IEI Integration Corp.

MODEL:

AFL2-12A-HM65 Series

**Flat Bezel Panel PC with Intel® Sandy Bridge Mobile CPU,
TFT LCD, Wi-Fi, Touchscreen, RFID Reader, GbE LAN,
RS-232/422/485, Camera, RoHS**

User Manual

Rev. 1.12 - 8 April, 2014

Revision

Date	Version	Changes
8 April, 2014	1.12	Modified viewing angle information.
8 August, 2013	1.11	Added information of the CPU temperature alert LED in Section 1.2.1.1.
10 July, 2012	1.10	Updated for R11 (remove second LAN function)
8 December, 2011	1.00	Initial release

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WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

IMPORTANT NOTE:

For products available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Chapter

1

Introduction

1.1 AFL2-12A-HM65 Flat Bezel Panel PC Overview

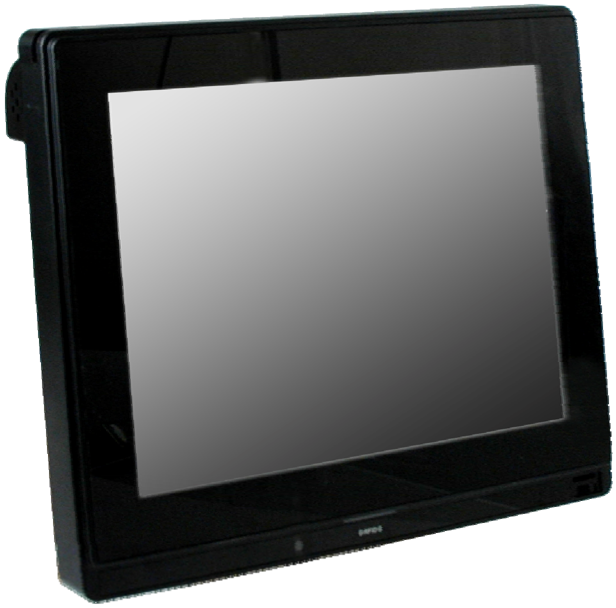


Figure 1-1: AFL2-12A-HM65 Flat Bezel Panel PC

The AFL2-12A-HM65 is a 2nd generation Intel® Core™ i7/i5/i3 or Celeron® processor powered flat bezel panel PC with a rich variety of functions and peripherals. The AFL2-12A-HM65 is designed for easy and simplified integration into kiosk and point-of-sales (POS) applications.

An Intel® Core™ i7/i5/i3 processor or Celeron® processor coupled with an Intel® HM65 input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system supports DDR3 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Three serial ports, two external USB 2.0 ports and two external USB 3.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and the RJ-45 Ethernet connector provide the system with smooth connection to an external LAN. An optional MSR card reader can equip the system for scanning credit cards, identification cards, loyalty cards, gift cards, and more.

1.1.1 Model Variations

The model variations of the AFL2-12A-HM65 Series are listed below.

Model No.	Touchscreen Type	Optional Features
AFL2-12A-HM65/PC-EM-R11	Projective capacitive	EM card reader
AFL2-12A-HM65/PC-MF-R11	Projective capacitive	MIFARE card reader
AFL2-12A-HM65/PC-R11	Projective capacitive	N/A
AFL2-12A-HM65/R-EM-R11	5-Wire Resistive	EM card reader
AFL2-12A-HM65/R-MF-R11	5-Wire Resistive	MIFARE card reader
AFL2-12A-HM65/R-R11	5-Wire Resistive	N/A

Table 1-1: AFL2-12A-HM65 Model Variations

1.1.2 Features

The AFL2-12A-HM65 features are listed below:

- 12.1" 600 cd/m^2 XGA LCD
- 2nd generation Intel® Core™ i7/i5/i3 or Celeron® processor supported
- Intel® HM65 chipset
- One DDR3 SO-DIMM socket supports up to 4 GB of memory
- RFID module compatible with EM or MIFARE cards
- Watchdog timer that triggers a system reset if the system hangs for some reason
- IP 64 compliant front panel
- AT or ATX power mode
- 5-wire resistive or projected capacitive type touchscreen
- RoHS compliance
- Auto-dimming control
- 1.3-megapixel webcam

1.1.3 Applications

AFL2-12A-HM65 Series panel PCs are elegant, sophisticated systems that can be easily implemented in commercial, industrial and corporate environments.

1.2 External Overview

1.2.1 Front Panel

The front side of the AFL2-12A-HM65 is a flat bezel panel TFT LCD screen surrounded by an ABS/PC plastic frame.

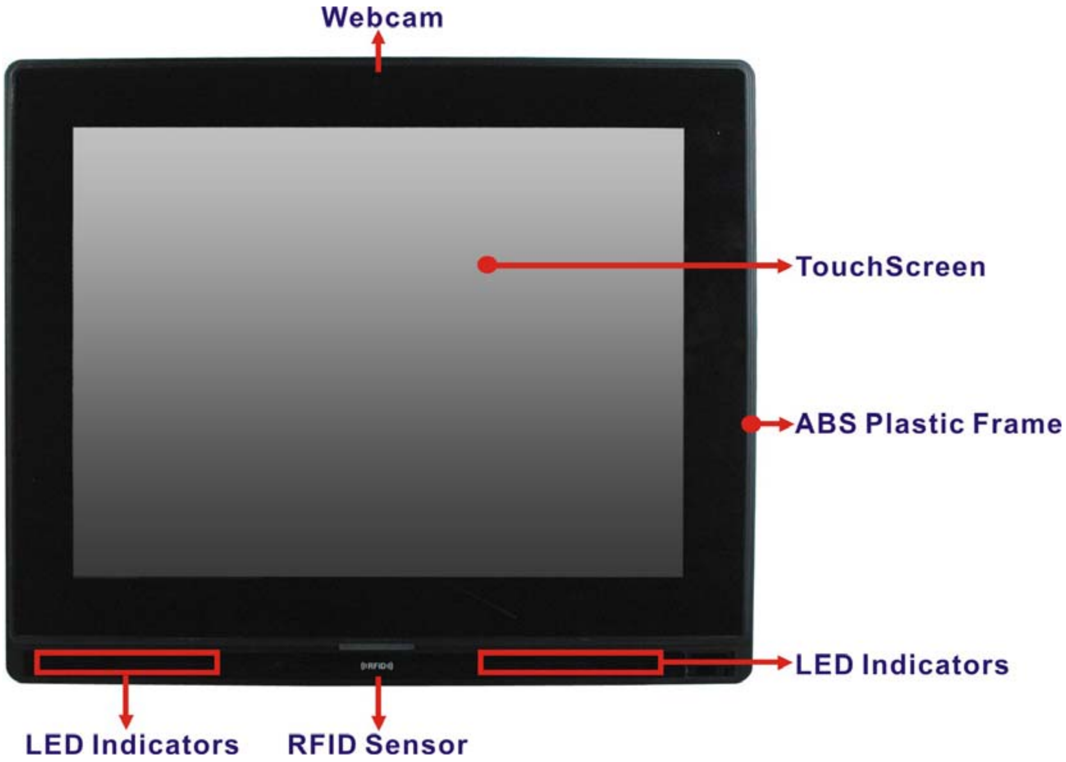

Webcam
TouchScreen
ABS Plastic Frame
LED Indicators
LED Indicators
RFID Sensor

Figure 1-2: AFL2-12A-HM65 Front View

1.2.1.1 LED Indicators

There are fifteen LED indicator lights located along the front of the LCD screen (**Figure 1-3**).

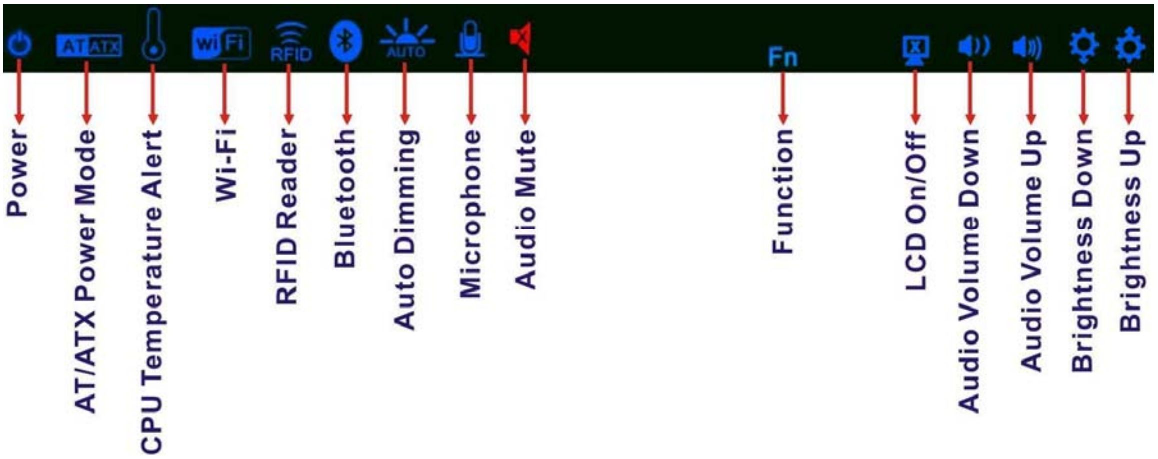

AT ATX
wi Fi
RFID
AUTO
Fn
Power
AT/ATX Power Mode
CPU Temperature Alert
Wi-Fi
RFID Reader
Bluetooth
Auto Dimming
Microphone
Audio Mute
Function
LCD On/Off
Audio Volume Down
Audio Volume Up
Brightness Down
Brightness Up

Figure 1-3: LED Indicators

The descriptions of each LED indicator are listed below.

LED Indicator	Description
Power	Shows power on/off status.
AT/ATX Mode	Shows the power mode status. Controlled by the AT/ATX power mode switch.
CPU Temperature Alert	BLUE: CPU temperature is normal. RED: CPU core temperature reaches TJ Max.
Wi-Fi	The Wi-Fi module is enabled or disabled. Controlled by the BIOS. See Section 6.5.1.1
RFID	The optional RFID reader is enabled or disabled. Controlled by the hot keys. See **Table 1-3**
Bluetooth	The Bluetooth module is enabled or disabled. Controlled by the BIOS. See Section 6.5.1.1
Auto-Dimming	The auto-dimming function is enabled or disabled. Controlled by the remote control
Microphone	The microphone is enabled or disabled. Controlled by the BIOS. See Section 6.5.1.1

LED Indicator	Description
Audio Mute	Lights on when the audio is turned off. Controlled by the hot keys. See **Table 1-3**
Function	Shows the status of the function key below the LED indicator. Blinks when the corresponding button is pushed.
LCD On/Off	
Audio Volume Down	
Audio Volume Up	
Brightness Down	
Brightness Up	

Table 1-2: LED Indicators

WARNING:

When the CPU's core temperature reaches TJ Max, the CPU temperature LED turns red and the CPU starts to lower its clock speed. At this moment, the user must lower the environments temperature or close some running applications to cool down the CPU.

1.2.1.2 Function Keys

The function keys are located under the bottom right hand corner of the LCD screen (**Figure 1-4**).

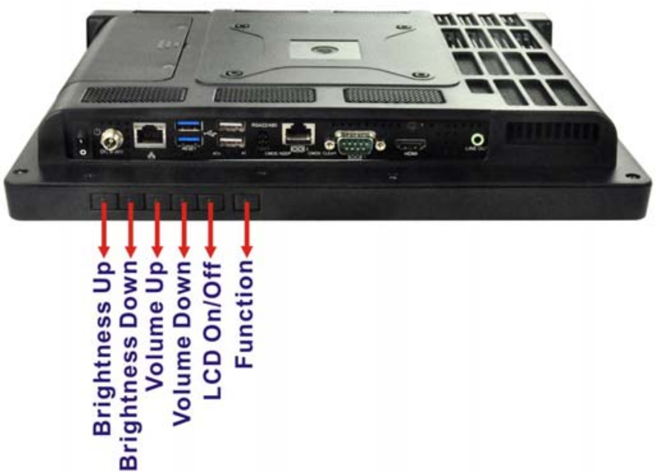

Brightness Up
Brightness Down
Volume Up
Volume Down
LCD On/Off
Function

Figure 1-4: Function Keys

The function keys are described in **Table 1-3**:

Key Combination	**Function Key Description**
Fn + LCD On/Off	RFID Enable/Disable
Fn + Audio Volume Down	Audio Mute
Fn + Audio Volume Up	Camera Enable/Disable
Fn + Brightness Down	Mini USB / MicroSD Enable/Disable
Fn + Brightness Up	Power On/Off Note: To power on the system, hold down the Fn + Brightness Up buttons for 3 seconds. To power down the system, hold down the FN + Brightness Up buttons for six seconds.

Table 1-3: Function Key Descriptions

1.2.2 Rear Panel

The rear panel provides access to the HDD bay and the retention screw holes that support the VESA mounting. Refer to **Figure 1-5**.

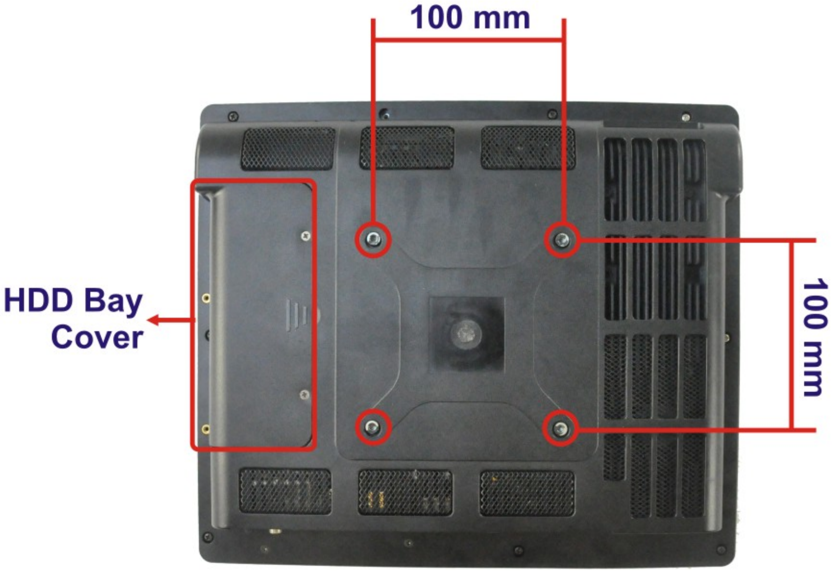


Figure 1-5: AFL2-12A-HM65 Rear View

1.2.3 I/O Interface Panel

The I/O interface panel located on the bottom of the AFL2-12A-HM65 has the following features:

- 1 x Audio jack
- 1 x 9V ~ 36V DC-IN power jack
- 1 x HDMI port
- 1 x RS-232 D-sub 9 connector
- 1 x RS-232 RJ-45 connector
- 1 x RS-422/485 connector
- 1 x GbE connector
- 2 x USB 2.0 connectors
- 2 x USB 3.0 connectors
- 1 x Power switch
- 1 x Reset button
- 1 x Clear CMOS switch

- 1 x AT/ATX Switch
- 6 x Function Keys

The external I/O interface connector panel is shown in **Figure 1-6**.

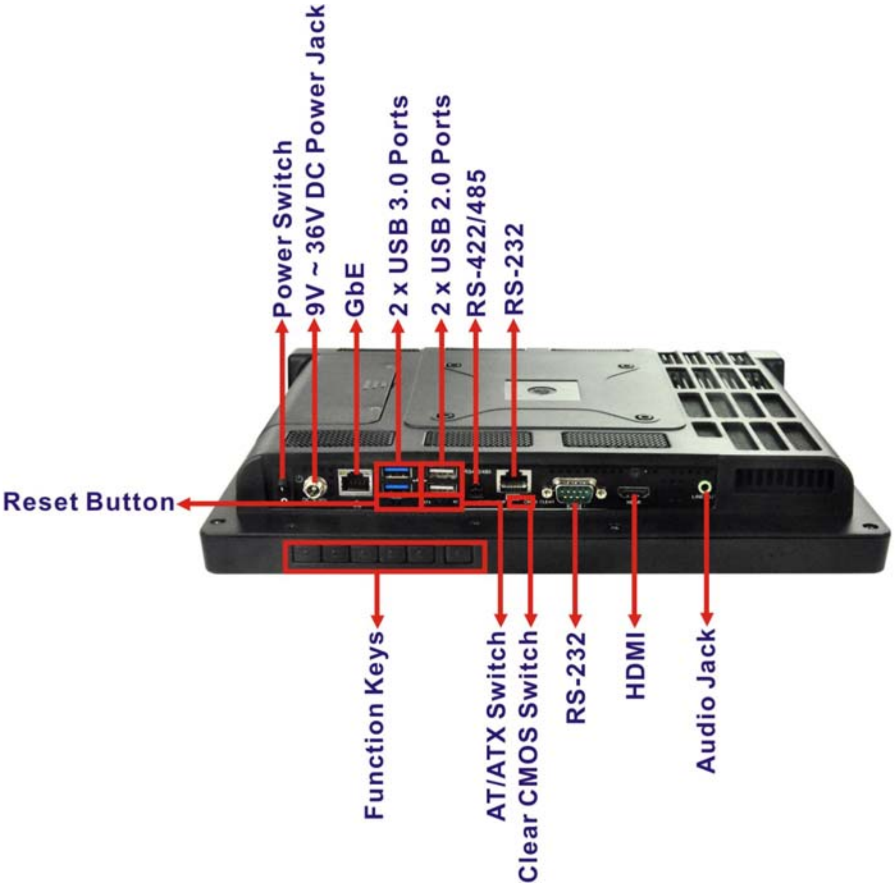

Power Switch
9V ~ 36V DC Power Jack
GbE
2 x USB 3.0 Ports
2 x USB 2.0 Ports
RS-422/485
RS-232
Reset Button
Function Keys
AT/ATX Switch
Clear CMOS Switch
RS-232
HDMI
Audio Jack

Figure 1-6: AFL2-12A-HM65 I/O Interface Panel

1.3 System Specifications

The technical specifications for the AFL2-12A-HM65 systems are listed in **Table 1-4.**

Specification	**AFL2-12A-HM65**
LCD Size	12.1”
Max. Resolution	1024 (W) x 768 (H)
Brightness (cd/m^2)	600
Contrast Ratio	700:1
LCD Color	16.2M
Pixel Pitch (H x V) (mm)	0.240 (H) x 0.240 (V)
Viewing Angle (H-V)	160 / 140
Backlight MTBF (hr)	50,000
Touchscreen	5-wire resistive type touchscreen (select models only) Projected capacitive type touchscreen (select models only)
SBC Model	AFL2MB-HM65
CPU	2nd generation Intel® Core™ i7/i5/i3 or Celeron® processor
Chipset	Intel® HM65
Ethernet	Realtek RTL8111E PCIe GbE controller supports ASF2.0
Memory	One 204-pin DDR3 SO-DIMM slot (4 GB system max.)
Drive Bay	One 2.5” SATA 3Gb/s SSD bay
Watchdog Timer	Software Programmable supports 1 sec. ~ 255 sec. system reset
Audio	AMP 3 W + 3 W (built-in stereo speakers)
Wi-Fi	802.11b/g/n Wi-Fi PCIe Mini module
Bluetooth	Bluetooth v2.0 + EDR (optional)
RFID	EM or MIFARE card reader (optional)
MSR Module	MSR card reader (optional)
Construction Material	ABS + PC plastic front frame
Mounting	VESA 100 mm x 100 mm for wall, rack, stand or arm mounting
Front Panel Color	Black
Net Weight	3.8 kg / 6.1 kg
Dimensions (W x H x D) (mm)	310 x 265 x 53.6

Operation Temperature	-20ºC ~ 50ºC with SSD
Storage Temperature	-20ºC ~ 60ºC
IP level	IP 64 compliant front panel
Power Adapter	90W
	Input: 100 V AC ~ 240 V AC @ 50 / 60 Hz
	Output: 19 V DC
Power Requirement	9 V ~ 36 V DC
Power Consumption	19 V @ 2.68 A (Intel® Core™ i5-2510E processor with 4 GB DDR3 memory)
I/O Ports and Switches	1 x RS-232 (D-sub 9 connector)
	1 x RS-232 (RJ-45 connector)
	1 x RS-422/485 (4-pin box header)
	1 x GbE LAN (RJ-45 connector)
	2 x USB 2.0 connector
	2 x USB 3.0 connector
	1 x Mini USB 2.0 connector (on front panel)
	1 x Audio jack (line-out)
	1 x HDMI port
	1 x SD card slot (on front panel)
	1 x Reset button
	1 x Power switch
	1 x AT/ATX switch
	1 x DC input jack
	1 x Clear CMOS button

Table 1-4: System Specifications

Chapter

2

Detailed Specifications

2.1 Dimensions

The AFL2-12A-HM65 dimensions are shown below.

- **Width**: 310.0 mm
- **Height**: 265.0 mm
- **Depth**: 53.6 mm

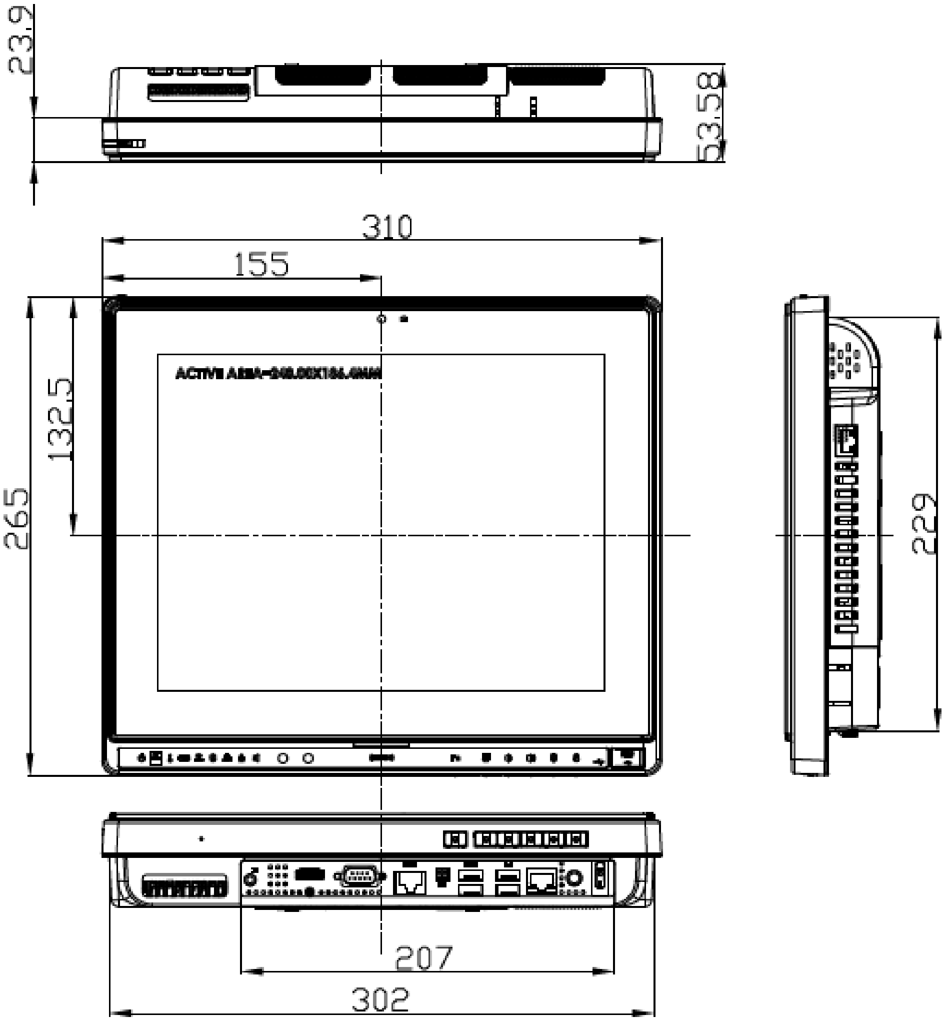

23.9
53.58
310
155
ACTIVE AREA=246.00X184.6MM
132.5
265
229
207
302

Figure 2-1: AFL2-12A-HM65 Dimensions (mm)

2.2 Intel® Mobile Processor

An Intel® Core™ i7/i5/i3 processor or Celeron® processor is installed in the system. The Intel® mobile processor interfaces with the HM65 chipset through a Direct Media Interface (DMI) with speed of 5 GT/s and a Flexible Display Interface (FDI).

2.3 Motherboard Components

The following sections describe some of the features on the motherboard.

2.3.1 Memory Support

One 204-pin DDR3 SO-DIMM socket supports up to 4 GB of memory which is controlled by the Intel® mobile CPU installed on the internal motherboard.

2.3.2 Storage Capacity

The AFL2-12A-HM65 comes equipped with a 2.5” SATA 3.0 SSD drive bay which can be easily accessed by removing two screws on the HDD cover.

2.4 External Peripheral Interface Connectors

The following section describes the external peripheral interface connectors on the bottom panel of the subsystem.

2.4.1 Serial Port Connectors

The AFL2-12A-HM65 has three serial ports. COM1 and COM3 support only RS-232 serial communications. The other serial port (COM6) can be configured as an RS-422 or RS-485 serial port. Enabling COM devices to be powered through the COM port eliminates unnecessary and messy cabling.

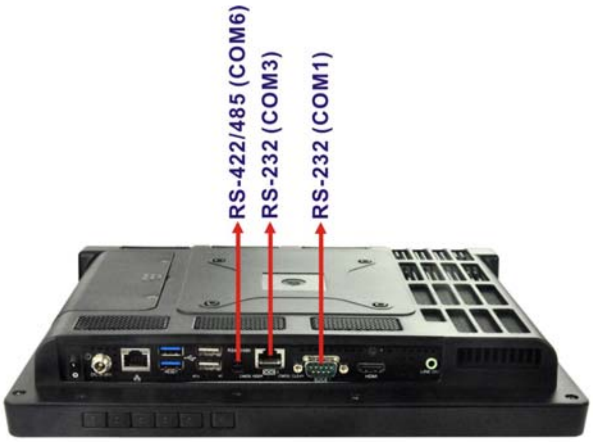


Figure 2-2: COM Ports

2.4.2 LAN Connectivity

The AFL2-12A-HM65 has one RJ-45 LAN connector on the bottom panel.

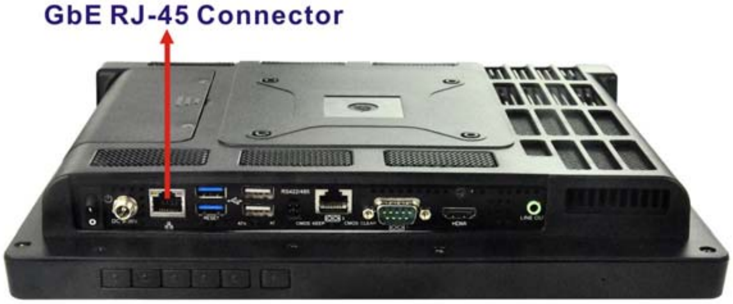


Figure 2-3: RJ-45 Ethernet Connectors

The PCIe LAN from the Intel® HM65 chipset of the AFL2-12A-HM65 is interfaced to the Realtek RTL8111E PCIe gigabit Ethernet (GbE) controllers. The RTL8111E controller is connected directly to the RJ-45 connector on the bottom panel and provides external GbE connectivity.

2.4.3 External USB Connectors

There are two USB 2.0 connectors and two USB 3.0 connectors on the bottom panel of the AFL2-12A-HM65. All USB connectors are interfaced directly to the USB controllers on the HM65 southbridge. All USB connectors are fully compliant with USB specification Revision 2.0 and USB specification Revision 1.1 and can be interfaced to both USB 1.1

and USB 2.0 compliant devices. Only USB 3.0 connectors are compatible with USB 3.0 devices.

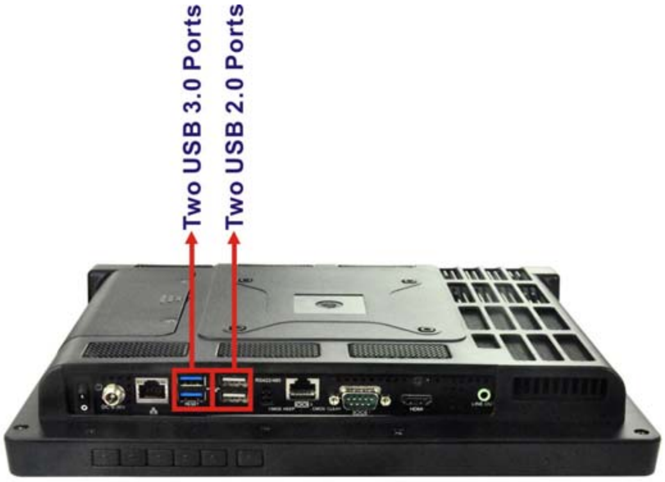

Two USB 3.0 Ports
Two USB 2.0 Ports

Figure 2-4: External USB Ports

2.5 Touchscreen LCD

2.5.1 Monitor

A 12.1” LCD screen is installed on the front of the AFL2-12A-HM65. The screen is shown in **Figure 2-5** below.

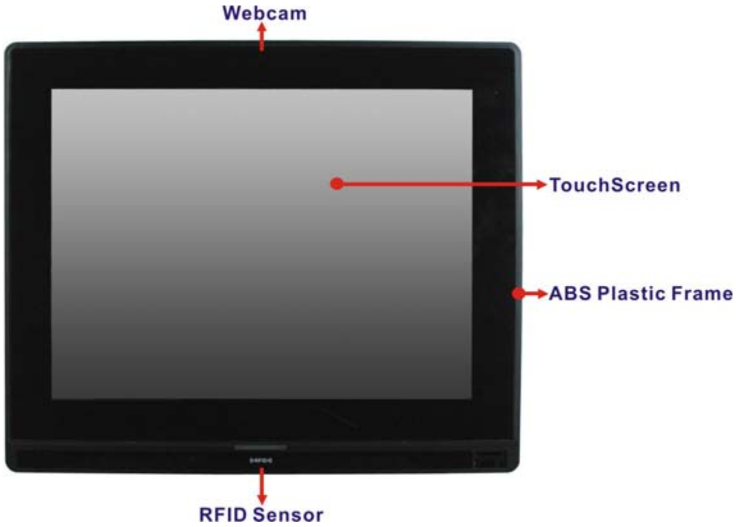

Webcam
TouchScreen
ABS Plastic Frame
RFID Sensor

Figure 2-5: LCD Screen

2.5.2 Touch-Screen Module

A controller for the touchscreen is installed on the motherboard. The sensitive touchscreen is accurate, reliable and durable.

2.6 Audio

2.6.1 Audio Codec Controller

The integrated HD Audio compliant audio controller on the Intel® HM65 Southbridge is integrated to a Realtek ALC888 audio codec. The Realtek ALC888 is connected to an external audio jack, which is then connected to compliant audio devices. The Realtek ALC888 is a 7.1+2 channel high definition audio codec with ten DAC channels. It supports 7.1 sound playback and 2 channels of independent stereo sound output. The audio connector is shown in **Figure 2-6**.

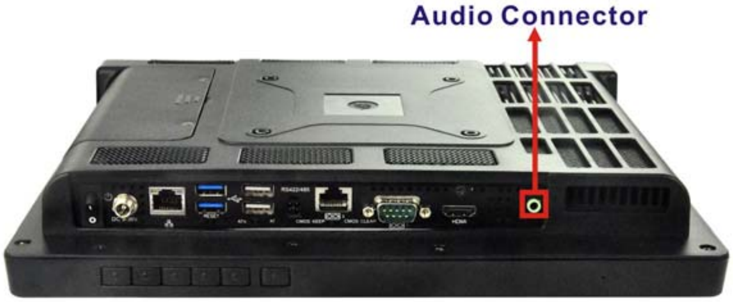


Figure 2-6: Audio Jack

2.6.2 Stereo Speakers

Two internal 3 W stereo speakers on the sides of the AFL2-12A-HM65 are interfaced to the system.

2.7 System Power

2.7.1 Power Mode

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

2.7.1.1 ATX Power Mode (Default)

With the ATX mode selected, the AFL2-12A-HM65 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

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

2.7.1.2 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL2-12A-HM65 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

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

2.7.2 Power Adapter

The system is shipped with a 100 V to 240 V AC power adapter that has a maximum power output of 90 W. The power adapter has a 19 V DC output connector.

Chapter

3

Unpacking

3.1 Unpacking

To unpack the flat bezel panel PC, follow the steps below:

WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the flat bezel panel PC has been properly installed. This ensures the screen is protected during the installation process.

Step 1: Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.

Step 2: Open the external (second) box.

Step 3: Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.

Step 4: Lift the monitor out of the boxes.

Step 5: Remove both polystyrene ends, one from each side.

Step 6: Pull the plastic cover off the flat bezel panel PC.

Step 7: Make sure all the components listed in the packing list are present.

3.1.1 Packing List

The AFL2-12A-HM65 flat bezel panel PC is shipped with the following components:

Quantity	Item	Image
Standard		
1	AFL2-12A-HM65 panel PC	

1	Power adapter (**P/N**: 63040-010090-030-RS)	
1	Power cord (**P/N**: 32702-000401-100-RS)	
1	Power transfer cord (**P/N**: 32000-089400-RS)	
4	M3 screws (**P/N**: 44013-030041-RS)	
4	M4 screws (**P/N**: 44403-040061-RS)	
1	Touch pen (**P/N**: 43125-0002C0-00-RS)	
1	RJ-45 to D-sub 9 COM port cable (**P/N**: 32005-000200-200-RS)	
1	RS-422 cable (**P/N**: 32205-002400-100-RS)	
1	IR remote control (**P/N**: 7Z000-SLPCB005-RS)	
1	User manual CD and driver CD	
1	One Key Recovery CD (**P/N**: 7B000-000724-RS)	

Optional	
Wall mounting kit (**P/N**: AFLWK-19/AFLWK-19B)	
Panel mounting kit (**P/N**: AFLPK-15)	
Rack mount kit (**P/N**: AFL2RK-12)	
Arm (**P/N**: ARM-11-RS)	
Stand (**P/N**: STAND-A12)	
V-Stand (**P/N**: VSTAND-A12)	
Hybrid Card Reader (**P/N**: AFL2P-12AMSI-U-R10)	

Magnetic Stripe Reader (**P/N**: AFL2P-12AMSR-U-R10)	
Rack Mounting Kit (**P/N**: AFL2RK-12)	
OS: Win CE 6.0 (128MB CF Card) (**P/N**: AFL2CF-12-HM65-CE060-128M-R10)	
OS: Win XPE (2GB CF Card) (**P/N**: AFL2CF-12-HM65-XPE-2G-R10)	
OS: Win XPE (4GB CF Card) (**P/N**: AFL2CF-12-HM65-XPE-4G-R10)	
OS: Linux (2GB CF Card) (**P/N**: AFL2CF-12A-HM65-LNX-R10)	
OS: Win 7 Embedded (4GB CF Card) (**P/N**: AFL2CF-12-HM65-WES7P-4G-R10 AFL2CF-12-HM65-WES7E-4G-R10)	

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter 4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the AFL2-12A-HM65 may result in permanent damage to the AFL2-12A-HM65 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-12A-HM65. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-12A-HM65 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL2-12A-HM65, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL2-12A-HM65.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

4.2 Installation Precautions

When installing the flat bezel panel PC, please follow the precautions listed below:

- **Power turned off**: When installing the flat bezel panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard functionalities.

- **Anti-static Discharge**: If a user open the rear panel of the flat bezel panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

4.3 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the flat bezel panel PC

Step 2: Install an HDD

Step 3: Configure the system

Step 4: Connect peripheral devices to the bottom panel of the flat bezel panel PC

Step 5: Mount the flat bezel panel PC

4.4 HDD Installation

WARNING:

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

To install the HDD into the AFL2-12A-HM65, please follow the steps below:

Step 1: Remove two (2) retention screws from the HDD cover (**Figure 4-1**).

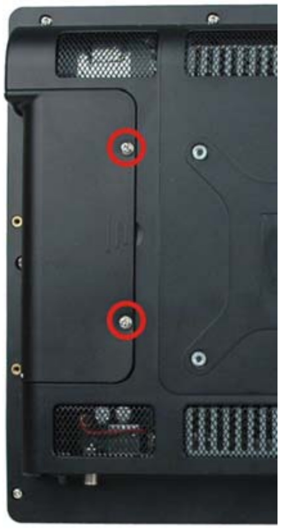


Figure 4-1: HDD Cover Retention Screws

Step 2: Remove the HDD cover from the device.

Step 3: Loosen the captive screw to release the HDD bracket from the chassis (**Figure** 4-2**)**.

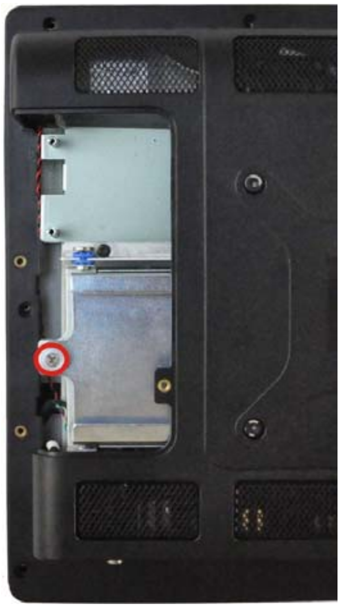


Figure 4-2: HDD Bracket Screw

Step 4: Slide the HDD bracket out of the device as shown (**Figure 4-3)**.

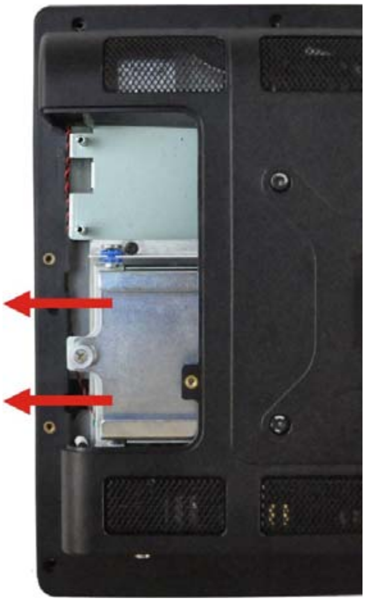


Figure 4-3: Removing the HDD Bracket

Step 5: Insert an HDD into the bracket as shown (**Figure 4-4**).

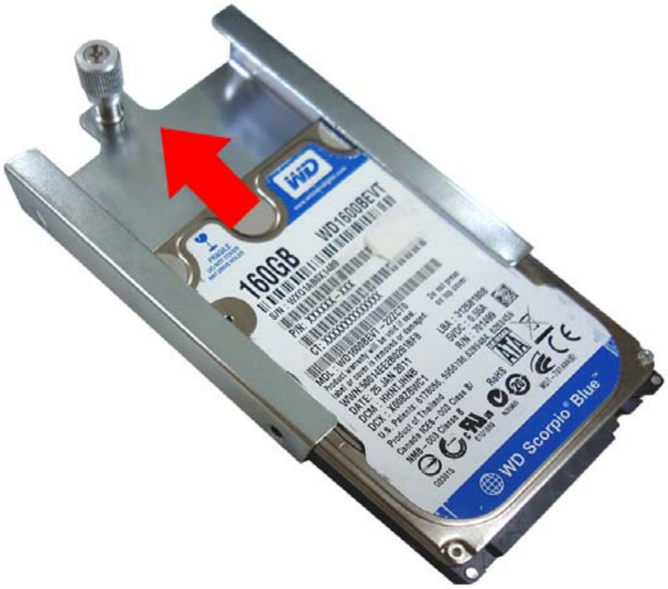


Figure 4-4: Inserting the HDD

Step 6: Secure the HDD to the bracket using four (4) retention screws (two screws on each side) (**Figure 4-5**).

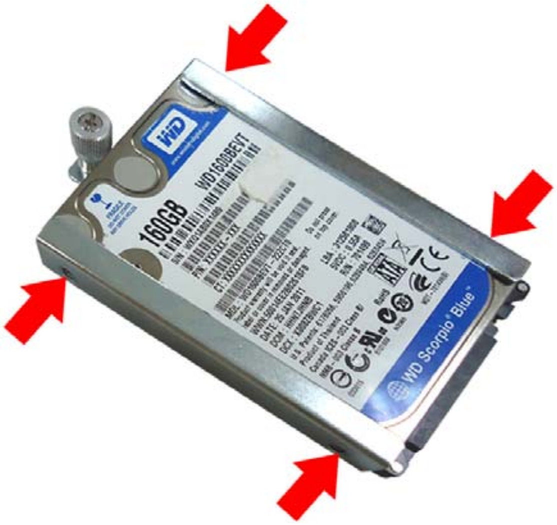


Figure 4-5: Securing the HDD

Step 7: Slide the HDD module back into the device.

Step 8: Tighten the captive screw.

Step 9: Replace the HDD cover and secure it using two (2) retention screws.

4.5 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFL2-12A-HM65. The selection is made through an AT/ATX switch located on the I/O panel (Figure 4-6). To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the I/O panel (**Figure 4-6**).

NOTE:

The system default is ATX power mode.

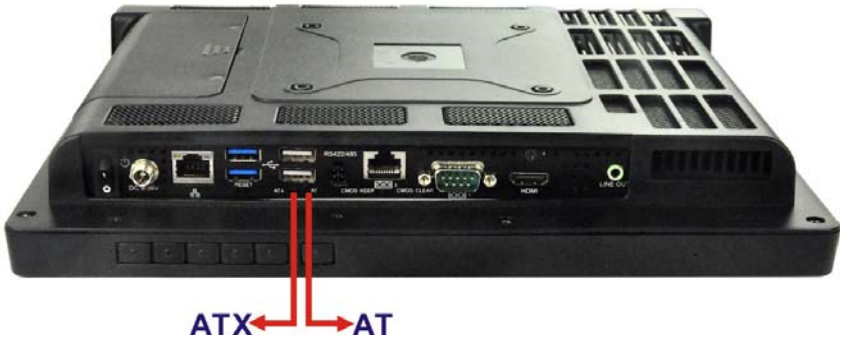


Figure 4-6: AT/ATX Switch Location

Step 2: Adjust the AT/ATX switch.

