IEI Technology Corp.

MODEL:

AFL2-W21A/AB-H61 Series

Flat Bezel Panel PC with Intel® Core™ i7/ i5/ i3 and Pentium® processor, Touch Screen, Wi-Fi, USB, Dual GbE LAN , RS-232/422/485, 2.0M pixels Camera, HD Audio and RoHS

User Manual

Rev. 1.00 - 16 April, 2013

RoHS Lead Free

Revision

Date	Version	Changes
16 April 2013	1.00	Initial release

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Introduction

1.1 AFL2-W21A/AB-H61 Flat Bezel Panel PC Overview

Figure 1-1: AFL2-W21A/AB-H61 Flat Bezel Panel PC

The AFL2-W21A/AB-H61 is an Intel® Core™ i7/i5/i3 and Pentium® processor powered flat bezel panel PC with a rich variety of functions and peripherals. The AFL2-W21A/AB-H61 is designed for easy and simplified integration into kiosk and point-of-sales (POS) applications.

An Intel® H61 chipset ensures optimal memory, graphics, and peripheral I/O support. The system comes with 4GB DDR3 1333MHz SO-DIMMs (2GB x 2) ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Three serial ports, three external USB 2.0 ports and two external USB 3.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and dual RJ-45 Ethernet connectors provide the system with smooth connection to an external LAN.

1.1.1 Model Variations

The model variations of the AFL2-W21A/AB-H61 Series are listed below.

Model No.	Touch Screen	LED Light Bar
Intel® Core™ i5 Series		
AFL2-W21A-H61-i5/PC-R10	Projected capacitive	Yes
AFL2-W21AB-H61-i5/PC-R10	Projected capacitive	No
Intel® Core™ i3 Series		
AFL2-W21A-H61-i3/PC-R10	Projected capacitive	Yes
AFL2-W21AB-H61-i3/PC-R10	Projected capacitive	No
Intel® Pentium® G6xxT Series		
AFL2-W21A-H61-P/PC-R10	Projected capacitive	Yes
AFL2-W21AB-H61-P/PC-R10	Projected capacitive	No

Table 1-1: AFL2-W21A/AB-H61 Model Variations

1.1.2 Features

The AFL2-W21A/AB-H61 features are listed below:

- Programmable colorful LED light bar (for AFL2-W21A-H61 series only)
- Intel® Core™ i7/i5/i3 and Pentium® processor
- Two 204-pin DDR3 SO-DIMM slot (system max. 16GB), pre-installed with 4GB (2GB x 2)
- Projected capacitive touchscreen supported
- Wi-Fi 802.11b/g/n 2T2R high speed wireless
- EM or Mifare RFID reader
- Built-in 2M pixels webcam with AF, AE and AWB capabilities
- Built-in two 3W speakers and microphone
- IP64 compliant front panel
- Auto dimming control
- Light fanless design
- K-type thermalcouple temperature sensor
- Wide range 9~36 VDC input

1.1.3 Light Fanless Technology Design

AFL2-W21A/AB-H61 series panel PCs are designed with light fanless technology. The light fanless technology utilizes K-type thermocouple temperature sensor to detect environment temperature and control fan operation, enhancing system stability and remote environment control. The relative errors between the detect environment temperature and the actual environment temperature are no more than ±5 degrees. When the environment temperature is lower than default temperature setting, the fan will be switched off, showing the advantage of quiet and dust free from fanless mode. While the environment temperature is higher, the smart fan will be turned on to speed up heat emission. The default temperature is 32 C and the setting can be adjusted in BIOS. See Section 7.3.9. The systems can be easily implemented in the working environments that require quiet and avoid dirt, like clean room, indoor HMI, and hospital.

1.2 External Overview

1.2.1 Front Panel

The front side of the AFL2-W21A/AB-H61 is a flat bezel panel TFT LCD screen surrounded by a PC/ABS plastic frame. The LED light bars are for AFL2-W21A-H61 series only.

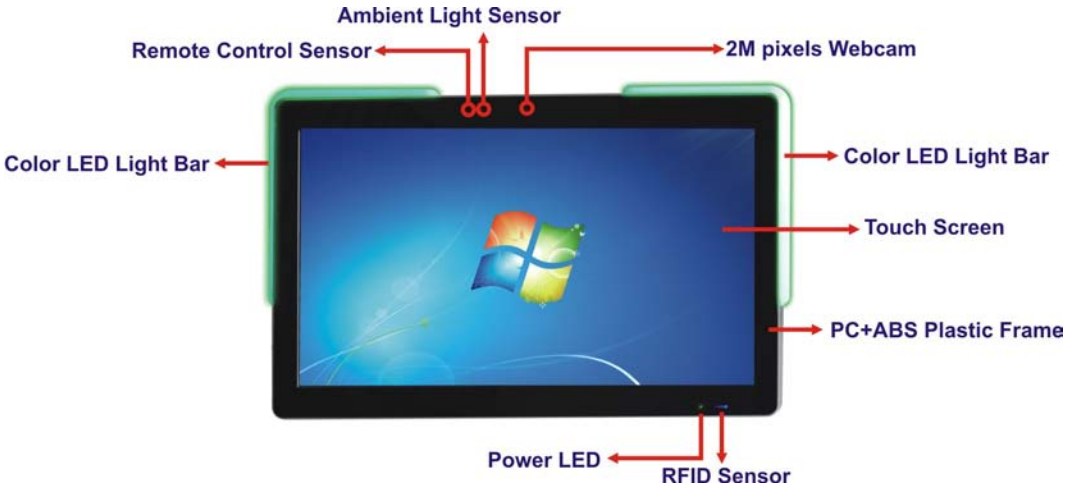


Figure 1-2: AFL2-W21A/AB-H61 Front View

1.2.1.1 Function Keys

The corresponding Function Keys are located under the bottom right hand corner of the LCD screen (**Figure 1-3**).

Figure 1-3: Function Keys

The Keys Combinations are described in **Table 1-2**:

Key Combination	Function Key Description
Fn + LCD On/Off	RFID Enable/Disable
Fn + Audio Volume Down	Audio Mute
Fn + Audio Volume Up	Camera Enable/Disable
Fn + Brightness Up	Power On/Off Note: To power on the system, hold down the Fn + Brightness Up buttons for 3 seconds. To power down the system, hold down the FN + Brightness Up buttons for six seconds.
Fn: The function key can maintain for 2 sec.	

Table 1-2: Function Key Descriptions

1.2.2 Rear Panel

The rear panel provides access to retention screw holes that support various mounting. Refer to **Figure 1-4**.

Figure 1-4: AFL2-W21A/AB-H61 Rear View

1.2.3 Bottom Panel

The bottom panel of the AFL2-W21A/AB-H61 has the following features (**Figure 1-5**):

- 1 x AT/ATX Switch
- 1 x Clear CMOS switch
- 1 x 9V ~ 36V DC power jack
- 6 x Function keys
- 1 x HDMI port
- 1 x K-type connector
- 1 x Power button
- 1 x Reset button
- 1 x RJ-45 LAN connector
- 2 x RS-232 connectors (COM1,COM2)
- 1 x RS-422/485 connector (COM3)
- 1 x Temperature sensor
- 2 x USB 2.0 connectors
- 2 x USB 3.0 connectors
- 1 x VGA port

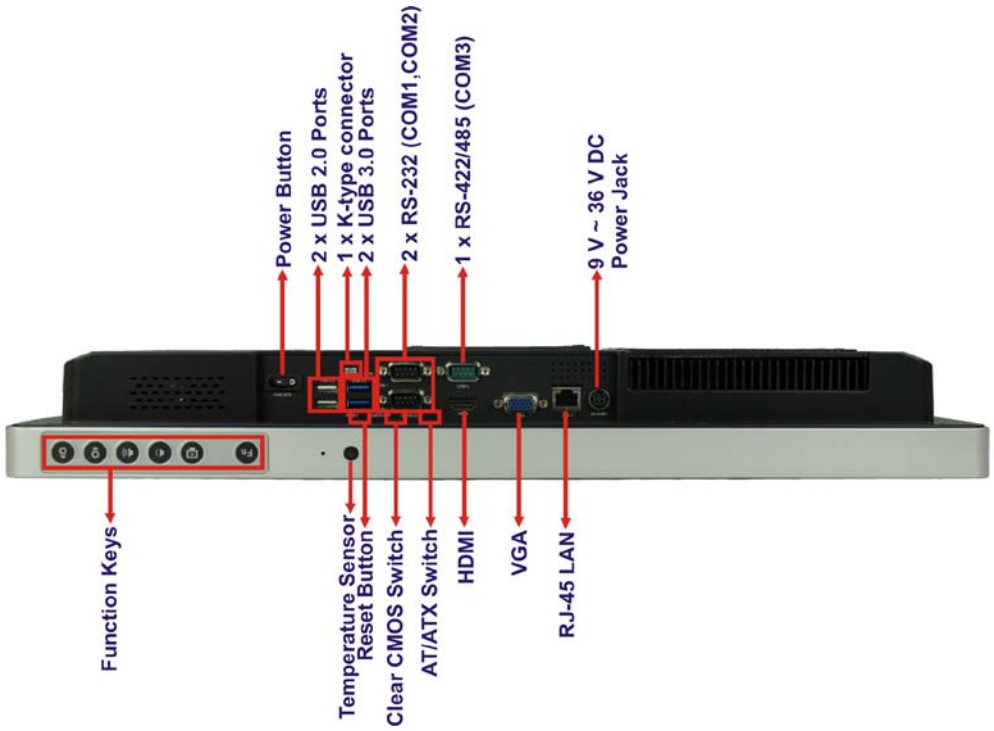


Figure 1-5: AFL2-W21A/AB-H61 Bottom Panel

1.2.4 Left Side Panel

The left side panel of the AFL2-W21A/AB-H61 has the following features (**Figure 1-6**):

- 2 x Audio jacks (Line out, MIC)
- 1 x RJ-45 LAN connector
- 1 x USB 2.0 connector

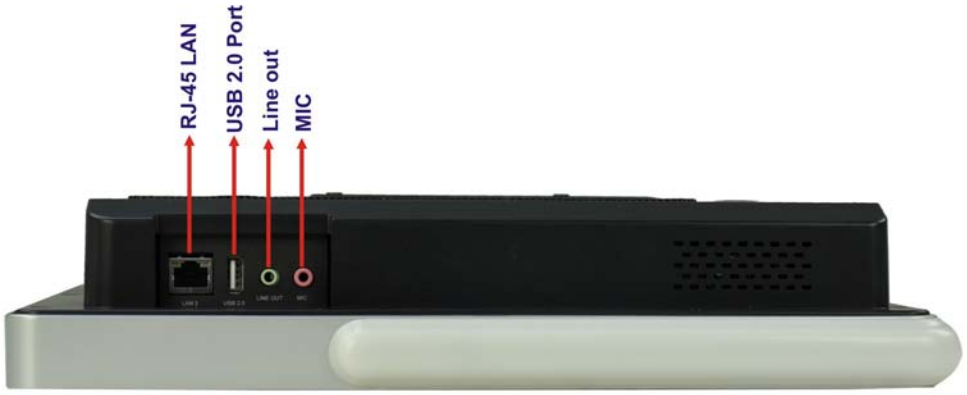


Figure 1-6: AFL2-W21A/AB-H61 Left Side Panel

1.2.5 Right Side Panel

The right side panel of the AFL2-W21A/AB-H61 provides access to the DVD-ROM bay (optional) (**Figure 1-7**):

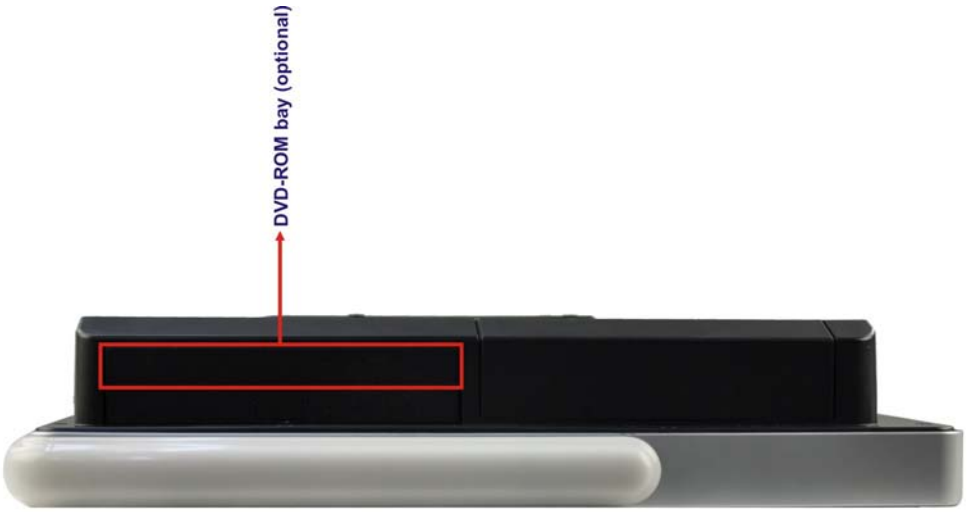


Figure 1-7: AFL2-W21A/AB-H61 Right Side Panel

1.3 Internal Overview

The AFL2-W21A/AB-H61 has the following components installed internally:

- 1 x Motherboard
- 2 x 2.0 GB 1333 MHz DDR3 SO-DIMMs

1.4 System Specifications

The technical specifications for the AFL2-W21A/AB-H61 systems are listed in **Table 1-3.**

Model	AFL2-W21A/AB-H61
LCD Specifications	
LCD Display	W21.5” (16:9)
Max Resolution	1920(W) x 1080(H)
Brightness (cd/m^2)	250
Contrast Ratio	1000:1
LCD Color	16.7M
Pixel Pitch (mm)	0.24825mm x 0.24825mm
Viewing Angle (H-V)	170° / 160°
Backlight MTBF (hr)	30,000 (LED backlight)
Touch	
Touch Screen	projected capacitive type with USB interface
Touch Controller	EETI EXC7200 & EXC5404
System	
CPU	Intel® Core™ i7/i5/i3 and Pentium® processors
Chipset	Intel® H61
Ethernet	Realtek RTL8111E PCIe GbE controller support ASF2.0
Memory	Support two 204-pin DDR3 SO-DIMM slot (system max. 16GB) preinstalled with 4GB (2GB x 2)
Storage	1 x 2.5” SATA 3Gb/s HDD Bay
CD-ROM	1 x Slim Type DVD-ROM bay (optional)
Audio Codec	Realtek ALC892 HD audio codec
Audio	AMP 3 W + 3 W (built-in stereo speakers)
Camera	2M pixel camera with low light function

Microphone	Digital Microphone
Expansion	1 x PCIe Mini slot for WiFi module 1 x PCIe Mini slot reserved
Cooling System	Light Fanless
Other Features	
RFID Reader	EM 125 KHz or MIFARE 13.56 MHz card reader (optional)
LED Light Bar	Programmable R/G/B colorful LED Light bar (SMBus Control)
Function Key	6 x function keys: Key1 Backlight On/Off Key2 Audio - Key3 Audio + Key4 Brightness - Key5 Brightness+ Key6 Fn Combinations: Fn+Key1 RFID Enable/Disable Fn+Key2 Audio Mute Fn+Key3 Camera Enable/Disable Fn+Key5 Power ON/OFF
Infrared	IR receiver 38KHz
Light Sensor	Ambient light sensor for panel brightness adjustment
TPM	Reserved by pin-header
OS Support	
OS Support	Windows Embedded Standard 7 Windows XP Embedded, Debian 6.0 Backports
Connectivity	
Wireless	IEEE 802.11b/g/n 2T2R module (WIFI-RT5392-SB-R10)
Bluetooth	Bluetooth V2.0+EDR with USB interface (optional)
Physical	
Construction Material	PC + ABS plastic for front cover and rear cover
Mounting	Wall, Stand and VESA 100 mm x 100mm
Enclosure Color	Sliver + Black
Dimension (mm)	546.85 (W) x 345.82 (H) x 70.35 (D)

Weight (Net/Gross)	8.27 Kg / 11.27 Kg
Environment	
Operation Temperature	-10°C ~ 50°C (with air flow)
Storage Temperature	-20ºC ~ 60ºC
Humidity	10% to 90% (non-condensing)
IP level	Front bezel IP 64
Safety and EMC	CE & FCC
Power	
Power Adapter	120W power adapter
	Input: 100 V AC ~ 240 V AC, 50 / 60Hz
	Output: 19 V DC
Power Input	9 ~ 36V DC-IN
I/O Ports and Switches	2 x RS-232 (DB-9 connector)
	1 x RS-422/485 (DB-9 connector)
	2 x GbE LAN (one on bottom side, one on left side)
	2 x USB 3.0 connector
	3 x USB 2.0 connectors (two on bottom side, one on left side)
	1 x Audio jack (line-out, MIC)
	1 x VGA port (DB15 connector)
	1 x HDMI port
	1 x Power switch
	1 x AT/ATX switch
	1 x Reset button
	1 x Clear CMOS button
	1 x 9 V ~ 36V DC input jack
	1 x k-type connector

Table 1-3: System Specifications

1.5 Dimensions

The AFL2-W21A/AB-H61 dimensions are shown below.

