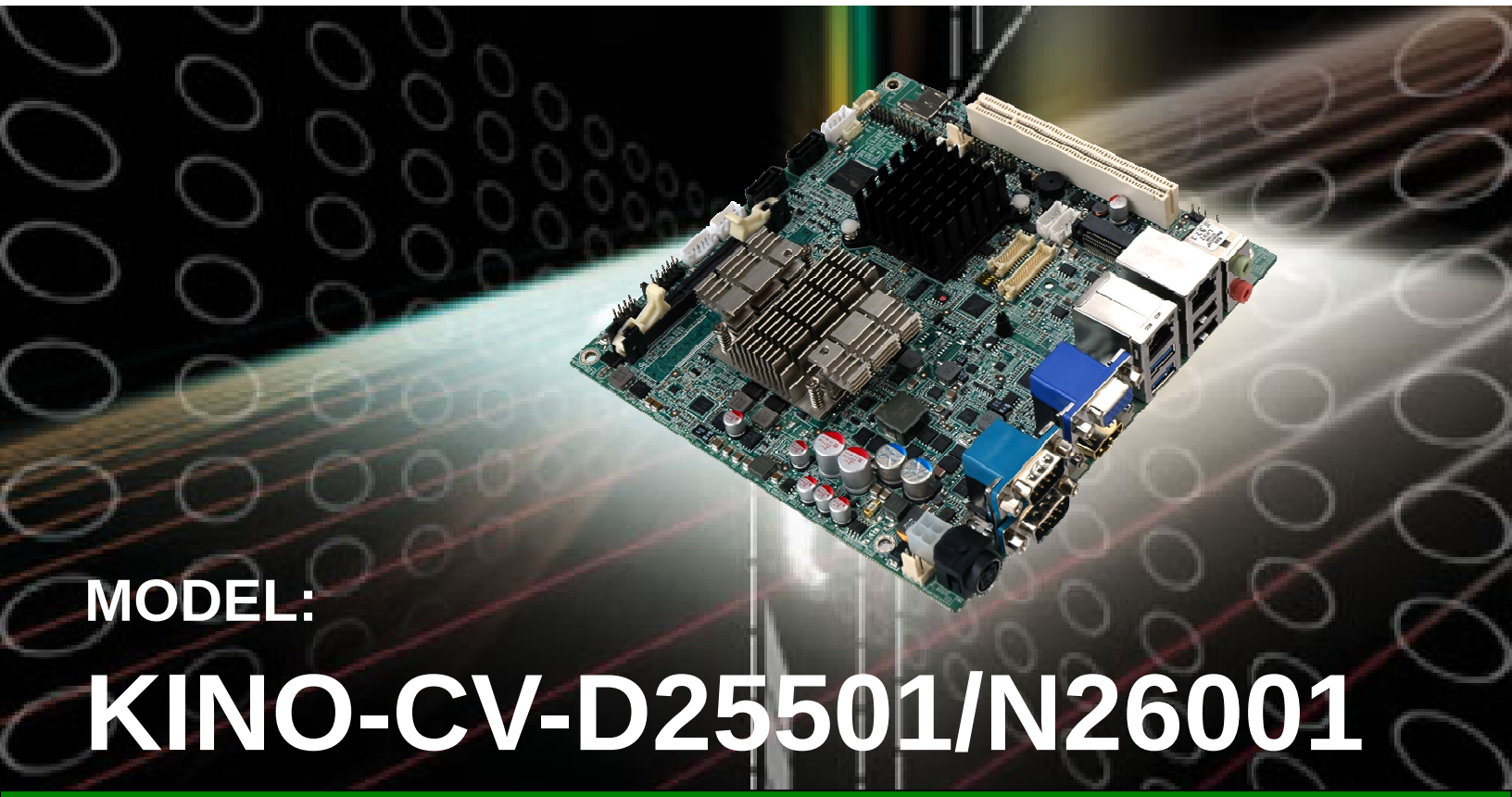
IEI Technology Corp.



MODEL:

# KINO-CV-D25501/N26001

**Mini-ITX SBC with Intel® Atom™ D2550/N2600 Processor**
**Up to 4.0 GB DDR3, VGA, HDMI, Dual LVDS, Dual GbE,**
**SATA 3Gb/s, USB 3.0, microSD, PCIe Mini, RoHS**

# User Manual

**Rev. 1.00 – 23 July, 2012**

RoHS Lead Free

# Revision

| Date | Version | Changes |
|---|---|---|
| 23 July, 2012 | 1.00 | Initial release |

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# Table of Contents

# List of Figures

# List of Tables

# BIOS Menus

Chapter

1

# Introduction

## 1.1 Introduction

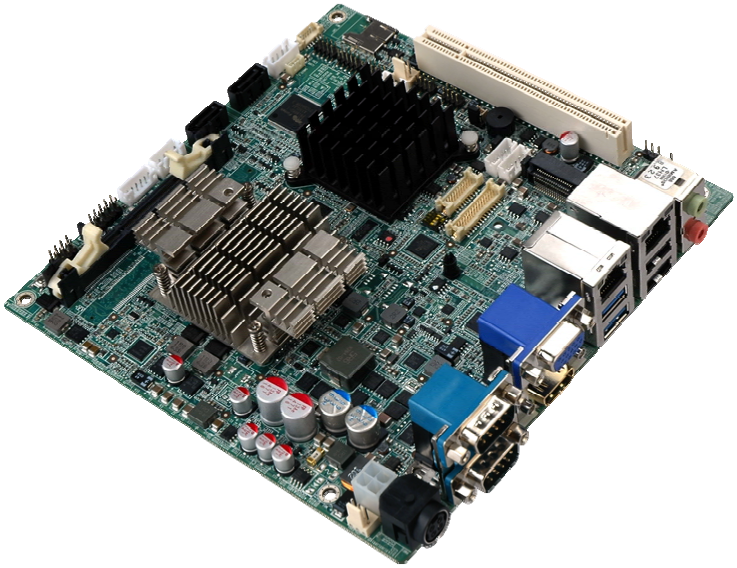


**Figure 1-1: KINO-CV-D25501/N26001**

The KINO-CV-D25501/N26001 is a Mini-ITX SBC with a Intel® Atom™ D2550 or N2600 CPU. The KINO-CV-D25501/N26001 is designed for fanless operation. The low power CPUs don't require active cooling and stay within specified heat range using the included heatsink.

Storage on the board is handled by a SATA 3Gb/s port for connecting a hard drive, optical drive or SSD. The PCIe Mini slot allows an mSATA card to be installed. A bootable microSD card can be installed into the on-board microSD slot.

The board has three types of graphics output. A VGA output connects to a traditional VGA monitor, one HDMI connector supports HDMI display and two LVDS connectors support 18-bit/24-bit displays.

Other slots and connectors include a PCIe Mini cards slot, PCI slot, RS-232, RS-422/485, Gigabit Ethernet, USB 3.0 ports, USB 2.0 ports and digital I/O.

## 1.2 Benefits

Some of the KINO-CV-D25501/N26001 motherboard benefits include:

- Low power consumption
- Wide range of I/O interfaces
- Dual display support

## 1.3 Features

Some of the KINO-CV-D25501/N26001 motherboard features are listed below:

- Mini-ITX form factor
- Fanless design
- RoHS compliant
- Supports HDMI, LVDS and VGA interface for dual display
- Wide range power input (9V~28V)
- Eight USB ports (six USB 2.0, two USB 3.0)
- Six serial ports
- PCIe Mini card slot supports mSATA SSD
- microSD slot
- Dual GbE

## 1.4 Connectors

The connectors on the KINO-CV-D25501/N26001 are shown in the figure below.

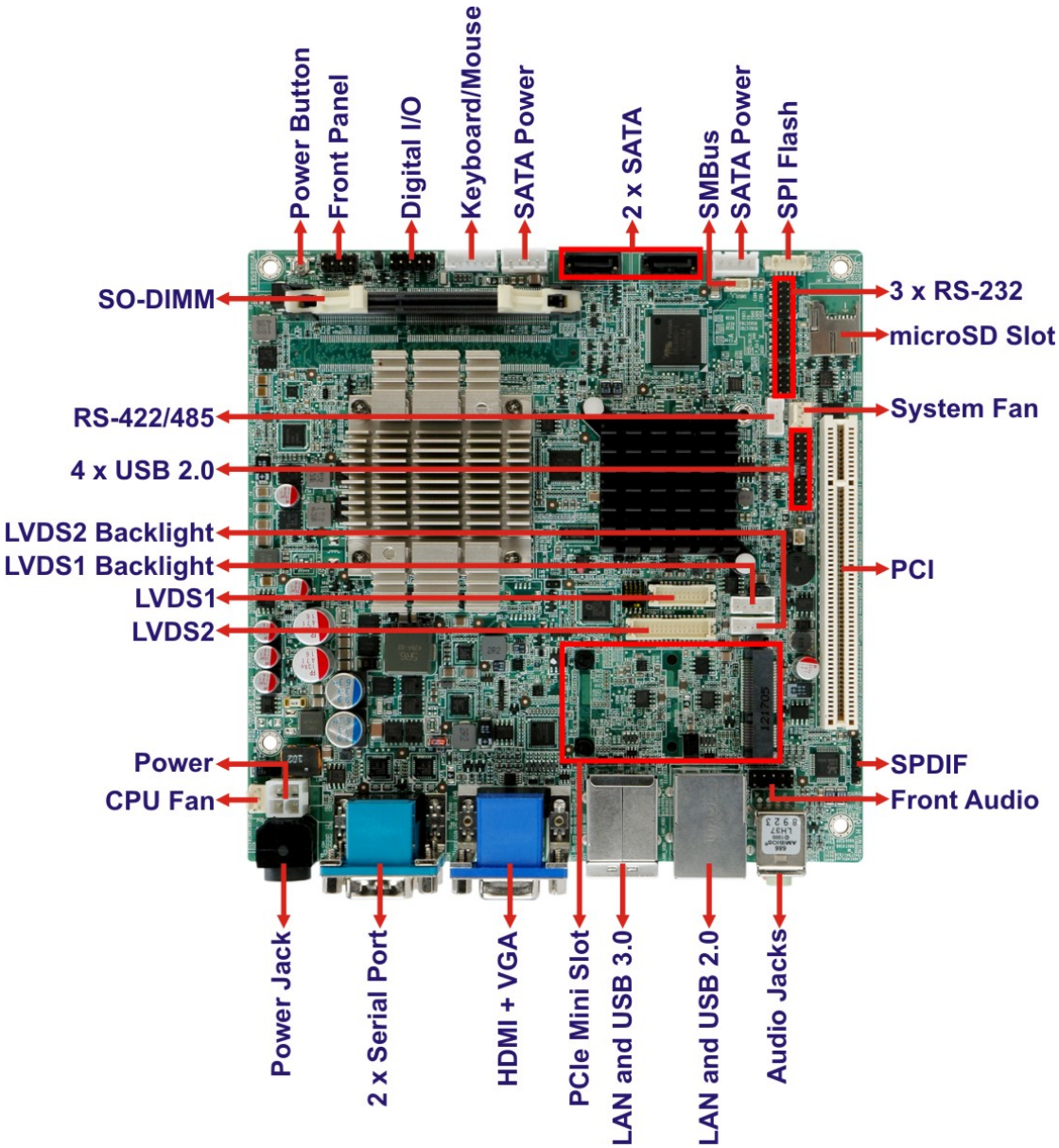



**Figure 1-2: Connectors**

## 1.5 Dimensions

The main dimensions of the KINO-CV-D25501/N26001 are shown in the diagram below.

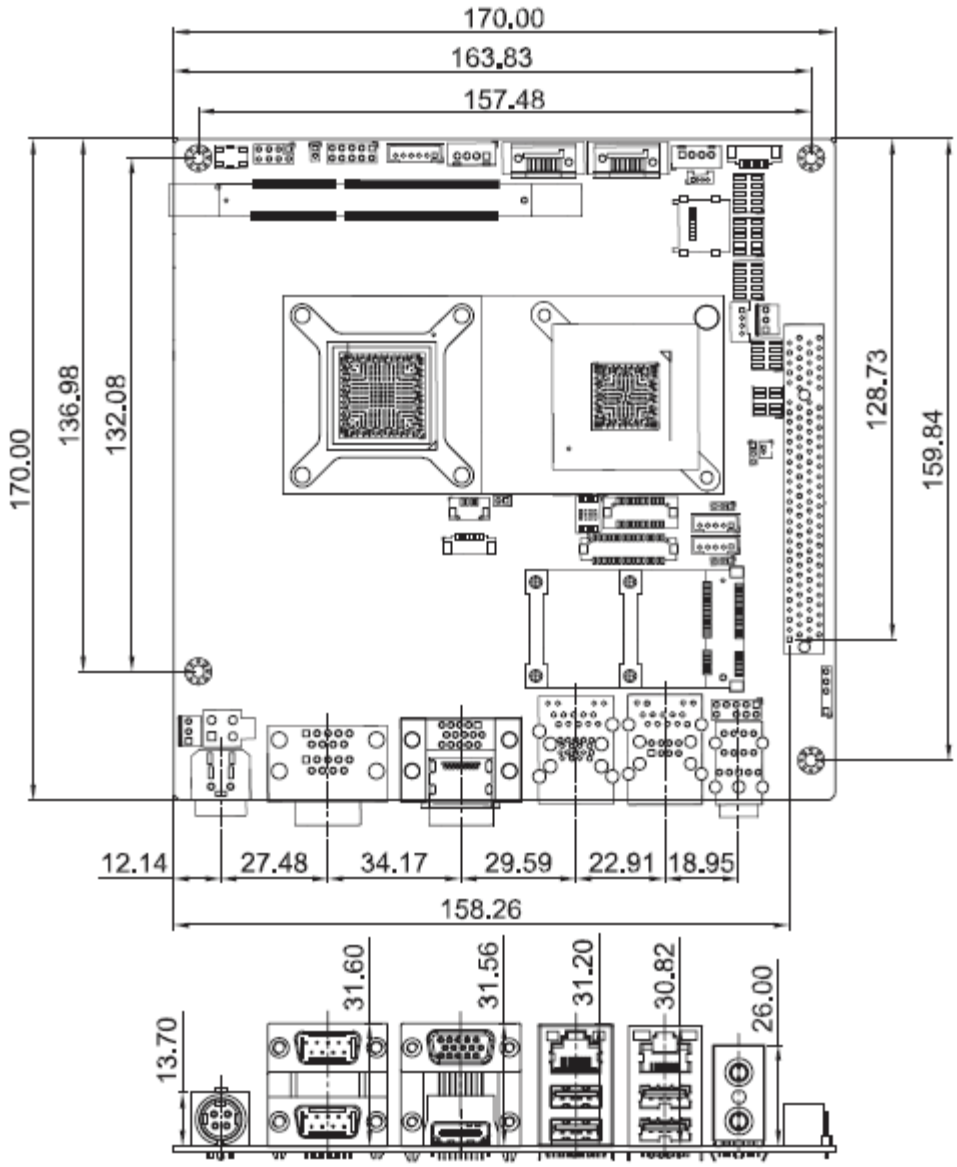



**Figure 1-3: Dimensions (mm)**

## 1.6 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

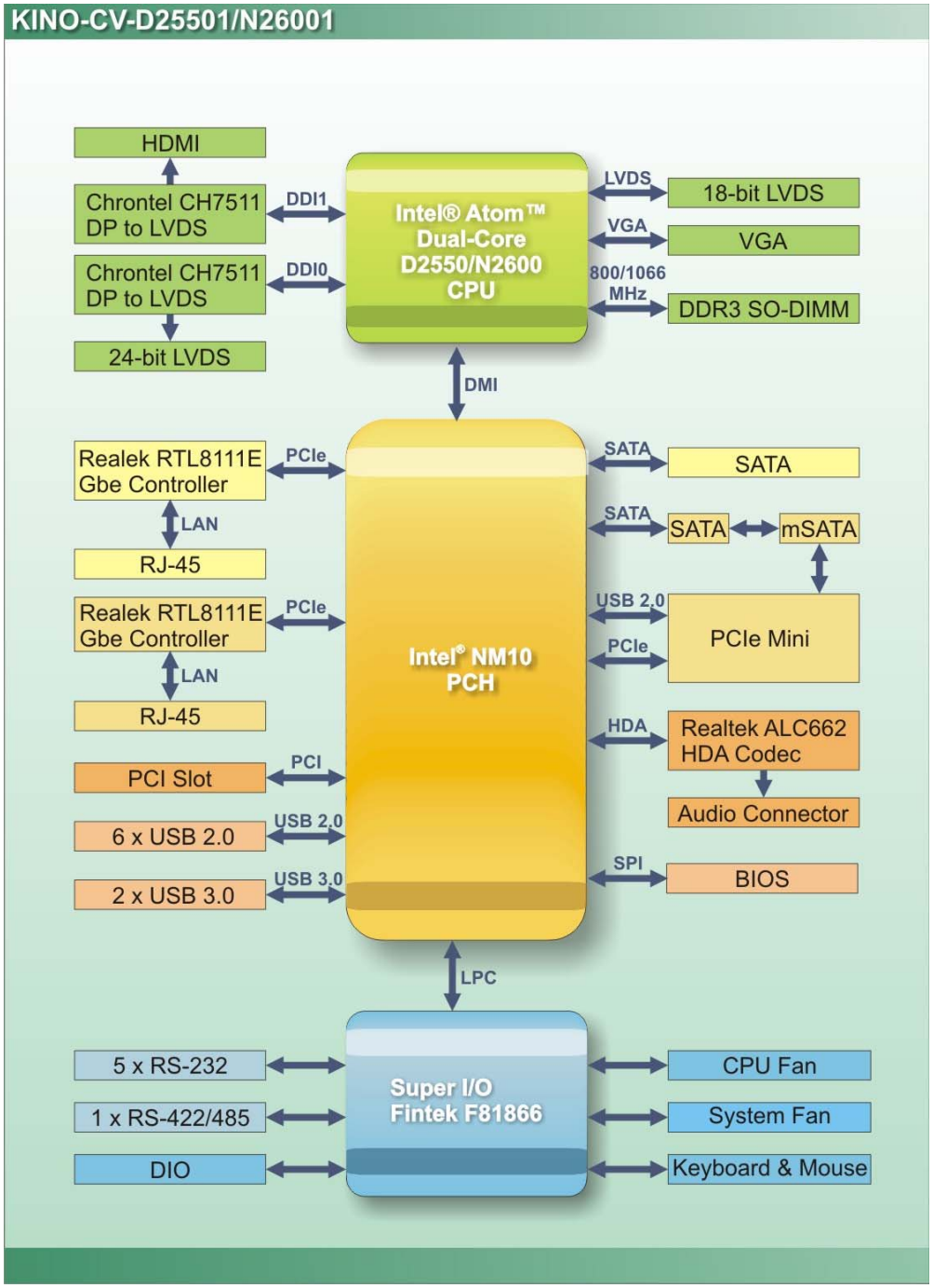



**Figure 1-4: Data Flow Diagram**

## 1.7 Technical Specifications

KINO-CV-D25501/N26001 technical specifications are listed in Table 1-1.

| Specification | KINO-CV-D25501/N26001 |
|---|---|
| **Form Factor** | Mini-ITX |
| **On-board CPU** | 1.86 GHz Intel® Atom™ D2550 dual-core CPU<br>1.60 GHz Intel® Atom™ N2600 dual-core CPU<br>1.86 GHz Intel® Atom™ N2800 dual-core CPU (Optional) |
| **System Chipset** | Intel® NM10 |
| **Memory** | **D2550** and **N2800**: One 204-pin 1066 MHz DDR3/DDR3L (1.35V) SDRAM SO-DIMM (system max. 4.0 GB)<br>**N2600**: One 204-pin 800 MHz DDR3/DDR3L (1.35V) SDRAM SO-DIMM (system max. 2.0 GB) |
| **Graphics Engine** | **D2550** and **N2800**: Intel® GMA3650 with 640 MHz graphic core speed<br>**N2600**: Intel® GMA3600 with 400 MHz graphic core speed |
| **BIOS** | UEFI BIOS |
| **Digital I/O** | 8-bit, 4-bit input/4-bit output |
| **Ethernet Controllers** | Two Realtek RTL8111E PCIe GbE controllers<br>(LAN1 supports ASF 2.0) |
| **Audio** | Realtek ALC662 HD Audio codec |
| **Super I/O Controller** | Fintek F81866 |
| **Watchdog Timer** | Software programmable supports 1~255 sec. system reset |
| **Expansions** | 1 x PCIe Mini slot supports mSATA SSD ((SATA2 and mSATA share SATA signal))<br>1 x PCI slot |

| I/O Interface Connectors | |
|---|---|
| **Display Output Ports**<br>(Dual Display Supported) | **One Analog CRT**<br>**One HDMI**<br>**One LVDS 1**:<br>▪ D2550: 24-bit single-channel LVDS up to 1440 x 900<br>▪ N2600 and N2800: 18-bit single-channel LVDS up to 1366 x 768<br>**One LVDS 2**: 24-bit dual-channel LVDS by Chrontel CH7511 DP to LVDS converter |
| **Fan Connectors** | One 3-pin wafer for CPU fan<br>One 3-pin wafer for system fan |
| **Keyboard/Mouse** | One internal 6-pin wafer connector |
| **Serial Ports** | Five RS-232 COM connectors<br>One RS-422/485 COM connector |
| **USB Ports** | Six USB 2.0 (four via pin header, two external ports)<br>Two external USB 3.0 ports |
| **SMBus** | One 4-pin wafer connector |
| **Storage** | |
| **microSD** | microSD slot (bootable) |
| **SATA** | Two independent SATA channels with 3.0 Gb/s data transfer rates (SATA2 and mSATA share SATA signal) |
| **Environmental and Power Specifications** | |
| **Power Supply** | Max. power input voltage range: 9V~28V<br>Recommended operating input voltage range: 12V~24V |
| **Power Connector** | 1 x External 4-pin DIN jack<br>1 x Internal 4-pin (2x2) power connector |
| **Power Consumption** | 12 V @ 2.8 A (1.86 GHz Intel® D2550 CPU with one 4 GB 1333MHz DDR3 SO-DIMM)<br>12 V @ 2.4 A (1.6 GHz Intel® N2600 CPU with one 2 GB 1333MHz DDR3 SO-DIMM) |

| | |
|---|---|
| **Operating Temperature** | **D2550:** -20ºC ~ 60ºC with free air; -20ºC ~ 70ºC with force air<br>**N2600** and **N2800:** -20ºC ~ 70ºC with free air; -20ºC ~ 75ºC with force air |
| **Storage Temperature** | **D2550:** -30ºC ~ 80ºC<br>**N2600** and **N2800:** -30ºC ~ 85ºC |
| **Operating Humidity** | 5% ~ 95% (non-condensing) |
| **Physical Specifications** | |
| **Dimensions** | 170 mm x 170 mm |
| **Weight GW/NW** | 600 g/250 g |

**Table 1-1: Technical Specifications**

Chapter

2

# Packing List

## 2.1 Anti-static Precautions

**WARNING!**

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: - Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***:- Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***:- Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

## 2.2 Unpacking Precautions

When the KINO-CV-D25501/N26001 is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

## 2.3 Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the KINO-CV-D25501/N26001 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

The KINO-CV-D25501/N26001 is shipped with the following components:

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | KINO-CV-D25501 or<br>KINO-CV-N26001 |  |
| 2 | SATA and power cable<br>(**P/N:** 32801-000100-100-RS) |  |
| 1 | Dual USB cable (w bracket)<br>(**P/N:** 19800-003100-100-RS) |  |
| 1 | I/O shielding<br>(**P/N:** 45014-0038C0-00-RS) |  |
| 1 | Mini jumper pack (2.0mm)<br>(**P/N**:33100-000033-RS) |  |
| 1 | Utility CD |  |

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | One Key Recovery CD |  |
| 1 | Quick installation guide |  |

**Table 2-1: Packing List**

## 2.4 Optional Items

These optional items are available.

| Item and Part Number | Image |
|---|---|
| RS-422/485 cable<br>(**P/N**: 32205-003800-100-RS) |  |
| KB/MS PS/2 Y-cable<br>(**P/N**: 32000-023800-RS) |  |

**Table 2-2: Optional Items**

Chapter

3

# Connector Pinouts

## 3.1 Peripheral Interface Connectors

**Section 3.1.1** shows peripheral interface connector locations. **Section 3.1.2** lists all the peripheral interface connectors seen in **Section 3.1.1**.

### 3.1.1 Layout

The figure below shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

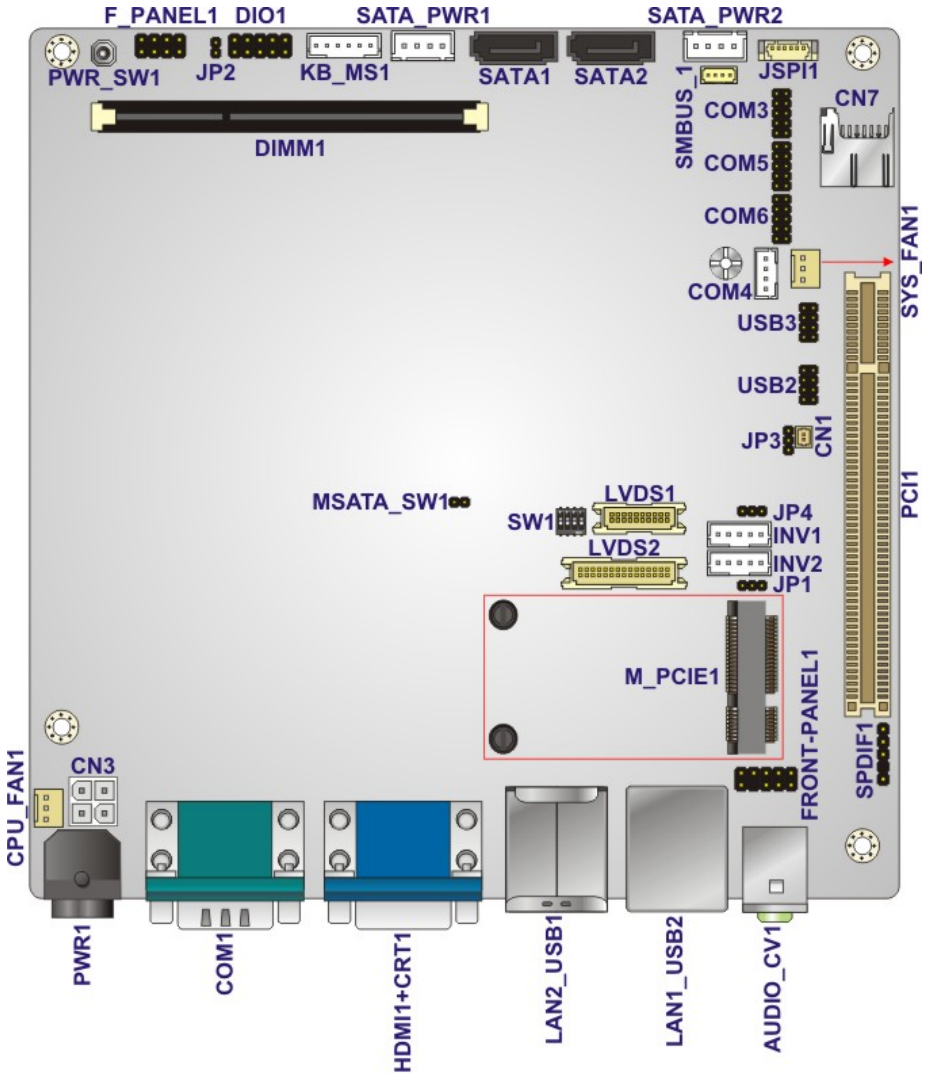



**Figure 3-1: Connector and Jumper Locations**

### 3.1.2 Peripheral Interface Connectors

The table below shows a list of the peripheral interface connectors on the KINO-CV-D25501/N26001. Detailed descriptions of these connectors can be found below.

| Connector | Type | Label |
|---|---|---|
| Battery connector | 2-pin wafer | CN1 |
| Digital I/O connector | 10-pin header | DIO1 |
| Fan connectors | 3-pin wafer | CPU_FAN1,<br>SYS_FAN1 |
| Front audio connector | 10-pin header | FRONT-PANEL1 |
| Front panel connector | 8-pin header | F_PANEL1 |
| Keyboard/mouse connector | 6-pin wafer | KB_MS1 |
| LVDS connector (1) | 20-pin crimp | LVDS1 |
| LVDS connector (2) | 30-pin crimp | LVDS2 |
| LVDS1 backlight connector | 5-pin wafer | INV1 |
| LVDS2 backlight connector | 5-pin wafer | INV2 |
| microSD card slot | microSD slot | CN7 |
| PCI slot | PCI slot | PCI1 |
| PCIe Mini card slot | PCIe Mini card slot | M_PCIE1 |
| Power connector (9V~28V) | 4-pin connector | CN3 |
| Power button | Push button | PWR_SW1 |
| RS-232 serial ports (COM3, COM5, COM6) | 10-pin header | COM3, COM5, COM6 |
| RS-422/485 serial port (COM4) | 4-pin wafer | COM4 |
| SATA connectors | SATA connector | SATA1, SATA2 |
| SATA power connectors | 4-pin wafer | SATA_PWR1<br>SATA_PWR2 |
| SMBus connector | 4-pin wafer | SMBUS_1 |
| SO-DIMM connector | SO-DIMM connector | DIMM1 |

| Connector | Type | Label |
|---|---|---|
| SPDIF connector | 5-pin header | SPDIF1 |
| SPI Flash | 6-pin wafer | JSPI1 |
| USB 2.0 connectors | 8-pin header | USB2, USB3 |

**Table 3-1: Peripheral Interface Connectors**

### 3.1.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the KINO-CV-D25501/N26001. Detailed descriptions of these connectors can be found in a later section.

| Connector | Type | Label |
|---|---|---|
| Audio jacks | Audio jack | AUDIO_CV1 |
| Ethernet and USB 2.0 ports | RJ-45, USB | LAN2_USB2 |
| Ethernet and USB 3.0 ports | RJ-45, USB | LAN1_USB1 |
| HDMI connector | HDMI | HDMI1 |
| Power jack | 4-pin DIN | PWR1 |
| Serial port connectors (COM1, COM2) | Male DB-9 | COM1 |
| VGA connector | 15-pin female VGA | CRT1 |

**Table 3-2: Rear Panel Connectors**

## 3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the KINO-CV-D25501/N26001.

### 3.2.1 Battery Connector

**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.

| | |
|---|---|
| **CN Label:** | **CN1** |
| **CN Type:** | 2-pin wafer |
| **CN Location:** | See **Figure 3-2** |
| **CN Pinouts:** | See **Table 3-3** |

This is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

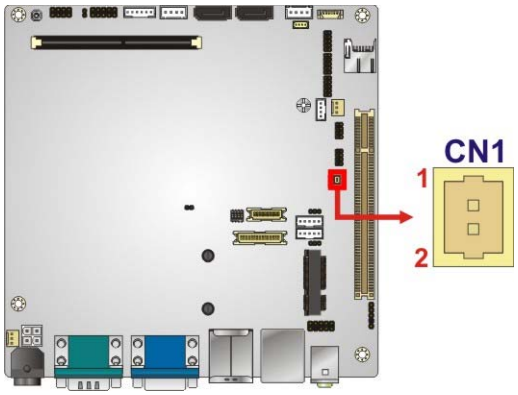



**Figure 3-2: Battery Connector Location**

| Pin | Description |
|---|---|
| 1 | Battery+ |
| 2 | Ground |

**Table 3-3: Battery Connector Pinouts**

### 3.2.2 Digital I/O Connector

| | |
|---|---|
| **CN Label:** | **DIO1** |
| **CN Type:** | 10-pin header |
| **CN Location:** | See **Figure 3-3** |
| **CN Pinouts:** | See **Table 3-4** |

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 4-bit output and 4-bit input.

