reaches the set value
- Start PWM Value (0~127): the initial PWM value when the fan starts
- Slope (PWM Value (add/°C): the PWM value added per degree Celsius (°C) of temperature increase when the fan start running

To set the value, double click the number and enter a new value. Click **apply** or **ok** when finished.

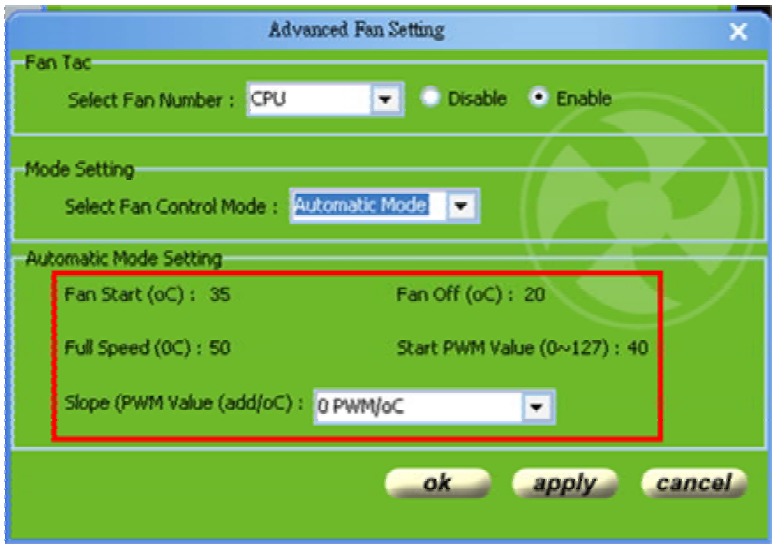


Figure 5-12: Smart Fan Setting – Automatic Mode

5.5 Temperature Page

The IEI iSMM application monitors the current CPU temperature and system temperature and shows the temperature on the Temperature Page (**Figure 5-13**). The following sections describe the Temperature Page in details.

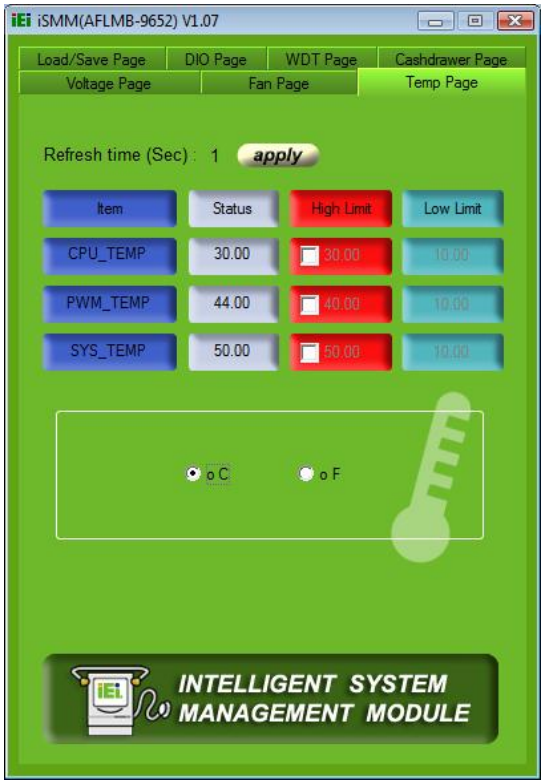


Figure 5-13: Temperature Page

5.5.1 Refresh Time Setting

The iSMM refreshes the CPU and system temperature according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Temperature Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-14**).

Step 3: Click apply (**Figure 5-14**).

Figure 5-14: Temperature Refresh Time Setting

5.5.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each temperature can be set by the user. When the temperature is greater than the high limit value or lower than the low limit value, the temperature value are displayed in red. For example, the SYSTEM1 temperature (48) shows in red in **Figure 5-13** since the current system temperature is greater than the high limit value (40). The temperature scale can be changed from Celsius scale (°C) to Fahrenheit scale (°F).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-15**).

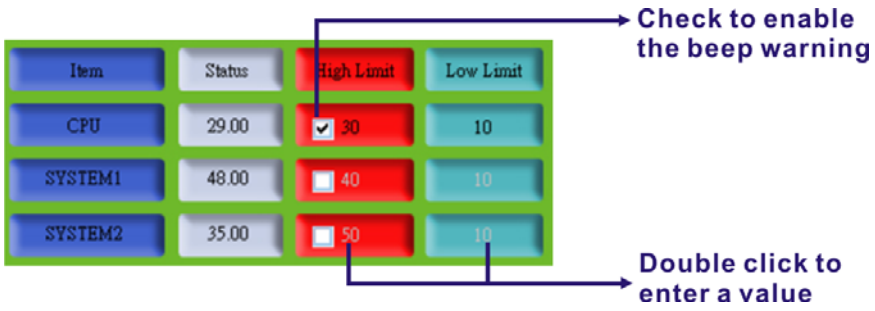


Figure 5-15: Temperature Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified temperature is greater or lower than the high limit or low limit (**Figure 5-15**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**). (Make sure to enable beep/audio alarm on the Load/Save Page.)