4.5.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL2-12A-HM65 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

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

4.5.2 ATX Power Mode

With the ATX mode selected, the AFL2-12A-HM65 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

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

4.6 Powering On the System

To power on the system, follow the steps below:

Step 1: Locate the **Function** and **Brightness Up** function keys. See **Section 1.2.1.1**.

Step 2: Hold down the Function and Brightness Up buttons for **three** seconds to power on the system.

4.7 Powering Off the System

To power off the system, follow the steps below:

Step 1: Locate the **Function** and **Brightness Up** function keys. See **Section 1.2.1.1**.

Step 2: Hold down the Function and Brightness Up buttons for **six** seconds to power off the system.

4.8 Mounting the System

WARNING!

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

The four methods of mounting the AFL2-12A-HM65 are listed below.

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

The four mounting methods are described below.

4.8.1 Arm Mounting

The AFL2-12A-HM65 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 100mm interface pad. To mount the AFL2-12A-HM65 on an arm, please follow the steps below.

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

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 100 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL2-12A-HM65 flat bezel panel PC.

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

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat bezel panel PC (**Figure 4-7**).

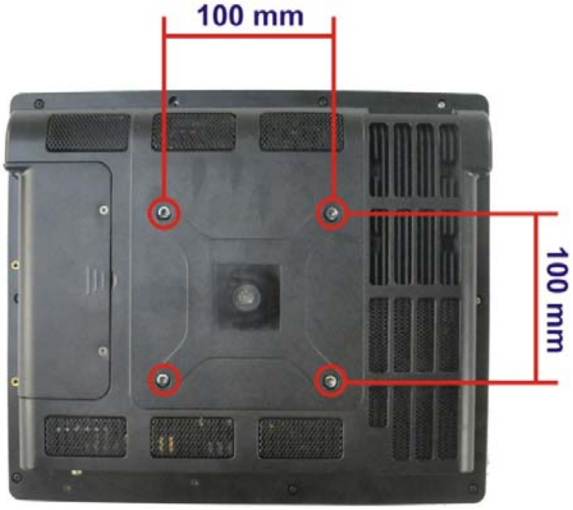


Figure 4-7: Arm Mounting Retention Screw Holes

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

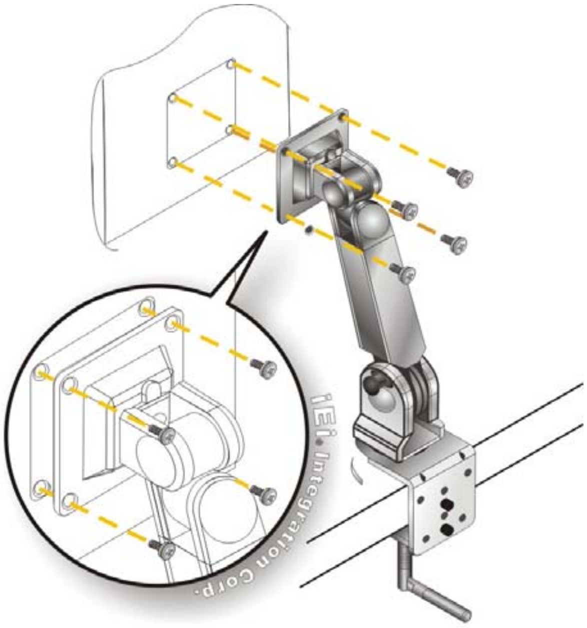


Figure 4-8: Arm Mounting (ARM-11-RS)

4.8.2 Panel Mounting

To mount the AFL2-12A-HM65 into a panel, please follow the steps below.

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

Step 2: Cut out a section corresponding to the size shown below. The size must be smaller then the outer edge.

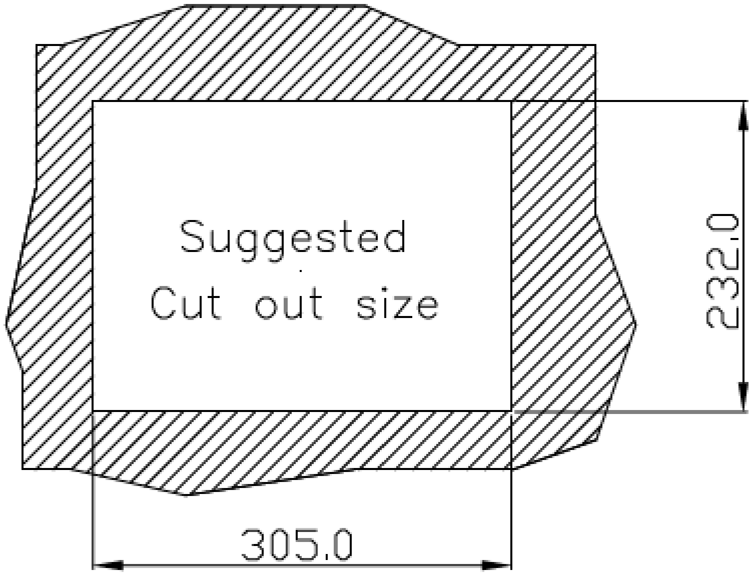


Figure 4-9: Cutout Dimensions

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

Step 4: Align the panel mounting bracket screw holes with the VESA mounting holes on the rear of the panel PC.

Step 5: Secure the two panel mounting brackets to the rear of the panel PC by inserting the four retention screws into the VESA mounting holes (**Figure 4-10 ❶**).

Step 6: Insert the panel mounting clamps into the pre-formed holes along the two edges of the panel mounting brackets (**Figure 4-10 ❷**). There are a total of 4 panel mounting clamps for AFL2-12A-HM65.

Step 7: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 4-10 ❸**).

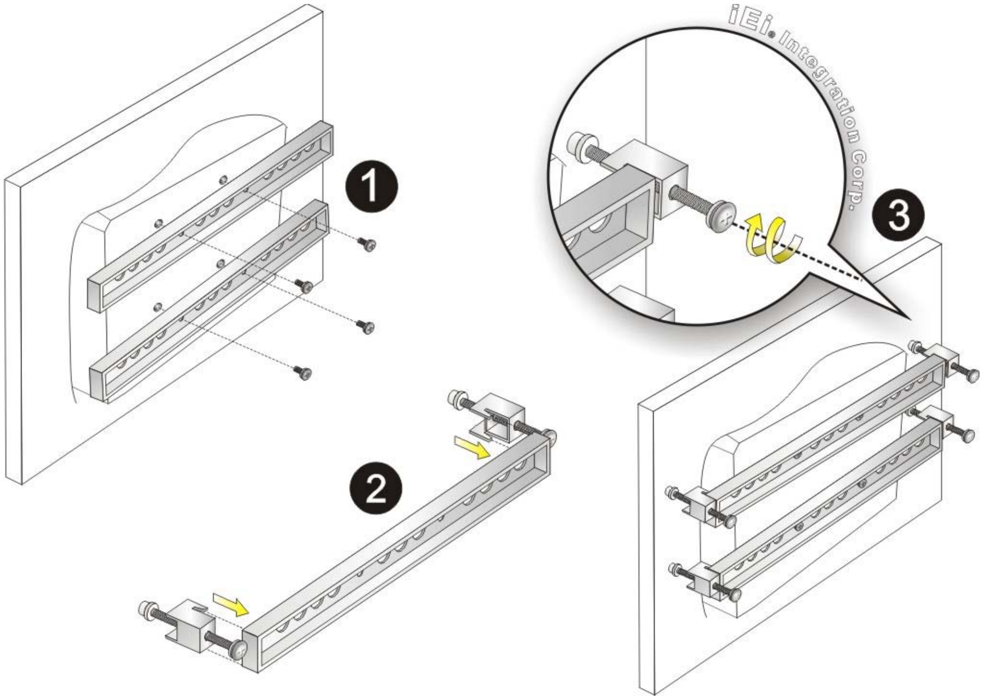


Figure 4-10: Panel Mounting

4.8.3 Rack Mounting

The AFL2-12A-HM65 flat bezel panel PC can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:

NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the AFL2-12A-HM65 flat bezel panel PC and the rack/cabinet into which the AFL2-12A-HM65 is installed.

Step 1: Slide the rear chassis of the AFL2-12A-HM65 flat bezel panel PC through the rack/cabinet bracket until the aluminum frame is flush against the front of the bracket (**Figure 4-11**).

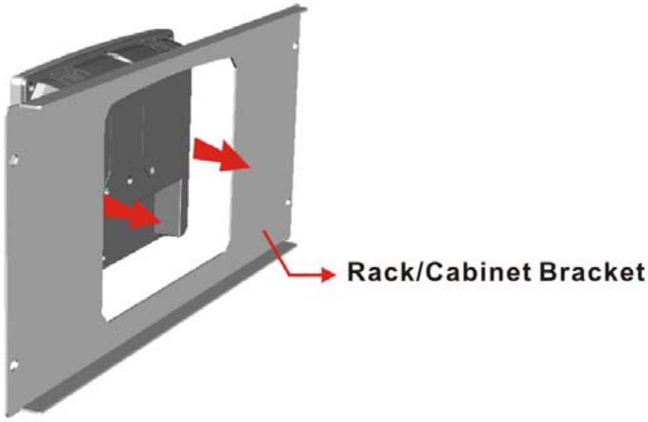


Figure 4-11: The Rack/Cabinet Bracket

Step 2: Align the rack mounting bracket screw holes with the VESA mounting holes on the rear of the panel PC.

Step 3: Secure the two rack mounting brackets to the rear of the panel PC by inserting the four retention screws into the VESA mounting holes (**Figure 4-10 ➊**).

Step 4: Insert the rack mounting clamps into the pre-formed holes along the two edges of the rack mounting brackets (**Figure 4-10 ➋**). There are a total of 4 rack mounting clamps for the AFL2-12A-HM65.

Step 5: Tighten the screws that pass through the rack mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 4-10 ➌**).

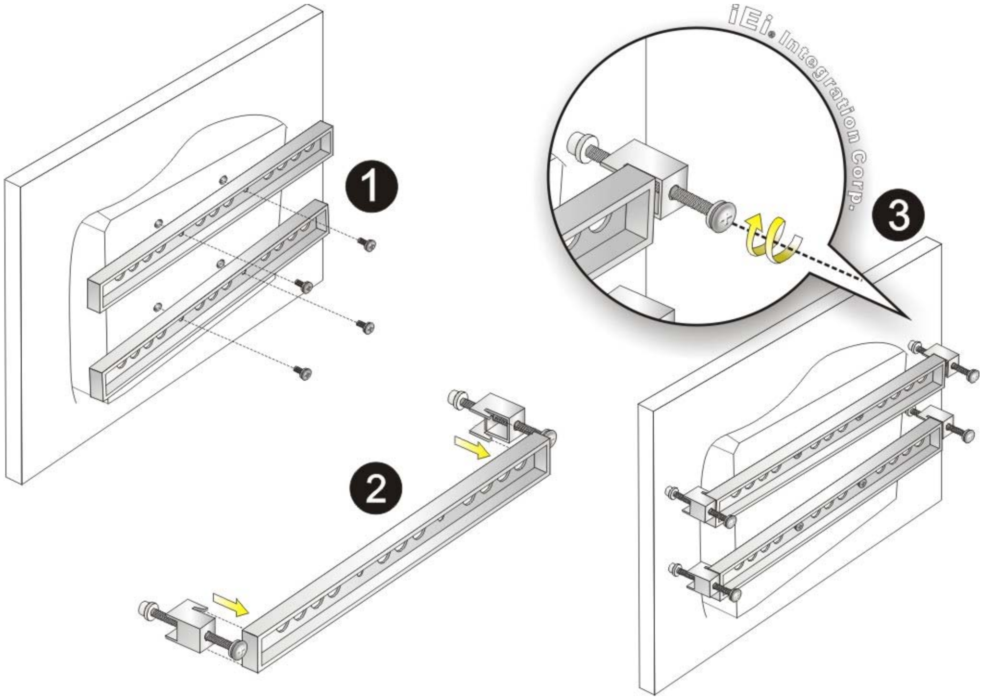

1
2
3
iEi Integration Corp.

Figure 4-12: Rack Bracket Mounting

Step 6: Slide the flat bezel panel PC with the attached rack/cabinet bracket into a rack or cabinet (**Figure 4-13**).

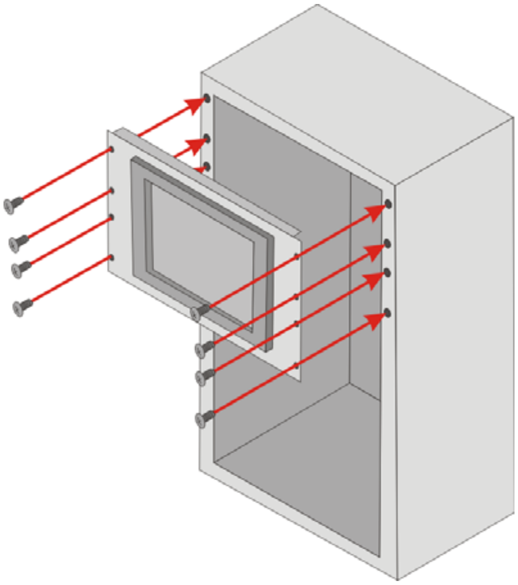


Figure 4-13: Install into a Rack/Cabinet

Step 7: Once the flat bezel panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 4-13**).

4.8.4 Stand Mounting

To mount the AFL2-12A-HM65 using the stand mounting kit, please follow the steps below.

Step 1: Locate the screw holes on the rear of the AFL2-12A-HM65. This is where the bracket will be attached (**Figure 4-14**).

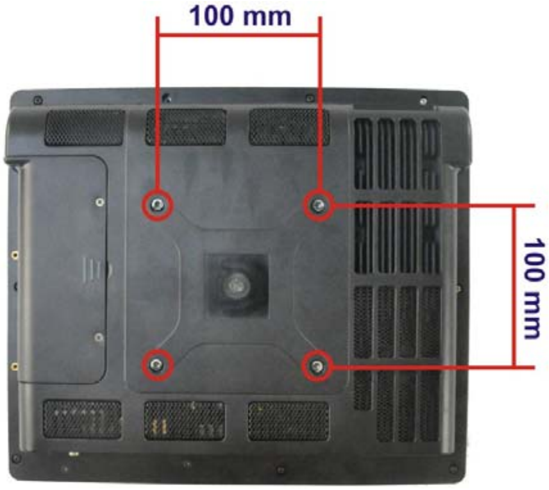


Figure 4-14: Mounting screw location

Step 2: Align the bracket with the screw holes.

Step 3: To secure the bracket to the AFL2-12A-HM65, insert the retention screws into the screw holes and tighten them.

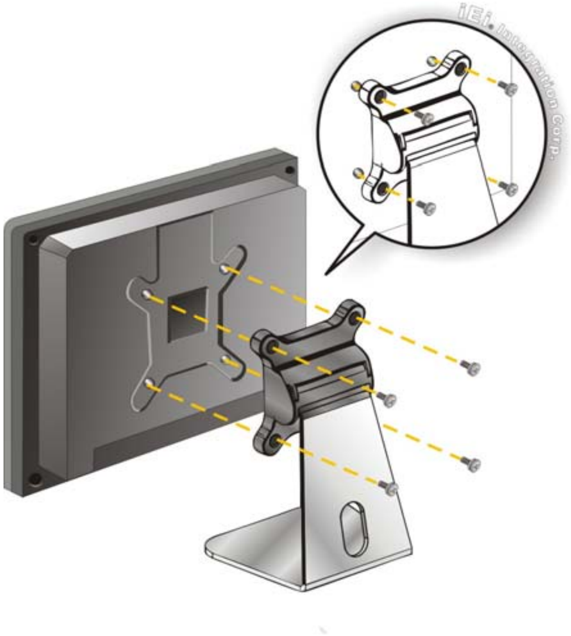


Figure 4-15: Stand Mounting (Stand-A12-RS)

4.8.5 Wall Mounting

To mount the flat bezel panel PC onto the wall, please follow the steps below.

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

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

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

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

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-16**).

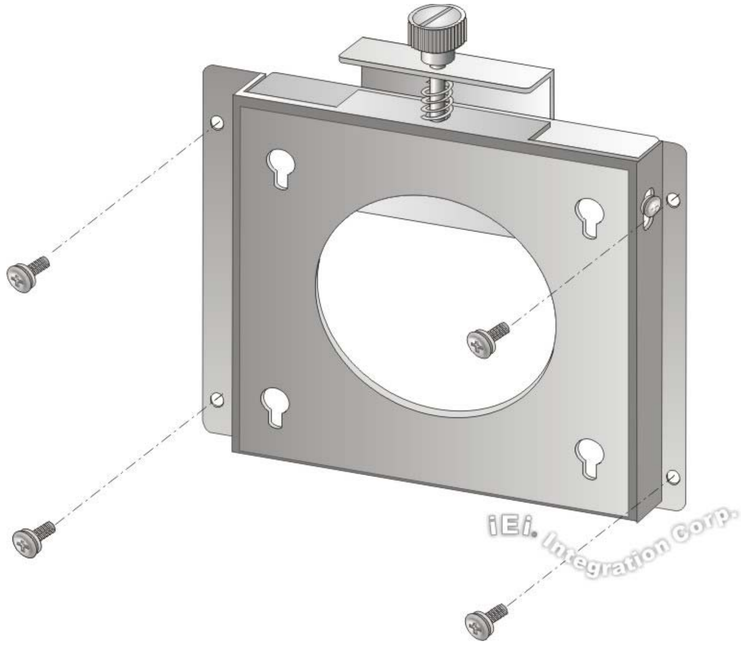
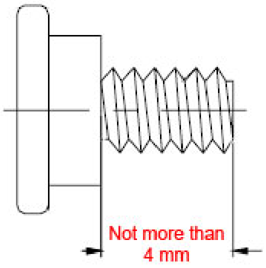


Figure 4-16: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mount kit into the four screw holes on the real panel of the flat bezel panel PC and tighten until the screw shank is secured against the rear panel (**Figure 4-17**).

WARNING:

Please use the M4 screws provided in the wall mount kit for the rear panel. If the screw is missing, the thread depth of the replacement screw should be not more than 4 mm.



Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 4-17**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

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

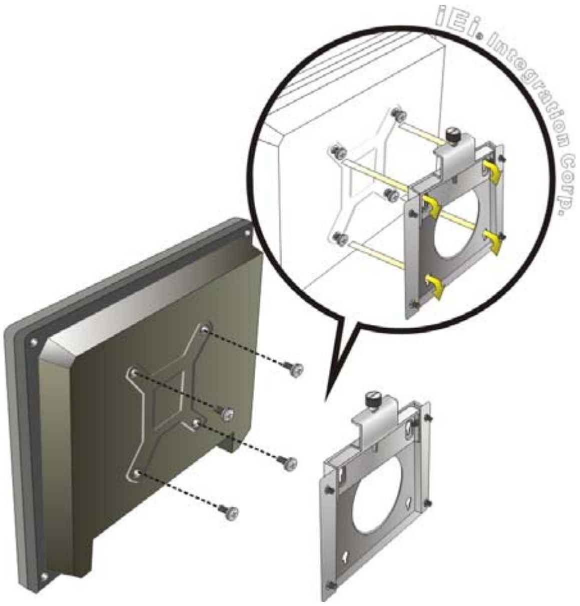


Figure 4-17: Chassis Support Screws

Step 9: Secure the panel PC by fastening the captive screw of the wall-mounting bracket. (**Figure 4-18**).

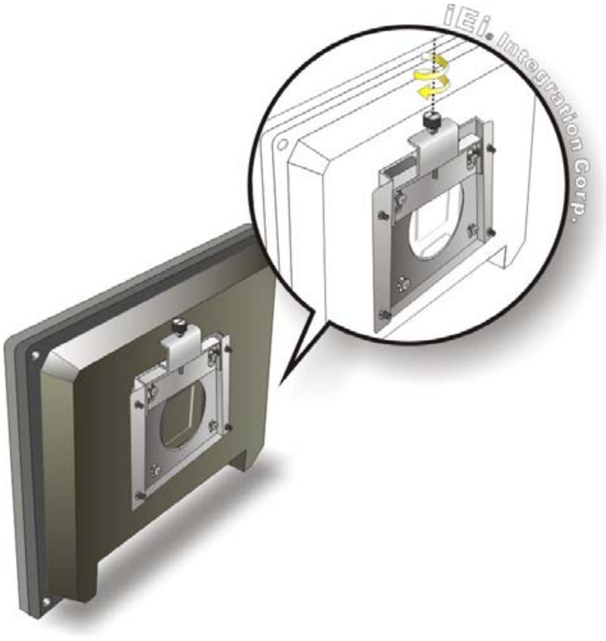


Figure 4-18: Secure the Panel PC

4.9 Bottom Panel Connectors

4.9.1 LAN Connection

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

Step 1: **Locate the RJ-45 connector** on the bottom panel of the AFL2-12A-HM65.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with the RJ-45 connectors on the bottom panel of the AFL2-12A-HM65. See **Figure 4-19**.

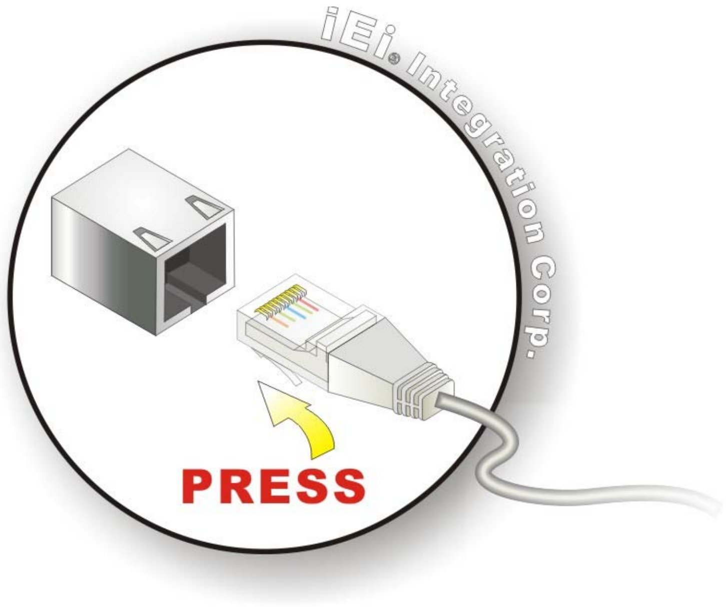


Figure 4-19: LAN Connection

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

4.9.2 Serial Device Connection

The AFL2-12A-HM65 has one male D-sub 9 port connector and one RJ-45 serial port connector on the I/O panel for serial device connection.

4.9.2.1 D-sub 9 Serial Port Connection

Follow the steps below to connect a serial device to the D-sub 9 connector of the AFL2-12A-HM65 panel PC.

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

Step 2: **Insert the serial connector**. Insert the D-sub 9 connector of a serial device into the D-sub 9 connector on the bottom panel. See **Figure 4-20**.

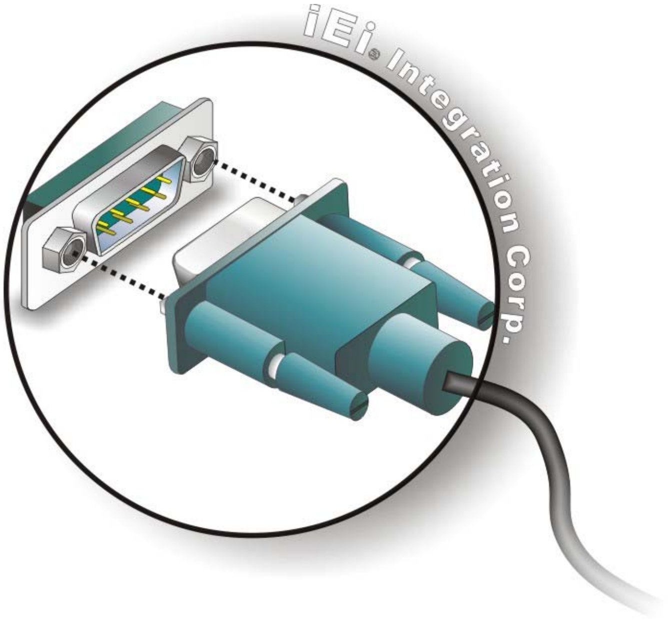

iEi Integration Corp.

Figure 4-20: D-sub 9 Serial Port 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.

4.9.2.2 RJ-45 Serial Port Connection

CN Label:	**COM3**
CN Type:	RJ-45
CN Location:	See **Figure 4-17**
CN Pinouts:	See Table 4-1

The RJ-45 serial port connector connects to RS-232 serial devices.

Pin	Description	Pin	Description
1	NDCD3	5	NTXD3
2	NDSR3	6	NCTS3
3	NRXD3	7	NDTR3

Pin	Description	Pin	Description
4	NRTS3	8	NRI3

Table 4-1: Ethernet Connector Pinouts

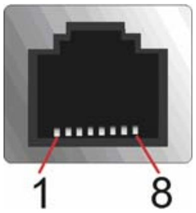


Figure 4-21: Ethernet Connector

Follow the steps below to connect a serial device to the RJ-45 serial port connector of the AFL2-12A-HM65 panel PC.

Step 1: **Locate the RJ-45 serial port**. The location of the RJ-45 serial port is shown in **Chapter 1**.

Step 2: **Connect the RJ-45 to COM port cable to the panel PC**. Insert the RJ-45 connector end of cable into the RJ-45 serial port. See **Figure 4-22**.

Step 3: **Connect the serial device.** Connect a serial device to the D-sub 9 connector end of the cable. See **Figure 4-22**.

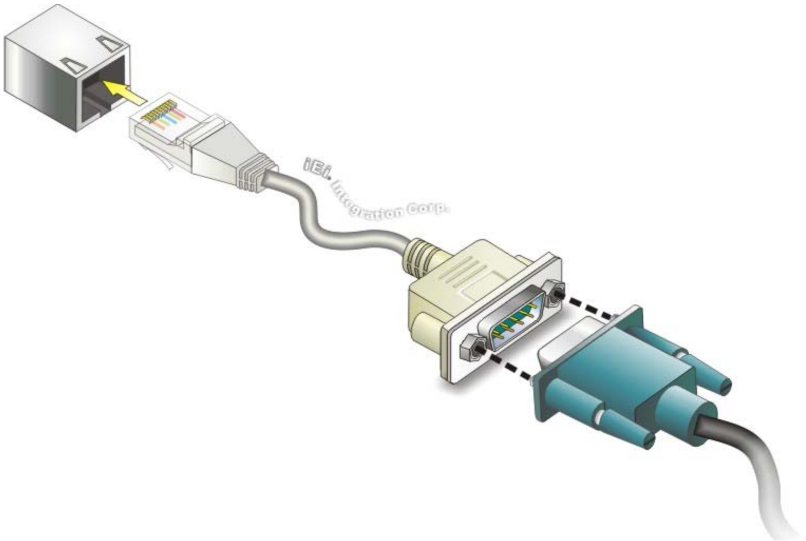


Figure 4-22: RJ-45 Serial Port Connector

Step 4: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.9.3 RS-422/485 Serial Port Connection

CN Label:	**COM6**
CN Type:	4-pin connector
CN Location:	See **Figure 4-23**
CN Pinouts:	See **Table 4-2 and Figure 4-24**

A RS-422/485 serial port device can be connected to the RS-422/485 serial port on the bottom panel. The pinouts of the RS-422/485 serial port are shown below.

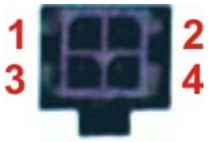


Figure 4-23: RS-422/485 Serial Port

Pin	RS-422	RS-485
1	RX+	
2	RX-	
3	TX+	DATA+
4	TX-	DATA-

Table 4-2: RS-422/485 Serial Port Pinouts

To install the RS-422/485 devices, follow the steps below.

Step 1: Locate the RS-422/RS485 connector. The location of the RS-422/RS-485 connector is shown in **Figure 1-6**.

Step 2: Connect the RS-422/485 connector to the RS-422/485 cable. The RS-422/485 cable can be found in the packing list and is shown in **Figure 4-24**.

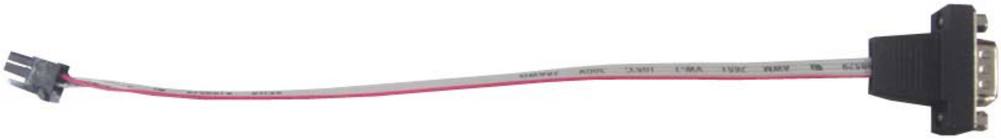


Figure 4-24: RS-422/485 Cable

Step 3: **Insert the serial connector**. Insert the D-sub 9 connector of a serial device into the D-sub 9 connector on the RS-422/485 cable.

Step 4: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

The D-sub 9 connector pinouts are listed below.

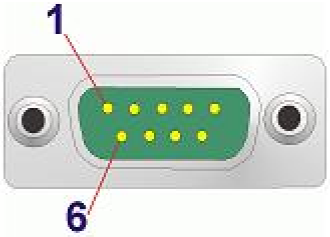


Figure 4-25: D-sub 9 Connector

Pin	RS-422	RS-485
1	TX-	DATA-
2	TX+	DATA+
3	RX+	
4	RX-	

Table 4-3: D-sub 9 Connector Pinouts

4.9.4 USB Device Connection

NOTE:

User must install the USB 3.0 driver before connecting a USB device to the system or else the system may not recognize the connected device.

There are two USB 2.0 connectors and two USB 3.0 connectors. All connectors are located on the bottom panel of the AFL2-12A-HM65. To connect a USB device, please follow the instructions below.

Step 5: **Locate the USB connectors**. The locations of the USB connectors are shown in **Chapter 1**.

Step 6: **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 4-26**.

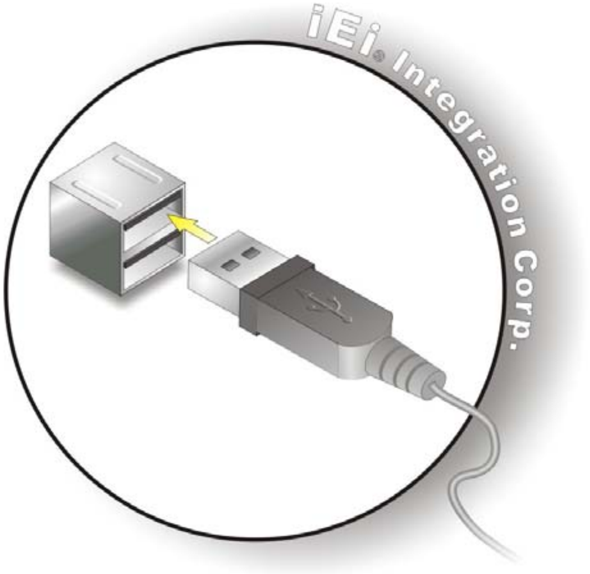

iEi Integration Corp.

Figure 4-26: USB Device Connection

Step 7: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

4.9.5 HDMI Device Connection

The HDMI connector transmits a digital signal to compatible HDMI display devices such as a TV or computer screen. To connect the HDMI cable to the AFL2-12A-HM65, follow the steps below.

Step 1: **Locate the HDMI connector**. The location is shown in **Chapter 1**.

Step 2: **Align the connector.** Align the HDMI connector with the HDMI port. Make sure the orientation of the connector is correct.

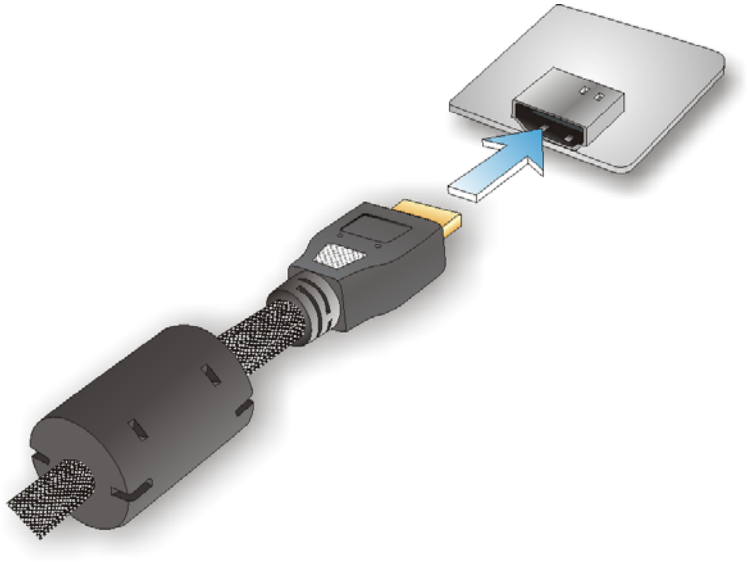


Figure 4-27: HDMI Connection

Step 3: **Insert the HDMI connector.** Gently insert the HDMI connector. The connector should engage with a gentle push. If the connector does not insert easily, check again that the connector is aligned correctly, and that the connector is being inserted with the right way up.

Chapter

5

System Maintenance

5.1 System Maintenance Introduction

If the components of the AFL2-12A-HM65 fail they must be replaced. Components that can be replaced include:

- SO-DIMM module
- WLAN Module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL2-12A-HM65 are described below.

5.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the AFL2-12A-HM65 may result in permanent damage to the AFL2-12A-HM65 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-12A-HM65. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-12A-HM65 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL2-12A-HM65, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL2-12A-HM65.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

5.3 Turn off the Power

WARNING:

Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

Before any maintenance procedures are carried out on the system, make sure the system is turned off.

To power off the system, follow the steps below:

Step 1: Locate the **Function** and **Brightness Up** function keys. See **Section 1.2.1.1**.

Step 2: Hold down the Function and Brightness Up buttons for **six** seconds to power off the system.

5.4 Opening the System

5.4.1 Removing the Back Cover

WARNING:

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

To access the AFL2-12A-HM65 internally the back cover must be removed. To remove the back cover, please follow the steps below.

Step 1: **Follow all anti-static procedures**. See **Section 5.2**.

Step 2: **Turn off the power**. See **Section 5.3**.

Step 3: Remove a total of nine (9) retention screws from the back cover (**Figure 5-1**).

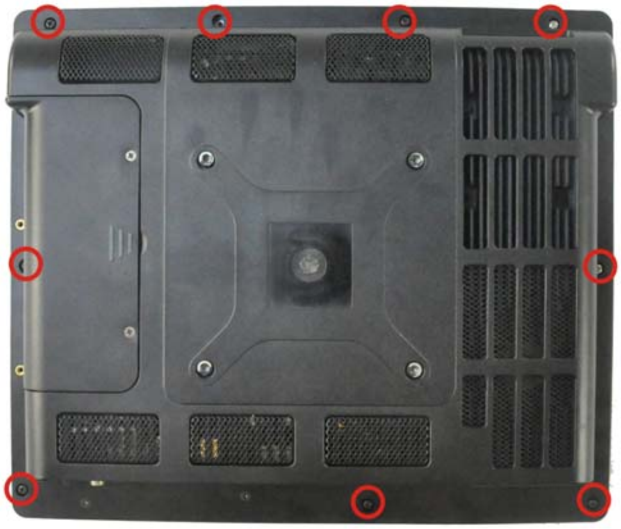


Figure 5-1: Back Cover Retention Screws

Step 4: Carefully separate the back cover from the chassis and lift the cover clear of the device

5.4.2 Removing the Internal Aluminum Cover

To remove the internal aluminum cover, follow the steps below.

Step 1: Remove the seven (7) retention screws securing the internal aluminum cover to the chassis (**Figure 5-2**).

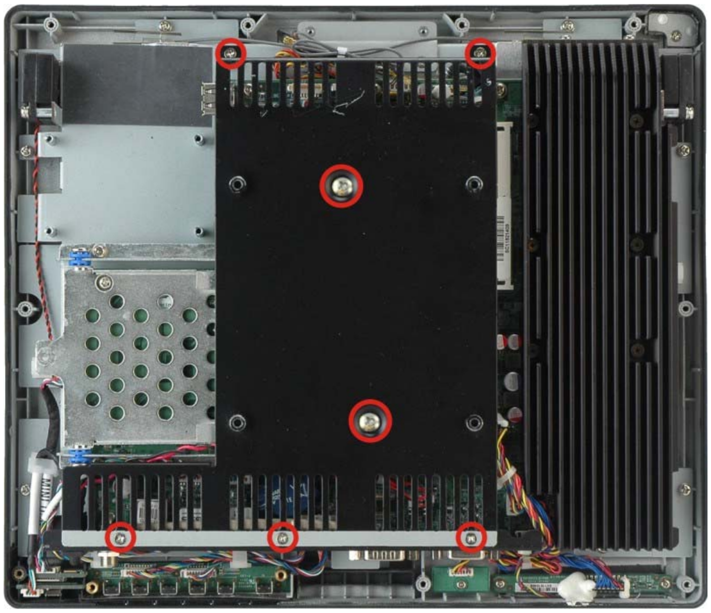


Figure 5-2: Internal Cover Retention Screws

Step 2: Lift the aluminum cover off the AFL2-12A-HM65.

5.5 Replacing Components

5.5.1 Memory Module Replacement

The flat bezel panel PC may be preinstalled with a DDR3 memory module. If the memory module fails, follow the instructions below to replace the memory module.

Step 1: Follow all anti-static procedures. See **Section 5.2**.

Step 2: Turn off the power. See **Section 5.3**.

Step 3: Remove the back cover. See **Section 5.4.1** above.

Step 4: Remove the internal aluminum back cover. See **Section 5.4.2** above.

Step 5: Locate the DDR3 SO-DIMM on the motherboard.

Step 6: Remove the DDR3 memory module by pulling both the spring retainer clips outward from the socket.

Step 7: Grasp the DDR3 memory module by the edges and carefully pull it out of the socket.

Step 8: Install the new DDR3 memory module by pushing it into the socket at an angle (**Figure 5-3**).

Step 9: Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR memory module down (**Figure 5-3**).

Step 10: Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR memory module in the socket.

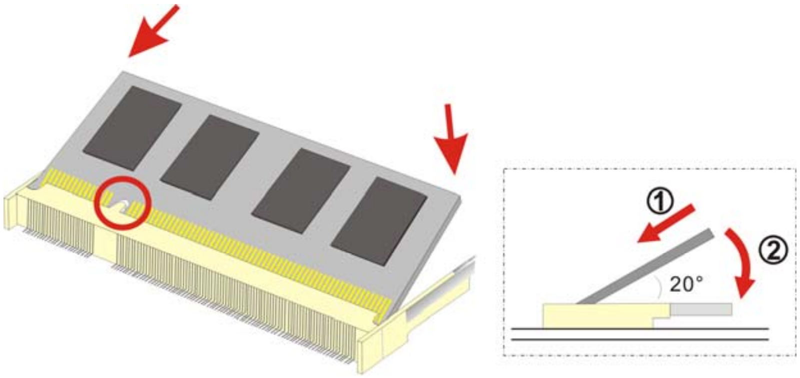


Figure 5-3: DDR SO-DIMM Module Installation

Step 11: Replace the internal aluminum cover and secure it to the chassis using six (6) retention screws.

Step 12: Replace the back cover and secure it using nine (9) previously removed retention screws.

5.5.2 WLAN Card Replacement

The AFL2-12A-HM65 has one WLAN card slot. To replace the WLAN card, follow the instructions below.

Step 1: Follow all anti-static procedures. See **Section 5.2**.

Step 2: Turn off the power. See **Section 5.3**.

Step 3: Remove the back cover. See **Section 5.4.1**.

Step 4: Remove the internal aluminum back cover. See **Section 5.4.2**.

Step 5: Locate the WLAN card.

Step 6: Disconnect the main and auxiliary antennas on the WLAN module (**Figure 5-4**).

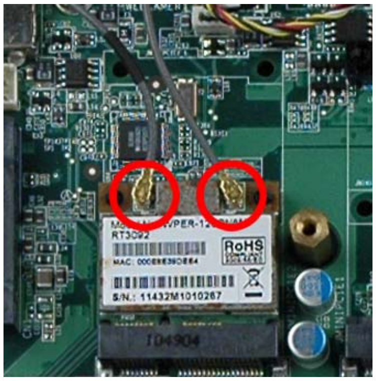


Figure 5-4: Removing the Antennas

Step 7: Push the two spring clips in to release the WLAN card.

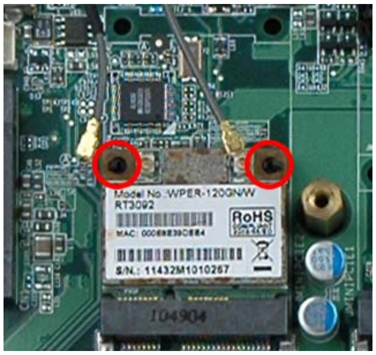


Figure 5-5: Releasing the WLAN Card

Step 8: Grasp the WLAN card by the edges and carefully pull it out of the socket (**Figure 5-6**).

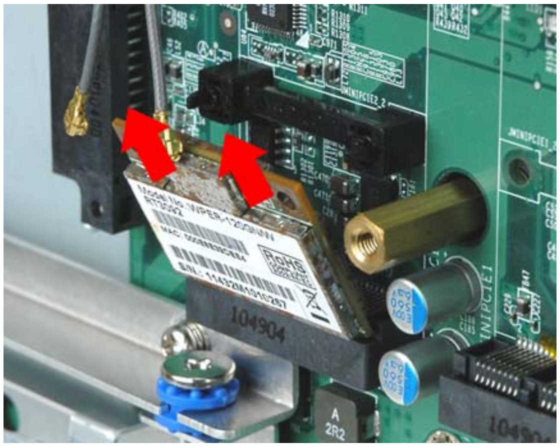


Figure 5-6: Removing the WLAN card

Step 9: Install a new WLAN card by inserting the card into the slot at an angle

Step 10: Push the WLAN card down until the spring retainer clips lock into place.