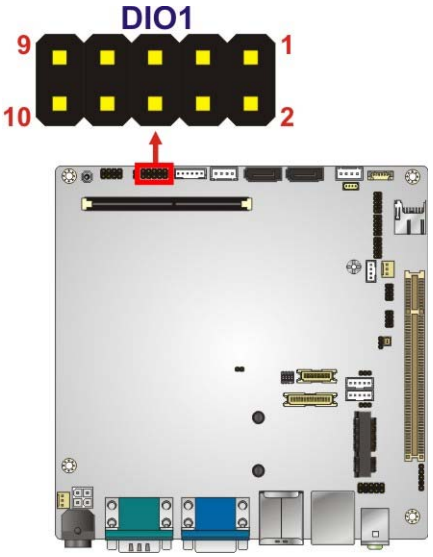



**Figure 3-3: Digital I/O Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | GND | 2 | VCC |
| 3 | Output 3 | 4 | Output 2 |
| 5 | Output 1 | 6 | Output 0 |
| 7 | Input 3 | 8 | Input 2 |
| 9 | Input 1 | 10 | Input 0 |

**Table 3-4: Digital I/O Connector Pinouts**

### 3.2.3 Fan Connectors

**CN Label:** **CPU_FAN1, SYS_FAN1**

**CN Type:** 3-pin wafer

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

**CN Pinouts:** See **Table 3-5**

The fan connector attaches to a cooling fan.

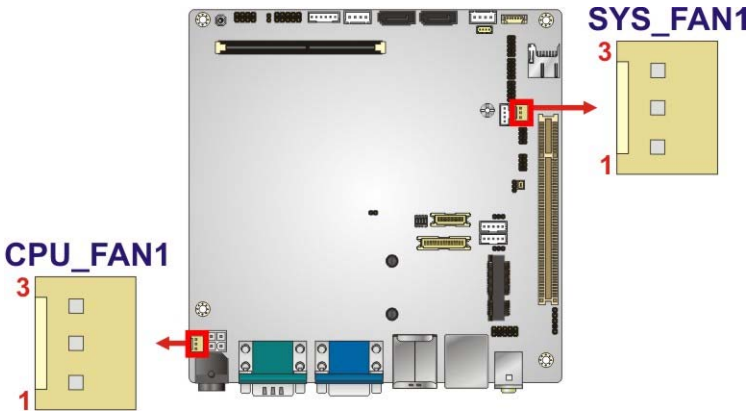



**Figure 3-4: Fan Connector Locations**

| Pin | Description |
|---|---|
| 1 | FANIO1 |
| 2 | +12V (PWM) |
| 3 | GND |

**Table 3-5: Fan Connector Pinouts**

### 3.2.4 Front Audio Connector

**CN Label:** **FRONT-PANEL1**

**CN Type:** 10-pin header

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

**CN Pinouts:** See **Table 3-6**

This connector connects to speaker, microphone and audio input connectors on the front panel.

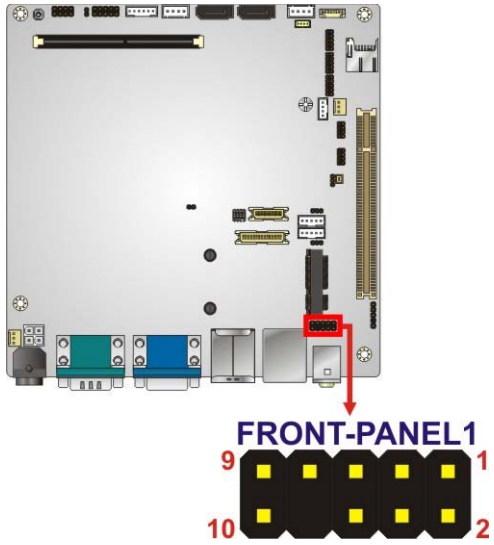



**Figure 3-5: Front Audio Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | MIC_L | 2 | GND |
| 3 | MIC_R | 4 | Audio Detect |
| 5 | LINE2-R | 6 | GND |
| 7 | Jack Detection | 8 | N/C |
| 9 | LINE2-L | 10 | GND |

**Table 3-6: Front Audio Connector Pinouts**

### 3.2.5 Front Panel Connector

**CN Label:** **F_PANEL1**

**CN Type:** 8-pin header

**CN Location:** See **Figure 3-6**

**CN Pinouts:** See **Table 3-7**

The front panel connector connects to the indicator LEDs and buttons on the computer's front panel.

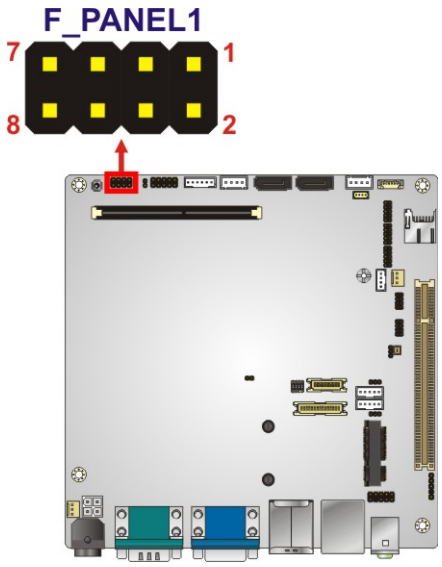



**Figure 3-6: Front Panel Connector Location**

| | Pin | Description | | Pin | Description |
|---|---|---|---|---|---|
| Power Button | 1 | PWRBTSW- | Power LED | 2 | VCC |
| | 3 | GROUND | | 4 | GROUND |
| HDD LED | 5 | VCC | Reset | 6 | SYSRST- |
| | 7 | -HDLED | | 8 | Ground |

**Table 3-7: Front Panel Connector Pinouts**

### 3.2.6 Keyboard/Mouse Connector

**CN Label:** **KB_MS1**

**CN Type:** 6-pin wafer

**CN Location:** See **Figure 3-7**

**CN Pinouts:** See **Table 3-8**

The keyboard/mouse connector connects to a PS/2 Y-cable that can be connected to a PS/2 keyboard and mouse.

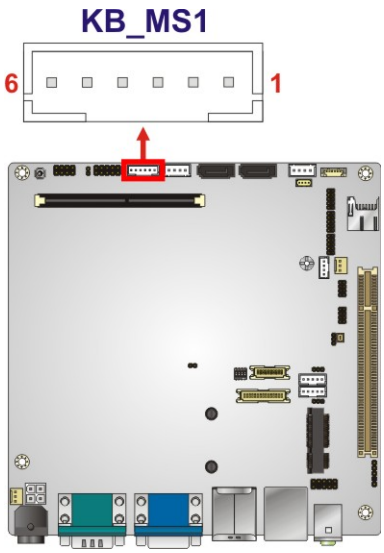



**Figure 3-7: Keyboard/Mouse Connector Location**

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | Mouse Data |
| 3 | Mouse Clock |
| 4 | Keyboard Data |
| 5 | Keyboard Clock |
| 6 | GND |

**Table 3-8: Keyboard/Mouse Connector Pinouts**

### 3.2.7 LVDS Connector (LVDS1)

**CN Label:** **LVDS1**

**CN Type:** 20-pin crimp

**CN Location:** See **Figure 3-8**

**CN Pinouts:** See **Table 3-9**

The LVDS connector is for an LCD panel connected to the board.

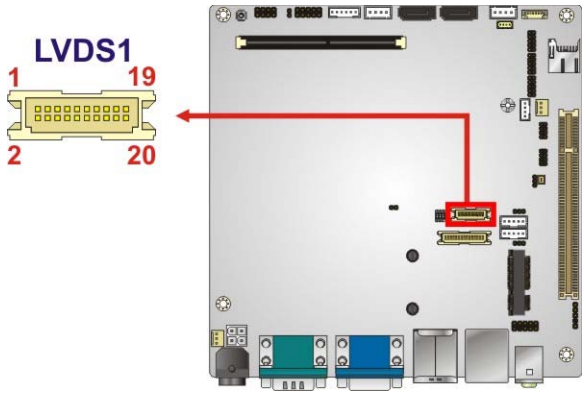



**Figure 3-8: LVDS1 Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | LVDS_DATA0 | 4 | LVDS_DATA0# |
| 5 | LVDS_DATA1 | 6 | LVDS_DATA1# |
| 7 | LVDS_DATA2 | 8 | LVDS_DATA2# |
| 9 | LVDS_CLK | 10 | LVDS_CLK# |
| 11 | NC | 12 | NC |
| 13 | GND | 14 | GND |
| 15 | LDDC_DATA | 16 | LDDC_CLK |
| 17 | VCC_LCD | 18 | VCC_LCD |
| 19 | VCC_LCD | 20 | VCC_LCD |

**Table 3-9: LVDS1 Connector Pinouts**

### 3.2.8 LVDS Connector (LVDS2)

**CN Label:** **LVDS2**

**CN Type:** 30-pin crimp

**CN Location:** See **Figure 3-9**

**CN Pinouts:** See **Table 3-10**

The LVDS connector is for an LCD panel connected to the board.

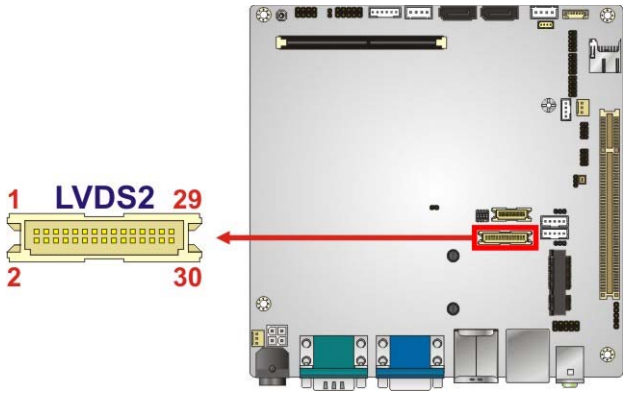



**Figure 3-9: LVDS2 Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | LVDS_DATA0 | 4 | LVDS_DATA0# |
| 5 | LVDS_DATA1 | 6 | LVDS_DATA1# |
| 7 | LVDS_DATA2 | 8 | LVDS_DATA2# |
| 9 | LVDS_CLK1 | 10 | LVDS_CLK1# |
| 11 | LVDS_DATA3 | 12 | LVDS_DATA3# |
| 13 | GND | 14 | GND |
| 15 | LVDS_DATA4 | 16 | LVDS_DATA4# |
| 17 | LVDS_DATA5 | 18 | LVDS_DATA5# |
| 19 | LVDS_DATA6 | 20 | LVDS_DATA6# |
| 21 | LVDS_CLK2 | 22 | LVDS_CLK2# |
| 23 | LVDS_DATA7 | 24 | LVDS_DATA7# |
| 25 | GND | 26 | GND |
| 27 | VCC_LCD | 28 | VCC_LCD |
| 29 | VCC_LCD | 30 | VCC_LCD |

**Table 3-10: LVDS2 Connector Pinouts**

### 3.2.9 LVDS Backlight Connectors

**CN Label:** **INV1, INV2**

**CN Type:** 5-pin wafer

**CN Location:** See **Figure 3-10**

**CN Pinouts:** See **Table 3-11**

The backlight inverter connectors provide power to LCD panels.

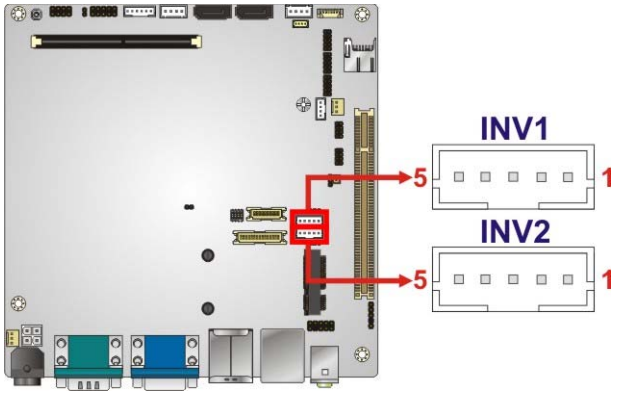



**Figure 3-10: LVDS Backlight Inverter Connectors**

| Pin | Description |
|---|---|
| 1 | LCD_BKLTCTL |
| 2 | GROUND |
| 3 | +12V |
| 4 | GROUND |
| 5 | BACKLIGHT ENABLE |

**Table 3-11: Backlight Inverter Connector Pinouts**

### 3.2.10 microSD Card Slot

**CN Label:** **CN7**

**CN Type:** 8-pin microSD slot

**CN Location:** See **Figure 3-11**

**CN Pinouts:** See **Table 3-12**

A microSD card can be installed in the microSD card slot.

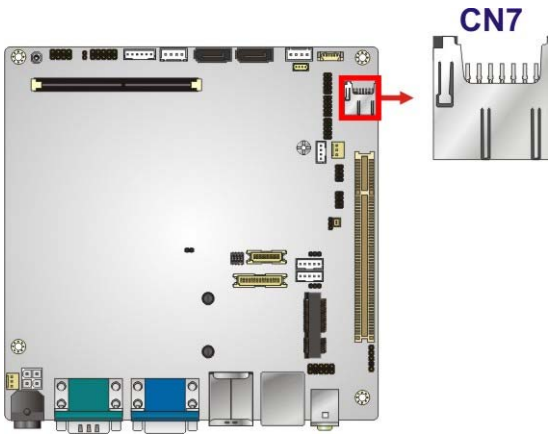



**Figure 3-11: microSD Slot Location**

| Pin | Description |
|---|---|
| 1 | DAT2 |
| 2 | DAT3 |
| 3 | CMD |
| 4 | VDD |
| 5 | CLK |
| 6 | VSS1 |
| 7 | DAT0 |
| 8 | DAT1 |

**Table 3-12: microSD Slot Connector Pinouts**

### 3.2.11 PCIe Mini Card Slot

**CN Label:** **M_PCIE1**

**CN Type:** PCIe Mini card slot

**CN Location:** See **Figure 3-12**

**CN Pinouts:** See **Table 3-13**

The PCIe mini card slot enables a PCIe mini card expansion module to be connected to the board. Cards supported include among others wireless LAN (WLAN) cards and mSATA cards.

**NOTE:**

If the PCIe Mini slot is installed with an mSATA card, the **SATA2** connector will be disabled.

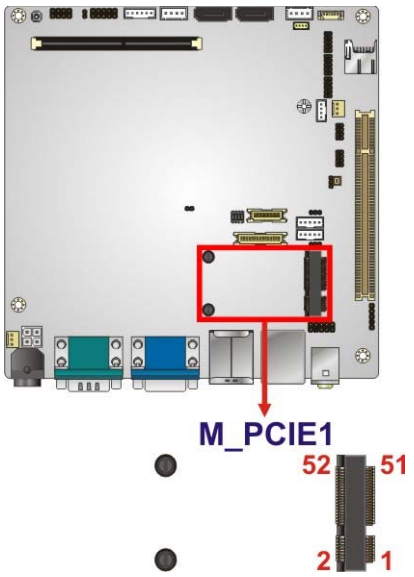



**Figure 3-12: PCIe Mini Card Slot Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | PCIE_WAKE# | 2 | VCC3 |
| 3 | N/C | 4 | GND |
| 5 | N/C | 6 | 1.5V |
| 7 | N/C | 8 | N/C |
| 9 | GND | 10 | N/C |
| 11 | PCIE_CLK# | 12 | N/C |
| 13 | PCIE_CLK | 14 | N/C |
| 15 | GND | 16 | N/C |

| Pin | Description | Pin | Description |
|---|---|---|---|
| 17 | N/C | 18 | GND |
| 19 | N/C | 20 | N/C |
| 21 | GND | 22 | PCIRST# |
| 23 | PCIE_RXN | 24 | VCC3 |
| 25 | PCIE_RXP | 26 | GND |
| 27 | GND | 28 | 1.5V |
| 29 | GND | 30 | SMBCLK |
| 31 | PCIE_TXN | 32 | SMBDATA |
| 33 | PCIE_TXP | 34 | GND |
| 35 | GND | 36 | USBD- |
| 37 | GND | 38 | USBD+ |
| 39 | VCC3 | 40 | GND |
| 41 | VCC3 | 42 | N/C |
| 43 | GND | 44 | N/C |
| 45 | N/C | 46 | N/C |
| 47 | N/C | 48 | 1.5V |
| 49 | N/C | 50 | GND |
| 51 | M-SATA Detect | 52 | VCC3 |

**Table 3-13: PCIe Mini Card Slot Pinouts**

### 3.2.12 Power Connector (9V~28V)

**CN Label:** **CN3**

**CN Type:** 4-pin connector

**CN Location:** See **Figure 3-13**

**CN Pinouts:** See **Table 3-14**

The power connector is connected to an external power supply and supports 9V~28V power input. Power is provided to the system, from the power supply through this connector.

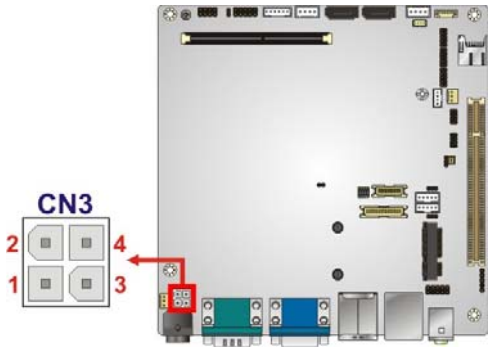



**Figure 3-13: ATX Power Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | Power | 4 | Power |

**Table 3-14: Power Connector Pinouts**

### 3.2.13 Power Button

**CN Label:** **PWR_SW1**

**CN Type:** Push button

**CN Location:** See **Figure 3-14**

It is an on-board power button. Push the power button to turn on the system.

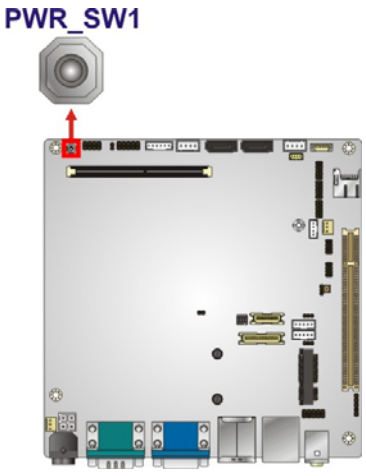



**Figure 3-14: Power Button Location**

### 3.2.14 RS-232 Serial Port Connectors (COM3, COM5, COM6)

| | |
|---|---|
| **CN Label:** | **COM3, COM5, COM6** |
| **CN Type:** | 10-pin header |
| **CN Location:** | See **Figure 3-15** |
| **CN Pinouts:** | See **Table 3-15** |

The 10-pin serial port connectors provide three RS-232 serial communications channels. The COM serial port connectors can be connected to external RS-232 serial port devices.

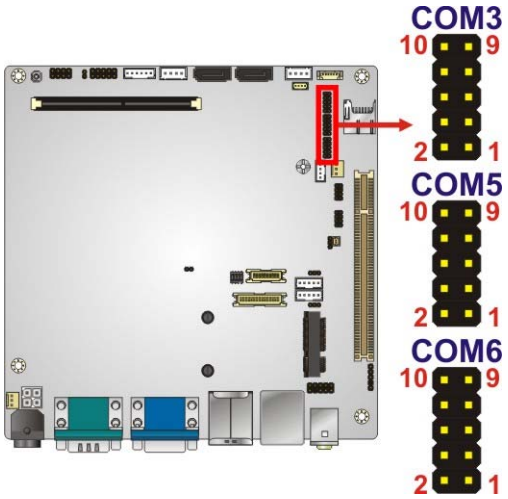



**Figure 3-15: RS-232 Serial Port Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | DATA CARRIER DETECT (DCD) | 2 | DATA SET READY (DSR) |
| 3 | RECEIVE DATA (RXD) | 4 | REQUEST TO SEND (RTS) |
| 5 | TRANSMIT DATA (TXD) | 6 | CLEAR TO SEND (CTS) |
| 7 | DATA TERMINAL READY (DTR) | 8 | RING INDICATOR (RI) |
| 9 | GND | 10 | GND |

**Table 3-15: Serial Port Connector Pinouts**

### 3.2.15 RS-422/485 Serial Port Connector (COM4)

| | |
|---|---|
| **CN Label:** | **COM4** |
| **CN Type:** | 4-pin wafer |
| **CN Location:** | See **Figure 3-16** |
| **CN Pinouts:** | See **Table 3-16** |

This connector provides RS-422 or RS-485 communications.

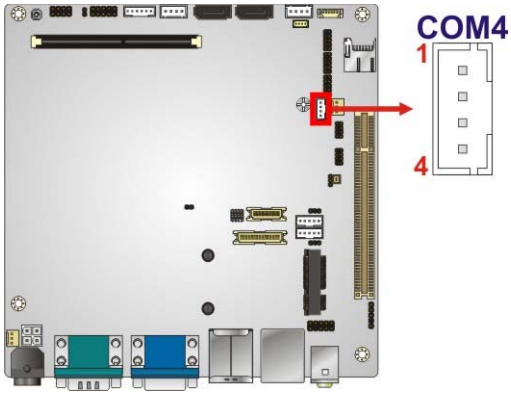



**Figure 3-16: RS-422/485 Serial Port Connector Location**

| Pin | Description |
|---|---|
| 1 | RXD485# |
| 2 | RXD485+ |
| 3 | TXD485+ |
| 4 | TXD485# |

**Table 3-16: RS-422/485 Serial Port Connector Pinouts**

Use the optional RS-422/485 cable to connect to a serial device. The pinouts of the DB-9 connector are listed below.

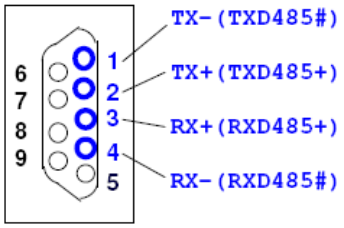
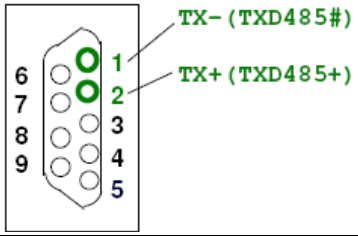
| RS-422 Pinouts | RS-485 Pinouts |
|---|---|
|  |  |



**Table 3-17: DB-9 RS-422/485 Pinouts**

### 3.2.16 SATA Drive Connectors

**CN Label:** **SATA1, SATA2**

**CN Type:** 7-pin SATA drive connectors

**CN Location:** See **Figure 3-17**

**CN Pinouts:** See **Table 3-18**

The SATA connectors connect to SATA hard drives or optical drives with data transfer speeds as high as 3Gb/s.

**NOTE:**

If the PCIe Mini slot is installed with an mSATA card, the **SATA2** connector will be disabled.

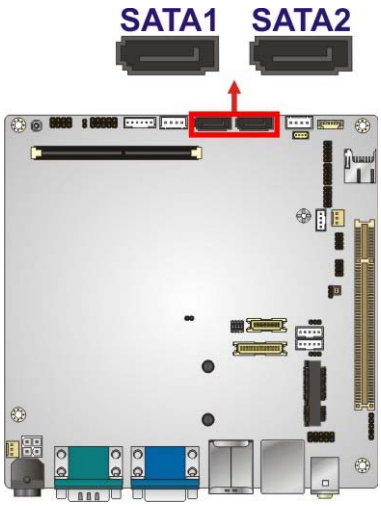



**Figure 3-17: SATA Drive Connector Location**

| Pin | Description |
|---|---|
| 1 | GND |
| 2 | TX+ |
| 3 | TX- |
| 4 | GND |
| 5 | RX- |
| 6 | RX+ |
| 7 | GND |

**Table 3-18: SATA Drive Connector Pinouts**

### 3.2.17 SATA Power Connectors

**CN Label:** **SATA_PWR1, SATA_PWR2**

**CN Type:** 4-pin wafer

**CN Location:** See **Figure 3-18**

**CN Pinouts:** See **Table 3-19**

Use the SATA Power Connector to connect to SATA device power connections.

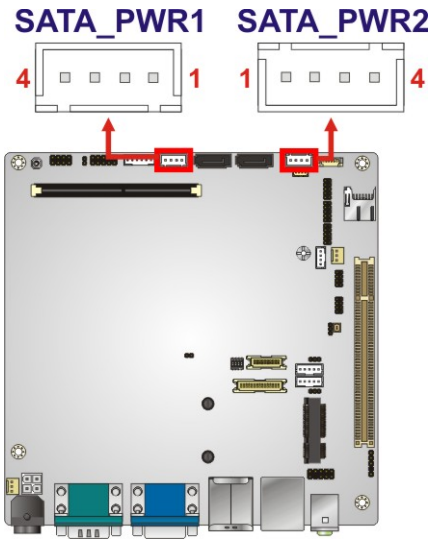



**Figure 3-18: SATA Power Connector Locations**

| Pin | Description |
|---|---|
| 1 | 12V |
| 2 | GND |
| 3 | GND |
| 4 | 5V |

**Table 3-19: SATA Power Connector Pinouts**

## 3.2.18 SMBus Connector

**CN Label:** **SMBUS_1**

**CN Type:** 4-pin wafer

**CN Location:** See **Figure 3-19**

**CN Pinouts:** See **Table 3-20**

The SMBus (System Management Bus) connector provides low-speed system management communications.

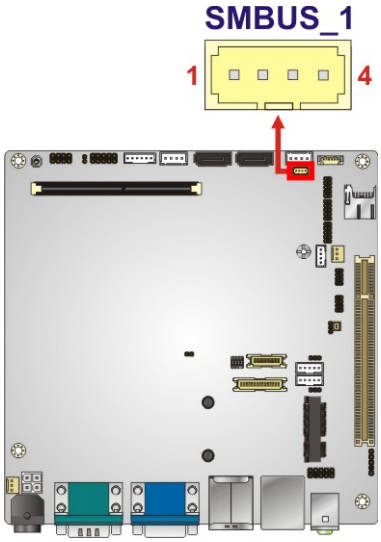



**Figure 3-19: SMBus Connector Location**

| Pin | Description |
|---|---|
| 1 | GND |
| 2 | SMBDATA |
| 3 | SMBCLK |
| 4 | +5V |

**Table 3-20: SMBus Connector Pinouts**

### 3.2.19 SO-DIMM Connector

**CN Label:** **DIMM1**

**CN Type:** 204-pin DDR3 SO-DIMM connector

**CN Location:** See **Figure 3-20**

The SO-DIMM connector is for installing memory on the system.