5.6 Cash Drawer Page

The Cashdrawer Page of the IEI iSMM application allows users to view and control the cash drawers connected to the EP-165E-N270. **Figure 5-17** shows an example of the status of the cash drawers:

- No. 1 cash drawer: open
- No. 2 cash drawer: closed

The user can change the status of the cash drawer by clicking the image.

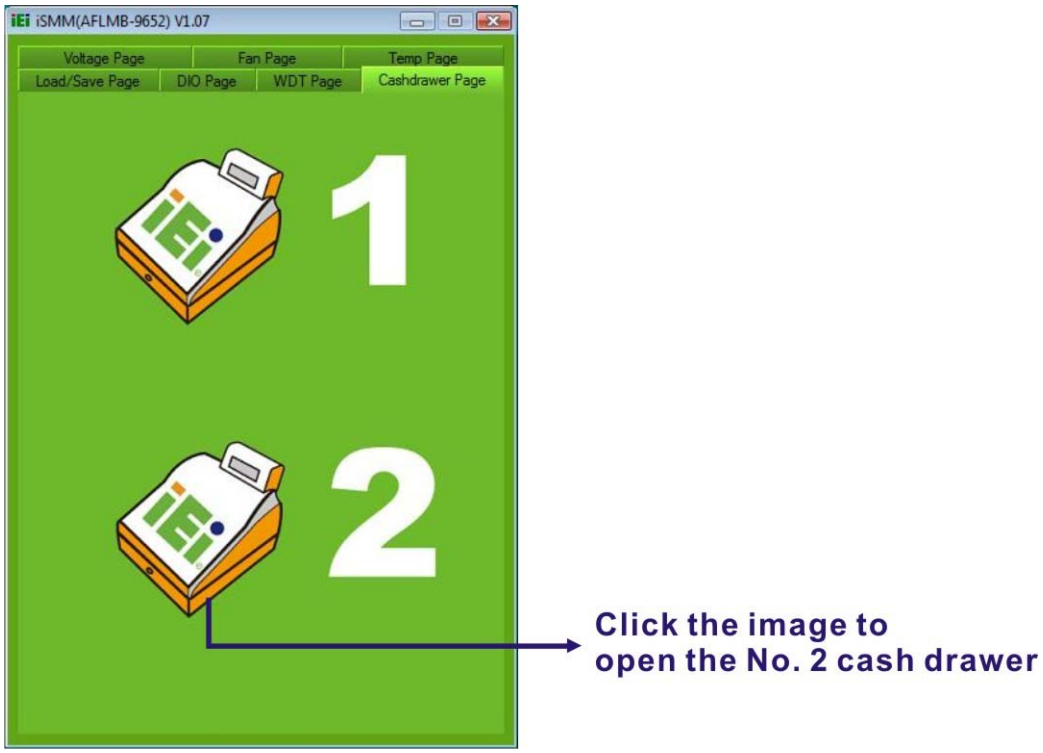


Figure 5-16: Cash Drawer Page

5.7 Watchdog Timer Page

The IEI iSMM application allows users to set watchdog timer on the WDT Page (**Figure 5-17**).

Figure 5-17: WDT Page

Set Timeout	**Set the watchdog timer value. The value is a period of time that the system will shut down if the timer is not reset in that period of time.**
Start	**Click to start the watchdog timer**
Stop	**Click to stop the watchdog timer**
Auto refresh	**The watchdog timer auto resets before timeout.**

5.8 DIO Page

The IEI iSMM application monitors the current voltage of the digital input and digital output and shows the information on the DIO Page (**Figure 5-18**). The digital output information can be set and written to an internal register to control the state driven on the output pin.