Step 11: Connect the main (1) and auxiliary (2) antennas. The main antenna is indicated with a strip of black electrical tape. See **Figure 5-7**.

NOTE:

To ensure the WLAN module functions correctly, please make sure the WLAN antennas are attached in the proper configuration.

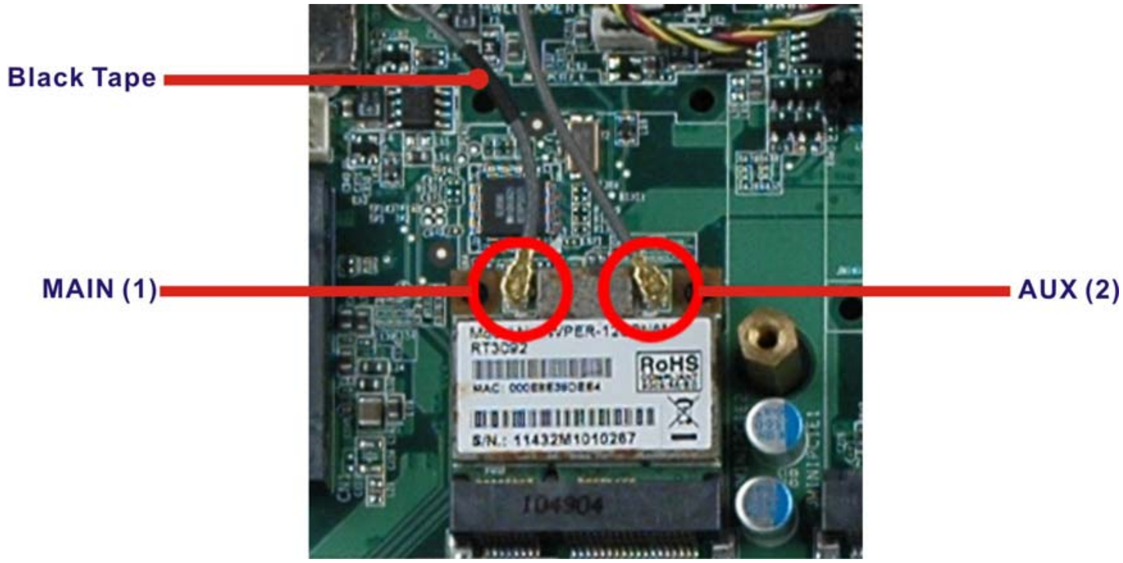


Figure 5-7: Attaching the Antennas

Step 12: Replace the internal aluminum cover and secure it to the chassis using six (6) retention screws.

Step 13: Replace the back cover and secure it using nine (9) previously removed retention screws.

5.6 Reinstalling the Covers

WARNING:

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

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

- Aluminum internal cover
- Plastic back cover
- Plastic HDD cover

Chapter

6

AMI BIOS Setup

6.1 Introduction

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

NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

6.1.1 Starting Setup

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

1. Press the **F2** or **DEL** key as soon as the system is turned on or
2. Press the **F2** or **DEL** key when the "**Press F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **F2 OR DEL** key is pressed, restart the computer and try again.

6.1.2 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 the following table.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below

Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up key	Move to the next page
Page Dn key	Move to the previous page
Esc key	Main Menu – Quit and do 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
F2 key	Load previous values
F3 key	Load optimized defaults
F4 key	Save changes and Exit BIOS

Table 6-1: BIOS Navigation Keys

6.1.3 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.

6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults. Use the jumper described in **Chapter 4.**

6.1.5 BIOS Menu Bar

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

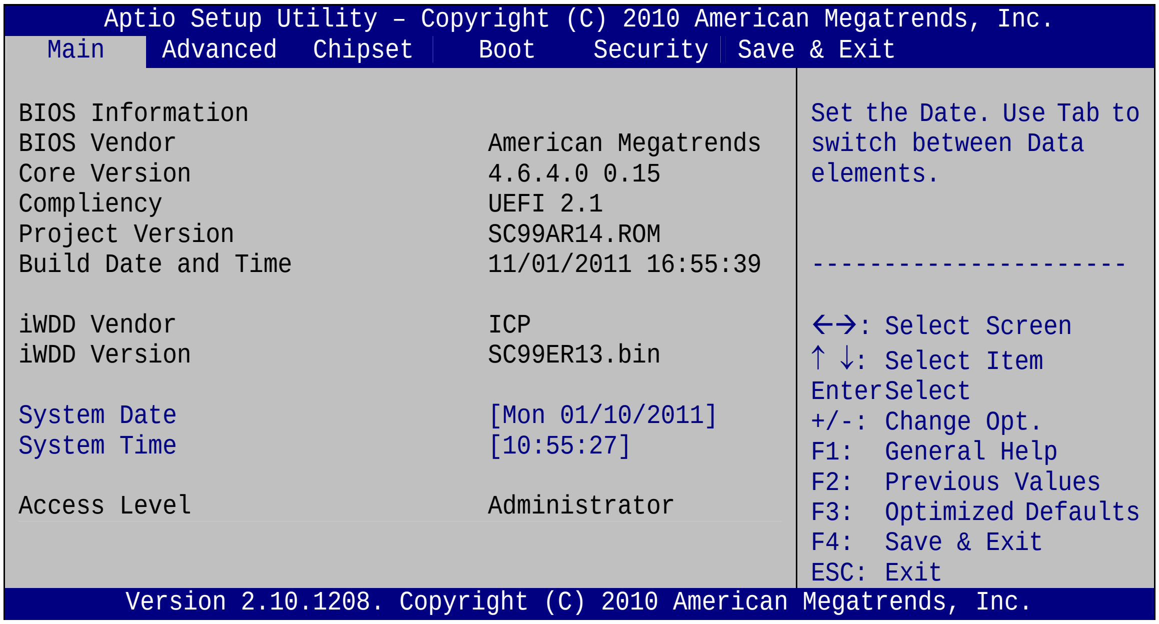
- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **Chipset** Changes the chipset settings

- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Save & 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.

6.2 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.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main     Advanced   Chipset      Boot     Security  Save & Exit

BIOS Information                                       Set the Date. Use Tab to
BIOS Vendor                     American Megatrends    switch between Data
Core Version                    4.6.4.0 0.15           elements.
Compliency                      UEFI 2.1
Project Version                 SC99AR14.ROM
Build Date and Time             11/01/2011 16:55:39    ----------------------

iWDD Vendor                     ICP                    ←→: Select Screen
iWDD Version                    SC99ER13.bin           ↑ ↓: Select Item
                                                       EnterSelect
System Date                     [Mon 01/10/2011]       +/-: Change Opt.
System Time                     [10:55:27]             F1:  General Help
                                                       F2:  Previous Values
Access Level                    Administrator          F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

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:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Compliency:** Current BIOS compliant version

- **Project Version:** The board version
- **Build Date and Time:** Date the current BIOS version was made
- **Access Level:** User access level

The System Overview field also has two user configurable fields:

➔ **System Date [xx/xx/xx]**

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

➔ **System Time [xx:xx:xx]**

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

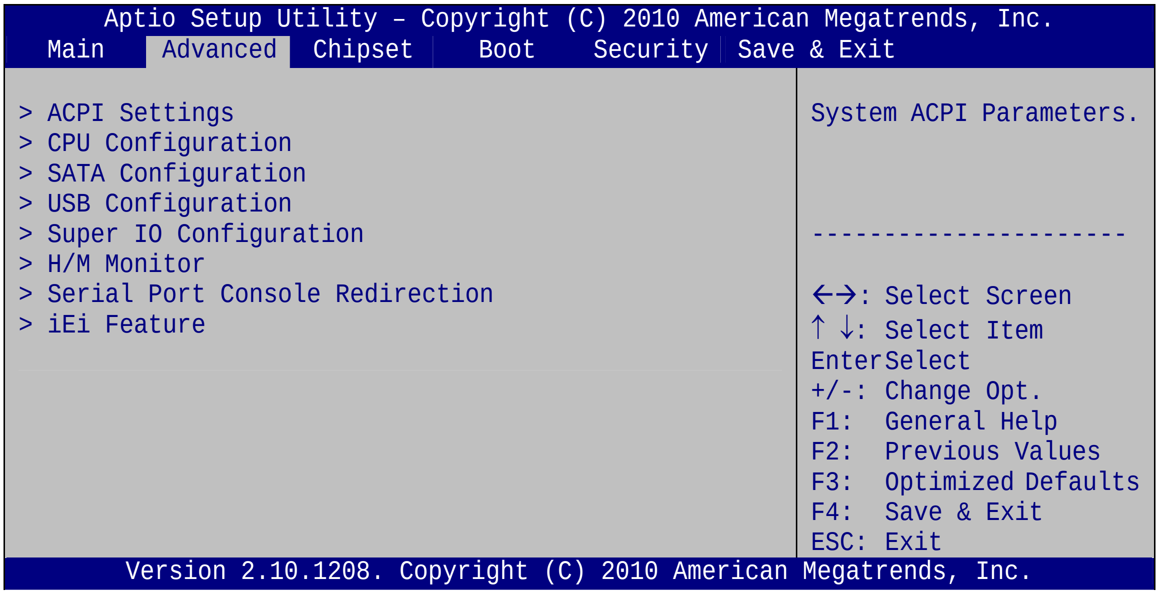
6.3 Advanced

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

WARNING:

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

- ACPI Settings
- CPU Configuration
- SATA Configuration
- USB Configuration
- Super IO Configuration
- H/W Monitor
- Serial Port Console Redirection
- iEi Feature

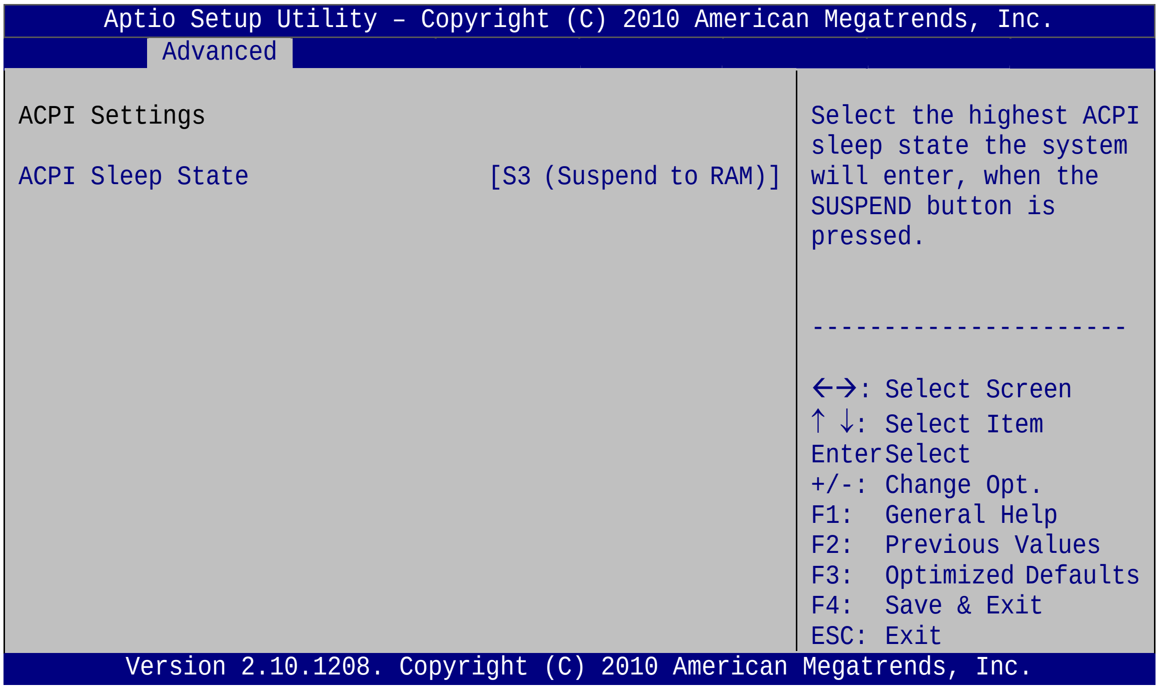


```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main     Advanced   Chipset     Boot     Security   Save & Exit

> ACPI Settings                                      System ACPI Parameters.
> CPU Configuration
> SATA Configuration
> USB Configuration
> Super IO Configuration                             ----------------------
> H/M Monitor
> Serial Port Console Redirection                    ←→: Select Screen
> iEi Feature                                        ↑ ↓: Select Item
                                                     EnterSelect
                                                     +/-: Change Opt.
                                                     F1:  General Help
                                                     F2:  Previous Values
                                                     F3:  Optimized Defaults
                                                     F4:  Save & Exit
                                                     ESC: Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

6.3.1 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
           Advanced

ACPI Settings                                        Select the highest ACPI
                                                     sleep state the system
ACPI Sleep State              [S3 (Suspend to RAM)]  will enter, when the
                                                     SUSPEND button is
                                                     pressed.


                                                     ----------------------

                                                     ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     EnterSelect
                                                     +/-: Change Opt.
                                                     F1:  General Help
                                                     F2:  Previous Values
                                                     F3:  Optimized Defaults
                                                     F4:  Save & Exit
                                                     ESC: Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 3: ACPI Configuration

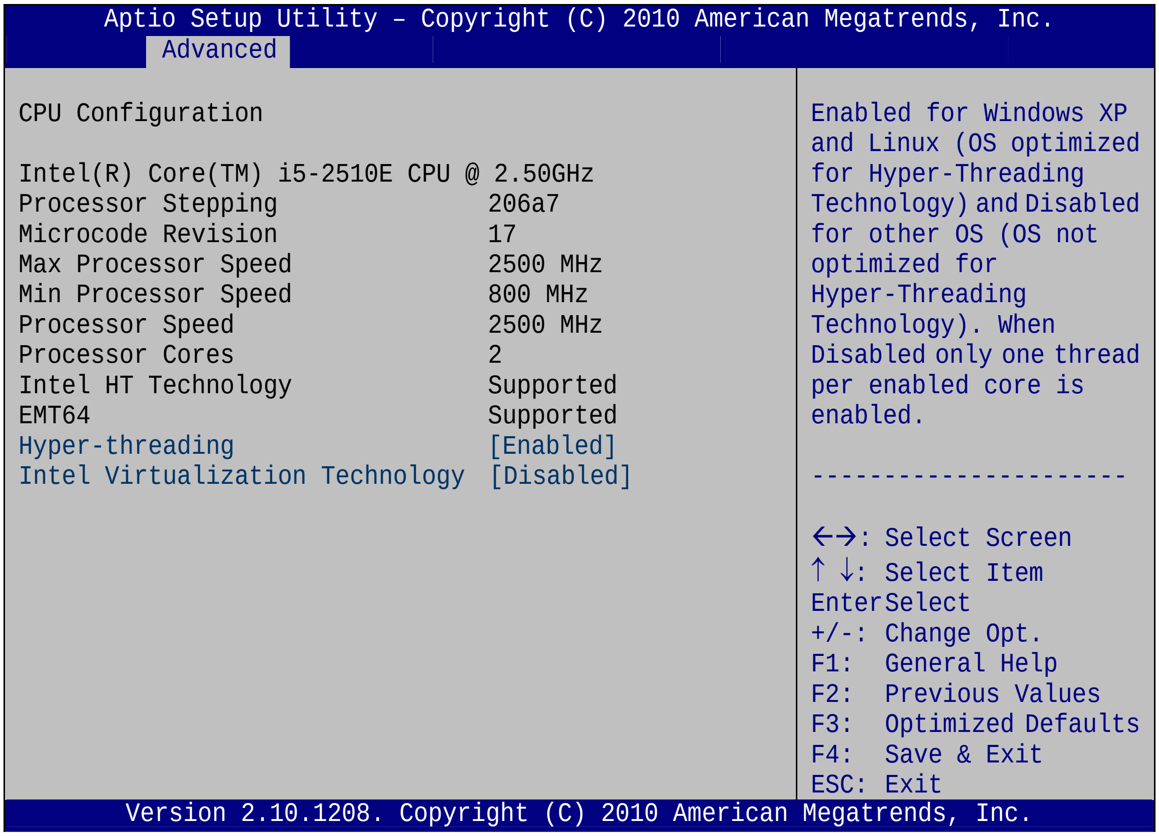
➔ **ACPI Sleep State [S3 (Suspend to RAM)]**

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔	**Suspend Disabled**		Suspend function disabled.
➔	**S1 (CPU Stop Clock)**		The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
➔	**S3 (Suspend to RAM)**	**DEFAULT**	The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

6.3.2 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 4**) to view detailed CPU specifications and configure the CPU.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
           Advanced
CPU Configuration                                 Enabled for Windows XP
                                                  and Linux (OS optimized
Intel(R) Core(TM) i5-2510E CPU @ 2.50GHz          for Hyper-Threading
Processor Stepping                206a7           Technology) and Disabled
Microcode Revision                17              for other OS (OS not
Max Processor Speed               2500 MHz        optimized for
Min Processor Speed               800 MHz         Hyper-Threading
Processor Speed                   2500 MHz        Technology). When
Processor Cores                   2               Disabled only one thread
Intel HT Technology               Supported       per enabled core is
EMT64                             Supported       enabled.
Hyper-threading                   [Enabled]
Intel Virtualization Technology   [Disabled]      ----------------------

                                                  ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  EnterSelect
                                                  +/-: Change Opt.
                                                  F1:  General Help
                                                  F2:  Previous Values
                                                  F3:  Optimized Defaults
                                                  F4:  Save & Exit
                                                  ESC: Exit
     Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 4: CPU Configuration

The CPU Configuration menu (**BIOS Menu 4**) lists the following CPU details:

- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- Max Processor Speed: Lists the Max CPU processing speed
- Min Processor Speed: Lists the Min CPU processing speed
- Processor Speed: Lists the CPU processing speed
- Processor Cores: Lists the number of the processor cores
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.
- EMT64: Indicates if EM64T is supported by the CPU.

→ Hyper Threading Function [Enabled]

Use the Hyper Threading function to enable or disable the CPU hyper threading function.

➔ **Disabled** Disables the use of hyper threading technology

➔ **Enabled** **DEFAULT** Enables the use of hyper threading technology

➔ **Intel® Virtualization Technology [Disabled]**

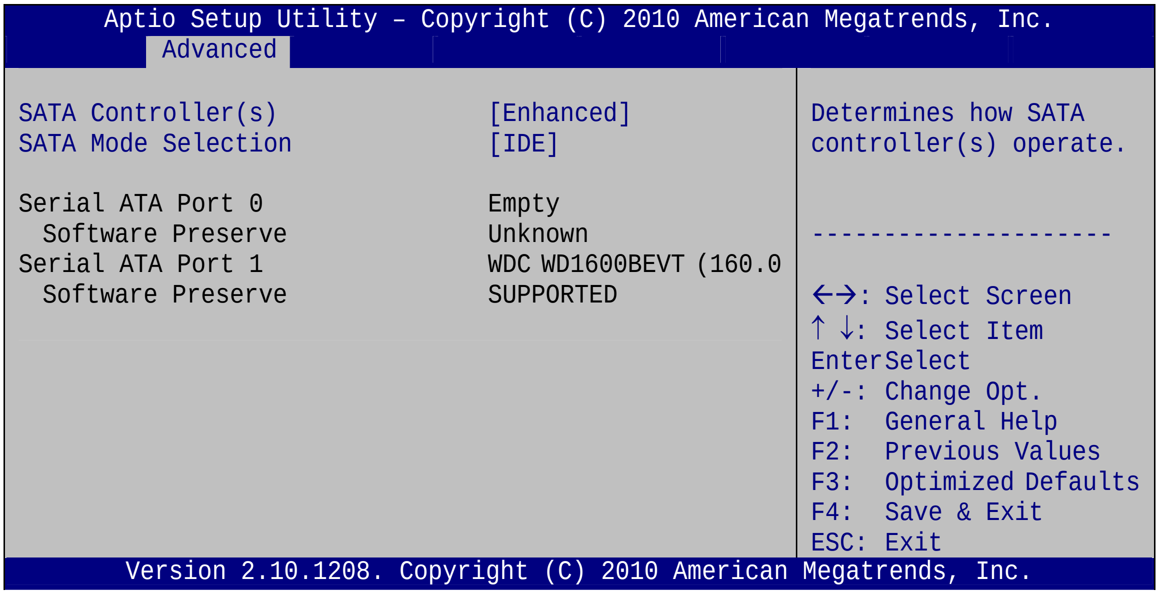
Use the Intel® Virtualization Technology option to enable or disable virtualization on the system. When combined with third party software, Intel Virtualization technology allows several OSes to run on the same system at the same time.

➔ **Disabled** **DEFAULT** Disables the use of Intel Virtualization technology

➔ **Enabled** Enables the use of Intel Virtualization technology

6.3.3 SATA Configuration

Use the **IDE Configuration** menu (**BIOS Menu 5**) to change and/or set the configuration of the SATA devices installed in the system.



```
        Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
           Advanced

SATA Controller(s)                [Enhanced]         Determines how SATA
SATA Mode Selection               [IDE]              controller(s) operate.

Serial ATA Port 0                 Empty
  Software Preserve               Unknown            ---------------------
Serial ATA Port 1                 WDC WD1600BEVT (160.0
  Software Preserve               SUPPORTED          ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     EnterSelect
                                                     +/-: Change Opt.
                                                     F1:  General Help
                                                     F2:  Previous Values
                                                     F3:  Optimized Defaults
                                                     F4:  Save & Exit
                                                     ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 5: SATA Configuration

➔ **SATA Controller(s) [Enhanced]**

Use the **SATA Controller(s)** option to configure the SATA controller.

➔	**Disabled**		Disables the on-board SATA controller.
➔	**Compatible**		Configures the on-board SATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 6 storage devices.
➔	**Enhanced**	**DEFAULT**	Configures the on-board SATA controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated.

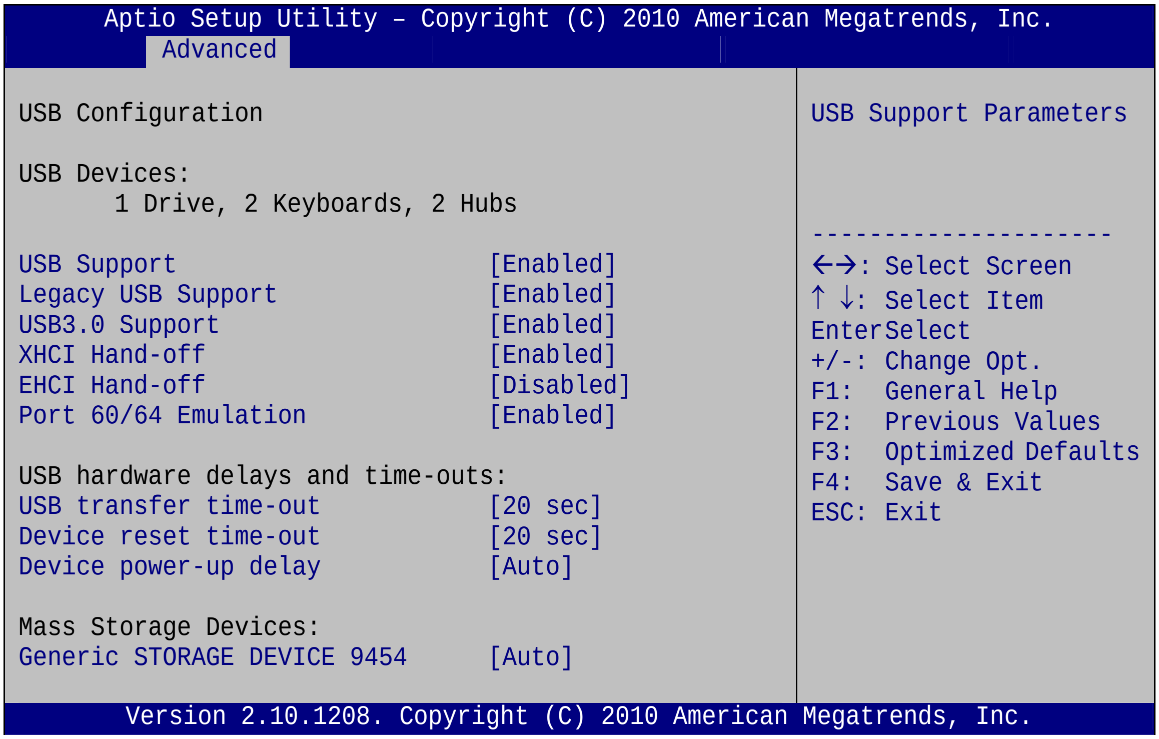
➔ **SATA Mode Selection [IDE]**

Use the **SATA Mode Selection** option to configure SATA devices as normal IDE devices.

➔	**IDE**	**DEFAULT**	Configures SATA devices as normal IDE device.
➔	**AHCI**		Configures SATA devices as AHCI device.

6.3.4 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 6**) to read USB configuration information and configure the USB settings.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced
USB Configuration                                 USB Support Parameters

USB Devices:
       1 Drive, 2 Keyboards, 2 Hubs
                                                  ---------------------
USB Support                      [Enabled]        ←→: Select Screen
Legacy USB Support               [Enabled]        ↑ ↓: Select Item
USB3.0 Support                   [Enabled]        EnterSelect
XHCI Hand-off                    [Enabled]        +/-: Change Opt.
EHCI Hand-off                    [Disabled]       F1:  General Help
Port 60/64 Emulation             [Enabled]        F2:  Previous Values
                                                  F3:  Optimized Defaults
USB hardware delays and time-outs:                F4:  Save & Exit
USB transfer time-out            [20 sec]         ESC: Exit
Device reset time-out            [20 sec]
Device power-up delay            [Auto]

Mass Storage Devices:
Generic STORAGE DEVICE 9454      [Auto]
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 6: USB Configuration

➔ USB Devices

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

➔ USB Support [Enabled]

Use the **USB Support** BIOS option to enable USB support.

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

➔ Legacy USB Support [Enabled]

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

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

➔ USB 3.0 Support [Enabled]

Use the **USB 3.0 Support** BIOS option to enable USB 3.0 support.

➔ **Enabled**	**DEFAULT**	USB 3.0 support enabled
➔ **Disabled**		USB 3.0 support disabled

➔ XHCI Hand-off [Enabled]

Use the **XHCI Hand-off** BIOS option to enable XHCI Hand-off support. This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by the XHCI driver.

➔ **Enabled**	**DEFAULT**	XHCI Hand-off enabled
➔ **Disabled**		XHCI Hand-off disabled

➔ EHCI Hand-off [Disabled]

Use the **EHCI Hand-off** BIOS option to enable EHCI Hand-off support. This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by the EHCI driver.

➔ **Enabled**		EHCI Hand-off enabled
➔ **Disabled**	**DEFAULT**	EHCI Hand-off disabled

➔ **Port 60/64 Emulation [Enabled]**

Use the **Port 60/64 Emulation** BIOS option to enable Port 60-/64 Emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware OSes.

➔	**Enabled**	**DEFAULT**	Port 60-/64 Emulation enabled
➔	**Disabled**		Port 60-/64 Emulation disabled

➔ **USB transfer time-out [20 sec]**

Use the **USB transfer time-out** BIOS option to configure the USB transfer timeout.

➔	**1 sec**		Sets the USB transfer time-out to 1 second.
➔	**5 sec**		Sets the USB transfer time-out to 5 seconds.
➔	**10 sec**		Sets the USB transfer time-out to 10 seconds.
➔	**20 sec**	**DEFAULT**	Sets the USB transfer time-out to 20 seconds.

➔ **Device reset time-out [20 sec]**

Use the **Device reset time-out** BIOS option to configure the device reset timeout.

➔	**10 sec**		Sets the Device reset time-out to 10 seconds.
➔	**20 sec**	**DEFAULT**	Sets the Device reset time-out to 20 seconds.
➔	**30 sec**		Sets the Device reset time-out to 30 seconds.
➔	**40 sec**		Sets the Device reset time-out to 40 seconds.

➔ **Device power-up delay [Auto]**

Use the **Device power-up delay** BIOS option to configure the device reset timeout.

➔	**Auto**	**DEFAULT**	Device power-up delay function is automatic
➔	**Manual**		Device power-up delay function is manual

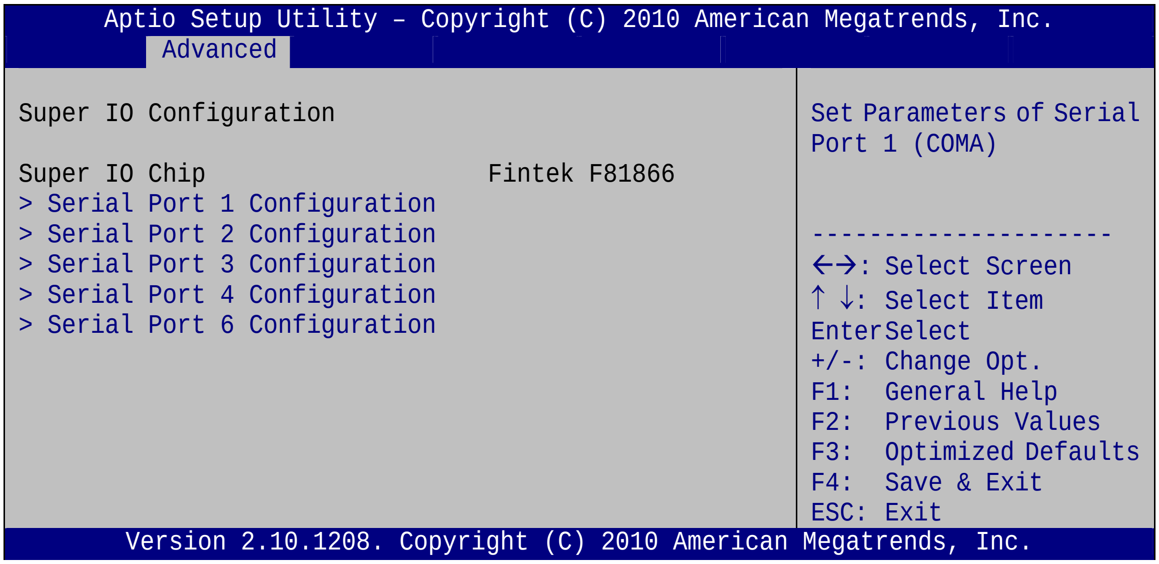
➔ **Generic Storage Device 9454 [Auto]**

Use the Generic Storage Device 9454 BIOS option to configure the mass storage device.

➔ **Auto**	**DEFAULT**	Sets the mass storage device to automatically detect settings