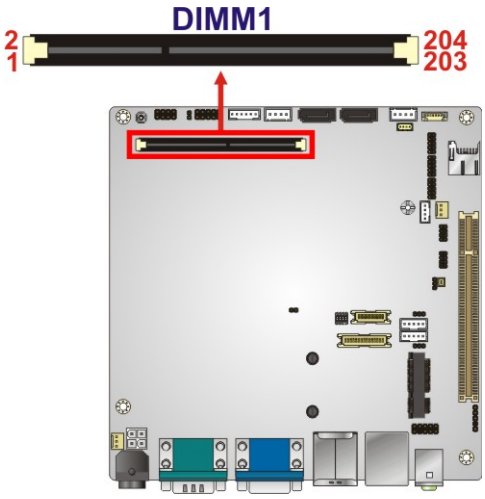



**Figure 3-20: SO-DIMM Connector Location**

## 3.2.20 SPDIF Connector

| | |
|---|---|
| **CN Label:** | **SPDIF1** |
| **CN Type:** | 5-pin header |
| **CN Location:** | See **Figure 3-21** |
| **CN Pinouts:** | See **Table 3-21** |

Use the SPDIF connector to connect digital audio devices to the system.

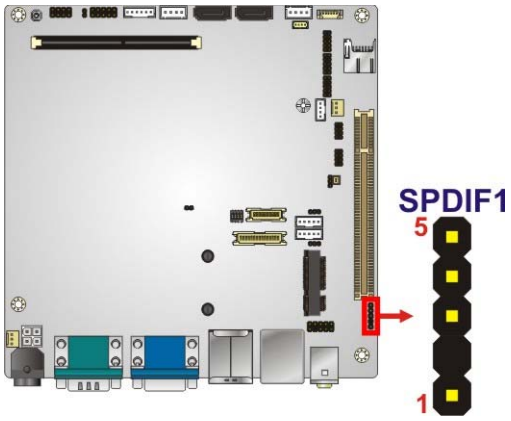



**Figure 3-21: SPDIF Connector Location**

| Pin | Description |
|---|---|
| 1 | VCC AUDIO |
| 2 | NC |
| 3 | SPDIF OUT |
| 4 | GND |
| 5 | SPDIF IN |

**Table 3-21: SPDIF Connector Pinouts**

### 3.2.21 SPI Flash Connector

**CN Label:** **JSPI1**

**CN Type:** 6-pin header

**CN Location:** See **Figure 3-22**

**CN Pinouts:** See **Table 3-22**

The 6-pin SPI Flash connector is used to flash the BIOS.

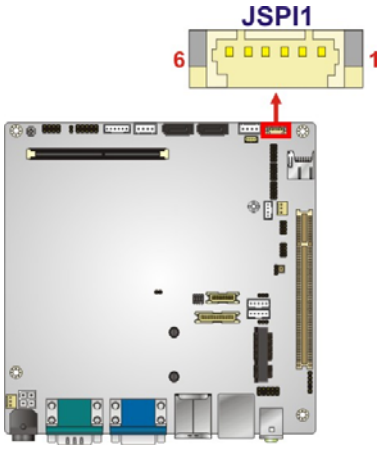



**Figure 3-22: SPI Flash Connector Location**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | SPI_VCC | 2 | SPI_CS |
| 3 | SPI_SO | 4 | SPI_CLK |
| 5 | SPI_SI | 6 | GND |

**Table 3-22: SPI Flash Connector Pinouts**

### 3.2.22 USB 2.0 Connectors

| | |
|---|---|
| **CN Label:** | **USB2, USB3** |
| **CN Type:** | 8-pin header |
| **CN Location:** | See **Figure 3-23** |
| **CN Pinouts:** | See **Table 3-23** |

The USB header can connect to two USB devices.

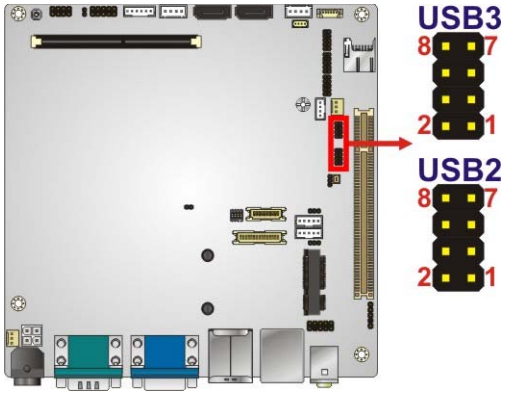



**Figure 3-23: USB Connector Locations**

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | VCC | 2 | GND |
| 3 | DATA- | 4 | DATA+ |
| 5 | DATA+ | 6 | DATA- |
| 7 | GND | 8 | VCC |

**Table 3-23: USB Port Connector Pinouts**

## 3.3 External Interface Connectors

**Figure 3-24** shows the KINO-CV-D25501/N26001 motherboard external interface connectors. The KINO-CV-D25501/N26001 on-board external interface connectors are shown in **Figure 3-24.**

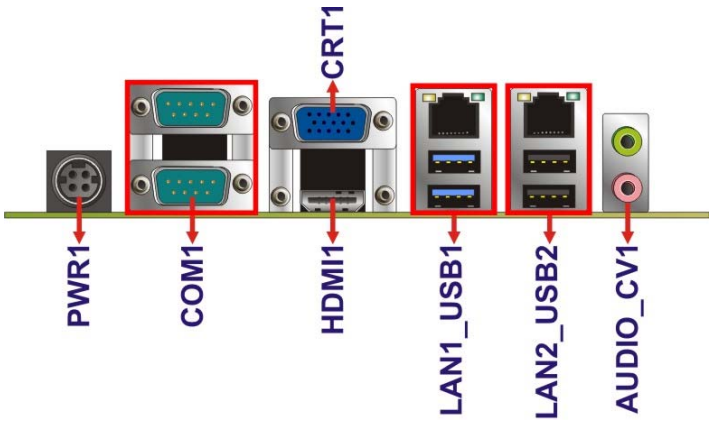



**Figure 3-24: External Interface Connectors**

### 3.3.1 Audio Connector

| | |
|---|---|
| **CN Label:** | **AUDIO_CV1** |
| **CN Type:** | Audio jacks |
| **CN Location:** | See **Figure 3-24** |

The audio jacks connect to external audio devices.

- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.


**Figure 3-25: Audio Connector**

### 3.3.2 Ethernet and USB Connector

**CN Label:** **LAN1_USB1, LAN2_USB2**

**CN Type:** RJ-45, USB 2.0 and USB 3.0 connectors

**CN Location:** See **Figure 3-24**

**CN Pinouts:** See **Table 3-24**

The LAN connector connects to a local network.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | MDIA3- | 2 | MDIA3+ |
| 3 | MDIA2- | 4 | MDIA1- |
| 5 | MDIA1+ | 6 | MDIA2+ |
| 7 | MDIA0- | 8 | MDIA0+ |

**Table 3-24: LAN Pinouts**

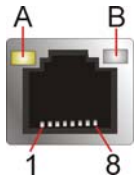



**Figure 3-26: Ethernet Connector**

| LED | Description | LED | Description |
|---|---|---|---|
| A | on: linked<br>blinking: data is being sent/received | B | off: 10 Mb/s<br>green: 100 Mb/s<br>orange: 1000 Mb/s |

**Table 3-25: Connector LEDs**

The USB connector can be connected to a USB device. The USB 3.0 ports are labeled as USB1 and the USB 2.0 ports are labels as USB2. Please refer to **Figure 1-2**.

| PIN | DESCRIPTION |
|---|---|
| 1 | 5 V |
| 2 | Data- |

| PIN | DESCRIPTION |
|---|---|
| 3 | Data+ |
| 4 | GND |

**Table 3-26: USB Port Pinouts**

### 3.3.3 HDMI Connector

**CN Label:** **HDMI1**

**CN Type:** HDMI connector

**CN Location:** See **Figure 3-24**

**CN Pinouts:** See **Table 3-27** and **Figure 3-27**

The HDMI connector connects to a display device with HDMI interface.

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | HDMI_DATA2 | 13 | N/C |
| 2 | GND | 14 | N/C |
| 3 | HDMI_DATA2# | 15 | HDMI_SCL |
| 4 | HDMI_DATA1 | 16 | HDMI_SDA |
| 5 | GND | 17 | GND |
| 6 | HDMI_DATA1# | 18 | +5V |
| 7 | HDMI_DATA0 | 19 | HDMI_HPD |
| 8 | GND | 20 | HDMI_GND |
| 9 | HDMI_DATA0# | 21 | HDMI_GND |
| 10 | HDMI_CLK | 22 | HDMI_GND |
| 11 | GND | 23 | HDMI_GND |
| 12 | HDMI_CLK# | | |

**Table 3-27: HDMI Connector Pinouts**

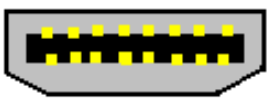


**Figure 3-27: HDMI Connector**

### 3.3.4 Power Connector (9V~28V, Power Adapter)

**CN Label:** **PWR1**

**CN Type:** 4-pin DIN

**CN Location:** See **Figure 3-24**

**CN Pinouts:** See **Figure 3-28**

The connector supports the 9V~28V power adapter.

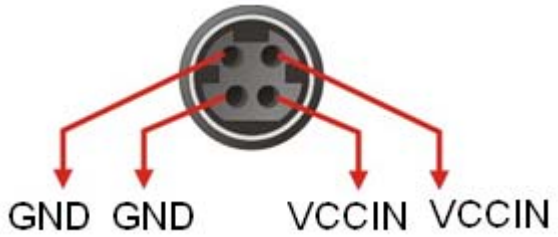



**Figure 3-28: 4-pin Power DIN Connection**

### 3.3.5 Serial Port Connectors (COM1, COM2)

**CN Label:** **COM1**

**CN Type:** DB-9 Male connector

**CN Location:** See **Figure 3-24**

**CN Pinouts:** See **Table 3-28** and **Figure 3-29**

The RS-232 serial connector provides serial connection in the RS-232 mode.

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | GND | | |

**Table 3-28: Serial Port Pinouts**

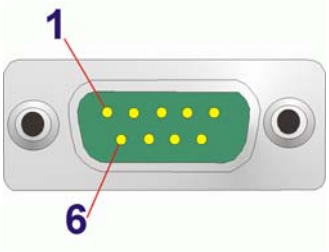



**Figure 3-29: Serial Port Pinout Locations**

### 3.3.6 VGA Connector

**NOTE:**

Due to Intel® GMA driver limitation, the monitor connected to the VGA connector may not have signal to it after restarting from the graphics driver installation. To solve this problem, press the **Ctrl+Alt+F1** hotkey to switch the screen to CRT mode.

**CN Label:** **CRT1**

**CN Type:** D-sub 15-pin female connector

**CN Location:** See **Figure 3-24**

**CN Pinouts:** See **Figure 3-30** an **Table 3-29**

The standard 15-pin female VGA connector connects to a CRT or LCD monitor.

| Pin | Description | Pin | Description | Pin | Description |
|---|---|---|---|---|---|
| 1 | RED | 6 | GROUND | 11 | NC |
| 2 | GREEN | 7 | GROUND | 12 | SDA |
| 3 | BLUE | 8 | GROUND | 13 | HSYNC |
| 4 | +5V | 9 | NC | 14 | VSYNC |
| 5 | GROUND | 10 | GROUND | 15 | SCL |

**Table 3-29: VGA Connector Pinouts**

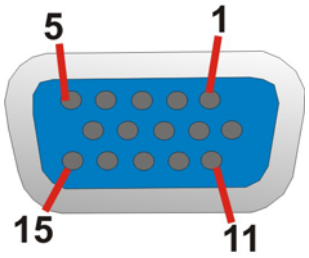



**Figure 3-30: VGA Connector**

Chapter

4

# Installation

## 4.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during installation may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO-CV-D25501/N26001. Dry climates are especially susceptible to ESD. It is therefore critical to strictly adhere to the following anti-static precautions whenever the KINO-CV-D25501/N26001, or any other electrical component, is handled.

- ***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 KINO-CV-D25501/N26001, place it on an antic-static pad. This reduces the possibility of ESD damaging the KINO-CV-D25501/N26001.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold it by the edges.

## 4.2 Installation Considerations

**NOTE:**

The following installation notices and installation considerations should be read and understood before the KINO-CV-D25501/N26001 is installed. All installation notices pertaining to the installation of KINO-CV-D25501/N26001 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the KINO-CV-D25501/N26001 and injury to the person installing the motherboard.

**WARNING:**

The installation instructions described in this manual should be carefully followed in order to prevent damage to the KINO-CV-D25501/N26001, KINO-CV-D25501/N26001 components and injury to the user.

Before and during the installation please **DO** the following:

- **Read the user manual**:
  - The user manual provides a complete description of the installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**:
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- **Place on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power off**:
  - Make sure the product is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the KINO-CV-D25501/N26001 **DO NOT:**

- **DO NOT** remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- **DO NOT** use the product before verifying all the cables and power connectors are properly connected.
- **DO NOT** allow screws to come in contact with the PCB circuit, connector pins, or its components.

## 4.3 SO-DIMM Installation

To install a SO-DIMM, please follow the steps below and refer to **Figure 4-1**.

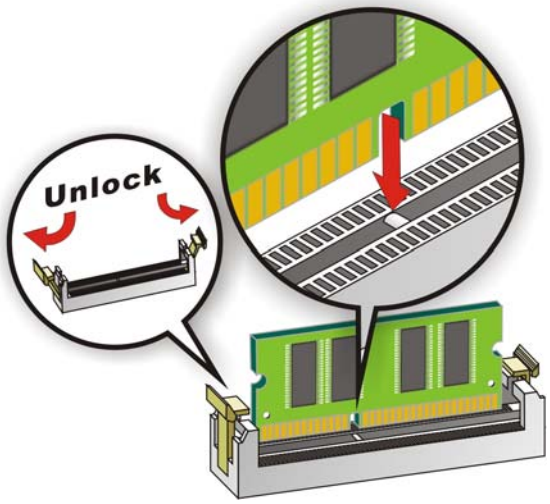



**Figure 4-1: SO-DIMM Installation**

**Step 1:** **Open the SO-DIMM socket handles**. Open the two handles outwards as far as they can. See **Figure 4-1**.

**Step 2:** **Align the SO-DIMM with the socket**. Align the DIMM so the notch on the memory lines up with the notch on the memory socket. See **Figure 4-1**.

**Step 3:** **Insert the SO-DIMM**. Once aligned, press down until the SO-DIMM is properly seated. Clip the two handles into place. See **Figure 4-1**.

**Step 4:** **Removing a SO-DIMM**. To remove a SO-DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

## 4.4 PCIe Mini Card Installation

To install the PCIe Mini card, please refer to the diagram and instructions below.

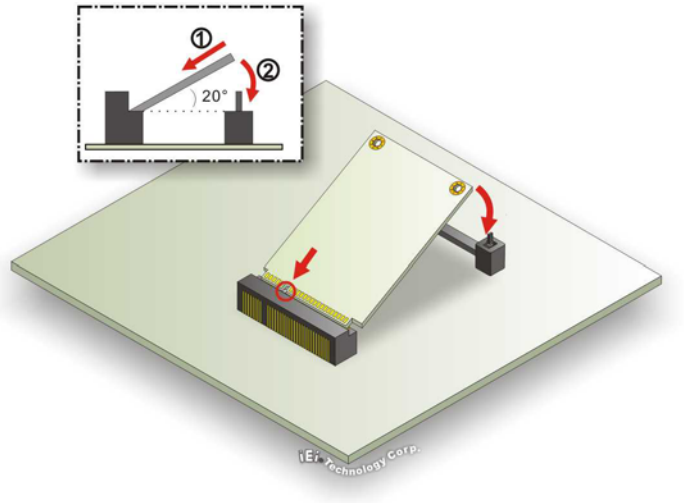


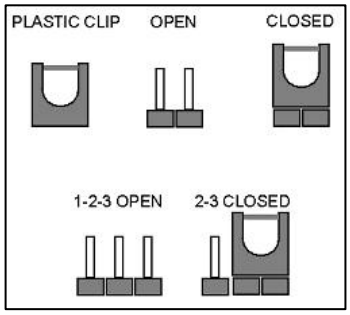

**Figure 4-2: PCIe Mini Card Installation**

**Step 1:** **Insert into the socket at an angle**. Line up the notch on the card with the notch on the connector. Slide the PCIe Mini card into the socket at an angle of about 20º.

**Step 2:** **Push down until the card clips into place**. Push the other end of the card down until it clips into place on the plastic connector.

## 4.5 Jumper Settings

**NOTE:**




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

Before the KINO-CV-D25501/N26001 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the KINO-CV-D25501/N26001 are listed in Table 4-1.

| Description | Label | Type |
|---|---|---|
| AT/ATX mode selection | JP2 | 2-pin header |
| Clear CMOS | JP3 | 3-pin header |
| LVDS1 voltage selection | JP4 | 3-pin header |
| LVDS2 voltage selection | JP1 | 3-pin header |
| LVDS2 resolution selection | SW1 | DIP switch |
| PCIe Mini/mSATA mode selection | MSATA_SW1 | 2-pin header |

**Table 4-1: Jumpers**

### 4.5.1 AT/ATX Mode Selection

**Jumper Label:** **JP2**

**Jumper Type:** 2-pin header

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

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

Set both of the jumpers select AT or ATX power mode for the KINO-CV-D25501/N26001. AT power mode limits the system to on/off. ATX allows the system to use various power saving states and enter a standby state, so the system can be turned on remotely over a network. The settings on both jumpers should be the same.

| Pin | Description |
|---|---|
| Closed | ATX mode (Default) |
| Open | AT mode |

**Table 4-2: AT/ATX Mode Selection**

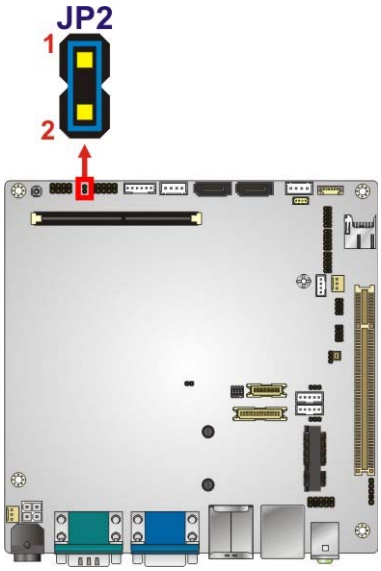



**Figure 4-3: AT/ATX Mode Selection Jumper Location**

### 4.5.2 Clear CMOS Jumper

**Jumper Label:** **JP3**

**Jumper Type:** 3-pin header

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

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

If the KINO-CV-D25501/N26001 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this,

use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

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

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

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

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

| Pin | Description |
|---|---|
| Short 1-2 | Keep CMOS Setup (Default) |
| Short 2-3 | Clear CMOS Setup |

**Table 4-3: Clear CMOS Jumper Settings**

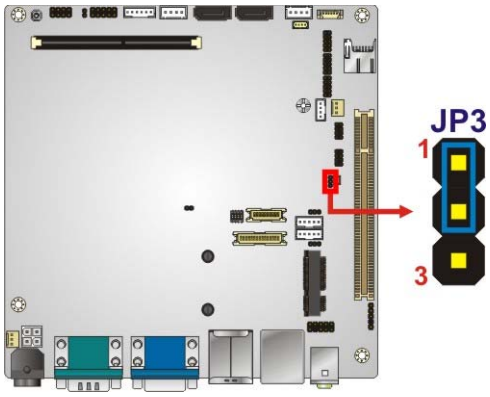



**Figure 4-4: Clear CMOS Jumper Location**

### 4.5.3 LVDS1 Voltage Selection

**Jumper Label:** **JP4**

**Jumper Type:** 3-pin header

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

**Jumper Location:** See **Figure 4-5**

Selects the voltage of the LVDS1 connector.

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

**Table 4-4: LVDS1 Voltage Selection**

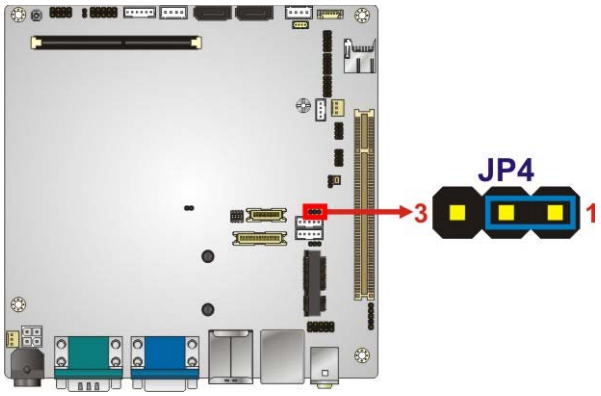



**Figure 4-5: LVDS1 Voltage Selection Jumper Location**

### 4.5.4 LVDS2 Voltage Selection

**Jumper Label:** **JP1**

**Jumper Type:** 3-pin header

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

**Jumper Location:** See **Figure 4-5**

Selects the voltage of the LVDS2 connector.

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

**Table 4-5: LVDS2 Voltage Selection**

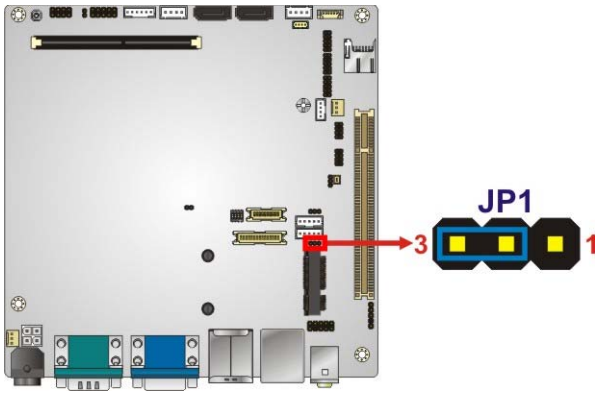



**Figure 4-6: LVDS2 Voltage Selection Jumper Location**

### 4.5.5 LVDS2 Resolution Selection

| | |
|---|---|
| **Jumper Label:** | **SW1** |
| **Jumper Type:** | DIP switch |
| **Jumper Settings:** | See **Table 4-6** |
| **Jumper Location:** | See **Figure 4-7** |

Selects the resolution of the LCD panel connected to the LVDS2 connector.

The pin order listed in the first column of **Table 4-6** is: 4 → 3 → 2 → 1. (ON=0, OFF=1)

| SW1 | EDID Resolution | Color Depth | Channel |
|---|---|---|---|
| 0000 | 800 x 600 @ 60Hz | 18-bit | Single |
| 0001 | 1024 x 768 @ 60Hz | 18-bit | Single |
| 0010 | 1024 x 768 @ 60Hz | 24-bit | Single |
| 0011 | 1280 x 768 @ 60Hz | 18-bit | Single |
| 0100 | 1280 x 800 @ 60Hz | 18-bit | Single |
| 0101 | 1280 x 960 @ 60Hz | 18-bit | Single |
| 0110 | 1280 x 1024 @ 60Hz | 24-bit | Dual |
| 0111 | 1366 x 678 @ 60Hz | 18-bit | Single |
| 1000 | 1366 x 678 @ 60Hz | 24-bit | Single |
| 1001 | 1440 x 900 @ 60Hz | 24-bit | Dual |
| 1010 | 1440 x 1050 @ 60Hz | 24-bit | Dual |

| | | | |
|---|---|---|---|
| 1011 | 1600 x 900 @ 60Hz | 24-bit | Dual |
| 1100 | 1680 x 1050 @ 60Hz | 24-bit | Dual |
| 1101 | 1600 x 1200 @ 60Hz | 24-bit | Dual |
| 1110 | 1920 x 1080 @ 60Hz | 24-bit | Dual |
| 1111 | 1920 x 1200 @ 60Hz | 24-bit | Dual |

**Table 4-6: LVDS2 Resolution Selection**

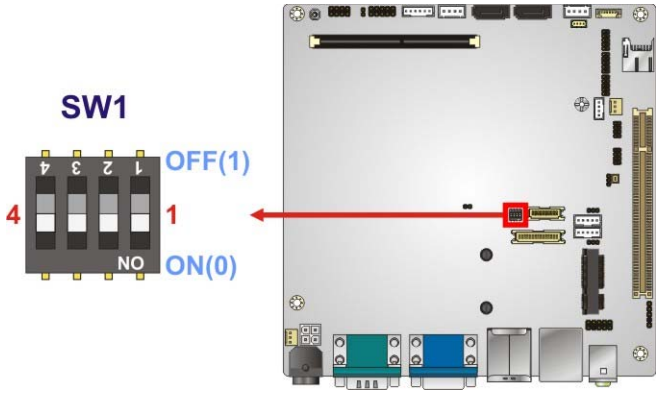



**Figure 4-7: LVDS2 Resolution Selection Jumper Location**

### 4.5.6 PCIe Mini/mSATA Mode Selection

**Jumper Label:** **MSATA_SW1**

**Jumper Type:** 2-pin header

**Jumper Settings:** See **Table 4-7**

**Jumper Location:** See **Figure 4-8**

The jumper configures the PCIe Mini slot (M_PCIE1) to automatically detect mSATA device or to force mSATA to be enabled.

| Pin | Description |
|---|---|
| Open | Auto-detect mSATA device (Default) |
| Closed | Enable mSATA |

**Table 4-7: PCIe Mini/mSATA Mode Selection**

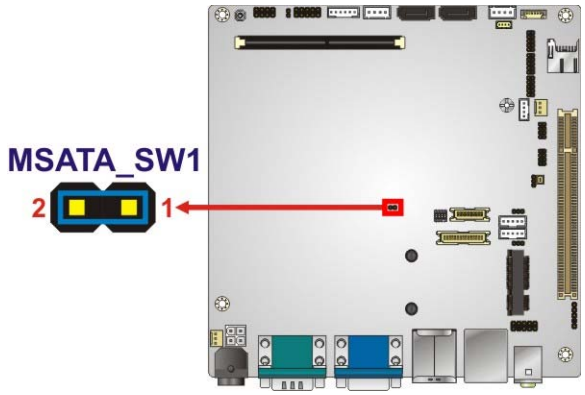



**Figure 4-8: PCIe Mini/mSATA Mode Selection Jumper Location**

## 4.6 Chassis Installation

### 4.6.1 Airflow

**WARNING:**

Airflow is critical for keeping components within recommended operating termperatures. The chassis should have fans and vents as necessary to keep things cool.

The KINO-CV-D25501/N26001 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

### 4.6.2 Motherboard Installation

To install the KINO-CV-D25501/N26001 motherboard into the chassis please refer to the reference material that came with the chassis.

## 4.7 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

### 4.7.1 SATA Drive Connection

The KINO-CV-D25501/N26001 is shipped with two SATA drive cable. To connect the SATA drive to the connector, please follow the steps below.

**Step 1:** **Locate the SATA connector and the SATA power connector**. The locations of the connectors are shown in **Chapter 3**.

**Step 2:** **Insert the cable connector**. Insert the cable connector into the on-board SATA drive connector and the SATA power connector. See **Figure 4-9**.

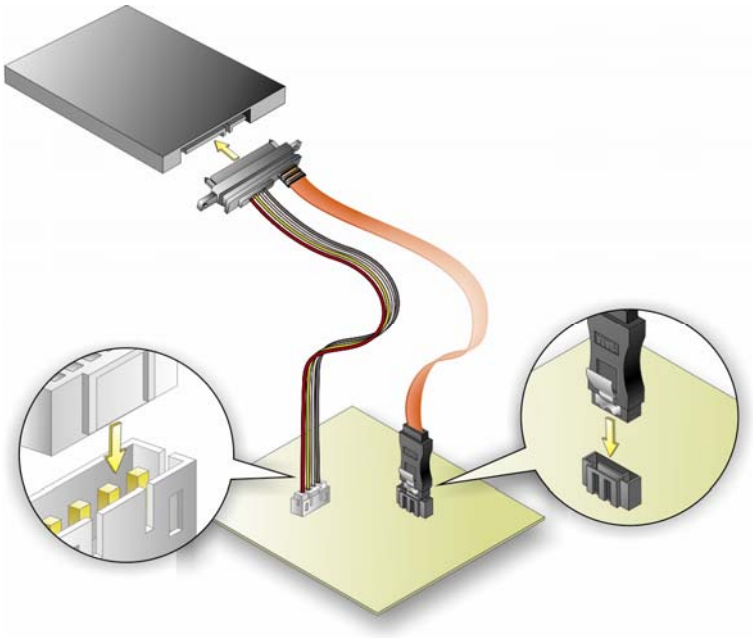


**Figure 4-9: SATA Drive Cable Connection**

**Step 3:** **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-9**.

**Step 4:** To remove the SATA cable from the SATA connector, press the clip on the connector at the end of the cable.

### 4.7.2 USB Cable (Dual Port) Connection

The KINO-CV-D25501/N26001 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

**Step 1:** **Locate the connectors**. The locations of the USB connectors are shown in **Chapter 3**.

**WARNING:**

If the USB pins are not properly aligned, the USB device can burn out.