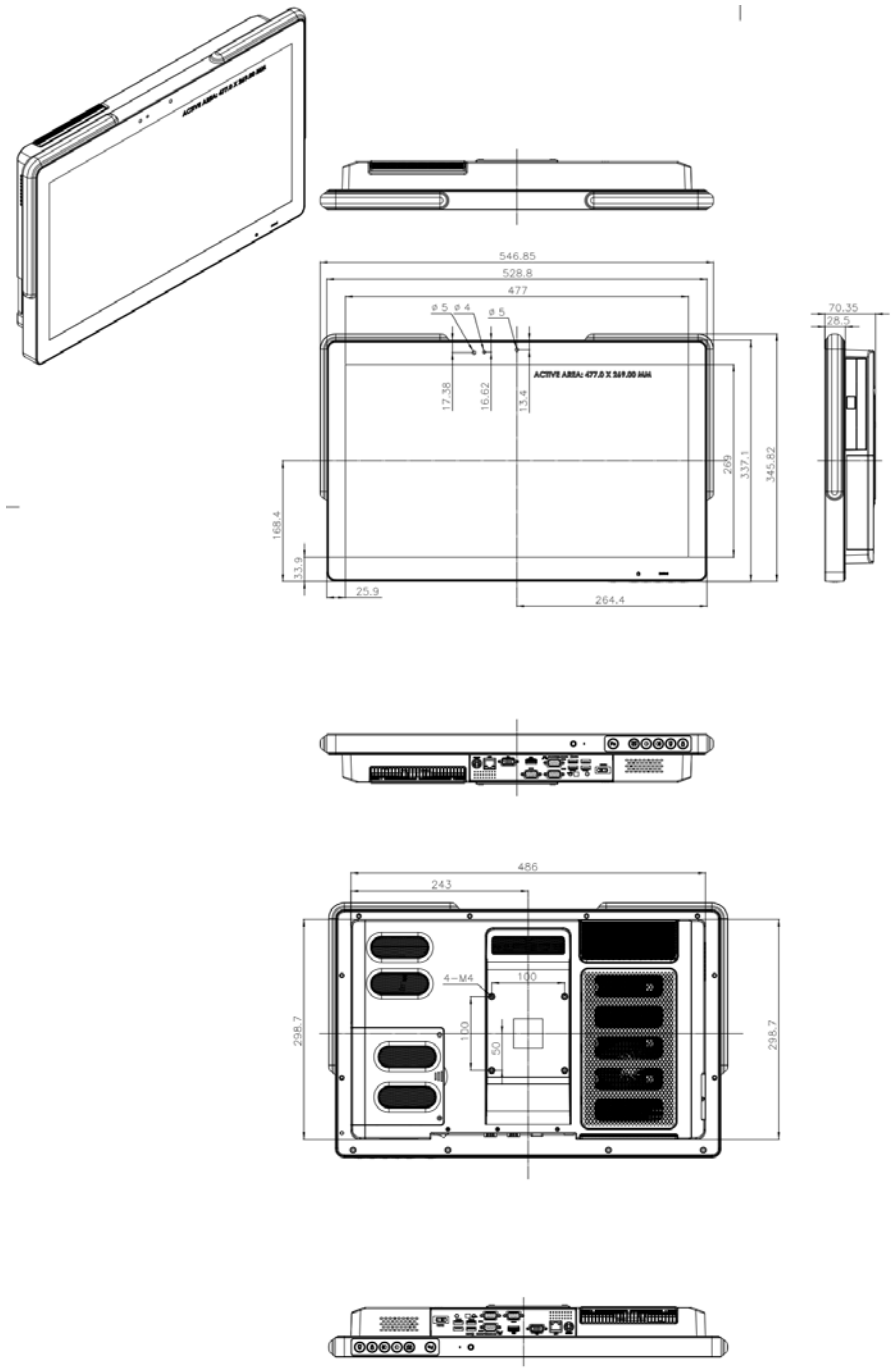


Figure 1-8: AFL2-W21A/AB-H61 Dimensions (mm)

Chapter

2

LED Light Bar (Optional)

2.1 Overview

To notify field staffs in an efficient way to increase productivity, the AFL2-W21A-H61 integrates LED dash light system on the side frame. With the provided API software and LED simulator software, users can customize their notification according to their needs through a quick and easy user interface. The customized functions include light scripts, programmable colors, light duration, flash rates and light patterns.

2.2 iEi LED Light Bar Display Simulator

To configure the LED light bars by iEi LED Light Bar Display Simulator, please follow the steps below:

Step 1: Make sure LED Bar driver is properly installed. See Section 8.10.

Step 2: Double click the AFL2 Series LED Light Bar Simulator setup file.

Step 3: The **Setup Wizard** starts (**Figure 2-1**).

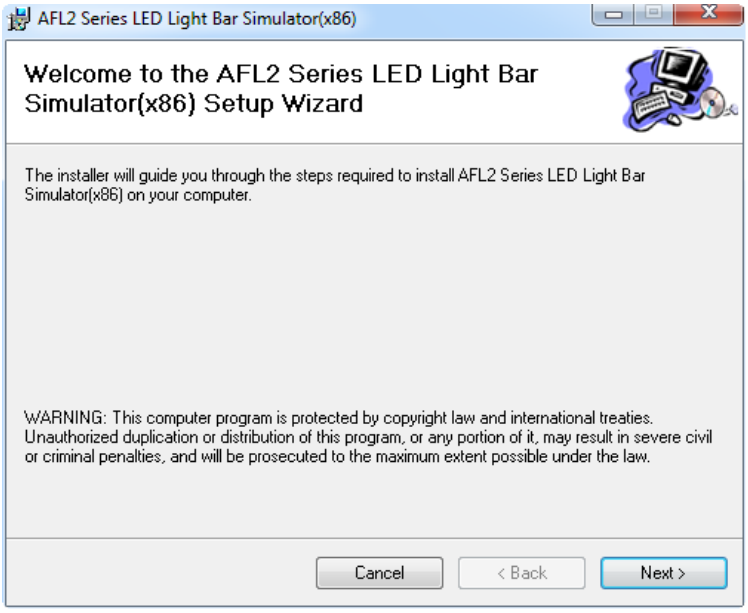


Figure 2-1: The Setup Wizard Starts

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

Step 5: The **Select Installation Folder** screen in **Figure 2-2** appears.

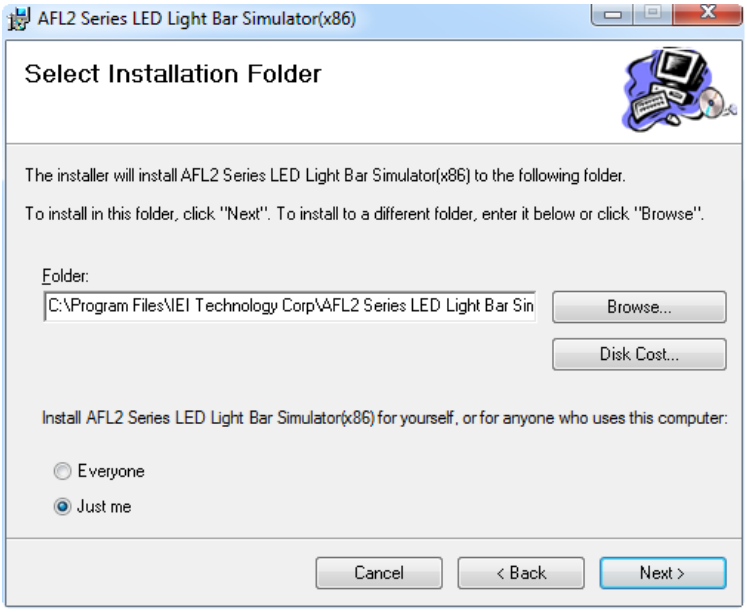


Figure 2-2: Select Installation Folder Screen

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

Step 7: The **Confirm Installation** screen in **Figure 2-3** appears.

Step 8: Click **Next** to proceed with the installation.

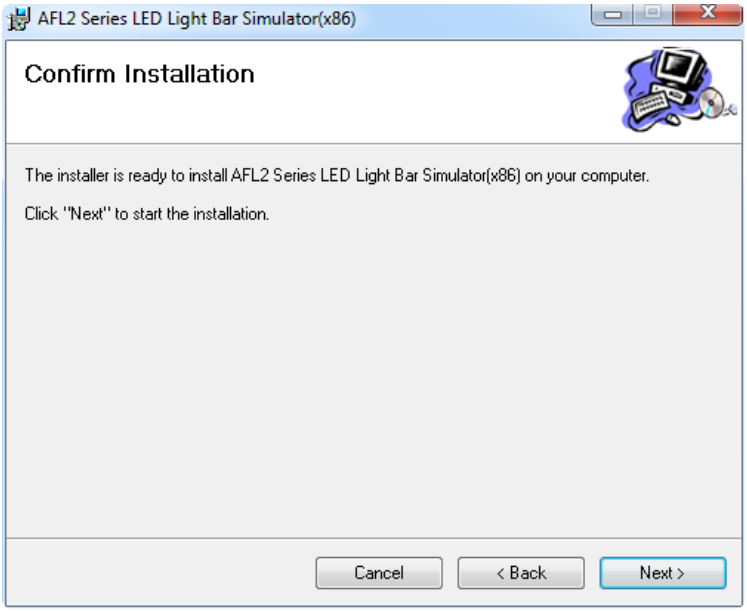


Figure 2-3: Confirm Installation Screen

Step 9: The program begins to install.

Step 10: When the installation is complete, the screen in **Figure 2-4** appears.

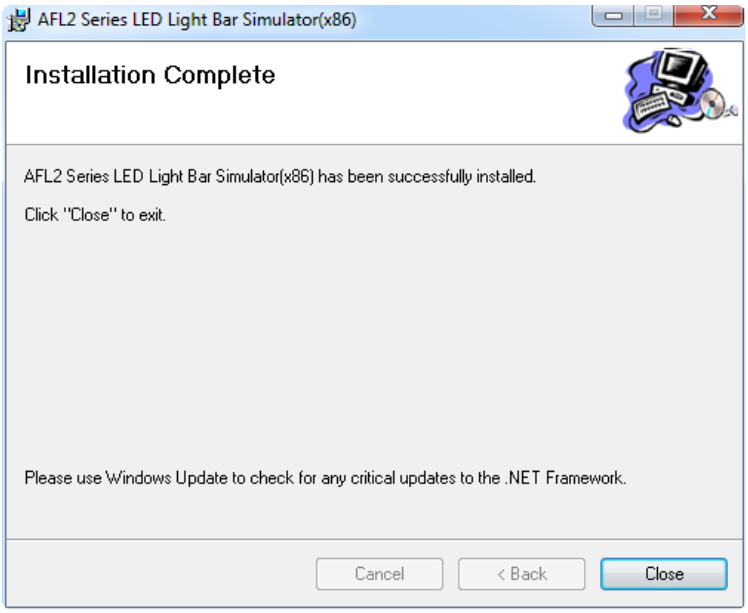


Figure 2-4: Installation Complete

Step 11: Click **Close** to complete the installation.

Step 12: The iEi LED Light Bar Display Simulator icon  shows on the computer desktop.

Step 13: Double click it to open the iEi LED Light Bar Display Simulator, as shown in **Figure 2-5**.

Figure 2-5: iEi LED Light Bar Display Simulator

The descriptions of iEi LED Light Bar Display Simulator are listed below.

Function	Description
New	Clear all current commands
Load	Load the configuration file (*.cld)
Save	Save all current commands
Run	Start to simulate the LED display
Add	Add a new command
Insert	Insert a command
Copy	Copy a command
Delete	Delete a command
UP	Move the command up
Down	Move the command down
Loop Start	Set loop start point

Function	Description
Loop End	Set Loop end point
ALL	Select all the LED simulation buttons
TOP	Select the top LED simulation buttons
LEFT	Select the left LED simulation buttons
RIGHT	Select the right LED simulation buttons
1~50	LED simulation buttons

Table 2-1: LED Simulator Software Description

Step 14: Select the color. The color setting area includes basic color and user defined color. Click the basic color to select the desired color.

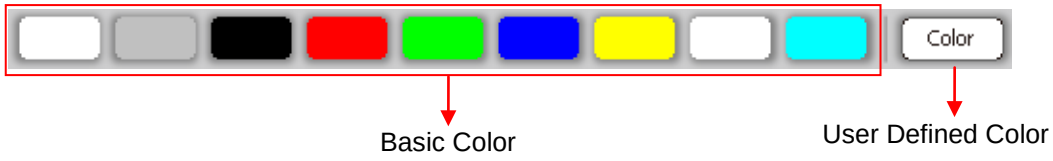


Figure 2-6: Color Setting Area

Step 15: Or you can double click the user defined color to open the color palette and select the desired color.