6.3.5 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

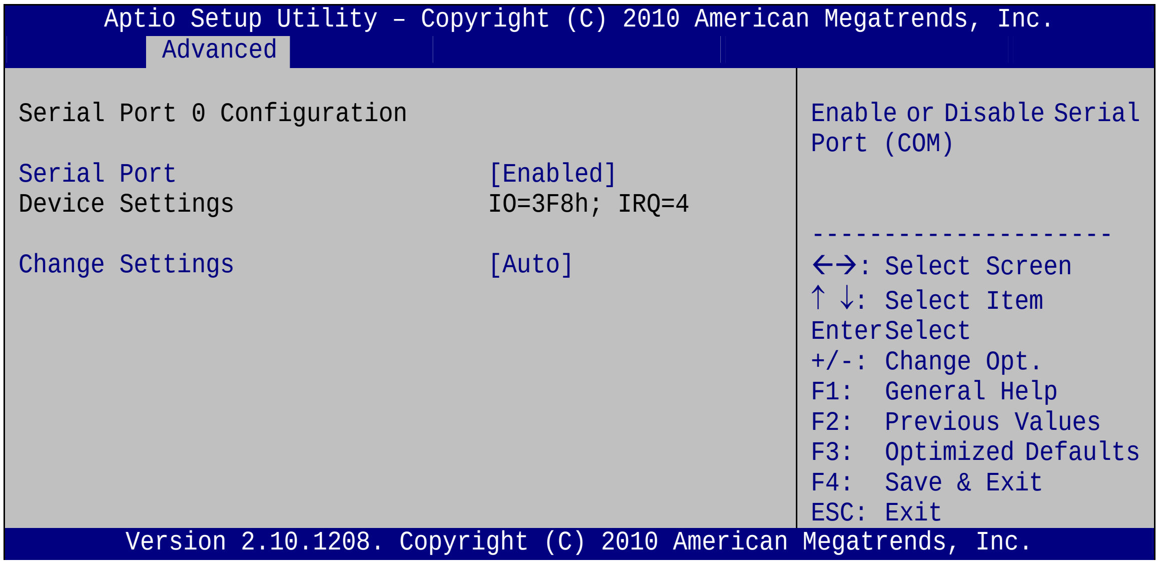


```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
             Advanced

Super IO Configuration                                 Set Parameters of Serial
                                                       Port 1 (COMA)
Super IO Chip                    Fintek F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration                          --------------------
> Serial Port 3 Configuration                          ←→: Select Screen
> Serial Port 4 Configuration                          ↑ ↓: Select Item
> Serial Port 6 Configuration                          EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 7: Super IO Configuration

6.3.5.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 8**) to configure the serial port n.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
           Advanced

 Serial Port 0 Configuration                                  Enable or Disable Serial
                                                              Port (COM)
 Serial Port                       [Enabled]
 Device Settings                   IO=3F8h; IRQ=4

 Change Settings                   [Auto]                     ---------------------
                                                              ←→: Select Screen
                                                              ↑ ↓: Select Item
                                                              EnterSelect
                                                              +/-: Change Opt.
                                                              F1:  General Help
                                                              F2:  Previous Values
                                                              F3:  Optimized Defaults
                                                              F4:  Save & Exit
                                                              ESC: Exit
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 8: Serial Port n Configuration Menu

6.3.5.1.1 Serial Port 1 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔	**Disabled**		Disable the serial port
➔	**Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

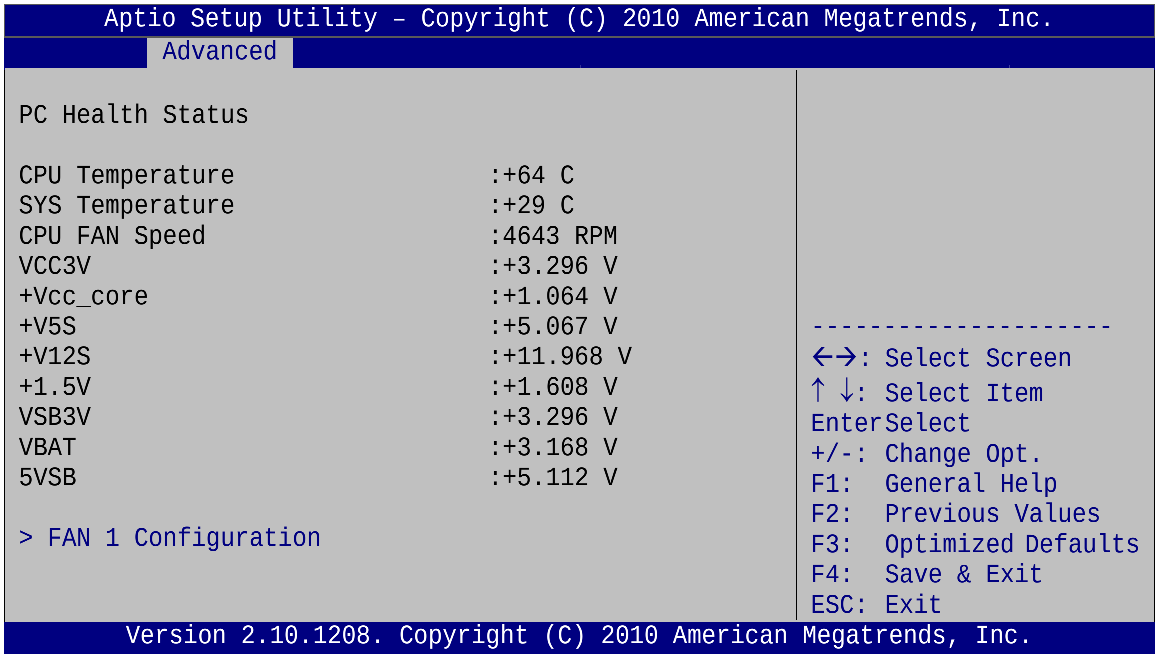
Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔	**Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔	**IO=3F8h; IRQ=4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ4

➔ **IO=3F8h; IRQ=3, 4**	Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**	Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4

6.3.6 H/W Monitor

The H/W Monitor menu (**BIOS Menu 9**) shows the operating temperature, fan speeds and system voltages.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

PC Health Status

CPU Temperature                   :+64 C
SYS Temperature                   :+29 C
CPU FAN Speed                     :4643 RPM
VCC3V                             :+3.296 V
+Vcc_core                         :+1.064 V
+V5S                              :+5.067 V            ---------------------
+V12S                             :+11.968 V           ←→: Select Screen
+1.5V                             :+1.608 V            ↑ ↓: Select Item
VSB3V                             :+3.296 V            EnterSelect
VBAT                              :+3.168 V            +/-: Change Opt.
5VSB                              :+5.112 V            F1:  General Help
                                                       F2:  Previous Values
> FAN 1 Configuration                                  F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 9: Hardware Health Configuration

➔ **PC Health Status**

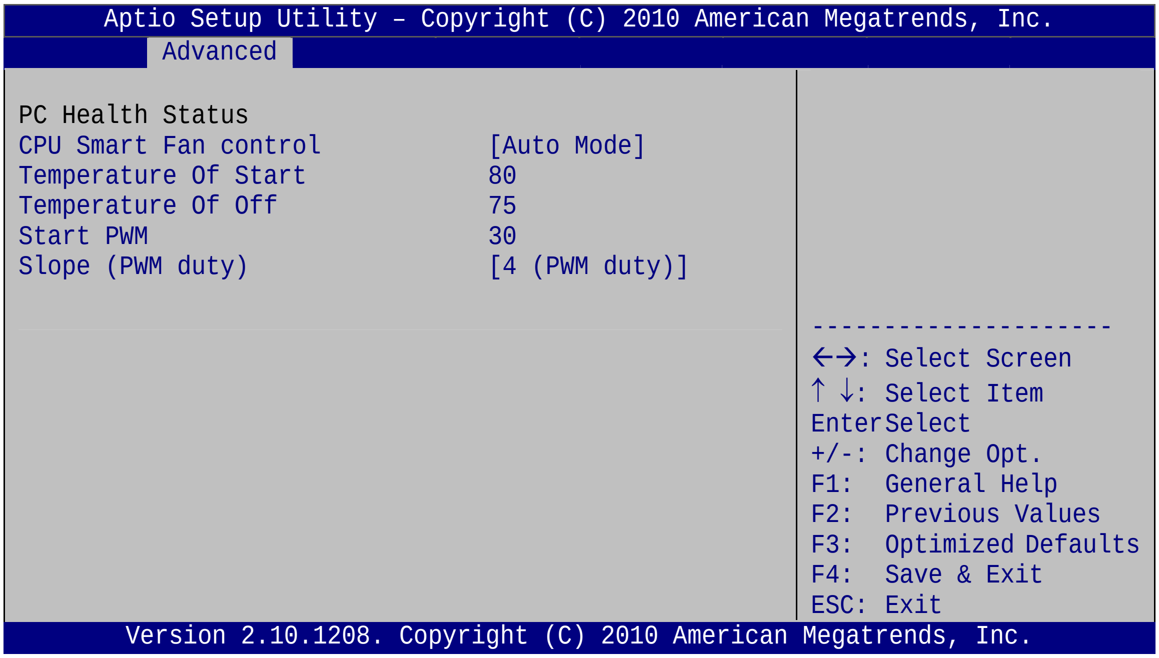
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Fan Speeds:
  - CPU Fan Speed

- Voltages:
  - VCC3V
  - +Vcc_core
  - +V5S
  - +V12S
  - +1.5V
  - VSB3V
  - VBAT
  - 5VSB

6.3.6.1 Fan 1 Configuration

The **Fan 1 Configuration** submenu (**BIOS Menu 10**) allows user to configure the CPU Smart fan settings.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

PC Health Status
CPU Smart Fan control            [Auto Mode]
Temperature Of Start             80
Temperature Of Off               75
Start PWM                        30
Slope (PWM duty)                 [4 (PWM duty)]

                                                    --------------------
                                                    ←→: Select Screen
                                                    ↑ ↓: Select Item
                                                    EnterSelect
                                                    +/-: Change Opt.
                                                    F1:  General Help
                                                    F2:  Previous Values
                                                    F3:  Optimized Defaults
                                                    F4:  Save & Exit
                                                    ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 10: Hardware Health Configuration

➔ **CPU Smart Fan control [Auto Mode]**

Use the **CPU Smart Fan control** BIOS option to configure the CPU Smart Fan.

➔ **Full Mode** Fan is on all the time

➔ **Manual Mode by PWM**		The fan spins at the speed set in: Fan PWM control
➔ **Auto Mode**	**DEFAULT**	The fan adjusts its speed using these settings: Temp. Limit of OFF Temp. Limit of Start Fan Start PWM Slope PWM 1

➔ **Temperature of Start [80]**

The **Temperature of Start** field allows user to set the starting temperature using the + and - keys.

➔ **Temperature of Off [75]**

The **Temperature of Off** field allows user to set the off temperature using the + and – keys.

➔ **Start PWM [30]**

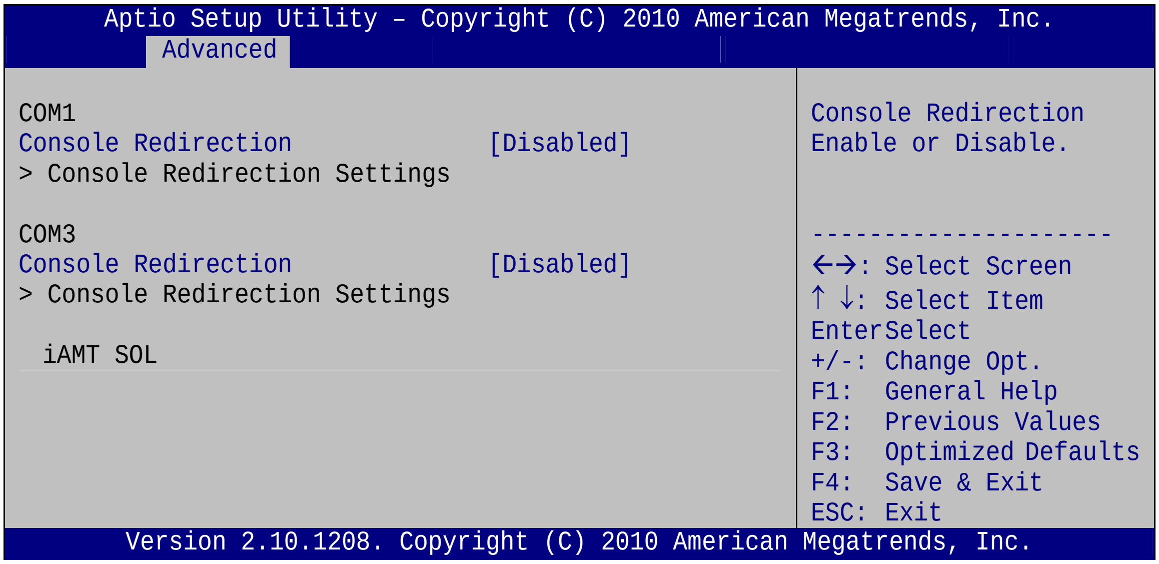
The **Start PWM** field allows user to set the start PWM speed using the + and – keys.

➔ **Slope (PWM duty) [4 (PWM duty)]**

The **Slope (PWM duty)** field allows user to set the slope fan speed.

6.3.7 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 11**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
             Advanced

COM1                                       Console Redirection
Console Redirection        [Disabled]      Enable or Disable.
> Console Redirection Settings

COM3                                       ---------------------
Console Redirection        [Disabled]      ←→: Select Screen
> Console Redirection Settings             ↑ ↓: Select Item
                                           EnterSelect
  iAMT SOL                                 +/-: Change Opt.
                                           F1:  General Help
                                           F2:  Previous Values
                                           F3:  Optimized Defaults
                                           F4:  Save & Exit
                                           ESC: Exit
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 11: Serial Port Console Redirection

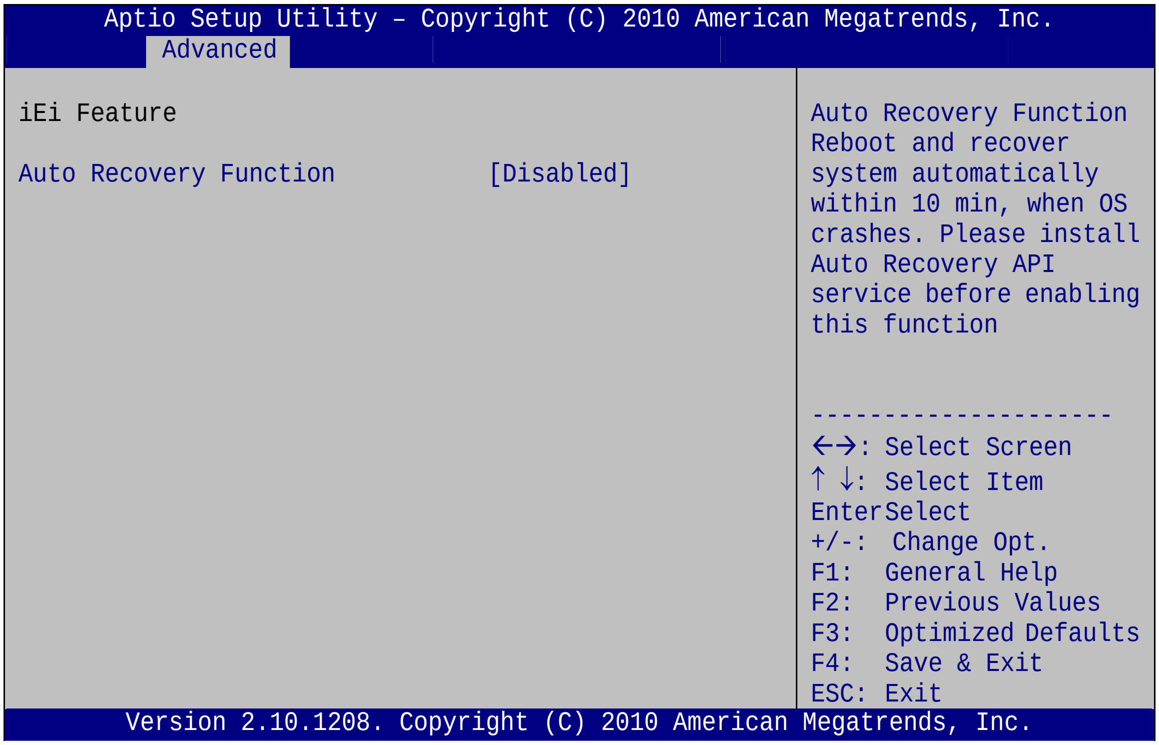
➔ **Console Redirection [Disabled]**

Use **Console Redirection** option to enable or disable the console redirection function.

➔ **Disabled**	**DEFAULT**	Disabled the console redirection function
➔ **Enabled**		Enabled the console redirection function

6.4 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 12**) to configure the auto recovery function.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

iEi Feature                                     Auto Recovery Function
                                                Reboot and recover
Auto Recovery Function          [Disabled]      system automatically
                                                within 10 min, when OS
                                                crashes. Please install
                                                Auto Recovery API
                                                service before enabling
                                                this function


                                                ---------------------
                                                ←→: Select Screen
                                                ↑ ↓: Select Item
                                                EnterSelect
                                                +/-:  Change Opt.
                                                F1:   General Help
                                                F2:   Previous Values
                                                F3:   Optimized Defaults
                                                F4:   Save & Exit
                                                ESC:  Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 12: iEi Feature

→ Auto Recovery Function [Disabled]

Use the **Auto Recovery Function** option to enable or disable auto recovery on the system.

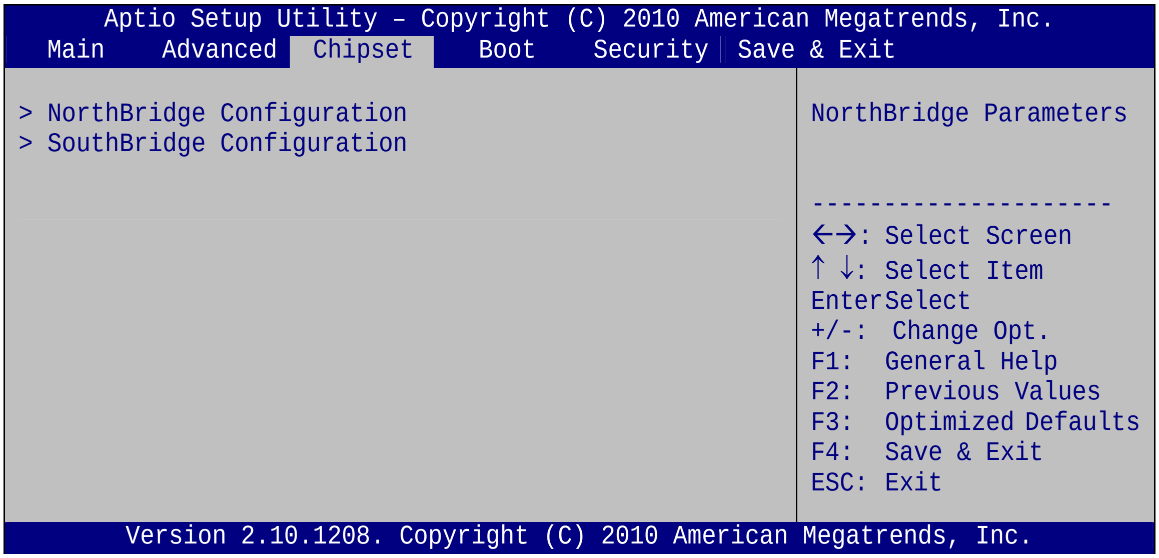
→	**Disabled**	**DEFAULT**	Auto Recovery Function support disabled
→	**Enabled**		Auto Recovery Function support enabled

6.5 Chipset

Use the **Chipset** menu (**BIOS Menu 13**) 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.

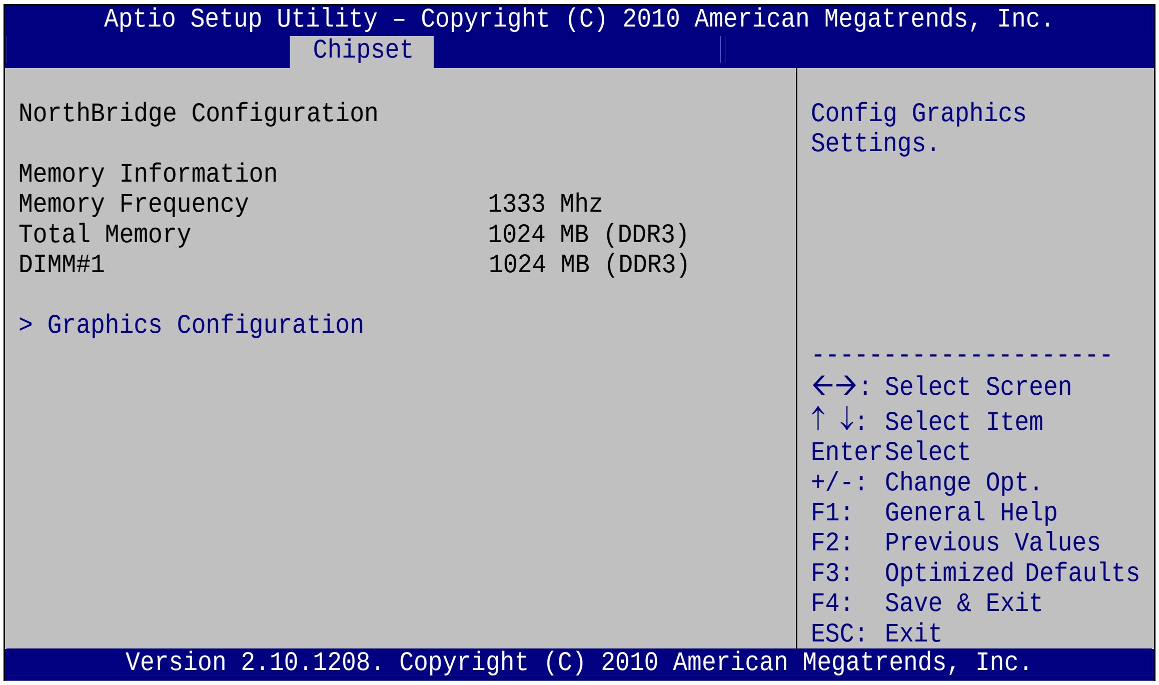


```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main    Advanced   Chipset     Boot    Security  Save & Exit

> NorthBridge Configuration                        NorthBridge Parameters
> SouthBridge Configuration


                                                   ---------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   +/-:  Change Opt.
                                                   F1:  General Help
                                                   F2:  Previous Values
                                                   F3:  Optimized Defaults
                                                   F4:  Save & Exit
                                                   ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 13: Chipset

6.5.1 NorthBridge Configuration

Use the **NorthBridge Configuration** menu (**BIOS Menu 14**) to configure the northbridge chipset.

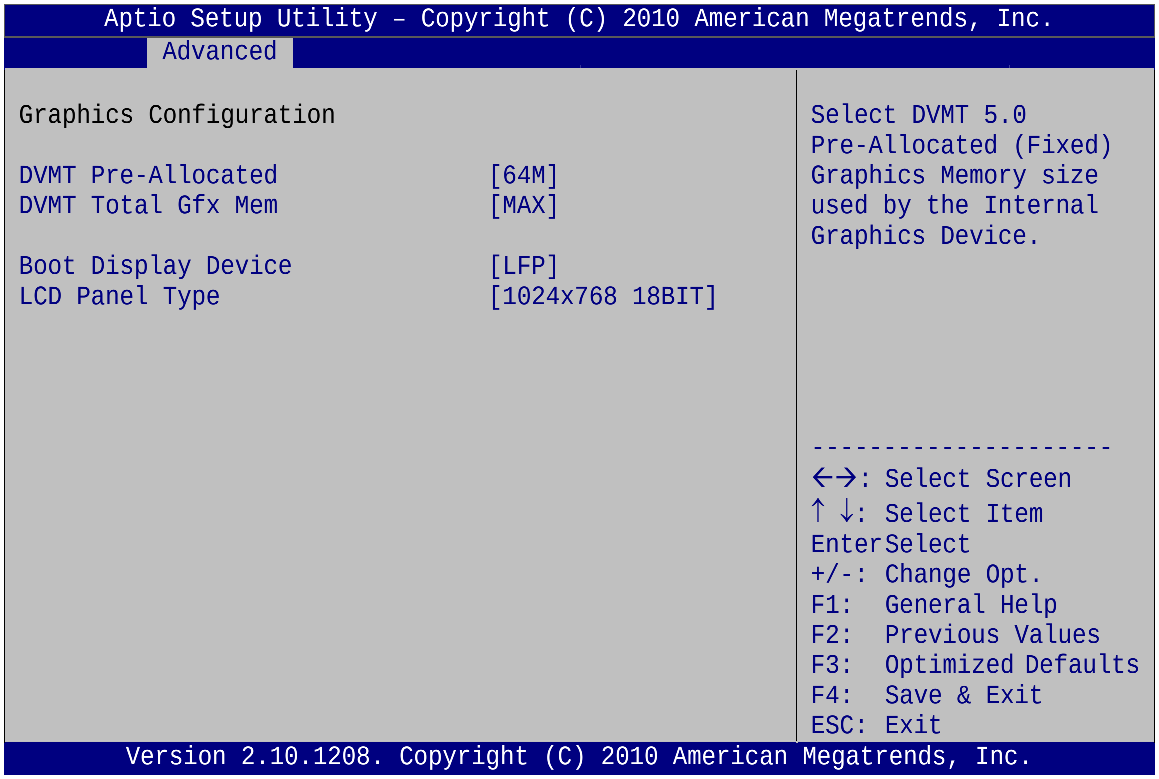


```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                 Chipset

NorthBridge Configuration                              Config Graphics
                                                       Settings.
Memory Information
Memory Frequency                 1333 Mhz
Total Memory                     1024 MB (DDR3)
DIMM#1                           1024 MB (DDR3)

> Graphics Configuration
                                                       ---------------------
                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 14: Host Bridge Chipset Configuration

6.5.1.1 Graphics Configuration

The **Graphics Configuration** submenu (**BIOS Menu 15**) allows user to configure graphics settings.



```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

Graphics Configuration                                 Select DVMT 5.0
                                                       Pre-Allocated (Fixed)
DVMT Pre-Allocated                [64M]                Graphics Memory size
DVMT Total Gfx Mem                [MAX]                used by the Internal
                                                       Graphics Device.
Boot Display Device               [LFP]
LCD Panel Type                    [1024x768 18BIT]




                                                       ---------------------
                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 15: Hardware Health Configuration

➔ **DVMT Pre-Allocated [64M]**

Use the **DVMT Pre-Allocated** BIOS option to configure the CPU Smart Fan.

➔	**0M**		DVMT memory size set at 0 MB
➔	**32M**		DVMT memory size set at 32 MB
➔	**64M**	**DEFAULT**	DVMT memory size set at 64 MB
➔	**96M**		DVMT memory size set at 96 MB
➔	**128M**		DVMT memory size set at 128 MB
➔	**160M**		DVMT memory size set at 160 MB

→ **192M**		DVMT memory size set at 192 MB
→ **224M**		DVMT memory size set at 224 MB
→ **256M**		DVMT memory size set at 256 MB
→ **288M**		DVMT memory size set at 288 MB
→ **320M**		DVMT memory size set at 320 MB
→ **352M**		DVMT memory size set at 352 MB
→ **384M**		DVMT memory size set at 384 MB
→ **416M**		DVMT memory size set at 416 MB
→ **448M**		DVMT memory size set at 448 MB
→ **480M**		DVMT memory size set at 480 MB
→ **512M**		DVMT memory size set at 512 MB

→ **DVMT Total Gfx Mem [MAX]**

Use the **DVMT Total Gfx Mem** BIOS option to configure the DVMT total graphics memory size.

→ **128 M**		Sets the DVMT Total Gfx Mem size to 128 MB.
→ **256 M**		Sets the DVMT Total Gfx Mem size to 256 MB.
→ **MAX**	**DEFAULT**	Sets the DVMT Total Gfx Mem size to maximum.

→ **Boot Display Device [LFP]**

Use the **Boot Display Device** BIOS option to configure the boot display device.

→ **HDMI**		Sets the boot display device to HDMI
→ **LFP**	**DEFAULT**	Sets the boot display device to LFP

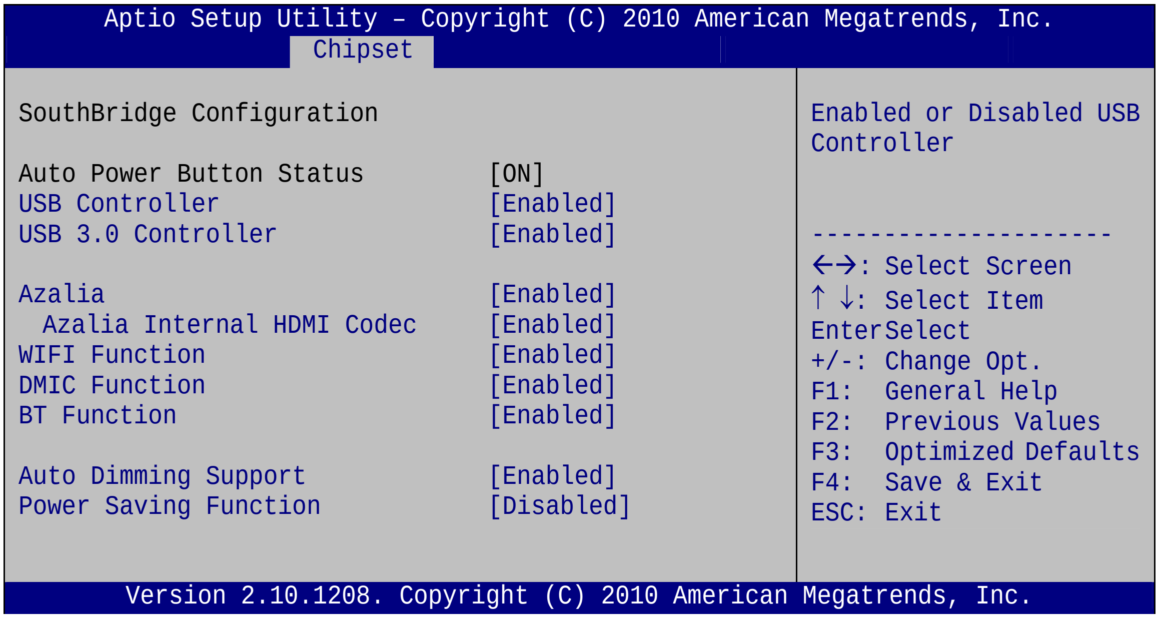
→ **LCD Panel Type [1024x768 18BIT]**

Use the **LCD Panel Type** BIOS option to configure the LCD panel type.

➔ **800x600 18BIT**		Sets the panel resolution at 800x600 (18-bit)
➔ **1024x768 18BIT**	**DEFAULT**	Sets the panel resolution at 1024x768 (18-bit)
➔ **1024x768 24BIT**		Sets the panel resolution at 1024x7678 (24-bit)

6.5.2 South Bridge Configuration

Use the **South Bridge Configuration** menu (**BIOS Menu 16**) to configure the southbridge chipset.



```
   Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                      Chipset

SouthBridge Configuration                            Enabled or Disabled USB
                                                     Controller
Auto Power Button Status         [ON]
USB Controller                   [Enabled]
USB 3.0 Controller               [Enabled]           --------------------
                                                     ←→: Select Screen
Azalia                           [Enabled]           ↑ ↓: Select Item
  Azalia Internal HDMI Codec     [Enabled]           EnterSelect
WIFI Function                    [Enabled]           +/-: Change Opt.
DMIC Function                    [Enabled]           F1:  General Help
BT Function                      [Enabled]           F2:  Previous Values
                                                     F3:  Optimized Defaults
Auto Dimming Support             [Enabled]           F4:  Save & Exit
Power Saving Function            [Disabled]          ESC: Exit

      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 16: Southbridge Chipset Configuration

➔ **USB Function [Enabled]**

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

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

➔ USB 3.0 Controller [Enabled]

Use the **USB 3.0 Controller** BIOS option to enable or disable the USB 3.0 controller

➔	**Disabled**		USB 3.0 controller disabled
➔	**Enabled**	**DEFAULT**	USB 3.0 controller enabled

➔ Azalia [Enabled]

Use the **Azalia** option to enable or disable the High Definition Audio controller.

➔	**Disabled**		The onboard High Definition Audio controller is disabled
➔	**Enabled**	**DEFAULT**	The onboard High Definition Audio controller automatically detected and enabled

➔ Azalia Internal HDMI Codec [Enabled]

Use the **Azalia Internal HDMI Codec** option to enable or disable the HDMI.

➔	**Disabled**		HDMI codec is disabled
➔	**Enabled**	**DEFAULT**	HDMI codec automatically detected and enabled

➔ WIFI Function [Enabled]

Use the **WIFI Function** option to enable or disable the Wi-Fi function.

➔	**Disabled**		Wi-Fi function disabled
➔	**Enabled**	**DEFAULT**	Wi-Fi function enabled

➔ DMIC Function [Enabled]

Use the **DMIC Function** option to enable or disable the DMIC function.

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

→ **BT Function [Enabled]**

Use the **BT Function** option to enable or disable the BT function.

→	**Disabled**		BT function disabled
→	**Enabled**	**DEFAULT**	BT function enabled

→ **Auto Dimming Support [Enabled]**

Use the **Auto Dimming Support** option to enable or disable auto dimming support.

→	**Disabled**		Auto dimming support disabled
→	**Enabled**	**DEFAULT**	Auto dimming support enabled

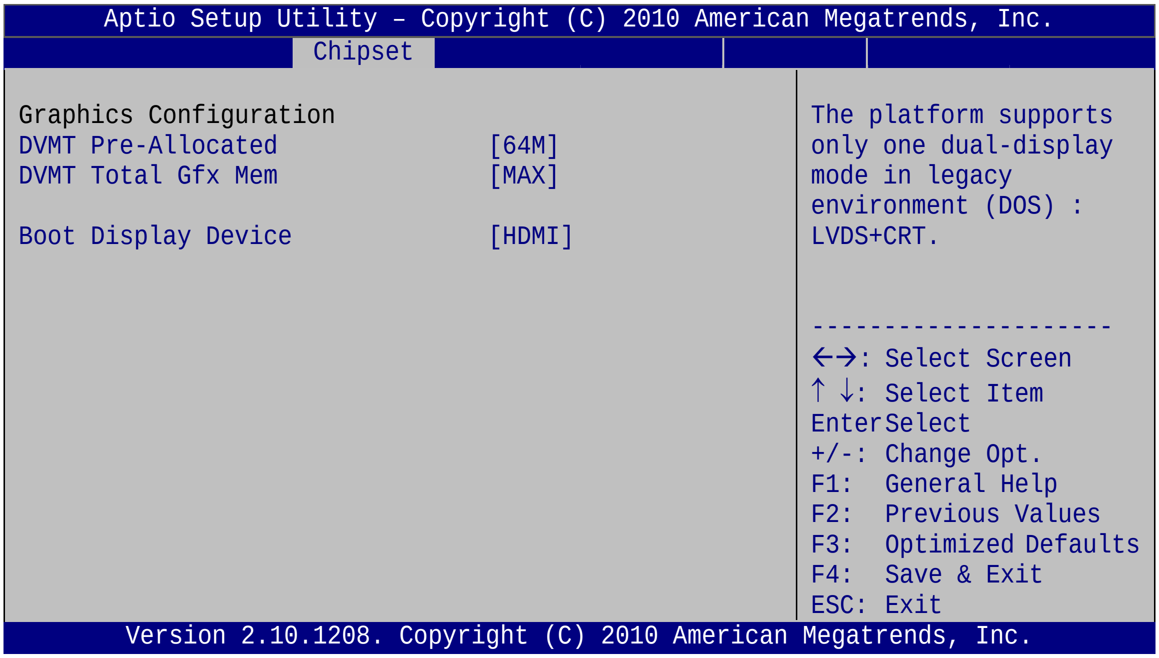
→ **Power Saving Function [Disabled]**

Use the **Power Saving Function** option to enable or disable the power saving function.

→	**Disabled**	**DEFAULT**	Power saving function disabled
→	**Enabled**		Power saving function enabled

6.5.3 Graphics Configuration

Use the **Graphics Configuration** menu (**BIOS Menu 17**) to configure the video device connected to the system.



```
        Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                    Chipset

 Graphics Configuration                                   The platform supports
 DVMT Pre-Allocated                 [64M]                 only one dual-display
 DVMT Total Gfx Mem                 [MAX]                 mode in legacy
                                                          environment (DOS) :
 Boot Display Device                [HDMI]                LVDS+CRT.



                                                          ---------------------
                                                          ←→: Select Screen
                                                          ↑ ↓: Select Item
                                                          EnterSelect
                                                          +/-: Change Opt.
                                                          F1:  General Help
                                                          F2:  Previous Values
                                                          F3:  Optimized Defaults
                                                          F4:  Save & Exit
                                                          ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 17: Graphics Configuration

➔ DVMT Pre-Allocated [64M]

Use the **DVMT Pre-Allocated** BIOS option to configure the CPU Smart Fan.

➔ **0M**		DVMT memory size set at 0 MB
➔ **32M**		DVMT memory size set at 32 MB
➔ **64M**	**DEFAULT**	DVMT memory size set at 64 MB
➔ **96M**		DVMT memory size set at 96 MB
➔ **128M**		DVMT memory size set at 128 MB
➔ **160M**		DVMT memory size set at 160 MB
➔ **192M**		DVMT memory size set at 192 MB
➔ **224M**		DVMT memory size set at 224 MB
➔ **256M**		DVMT memory size set at 256 MB
➔ **288M**		DVMT memory size set at 288 MB
➔ **320M**		DVMT memory size set at 320 MB
➔ **352M**		DVMT memory size set at 352 MB

➔ **384M**		DVMT memory size set at 384 MB
➔ **416M**		DVMT memory size set at 416 MB
➔ **448M**		DVMT memory size set at 448 MB
➔ **480M**		DVMT memory size set at 480 MB
➔ **512M**		DVMT memory size set at 512 MB

➔ **DVMT Total Gfx Mem [MAX]**

Use the **DVMT Total Gfx Mem** BIOS option to configure the DVMT total graphics memory size.

➔ **128 M**		Sets the DVMT Total Gfx Mem size to 128 MB.
➔ **256 M**		Sets the DVMT Total Gfx Mem size to 256 MB.
➔ **MAX**	**DEFAULT**	Sets the DVMT Total Gfx Mem size to maximum.

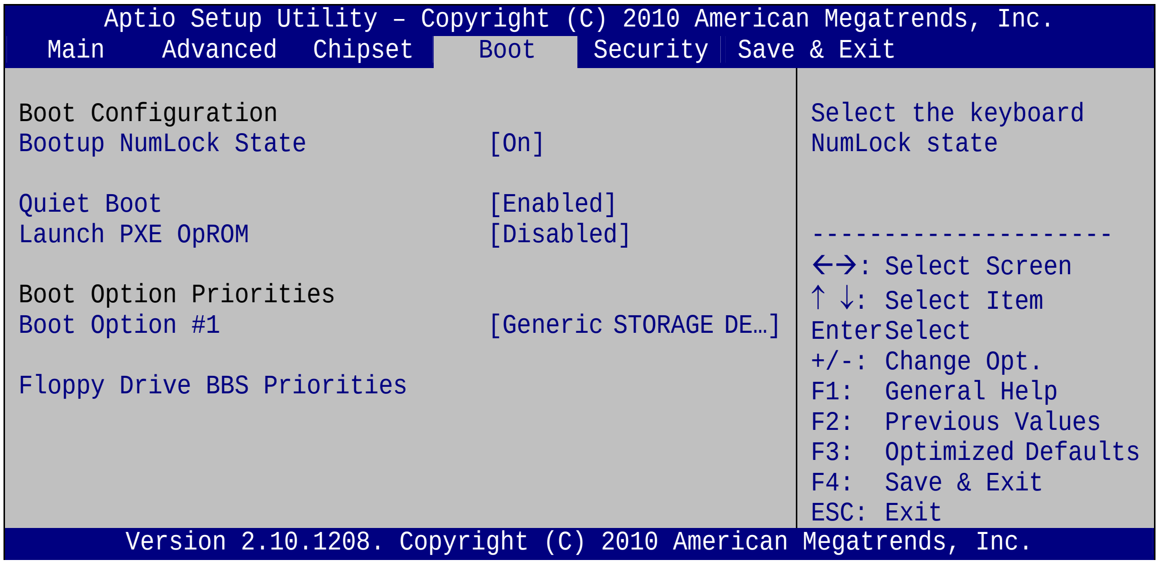
➔ **Boot Display Device [HDMI]**

Use the **Boot Display Device** BIOS option to configure the boot display device.

➔ **HDMI**	**DEFAULT**	Sets the boot display device to HDMI
➔ **LFP**		Sets the boot display device to LFP

6.6 Boot

Use the **Boot** menu (**BIOS Menu 18**) to configure system boot options.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main    Advanced   Chipset      Boot     Security  Save & Exit

Boot Configuration                                     Select the keyboard
Bootup NumLock State              [On]                 NumLock state

Quiet Boot                        [Enabled]
Launch PXE OpROM                  [Disabled]           ---------------------
                                                       ←→: Select Screen
Boot Option Priorities                                 ↑ ↓: Select Item
Boot Option #1                    [Generic STORAGE DE…] EnterSelect
                                                       +/-: Change Opt.
Floppy Drive BBS Priorities                            F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 18: Boot

➔ **Bootup NumLock State [On]**

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **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.
➔ **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.

➔ Quiet Boot [Enabled]

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

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

➔ Launch PXE OpROM [Disabled]

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

➔ **Disabled**	**DEFAULT**	Ignore all PXE Option ROMs
➔ **Enabled**		Load PXE Option ROMs

➔ Boot Option #1 [Generic STORAGE DE…]

Use **Boot Option #1** to enable or disable booting from the detected drive.

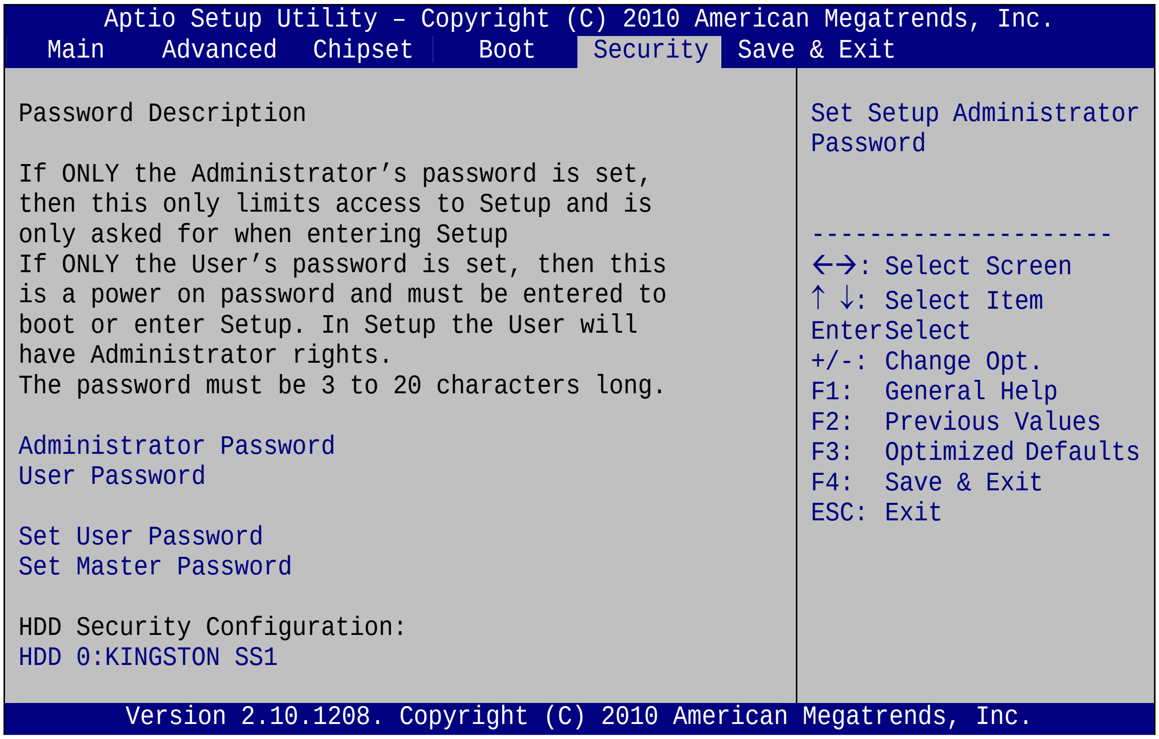
➔ **Generic STORAGE DE…**	**DEFAULT**	Enables booting from the detected storage device.
➔ **Disabled**		Disables boot option.

➔ Hard Drive BBS Priorities

Use **Hard Drive BBS Priorities** option to set the system boot order.

6.7 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main     Advanced   Chipset     Boot      Security  Save & Exit

 Password Description                                Set Setup Administrator
                                                     Password
 If ONLY the Administrator’s password is set,
 then this only limits access to Setup and is
 only asked for when entering Setup                  ---------------------
 If ONLY the User’s password is set, then this       ←→: Select Screen
 is a power on password and must be entered to       ↑ ↓: Select Item
 boot or enter Setup. In Setup the User will         EnterSelect
 have Administrator rights.                          +/-: Change Opt.
 The password must be 3 to 20 characters long.       F1:  General Help
                                                     F2:  Previous Values
 Administrator Password                              F3:  Optimized Defaults
 User Password                                       F4:  Save & Exit
                                                     ESC: Exit
 Set User Password
 Set Master Password

 HDD Security Configuration:
 HDD 0:KINGSTON SS1

       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 19: Security

➔ Administrator Password

Use the **Administrator Password** field to set or change an administrator password.

➔ User Password

Use the **User Password** field to set or change a user password.

➔ Set User Password

Use the **Set User Password** field to set or change an HDD user password.

NOTE:

It is recommended that the system be reset after setting a new HDD password.

➔ Set Master Password

Use the **Set Master Password** field to set or change the master HDD password.

NOTE:

It is recommended that the system be reset after setting a new master HDD password.

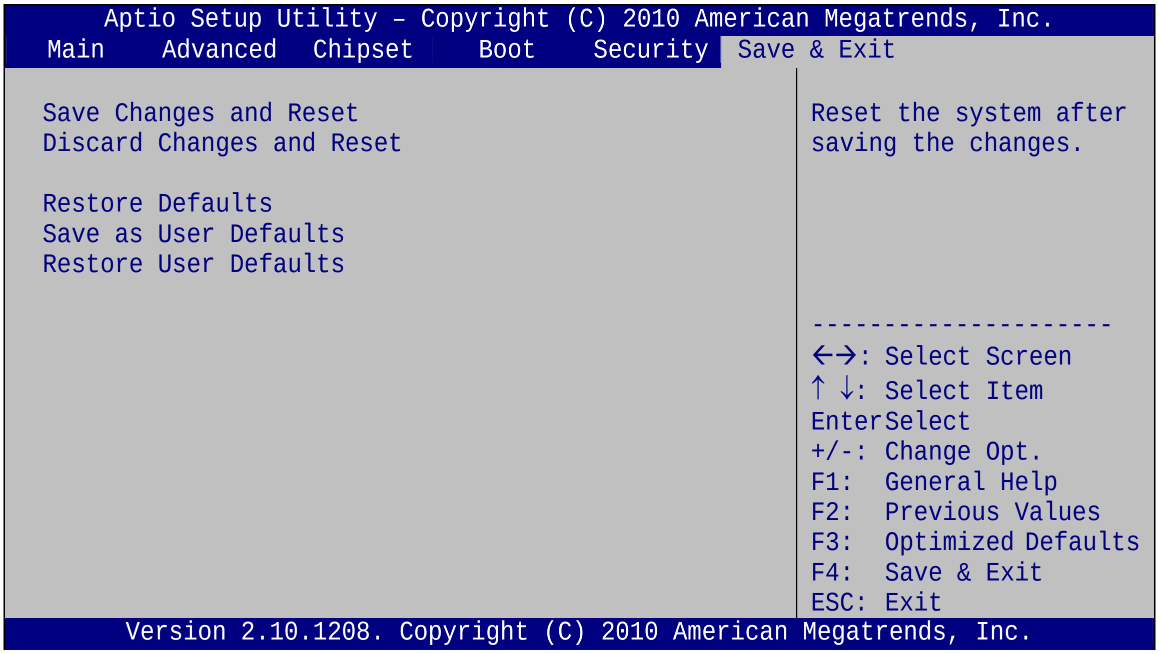
➔ HDD Password Configuration

The **HDD 0:KINGSTON SS1** submenu displays the HDD password security features supported by the system.

- **Security Supported:** Yes
- **Security Enabled:** No
- **Security Locked:** No
- **Security Frozen:** No
- **HDD User Pwd Status:** Not installed
- **HDD Master Pwd Status:** Installed

6.8 Save & Exit

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



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main     Advanced   Chipset     Boot     Security  Save & Exit

   Save Changes and Reset                              Reset the system after
   Discard Changes and Reset                           saving the changes.

   Restore Defaults
   Save as User Defaults
   Restore User Defaults

                                                       ---------------------
                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 20: Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ **Discard Changes and Reset**

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

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

- **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

- **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

7

Software Drivers

7.1 Available Software Drivers

NOTE:

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

The following drivers can be installed on the system:

- Chipset
- Graphic
- Audio
- Touchscreen
- AMCap
- USB 3.0

Installation instructions are given below.

7.2 Starting the Driver Program

To access the driver installation programs, please do the following.

Step 1: Insert the CD-ROM that came with the system into a CD-ROM drive attached to the system.

Step 2: Click **AFL2-12A-HM65**.

Step 3: A list of available drivers appears.

7.3 Chipset Driver Installation

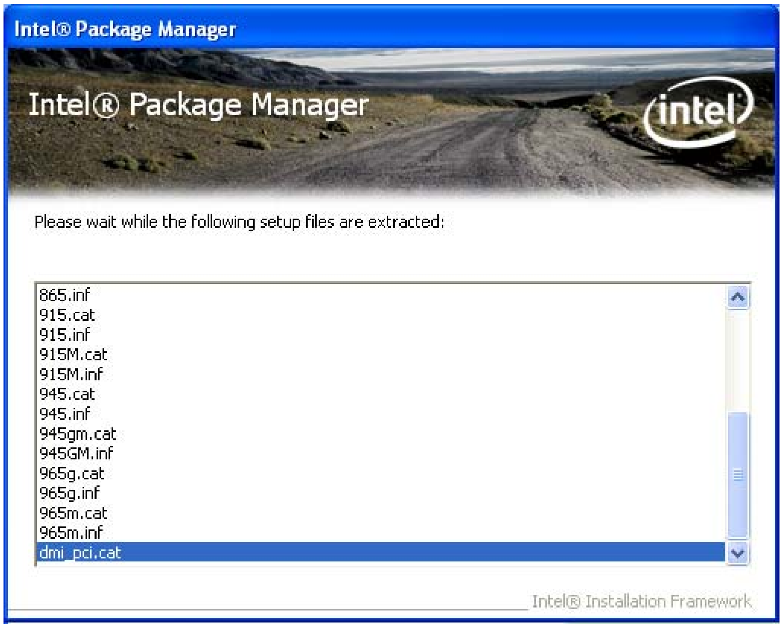
To install the chipset driver, please do the following.

Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click “**Chipset**.”

Step 3: Locate the setup file and double click on it.

Step 4: The setup files are extracted as shown in **Figure 7-1**.


Intel® Package Manager
Intel® Package Manager
intel
Intel® Installation Framework

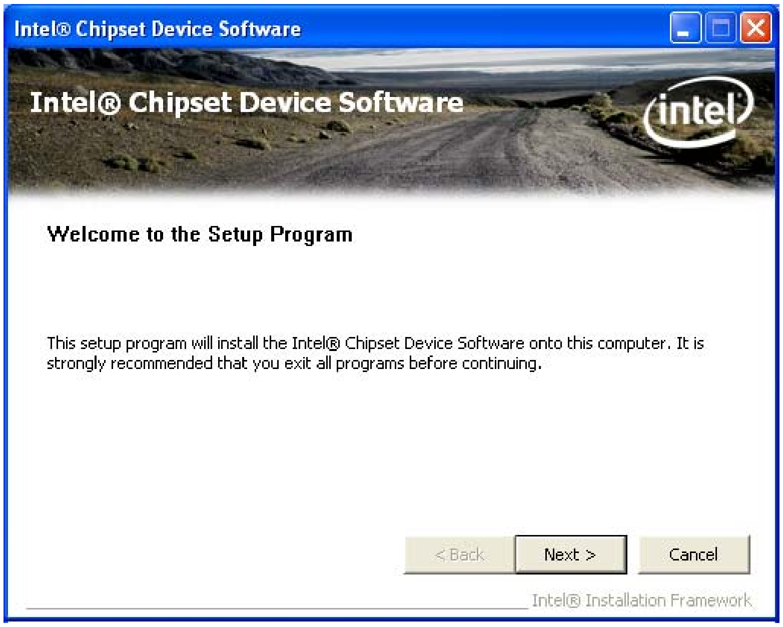
Please wait while the following setup files are extracted:

```
865.inf
915.cat
915.inf
915M.cat
915M.inf
945.cat
945.inf
945gm.cat
945GM.inf
965g.cat
965g.inf
965m.cat
965m.inf
dmi_pci.cat
```

Figure 7-1: Chipset Driver Screen

Step 5: When the setup files are completely extracted the **Welcome Screen** in **Figure 7-2** appears.