**Step 2:** **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the KINO-CV-D25501/N26001 USB connector.

**Step 3:** **Insert the cable connectors** Once the cable connectors are properly aligned with the USB connectors on the KINO-CV-D25501/N26001, connect the cable connectors to the on-board connectors. See Figure 4-10.

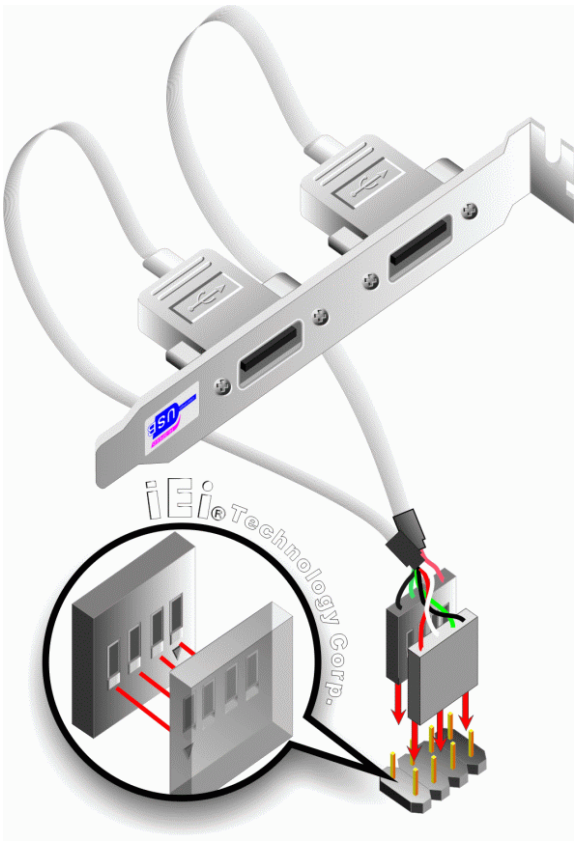


**Figure 4-10: Dual USB Cable Connection**

**Step 4:** **Attach the bracket to the chassis**. The USB 2.0 connectors are attached to a bracket. To secure the bracket to the chassis please refer to the installation instructions that came with the chassis.

### 4.7.3 Keyboard/Mouse Connector (Optional)

The KINO-CV-D25501/N26001 is shipped with a keyboard/mouse Y-cable connector. The keyboard/mouse Y-cable connector connects to a keyboard/mouse connector on the KINO-CV-D25501/N26001 and branches into two cables that are each connected to a PS/2 connector, one for a mouse and one for a keyboard. To connect the keyboard/mouse Y-cable connector please follow the steps below.

**Step 1:** **Locate the connector**. The location of the keyboard/mouse Y-cable connector is shown in **Chapter 3**.

**Step 2:** **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on the KINO-CV-D25501/N26001 keyboard/mouse connector. See Figure 4-11.

**Step 3:** **Insert the cable connectors** Once the cable connector is properly aligned with the keyboard/mouse connector on the KINO-CV-D25501/N26001, connect the cable connector to the on-board connectors. See Figure 4-11.

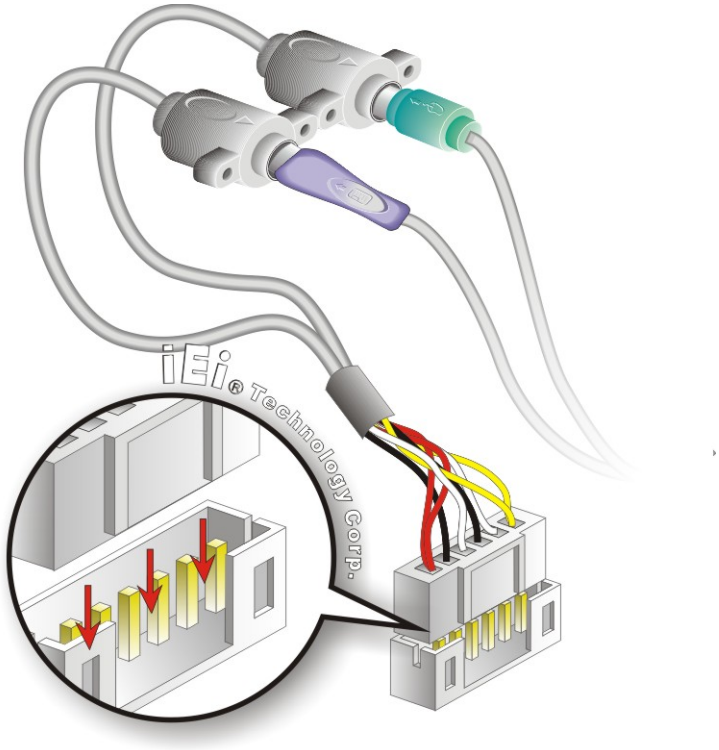



**Figure 4-11: Keyboard/mouse Y-cable Connection**

**Step 4:** **Attach PS/2 connectors to the chassis**. The keyboard/mouse Y-cable connector is connected to two PS/2 connectors. To secure the PS/2 connectors to the chassis please refer to the installation instructions that came with the chassis.

**Step 5:** **Connect the keyboard and mouse**. Once the PS/2 connectors are connected to the chassis, a keyboard and mouse can each be connected to one of the PS/2 connectors. The keyboard PS/2 connector and mouse PS/2 connector are

both marked. Please make sure the keyboard and mouse are connected to the correct PS/2 connector.

## 4.8 External Peripheral Interface Connection

Devices can be connected to the external connectors. To install external devices, follow the directions in the subsections below.

### 4.8.1 Audio Connector

The audio jacks on the external audio connector enable the KINO-CV-D25501/N26001 to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

**Step 1:** **Identify the audio plugs**. The plugs on your home theater system or speakers may not match the colors on the rear panel. If audio plugs are plugged into the wrong jacks, sound quality will be very bad.

**Step 2:** **Plug the audio plugs into the audio jacks**. Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

- **Line Out port (Lime):** Connects to a headphone or a speaker.
- **Microphone (Pink):** Connects to a microphone.

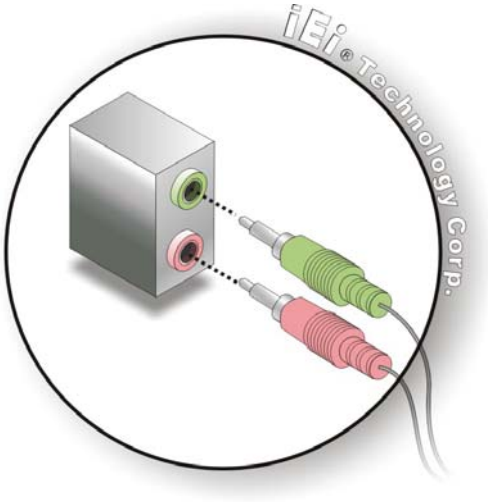


**Figure 4-12: Audio Connector**

**Step 3:** **Check audio clarity**. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

### 4.8.2 HDMI Display 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 KINO-CV-D25501/N26001, follow the steps below.

**Step 1:** **Locate the HDMI connector**. The location is shown in **Chapter 3**.

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

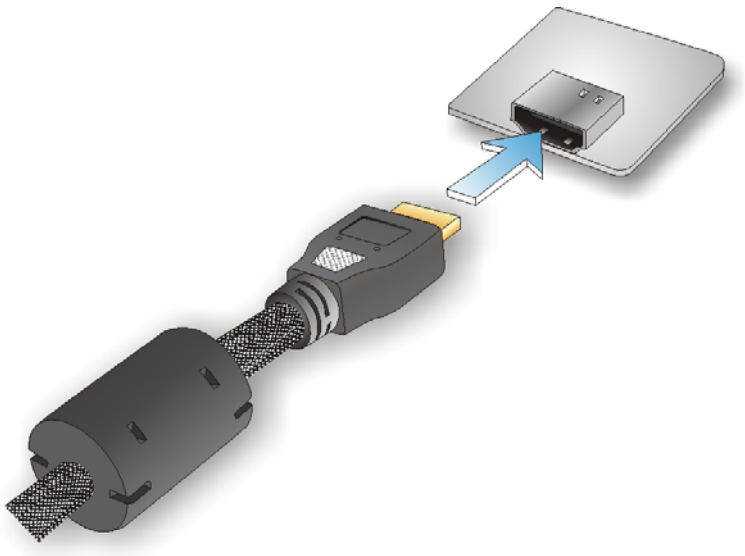


**Figure 4-13: HDMI Connection**

**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.

### 4.8.3 LAN Connection (Single Connector)

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

**Step 1:** **Locate the RJ-45 connectors**. The locations of the USB connectors are shown in **Chapter 4**.

**Step 2:** **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the KINO-CV-D25501/N26001. See Figure 4-14.

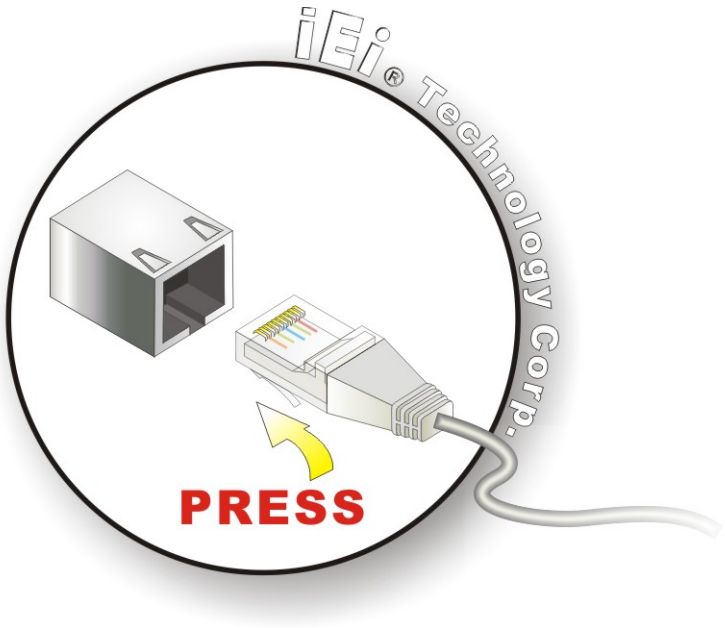



**Figure 4-14: LAN Connection**

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

### 4.8.4 Serial Device Connection

The KINO-CV-D25501/N26001 has two single male DB-9 connectors on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the KINO-CV-D25501/N26001.

**Step 1:** **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

**Step 2:** **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 4-15.

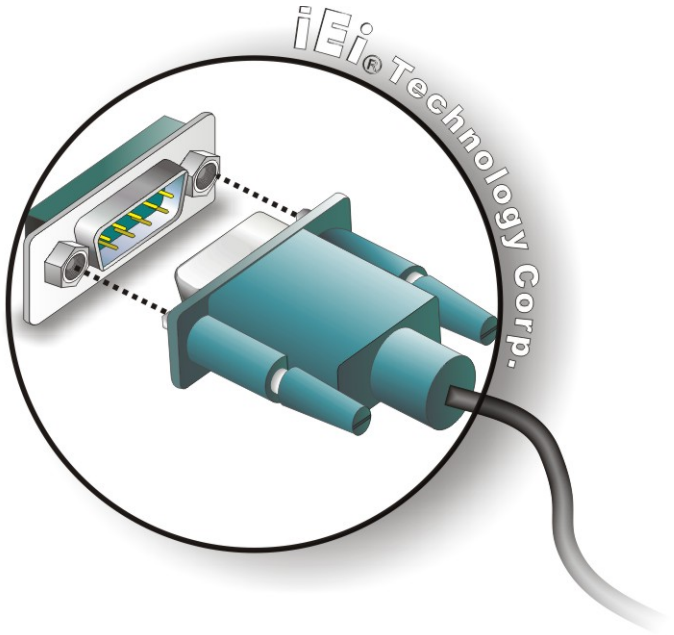


**Figure 4-15: Serial Device Connector**

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

### 4.8.5 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the KINO-CV-D25501/N26001.

**Step 1:** **Locate the USB Series "A" receptacle connectors**. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

**Step 2:** **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See Figure 4-16.

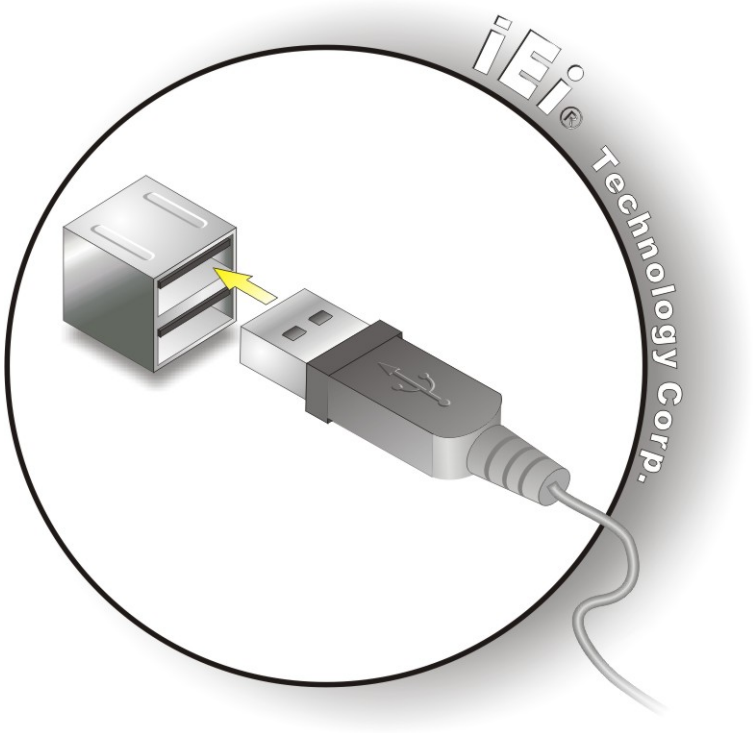



**Figure 4-16: USB Connector**

### 4.8.6 VGA Monitor Connection

The KINO-CV-D25501/N26001 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the KINO-CV-D25501/N26001, please follow the instructions below.

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

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

**Step 3:** **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the KINO-CV-D25501/N26001. See Figure 4-17.

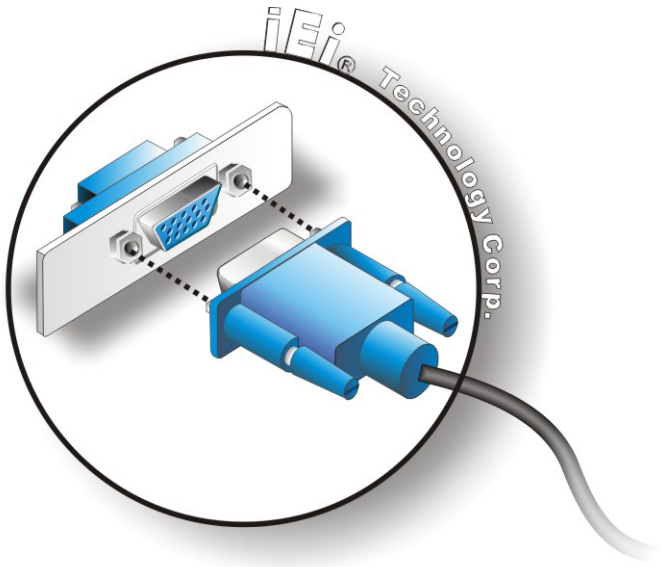


**Figure 4-17: VGA Connector**

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

## 4.9 Software Installation

All the drivers for the KINO-CV-D25501/N26001 are on the CD that came with the system. To install the drivers, please follow the steps below.

**Step 1:** Insert the CD into a CD drive connected to the system.

**NOTE:**

If the installation program doesn't start automatically:
Click "Start->My Computer->CD Drive->autorun.exe"

**Step 2:** The driver main menu appears (Figure 4-18).


**Figure 4-18: Introduction Screen**

**Step 3:** Click KINO-CV-D25501/N26001.

**Step 4:** A new screen with a list of available drivers appears (Figure 4-19).

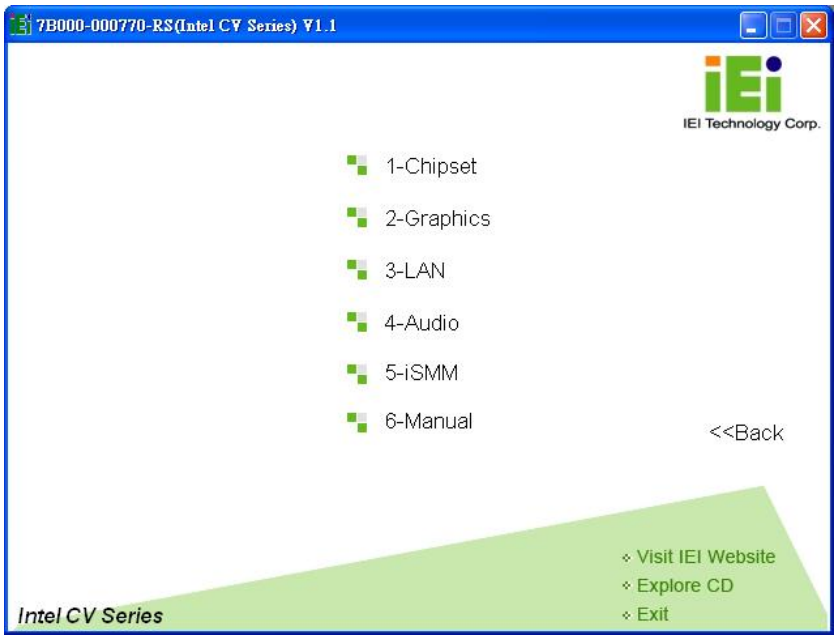



**Figure 4-19: Available Drivers**

**Step 5:** Install all of the necessary drivers in this menu.

**NOTE:**

Due to Intel® GMA driver limitation, the monitor connected to the VGA connector may not have signal to it after restarting from the graphics driver installation. To solve this problem, press the **Ctrl+Alt+F1** hotkey to switch the screen to CRT mode.

Chapter

5

# BIOS

# 5.1 Introduction

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

## 5.1.1 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 **DELETE** or **F2** key as soon as the system is turned on or
2. Press the **DELETE** or **F2** key when the "**Press Del to enter SETUP**" message appears on the screen.

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

## 5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

| Key | Function |
|---|---|
| Up arrow | Move to 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 | Move to the next page |
| Page down | Move to the previous page |

| Key | Function |
|---|---|
| Esc | Main Menu – Quit and do not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| F1 | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| F9 | Load optimized defaults |
| F10 | Save changes and Exit BIOS |

**Table 5-1: BIOS Navigation Keys**

### 5.1.3 Getting Help

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

### 5.1.4 Unable to Reboot After Configuration Changes

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

### 5.1.5 BIOS Menu Bar

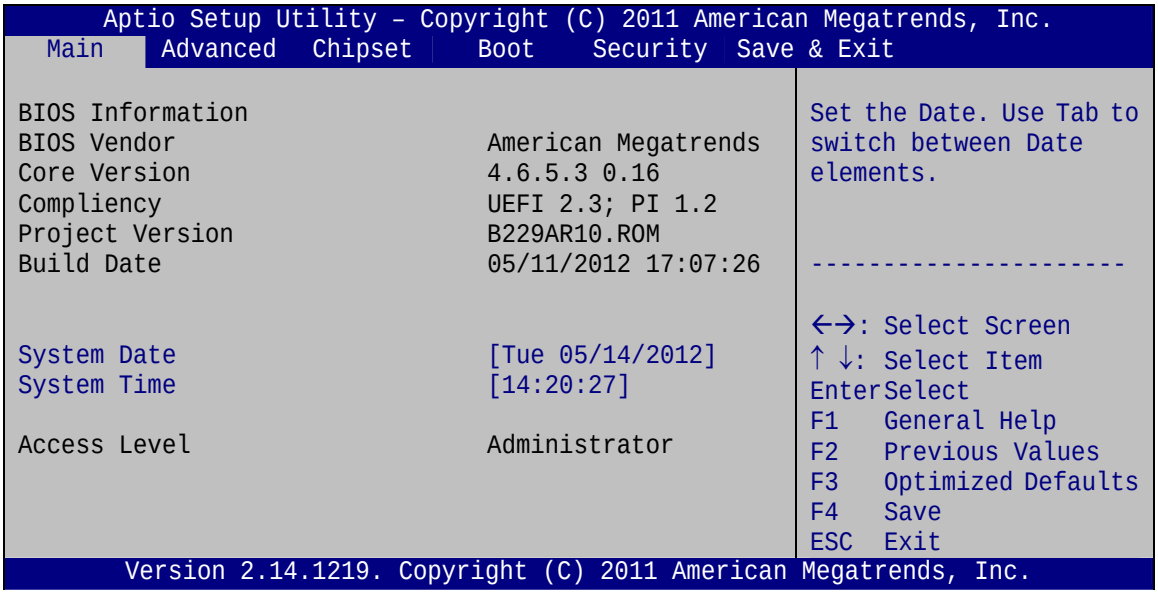
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- 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.

## 5.2 Main

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




**BIOS Menu 1: Main**

### ➔ BIOS Information

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date and Time:** Date and time the current BIOS version was made

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.