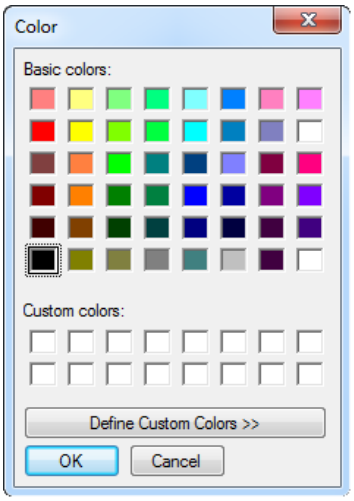


Figure 2-7: Color Palette

Step 16: After setting the color, click LED simulation button and the color of selected LED simulation button will automatically change. See **Figure 2-8.**

Figure 2-8: Simulate the LED Light

Step 17: If you want to set all the left LED simulation buttons for a certain color at the same time, click the “LEFT" button. Setting the right LED simulation buttons and top LED simulation buttons are the same way.

Figure 2-9: Set the Left LEDs

Step 18: If you want to set all the LED simulation buttons for a certain color at the same time, click the “ALL" button.

Figure 2-10: Set All the LEDs

Step 19: Enter the light duration. Please note that the unit is second, enter a number between 1 and 20. See **Figure 2-11.**

Figure 2-11: Light Duration

Step 20: Press the **Add** button to insert a new control command. You may continue to set a new command in accordance with Step14 ~ Step19.

Figure 2-12: Add new command

Step 21: Press the **Loop Start** button to set loop start point.

Figure 2-13: Add Loop Start

Step 22: Press the **Loop End** button to set loop end point.

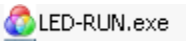
Figure 2-14: Add Loop End

Step 23: Press the **Run** button to simulate.

2.3 iEi LED Run

To configure the LED light bars through a quick and easy way, please follow the steps below:

Step 1: Make sure the LED Bar driver is properly installed. See Section 8.10.

Step 2: Double click the **LED-RUN.exe** icon 

to open the LED RUN software, as shown in **Figure 2-15**.

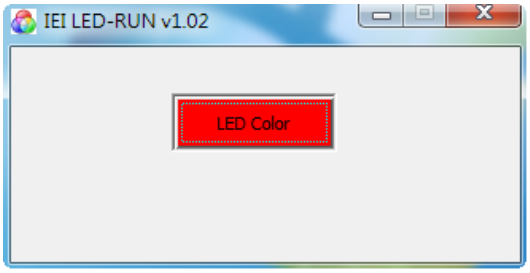


Figure 2-15: iEi LED RUN Software

Step 3: The LED light bars start to dash in a preset mode.

2.4 LED Control API

2.4.1 Introduction

This chapter aims to explain how to use LED Light Bar Control API, and support API version is V1.0.0.7. Due LED Light Bar driver only has x86 version, this API could be used in the Windows 2000/XP(x86)/2003/7(x86) environments.

2.4.1.1 Programming Language Support

The iEi LED Light Bar Control application provides an interface to driver with:

- Microsoft Visual C/C++
- Microsoft Visual Basic
- Other programming systems that can access functions into DLL's

2.4.1.2 Application Content

The iEi LED Light Bar Control application includes the following files:

- IBS_LEDCTRL.dll
- IBS_LEDCTRL.lib
- IBS_LEDCTRL.h

2.4.2 LED Control API Functions

2.4.2.1 LIGHTBAR_DriverInit

Syntax: PACSM_LIGHTBAR_CTRL STD_HANDLE LIGHTBAR_DriverInit(void)

Parameters: NONE

Return value: Return a Handle from LED driver.

Remarks: Call this function to initial and start the LED Driver and return a Handle from LED driver.

2.4.2.2 LIGHTBAR_DriverUninit

Syntax: PACSM_LIGHTBAR_CTRL STD_Void LIGHTBAR_DriverUninit(HANDLE hDev)

Parameters: hDev [IN] – Handle be released.

Return value: True if success.

Remarks: Call this function to stop and uninitialized the LED Driver and to release resource of Handle.

2.4.2.3 LIGHTBAR_DeviceInit

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_DeviceInit(HANDLE hDev)

Parameters: hDev [IN] – Input Handle.

Return value: True if success.

Remarks: Call this function to initial the LED IC.

2.4.2.4 LIGHTBAR_DeviceClose

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_DeviceClose(HANDLE hDev)

Parameters: hDev [IN] – Input Handle.

Return value: True if success.

Remarks: Call this function to turn off LED IC.

2.4.2.5 LIGHTBAR_Brightness_Single

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_Brightness_Single(
HANDLE hDev,
PLED_COLOR_INFO Brightness_Step,
int INFO_Size)

Parameters: hDev [IN] – Input Handle.
Brightness_Step [IN] –Point to structures buffers to write. (see Section 2.4.3)
INFO_Size [IN] – describe the data structure array size.

Return value: True if success.

Remarks: Write data to LED IC on I2C bus via drivers. This function creates data structures include the target LED IC address and Brightness information to send to LED IC via LED Driver.

2.4.2.6 LIGHTBAR_BLNK_Settings

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_BLNK_Settings(
HANDLE hDev,
PLED_BLNK_SET LED_Blinking_Set)

Parameters: hDev [IN] – Input Handle.
LED_Blinking_Set [IN] –Point to structures buffers to write. (see Section 2.4.3)

Return value: True if success.

Remarks: This function is used to set LED IC Blinking modes via drivers.

2.4.2.7 LIGHTBAR_BLNK_Type

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_BLNK_Type(
HANDLE hDev,
PLED_BLNK_TYPE Blinking_Type)

Parameters: hDev [IN] – Input Handle.
Brightness_Step [IN] –Point to structures buffers to write. (see Section 2.4.3)

Return value: True if success.

Remarks: This function is used to turn on/off LED IC blinking control via drivers.

2.4.2.8 LIGHTBAR_LED_ModeSet

Syntax: PACSM_LIGHTBAR_CTRL STD_BOOLEN LIGHTBAR_LED_ModeSet (
HANDLE hDev,
PLED_MODE_SETTINGS LED_Mode_Settings)

Parameters: hDev [IN] – Input Handle.
LED_Mode_Settings [IN] –Point to structures buffers to write. (see Section 2.4.3)

Return value: True if success.

Remarks: This function is used to set each LED operation mode on LED IC via drivers.

2.4.3 Structures

2.4.3.1 _LED_COLOR_INFO

Syntax:

```
typedef struct _LED_COLOR_INFO{
    LED_INFO LED_Info;
    int R_LEVEL;
    int G_LEVEL;
    int B_LEVEL;
}LED_COLOR_INFO, *PLED_COLOR_INFO;
```

Parameters: **R_LEVEL、G_LEVEL、B_LEVEL [int]** - Store the Brightness Level information for R, G and B LED. The brightness level was from 0 to 7.

LED_Info [structure] - The LED IC address was stored in Main_Addr on the I2c bus, and LED List number are stored in R_LN、G_LN and B_LN parameters：

```
typedef struct _LED_INFO {
    UCHAR   Main_Addr;      //Main address
    UCHAR   R_LN;           //Red list number
    UCHAR   G_LN;           //Green list number
    UCHAR   B_LN;           //Blue list number
} LED_INFO, *PLED_INFO;
```

Remarks: This structure has included essential information to set LED IC.

2.4.3.2 _LED_BLNK_SET

Syntax:

```
typedef struct _LED_BLNK_SET{
    UCHAR   Main_Addr;      //Main address
    BYTE    BLNK_DutCyc;    //Duty Cycle
    BYTE    BLNK_Freq;      //Blinking Frequency
}LED_BLNK_SET, *PLED_BLNK_SET;
```

Parameters:

Main_Addr [UCHAR] - IC Address on I2C bus.

BLNK_DutCyc [BYTE] - Duty Cycle of LED blinking. Duty cycle = (0 ~ 255)/256 = x%。

BLNK_Freq [BYTE] -Frequency of LED blinking. 0x00 = (41ms,

frequency 24Hz) , 0xFF = (10.73s) , Frequency = [(0~255) + 1]/24= x(second) , Ex : 300ms = (7 + 1) / 24 ≒ 0.333s。

Remarks: This structure has used to store the blinking duty cycle and frequency of LED IC. Please attention one LED IC only has one duty cycle and frequency to be group used, It means all LED has the same blink mode on a LED IC.

2.4.3.3 _LED_BLNK_SET

Syntax:

```
typedef struct _LED_BLNK_TYPE{
    UCHAR       Main_Addr; //Main address
    int         BLNK_TYPE;
}LED_BLNK_TYPE, *PLED_BLNK_TYPE;
```

Parameters:

Main_Addr [UCHAR] – IC Address on I2C bus.

BLNK_Type [int] - Turn on/off blinking circuit on the LED IC. Defined by:

```
#define     LED_BLNK_ON     0
#define     LED_BLNK_OFF    1
```

Remarks: This structure has used to turn on/off blinking circuit on the LED IC.

2.4.3.4 _LED_MODE_SETTINGS

Syntax:

```
typedef struct _LED_MODE_SETTINGS{
    UCHAR   Main_Addr; //Main address
    int     LED_00;
    int     LED_01;
    int     LED_02;
    int     LED_03;
    int     LED_04;
    int     LED_05;
    int     LED_06;
    int     LED_07;
    int     LED_08;
    int     LED_09;
    int     LED_10;
    int     LED_11;
    int     LED_12;
    int     LED_13;
    int     LED_14;
}LED_MODE_SETTINGS, *PLED_MODE_SETTINGS;
```

Parameters:

Main_Addr [UCHAR] – IC Address on I2C bus.

LED_00 ~ LED_15: Each LED operation mode, defined by :

```
#define   LED_DispMode_OFF    0   //Turn OFF LED.
#define   LED_DispMode_Gen    1   //General Mode
#define   LED_DispMode_BLNK   2   //Blinking Mode
```

Remarks: This structure can decision operation mode for each LED.

2.4.4 Programming Example

2.4.4.1 Turn on LED - single

```
{
//Define Data structure
PLED_PWM_INFO LEDCOLOR = (PLED_PWM_INFO)malloc(sizeof(LED_PWM_INFO));
```

```
HANDLE hSMB_Dev = LIGHTBAR_DriverInit();//Init SMBAPI driver and get device Handle.

LIGHTBAR_DeviceInit(hSMB_Dev);//Init Target device

//Set LED level information.
LEDCOLOR.R_LEVEL = 7;
LEDCOLOR.G_LEVEL = 7;
LEDCOLOR.B_LEVEL = 7;

//Set LED Address
LEDCOLOR.LED_Info.Main_Addr = 0xC0;
LEDCOLOR.LED_Info.R_LN = 0x00;
LEDCOLOR.LED_Info.G_LN = 0x01;
LEDCOLOR.LED_Info.B_LN = 0x02;

If(LIGHTBAR_Brightness_Single(hSMB_Dev, LEDCOLOR, 1) == False){
 //Error message
}

LIGHTBAR_DeviceClose(hSMB_Dev);          //Close Device.
LIGHTBAR_DriverUninit(hSMB_Dev);         //Close Driver Handle

delete LEDCOLOR;
}
```

2.4.4.2 Turn on LED - multiple

```
{
//Define Data structure
PLED_PWM_INFO LEDCOLOR = (PLED_PWM_INFO)malloc(sizeof(LED_PWM_INFO) * 4);
HANDLE hSMB_Dev = LIGHTBAR_DriverInit();//Init SMBAPI driver and get device Handle.

LIGHTBAR_DeviceInit(hSMB_Dev);//Init Target device

 LEDCOLOR [0].LED_Info.Main_Addr = 0xD0;
 LEDCOLOR [0].LED_Info.R_LN = 0x02;
 LEDCOLOR [0].LED_Info.G_LN = 0x03;
 LEDCOLOR [0].LED_Info.B_LN = 0x04;
 LEDCOLOR [0].R_LEVEL = 7;
```

```
LEDCOLOR [0].G_LEVEL = 7;
LEDCOLOR [0].B_LEVEL = 7;

LEDCOLOR [1].LED_Info.Main_Addr = 0xD0;
LEDCOLOR [1].LED_Info.R_LN = 0x05;
LEDCOLOR [1].LED_Info.G_LN = 0x06;
LEDCOLOR [1].LED_Info.B_LN = 0x07;
LEDCOLOR [1].R_LEVEL = 7;
LEDCOLOR [1].G_LEVEL = 7;
LEDCOLOR [1].B_LEVEL = 7;

LEDCOLOR [2].LED_Info.Main_Addr = 0xD0;
LEDCOLOR [2].LED_Info.R_LN = 0x08;
LEDCOLOR [2].LED_Info.G_LN = 0x09;
LEDCOLOR [2].LED_Info.B_LN = 0x0a;
LEDCOLOR [2].R_LEVEL = 7;
LEDCOLOR [2].G_LEVEL = 7;
LEDCOLOR [2].B_LEVEL = 7;

LEDCOLOR [3].LED_Info.Main_Addr = 0xD0;
LEDCOLOR [3].LED_Info.R_LN = 0x0b;
LEDCOLOR [3].LED_Info.G_LN = 0x0c;
LEDCOLOR [3].LED_Info.B_LN = 0x0d;
LEDCOLOR [3].R_LEVEL = 7;
LEDCOLOR [3].G_LEVEL = 7;
LEDCOLOR [3].B_LEVEL = 7;

LEDCOLOR [4].LED_Info.Main_Addr = 0xD0;
LEDCOLOR [4].LED_Info.R_LN = 0x0e;
LEDCOLOR [4].LED_Info.G_LN = 0x0f;
LEDCOLOR [4].LED_Info.B_LN = 0x10;
LEDCOLOR [4].R_LEVEL = 7;
LEDCOLOR [4].G_LEVEL = 7;
LEDCOLOR [4].B_LEVEL = 7;

If(LIGHTBAR_Brightness_Single(hSMB_Dev, LEDCOLOR, 5) == False){
        //Error message
}
```

```
LIGHTBAR_DeviceClose(hSMB_Dev);          //Close Device.
LIGHTBAR_DriverUninit(hSMB_Dev);         //Close Driver Handle

delete LEDCOLOR;
}
```