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


Intel® Chipset Device Software
Intel® Chipset Device Software
intel
< Back
Next >
Cancel
Intel® Installation Framework

Welcome to the Setup Program

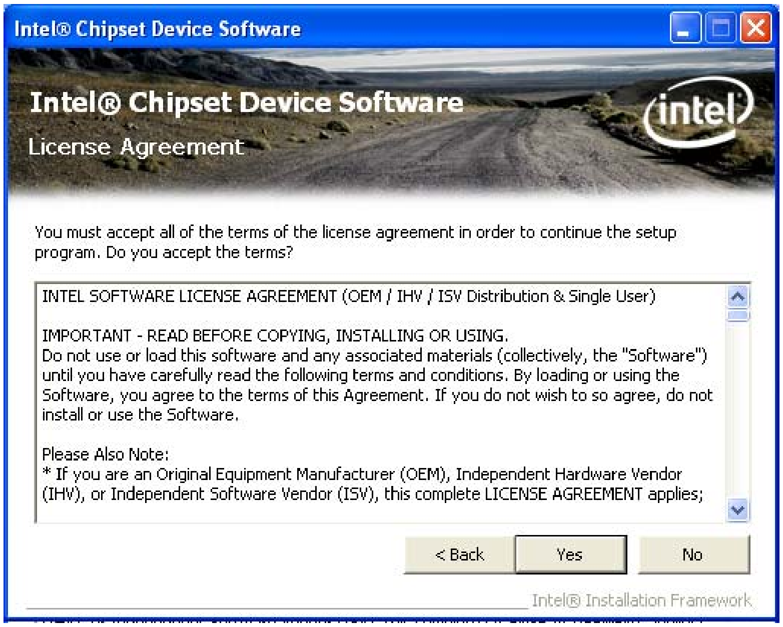
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.

Figure 7-2: Chipset Driver Welcome Screen

Step 7: The license agreement in **Figure 7-3** appears.

Step 8: Read the **License Agreement**.

Step 9: Click **Yes** to continue.


Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
intel
< Back
Yes
No
Intel® Installation Framework

You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?

INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)

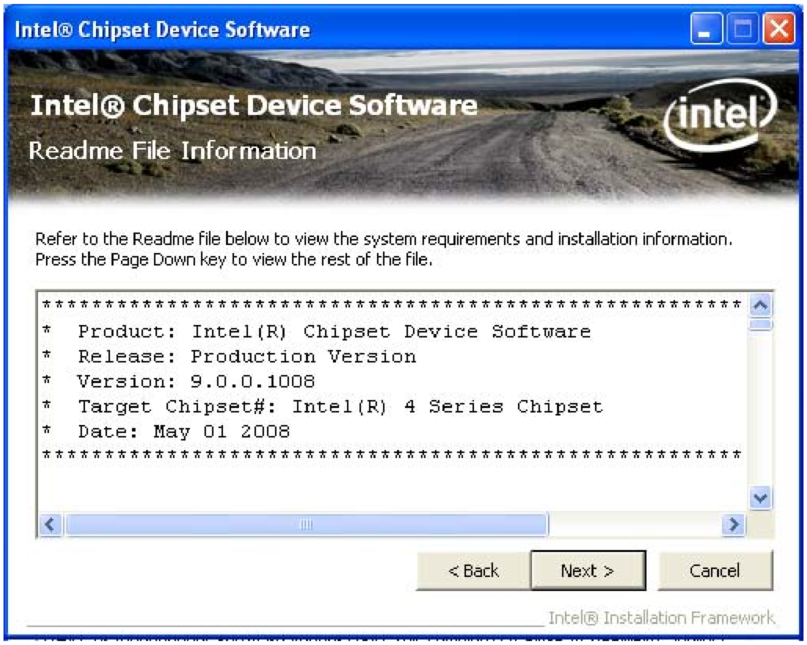
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.

Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;

Figure 7-3: Chipset Driver License Agreement

Step 10: The **Read Me** file in **Figure 7-4** appears.

Step 11: Click **Next** to continue.


Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
< Back
Next >
Cancel
Intel® Installation Framework

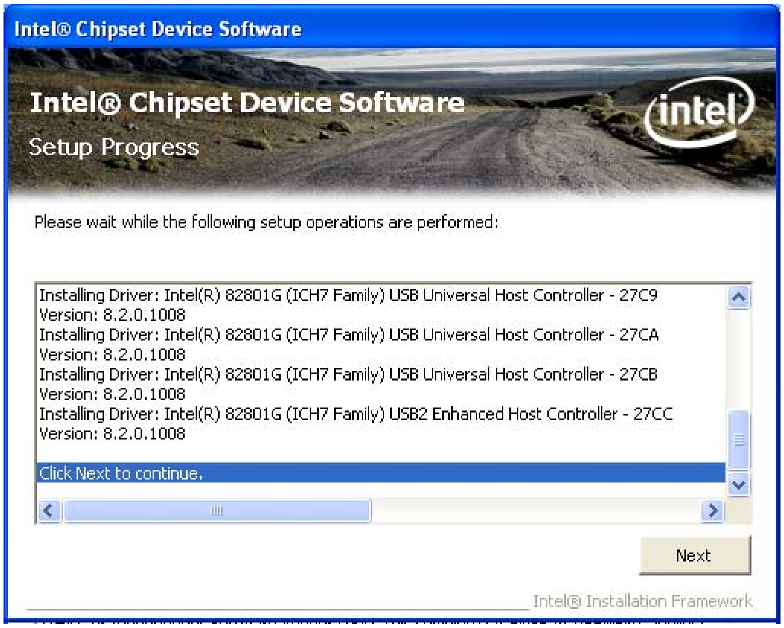
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.

```
*************************************************************
*  Product: Intel(R) Chipset Device Software
*  Release: Production Version
*  Version: 9.0.0.1008
*  Target Chipset#: Intel(R) 4 Series Chipset
*  Date: May 01 2008
*************************************************************
```

Figure 7-4: Chipset Driver Read Me File

Step 12: **Setup Operations** are performed as shown in **Figure 7-5**.

Step 13: Once the **Setup Operations** are complete, click **Next** to continue.


Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Next
Intel® Installation Framework

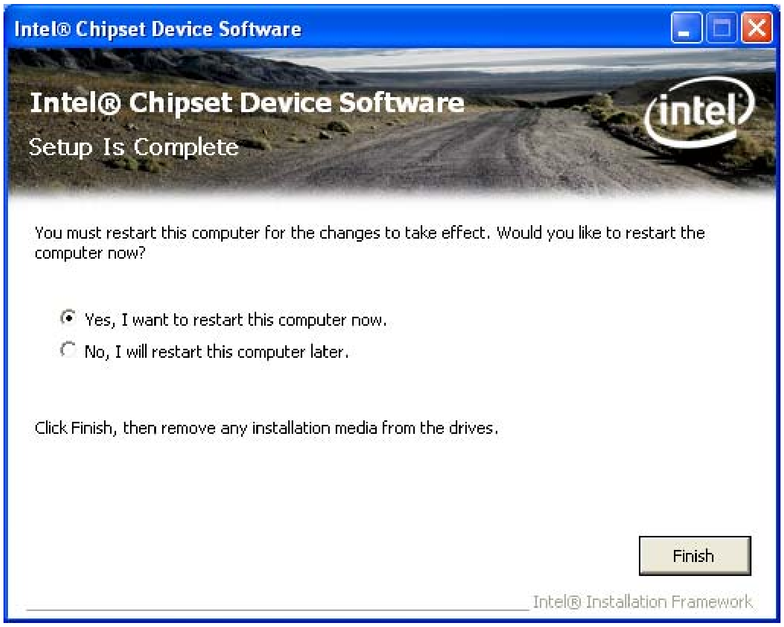
Please wait while the following setup operations are performed:

```
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
Version: 8.2.0.1008

Click Next to continue.
```

Figure 7-5: Chipset Driver Setup Operations

Step 14: The **Finish** screen in **Figure 7-6** appears.

Step 15: Select “**Yes, I want to restart this computer now**” and click **Finish**.


Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel

You must restart this computer for the changes to take effect. Would you like to restart the computer now?

● Yes, I want to restart this computer now.
○ No, I will restart this computer later.

Click Finish, then remove any installation media from the drives.

Finish
Intel® Installation Framework

Figure 7-6: Chipset Driver Installation Finish Screen

7.4 Graphics Driver Installation

To install the Graphics driver, please do the following.

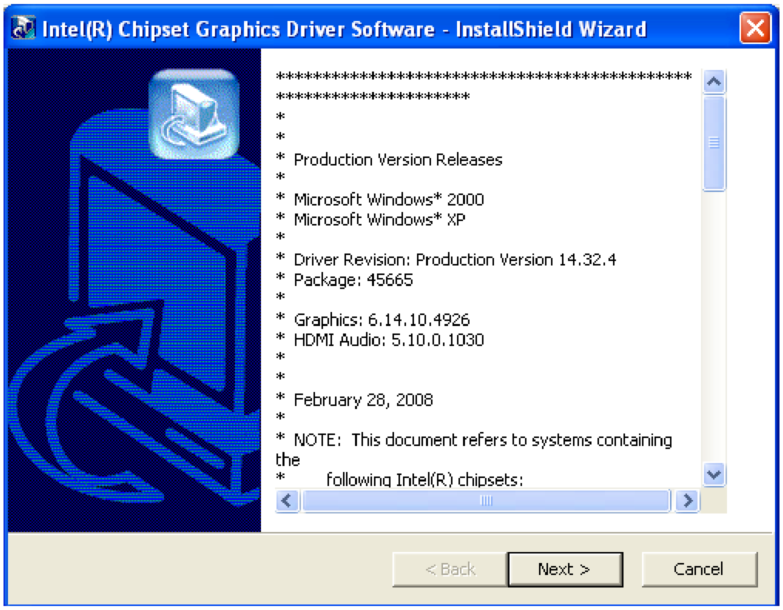
Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click “**Graphic**” and select the folder which corresponds to your operating system.

Step 3: Double click the setup file.

Step 4: The **Read Me** file in **Figure 7-7** appears.

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


Intel(R) Chipset Graphics Driver Software - InstallShield Wizard

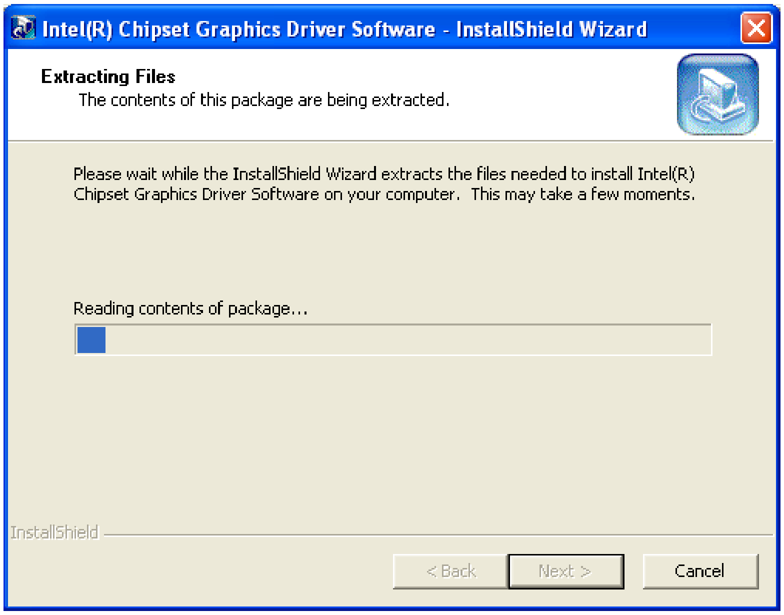
```
***********************************************
**********************
*
*
*  Production Version Releases
*
*  Microsoft Windows* 2000
*  Microsoft Windows* XP
*
*  Driver Revision: Production Version 14.32.4
*  Package: 45665
*
*  Graphics: 6.14.10.4926
*  HDMI Audio: 5.10.0.1030
*
*
*  February 28, 2008
*
*  NOTE:  This document refers to systems containing
the
*       following Intel(R) chipsets:
```

< Back
Next >
Cancel

Figure 7-7: Graphics Driver Read Me File

Step 6: The installation files are extracted. See **Figure 7-8**.

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


Intel(R) Chipset Graphics Driver Software - InstallShield Wizard

Extracting Files

The contents of this package are being extracted.

Please wait while the InstallShield Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.

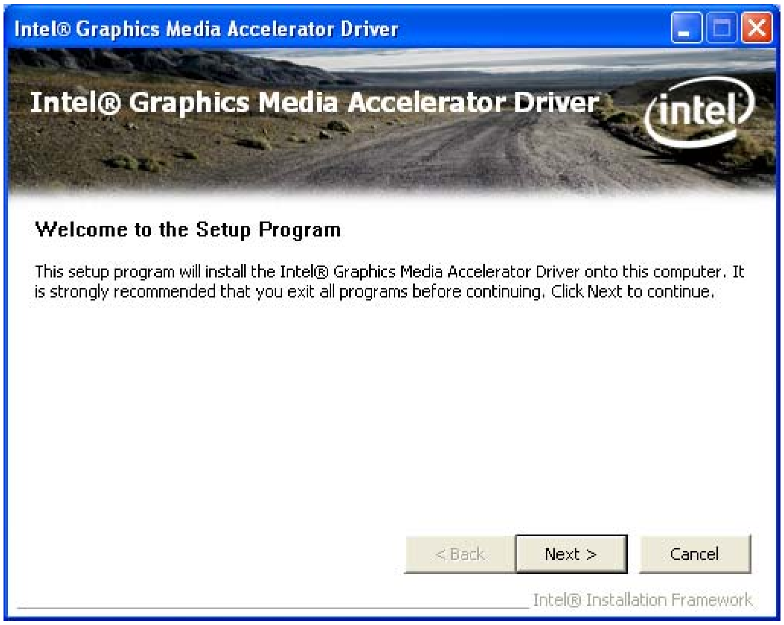
Reading contents of package...

InstallShield
< Back
Next >
Cancel

Figure 7-8: Graphics Driver Setup Files Extracted

Step 8: The **Welcome Screen** in **Figure 7-9** appears.

Step 9: Click **Next** to continue.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel

Welcome to the Setup Program

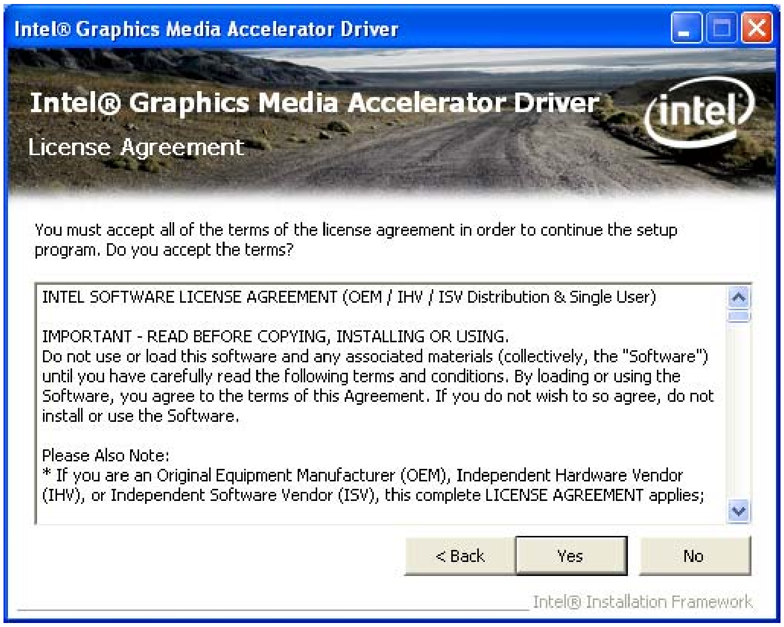
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.

< Back
Next >
Cancel
Intel® Installation Framework

Figure 7-9: Graphics Driver Welcome Screen

Step 10: The **License Agreement** in **Figure 7-10** appears.

Step 11: Click **Yes** to accept the agreement and continue.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
intel

You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?

INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.

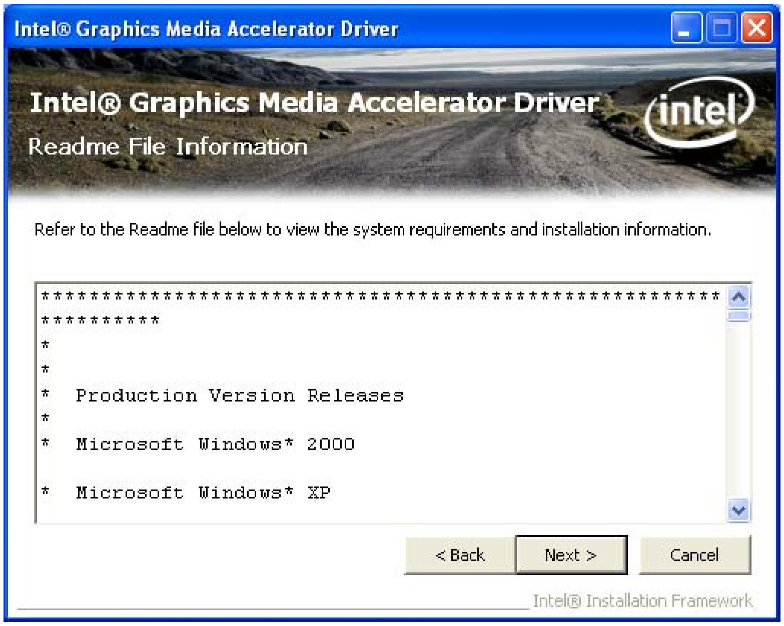
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;

< Back
Yes
No
Intel® Installation Framework

Figure 7-10: Graphics Driver License Agreement

Step 12: The **Read Me** file in **Figure 7-11** appears.

Step 13: Click **Next** to continue.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Readme File Information
intel
< Back
Next >
Cancel
Intel® Installation Framework

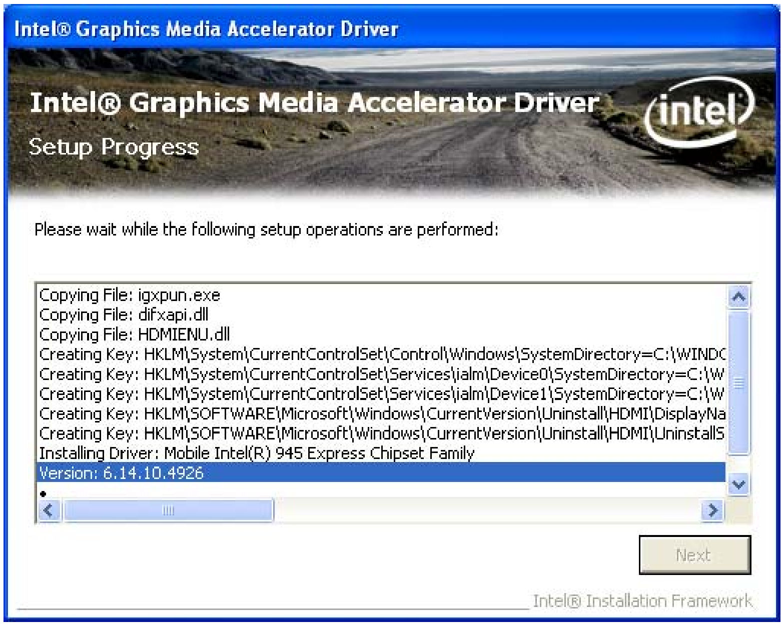
Refer to the Readme file below to view the system requirements and installation information.

```
********************************************************
**********
*
*
*   Production Version Releases
*
*   Microsoft Windows* 2000

*   Microsoft Windows* XP
```

Figure 7-11: Graphics Driver Read Me File

Step 14: **Setup Operations** are performed as shown in **Figure 7-12**.

Step 15: Once the **Setup Operations** are complete, click **Next** to continue.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Progress
intel
Next
Intel® Installation Framework

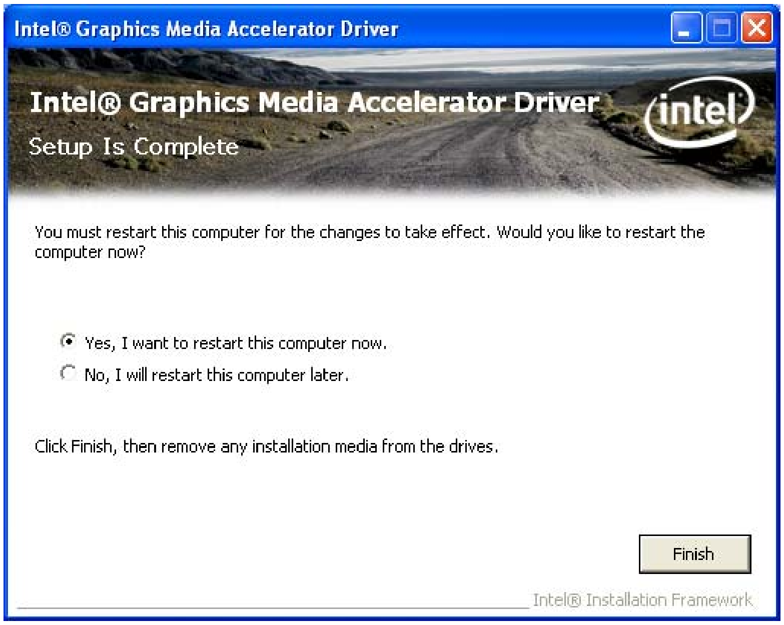
Please wait while the following setup operations are performed:

```
Copying File: igxpun.exe
Copying File: difxapi.dll
Copying File: HDMIENU.dll
Creating Key: HKLM\System\CurrentControlSet\Control\Windows\SystemDirectory=C:\WINDC
Creating Key: HKLM\System\CurrentControlSet\Services\ialm\Device0\SystemDirectory=C:\W
Creating Key: HKLM\System\CurrentControlSet\Services\ialm\Device1\SystemDirectory=C:\W
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\DisplayNa
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\UninstallS
Installing Driver: Mobile Intel(R) 945 Express Chipset Family
Version: 6.14.10.4926
•
```

Figure 7-12: Graphics Driver Setup Operations

Step 16: The **Finish** screen in **Figure 7-13** appears.

Step 17: Select “**Yes, I want to restart this computer now**” and click **Finish**.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
intel

You must restart this computer for the changes to take effect. Would you like to restart the computer now?

● Yes, I want to restart this computer now.

○ No, I will restart this computer later.

Click Finish, then remove any installation media from the drives.

Finish
Intel® Installation Framework

Figure 7-13: Graphics Driver Installation Finish Screen

7.5 Audio Driver Installation

To install the audio driver, please do the following.

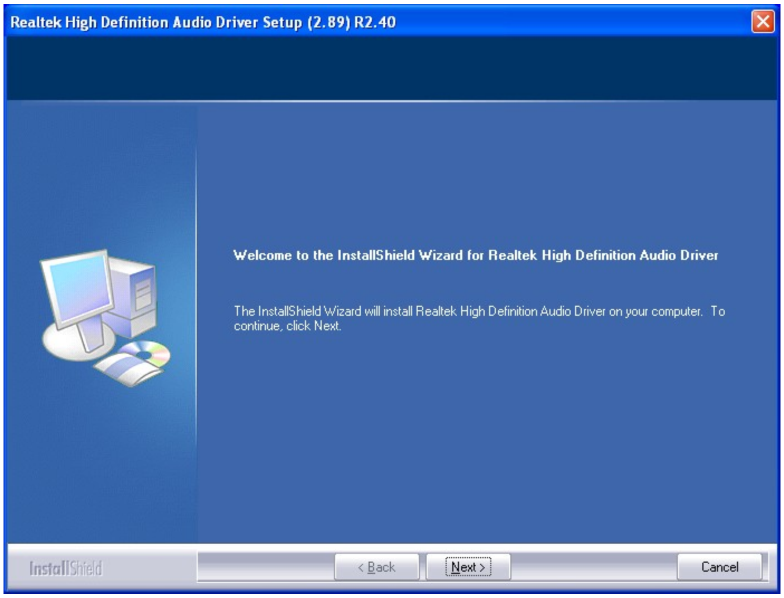
Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click “**Audio**” and select the folder which corresponds to your operating system.

Step 3: Double click the setup file.

Step 4: The **Audio Driver Welcome Screen** in **Figure 7-14** appears.

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

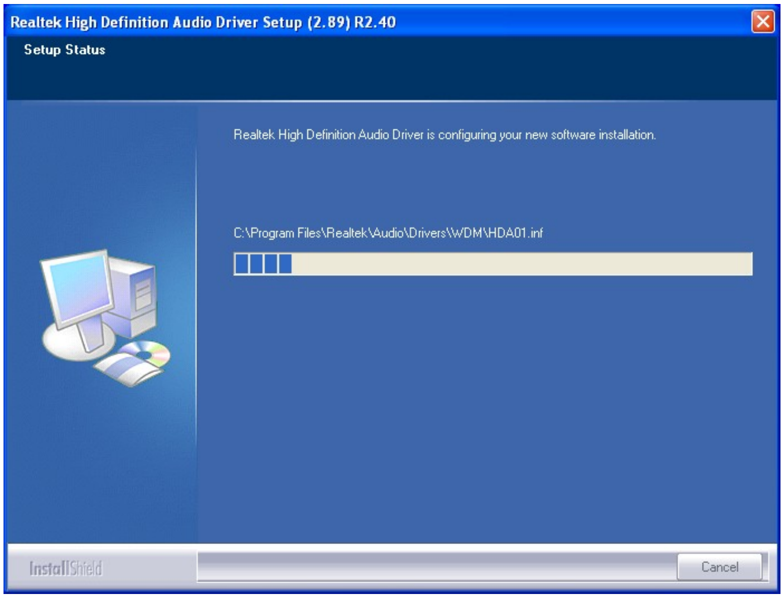

Realtek High Definition Audio Driver Setup (2.89) R2.40

Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver

The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.

Figure 7-14: Audio Driver Welcome Screen

Step 6: The audio driver installation begins. See **Figure 7-15**.


Realtek High Definition Audio Driver Setup (2.89) R2.40

Setup Status

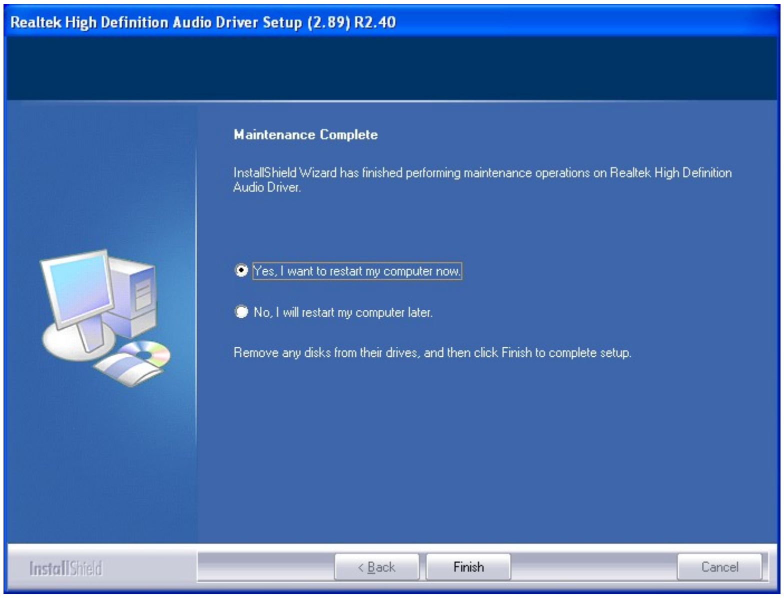
Realtek High Definition Audio Driver is configuring your new software installation.

C:\Program Files\Realtek\Audio\Drivers\WDM\HDA01.inf

Figure 7-15: Audio Driver Installation

Step 7: When the installation is complete, the screen in **Figure 7-16** appears.

Step 8: Select "**Yes, I want to restart my computer now**" and click **Finish**.



Realtek High Definition Audio Driver Setup (2.89) R2.40

Maintenance Complete

InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Audio Driver.

● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

Figure 7-16: AC'97 Driver Installation Complete

7.6 Touchscreen Driver

To install the touch panel software driver, please follow the steps below.

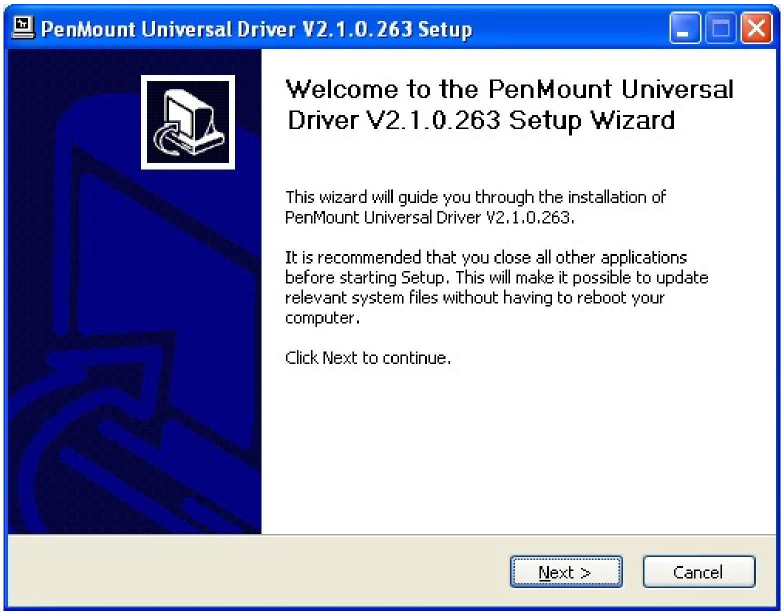
Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click "**Touch Screen**."

Step 3: Locate the setup file and double click on it.

Step 4: A **Welcome Screen** appears (**Figure 7-17**).

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



Welcome to the PenMount Universal Driver V2.1.0.263 Setup Wizard

This wizard will guide you through the installation of PenMount Universal Driver V2.1.0.263.

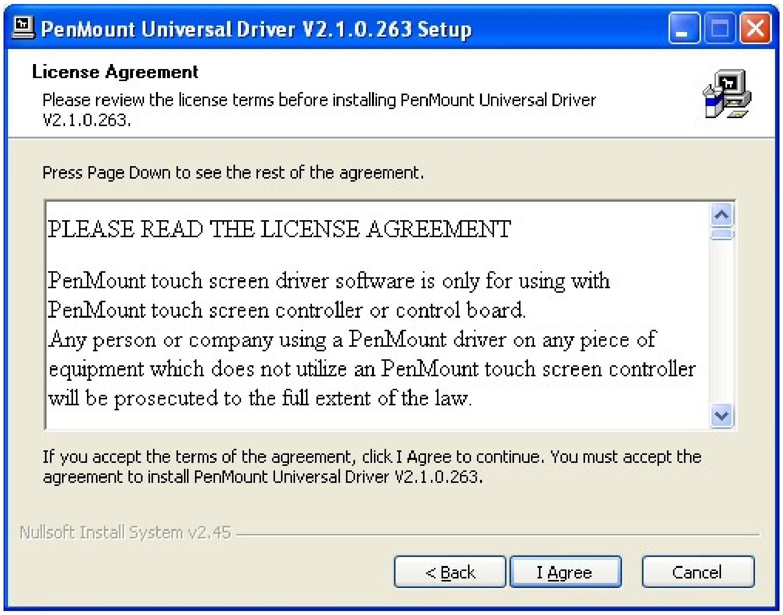
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Figure 7-17: Touchscreen Driver Welcome Screen

Step 6: The **License Agreement** shown in **Figure 7-18** appears.

Step 7: Click **I AGREE** to accept and continue.


PenMount Universal Driver V2.1.0.263 Setup
Nullsoft Install System v2.45
< Back
I Agree
Cancel

License Agreement

Please review the license terms before installing PenMount Universal Driver V2.1.0.263.

Press Page Down to see the rest of the agreement.

PLEASE READ THE LICENSE AGREEMENT

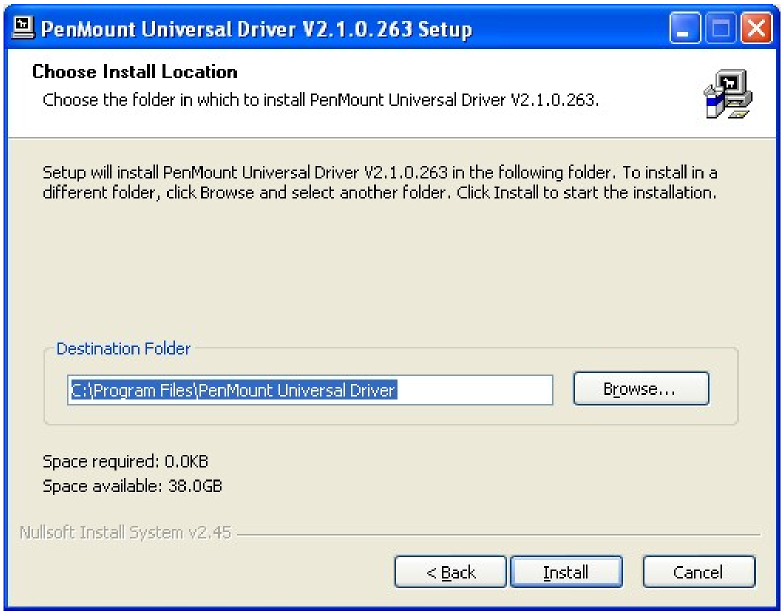
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.

If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Universal Driver V2.1.0.263.

Figure 7-18: Touchscreen Driver License Agreement

Step 8: Browse for an install location or use the one suggested (**Figure 7-19**).

Step 9: Click **INSTALL** to continue.


PenMount Universal Driver V2.1.0.263 Setup
Browse...
Nullsoft Install System v2.45
< Back
Install
Cancel

Choose Install Location

Choose the folder in which to install PenMount Universal Driver V2.1.0.263.

Setup will install PenMount Universal Driver V2.1.0.263 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

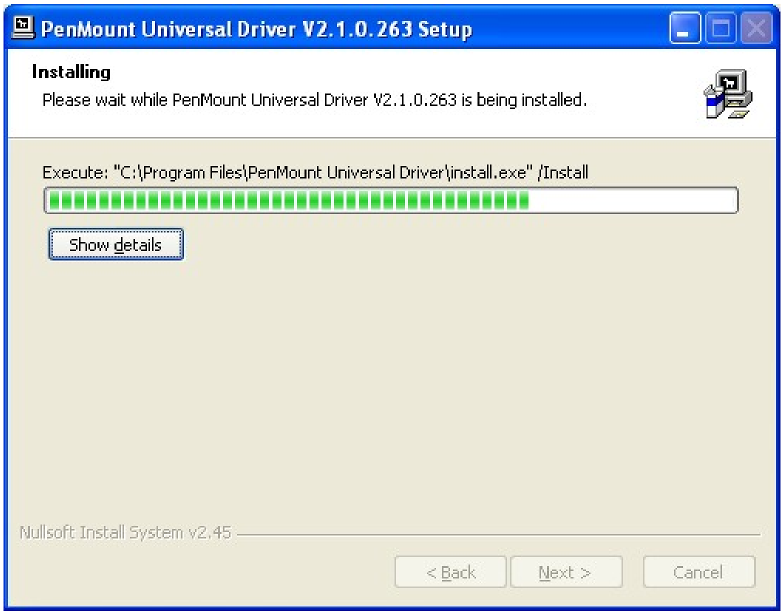
Destination Folder: C:\Program Files\PenMount Universal Driver

Space required: 0.0KB
Space available: 38.0GB

Figure 7-19: Touchscreen Driver Choose Install Location

Step 10: The **Install** screen appears and displays the progress of the installation (**Figure 7-20)**.

Step 11: Click **NEXT** to continue.



PenMount Universal Driver V2.1.0.263 Setup

Installing

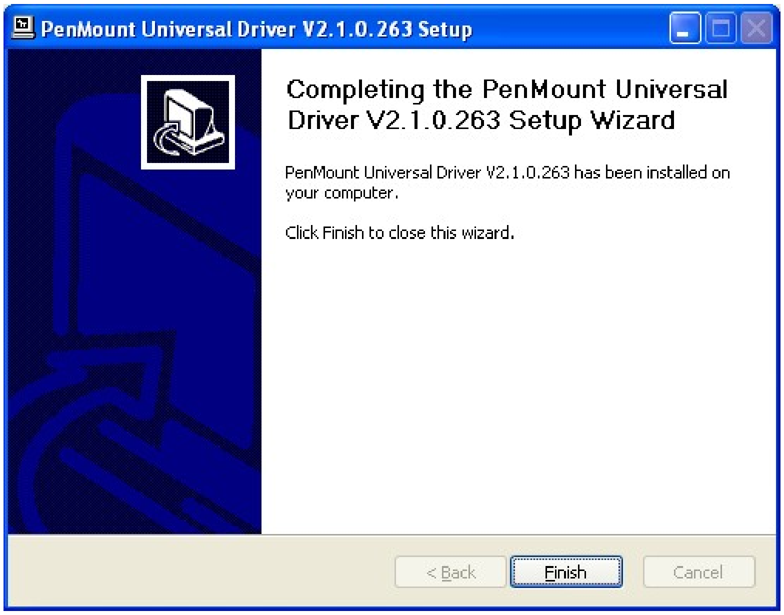
Please wait while PenMount Universal Driver V2.1.0.263 is being installed.

Execute: "C:\Program Files\PenMount Universal Driver\install.exe" /Install

Show details
Nullsoft Install System v2.45
< Back
Next >
Cancel

Figure 7-20: Touchscreen Driver Installation Screen

Step 12: When the installation is complete, click **FINISH** to exit setup. (**Figure 7-21**).



PenMount Universal Driver V2.1.0.263 Setup

Completing the PenMount Universal Driver V2.1.0.263 Setup Wizard

PenMount Universal Driver V2.1.0.263 has been installed on your computer.

Click Finish to close this wizard.

< Back
Finish
Cancel

Figure 7-21: Touchscreen Driver Update Complete

7.6.1 Calibrating the Touchscreen

To calibrate the touchscreen cursor with the motion of the touchscreen pen (or finger), please follow the steps below:

Step 1: Make sure the touchscreen driver is properly installed.

Step 2: Locate the PenMount Monitor icon in the bottom right corner of the screen.

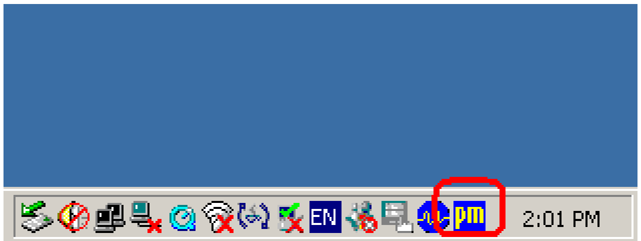


Figure 7-22: PenMount Monitor Icon

Step 3: Click the icon. A pop up menu appears. See **Figure 7-23**.

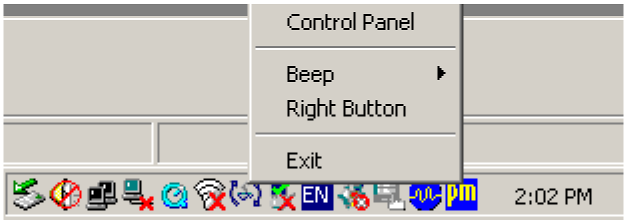
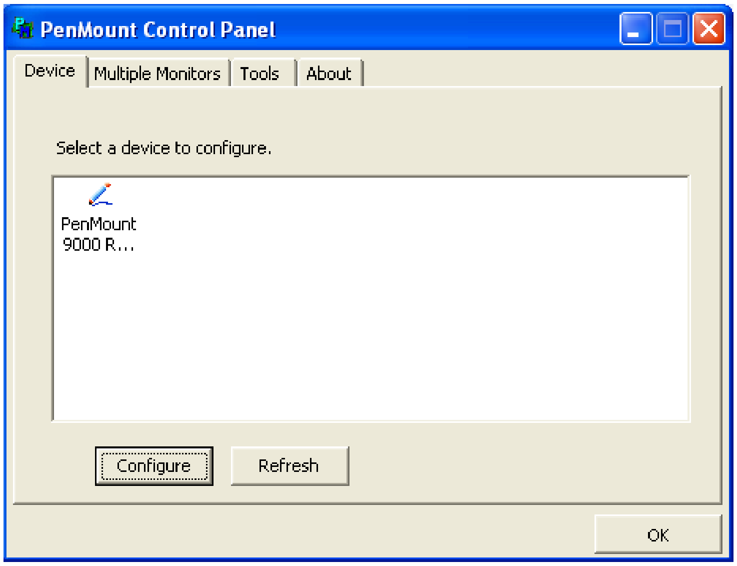


Figure 7-23: PenMount Monitor Popup Menu

Step 4: Click Control Panel in the pop up menu shown in **Figure 7-23.**

Step 5: The configuration screen in **Figure 7-24** appears.



PenMount Control Panel
Device
Multiple Monitors
Tools
About

Select a device to configure.