## 5.3 Advanced

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

**WARNING!**

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

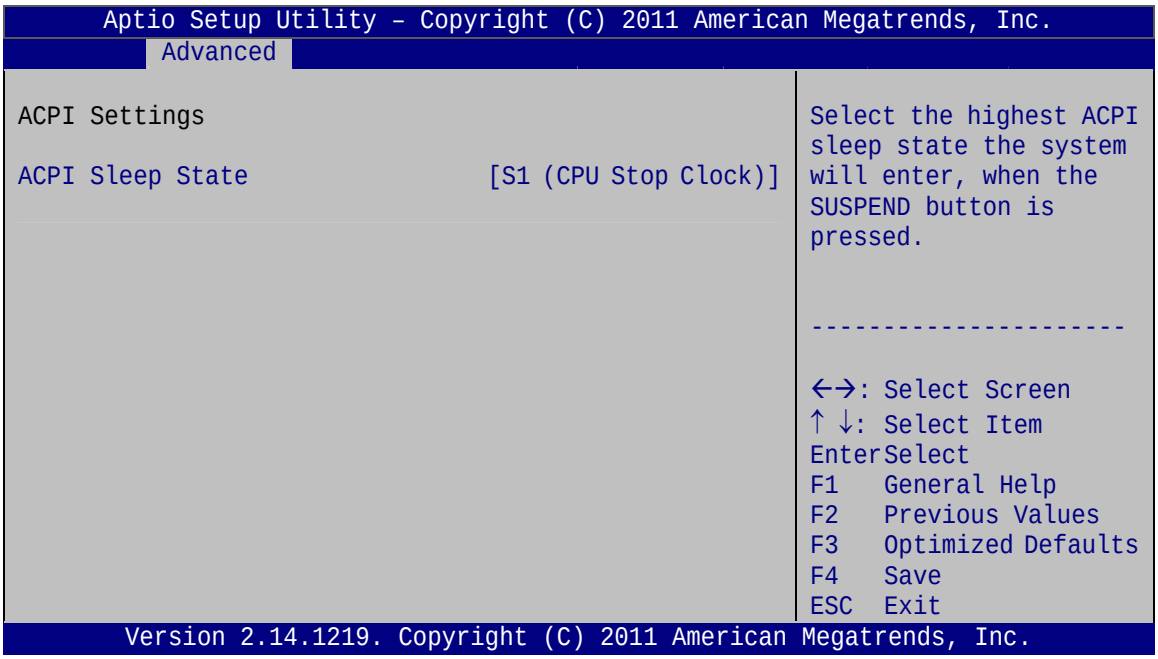
```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main   Advanced  Chipset   Boot   Security  Save & Exit

> ACPI Settings                              System ACPI Parameters
> RTC Wake Settings
> CPU Configuration
> IDE Configuration
> USB Configuration                          ----------------------
> F81866 Super IO Configuration
> F81866 H/M Monitor                         ←→: Select Screen
> Serial Port Console Redirection            ↑ ↓: Select Item
> iEi Feature                                EnterSelect
                                             F1   General Help
                                             F2   Previous Values
                                             F3   Optimized Defaults
                                             F4   Save
                                             ESC  Exit
      Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

**BIOS Menu 2: Advanced**

### 5.3.1 ACPI Configuration

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




**BIOS Menu 3: ACPI Configuration**

➔ **ACPI Sleep State [S1 (CPU Stop Clock)]**

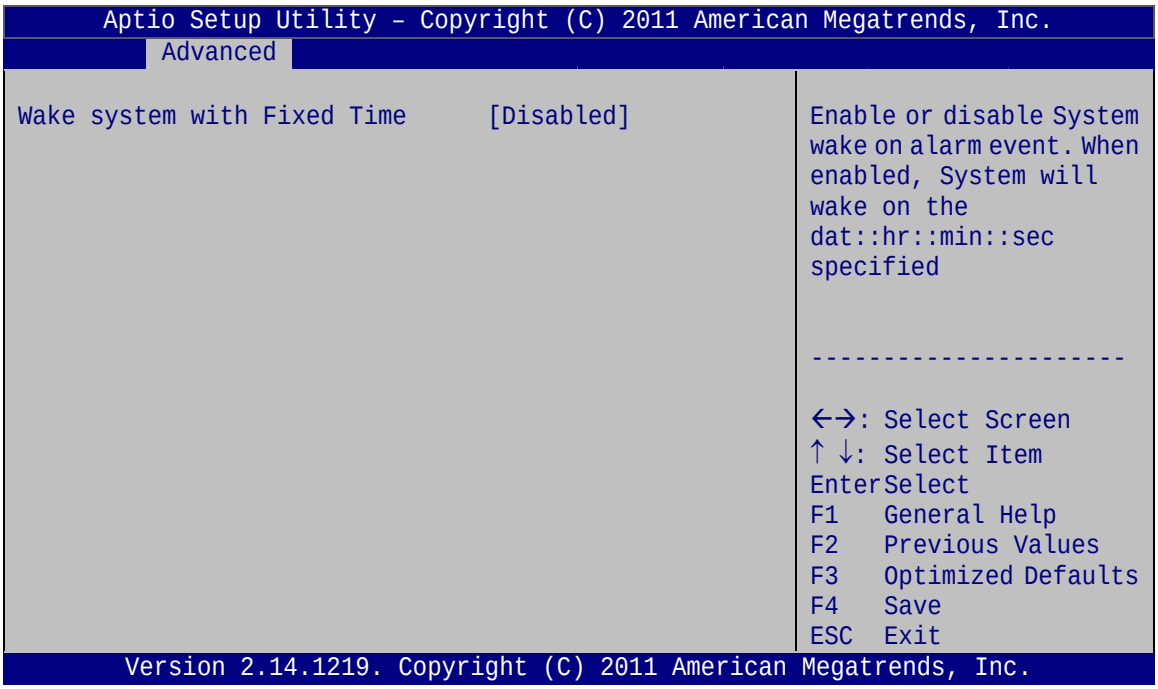
Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (CPU Stop Clock)** **DEFAULT** 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)** 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.

### 5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) configures RTC wake event.




**BIOS Menu 4: RTC Wake Settings**

➔ **Wake System with Fixed Time [Disabled]**

Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

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

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

*Wake up every day

*Wake up date

*Wake up hour

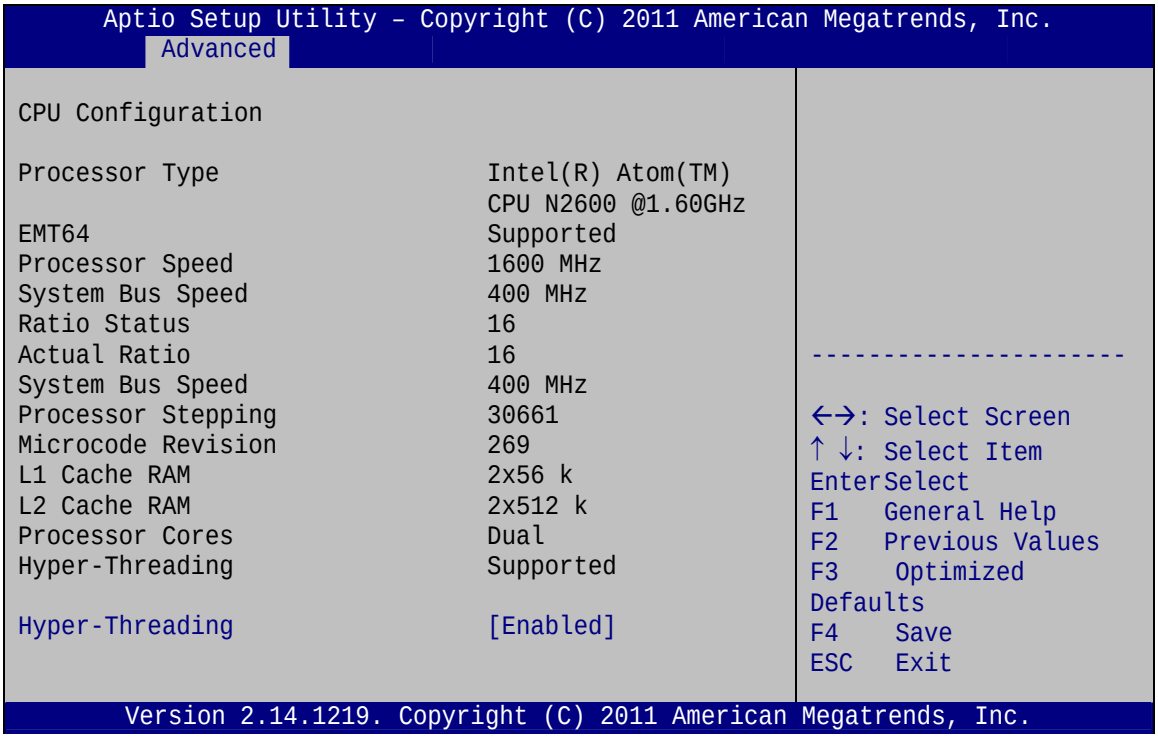
*Wake up minute

*Wake up second

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

### 5.3.3 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5**) to view detailed CPU specifications and configure the CPU.




**BIOS Menu 5: CPU Configuration**

The CPU Configuration menu (**BIOS Menu 5**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- EMT64: Indicates if the EM64T is supported by the CPU.
- Processor Speed: Lists the CPU processing speed
- Actual Ratio: Lists the ratio of the frequency to the clock speed
- System Bus Speed: Lists the system bus speed
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- L1 Cache RAM: Lists the CPU L1 cache size
- L2 Cache RAM: Lists the CPU L2 cache size
- Processor Cores: Lists the number of the processor core

- Hyper-Threading: Indicates if the Intel HT Technology is supported by the CPU.

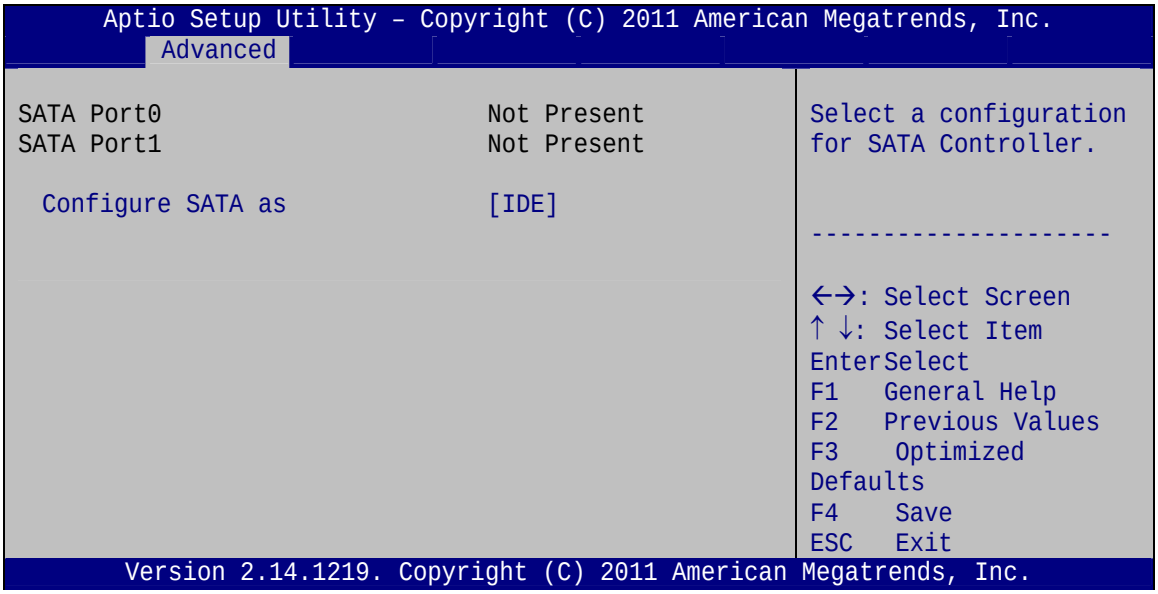
➔ **Hyper Threading Function [Enabled]**

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 |

### 5.3.4 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 6**) to change and/or set the configuration of the IDE devices installed in the system.




**BIOS Menu 6: IDE Configuration**

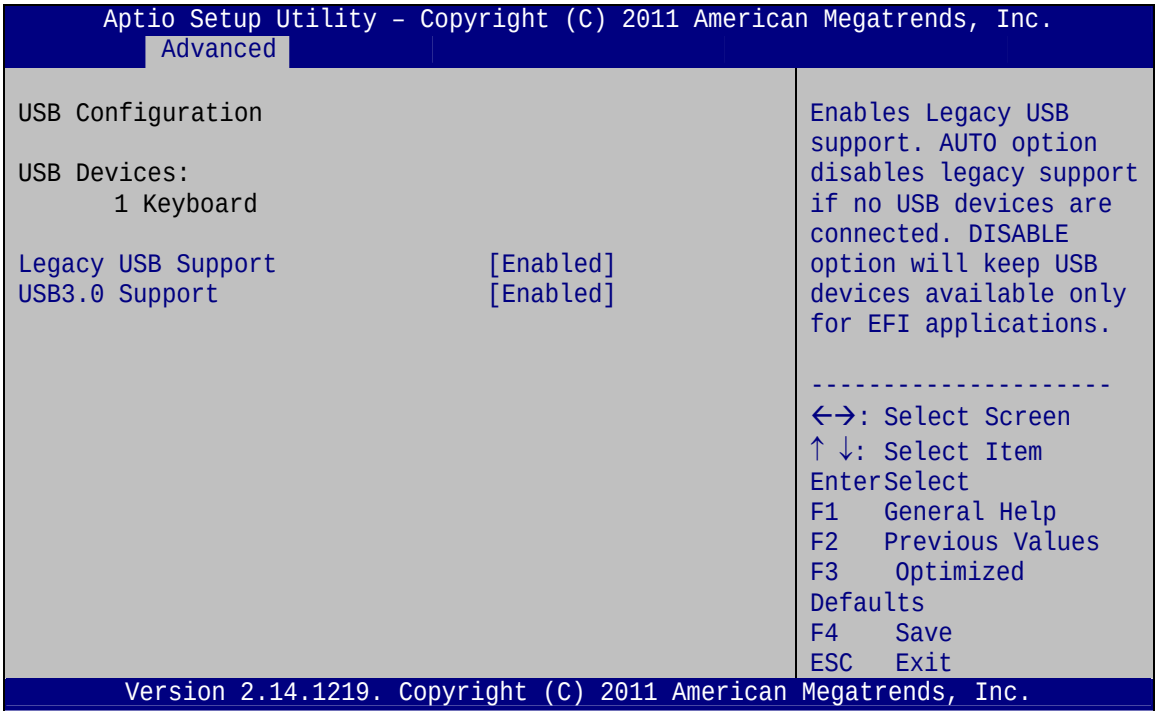
➔ **Configure SATA as [IDE]**

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

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

### 5.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 7**) to read USB configuration information and configure the USB settings.




**BIOS Menu 7: USB Configuration**

➔ **USB Devices**

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

➔ **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 |

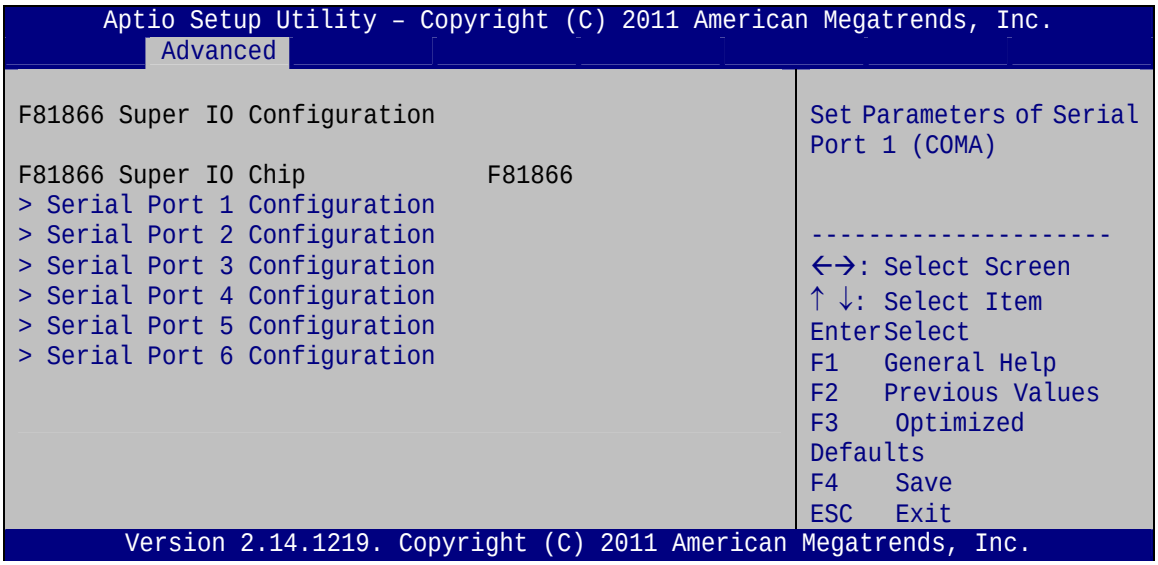
➔ **USB3.0 Support [Enabled]**

Use the **USB3.0 Support** BIOS option to enable or disable the USB 3.0 controller

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

### 5.3.6 F81866 Super IO Configuration

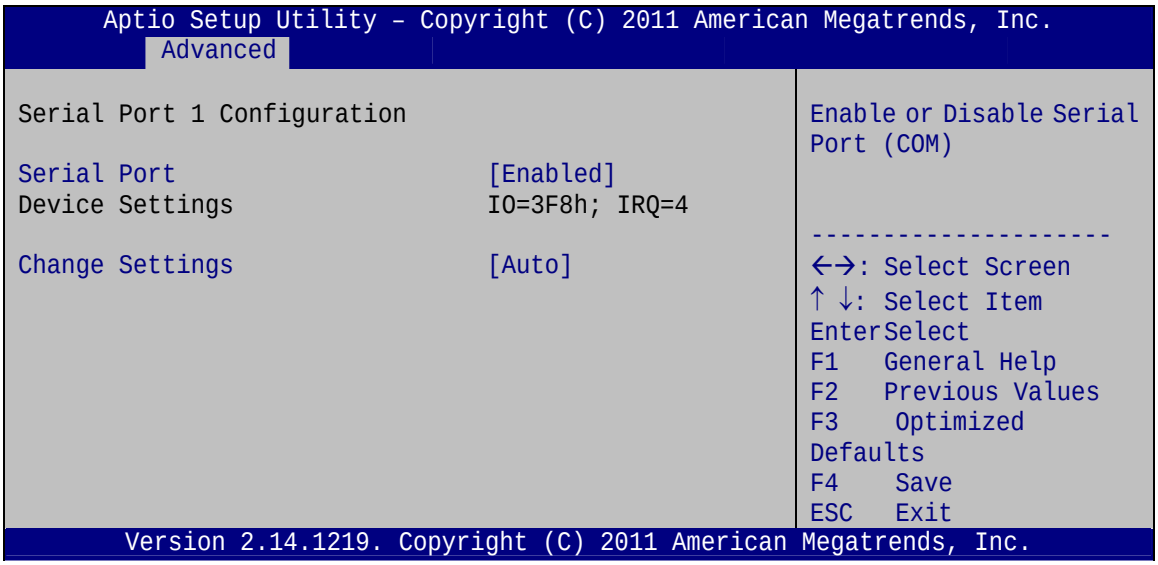
Use the **F81866 Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.




**BIOS Menu 8: Super IO Configuration**

### 5.3.6.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 9**) to configure the serial port n.




**BIOS Menu 9: Serial Port n Configuration Menu**

#### 5.3.6.1.1 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 3E8h 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 |
| ➔ **IO=3E8h; IRQ=3, 4** | Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4 |
| ➔ **IO=2E8h; IRQ=3, 4** | Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4 |

#### 5.3.6.1.2 Serial Port 2 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=2F8h; IRQ=3** | | Serial Port I/O port address is 2F8h and the interrupt address is IRQ3 |
| ➔ **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 |
| ➔ **IO=3E8h; IRQ=3, 4** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4 |

| | | |
|---|---|---|
| ➔ **IO=2E8h; IRQ=3, 4** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4 |

### 5.3.6.1.3 Serial Port 3 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=3E8h; IRQ=10** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10 |
| ➔ **IO=3F8h; IRQ=10, 11** | | Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2F8h; IRQ=10, 11** | | Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=3E8h; IRQ=10, 11** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E8h; IRQ=10, 11** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=250h; IRQ=10, 11** | | Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E0h; IRQ=10, 11** | | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11 |

#### 5.3.6.1.4 Serial Port 4 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=2E8h; IRQ=10** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10 |
| ➔ **IO=3F8h; IRQ=10, 11** | | Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2F8h; IRQ=10, 11** | | Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=3E8h; IRQ=10, 11** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E8h; IRQ=10, 11** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=250h; IRQ=10, 11** | | Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E0h; IRQ=10, 11** | | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11 |

### 5.3.6.1.5 Serial Port 5 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=250h; IRQ=10** | | Serial Port I/O port address is 250h and the interrupt address is IRQ10 |
| ➔ **IO=3F8h; IRQ=10, 11** | | Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2F8h; IRQ=10, 11** | | Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=3E8h; IRQ=10, 11** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E8h; IRQ=10, 11** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=250h; IRQ=10, 11** | | Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E0h; IRQ=10, 11** | | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11 |

#### 5.3.6.1.6 Serial Port 6 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 |

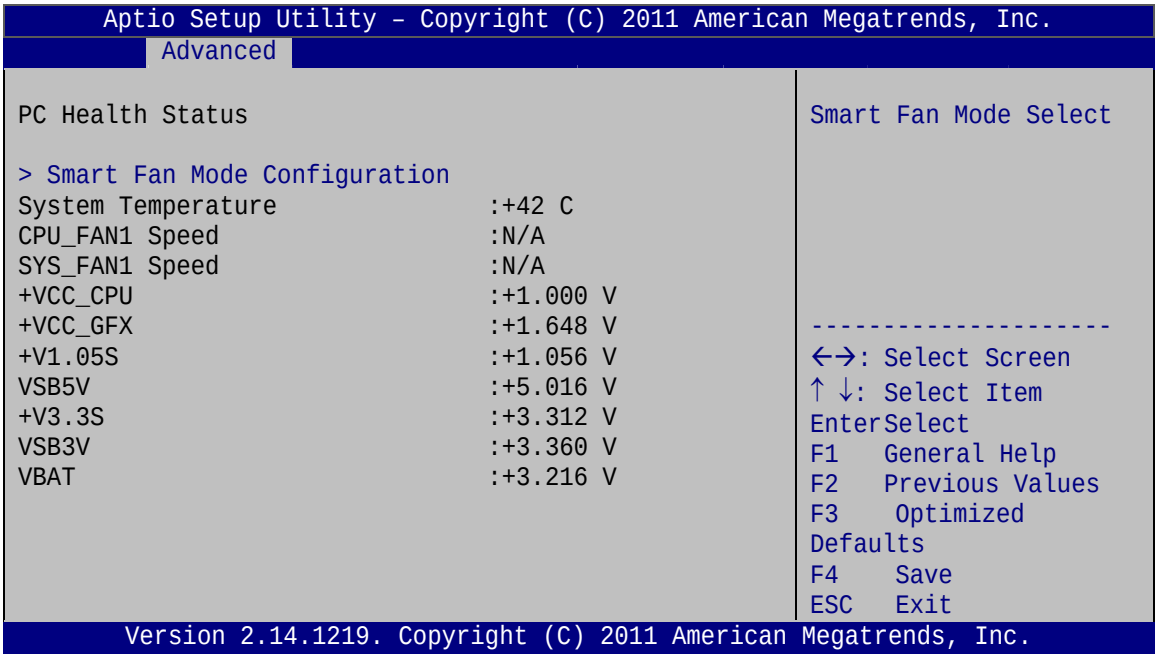
➔ **Change Settings [Auto]**

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=2E0h; IRQ=10** | | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10 |
| ➔ **IO=3F8h; IRQ=10, 11** | | Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2F8h; IRQ=10, 11** | | Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=3E8h; IRQ=10, 11** | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E8h; IRQ=10, 11** | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11 |
| ➔ **IO=250h; IRQ=10, 11** | | Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11 |
| ➔ **IO=2E0h; IRQ=10, 11** | | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11 |

### 5.3.7 F81866 H/W Monitor

The **F8186 H/W Monitor** menu (**BIOS Menu 10**) shows the operating temperature, fan speeds and system voltages.




**BIOS Menu 10: Hardware Health Configuration**

➔ **PC Health Status**

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

- System Temperatures
- Fan Speeds:
  - CPU Fan Speed
  - System Fan Speed
- Voltages:
  - +VCC_CPU
  - +VCC_GFX
  - +V1.05S
  - VSB5V
  - +V3.3S

- VSB3V
- VBAT