2.4.4.3 LED Blink - 1

```
{
PLED_MODE_SETTINGS      LED_ModeSet =
(PLED_MODE_SETTINGS)malloc(sizeof(LED_MODE_SETTINGS));
PLED_BLNK_SET       LED_Blinking_Set = (P LED_BLNK_SET)malloc(sizeof(LED_BLNK_SET));
PLED_BLNK_TYPE      LED_Blinking_Type =
(PLED_BLNK_TYPE)malloc(sizeof(LED_BLNK_TYPE));

// Set Structure: Set Broadcast address
LED_ModeSet.Main_Addr = 0xD0;
LED_Blinking_Set.Main_Addr = 0xD0;
LED_Blinking_Type.Main_Addr = 0xD0;

//Set Structure: Set blinking settings.
LED_Blinking_Set.BLNK_Freq = 0x07;                  //300ms
LED_Blinking_Set.BLNK_DutCyc = 0x80;                //50:50

//Set Structure: Set each LED operation mode.
LED_ModeSet.LED_00 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_01 = LED_DispMode_BLNK;         //G
LED_ModeSet.LED_02 = LED_DispMode_BLNK;         //B
LED_ModeSet.LED_03 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_04 = LED_DispMode_BLNK;         //G
LED_ModeSet.LED_05 = LED_DispMode_BLNK;         //B
LED_ModeSet.LED_06 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_07 = LED_DispMode_BLNK;         //G
LED_ModeSet.LED_08 = LED_DispMode_BLNK;         //B
LED_ModeSet.LED_09 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_10 = LED_DispMode_BLNK;         //G
LED_ModeSet.LED_11 = LED_DispMode_BLNK;         //B
LED_ModeSet.LED_12 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_13 = LED_DispMode_BLNK;         //G
```

```
LED_ModeSet.LED_14 = LED_DispMode_BLNK;        //B
LED_ModeSet.LED_15 = LED_DispMode_BLNK;

//Set Structure: Enable blinking of IC
LED_Blinking_Type.BLNK_TYPE = LED_BLNK_ON;

LIGHTBAR_BLNK_Settings(hSMB_Dev, LED_Blinking_Set);          //Set LED blinking
settings.
LIGHTBAR_LED_ModeSet(hSMB_Dev, LED_ModeSet)                  //Set LED Operation
Mode.
LIGHTBAR_BLNK_Type(hSMB_Dev, LED_Blinking_Type);             //Enable LED Blinking.
}
```

2.4.4.4 LED Blink - 2

```
{
PLED_MODE_SETTINGS       LED_ModeSet =
(PLED_MODE_SETTINGS)malloc(sizeof(LED_MODE_SETTINGS));
PLED_BLNK_SET        LED_Blinking_Set = (P LED_BLNK_SET)malloc(sizeof(LED_BLNK_SET));
PLED_BLNK_TYPE       LED_Blinking_Type =
(PLED_BLNK_TYPE)malloc(sizeof(LED_BLNK_TYPE));

// Set Structure: Set Broadcast address
LED_ModeSet.Main_Addr = 0xD0;
LED_Blinking_Set.Main_Addr = 0xD0;
LED_Blinking_Type.Main_Addr = 0xD0;

//Set Structure: Set blinking settings.
LED_Blinking_Set.BLNK_Freq = 0x07;                  //300ms
LED_Blinking_Set.BLNK_DutCyc = 0x80;                //50:50

//Set Structure: Set each LED operation mode.
LED_ModeSet.LED_00 = LED_DispMode_Gen;              //R
LED_ModeSet.LED_01 = LED_DispMode_Gen;              //G
LED_ModeSet.LED_02 = LED_DispMode_Gen;              //B
LED_ModeSet.LED_03 = LED_DispMode_BLNK;             //R
LED_ModeSet.LED_04 = LED_DispMode_BLNK;             //G
LED_ModeSet.LED_05 = LED_DispMode_BLNK;             //B
```

```
LED_ModeSet.LED_06 = LED_DispMode_Gen;          //R
LED_ModeSet.LED_07 = LED_DispMode_Gen;          //G
LED_ModeSet.LED_08 = LED_DispMode_Gen;          //B
LED_ModeSet.LED_09 = LED_DispMode_BLNK;         //R
LED_ModeSet.LED_10 = LED_DispMode_BLNK;         //G
LED_ModeSet.LED_11 = LED_DispMode_BLNK;         //B
LED_ModeSet.LED_12 = LED_DispMode_Gen;          //R
LED_ModeSet.LED_13 = LED_DispMode_Gen;          //G
LED_ModeSet.LED_14 = LED_DispMode_Gen;          //B
LED_ModeSet.LED_15 = LED_DispMode_BLNK;

//Set Structure: Enable blinking of IC
LED_Blinking_Type.BLNK_TYPE = LED_BLNK_ON;

LIGHTBAR_BLNK_Settings(hSMB_Dev, LED_Blinking_Set);          //Set LED blinking
settings.
LIGHTBAR_LED_ModeSet(hSMB_Dev, LED_ModeSet)                  //Set LED Operation
Mode.
LIGHTBAR_BLNK_Type(hSMB_Dev, LED_Blinking_Type);             //Enable LED Blinking.
}
```

Chapter

3

Unpacking

3.1 Unpacking

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

WARNING!

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

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

Step 2: Open the external (second) box.

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

Step 4: Lift the monitor out of the boxes.

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

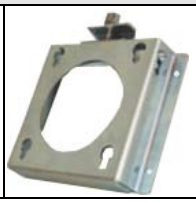
Step 6: Pull the plastic cover off the flat bezel panel PC.

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

3.1.1 Packing List

The AFL2-W21A/AB-H61 flat bezel panel PC is shipped with the following components:

Quantity	Item	Image
Standard		
1	AFL2-W21A/AB-H61 panel PC	

1	Power adapter (**P/N**: 63000-FSP120AAB-RS)	
1	Power cord (**P/N**: 32702-000401-100-RS)	
1	Power transfer cord (**P/N**: 32000-089400-RS)	
1	Infrared Remote Controller (**P/N**: 7Z000-SLPCB005-RS)	
1	Pen (**P/N**: 43125-0002C0-00-RS)	
4	M3 screw pack (**P/N**: 44013-030041-RS)	
4	M4 screw pack (**P/N**: 44033-040061-RS)	
1	Utility CD	
1	One Key Recovery CD	
Optional		
Wall mounting kit (**P/N**: AFLWK-19/AFLWK-19B)		

Arm (**P/N**: STAND-A21)	
Stand (**P/N**: STAND-A21-R10)	
Hybrid Card Reader (MSI only for AFL2-W21AB series) (**P/N**: AFL2P-21AMSI-U-R10)	
Magnetic Stripe Reader (**P/N**: AFL2P-21AMSR-U-R10)	
Slim DVD Burner Installation Kit (Including SATA Cable)	
Bluetooth Module Kit (**P/N**: AFL2-BT-KIT01-R11)	
Trusted Platform Module (TPM) (**P/N**: TPM-IN01-R11)	
EM RFID Reader (**P/N**: AFL2-EM-RFID-KIT03-R10)	
Mifare RFID Reader (**P/N**: AFL2-MF-RFID-KIT04-R10)	

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

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the AFL2-W21A/AB-H61 may result in permanent damage to the AFL2-W21A/AB-H61 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-W21A/AB-H61. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-W21A/AB-H61 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL2-W21A/AB-H61, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL2-W21A/AB-H61.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

4.2 Installation Precautions

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

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

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

4.3 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the flat bezel panel PC.

Step 2: Install the HDD.

Step 3: Install the K-type temperature sensor.

Step 4: Install the RFID reader (optional).

Step 5: Install the CD-ROM (optional).

Step 6: Configure the system.

Step 7: Connect peripheral devices to the flat bezel panel PC.

Step 8: Mount the flat bezel panel PC.

4.4 HDD Installation

WARNING:

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

To install the HDD into the AFL2-W21A/AB-H61, please follow the steps below:

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

Figure 4-1: HDD Cover Retention Screws

Step 2: Remove the HDD cover from the device.

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

Figure 4-2: HDD Bracket Screw

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

Figure 4-3: Removing the HDD Bracket

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

Figure 4-4: Inserting the HDD

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

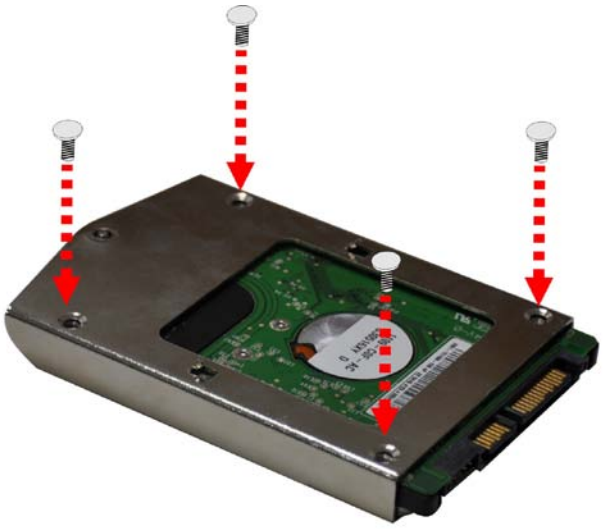


Figure 4-5: Securing the HDD

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

Step 8: Tighten the captive screw.

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

4.5 K-Type Temperature Sensor Installation

The AFL2-W21A/AB-H61 has a K-type connector on the external peripheral interface panel. The K-type connector is connected to a K-type temperature sensor cable. The K-type temperature sensor cable can be found in the packing list. To connect a K-type temperature sensor cable to the AFL2-W21A/AB-H61, please follow the instructions below.

Step 1: Locate the K-type connector. The location is shown in Chapter 1.

Step 2: **Align the connector.** Align the K-type temperature sensor cable with the K-type connector on the AFL2-W21A/AB-H61 . Make sure the orientation of the connector is correct.

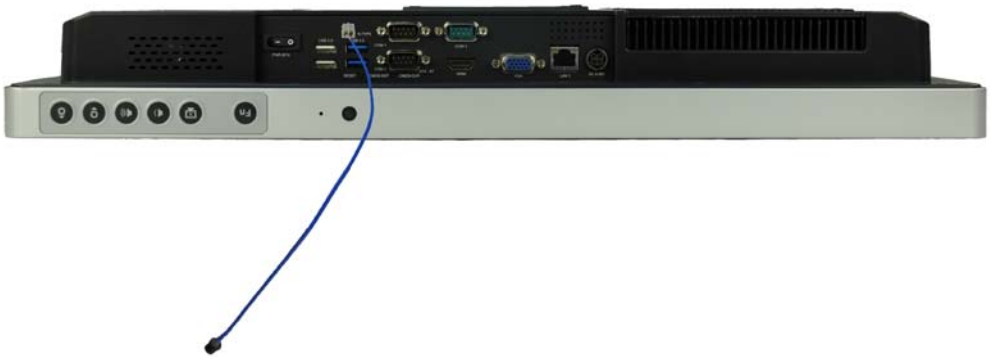


Figure 4-6: Insert the K-type Temperature Sensor Cable

Step 3: **Insert the K-type connector.** Gently insert the K-type temperature sensor cable. The connector should engage with a gentle push.

4.6 RFID Reader (Optional)

The AFL2-W21A/AB-H61 series (selected models only) supports RFID reader function. The RFID reader is located at the bottom of the screen. An optional Mifare 13.56 MHz or EM 125 KHz RFID reader can be integrated in the system. All the data on the RFID tag can be easily retrieved or updated through the reader to secure the data transmission process and increase efficiency for certain identity group.

To install the RFID reader, follow the steps below.

Step 1: Connect the RFID USB cable to the USB connector on the RFID reader module. (**Figure 4-7**)

Figure 4-7: Connect the RFID USB cable

Step 4: Connect the RFID connector of the RFID USB cable to the RFID connector on the motherboard (RFID_USB1).

Step 5: Attach the sticker of the RFID module to the bottom of the panel.

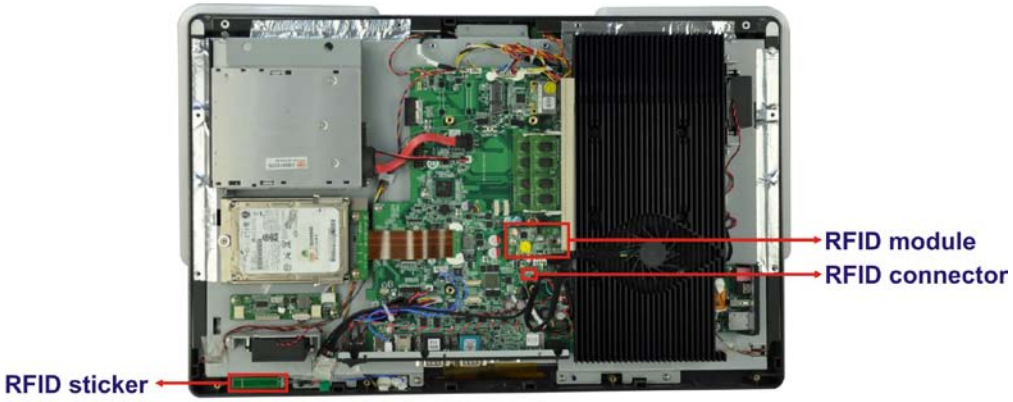


Figure 4-8: Install the RFID module

Step 6: Secure the RFID module to the motherboard using two retention screws on either side.

Step 7: Use the RFID reader to read a RFID card.

4.7 DVD-ROM Installation (Optional)

To install a DVD-ROM, please follow the steps below.

Step 1: Remove the DVD-ROM bracket from the AFL2-W21A/AB-H61. (**Figure 4-9**).

Figure 4-9: DVD-ROM Bracket

Step 2: Loosen the captive screw to release the HDD bracket from the system and slide the HDD bracket out of the system as shown.

Figure 4-10: Remove the HDD Bracket

Step 3: Insert the DVD-ROM to the DVD-ROM bay and secure the DVD-ROM to the DVD-ROM bracket using four screws (two screws on each side). (**Figure 4-11**)

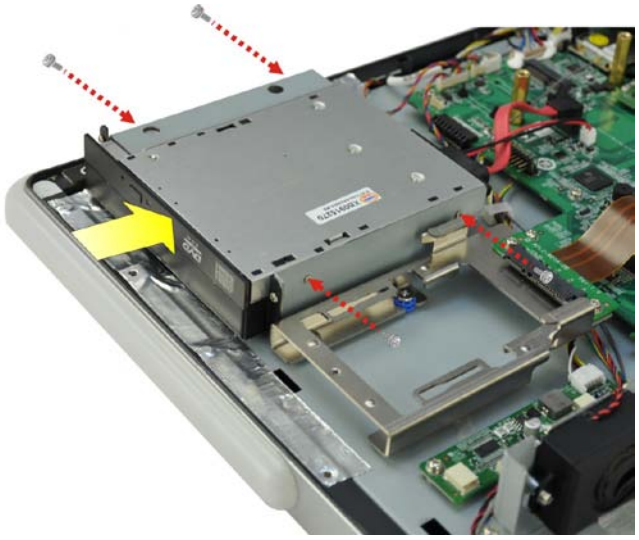


Figure 4-11: Secure the DVD-ROM

Step 4: Attach the SATA cable to the DVD-ROM and fasten the SATA cable screws. Connect the SATA cable and power cable to the connectors on the motherboard. (**Figure 4-12**).

Figure 4-12: DVD-ROM Installation

4.8 AT/ATX Mode Selection

AT or ATX power mode can be used on the AFL2-W21A/AB-H61. The selection is made through an AT/ATX switch located on the bottom panel (Figure 4-13). To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the bottom panel (**Figure 4-13**).