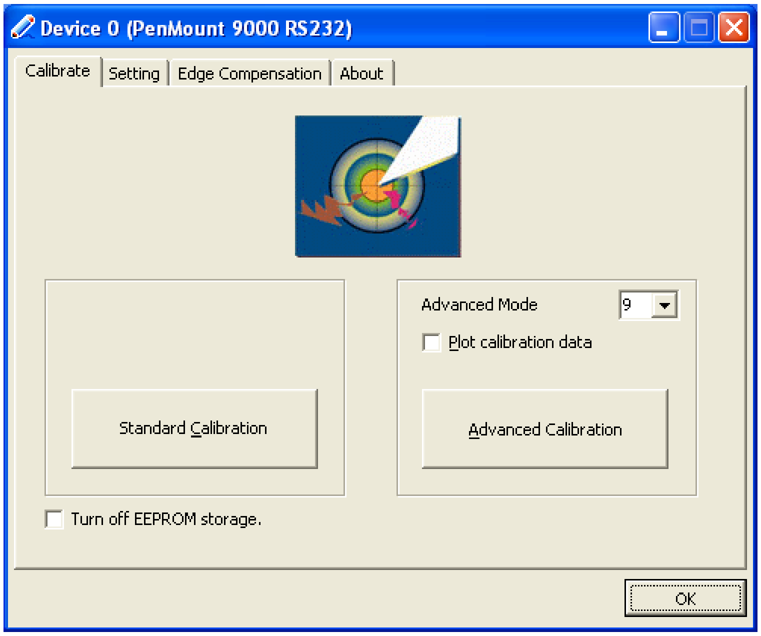
PenMount
9000 R...
Configure
Refresh
OK

Figure 7-24: Configuration Screen

Step 6: Double click the PenMount 9000 icon as shown in **Figure 7-24**.

Step 7: The calibration initiation screen in **Figure 7-25** appears.

Step 8: Select the **Standard Calibration** button as shown in **Figure 7-25**.



Device 0 (PenMount 9000 RS232)
Calibrate
Setting
Edge Compensation
About

Advanced Mode: 9

☐ Plot calibration data

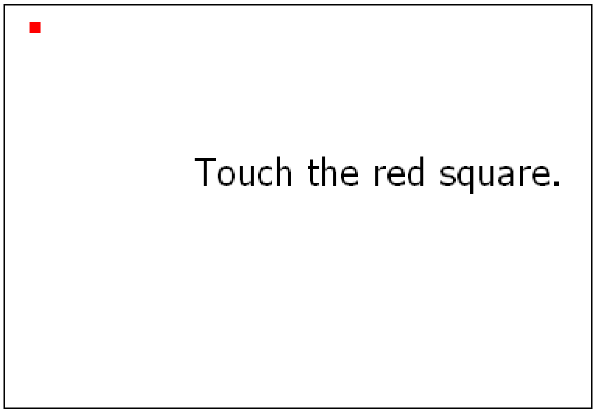
Standard Calibration
Advanced Calibration

☐ Turn off EEPROM storage.

OK

Figure 7-25: Calibration Initiation Screen

Step 9: The calibration screen in is shown. See **Figure 7-26**.



Touch the red square.

Figure 7-26: Calibration Screen

Step 10: Follow the instructions. The user is asked touch the screen at five specified points after which the screen is calibrated.

7.7 AMCap Driver Installation

To install the AMCap driver, please do the following.

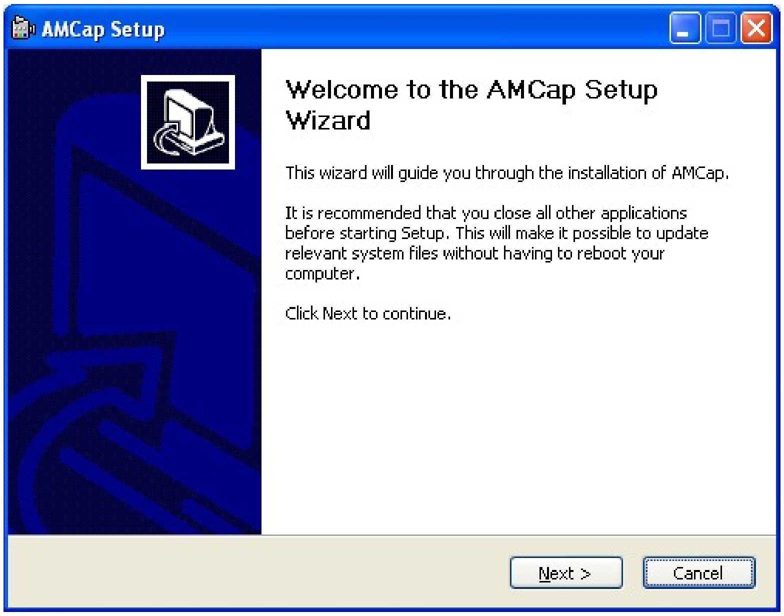
Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click “**AMCap**” and select the folder which corresponds to your operating system.

Step 3: Double click the setup file.

Step 4: The **Welcome Screen** in **Figure 7-27** appears.

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



Welcome to the AMCap Setup Wizard

This wizard will guide you through the installation of AMCap.

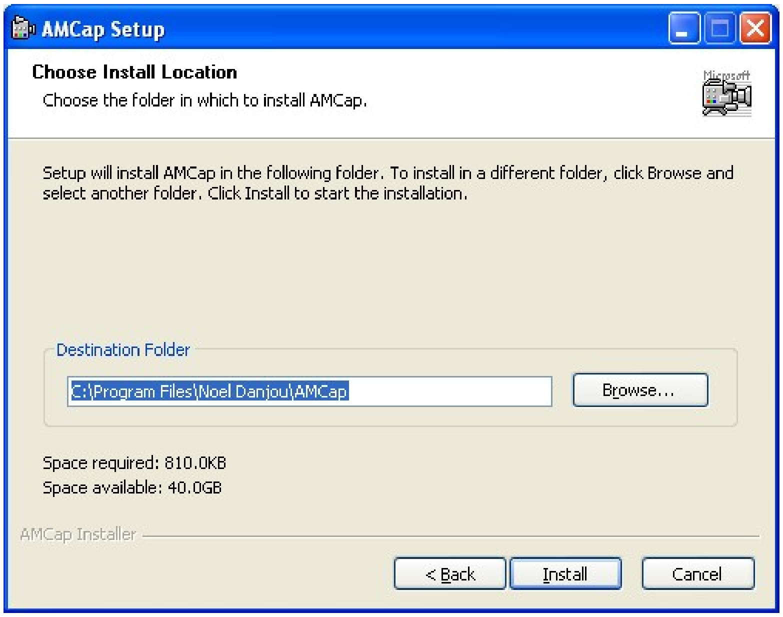
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Figure 7-27: AMCap Driver Welcome Screen

Step 6: Browse for an install location or use the one suggested (**Figure 7-28**).

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



Choose Install Location

Choose the folder in which to install AMCap.

Setup will install AMCap in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

Destination Folder: C:\Program Files\Noel Danjou\AMCap

Space required: 810.0KB

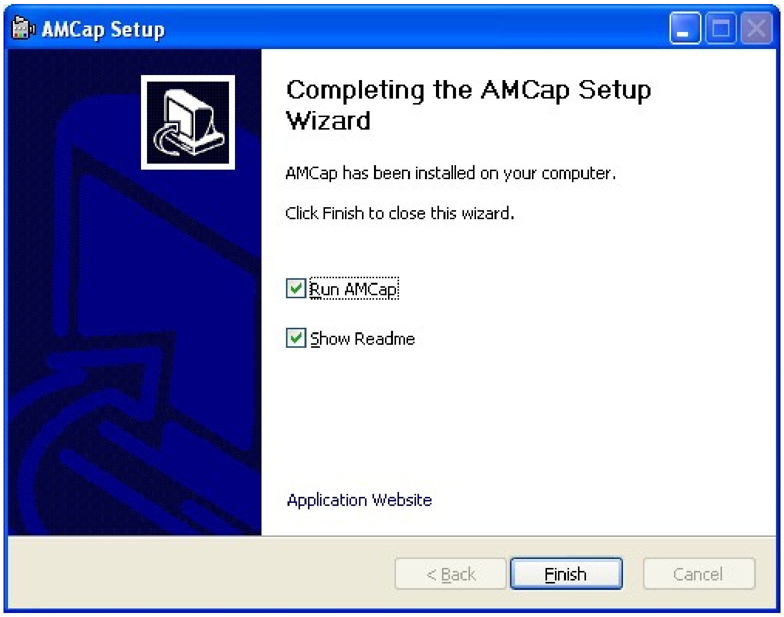
Space available: 40.0GB

Figure 7-28: AMCap Driver Choose Install Location

Step 8: The program begins to install.

Step 9: When the driver installation is complete, the screen in **Figure 7-29** appears.

Step 10: Click **Finish** to save and exit.


AMCap Setup
Completing the AMCap Setup Wizard

AMCap has been installed on your computer.

Click Finish to close this wizard.

☑ Run AMCap

☑ Show Readme

Application Website
< Back
Finish
Cancel

Figure 7-29: AMCap Driver Installation Complete

7.8 USB 3.0 Driver Installation

To install the USB 3.0 driver, please do the following.

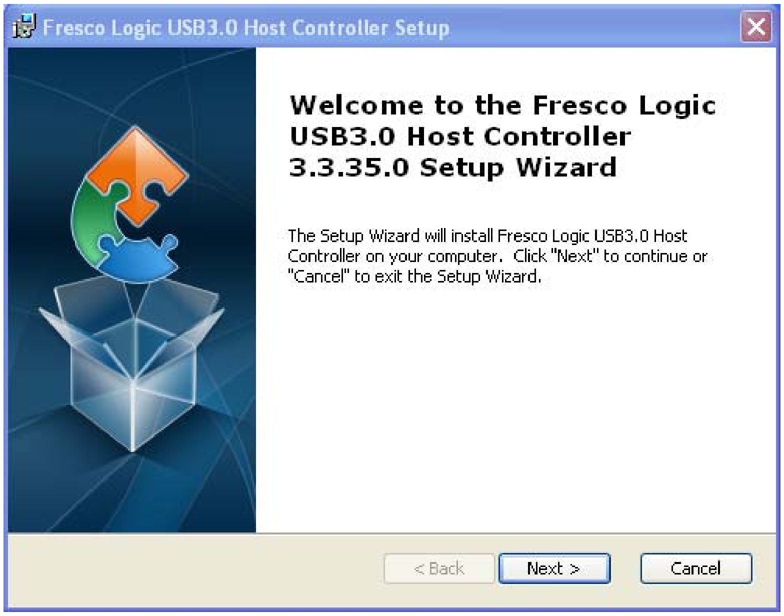
Step 1: Access the driver list. (See **Section 7.2**)

Step 2: Click "**USB 3.0**" and select the folder which corresponds to your operating system.

Step 3: Double click the setup file.

Step 4: The **Welcome Screen** in **Figure 7-30** appears.

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


Fresco Logic USB3.0 Host Controller Setup
< Back
Next >
Cancel

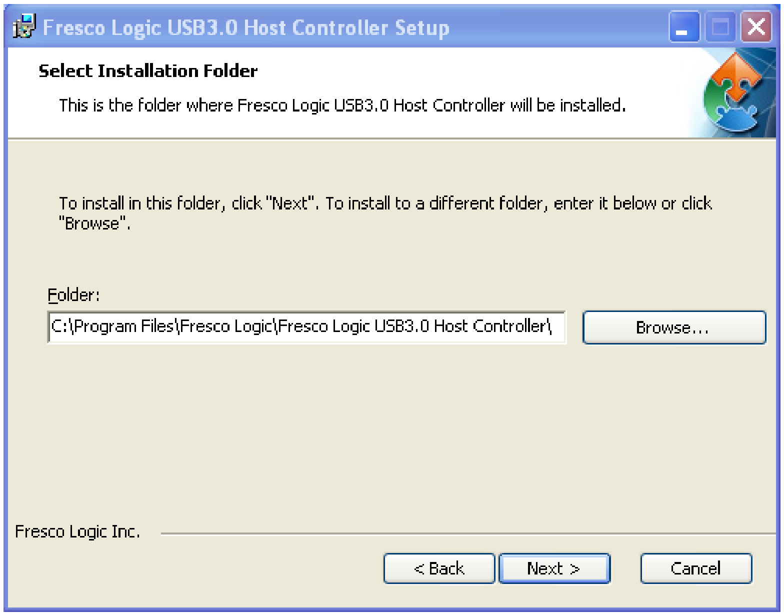
Welcome to the Fresco Logic USB3.0 Host Controller 3.3.35.0 Setup Wizard

The Setup Wizard will install Fresco Logic USB3.0 Host Controller on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.

Figure 7-30: USB 3.0 Driver Welcome Screen

Step 6: Browse for an install location or use the one suggested (**Figure 7-31)**.

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


Fresco Logic USB3.0 Host Controller Setup
Browse...
Fresco Logic Inc.
< Back
Next >
Cancel

Select Installation Folder

This is the folder where Fresco Logic USB3.0 Host Controller will be installed.

To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".

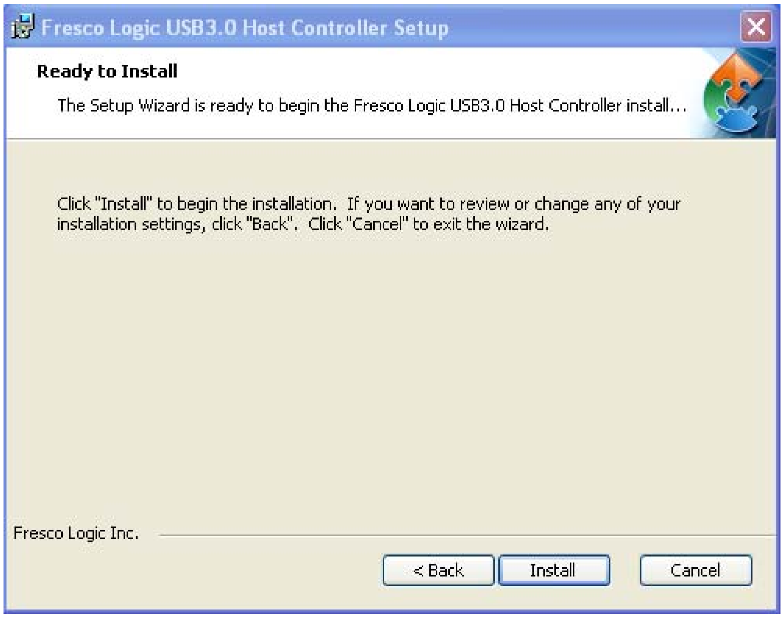
Folder:

C:\Program Files\Fresco Logic\Fresco Logic USB3.0 Host Controller\

Figure 7-31: USB 3.0 Driver Choose Install Location

Step 8: The program is ready to install (**Figure 7-32**).

Step 9: Click **INSTALL** to continue.


Fresco Logic USB3.0 Host Controller Setup

Ready to Install

The Setup Wizard is ready to begin the Fresco Logic USB3.0 Host Controller install...

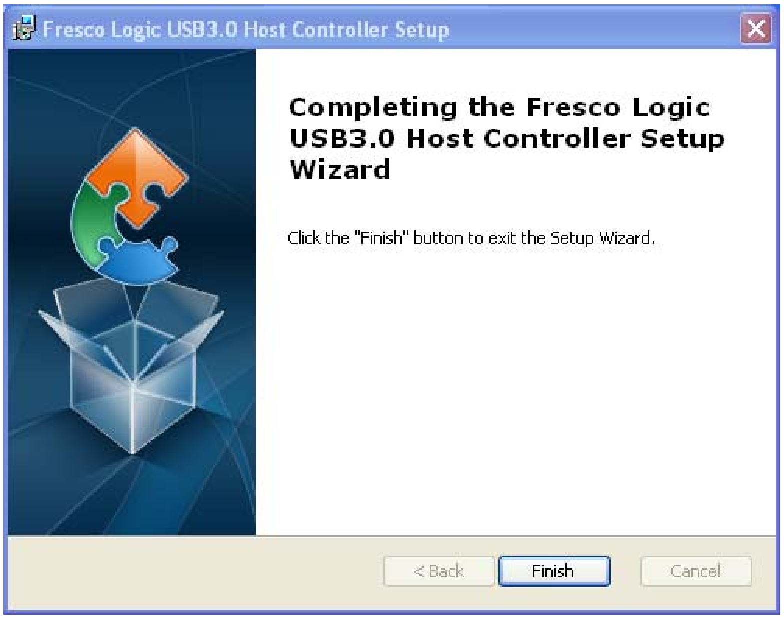
Click "Install" to begin the installation. If you want to review or change any of your installation settings, click "Back". Click "Cancel" to exit the wizard.

Fresco Logic Inc.

Figure 7-32: USB 3.0 Driver Choose Install Location

Step 10: When the driver installation is complete, the screen in **Figure 7-33** appears.

Step 11: Click **Finish** to exit.


Fresco Logic USB3.0 Host Controller Setup

Completing the Fresco Logic USB3.0 Host Controller Setup Wizard

Click the "Finish" button to exit the Setup Wizard.

Figure 7-33: USB 3.0 Driver Installation Complete

Appendix

A

Interface Connectors

A.1 Peripheral Interface Connectors

The AFL2-12A-HM65 panel PC motherboard comes with a number of peripheral interface connectors and configuration jumpers. The pinouts for these connectors are listed below:

PIN NO.	DESCRIPTION
1	RXD422+
2	RXD422-
3	TXD422+/TXD485+
4	TXD422-/TXD485-

Table A-1: RS-422/485 Connector (COM6) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD3	2	DSR3
3	RXD3	4	RTS3
5	TX3	6	CTS3
7	DTR3	8	RI3

Table A-2: RJ-45 COM Port Connector (COM3) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	2	RX1
3	TX1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1		

Table A-3: D-sub 9 COM Port Connector (COM1) Pinouts

PIN NO.	DESCRIPTION
1	SPK_OUT_P_L
2	SPK_OUT_N_L
3	SPK_OUT_N_R
4	SPK_OUT_P_R

Table A-4: Speaker Connector (CN8) Pinouts

PIN NO.	DESCRIPTION
1	PWRBTN_SW#
2	GND

Table A-5: Power Button Connector (PW_BT1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA5
3	+DATA5
4	GND

Table A-6: RFID USB Connector (RFID_USB1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	SIN2
3	SOUT2
4	GND

Table A-7: RFID COM Connector (RFID_COM1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KEYLED1	2	KEYLED2
3	KEYLED3	4	KEYLED4
5	KEYLED4	6	KEYLED6
7	GND	8	VCC3

Table A-8: Hotkey LED Connector (HOTKEYLEDCN1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_KSO0	2	EC_KSO1
3	EC_KSO2	4	EC_KSO3
5	EC_KSO4	6	EC_KSO5
7	EC_KSI6	8	EC_KSI7
9	GND	1	

Table A-9: Hotkey Connector (HOTKEYCN1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA
3	+DATA
4	GND

Table A-10: Mini USB Connector (MINUSB2) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA
3	+DATA
4	GND
5	3VCC

Table A-11: Mini USB Connector (MINUSB1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC	2	FSCE#
3	FMISO	4	FSCK
5	FMOSI	6	GND

Table A-12: EC Firmware Connector (JSPI2) Pinouts

PIN NO.	DESCRIPTION
1	DMIC_CLK
2	DMIC _DATA
3	VCC3
4	GND

Table A-13: DMIC Connector (DMIC1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	AUDIO_LED#	2	PWRLED01#
3	MIC_LED#	4	PWRLED02#
5	CPU_LED02#	6	AT_LED#
7	CPU_LED01#	8	ATX_LED#

9	AD_LED#	10	VCC3
11	WiFi_LED#	12	VCC3
13	BT_LED#	14	+V3.3A_EC
15	VCC_RFID	16	GROUND

Table A-14: LED Connector (LEDCN1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PD0	4	EC_EPP_ERR#
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GROUND
11	EC_EPP_PD4	12	EC_EPP_ACK#
13	EC_EPP_PD5	14	EC_EPP_BUSY
15	EC_EPP_PD6	16	EC_EPP_PE
17	EC_EPP_PD7	18	EC_EPP_SLCT

Table A-15: EC Debug Connector (CN4) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	2	VCC5DUAL
3	VCC5DUAL	4	IRRX
5	GROUND	6	AUTO_CLK
7	NC	8	AUTO_DATA
9	NC	10	GROUND

Table A-16: Auto-dimming Connector (JP6) Pinouts

PIN NO.	DESCRIPTION
1	VCC12
2	GND
3	GND
4	VCC5

Table A-17: SATA Power Connector (CN5) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC12
3	NC	4	VCC12
5	NC	6	NC
7	GND	8	VCC5
9	SATA_RXP0_C	10	VCC5
11	SATA_RXN0_C	12	VCC5
13	GND	14	VCC5
15	SATA_TXN0_C	16	GND
17	SATA_TXP0_C	18	VCC3
19	GND	20	VCC3

Table A-18: SATA Connector (JSATA1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA
3	+DATA
4	GND

Table A-19: Bluetooth USB Connector (BLUETOOTH1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA
3	+DATA
4	GND

Table A-20: WebCAM USB Connector (WEBCAMER1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	X+	2	X-
3	Y+	4	SENSE
5	X+	6	X-
7	Y+	8	Y-
9	GND	10	

Table A-21: Touch Panel Connector (TS1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC	2	FSCE#
3	FMISO	4	FSCK
5	FMOSI	6	GND

Table A-22: Flash SPI Connector (JSPI1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BKL_POWER	2	BKL_POWER
3	ENABKL	4	BRIGHTNESS
5	GND	6	GND

Table A-23: Backlight Inverter Connector (INVERTER1) Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDSA_DATA0	4	LVDSA_DATA#0
5	LVDSA_DATA1	6	LVDSA_DATA#1
7	LVDSA_DATA2	8	LVDSA_DATA#2
9	LVDSA_CLK	10	LVDSA_CLK#
11	NC	12	NC
13	GND	14	GND
15	L_DDC_DATA	16	L_DDC_CLK
17	VCC_LCD	18	VCC_LCD
19	VCC_LCD	20	VCC_LCD

Table A-24: LVDS Connector (LVDS1) Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	-DATA
3	+DATA
4	GND

Table A-25: Touch Panel Connector (TOUCH1) Pinouts

Appendix

B

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 AFL2-12A-HM65.

B.1 Safety Precautions

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

B.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 AFL2-12A-HM65 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the AFL2-12A-HM65 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 AFL2-12A-HM65 chassis is opened when the AFL2-12A-HM65 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the AFL2-12A-HM65.
- ***If considerable amounts of dust, water, or fluids enter the AFL2-12A-HM65***, turn off the power supply immediately, unplug the power cord, and contact the AFL2-12A-HM65 vendor.
- **DO NOT**:
    - Drop the AFL2-12A-HM65 against a hard surface.
    - Strike or exert excessive force onto the LCD panel.
    - Touch any of the LCD panels with a sharp object
    - In a site where the ambient temperature exceeds the rated temperature

B.1.2 CPU Temperature Warning

WARNING:

When the CPU's core temperature reaches TJ Max, the CPU temperature alert LED turns **RED** and the CPU starts to lower its clock speed. At this moment, the user must lower the environments temperature or close some running applications to cool down the CPU.

B.1.3 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the AFL2-12A-HM65 may result in permanent damage to the AFL2-12A-HM65 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-12A-HM65. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-12A-HM65 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.

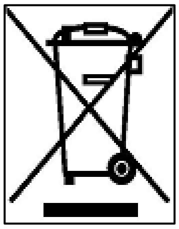
B.1.4 Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL2-12A-HM65, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL2-12A-HM65, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the AFL2-12A-HM65X does not require cleaning. Keep fluids away from the AFL2-12A-HM65 interior.
- Be cautious of all small removable components when vacuuming the AFL2-12A-HM65.
- Turn the AFL2-12A-HM65 off before cleaning the AFL2-12A-HM65.
- Never drop any objects or liquids through the openings of the AFL2-12A-HM65.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the AFL2-12A-HM65.
- Avoid eating, drinking and smoking within vicinity of the AFL2-12A-HM65.

B.2.2 Cleaning Tools

Some components in the AFL2-12A-HM65 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the AFL2-12A-HM65.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the AFL2-12A-HM65.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the LAFL2-12A-HM65.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the LAFL2-12A-HM65 as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the AFL2-12A-HM65. Dust and dirt can restrict the airflow in the AFL2-12A-HM65 and cause its circuitry to corrode.
- ***Cotton swabs*** **-** Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** **-** Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

BIOS Configuration Options

C.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 6**.

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System Date [xx/xx/xx] 63

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Appendix

D

One Key Recovery

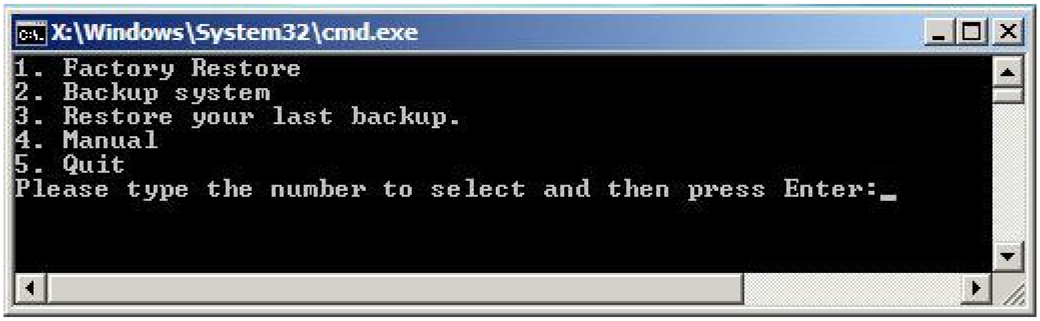
D.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. This tool provides quick and easy shortcuts for creating a backup and reverting to that backup or reverting to the factory default settings.

NOTE:

The latest One Key Recovery software provides an auto recovery function that allows a system running Microsoft Windows OS to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. Please refer to Section D.3 for the detailed setup procedure.

The IEI One Key Recovery tool menu is shown below.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:_
```

Figure D-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure D-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section D.2.1**)
2. Create partitions (see **Section D.2.2**)
3. Install operating system, drivers and system applications (see **Section D.2.3**)
4. Build the recovery partition (see **Section D.2.4**)
5. Create factory default image (see **Section D.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The detailed information of each function is described in **Section D.5**.

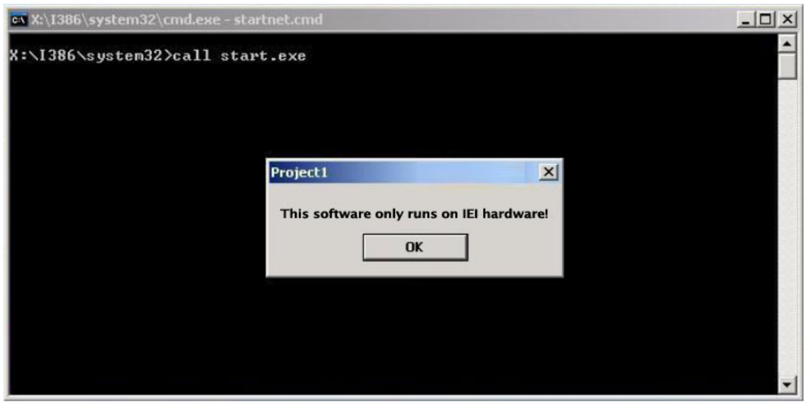
NOTE:

The initial setup procedures for Linux system are described in **Section D.3**.

D.1.1 System Requirement

NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.



```
X:\I386\system32>call start.exe
```

This software only runs on IEI hardware!

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

D.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating systems (OS). The supported OS versions are listed below.

- Microsoft Windows
  - Windows 2000
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
  - Windows Embedded Standard 7

NOTE:

The auto recovery function (described in Section D.3) and the restore through LAN function (described in Section D.6) are not supported in the Windows CE 5.0/6.0 operating system environment.

- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)
  - Ubuntu 8.10 (Intrepid)
  - Ubuntu 7.10 (Gutsy)
  - Ubuntu 6.10 (Edgy)
  - Debian 5.0 (Lenny)
  - Debian 4.0 (Etch)
  - SuSe 11.2
  - SuSe 10.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

D.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore, a few setup procedures are required.

Step 1: Hardware and BIOS setup (see Section D.2.1)

Step 2: Create partitions (see **Section D.2.2**)

Step 3: Install operating system, drivers and system applications (see **Section D.2.3**)

Step 4: Build the recovery partition (see **Section D.2.4**) or build the auto recovery partition (see **Section D.3**)

Step 5: Create factory default image (see **Section D.2.5**)

The detailed descriptions are described in the following sections.

NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux, most of the setup procedures are the same except for several steps described in **Section D.3**.

D.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the system and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

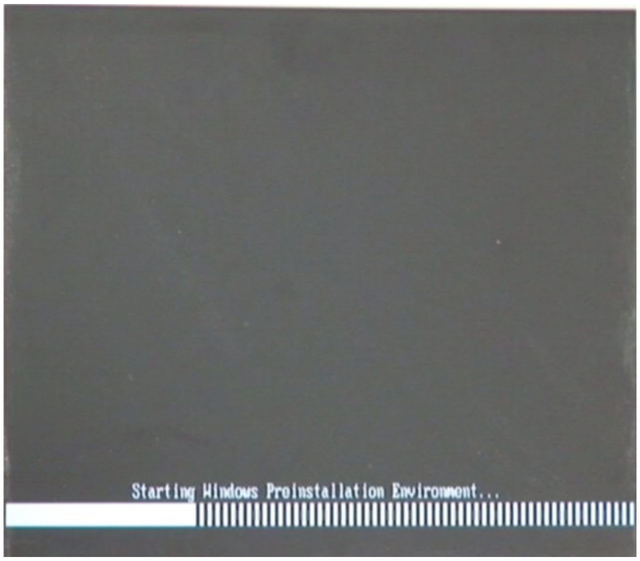
Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

D.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

Step 1: Put the recovery CD in the optical drive of the system.

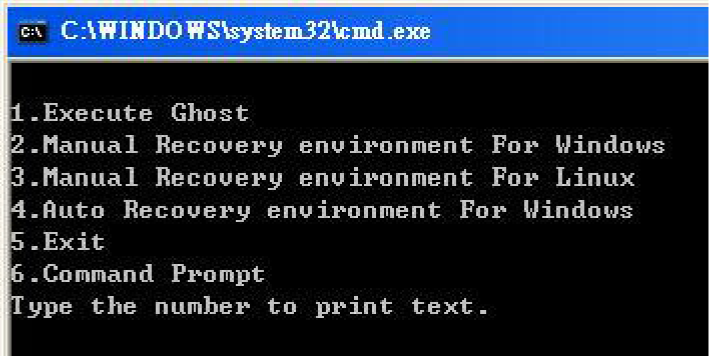
Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



```
Starting Windows Preinstallation Environment...
```

Figure D-2: Launching the Recovery Tool

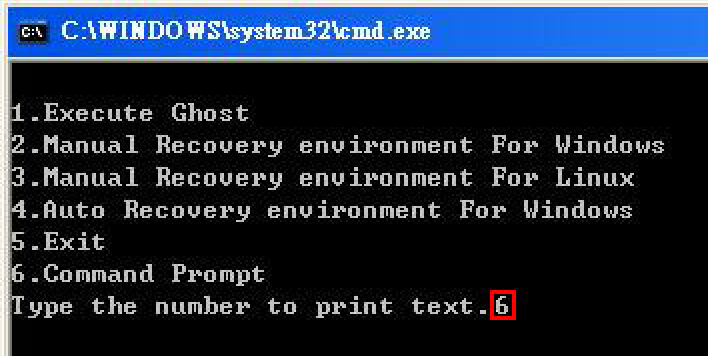
Step 3: The recovery tool setup menu is shown as below.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.
```

Figure D-3: Recovery Tool Setup Menu

Step 4: Press <**6**> then <Enter>.



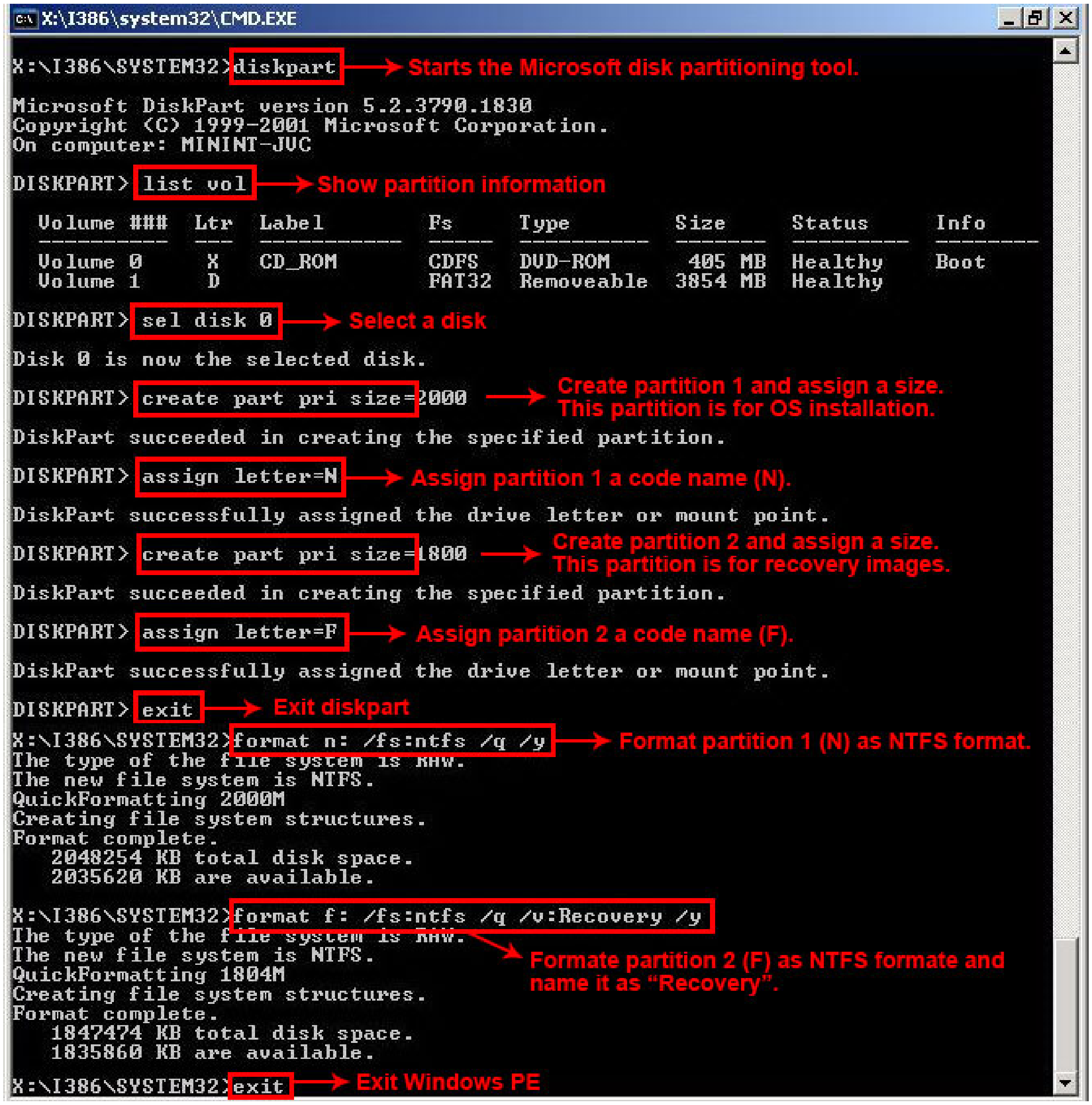
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.6
```

Figure D-4: Command Prompt

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

```
system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ___
DISKPART>assign letter=N
DISKPART>create part pri size= ___
DISKPART>assign letter=F
DISKPART>exit
system32>format N: /fs:ntfs /q /y
system32>format F: /fs:ntfs /q /v:Recovery /y
system32>exit
```



```
X:\I386\SYSTEM32>diskpart

Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> list vol

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0     X   CD_ROM       CDFS   DVD-ROM      405 MB  Healthy    Boot
  Volume 1     D                FAT32  Removeable  3854 MB  Healthy

DISKPART> sel disk 0

Disk 0 is now the selected disk.

DISKPART> create part pri size=2000

DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=N

DiskPart successfully assigned the drive letter or mount point.

DISKPART> create part pri size=1800

DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=F

DiskPart successfully assigned the drive letter or mount point.

DISKPART> exit
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
    2048254 KB total disk space.
    2035620 KB are available.

X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
    1847474 KB total disk space.
    1835860 KB are available.

X:\I386\SYSTEM32>exit
```

Starts the Microsoft disk partitioning tool.

Show partition information

Select a disk

Create partition 1 and assign a size.
This partition is for OS installation.

Assign partition 1 a code name (N).

Create partition 2 and assign a size.
This partition is for recovery images.

Assign partition 2 a code name (F).

Exit diskpart

Format partition 1 (N) as NTFS format.

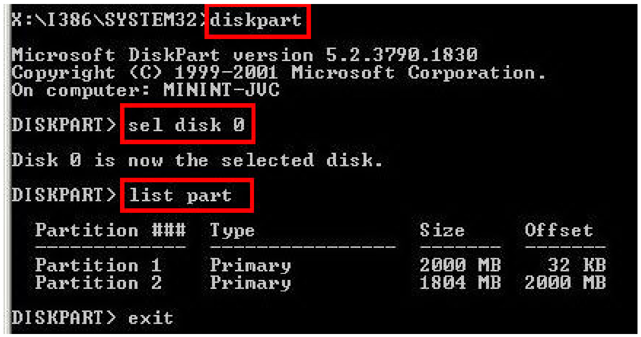
Formate partition 2 (F) as NTFS formate and
name it as “Recovery”.

Exit Windows PE

Figure D-5: Partition Creation Commands

NOTE:

Use the following commands to check if the partitions were created successfully.



```
X:\I386\SYSTEM32>diskpart

Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC

DISKPART> sel disk 0

Disk 0 is now the selected disk.

DISKPART> list part

  Partition ###  Type              Size     Offset
  -------------  ----------------  -------  -------
  Partition 1    Primary           2000 MB    32 KB
  Partition 2    Primary           1804 MB  2000 MB

DISKPART> exit
```

Step 6: Press any key to exit the recovery tool and automatically reboot the system. Please continue to the following procedure: Build the Recovery Partition.

D.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

NOTE:

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

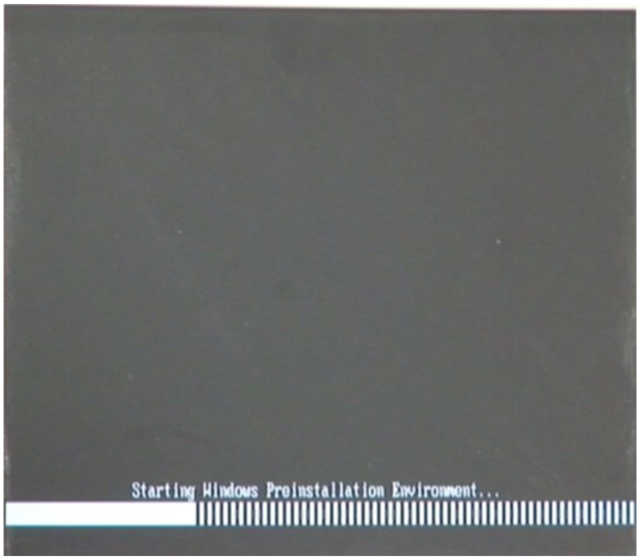
To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

D.2.4 Building the Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

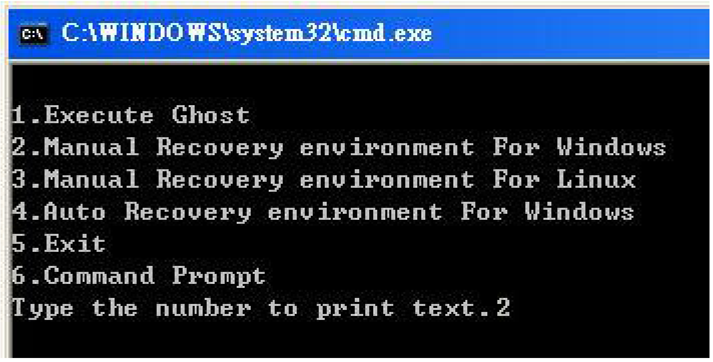
Step 3: **Boot the system from the recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



```
Starting Windows Preinstallation Environment...
```

Figure D-6: Launching the Recovery Tool

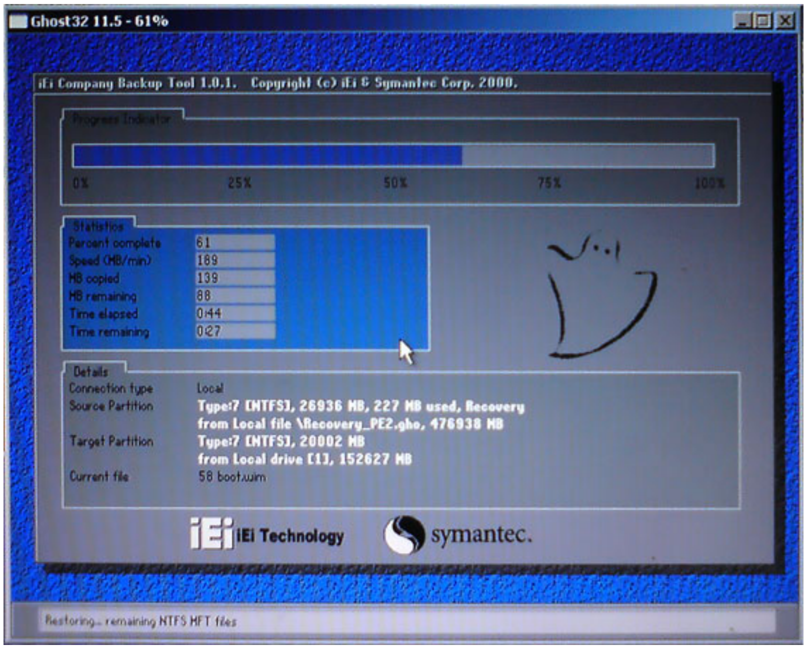
Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.2
```

Figure D-7: Manual Recovery Environment for Windows

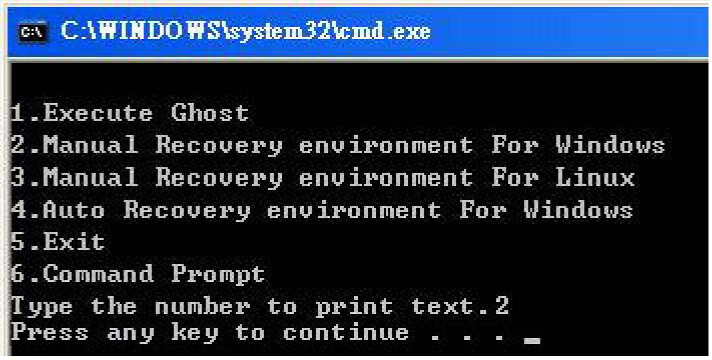
Step 5: The Symantec Ghost window appears and starts configuring the system to build a recovery partition. In this process the partition created for recovery files in **Section D.2.2** is hidden and the recovery tool is saved in this partition.