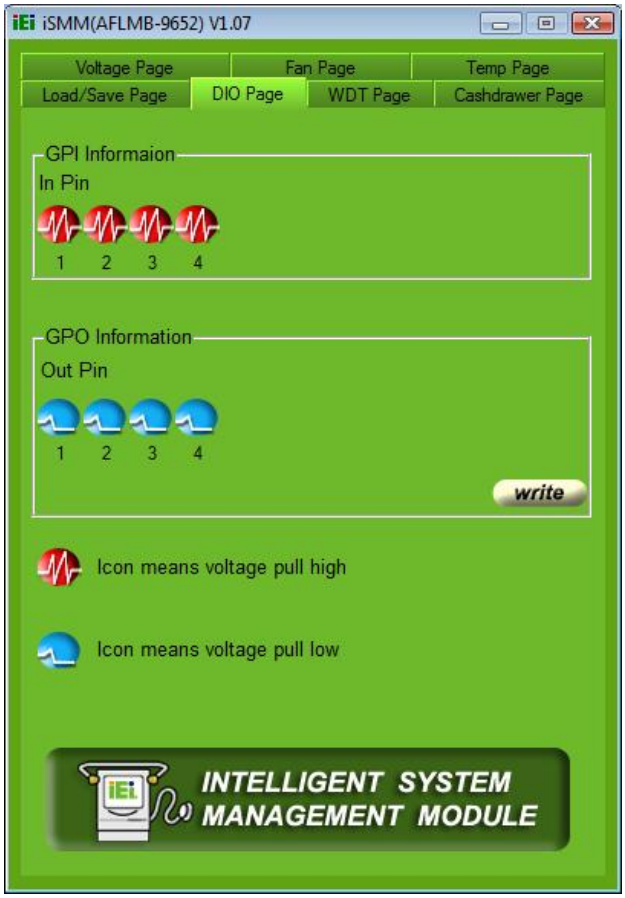


Figure 5-18: DIO Page

5.8.1 GPO Information Setting

Follow the steps below to set the GPO.

Step 1: Click the DIO Page.

Step 2: Click the icon in the GPO Information section to change the output pin state.

(: voltage pull high) (: voltage pull low)

Step 3: Click **Write** to write to an internal register to control the state after finish setting the output pin.

5.9 Load/Save Page

The IEI iSMM application allows the user to save the settings of all the high limit/low limit values and smart fan setting as an ***.ini** file. Thus, the user can load the setting easily to the iSMM if necessary. The saving and loading action is done from the Load/Save Page of the iSMM (**Figure 5-19**). This page can also enable the beep/audio alarm.

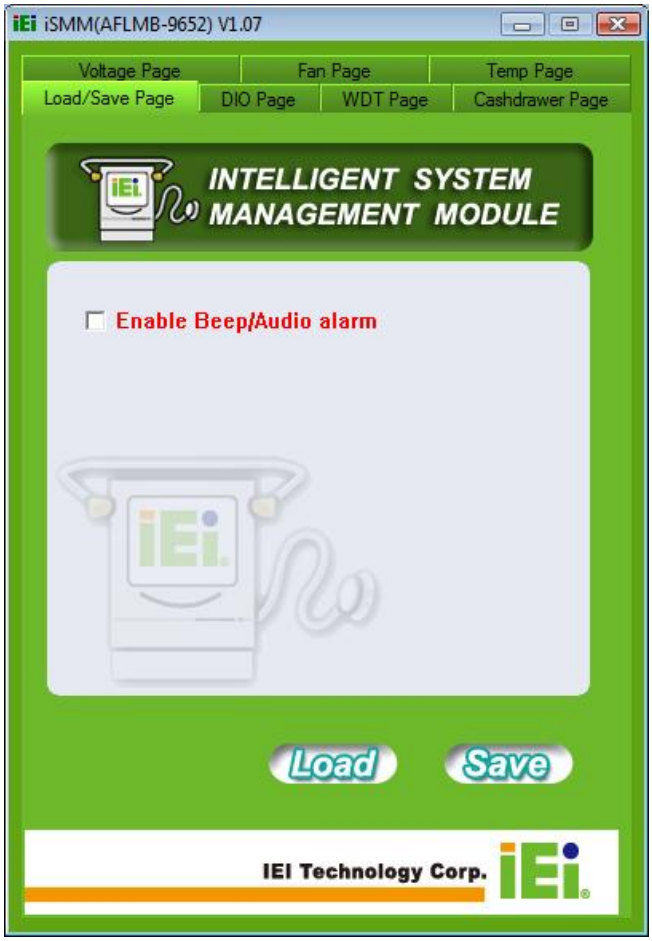


Figure 5-19: Load/Save Page

Appendix

A

Safety Precautions

A.1 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 EP-165E-N270.

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 EP-165E-N270 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the EP-165E-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 EP-165E-N270 chassis is opened when the EP-165E-N270 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the EP-165E-N270.
- ***If considerable amounts of dust, water, or fluids enter the EP-165E-N270***, turn off the power supply immediately, unplug the power cord, and contact the EP-165E-N270 vendor.
- **DO NOT** do the following:
  - **DO NOT** drop the EP-165E-N270 against a hard surface.
  - **DO NOT** strike or exert excessive force onto the LCD panel.
  - **DO NOT** touch the LCD panel with a sharp object
  - **DO NOT** use the EP-165E-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 EP-165E-N270 may result in permanent damage to the EP-165E-N270 and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the EP-165E-N270. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the EP-165E-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.2 Maintenance and Cleaning Precautions

Prior to cleaning any part or component of the EP-165E-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.2.1 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

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.
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
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.
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.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
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.
GPIO	General purpose input
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.
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

D

Watchdog Timer

NOTE:

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

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external 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 D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. 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 ;
```

Appendix

E

Hazardous Materials Disclosure

E.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。