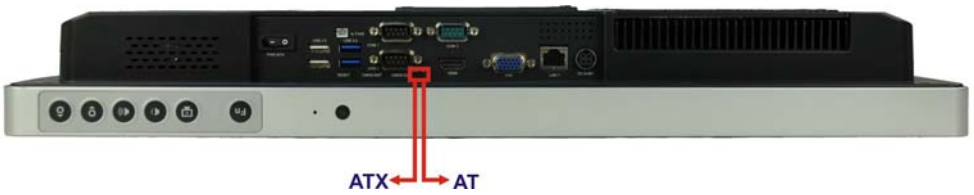


Figure 4-13: AT/ATX Switch Location

Step 2: Adjust the AT/ATX switch.

4.8.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL2-W21A/AB-H61 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

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

4.8.2 ATX Power Mode

With the ATX mode selected, the AFL2-W21A/AB-H61 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

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

4.9 Clear CMOS

If the AFL2-W21A/AB-H61 fails to boot due to improper BIOS settings, the clear CMOS switch clears the CMOS data and resets the system BIOS information. To do this, adjust the clear CMOS switch to clear CMOS mode for a few seconds then reinstall the clear CMOS switch back to keep CMOS mode.

Step 1: Locate the clear CMOS switch on the bottom panel (**Figure 4-14**).

Figure 4-14: Clear CMOS Switch Location

Step 2: Adjust the clear CMOS switch.

4.10 Reset the System

The reset button enables user to reboot the system when the system is turned on. To reboot the system, follow the steps below.

Step 1: Locate the reset button on the bottom panel (**Figure 4-15**).

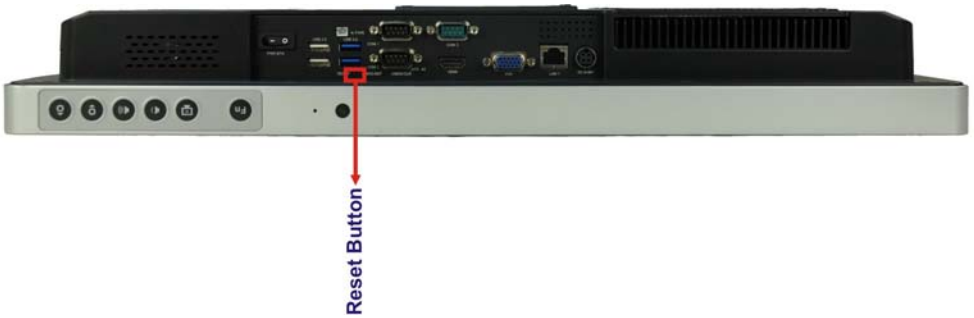


Figure 4-15: Reset Button Location

Step 2: Press the reset button.

4.11 Powering On the System

To power on the system, follow the steps below:

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

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

4.12 Powering Off the System

To power off the system, follow the steps below:

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

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

4.13 Mounting the System

WARNING!

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

The four methods of mounting the AFL2-W21A/AB-H61 are listed below.

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

The four mounting methods are described below.

4.13.1 Wall Mounting

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

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

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

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

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

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

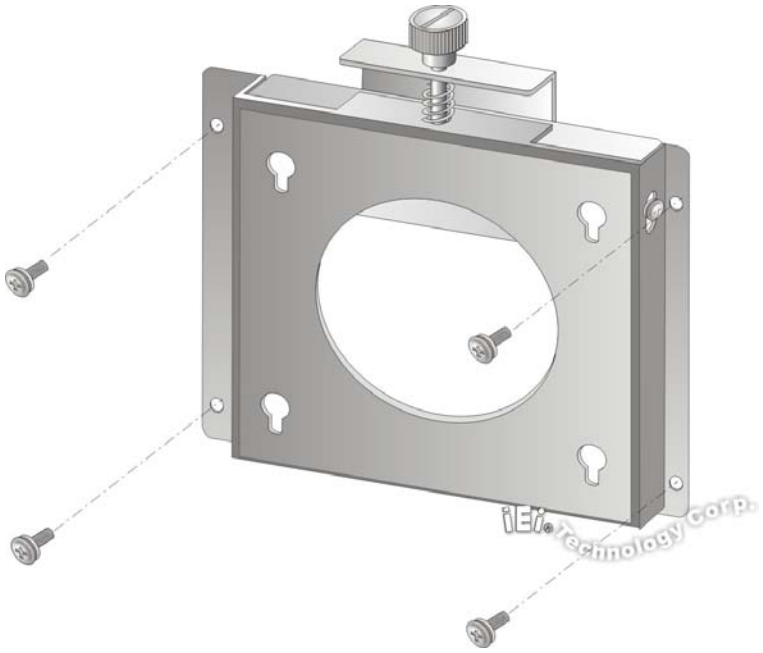
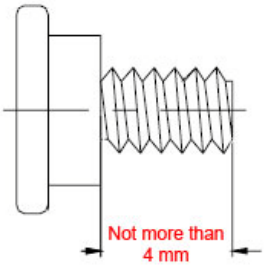


Figure 4-16: Wall-mounting Bracket

Step 8: Insert the four monitor mounting screws provided in the wall mount kit into the four screw holes on the real panel of the flat bezel panel PC and tighten until the screw shank is secured against the rear panel (**Figure 4-17**).

WARNING:

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



Step 9: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 10: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 4-17**). Ensure that all four of the mounting screws fit snugly into their respective slotted holes.

NOTE:

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

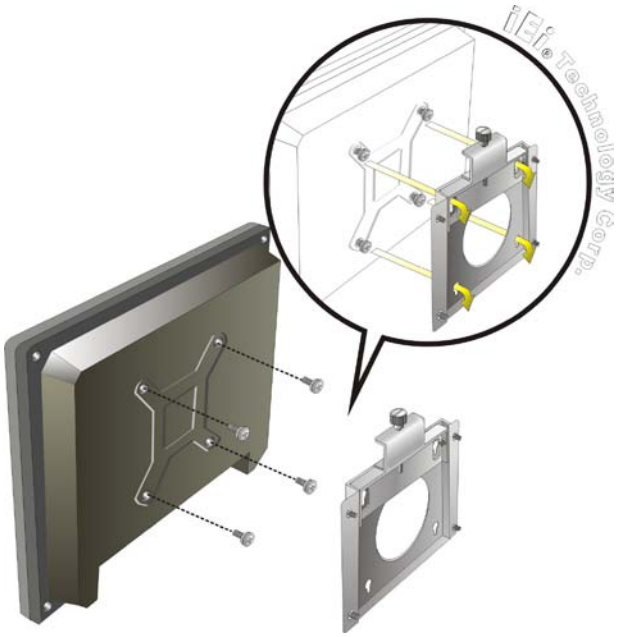


Figure 4-17: Chassis Support Screws

Step 11: Secure the panel PC by fastening the retention screw of the wall-mounting bracket. (**Figure 4-18**).

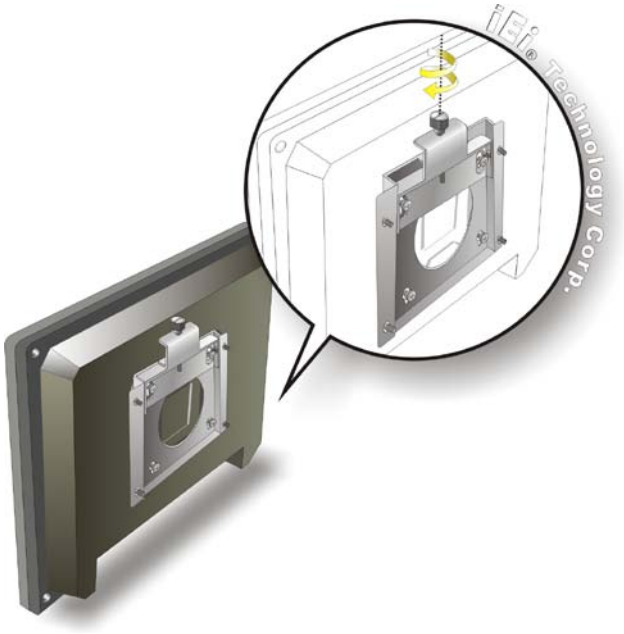


Figure 4-18: Secure the Panel PC

4.13.2 Panel Mounting

To mount the AFL2-W21A/AB-H61 flat bezel panel PC into a panel, please follow the steps below.

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

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

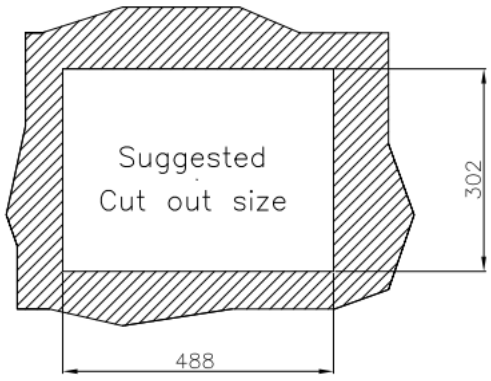


Figure 4-19: Cutout Dimensions

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

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

Step 5: Secure the two panel mounting brackets to the rear of the panel PC by inserting the four retention screws into the VESA mounting holes (**Figure 4-20 ❶**).

Step 6: Insert the panel mounting clamps into the holes of the panel mounting brackets (**Figure 4-20 ❷**). There are a total of 4 panel mounting clamps for AFL2-W21A/AB-H61.

Step 7: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel.

Step 8: Install the covers into the panel mounting bracket. Each mounting bracket includes two side covers and one top cover (**Figure 4-20 ❸**).

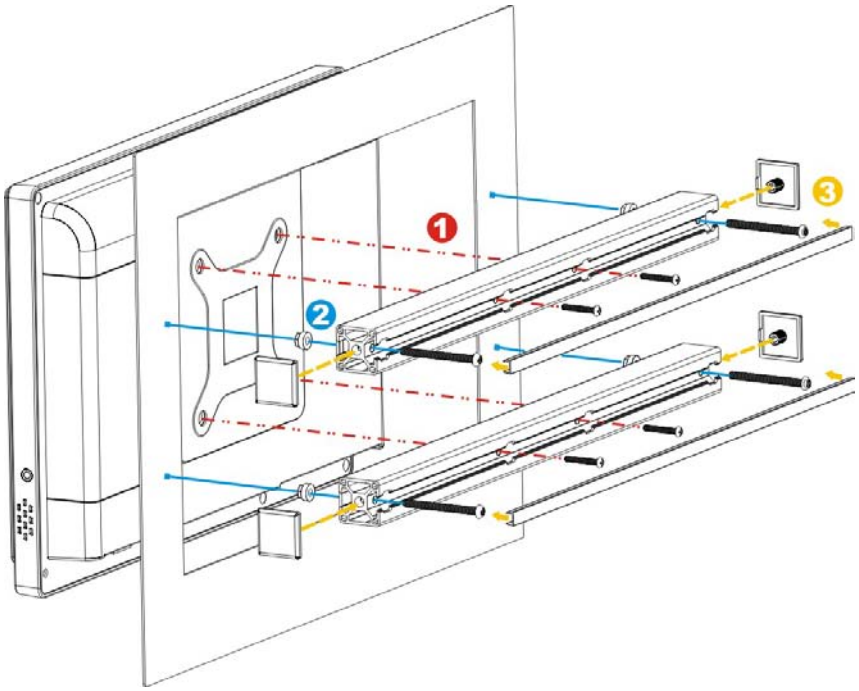


Figure 4-20: Tighten the Panel Mounting Clamp Screws

4.13.3 Stand Mounting

To mount the AFL2-W21A/AB-H61 using the stand mounting kit, please follow the steps below.

Step 1: Locate the screw holes on the rear of the AFL2-W21A/AB-H61. This is where the bracket will be attached. (**Figure 4-21**)

Figure 4-21: Mounting screw location

Step 2: Align the bracket with the screw holes.

Step 3: To secure the bracket to the AFL2-W21A/AB-H61, insert the retention screws into the screw holes and tighten them.

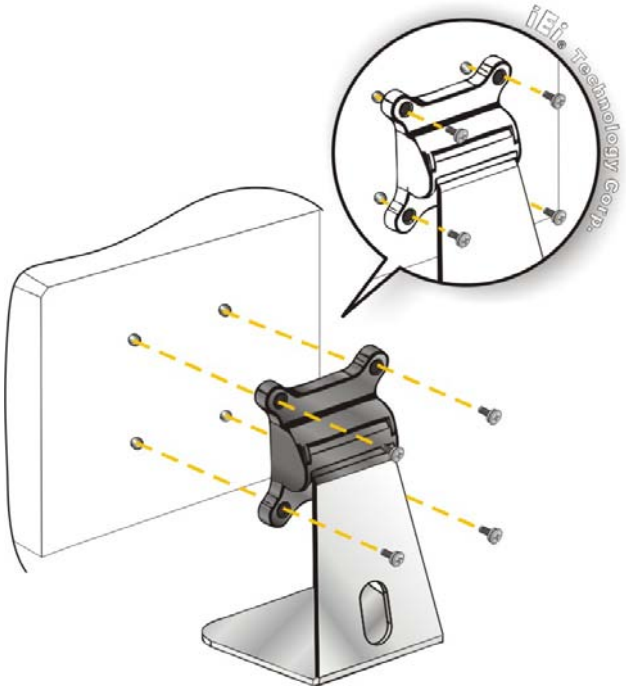


Figure 4-22: Stand Mounting (Stand-A/Bxx)

4.13.4 Arm Mounting

The AFL2-W21A/AB-H61 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 100mm interface pad. To mount the AFL2-W21A/AB-H61 on an arm, please follow the steps below.

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

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 100mm x 100mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL2-W21A/AB-H61 flat bezel panel PC.

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

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat bezel panel PC (**Figure 4-23**).

Figure 4-23: Arm Mounting Retention Screw Holes

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

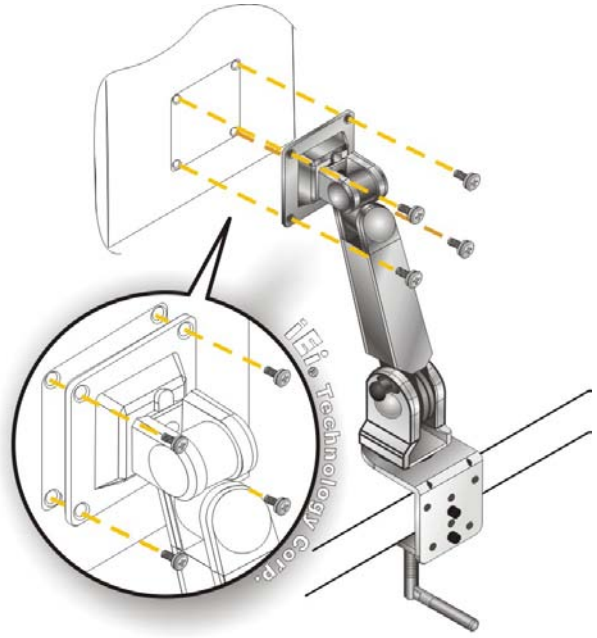


Figure 4-24: Arm Mounting (ARM-11-RS)

4.14 External Peripheral Device Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- HDMI devices
- RJ-45 Ethernet cable connector
- Serial port devices
- USB devices
- VGA monitor

To install these devices, connect the corresponding cable connector from the actual device to the corresponding AFL2-W21A/AB-H61 external peripheral interface connector making sure the pins are properly aligned.