Ghost32 11.5 - 61%
iEi Company Backup Tool 1.0.1. Copyright (c) iEi & Symantec Corp. 2000.
Progress Indicator
0%
25%
50%
75%
100%
iEi Technology
symantec.

```
Statistics
Percent complete    61
Speed (MB/min)      189
MB copied           139
MB remaining        88
Time elapsed        0:44
Time remaining      0:27

Details
Connection type     Local
Source Partition    Type:7 [NTFS], 26936 MB, 227 MB used, Recovery
                    from Local file \Recovery_PE2.gho, 476938 MB
Target Partition    Type:7 [NTFS], 20002 MB
                    from Local drive [1], 152627 MB
Current file        58 boot.wim

Restoring... remaining NTFS MFT files
```

Figure D-8: Building the Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.


C:\WINDOWS\system32\cmd.exe

```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.2
Press any key to continue . . . _
```

Figure D-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

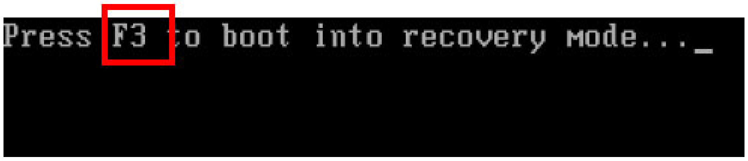
D.2.5 Create Factory Default Image

NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

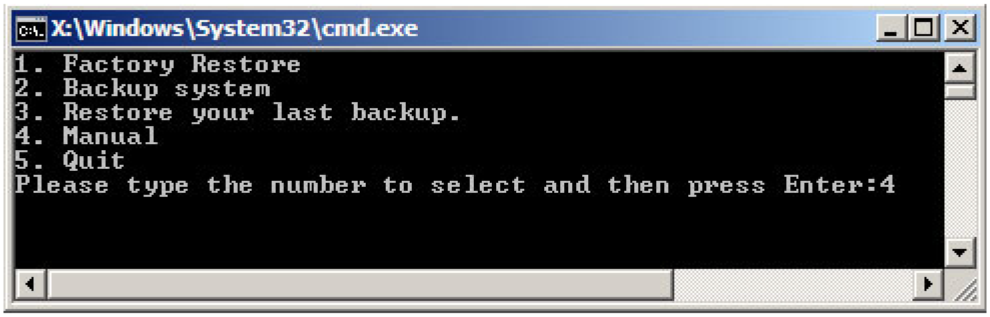
Step 1: Turn on the system. When the following screen displays (**Figure D-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.



```
Press F3 to boot into recovery mode..._
```

Figure D-10: Press F3 to Boot into Recovery Mode

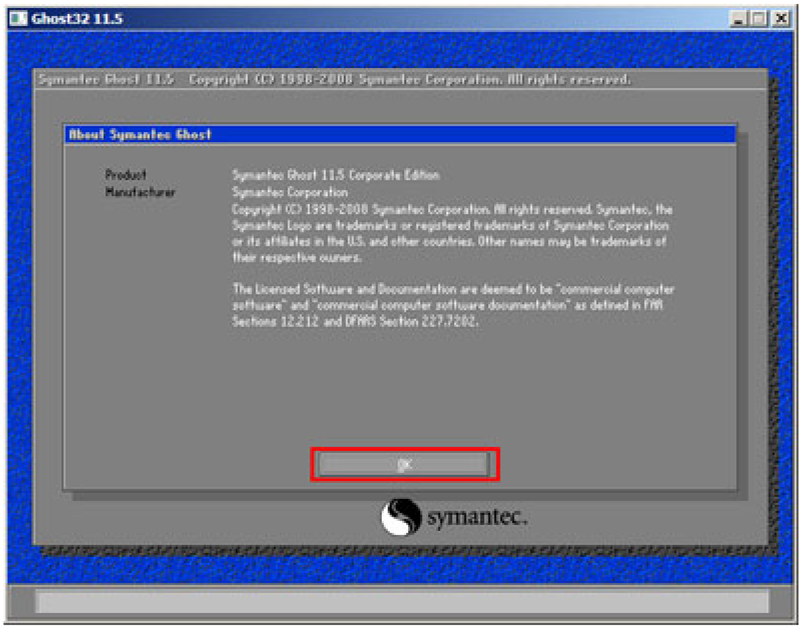
Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure D-11**)



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4
```

Figure D-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.


Ghost32 11.5
OK
symantec.

Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

About Symantec Ghost

Product	Symantec Ghost 11.5 Corporate Edition
Manufacturer	Symantec Corporation

Copyright (C) 1998-2008 Symantec Corporation. All rights reserved. Symantec, the Symantec Logo are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

The Licensed Software and Documentation are deemed to be "commercial computer software" and "commercial computer software documentation" as defined in FAR Sections 12.212 and DFARS Section 227.7202.

Figure D-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure D-13**).

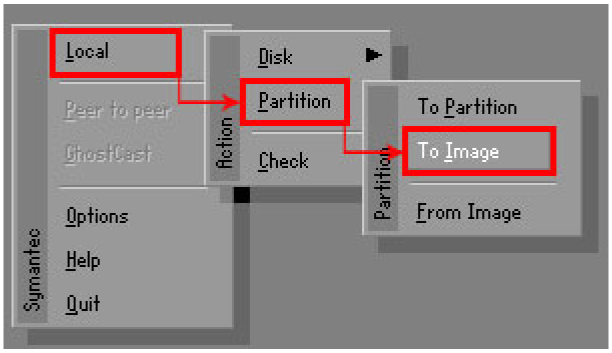
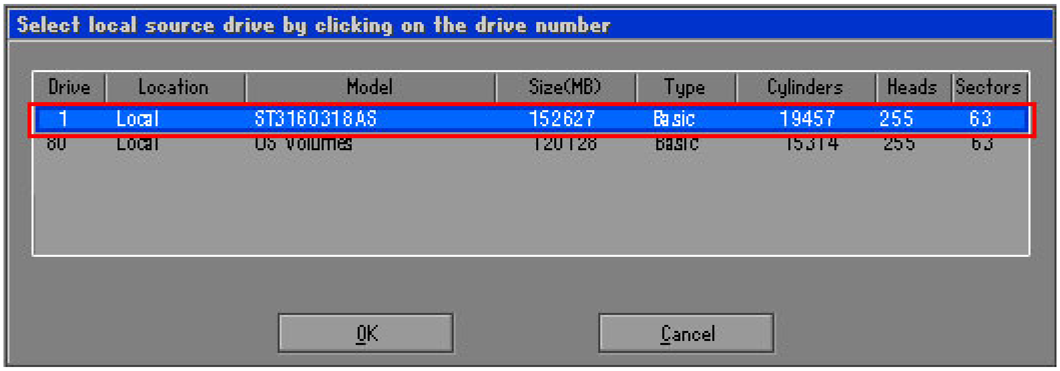

Symantec
Local
Peer to peer
GhostCast
Options
Help
Quit
Action
Disk
Partition
Check
Partition
To Partition
To Image
From Image

Figure D-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in **Figure D-14**. Then click OK.

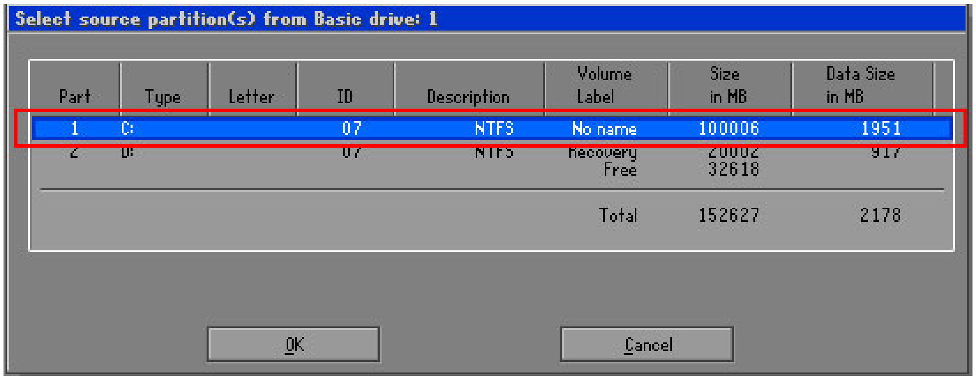


Select local source drive by clicking on the drive number

Drive	Location	Model	Size(MB)	Type	Cylinders	Heads	Sectors
1	Local	ST3160318AS	152627	Basic	19457	255	63
80	Local	OS Volumes	120128	Basic	15314	255	63

Figure D-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure D-15**. Then click OK.



Select source partition(s) from Basic drive: 1

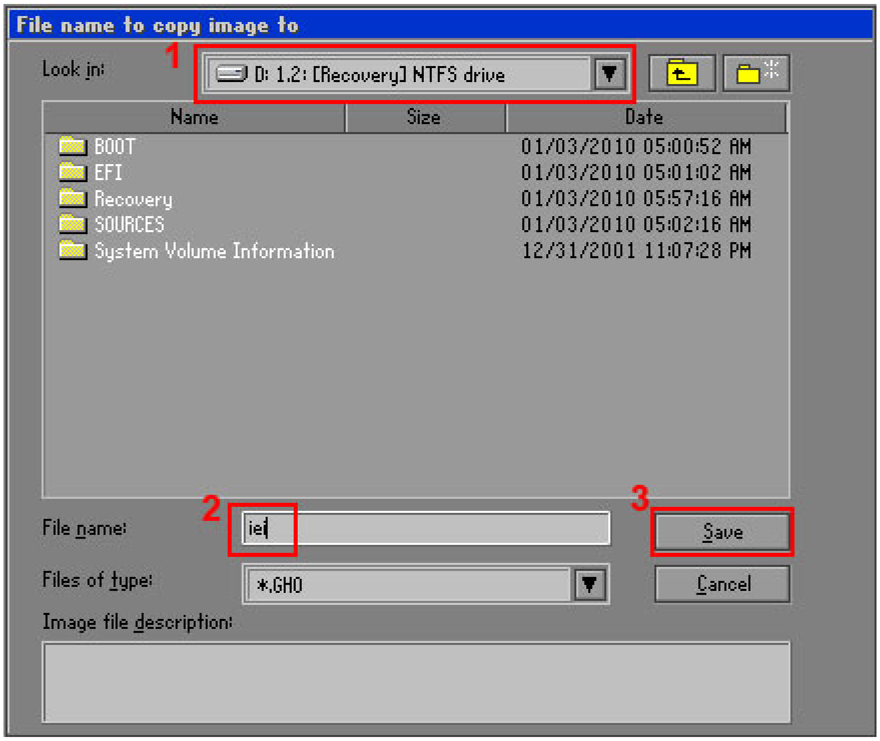
Part	Type	Letter	ID	Description	Volume Label	Size in MB	Data Size in MB
1	C:		07	NTFS	No name	100006	1951
2	D:		07	NTFS	Recovery	20002	917
					Free	32618	
					Total	152627	2178

Figure D-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure D-16**). Click **Save.** The factory default image will then be saved in the selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.



File name to copy image to

Look in: D: 1.2: [Recovery] NTFS drive

Name	Size	Date
BOOT		01/03/2010 05:00:52 AM
EFI		01/03/2010 05:01:02 AM
Recovery		01/03/2010 05:57:16 AM
SOURCES		01/03/2010 05:02:16 AM
System Volume Information		12/31/2001 11:07:28 PM

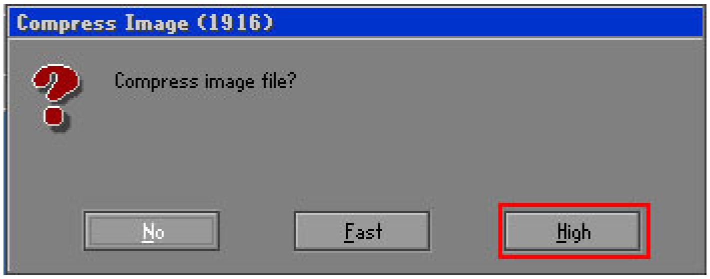
File name: iei

Files of type: *.GHO

Image file description:

Figure D-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure D-17** prompts, click **High** to make the image file smaller.

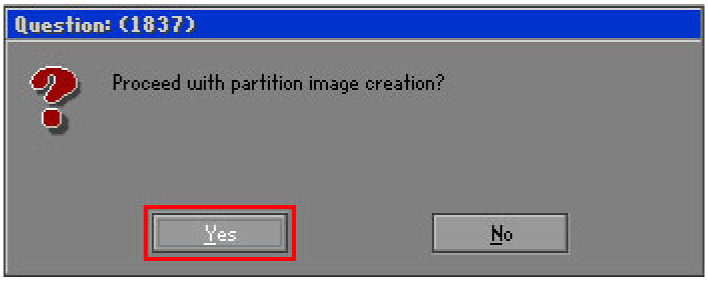


Compress Image (1916)

Compress image file?

Figure D-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

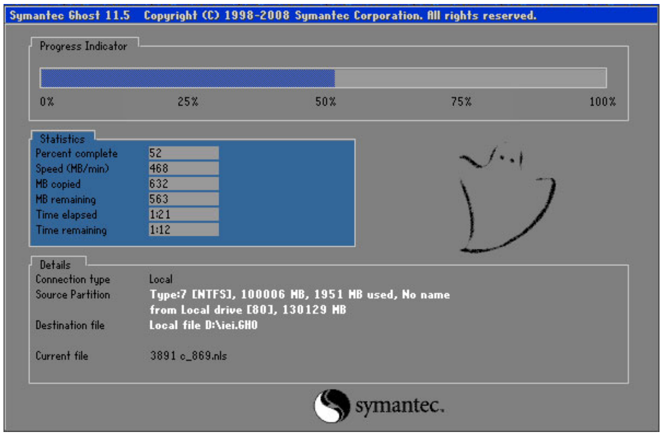


Question: (1837)

Proceed with partition image creation?

Figure D-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure D-19**).



```
Symantec Ghost 11.5   Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Progress Indicator
0%          25%          50%          75%          100%

Statistics
Percent complete    52
Speed (MB/min)      468
MB copied           632
MB remaining        563
Time elapsed        1:21
Time remaining      1:12

Details
Connection type     Local
Source Partition    Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                    from Local drive [80], 130129 MB
Destination file    Local file D:\iei.GHO

Current file        3891 c_869.nls
```

Figure D-19: Creating Image

Step 11: When the image creation completes, a screen prompts as shown in **Figure D-20**. Click **Continue** and close the Ghost window to exit the program.

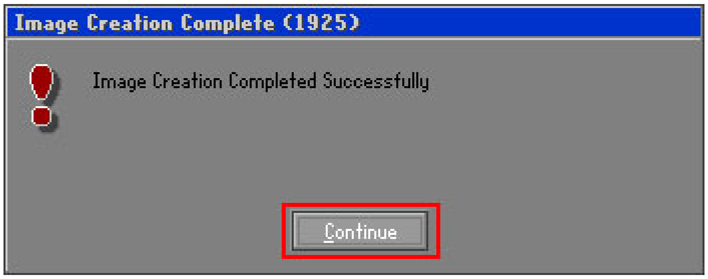
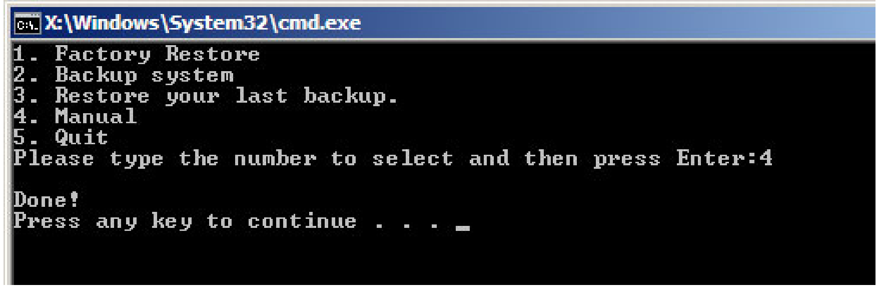


Image Creation Complete (1925)

Image Creation Completed Successfully

Figure D-20: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4

Done!
Press any key to continue . . . _
```

Figure D-21: Press Any Key to Continue

D.3 Auto Recovery Setup Procedure

The auto recovery function allows a system to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To use the auto recovery function, follow the steps described in the following sections.

CAUTION:

The auto recovery function can only run on a Microsoft Windows system with the following OS versions:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows XP Embedded
- Windows Embedded Standard 7

CAUTION:

The setup procedure may include a step to create a factory default image. It is suggested to configure the system to a factory default environment before the configuration, including driver and application installations.

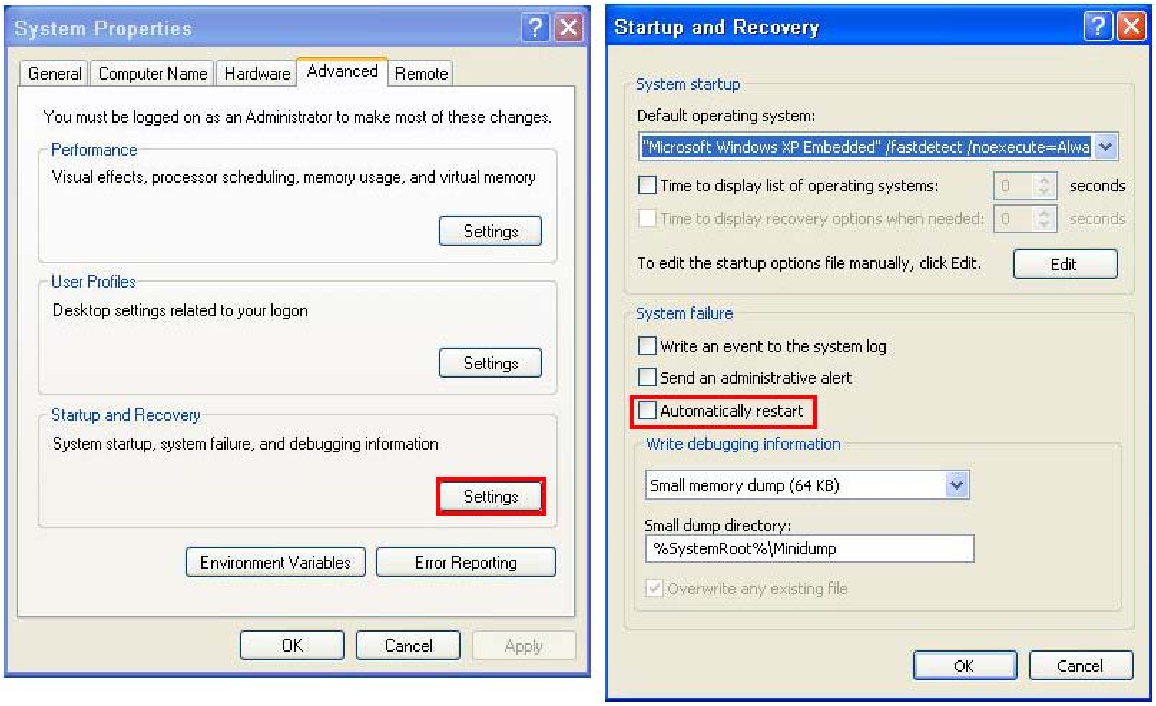
Step 1: Follow the steps described in **Section D.2.1 ~ Section D.2.3** to setup BIOS, create partitions and install operating system.

Step 2: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.

AUTORECOVERY-SETUP.EXE
Setup Launcher
IEI

Figure D-22: Auto Recovery Utility

Step 3: **Disable the automatically restart function before creating the factory default image**. Go to: My Computer → Properties → Advanced. Click the Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See Figure D-23)



System Properties
General
Computer Name
Hardware
Advanced
Remote

You must be logged on as an Administrator to make most of these changes.

Performance
Visual effects, processor scheduling, memory usage, and virtual memory

Settings

User Profiles
Desktop settings related to your logon

Settings

Startup and Recovery
System startup, system failure, and debugging information

Settings
Environment Variables
Error Reporting
OK
Cancel
Apply
Startup and Recovery

System startup

Default operating system: "Microsoft Windows XP Embedded" /fastdetect /noexecute=Alwa

☐ Time to display list of operating systems: 0 seconds

☐ Time to display recovery options when needed: 0 seconds

To edit the startup options file manually, click Edit.

System failure

☐ Write an event to the system log

☐ Send an administrative alert

☐ Automatically restart

Write debugging information

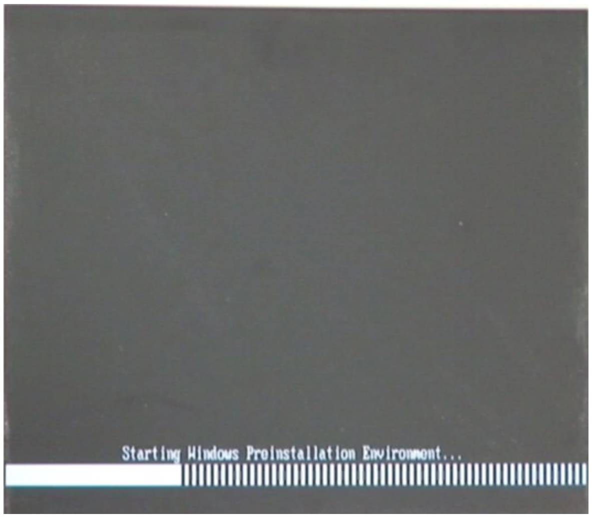
Small memory dump (64 KB)

Small dump directory: %SystemRoot%\Minidump

☑ Overwrite any existing file

Figure D-23: Disable Automatically Restart

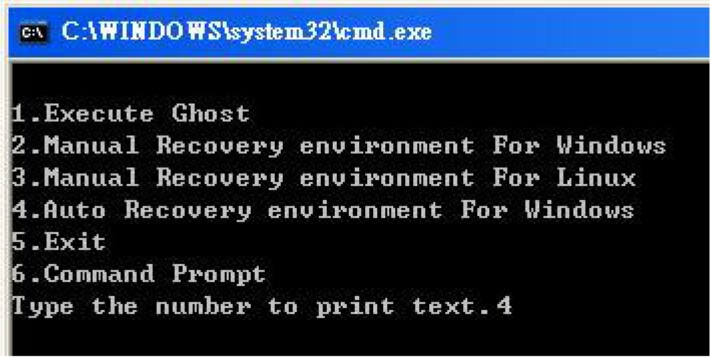
Step 4: Reboot the system from the recovery CD. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



```
Starting Windows Preinstallation Environment...
```

Figure D-24: Launching the Recovery Tool

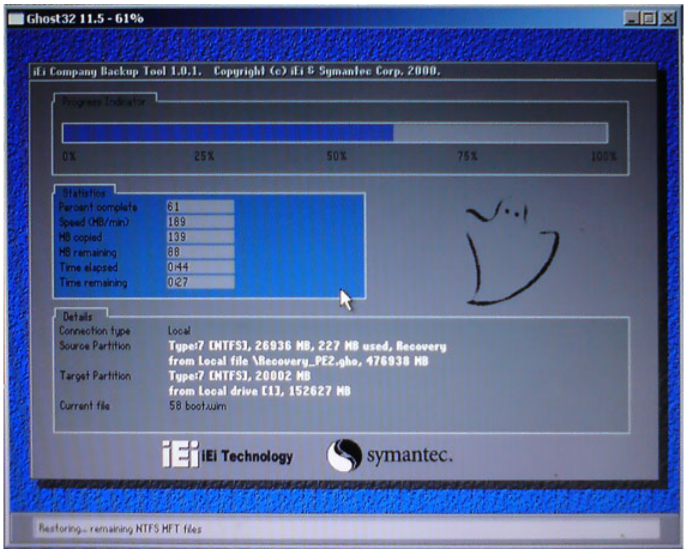
Step 5: When the recovery tool setup menu appears, press <**4**> then <Enter>.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.4
```

Figure D-25: Auto Recovery Environment for Windows

Step 6: The Symantec Ghost window appears and starts configuring the system to build an auto recovery partition. In this process the partition created for recovery files in **Section D.2.2** is hidden and the auto recovery tool is saved in this partition.


Ghost32 11.5 - 61%
iEi Company Backup Tool 1.0.1. Copyright (c) iEi & Symantec Corp. 2000.
Progress Indicator
0%
25%
50%
75%
100%
Statistics
Details
iEi Technology
symantec.

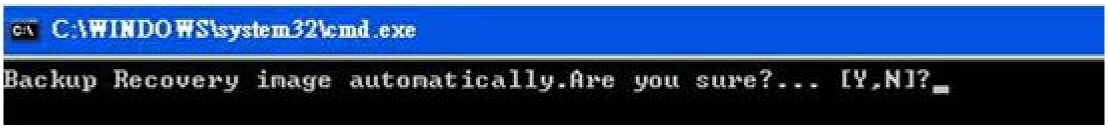
Percent complete	61
Speed (MB/min)	189
MB copied	139
MB remaining	88
Time elapsed	0:44
Time remaining	0:27

Connection type	Local
Source Partition	Type:7 [NTFS], 26936 MB, 227 MB used, Recovery from Local file \Recovery_PE2.gho, 476938 MB
Target Partition	Type:7 [NTFS], 20002 MB from Local drive [1], 152627 MB
Current file	58 boot.wim

Restoring... remaining NTFS MFT files

Figure D-26: Building the Auto Recovery Partition

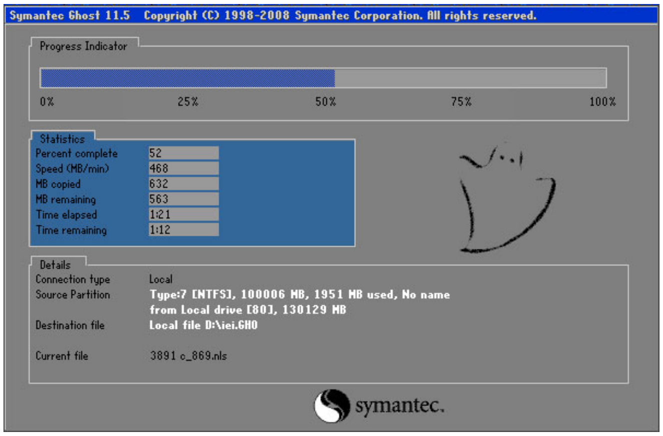
Step 7: After completing the system configuration, the following message prompts to confirm whether to create a factory default image. Type **Y** to have the system create a factory default image automatically. Type **N** within 6 seconds to skip this process (The default option is YES). It is suggested to choose YES for this option.


C:\WINDOWS\system32\cmd.exe

```
Backup Recovery image automatically.Are you sure?... [Y,N]?_
```

Figure D-27: Factory Default Image Confirmation

Step 8: The Symantec Ghost starts to create the factory default image (**Figure D-28**).



Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Statistics

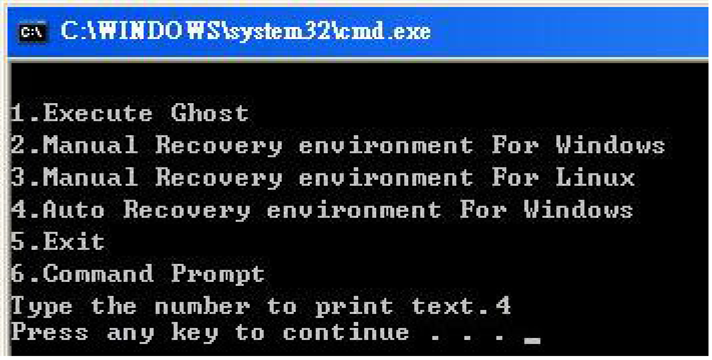
Percent complete	52
Speed (MB/min)	468
MB copied	632
MB remaining	563
Time elapsed	1:21
Time remaining	1:12

Details

Connection type	Local
Source Partition	Type:7 [NTFS], 100006 MB, 1951 MB used, No name from Local drive [80], 130129 MB
Destination file	Local file D:\iei.GHO
Current file	3891 c_869.nls

Figure D-28: Creating Image

Step 9: After completing the system configuration, press any key in the following window to restart the system.



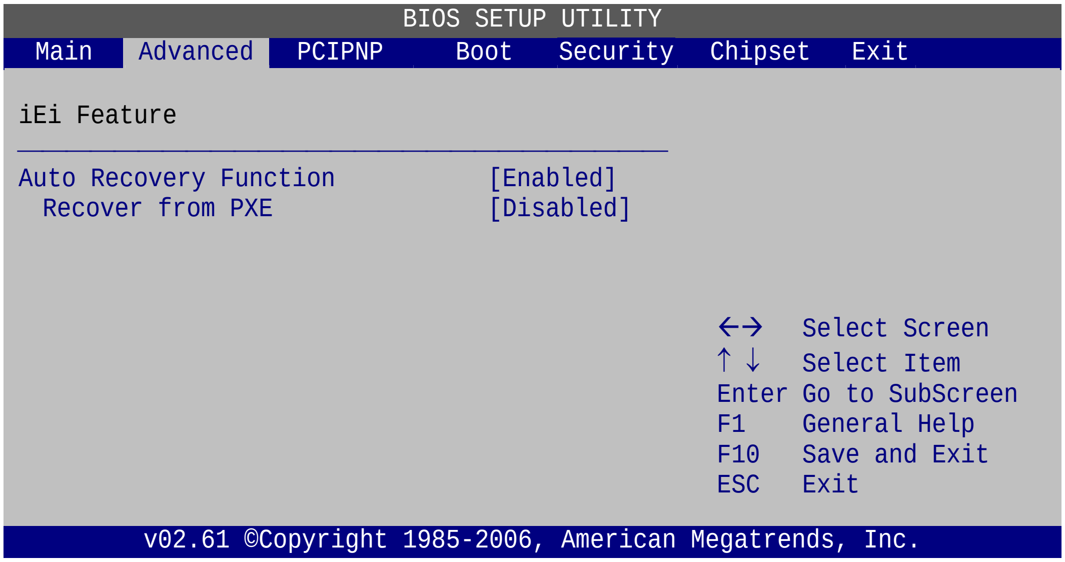
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.4
Press any key to continue . . . _
```

Figure D-29: Press Any Key to Continue

Step 10: Eject the One Key Recovery CD and restart the system.

Step 11: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 12: Enable the Auto Recovery Function option (**Advanced → iEi Feature → Auto Recovery Function**).



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

 iEi Feature
 _____________________________________________
 Auto Recovery Function             [Enabled]
   Recover from PXE                 [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.
```

Figure D-30: IEI Feature BIOS Menu

Step 13: Save changes and restart the system. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image.

D.4 Setup Procedure for Linux

The initial setup procedure for Linux system is mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section D.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: **/**
- Partition 2: **SWAP**

NOTE:

Please reserve enough space for partition 3 for saving recovery images.

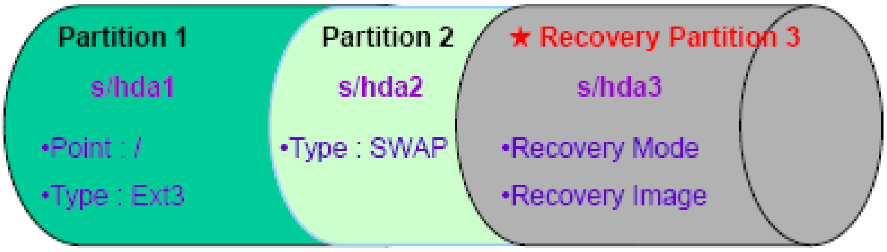
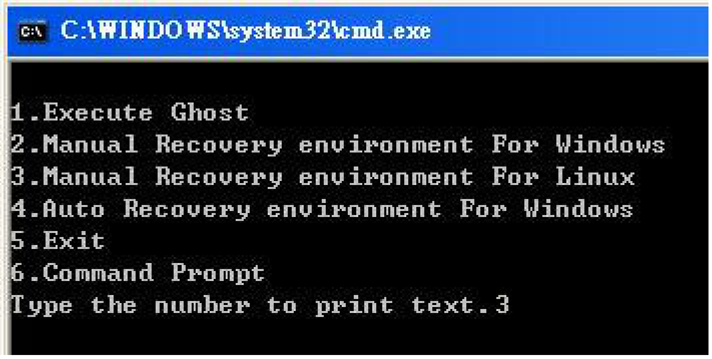

Partition 1
s/hda1
•Point : /
•Type : Ext3
Partition 2
s/hda2
•Type : SWAP
★ Recovery Partition 3
s/hda3
•Recovery Mode
•Recovery Image

Figure D-31: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section D.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

```
system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ___
DISKPART>assign letter=N
DISKPART>exit
system32>format N: /fs:ntfs /q /v:Recovery /y
system32>exit
```

Step 4: **Build the recovery partition**. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <**3**> and press <Enter> (**Figure D-32**). The Symantec Ghost window appears and starts configuring the system to build a recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.



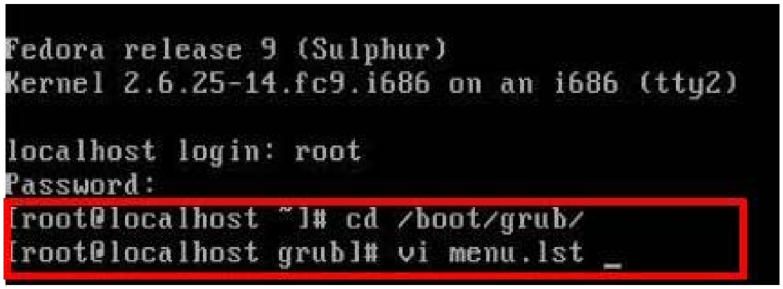
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.3
```

Figure D-32: Manual Recovery Environment for Linux

Step 5: **Access the recovery tool main menu by modifying the "menu.lst"**. To first access the recovery tool main menu, the menu.lst must be modified. In Linux, enter Administrator (root). When prompt appears, type:

cd /boot/grub

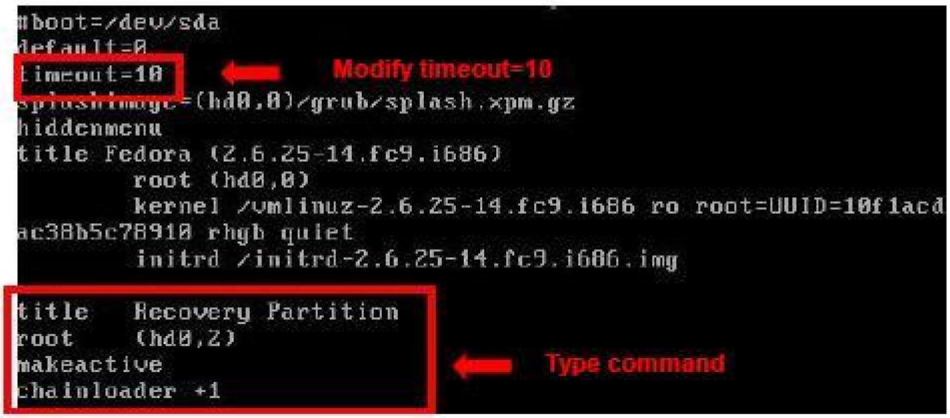
vi menu.lst



```
Fedora release 9 (Sulphur)
Kernel 2.6.25-14.fc9.i686 on an i686 (tty2)

localhost login: root
Password:
[root@localhost ~]# cd /boot/grub/
[root@localhost grub]# vi menu.lst _
```

Figure D-33: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.



```
#boot=/dev/sda
default=0
timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
        root (hd0,0)
        kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
ac38b5c78910 rhgb quiet
        initrd /initrd-2.6.25-14.fc9.i686.img

title   Recovery Partition
root    (hd0,2)
makeactive
chainloader +1
```

- **Type command:**

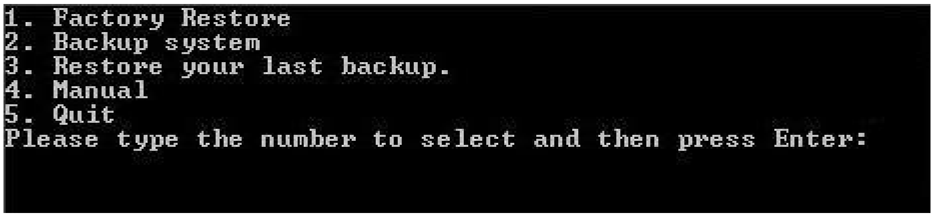
  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure D-34**)



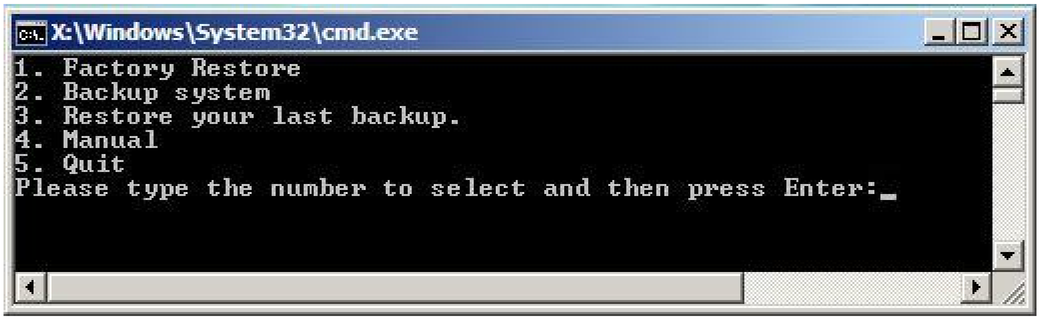
```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:
```

Figure D-34: Recovery Tool Menu

Step 8: **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section D.2.5** to create a factory default image.

D.5 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. However, if the setup procedure in Section D.3 has been completed and the auto recovery function is enabled, the system will automatically restore from the factory default image without pressing the F3 key. The recovery tool main menu is shown below.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:_
```

Figure D-35: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore**: Restore the factory default image (iei.GHO) created in Section D.2.5.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

WARNING:

Please do not turn off the system power during the process of system recovery or backup.

WARNING:

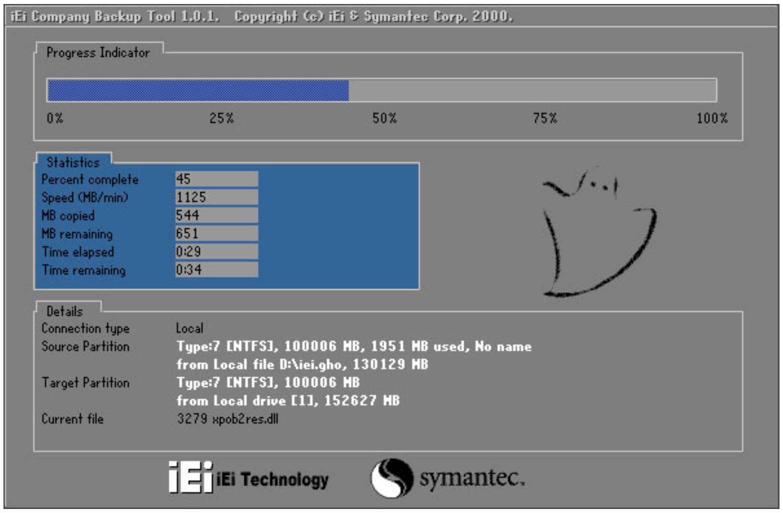
All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

D.5.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <**1**> and press <**Enter**> in the main menu.

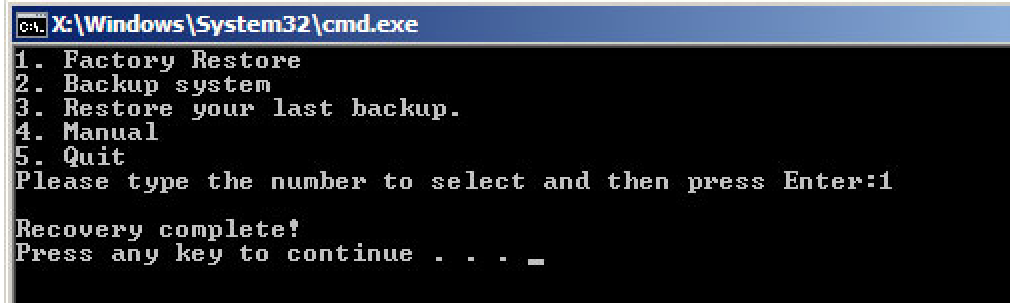
Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.



```
iEi Company Backup Tool 1.0.1.   Copyright (c) iEi & Symantec Corp. 2000.