### 5.3.7.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 11**) to configure the smart fan temperature and speed settings.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Advanced
Smart Fan Mode Configuration                    Smart Fan Mode Select
                                                (Reference System
CPU_FAN1 Smart Fan Control      [Auto Duty-Cycle Mode]  Temperature)
CPU Temperature 1               60
CPU Temperature 2               50
CPU Temperature 3               40
CPU Temperature 4               30
SYS_FAN1 Smart Fan Control      [Auto Duty-Cycle Mode]  ---------------------
System Temperature 1            60                      ←→: Select Screen
System Temperature 2            50                      ↑ ↓: Select Item
System Temperature 3            40                      EnterSelect
System Temperature 4            30                      + -   Change Opt.
                                                        F1    General Help
                                                        F2    Previous Values
                                                        F3    Optimized Defaults
                                                        F4    Save & Exit
                                                        ESC   Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

**BIOS Menu 11: FAN 1 Configuration**

➔ **CPU_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]**

Use the **CPU_FAN1 Smart Fan Control** option to configure the CPU Smart Fan (CPU_FAN1).

| | |
|---|---|
| ➔ **Manual Duty Mode** | The fan spins at the speed set in Manual by Duty Cycle settings |
| ➔ **Auto Duty-Cycle Mode** | The fan adjusts its speed using Auto by Duty-Cycle settings |

➔ **SYS_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]**

Use the **SYS_FAN1 Smart Fan Control** option to configure the System Smart Fan (SYS_FAN1).

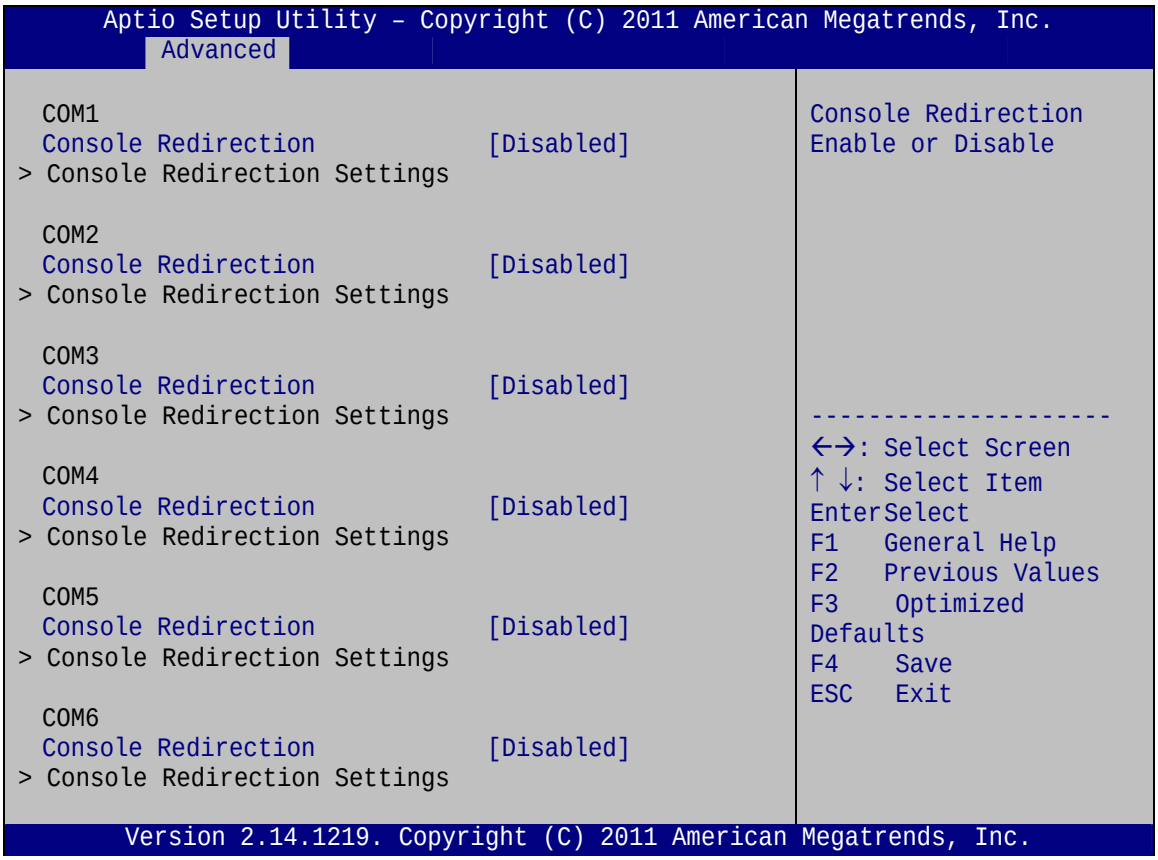
| | |
|---|---|
| ➔ **Manual Duty Mode** | The fan spins at the speed set in Manual by Duty Cycle settings |
| ➔ **Auto Duty-Cycle Mode** | The fan adjusts its speed using Auto by Duty-Cycle settings |

➔ **Temperature n**

Use the + or – key to change the fan **Temperature n** value. Enter a decimal number between 0 and 85.

### 5.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) 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.




**BIOS Menu 12: Serial Port Console Redirection**

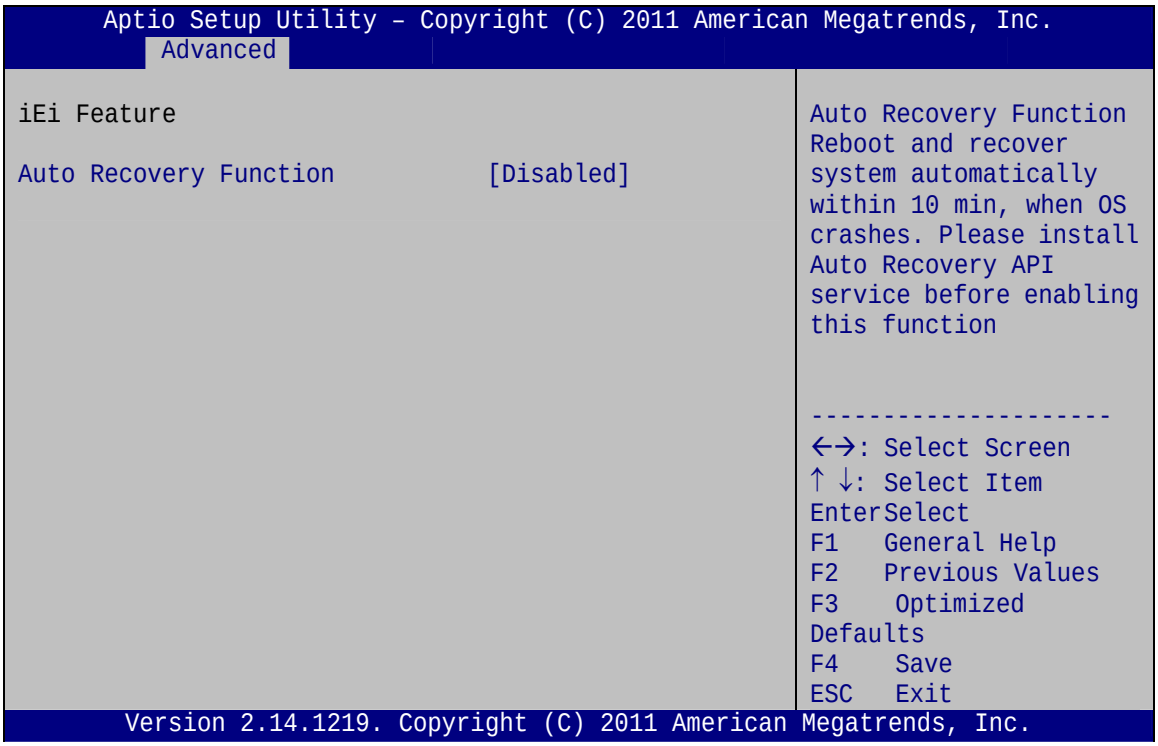
➔ **Console Redirection [Disabled]**

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 |

### 5.3.9 IEI Feature

Use the **IEI Feature** menu (**BIOS Menu 13**) to configure One Key Recovery function.




**BIOS Menu 13: IEI Feature**

➔ **Auto Recovery Function [Disabled]**

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

➔ **Disabled** **DEFAULT** Auto recovery function disabled

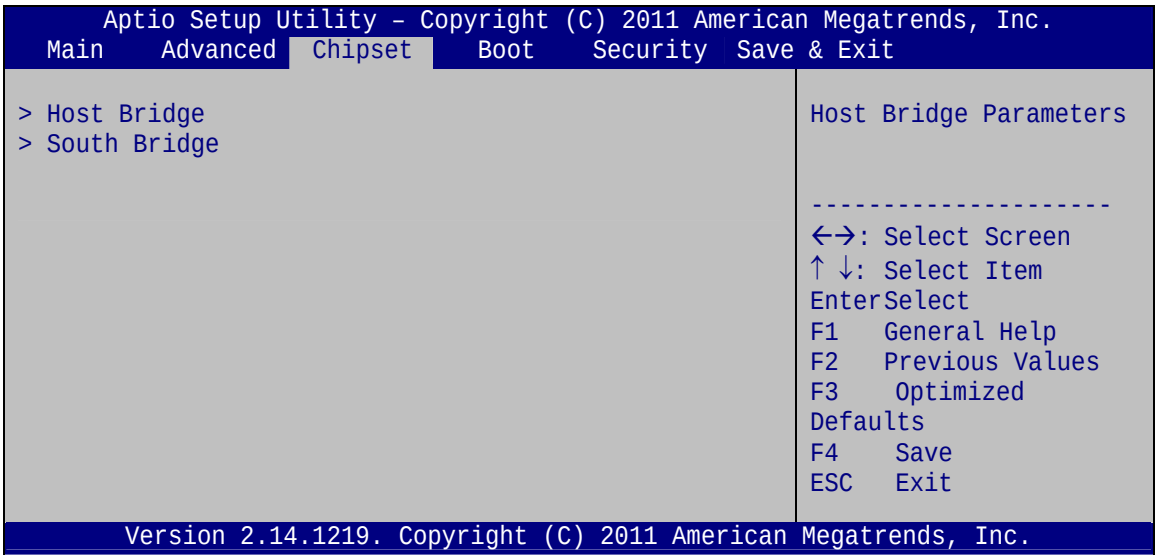
➔ **Enabled** Auto recovery function enabled

## 5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 14**) to access the Hostbridge and Southbridge configuration menus

**WARNING!**

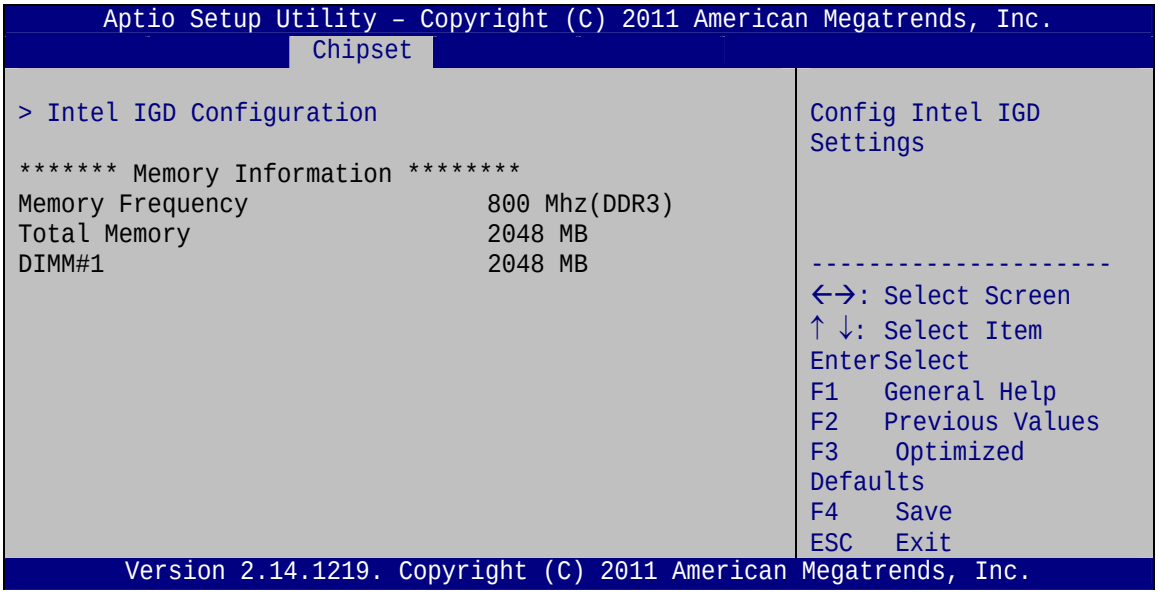
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.




**BIOS Menu 14: Chipset**

### 5.4.1 Host Bridge

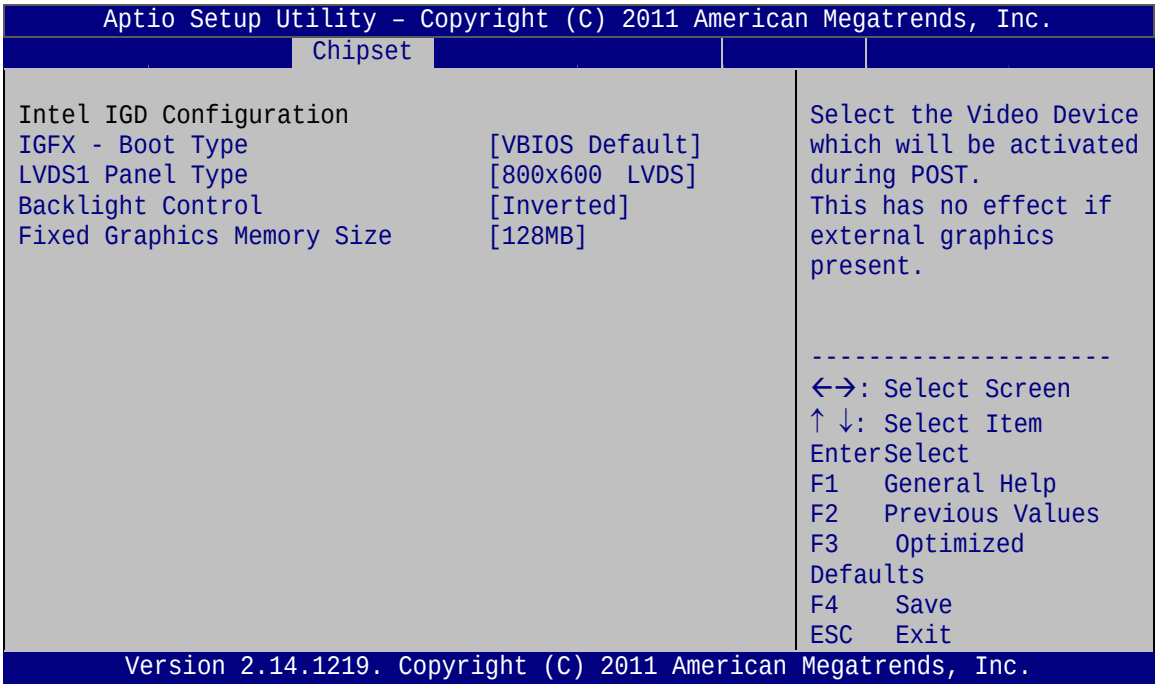
Use the **Host Bridge** menu (**BIOS Menu 15**) to configure the host bridge chipset.




**BIOS Menu 15:Host Bridge Configuration**

### 5.4.1.1 Intel IGD Configuration

Use the **Intel IGD Configuration** menu to configure the video device connected to the system.




**BIOS Menu 16: Intel IGD SWSCI OpRegion**

➔ **IGFX - Boot Type [VBIOS Default]**

Use the **IGFX - Boot Type** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default **DEFAULT**
- CRT
- CRT + HDMI
- LVDS1
- LVDS2

➔ **LVDS1 Panel Type [800x600 LVDS]**

Use the **LVDS1 Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 LVDS
- 800x600 LVDS **DEFAULT**
- 1024x768 LVDS
- 1280x1024 LVDS
- 1366x768 LVDS
- 1224x600 LVDS
- 1280x800 LVDS

➔ **Backlight Control [Inverted]**

Use the **Backlight Control** option to select the backlight control mode.

| | | |
|---|---|---|
| ➔ **Normal** | | The LVDS backlight is brighter at low voltage level. |
| ➔ **Inverted** | **DEFAULT** | The LVDS backlight is brighter at high voltage level. |

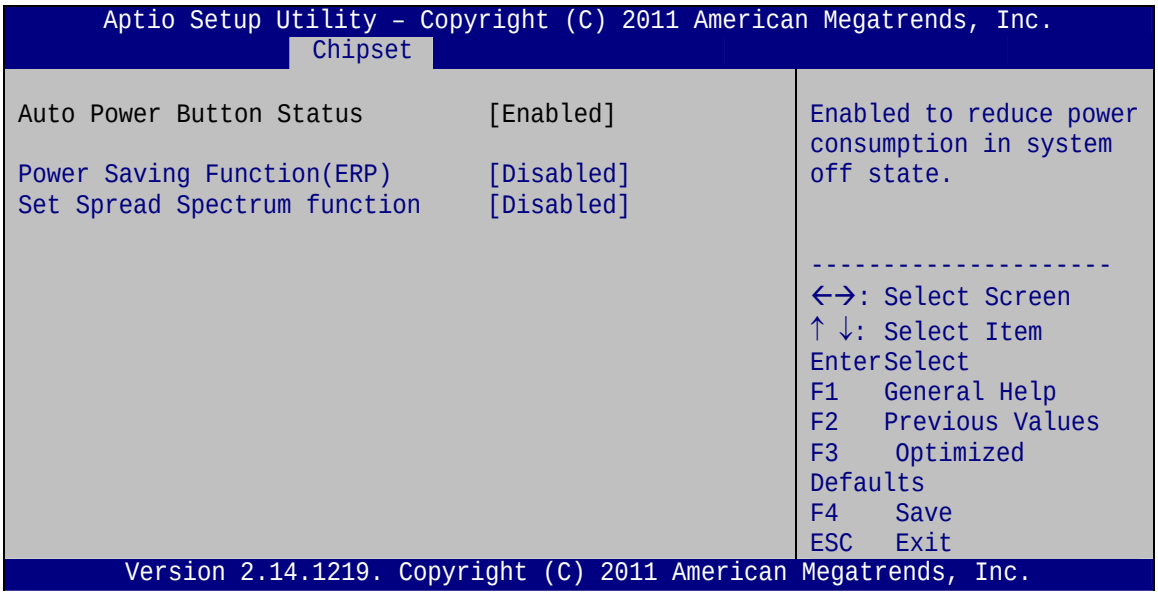
➔ **Fixed Graphics Memory Size [128MB]**

Use the **Fixed Graphics Memory Size** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128 MB **Default**
- 256 MB

### 5.4.2 South Bridge

Use the **South Bridge** menu (**BIOS Menu 17**) to configure the Southbridge chipset.




**BIOS Menu 17:Southbridge Chipset Configuration**

➔ **Power Saving Function(ERP) [Disabled]**

Use the **Power Saving Function(ERP)** BIOS option to enable or disable the power saving function.

➔ **Disabled** **DEFAULT** Power saving function is disabled.

➔ **Enabled** Power saving function is enabled. It will reduce power consumption when the system is off.

➔ **Set Spread Spectrum Function [Disabled]**

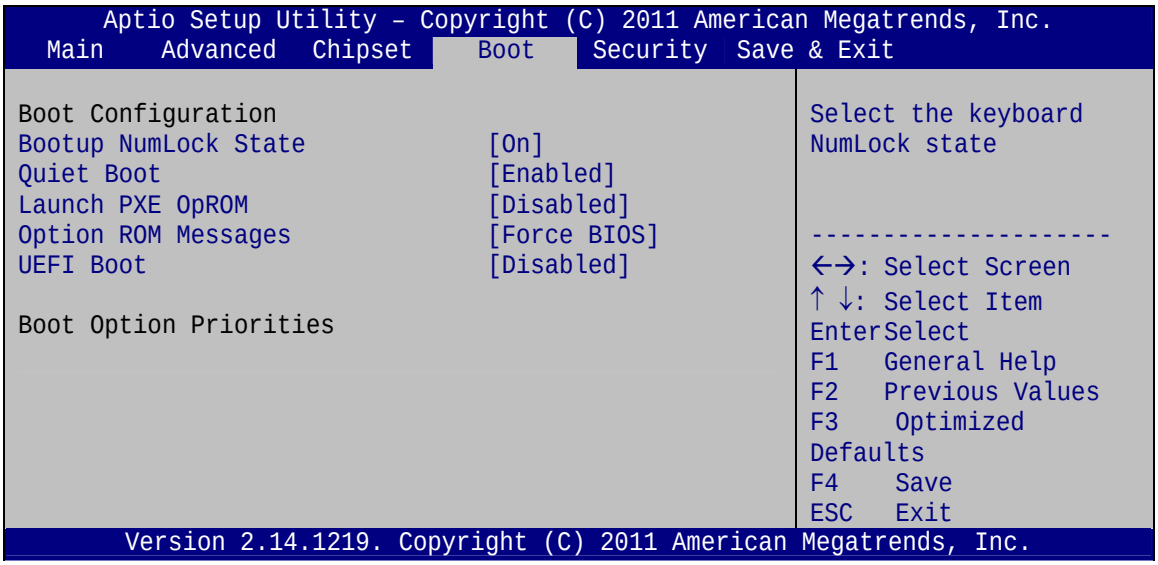
The **Set Spread Spectrum Function** option can help to improve CPU EMI issues.

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

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

## 5.5 Boot

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




**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. |

➔ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

| | | |
|---|---|---|
| ➔ **Force BIOS** | **DEFAULT** | Sets display mode to force BIOS. |
| ➔ **Keep Current** | | Sets display mode to current. |

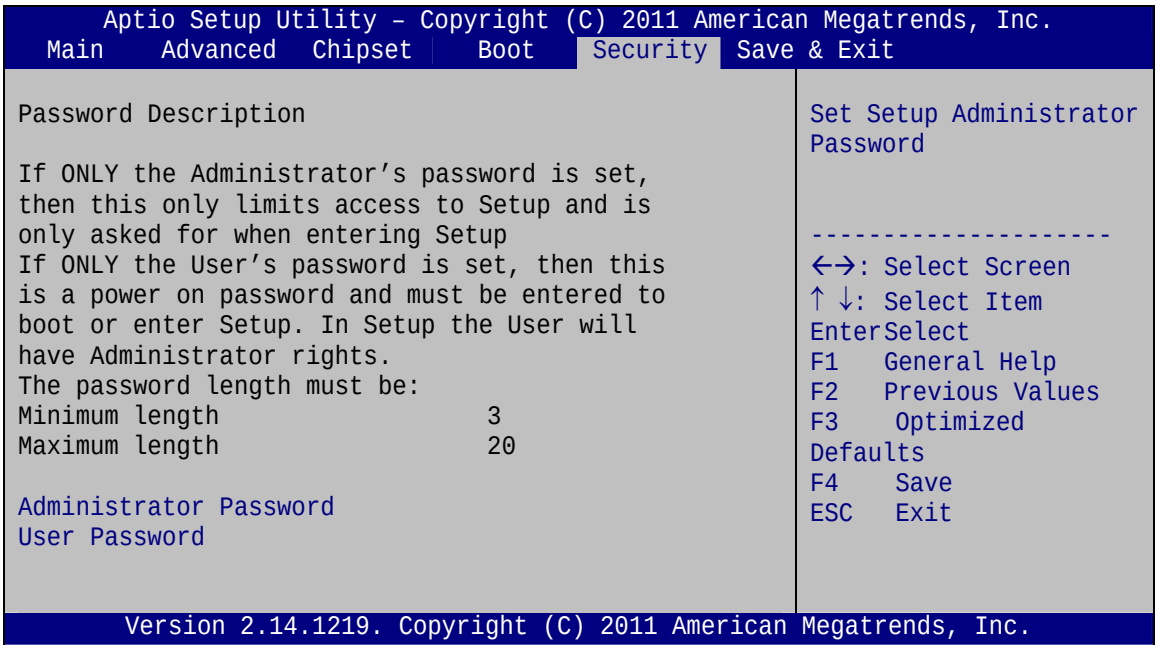
➔ **UEFI Boot [Disabled]**

Use the **UEFI Boot** option to enable or disable to boot from the UEFI devices.

| | | |
|---|---|---|
| ➔ **Disabled** | **DEFAULT** | Boot from UEFI devices is disabled. |
| ➔ **Enabled** | | Boot from UEFI devices is enabled. |

## 5.6 Security

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




**BIOS Menu 19: Security**

➔ **Administrator Password**

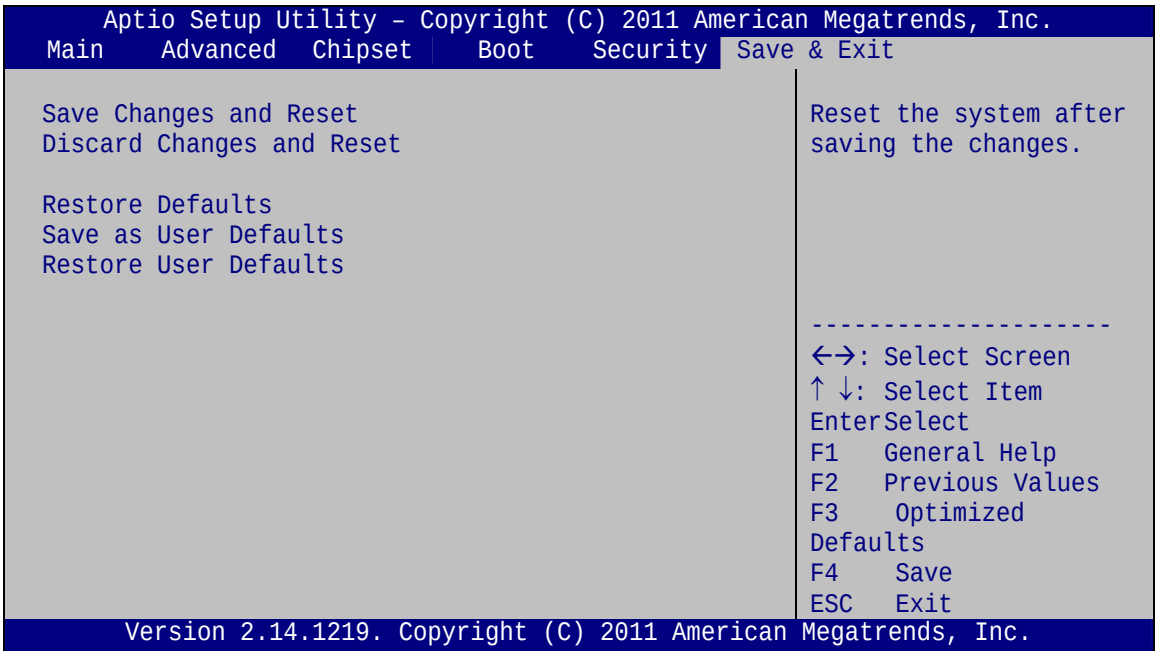
Use the **Administrator Password** to set or change a administrator password.

➔ **User Password**

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

## 5.7 Exit

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




**BIOS Menu 20:Exit**

➔ **Save Changes and Reset**

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

➔ **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.

Appendix

A

# BIOS Options

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

Appendix

B

# One Key Recovery

## B.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 B.3 for the detailed setup procedure.

The IEI One Key Recovery tool menu is shown below.


**Figure B-1: IEI One Key Recovery Tool Menu**

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

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

**NOTE:**

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

### B.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.


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.

### B.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 B.3) and the restore through LAN function (described in Section B.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.

## B.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 B.2.1**)

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

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

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

**Step 5:** Create factory default image (see **Section B.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 B.3**.

### B.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.

### B.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!

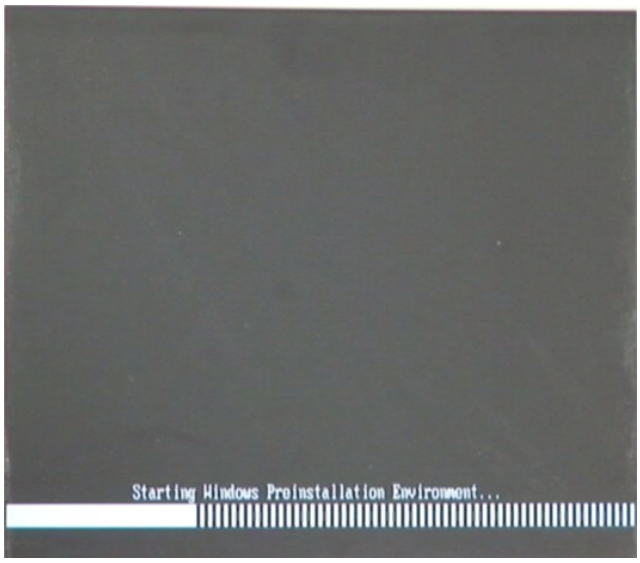



**Figure B-2: Launching the Recovery Tool**

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

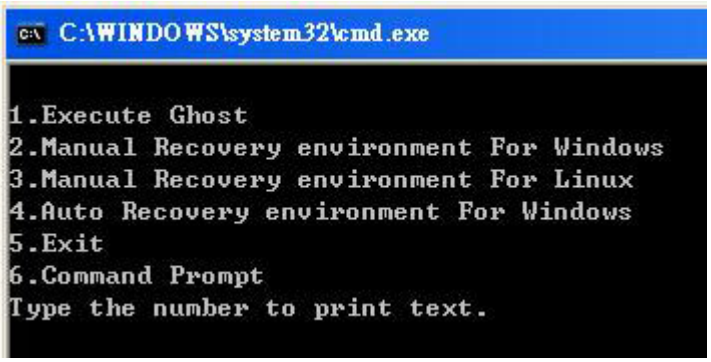



**Figure B-3: Recovery Tool Setup Menu**

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