4.14.1 Audio Connection

The audio jacks on the external audio connector enable the AFL2-W21A/AB-H61 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.

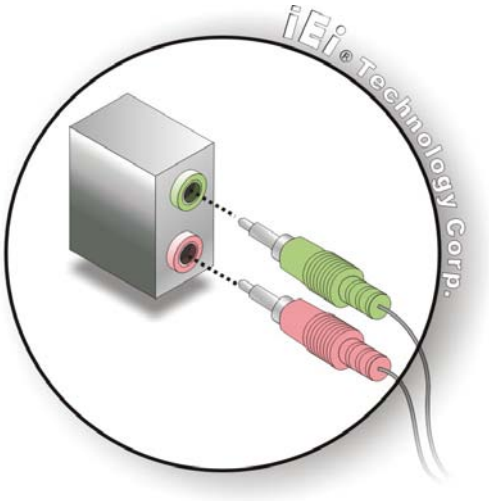


Figure 4-25: Audio Connector

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.

4.14.2 HDMI Device Connection

The HDMI connector transmits a digital signal to compatible HDMI display devices such as a TV or computer screen. To connect the HDMI cable to the AFL2-W21A/AB-H61, follow the steps below.

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

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

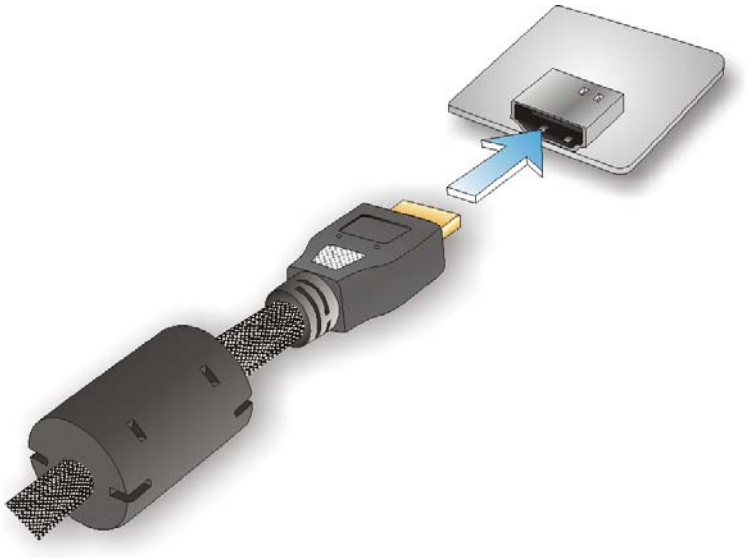


Figure 4-26: HDMI Connection

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.

The pinouts of the HDMI connector is shown below.

Pin	Description	Pin	Description
1	HDMI_TMDS_C_DATA2	2	GND
3	HDMI_TMDS_C_DATA2#	4	HDMI_TMDS_C_DATA1
5	GND	6	HDMI_TMDS_C_DATA1#
7	HDMI_TMDS_C_DATA0	8	GND
9	HDMI_TMDS_C_DATA0#	10	HDMI_TMDS_C_CLK
11	GND	12	HDMI_TMDS_C_CLK#
13	NC	14	NC
15	HDMI_DDC_SCLK	16	HDMI_DDC_SDATA
17	GND	18	+5V_HDMI
19	HDMI_HPD		

Table 4-1: HDMI Pinouts

4.14.3 LAN Connection

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

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

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the AFL2-W21A/AB-H61. See **Figure 4-27**.

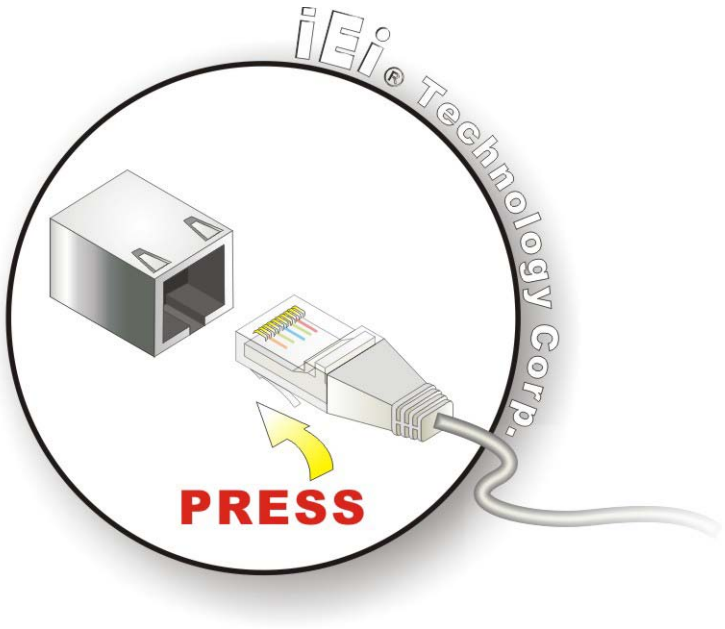


Figure 4-27: LAN Connection

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

The pinouts of the RJ-45 LAN connectors are shown below.

Pin	Description	Pin	Description
1	LAN1_MDI0+	2	LAN1_MDI0-
3	LAN1_MDI1+	4	LAN1_MDI1-
5	GND	6	GND

Pin	Description	Pin	Description
7	LAN1_MDI2+	8	LAN1_MDI2-
9	LAN1_MDI3+	10	LAN1_MDI3-
11	GND	12	GND
13	NC	14	NC
L1	LAN1_LINK100	L2	LAN1_LINK1000
L3	LAN1_ACT-1	L4	POWER

Table 4-2: LAN1 Pinouts

Pin	Description	Pin	Description
1	LAN2_MDI0+	2	LAN2_MDI0-
3	LAN2_MDI1+	4	LAN2_MDI1-
5	GND	6	GND
7	LAN12_MDI2+	8	LAN2_MDI2-
9	LAN2_MDI3+	10	LAN2_MDI3-
11	GND	12	GND
13	NC	14	NC
L1	LAN12_LINK100	L2	LAN2_LINK1000
L3	LAN2_ACT-1	L4	POWER

Table 4-3: LAN2 Pinouts

4.14.4 Serial Device Connection

There are two external RS-232 DB-9 connectors and one RS-422/485 DB-9 connector for serial device connection. Follow the steps below to connect a serial device to the AFL2-W21A/AB-H61.

Step 1: **Locate the DB-9 connector**. The locations of the DB-9 connectors are shown in **Chapter 1**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the bottom panel. See **Figure 4-28**.

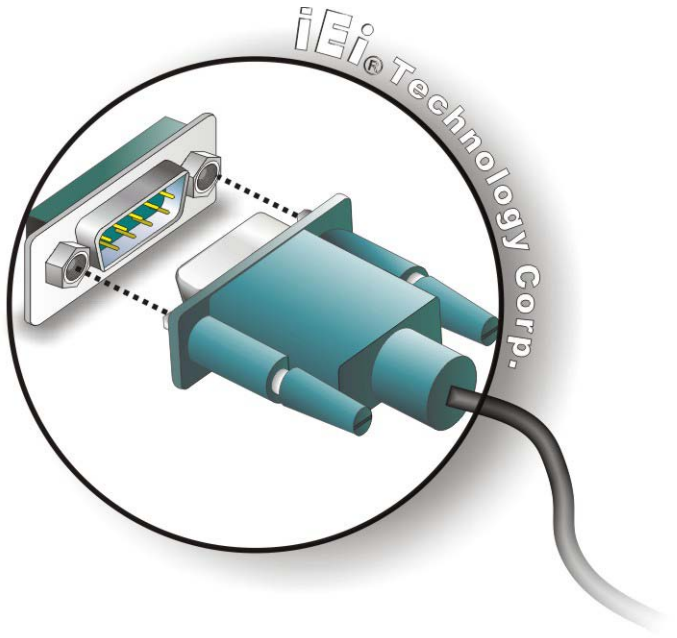


Figure 4-28: DB-9 Serial Port Connector

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

The pinouts of the RS-232 serial ports are shown below.

Pin	Description	Pin	Description
1	NDCD1	2	NSIN1
3	NSOUT1	4	NDTR1
5	GND	6	NDSR1
7	NRTS1	8	NCTS1
9	XRI1	10	NDCD2
11	NSIN2	12	NSOUT2
13	NDTR2	14	GND
15	NDSR2	16	NRTS2
17	NCTS2	18	XRI2

Table 4-4: RS-232 Serial Ports Pinouts (COM1, COM2)

The pinouts of the RS-422/485 serial ports are shown below.

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

Table 4-5: RS-422/485 Serial Port Pinouts (COM3)

4.14.5 USB Device Connection

NOTE:

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

There are three USB 2.0 connectors and two USB 3.0 connectors on the AFL2-W21A/AB-H61. To connect a USB device, please follow the instructions below.

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

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 4-29**.

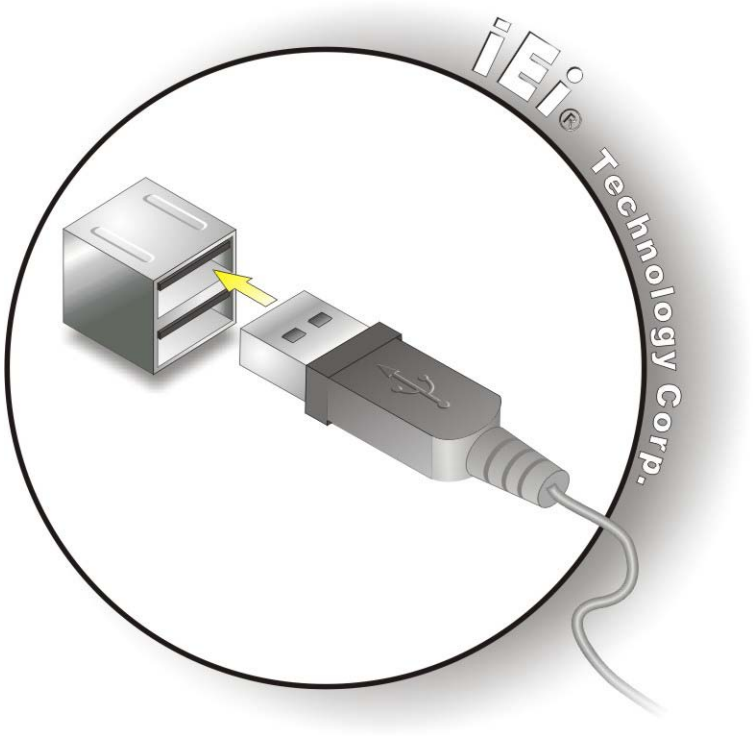


Figure 4-29: USB Device Connection

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

The pinouts of the USB 2.0 connectors are shown below.

Pin	Description	Pin	Description
1	POWER	2	-DATA0
3	+DATA0	4	GND
5	POWER	6	-DATA1
7	+DATA1	8	GND

Table 4-6: USB 2.0 connectors Pinouts (bottom panel)

Pin	Description	Pin	Description
1	POWER	2	-DATA2
3	+DATA2	4	USB20_GND

Table 4-7: USB 2.0 connectors Pinouts (left side panel)

The pinouts of the USB 3.0 connectors are shown below.

Pin	Description	Pin	Description
1	USB3_PWR1	2	USB2P0_DM1_L
3	USB2P0_DP1_L	4	GND
5	USB3P0_RXDN1_L	6	USB3P0_RXDP1_L
7	GND	8	USB3P0_TXDN1_C_L
9	USB3P0_TXDP1_C_L	10	USB3_PWR2
11	USB2P0_DM2_L	12	USB2P0_DP2_L
13	GND	14	USB3P0_RXDN2_L
15	USB3P0_RXDP2_L	16	GND
17	USB3P0_TXDN2_C_L	18	USB3P0_TXDP2_C_L

Table 4-8: USB 3.0 connectors Pinouts

4.14.6 VGA Monitor Connection

The AFL2-W21A/AB-H61 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 AFL2-W21A/AB-H61, 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 1**.

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 AFL2-W21A/AB-H61. See **Figure 4-30**.

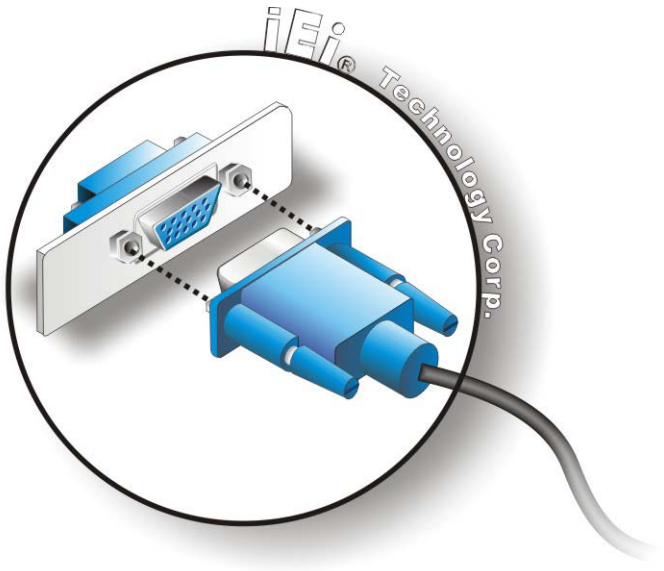


Figure 4-30: VGA Connector

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.

The pinouts of the VGA connector is shown below.

Pin	Description	Pin	Description
1	CRT_RED	2	CRT_GREEN
3	CRT_BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	CRT_VCC	10	CRT_PLUG#
11	NC	12	CRT_DDC_DATA
13	CRT_HSYNC	14	CRT_VSYNC
15	CRT_DDC_CLK		

Table 4-9: VGA Pinouts

Chapter

5

System Motherboard

5.1 Overview

This chapter details all the jumpers and connectors of the system motherboard.

5.1.1 Layout

The figures below show all the connectors and jumpers of the system motherboard..