Progress Indicator
0%            25%            50%            75%            100%

Statistics
Percent complete     45
Speed (MB/min)       1125
MB copied            544
MB remaining         651
Time elapsed         0:29
Time remaining       0:34

Details
Connection type      Local
Source Partition     Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                     from Local file D:\iei.gho, 130129 MB
Target Partition     Type:7 [NTFS], 100006 MB
                     from Local drive [1], 152627 MB
Current file         3279 xpob2res.dll
```

Figure D-36: Restore Factory Default

Step 3: The screen shown in **Figure D-37** appears when completed. Press any key to reboot the system.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:1

Recovery complete!
Press any key to continue . . . _
```

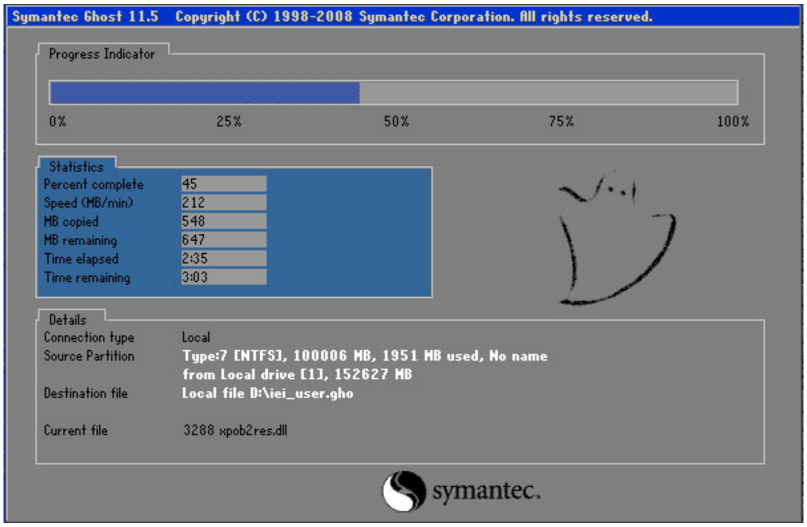
Figure D-37: Recovery Complete Window

D.5.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <**2**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

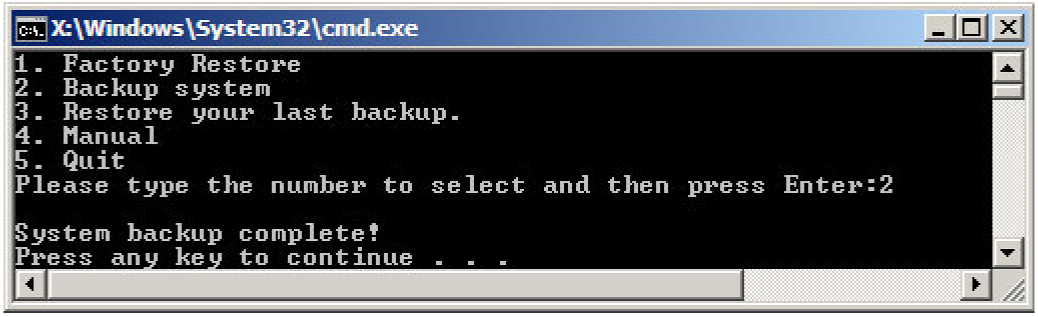

Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.
Progress Indicator
0%
25%
50%
75%
100%
Statistics
Details
symantec.

Percent complete 45
Speed (MB/min) 212
MB copied 548
MB remaining 647
Time elapsed 2:35
Time remaining 3:03

Connection type Local
Source Partition Type:7 [NTFS], 100006 MB, 1951 MB used, No name
from Local drive [1], 152627 MB
Destination file Local file D:\iei_user.gho
Current file 3288 xpob2res.dll

Figure D-38: Backup System

Step 3: The screen shown in **Figure D-39** appears when system backup is complete. Press any key to reboot the system.


X:\Windows\System32\cmd.exe

```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:2

System backup complete!
Press any key to continue . . .
```

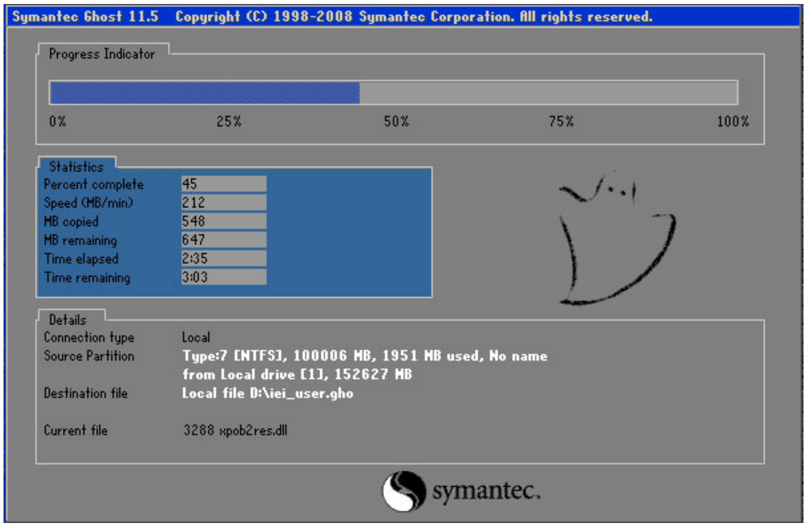
Figure D-39: System Backup Complete Window

D.5.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <**3**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).



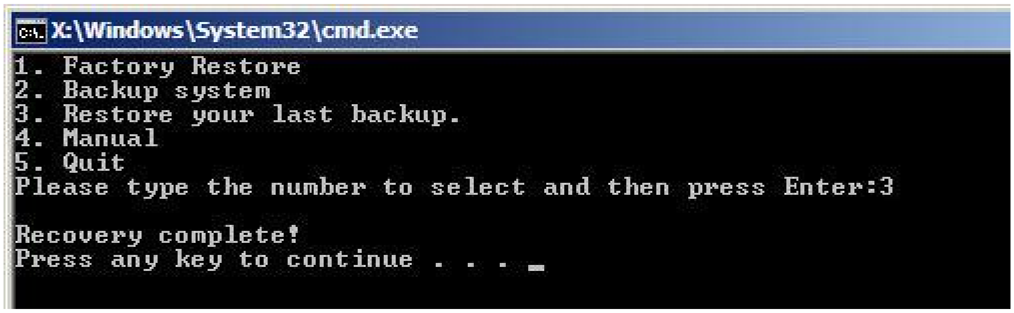
Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Percent complete 45
Speed (MB/min) 212
MB copied 548
MB remaining 647
Time elapsed 2:35
Time remaining 3:03

Connection type Local
Source Partition Type:7 [NTFS], 100006 MB, 1951 MB used, No name from Local drive [1], 152627 MB
Destination file Local file D:\iei_user.gho
Current file 3288 xpob2res.dll

Figure D-40: Restore Backup

Step 3: The screen shown in **Figure D-41** appears when backup recovery is complete. Press any key to reboot the system.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:3

Recovery complete!
Press any key to continue . . . _
```

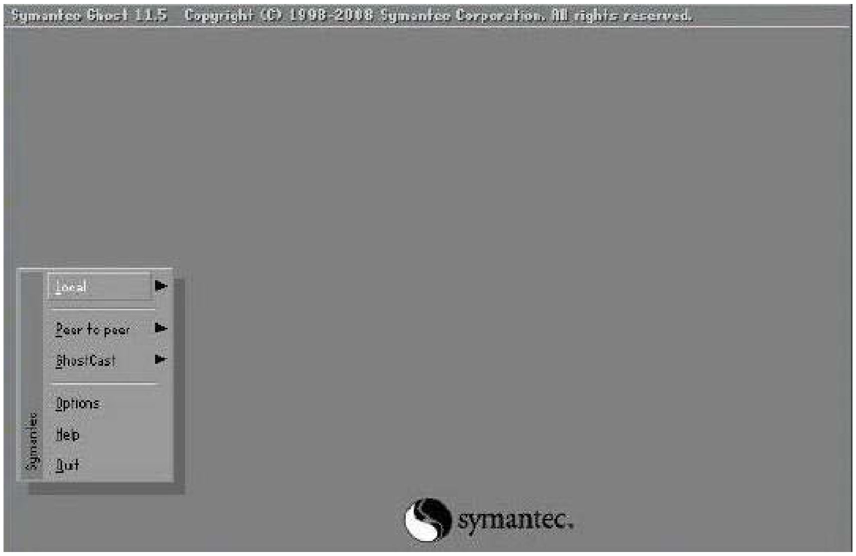
Figure D-41: Restore System Backup Complete Window

D.5.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <**4**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.



Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

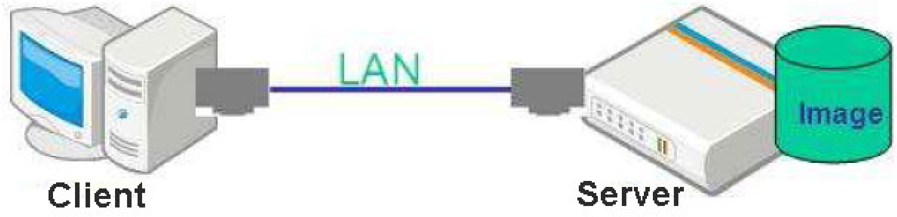
Local
Peer to peer
GhostCast
Options
Help
Quit
Symantec
symantec.

Figure D-42: Symantec Ghost Window

Step 3: When backup or recovery is completed, press any key to reboot the system.

D.6 Restore Systems from a Linux Server through LAN

The One Key Recovery allows a client system to automatically restore to a factory default image saved in a Linux system (the server) through LAN connectivity after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To be able to use this function, the client system and the Linux system MUST reside in the same domain.



CAUTION:

The supported client OS includes:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows XP Embedded
- Windows Embedded Standard 7

Prior to restoring client systems from a Linux server, a few setup procedures are required.

Step 1: Configure DHCP server settings

Step 2: Configure TFTP settings

Step 3: Configure One Key Recovery server settings

Step 4: Start DHCP, TFTP and HTTP

Step 5: Create a shared directory

Step 6: Setup a client system for auto recovery

The detailed descriptions are described in the following sections. In this document, two types of Linux OS are used as examples to explain the configuration process – CentOS 5.5 (Kernel 2.6.18) and Debian 5.0.7 (Kernel 2.6.26).

D.6.1 Configure DHCP Server Settings

Step 1: Install the DHCP

#yum install dhcp (CentOS, commands marked in red)

#apt-get install dhcp3-server (Debian, commands marked in blue)

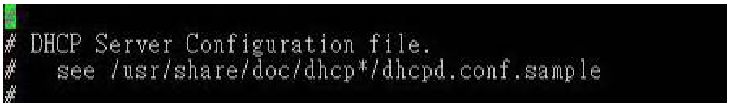
Step 2: Confirm the operating system default settings: dhcpd.conf.

CentOS

Use the following command to show the DHCP server sample location:

#vi /etc/dhcpd.conf

The DHCP server sample location is shown as below:

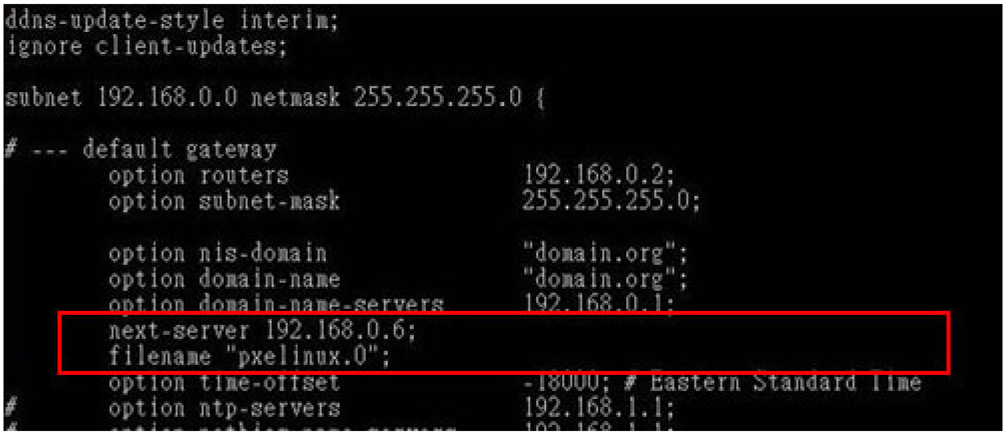


```
#
# DHCP Server Configuration file.
#   see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
```

Use the following command to copy the DHCP server sample to etc/dhcpd.conf:

#cp /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf

#vi /etc/dhcpd.conf



```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

# --- default gateway
        option routers                  192.168.0.2;
        option subnet-mask              255.255.255.0;

        option nis-domain               "domain.org";
        option domain-name              "domain.org";
        option domain-name-servers      192.168.0.1;
        next-server 192.168.0.6;
        filename "pxelinux.0";
        option time-offset              -18000; # Eastern Standard Time
#       option ntp-servers              192.168.1.1;
```

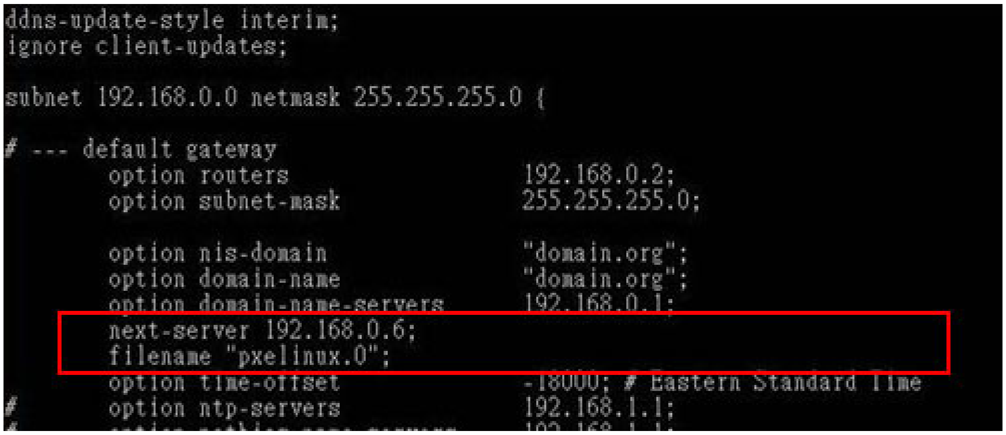
Debian

#vi /etc/dhcpd.conf

Edit "/etc/dhcpd.conf" for your environment. For example, add

next-server PXE server IP address;

filename “pxelinux.0”;



```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

# --- default gateway
        option routers                  192.168.0.2;
        option subnet-mask              255.255.255.0;

        option nis-domain               "domain.org";
        option domain-name              "domain.org";
        option domain-name-servers      192.168.0.1;
        next-server 192.168.0.6;
        filename "pxelinux.0";
        option time-offset              -18000; # Eastern Standard Time
#       option ntp-servers              192.168.1.1;
```

D.6.2 Configure TFTP Settings

Step 1: Install the tftp, httpd and syslinux.

#yum install tftp-server httpd syslinux (CentOS)

#apt-get install tftpd-hpa xinetd syslinux (Debian)

Step 2: Enable the TFTP server by editing the “/etc/xinetd.d/tftp” file and make it use the remap file. The “-vvv” is optional but it could definitely help on getting more information while running the remap file. For example:

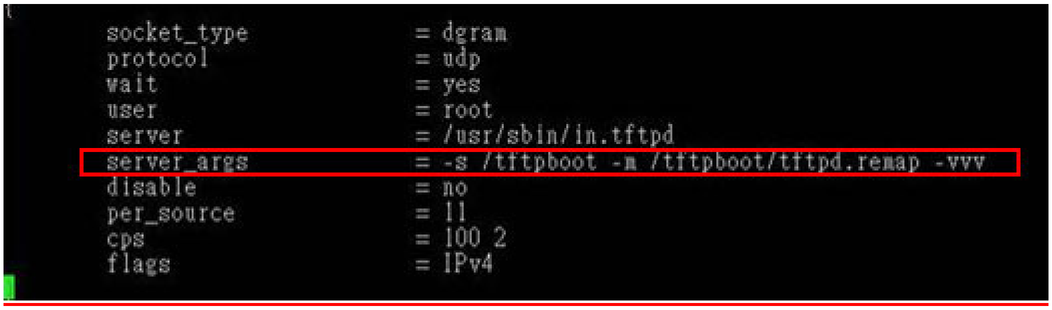
CentOS

#vi /etc/xinetd.d/tftp

Modify:

disable = no

server_args = -s /tftpboot –m /tftpboot/tftpd.remap -vvv_



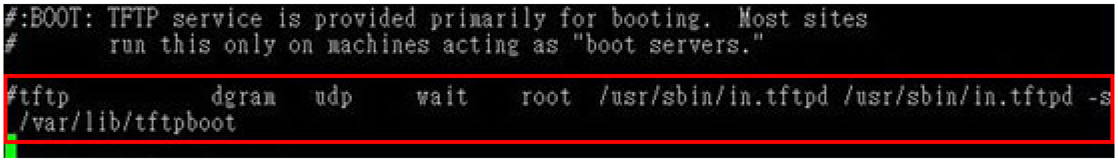
```
{
        socket_type             = dgram
        protocol                = udp
        wait                    = yes
        user                    = root
        server                  = /usr/sbin/in.tftpd
        server_args             = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
        disable                 = no
        per_source              = 11
        cps                     = 100 2
        flags                   = IPv4
```

Debian

Replace the TFTP settings from “inetd” to “xinetd” and annotate the “inetd” by adding “#”.

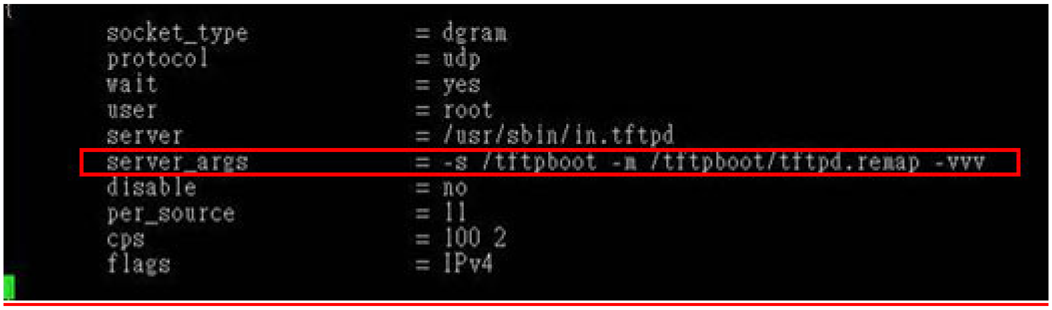
#vi /etc/inetd.conf

Modify: #tftp dgram udp wait root /usr/sbin....... (as shown below)



```
#:BOOT: TFTP service is provided primarily for booting.  Most sites
#       run this only on machines acting as "boot servers."

#tftp           dgram   udp     wait    root   /usr/sbin/in.tftpd /usr/sbin/in.tftpd -s
 /var/lib/tftpboot
```

#vi /etc/xinetd.d/tftp



```
{
        socket_type             = dgram
        protocol                = udp
        wait                    = yes
        user                    = root
        server                  = /usr/sbin/in.tftpd
        server_args             = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
        disable                 = no
        per_source              = 11
        cps                     = 100 2
        flags                   = IPv4
```

D.6.3 Configure One Key Recovery Server Settings

Step 1: Copy the **Utility/RECOVERYR10.TAR.BZ2** package from the One Key Recovery CD to the system (server side).

RECOVERYR10.TAR.BZ2
bz2 Archive
197,416 KB

Step 2: Extract the recovery package to /.

#cp RecoveryR10.tar.bz2 /

#cd /

#tar –xvjf RecoveryR10.tar.bz2

Step 3: Copy “pxelinux.0” from “syslinux” and install to “/tftboot”.

#cp /usr/lib/syslinux/pxelinux.0 /tftpboot/

D.6.4 Start the DHCP, TFTP and HTTP

Start the DHCP, TFTP and HTTP. For example:

CentOS

```
#service xinetd restart

#service httpd restart

#service dhcpd restart
```

Debian

```
#/etc/init.d/xinetd reload

#/etc/init.d/xinetd restart

#/etc/init.d/dhcp3-server restart
```

D.6.5 Create Shared Directory

Step 1: Install the samba.

```
#yum install samba
```

Step 2: Create a shared directory for the factory default image.

```
#mkdir /share
#cd /share
#mkdir /image
#cp iei.gho /image
```

WARNING:

The file name of the factory default image must be **iei.gho**.

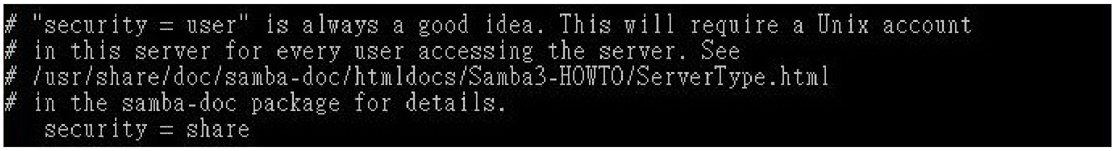
Step 3: Confirm the operating system default settings: smb.conf.

```
#vi /etc/samba/smb.conf
```

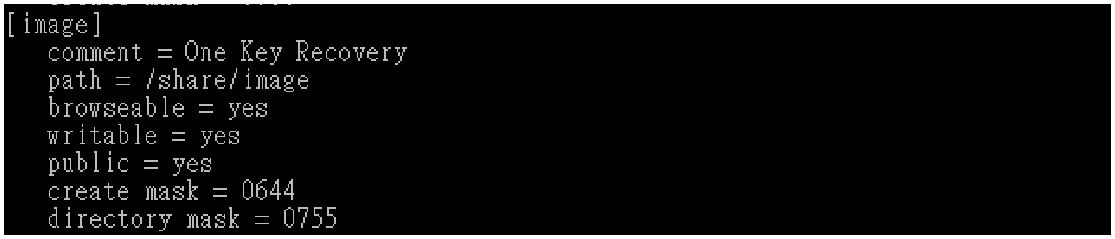
Modify:

```
[image]
    comment = One Key Recovery
    path = /share/image
    browseable = yes
    writable = yes
    public = yes
    create mask = 0644
    directory mask = 0755
```

Step 4: Edit “/etc/samba/smb.conf” for your environment. For example:



```
# "security = user" is always a good idea. This will require a Unix account
# in this server for every user accessing the server. See
# /usr/share/doc/samba-doc/htmldocs/Samba3-HOWTO/ServerType.html
# in the samba-doc package for details.
   security = share
```

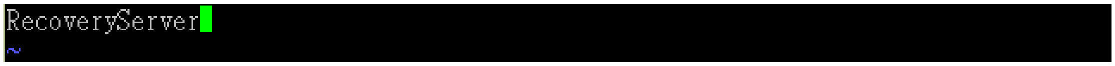


```
[image]
   comment = One Key Recovery
   path = /share/image
   browseable = yes
   writable = yes
   public = yes
   create mask = 0644
   directory mask = 0755
```

Step 5: Modify the hostname

`#vi /etc/hostname`

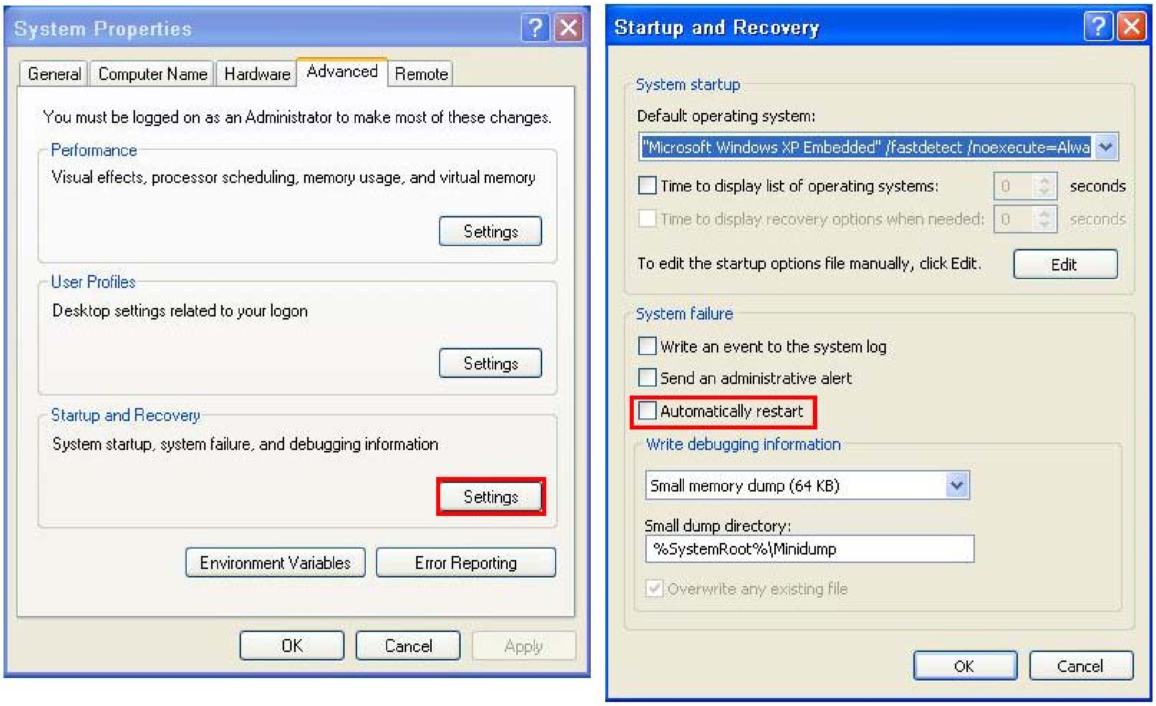
Modify: RecoveryServer



```
RecoveryServer
~
```

D.6.6 Setup a Client System for Auto Recovery

Step 1: **Disable the automatically restart function before creating the factory default image**. Go to: My Computer → Properties → Advanced. Click the Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See Figure D-23)


System Properties
General
Computer Name
Hardware
Advanced
Remote
Performance
Settings
User Profiles
Settings
Startup and Recovery
Settings
Environment Variables
Error Reporting
OK
Cancel
Apply
Startup and Recovery
System startup
Default operating system:
Edit
System failure
Write debugging information
Small dump directory:
OK
Cancel

You must be logged on as an Administrator to make most of these changes.

Visual effects, processor scheduling, memory usage, and virtual memory

Desktop settings related to your logon

System startup, system failure, and debugging information

"Microsoft Windows XP Embedded" /fastdetect /noexecute=Alwa

☐ Time to display list of operating systems: 0 seconds

☐ Time to display recovery options when needed: 0 seconds

To edit the startup options file manually, click Edit.

☐ Write an event to the system log

☐ Send an administrative alert

☐ Automatically restart

Small memory dump (64 KB)

%SystemRoot%\Minidump

☑ Overwrite any existing file

Figure D-43: Disable Automatically Restart

Step 2: Configure the following BIOS options of the client system.

Advanced → iEi Feature → Auto Recovery Function → **Enabled**

Advanced → iEi Feature → Recover from PXE → **Enabled**

Boot → Launch PXE OpROM → **Enabled**

Step 3: Continue to configure the **Boot Option Priorities** BIOS option of the client system:

Boot Option #1 → remain the default setting to boot from the original OS.

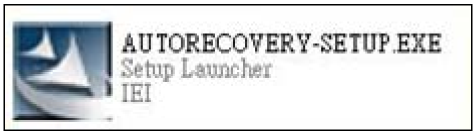
Boot Option #2 → select the boot from LAN option.

Step 4: Save changes and exit BIOS menu.

Exit → **Save Changes and Exit**

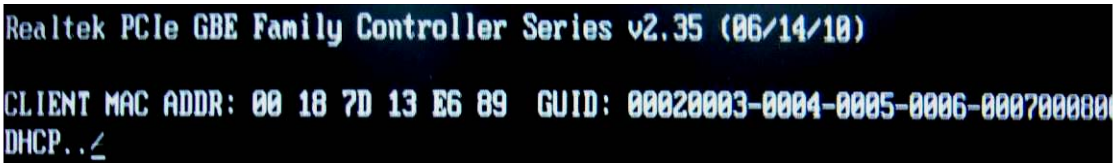
Step 5: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility

MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.

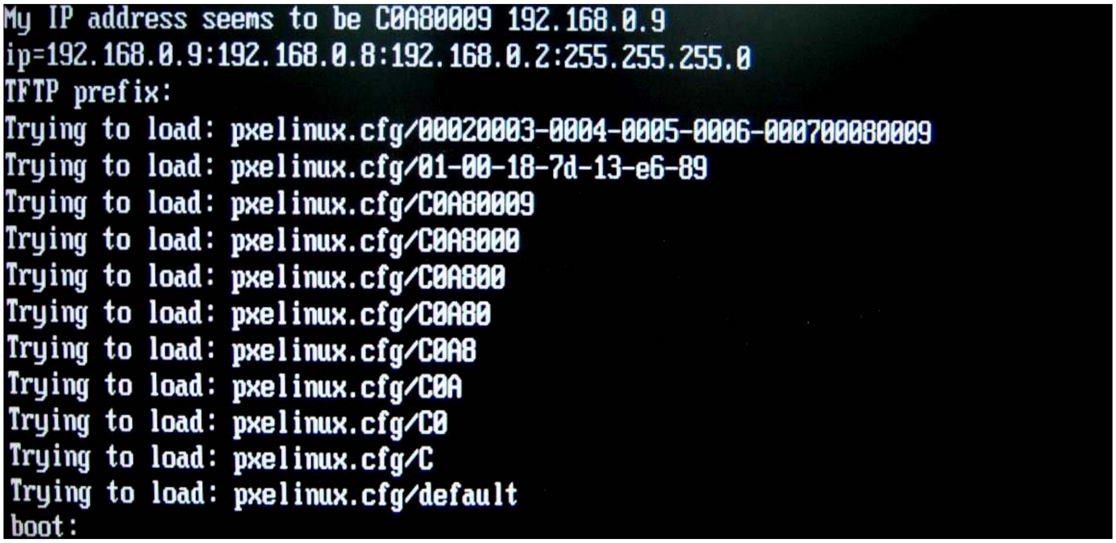


AUTORECOVERY-SETUP.EXE
Setup Launcher
IEI

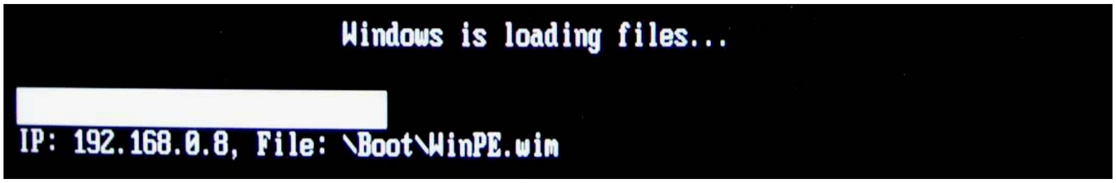
Step 6: Restart the client system from LAN. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image. The following screens will show when the system starts auto recovering.



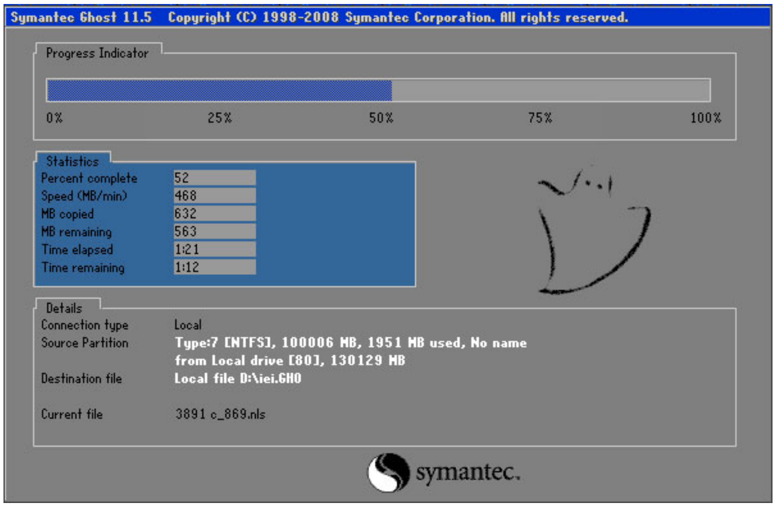
```
Realtek PCIe GBE Family Controller Series v2.35 (06/14/10)

CLIENT MAC ADDR: 00 18 7D 13 E6 89  GUID: 00020003-0004-0005-0006-000700080
DHCP../
```



```
My IP address seems to be C0A80009 192.168.0.9
ip=192.168.0.9:192.168.0.8:192.168.0.2:255.255.255.0
TFTP prefix:
Trying to load: pxelinux.cfg/00020003-0004-0005-0006-000700080009
Trying to load: pxelinux.cfg/01-00-18-7d-13-e6-89
Trying to load: pxelinux.cfg/C0A80009
Trying to load: pxelinux.cfg/C0A8000
Trying to load: pxelinux.cfg/C0A800
Trying to load: pxelinux.cfg/C0A80
Trying to load: pxelinux.cfg/C0A8
Trying to load: pxelinux.cfg/C0A
Trying to load: pxelinux.cfg/C0
Trying to load: pxelinux.cfg/C
Trying to load: pxelinux.cfg/default
boot:
```



```
                    Windows is loading files...

IP: 192.168.0.8, File: \Boot\WinPE.wim
```



```
Symantec Ghost 11.5   Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Progress Indicator
0%            25%            50%            75%            100%

Statistics
Percent complete      52
Speed (MB/min)        468
MB copied             632
MB remaining          563
Time elapsed          1:21
Time remaining        1:12

Details
Connection type       Local
Source Partition      Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                      from Local drive [80], 130129 MB
Destination file      Local file D:\iei.GHO

Current file          3891 c_869.nls
```

NOTE:

A firewall or a SELinux is not in use in the whole setup process described above. If there is a firewall or a SELinux protecting the system, modify the configuration information to accommodate them.

D.7 Other Information

D.7.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

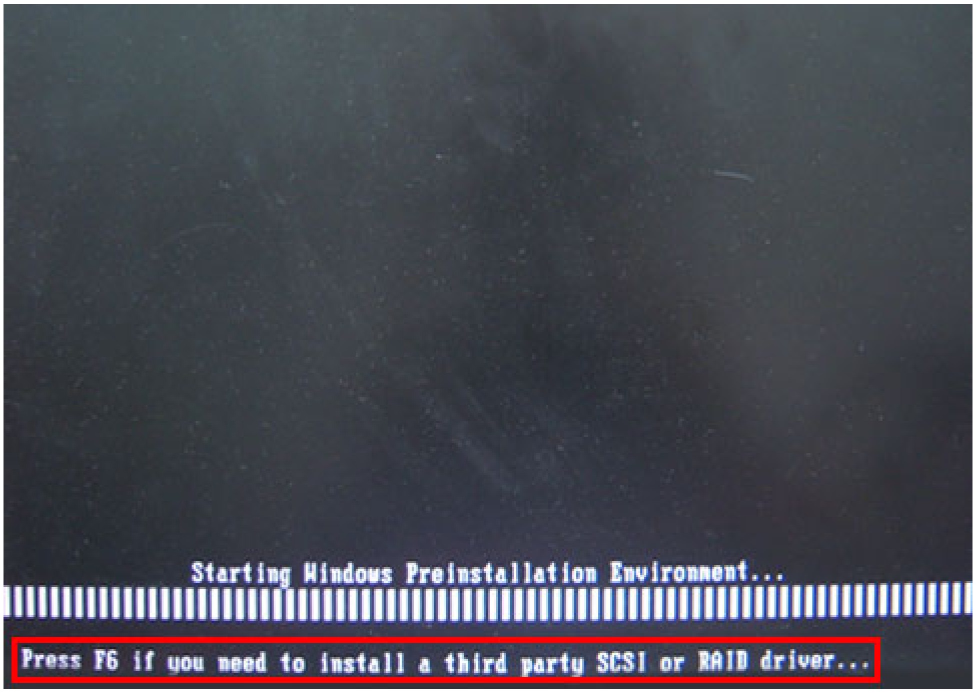
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

Step 2: Connect the USB floppy disk drive to the system.

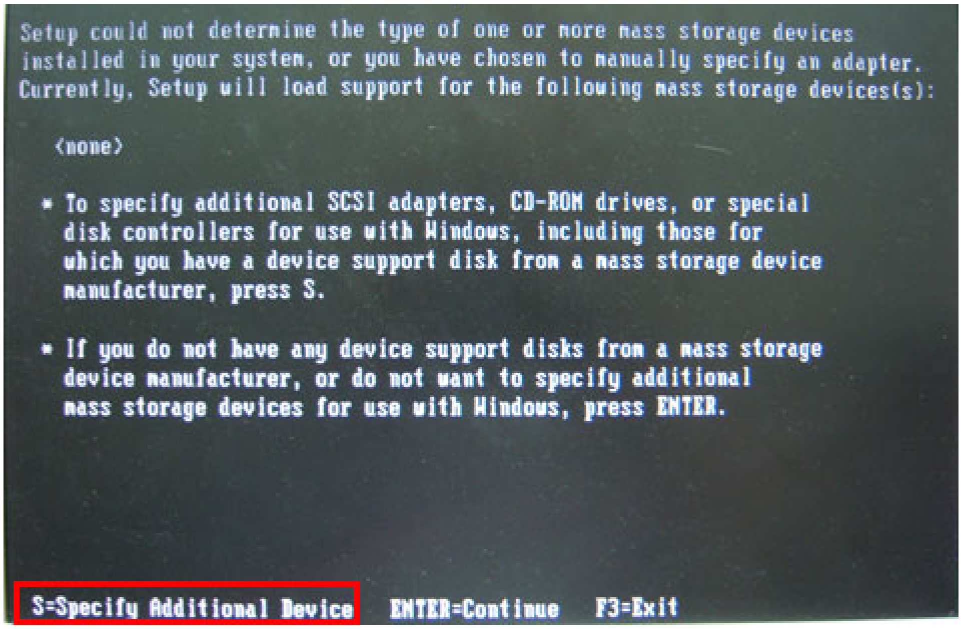
Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

Step 4: When launching the recovery tool, press <**F6**>.



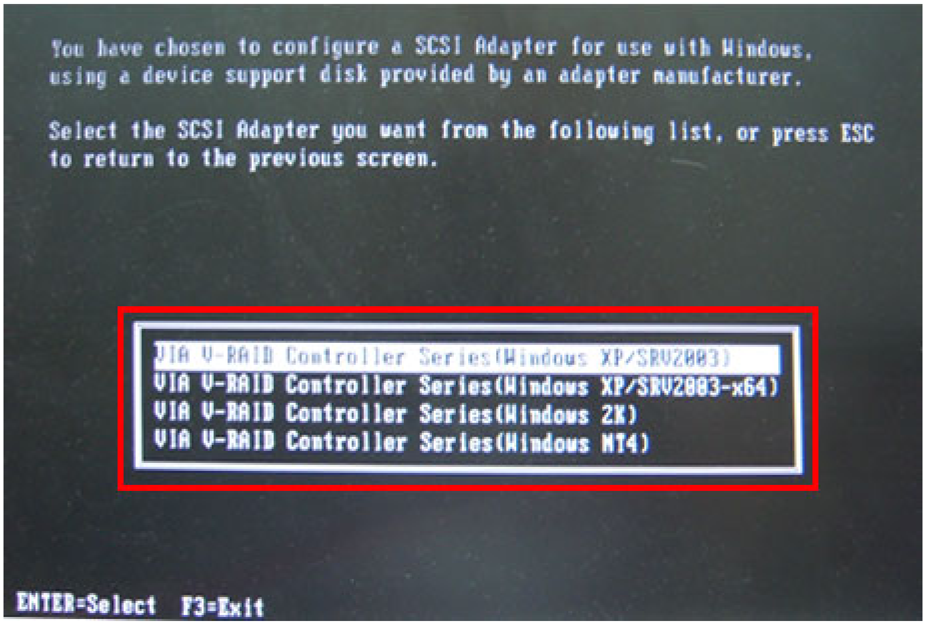
```
Starting Windows Preinstallation Environment...

Press F6 if you need to install a third party SCSI or RAID driver...
```

Step 5: When the following window appears, press <**S**> to select “Specify Additional Device”.



```
Setup could not determine the type of one or more mass storage devices
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices(s):

   <none>

  * To specify additional SCSI adapters, CD-ROM drives, or special
    disk controllers for use with Windows, including those for
    which you have a device support disk from a mass storage device
    manufacturer, press S.

  * If you do not have any device support disks from a mass storage
    device manufacturer, or do not want to specify additional
    mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit
```

Step 6: In the following window, select a SATA controller mode used in the system. Then press <**Enter**>. The user can now start using the SATA HDD.



```
You have chosen to configure a SCSI Adapter for use with Windows,
using a device support disk provided by an adapter manufacturer.

Select the SCSI Adapter you want from the following list, or press ESC
to return to the previous screen.

VIA V-RAID Controller Series(Windows XP/SRV2003)
VIA V-RAID Controller Series(Windows XP/SRV2003-x64)
VIA V-RAID Controller Series(Windows 2K)
VIA V-RAID Controller Series(Windows NT4)

ENTER=Select  F3=Exit
```

Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section D.2.2 Create Partitions** to finish the whole setup process.

D.7.2 System Memory Requirement

To be able to access the recovery tool by pressing <**F3**> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS**: 128 MB system memory
- **Using AMI BIOS**: 512 MB system memory.

Appendix

E

Watchdog Timer

NOTE:

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

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

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

INT 15H:

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

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

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

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

NOTE:

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

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H           ;setting the time-out value
        MOV     BX, 05              ;time-out value is 5 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    BX, 0           ;
        INT     15H
;
; EXIT ;
```

Appendix

F

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
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	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
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。