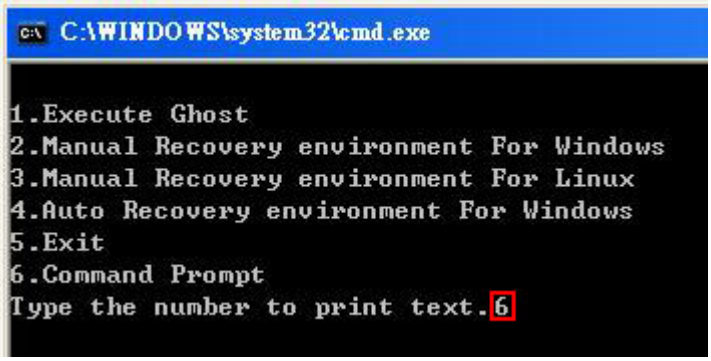



**Figure B-4: Command Prompt**

**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**

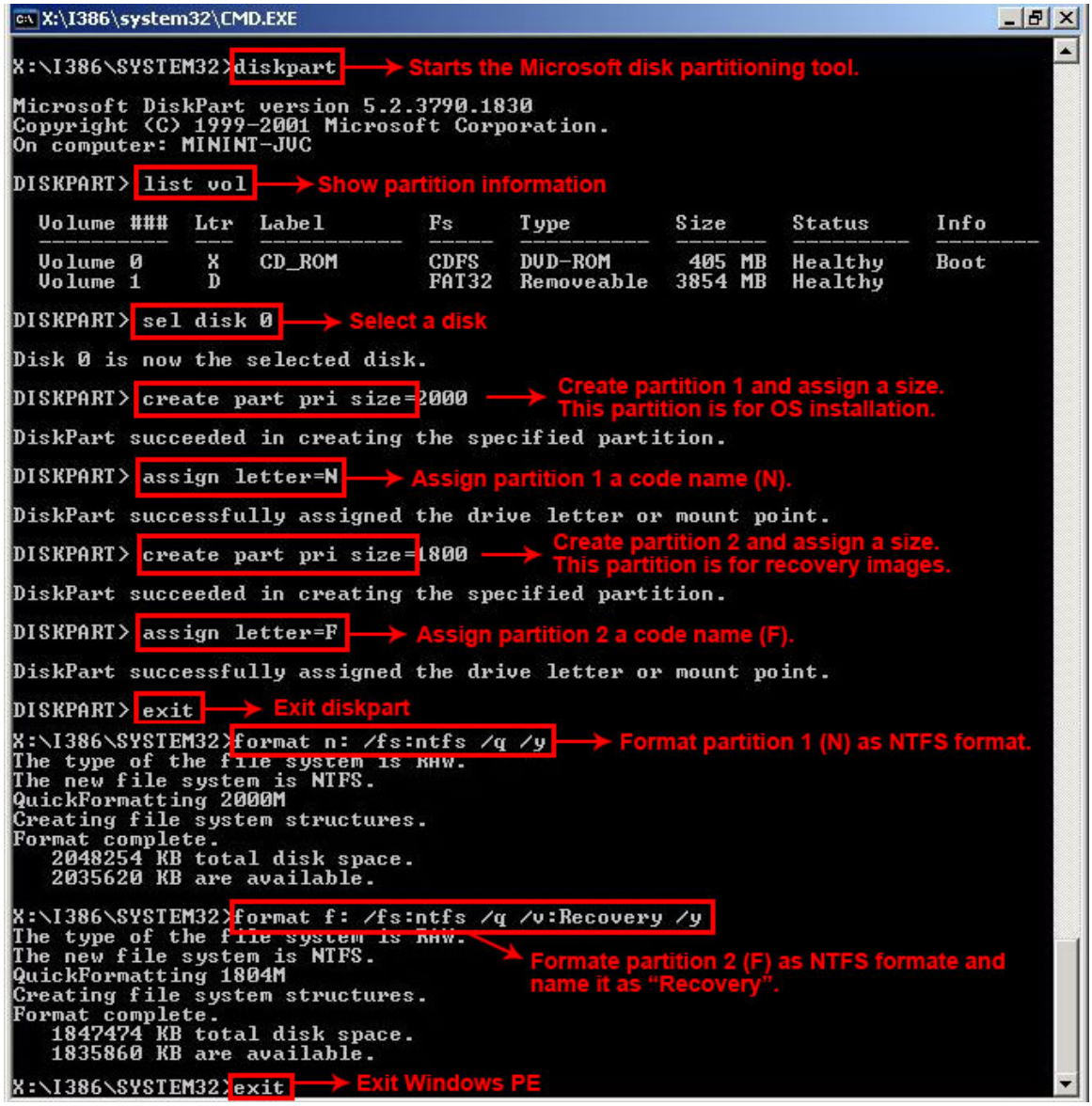
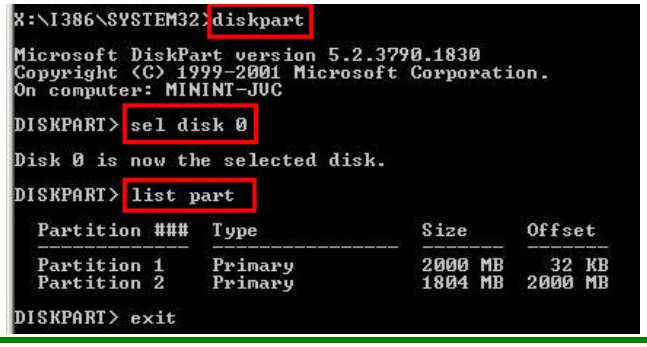



**Figure B-5: Partition Creation Commands**

**NOTE:**

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




**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.

### B.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.

### B.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!

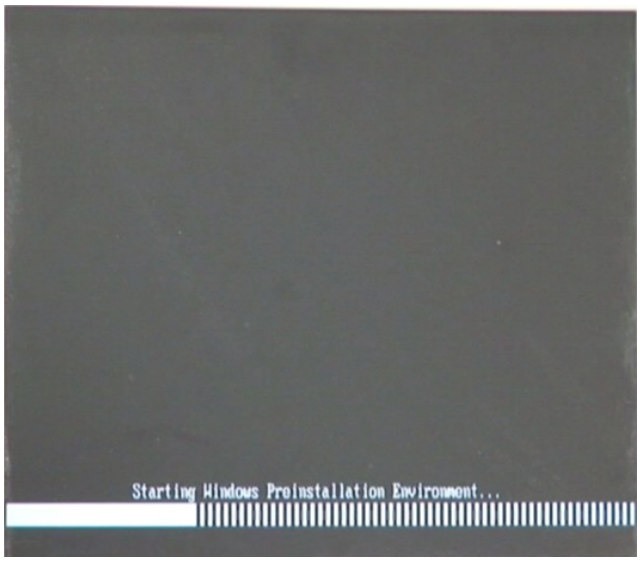



**Figure B-6: Launching the Recovery Tool**

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

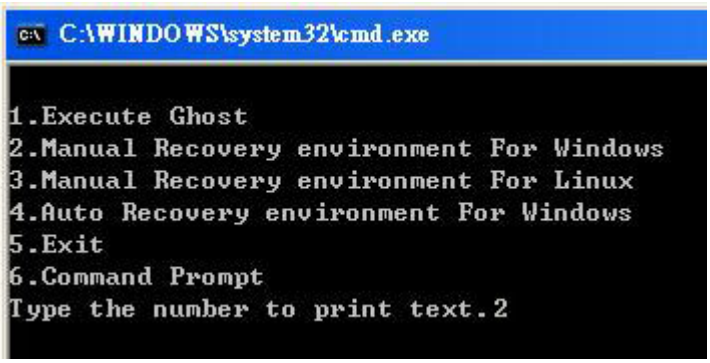



**Figure B-7: Manual Recovery Environment for Windows**

**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 B.2.2** is hidden and the recovery tool is saved in this partition.

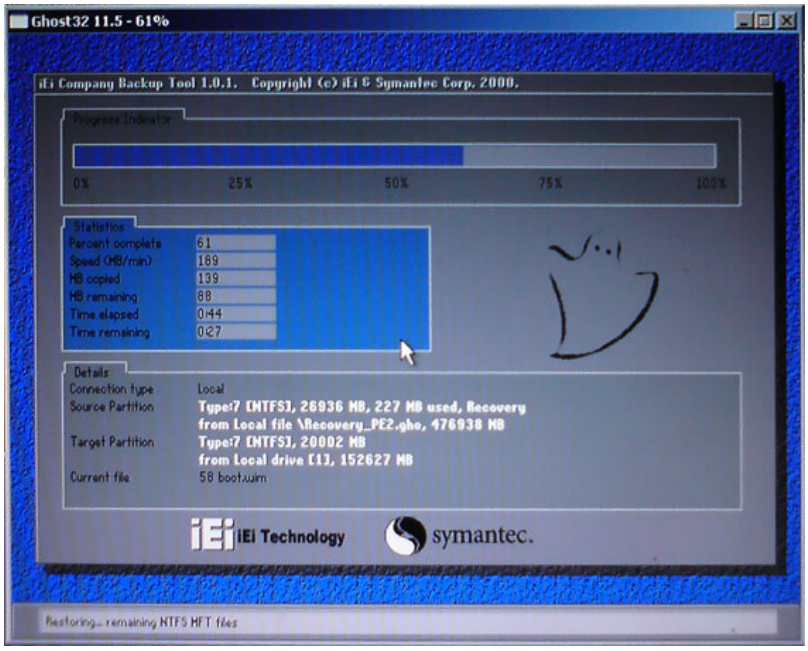



**Figure B-8: Building the Recovery Partition**

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

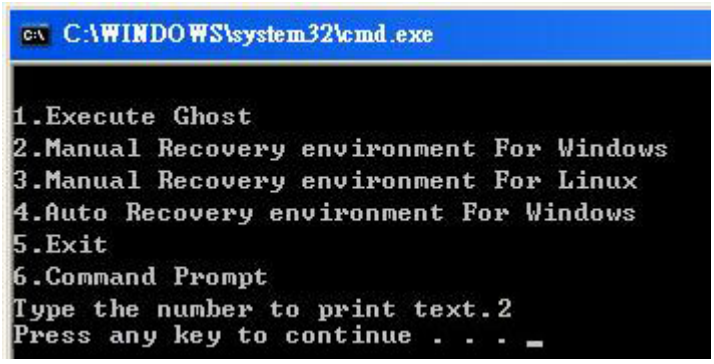



**Figure B-9: Press Any Key to Continue**

**Step 7:** Eject the recovery CD.

### B.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 B-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.

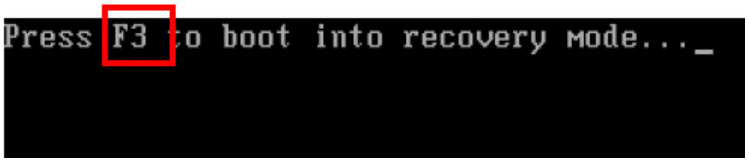



**Figure B-10: Press F3 to Boot into Recovery Mode**

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

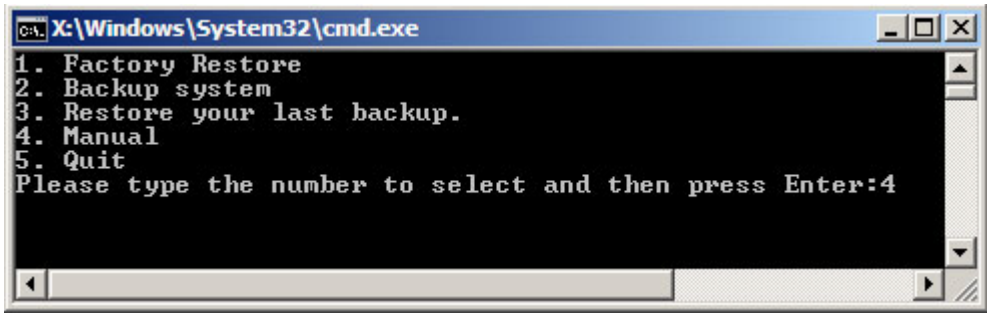



**Figure B-11: Recovery Tool Menu**

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

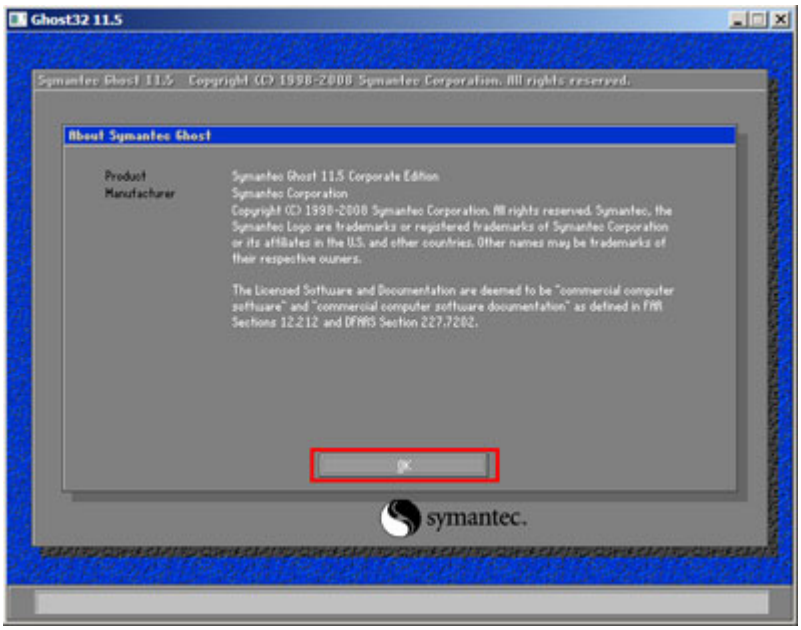



**Figure B-12: About Symantec Ghost Window**

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

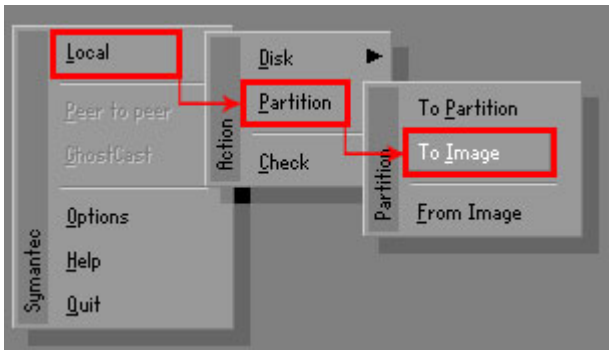



**Figure B-13: Symantec Ghost Path**

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

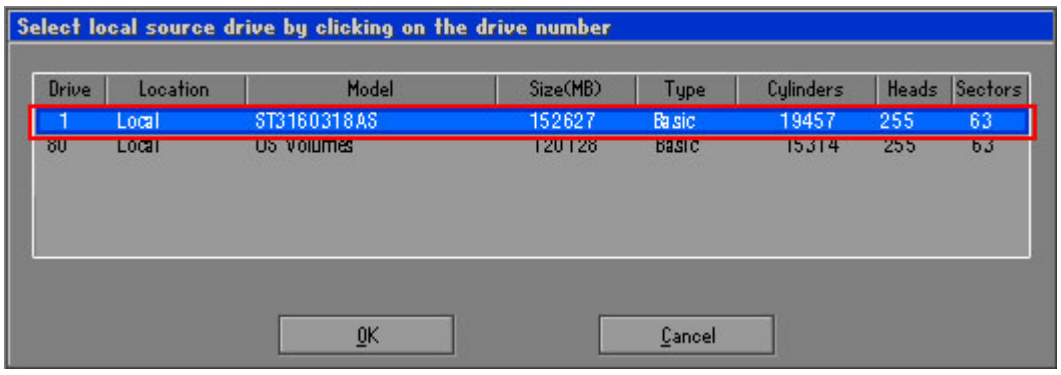



**Figure B-14: Select a Local Source Drive**

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

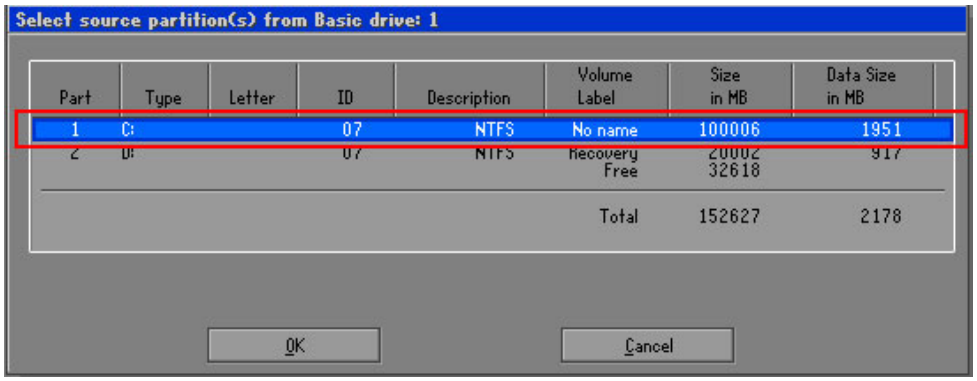



**Figure B-15: Select a Source Partition from Basic Drive**

**Step 7:** Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure B-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**.

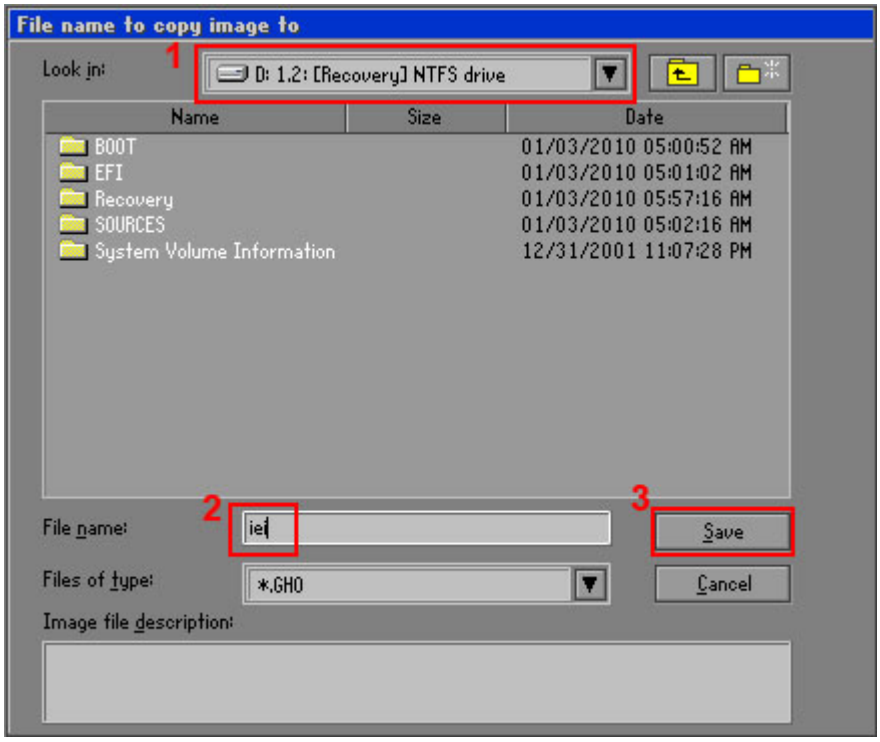



**Figure B-16: File Name to Copy Image to**

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

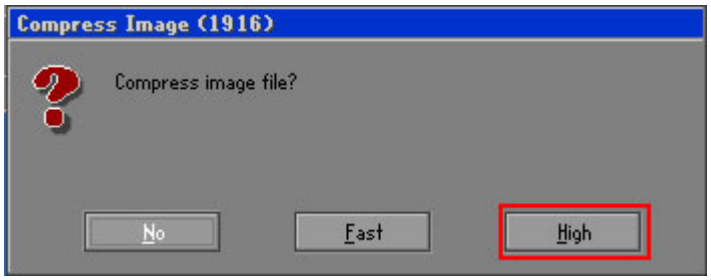



**Figure B-17: Compress Image**

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

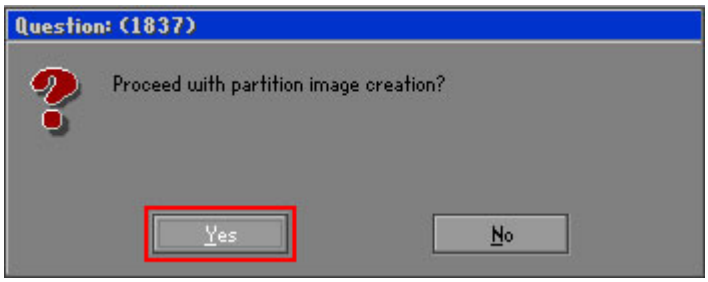



**Figure B-18: Image Creation Confirmation**

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

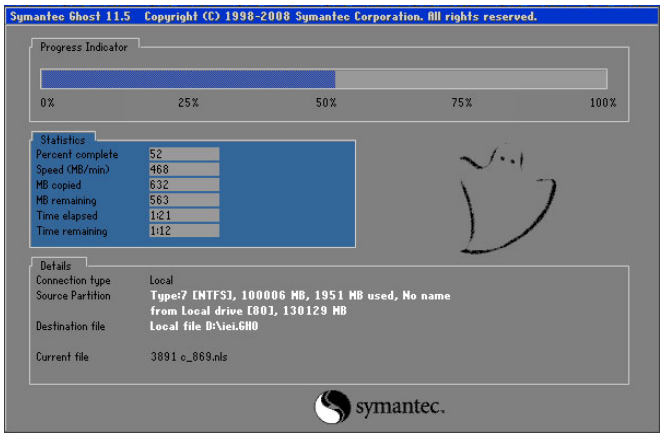



**Figure B-19: Image Creation Complete**

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

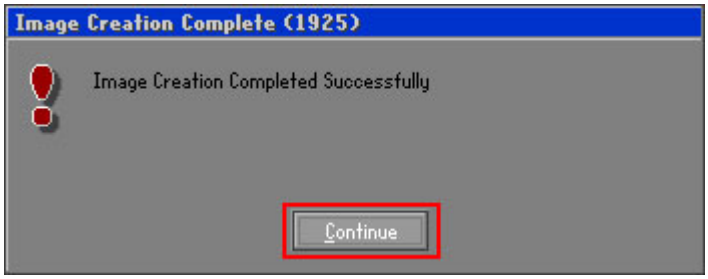



**Figure B-20: Image Creation Complete**

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

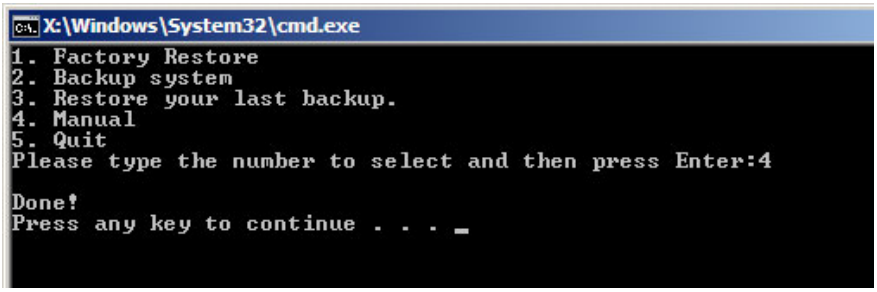



**Figure B-21: Press Any Key to Continue**

## B.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 B.2.1 ~ Section B.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.


**Figure B-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 B-23)

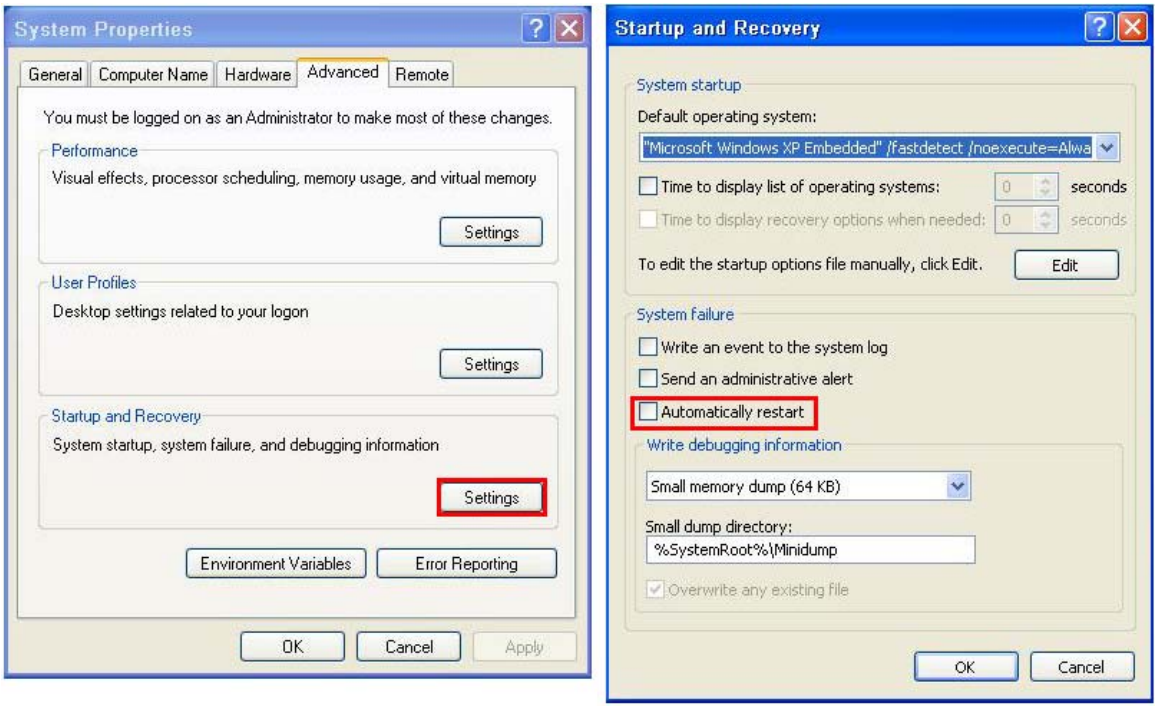



**Figure B-23: Disable Automatically Restart**

**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!

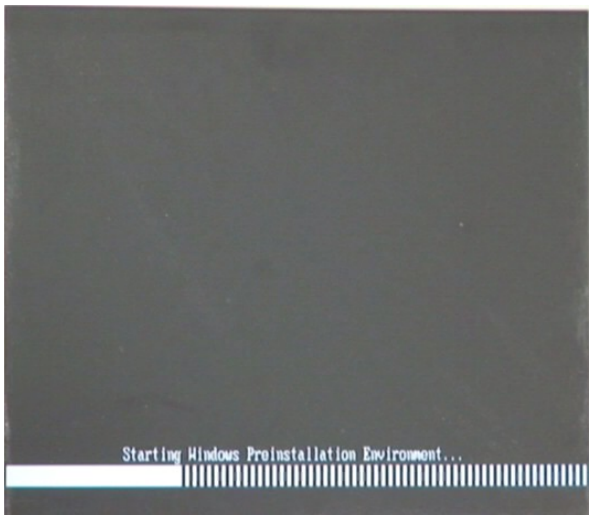



**Figure B-24: Launching the Recovery Tool**

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

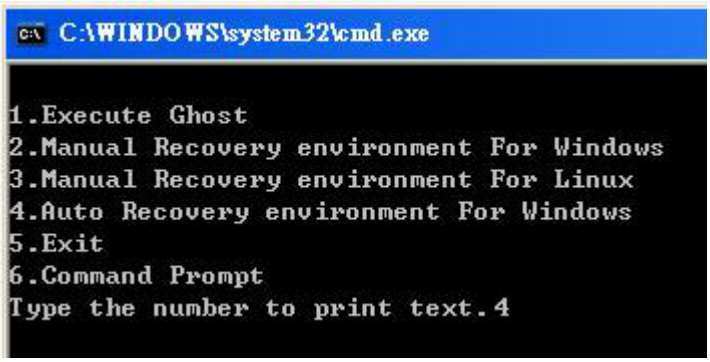



**Figure B-25: Auto Recovery Environment for Windows**

**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 B.2.2** is hidden and the auto recovery tool is saved in this partition.

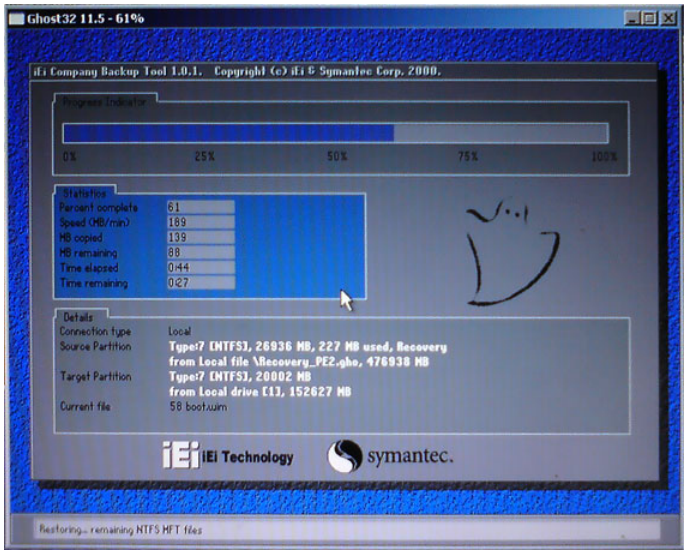



**Figure B-26: Building the Auto Recovery Partition**

**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.


**Figure B-27: Factory Default Image Confirmation**

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

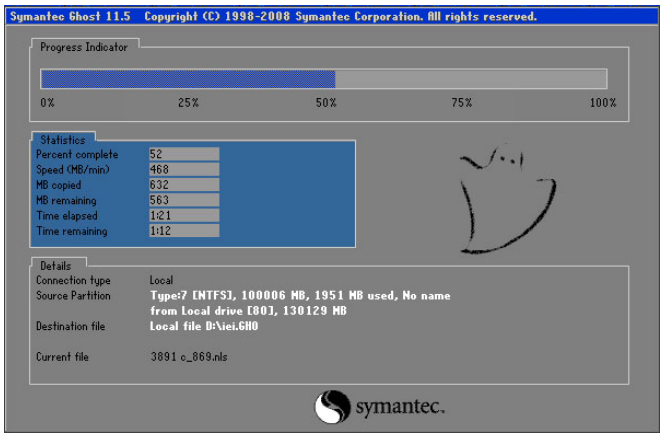



**Figure B-28: Image Creation Complete**

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

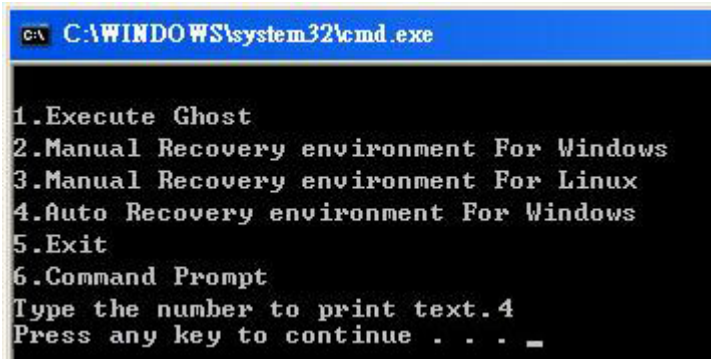
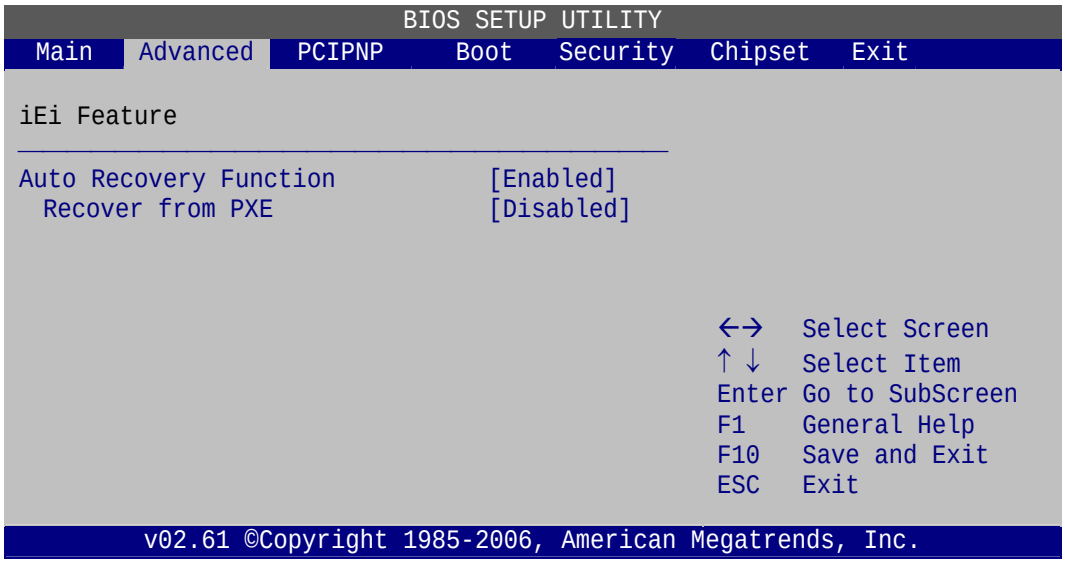



**Figure B-29: Press any key to continue**

**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 Menu 21: IEI Feature**

**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.

## B.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 B.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.

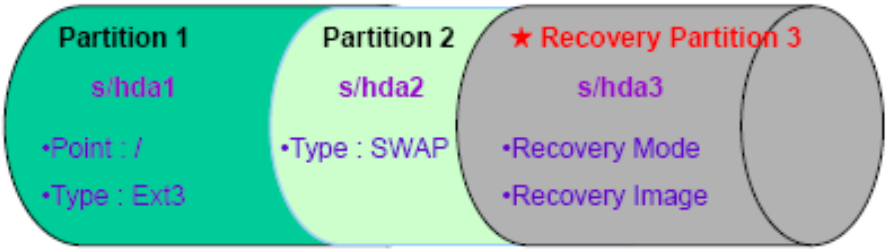



**Figure B-30: Partitions for Linux**

**Step 3:** **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section B.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 B-31**). 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.

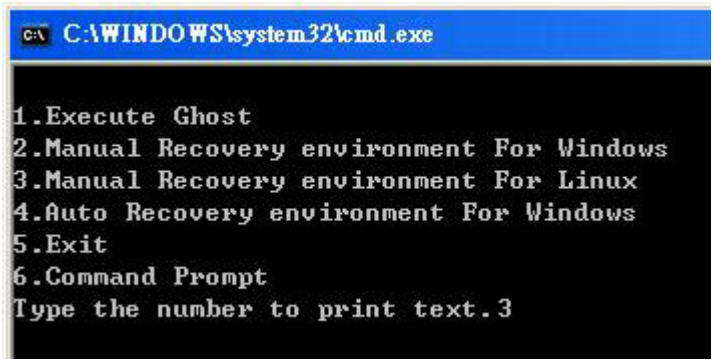



**Figure B-31: Manual Recovery Environment for Linux**

**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**

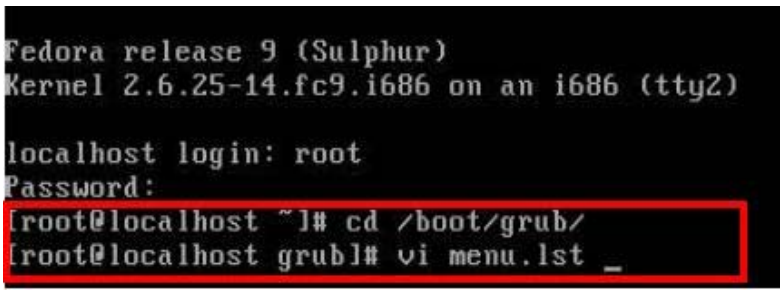
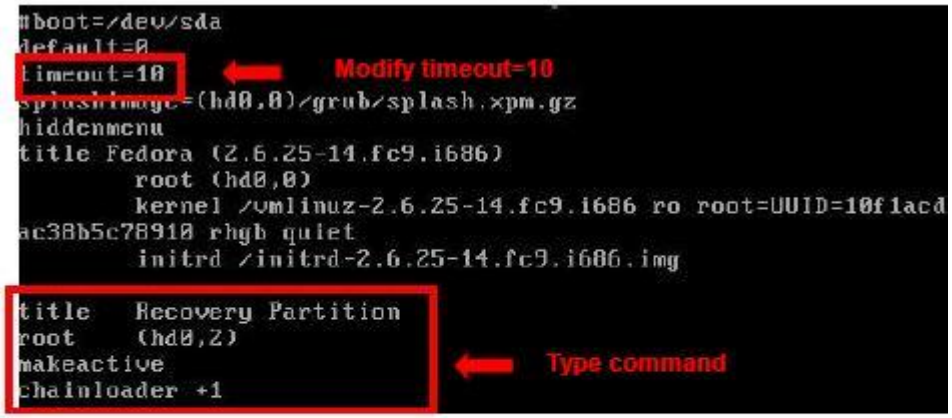



**Figure B-32: Access menu.lst in Linux (Text Mode)**

**Step 6:** Modify the menu.lst as shown below.




- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

**Step 7:** The recovery tool menu appears. (**Figure B-33**)

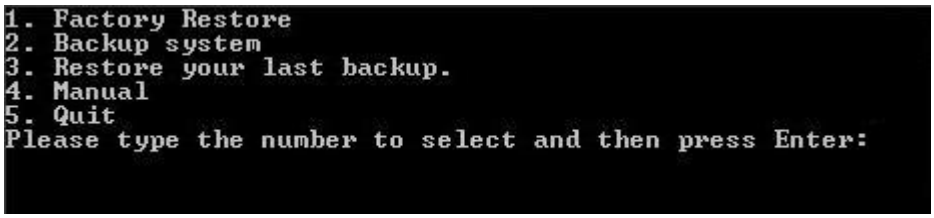



**Figure B-33: Recovery Tool Menu**

**Step 8:** **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section B.2.5** to create a factory default image.

## B.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 B.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.


**Figure B-34: Recovery Tool Main Menu**

The recovery tool has several functions including:

1. **Factory Restore**: Restore the factory default image (iei.GHO) created in Section B.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).

### B.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.

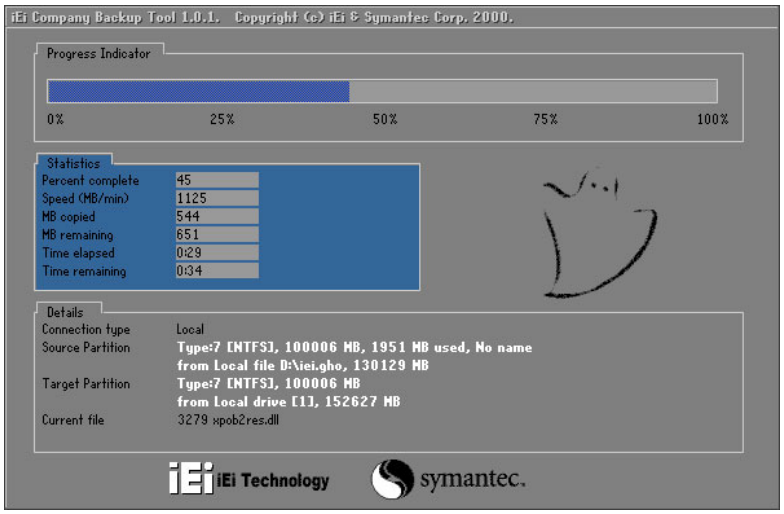



**Figure B-35: Restore Factory Default**

**Step 3:** The screen shown in **Figure B-36** appears when completed. Press any key to reboot the system.

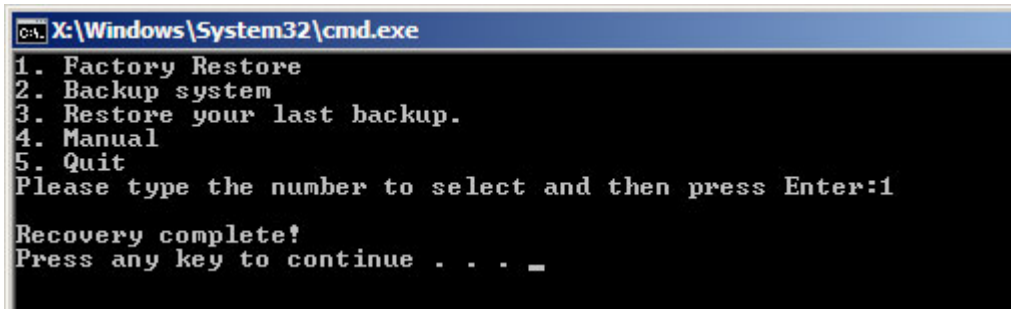



**Figure B-36: Recovery Complete Window**

### B.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.

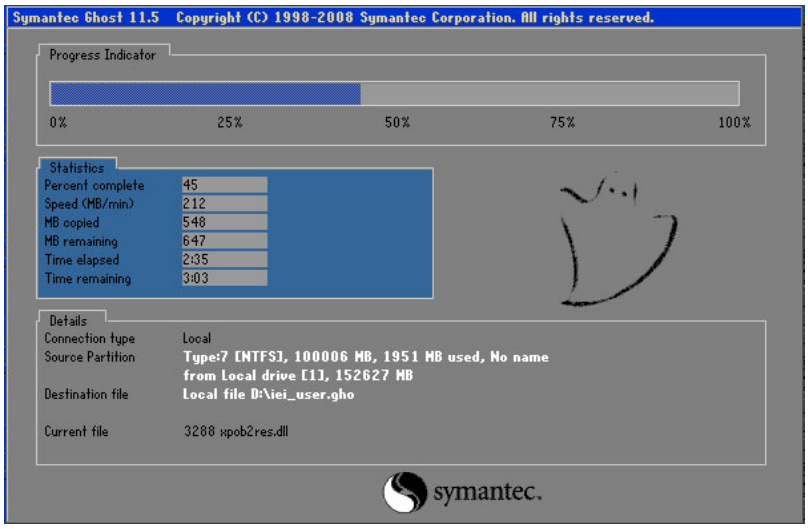



**Figure B-37: Backup System**

**Step 3:** The screen shown in **Figure B-38** appears when system backup is complete. Press any key to reboot the system.

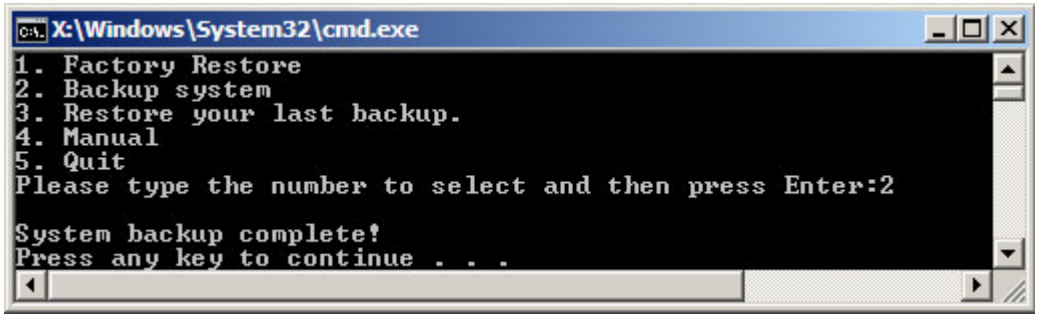



**Figure B-38: System Backup Complete Window**

### B.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).

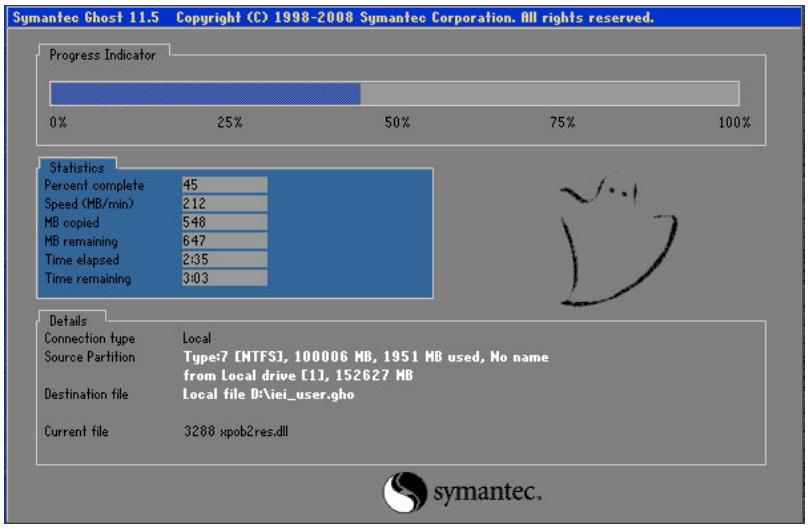



**Figure B-39: Restore Backup**

**Step 3:** The screen shown in **Figure B-40** appears when backup recovery is complete. Press any key to reboot the system.

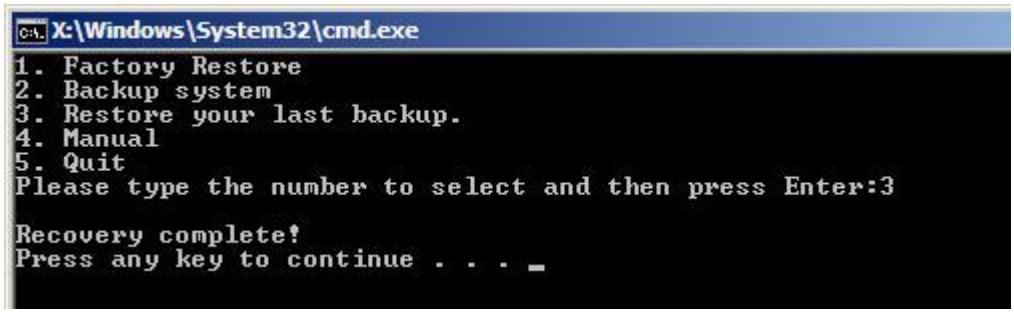



**Figure B-40: Restore System Backup Complete Window**

### B.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.

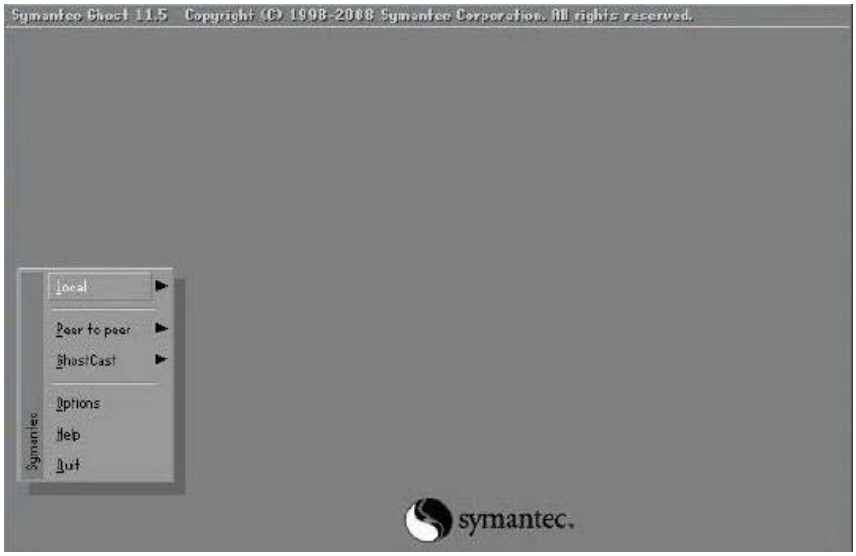
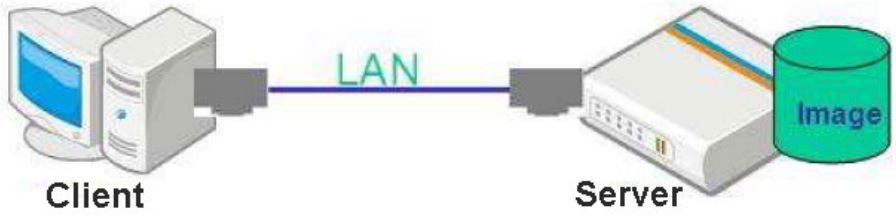



**Figure B-41: Symantec Ghost Window**

**Step 3:** When backup or recovery is completed, press any key to reboot the system.

## B.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).

### B.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:

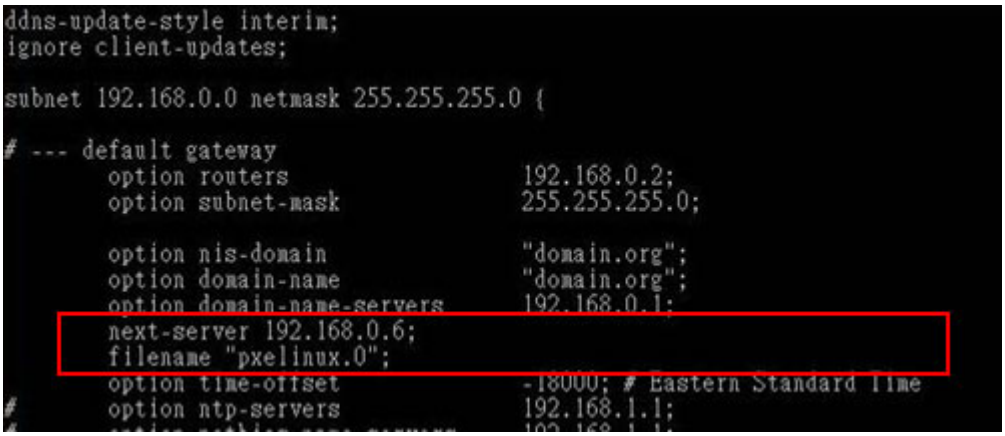
#vi /etc/dhcpd.conf

The DHCP server sample location is shown as below:


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



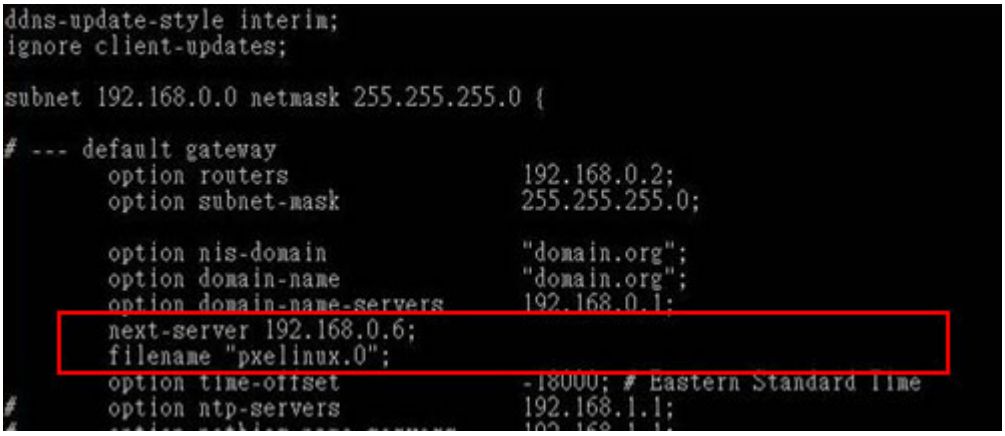

**Debian**

#vi /etc/dhcpd.conf

Edit “/etc/dhcpd.conf” for your environment. For example, add

next-server PXE server IP address;

filename “pxelinux.0”;




## B.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:

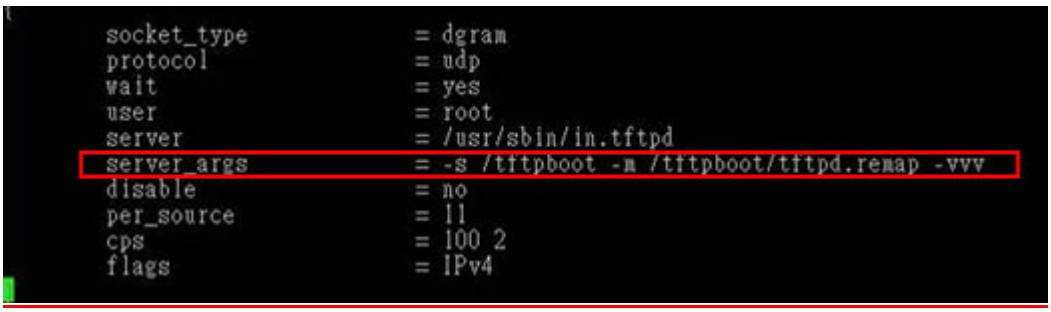
**CentOS**

#vi /etc/xinetd.d/tftp

Modify:

disable = no

server_args = -s /tftpboot –m /tftpboot/tftpd.remap -vvv_



**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
```