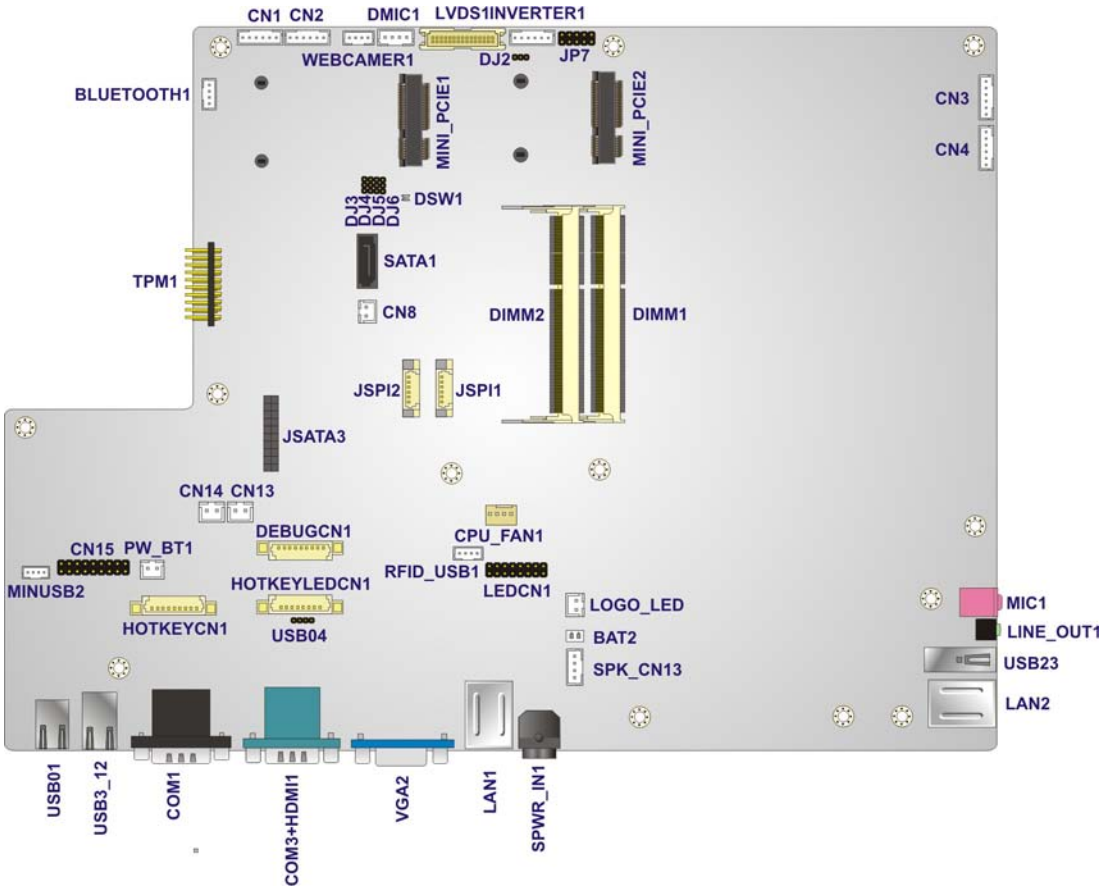


Figure 5-1: Connectors and Jumpers (front)

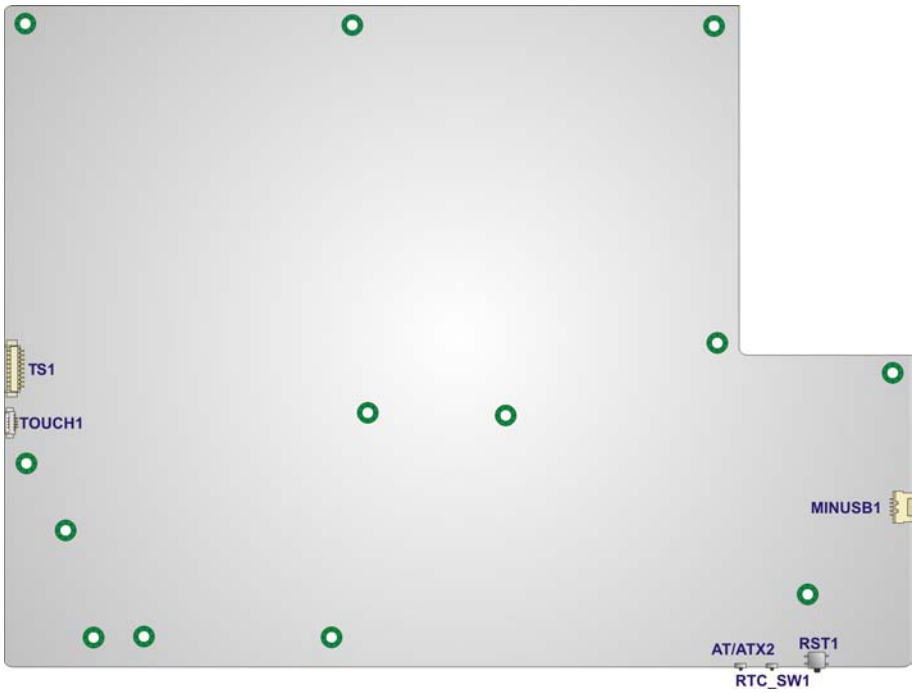


Figure 5-2: Connectors and Jumpers (rear)

5.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
Auto-dimming connector	10-pin header	JP7
Battery connector	2-pin wafer	BAT2
BIOS programming connector	6-pin wafer	JSPI1
Bluetooth connector	4-pin wafer	BLUETOOTH1
CPU fan connector	4-pin wafer	CPU_FAN1
DDR3 SO-DIMM slots	DDR3 SO-DIMM slot	DIMM1, DIMM2
Debug port connector	9-pin wafer	DEBUGCN1
Digital microphone connector	4-pin wafer	DMIC1

Connector	Type	Label
EC debug connector	18-pin header	CN15
EC programming connector	6-pin wafer	JSPI2
Hotkey connector	9-pin wafer	HOTKEYCN1
Hotkey LED connector	8-pin wafer	HOTKEYLEDCN1
JSATA connector	20-pin connector	JSATA3
K type thermocouple connector	2-pin wafer	CN13, CN14
LVDS connector	30-pin crimp	LVDS1
LVDS backlight inverter connector	6-pin wafer	INVERTER1
LED connector	16-pin header	LEDCN1
Light bar connector	6-pin wafer	CN1, CN2, CN3, CN4
LOGO LED connector	2-pin wafer	LOGO_LED
Mini USB connector	4-pin wafer	MINUSB1, MINUSB2
PCIe Mini Card Slot	PCIe mini card slot	MINI_PCIE1, MINI_PCIE2
Power button connector	2-pin wafer	PW_BT1
RFID connector	4-pin wafer	RFID_USB1
SATA 3Gb/s drive connector	7-pin SATA connector	SATA1
SATA power connector	2-pin wafer	CN8
Speaker connector	4-pin wafer	SPK_CN13
Touch panel connector	9-pin wafer	TS1
Touch panel connector	4-pin wafer	TOUCH1
TPM connector	20-pin header	TPM1
Web camera connector	4-pin wafer	WEBCAMER1

Table 5-1: Peripheral Interface Connectors

5.2 Internal Peripheral Connectors

The section describes all of the connectors on the AFL2-W21A/AB-H61.

5.2.1 Auto-Dimming Connector

CN Label: JP7

CN Type: 10-pin header

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

CN Pinouts: See **Table 5-2**

The auto-dimming connector connects to an external auto-dimming sensor.

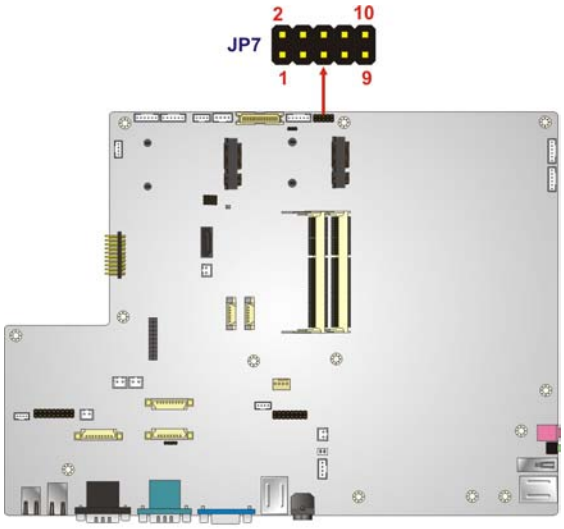


Figure 5-3: Auto-dimming Connector Pinout Location

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

Table 5-2: Auto-dimming Connector Pinouts

5.2.2 Battery Connector

CN Label: BAT2

CN Type: 2-pin wafer

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

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

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

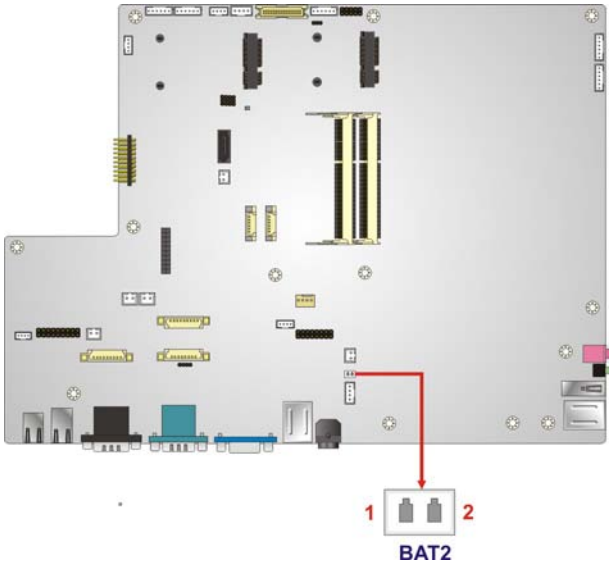


Figure 5-4: Battery Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBATT	2	GND

Table 5-3: Battery Connector Pinouts

5.2.3 BIOS Programming Connector

CN Label: JSPI1

CN Type: 6-pin wafer

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

CN Pinouts: See **Table 5-4**

The connector is for BIOS programming.

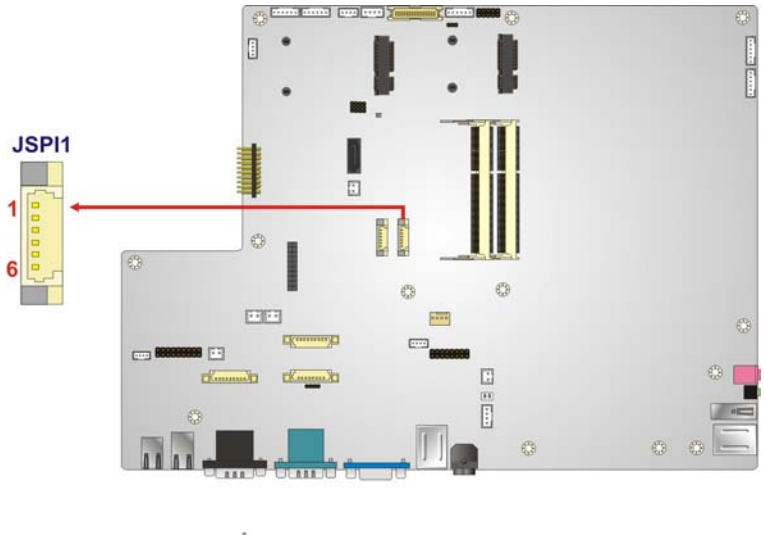


Figure 5-5: BIOS Programming Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC	2	SPI_CS#0_CN
3	SPI_SO0_CN	4	SPI_CLK0_CN
5	SPI_SI0_CN	6	GND

Table 5-4: BIOS Programming Connector Pinouts

5.2.4 Bluetooth Connector

CN Label: BLUETOOTH1

CN Type: 4-pin wafer

CN Location: See **Figure 5-6**

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

The Bluetooth connector connects to a Bluetooth module.

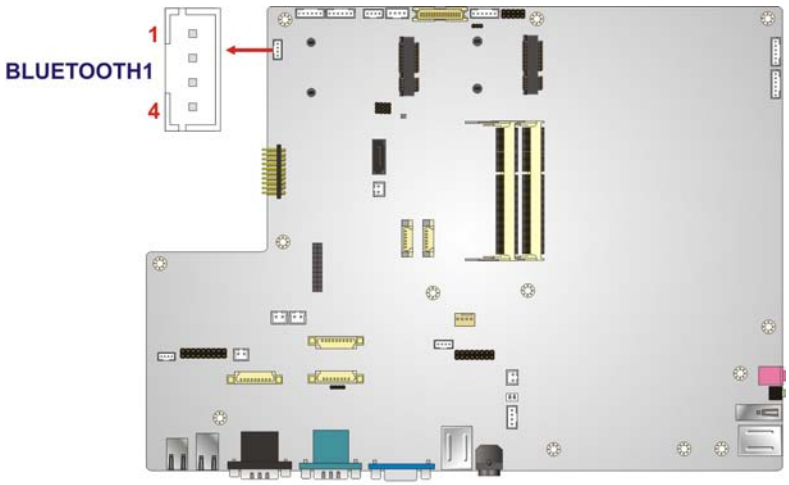


Figure 5-6: Bluetooth Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	-DATA9
3	+DATA9	4	GND

Table 5-5: Bluetooth Connector Pinouts

5.2.5 CPU Fan Connector

CN Label: CPU_FAN1

CN Type: 4-pin wafer

CN Location: See **Figure 5-7**

CN Pinouts: See **Table 5-6**

The fan connector attaches to a CPU cooling fan.

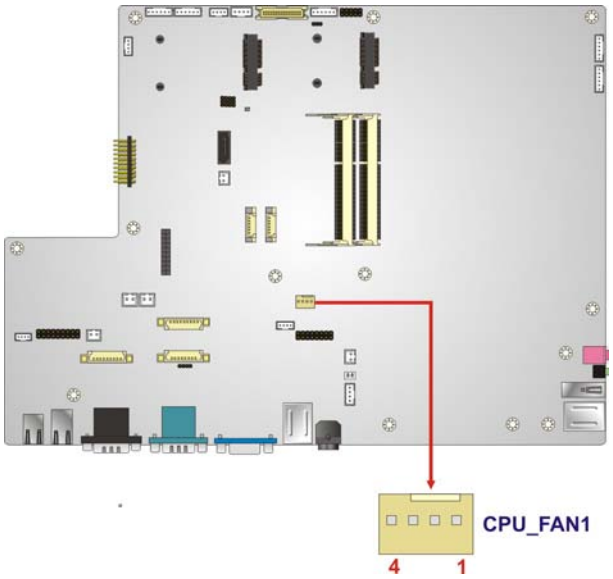


Figure 5-7: CPU Fan Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V12S
3	FANIN1	4	+V3.3S

Table 5-6: CPU Fan Connector Pinouts

5.2.6 DDR3 SO-DIMM Slots

CN Label: DIMM1, DIMM2

CN Type: DDR3 SO-DIMM slot

CN Location: See **Figure 5-8**

The DIMM slots are for DDR3 DIMM memory modules.