## B.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).


**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/

### B.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

### B.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
~
```

### B.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 B-23)

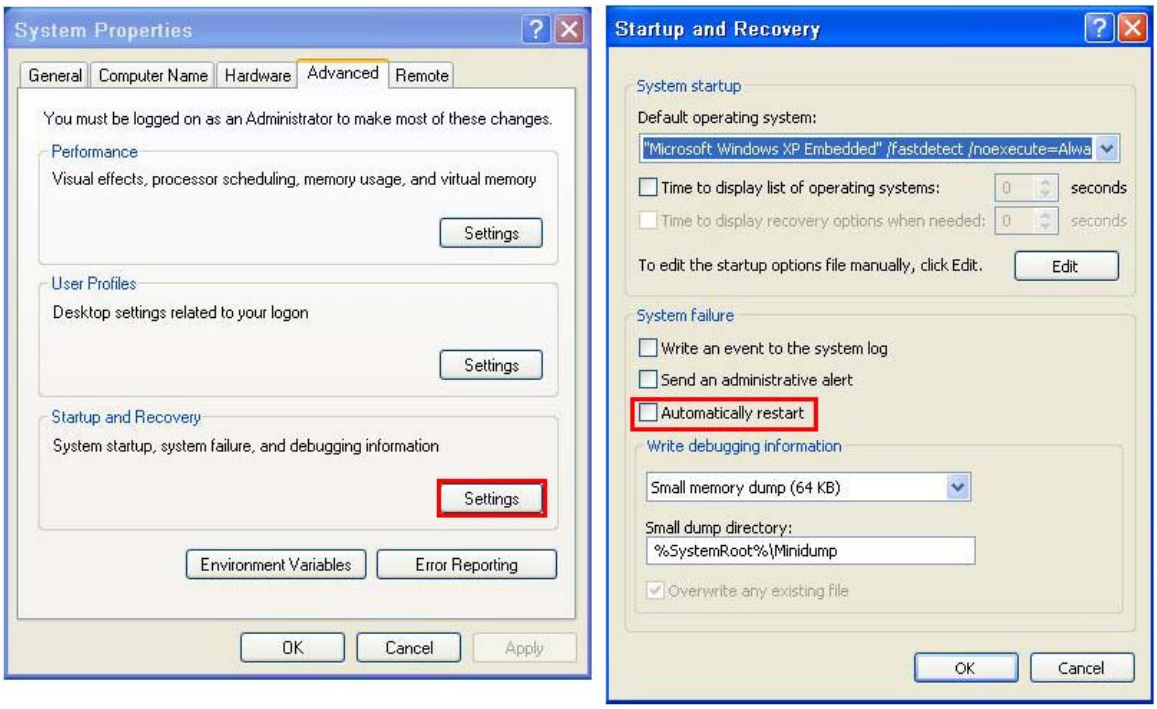



**Figure B-42: Disable Automatically Restart**

**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.

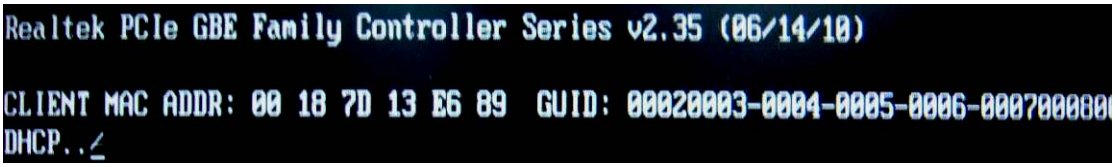
**Step 4:** Save changes and exit BIOS menu.

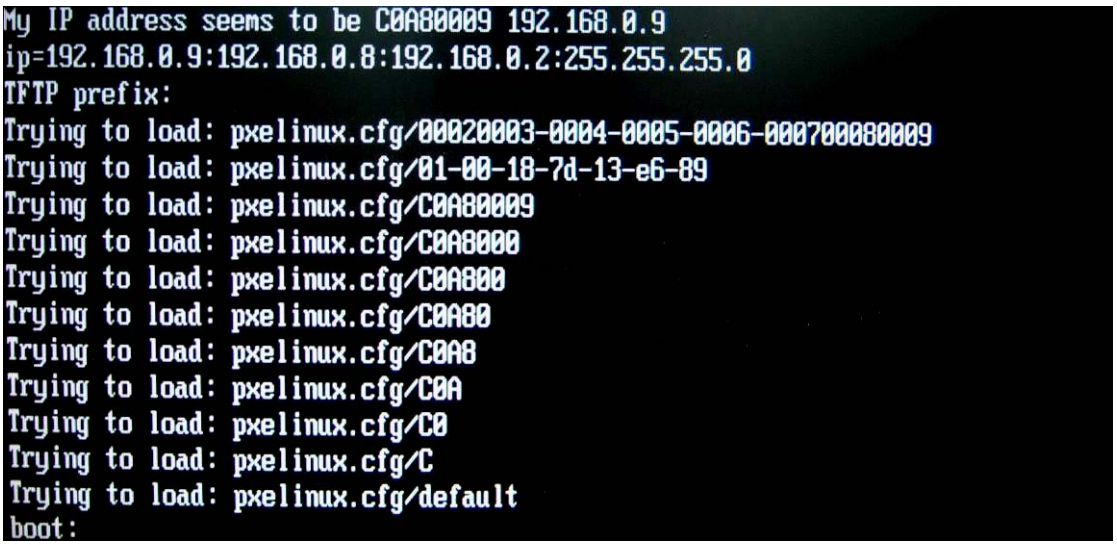
Exit → **Save Changes and Exit**

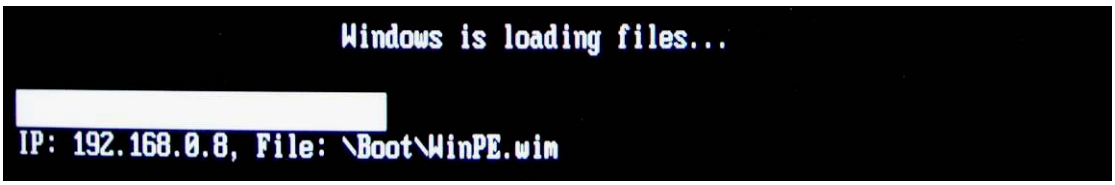
**Step 5:** Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility

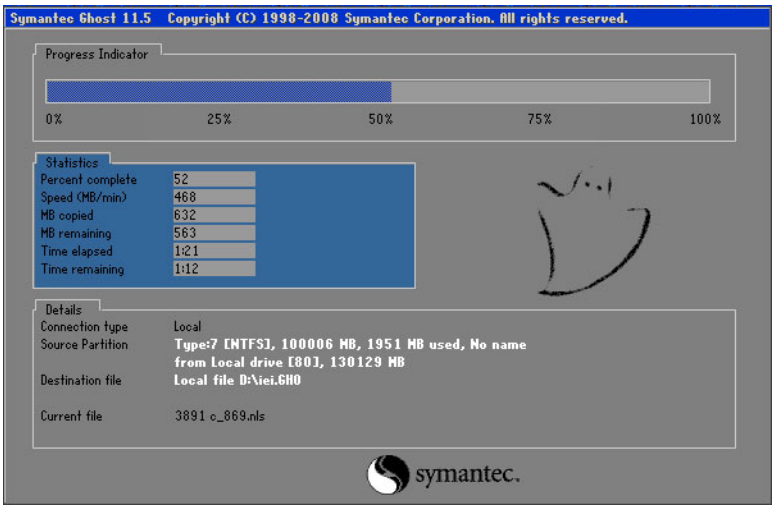
MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.


**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.






**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.

## B.7 Other Information

### B.7.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

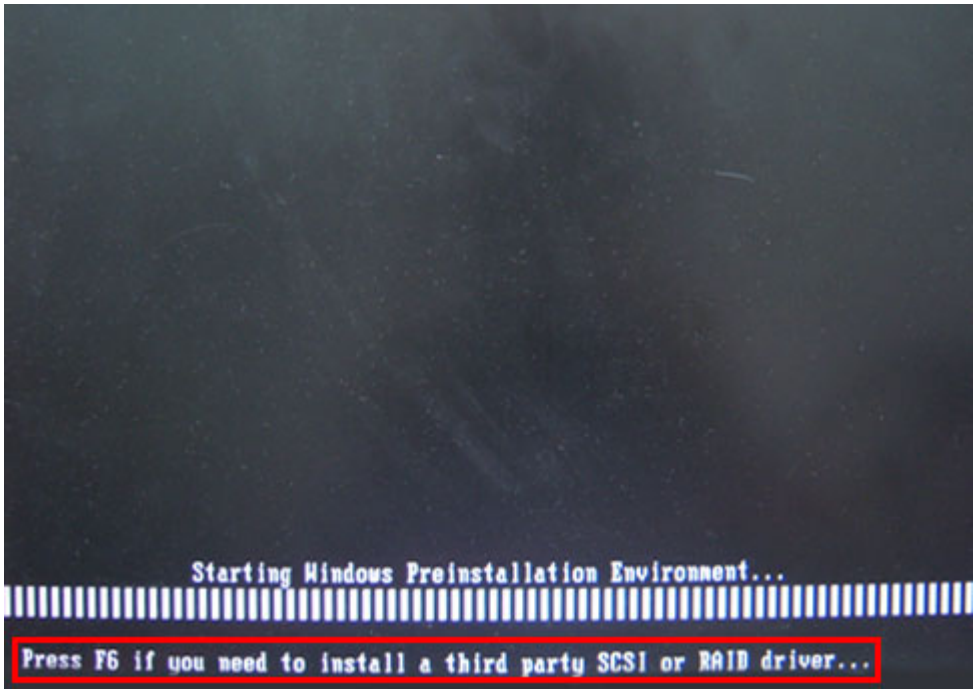
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

**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.

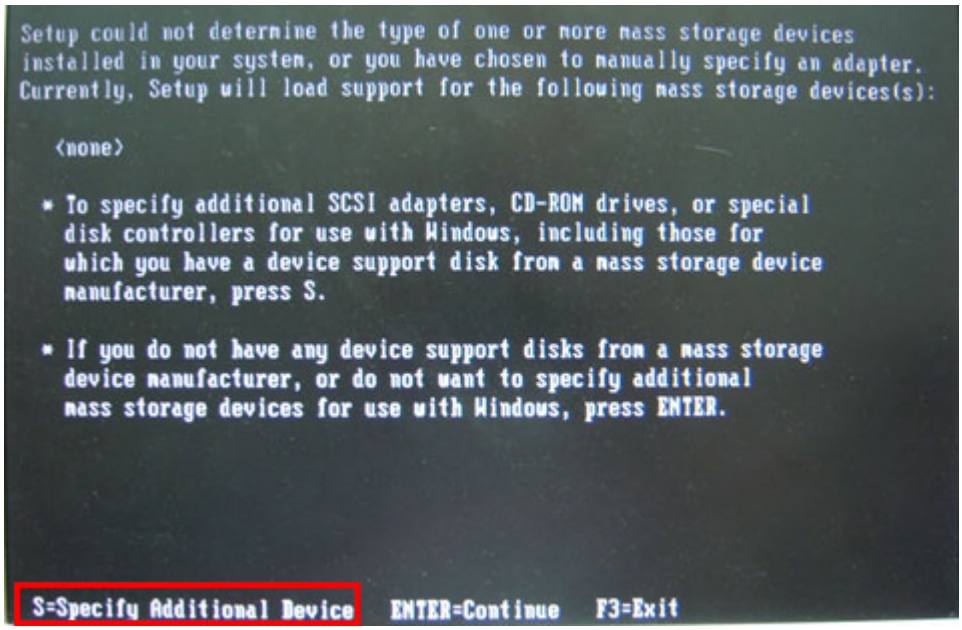
**Step 2:** Connect the USB floppy disk drive to the system.

**Step 3:** Insert the One Key Recovery CD into the system and boot the system from the CD.

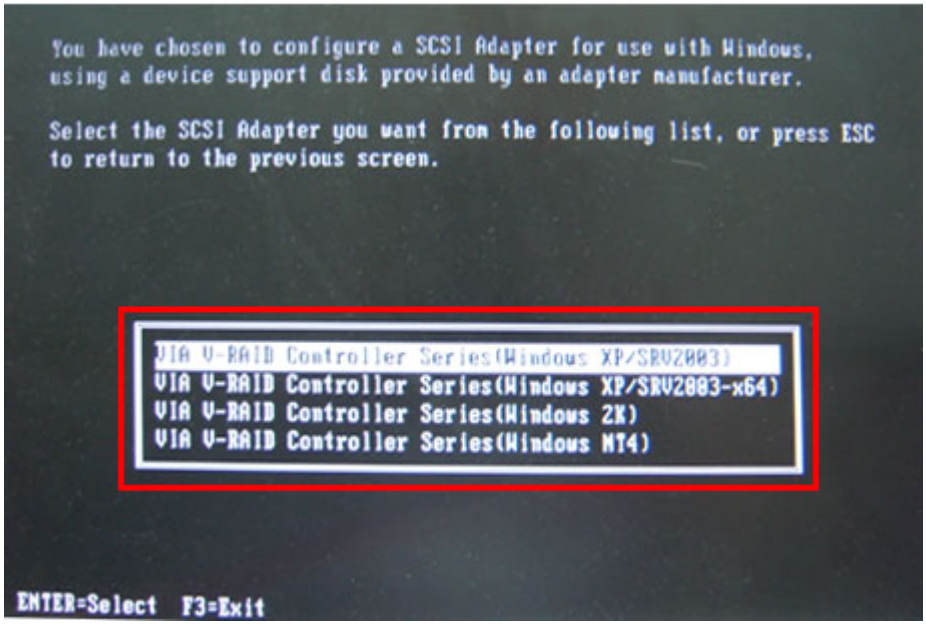
**Step 4:** When launching the recovery tool, press <**F6**>.




**Step 5:** When the following window appears, press <**S**> to select “Specify Additional Device”.



**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.




**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 B.2.2 Create Partitions** to finish the whole setup process.

## B.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

C

# Terminology

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

| | |
|---|---|
| **DMA** | Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory. |
| **DIMM** | Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module. |
| **DIO** | The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions. |
| **EHCI** | The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers. |
| **EIDE** | Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps. |
| **EIST** | Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage. |
| **FSB** | The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset. |
| **GbE** | Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard. |
| **GPIO** | General purpose input |
| **HDD** | Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data. |
| **ICH** | The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset. |
| **IrDA** | Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other. |
| **L1 Cache** | The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor. |
| **L2 Cache** | The Level 2 Cache (L2 Cache) is an external processor memory cache. |

| | |
|---|---|
| **LCD** | Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between. |
| **LVDS** | Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer. |
| **POST** | The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on. |
| **RAM** | Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives. |
| **SATA** | Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps. |
| **S.M.A.R.T** | Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives. |
| **UART** | Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports. |
| **UHCI** | The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers. |
| **USB** | The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates. |
| **VGA** | The Video Graphics Array (VGA) is a graphics display system developed by IBM. |

Appendix

D

# Hazardous Materials Disclosure

## D.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

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

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

Please refer to the table on the next page.

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

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

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

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

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

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 壳体 | X | O | O | O | O | X |
| 显示 | X | O | O | O | O | X |
| 印刷电路板 | X | O | O | O | O | X |
| 金属螺帽 | X | O | O | O | O | O |
| 电缆组装 | X | O | O | O | O | X |
| 风扇组装 | X | O | O | O | O | X |
| 电力供应组装 | X | O | O | O | O | X |
| 电池 | O | O | O | O | O | O |
| O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。<br>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。 | | | | | | |