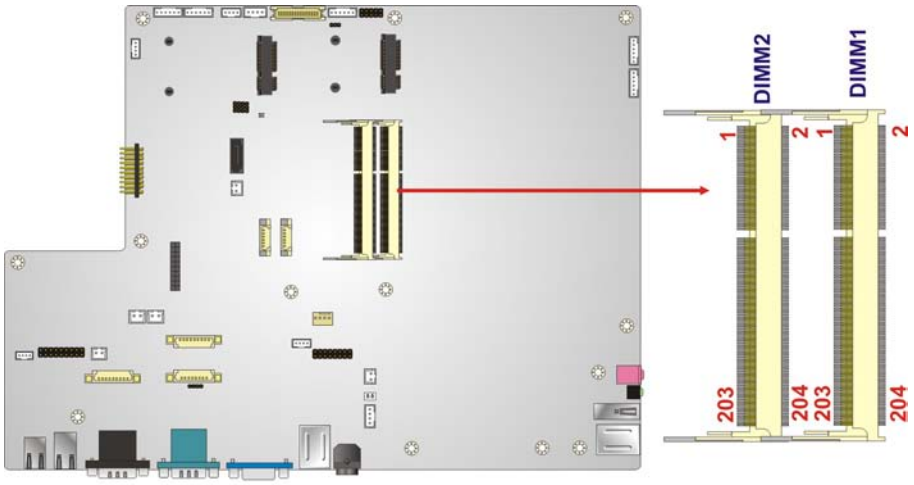


Figure 5-8: DDR3 DIMM Slot Locations

5.2.7 Debug Port Connector

CN Label:	**DEBUGCN1**
CN Type:	9-pin header
CN Location:	See **Figure 5-9**
CN Pinouts:	See **Table 5-7**

The debug port connector is for system debug.

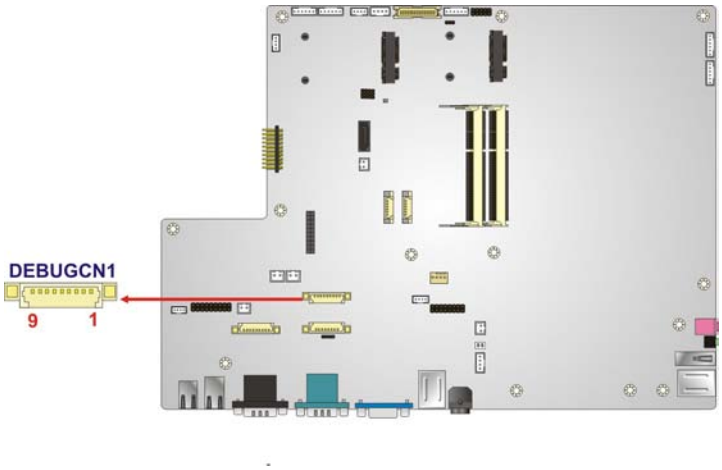


Figure 5-9: Debug Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BUF_PLT_RST#	2	FIN_CLK
3	GND	4	LPC_AD3
5	LPC_AD2	6	LPC_AD1
7	LPC_AD0	8	LPC_FRAME#
9	GND		

Table 5-7: Debug Port Connector Pinouts

5.2.8 Digital Microphone Connector

CN Label: DMIC1

CN Type: 4-pin wafer

CN Location: See **Figure 5-10**

CN Pinouts: See **Table 5-8**

The digital microphone connector connects to the digital microphone on the front panel.

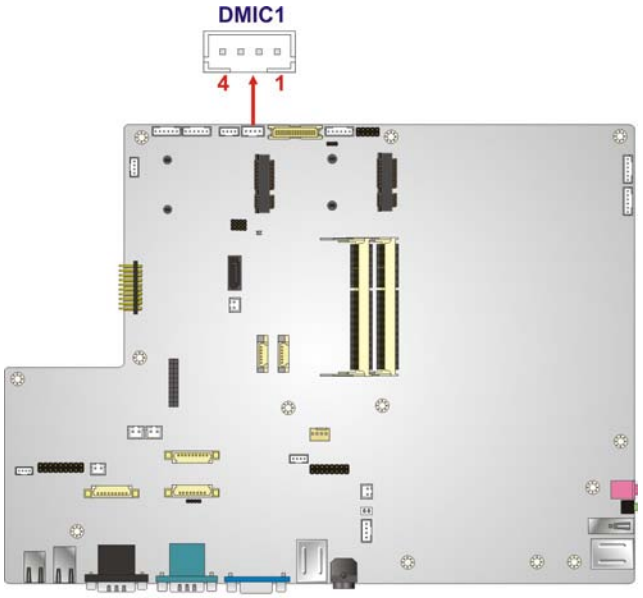


Figure 5-10: Digital Microphone Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DMIC_CLK	2	DMIC_DATA
3	VCC3	4	GND

Table 5-8: Digital Microphone Connector Pinouts

5.2.9 EC Debug Connector

CN Label: **CN15**

CN Type: 18-pin header

CN Location: See **Figure 5-11**

CN Pinouts: See **Table 5-9**

The debug port connector is for system debug.

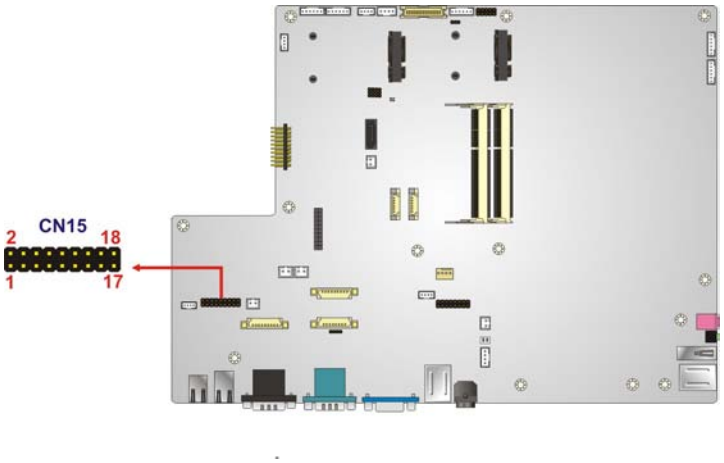


Figure 5-11: Debug Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PD0	4	EC_EPP_ERR#
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND
11	EC_EPP_PD4	12	EC_EPP_ACK#
13	EC_EPP_PD5	14	EC_EPP_BUSY

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
15	EC_EPP_PD6	16	EC_EPP_PE
17	EC_EPP_PD7	18	EC_EPP_SLCT

Table 5-9: Debug Port Connector Pinouts

5.2.10 EC Programming Connector

CN Label: JSPI2

CN Type: 6-pin header

CN Location: See **Figure 5-12**

CN Pinouts: See **Table 5-10**

The EC programming connector is used for programming the firmware.

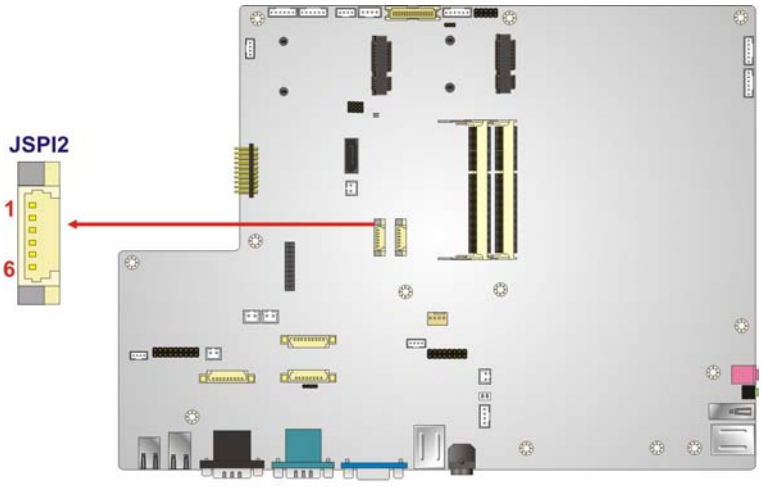


Figure 5-12: EC Programming Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC	2	FSCE#_S
3	FMISO_S	4	FSCK_S
5	FMOSI_S	6	GND

Table 5-10: EC Programming Connector Pinouts

5.2.11 Hotkey Connector

CN Label: HOTKEYCN1

CN Type: 9-pin wafer

CN Location: See **Figure 5-13**

CN Pinouts: See **Table 5-11**

The hotkey connector connects to the hotkeys on the bottom panel.

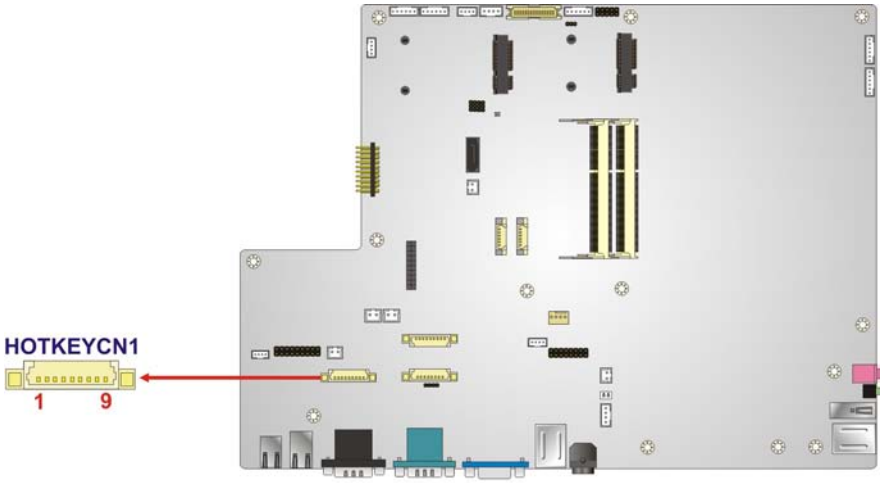


Figure 5-13: Hotkey Connector Location

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

Table 5-11: Hotkey Connector Pinouts

5.2.12 Hotkey LED Connector

CN Label: HOTKEYLEDCN1

CN Type: 8-pin wafer

CN Location: See **Figure 5-14**

CN Pinouts: See **Table 5-12**

The hotkey LED connector connects to the hotkey LEDs on the front panel.

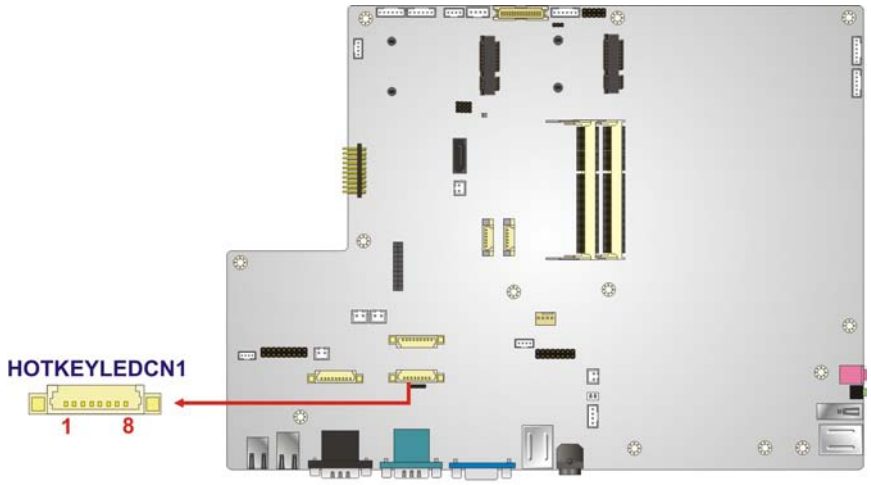


Figure 5-14: Hotkey LED Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KEYLED1	2	KEYLED2
3	KEYLED3	4	KEYLED4
5	KEYLED5	6	KEYLED6
7	GND	8	VCC3

Table 5-12: Hotkey LED Connector Pinouts

5.2.13 JSATA Connector

CN Label: JSATA3

CN Type: 20-pin connector

CN Location: See **Figure 5-15**

CN Pinouts: See **Table 5-13**

The JSATA connector connects to the SATA rigid-flex board.

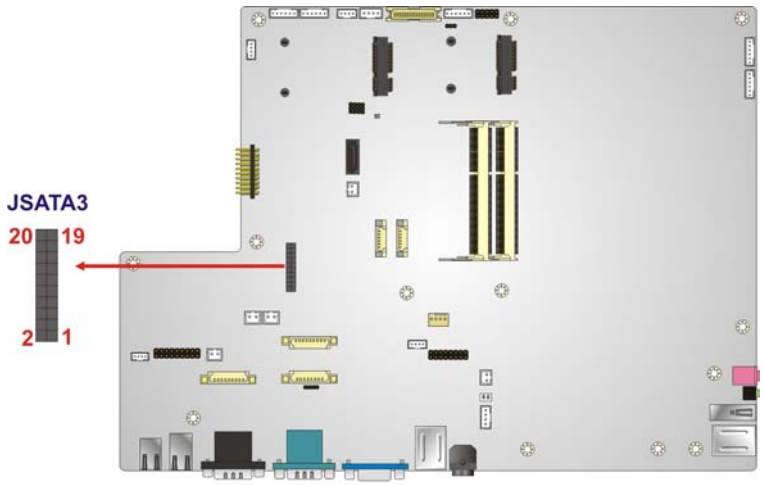


Figure 5-15: JSATA Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V12S
3	NC	4	+V12S
5	NC	6	NC
7	GND	8	+V5S
9	SATA20_PRX_C_DTX_P3	10	+V5S
11	SATA20_PRX_C_DTX_N3	12	+V5S
13	GND	14	+V5S
15	SATA20_PRX_C_DRX_P3	16	GND
17	SATA20_PRX_C_DRX_N3	18	+V3.3S
19	GND	20	+V3.3S

Table 5-13: JSATA Connector Pinouts

5.2.14 K Type Thermocouple Connector

CN Label: CN13, CN14

CN Type: 2-pin wafer

CN Location: See **Figure 5-16**

CN Pinouts: See **Table 5-14**

The K type thermocouple connector connects to the K type thermocouple. CN13 connects to the temperature sensor and CN14 connects to the K-type connector on the bottom panel. (**Figure 5-17**)

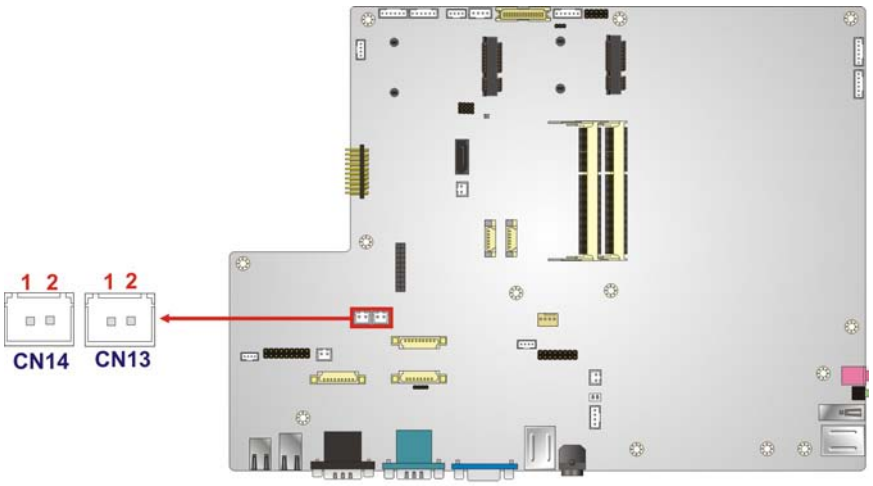


Figure 5-16: K Type Thermocouple Connector Location

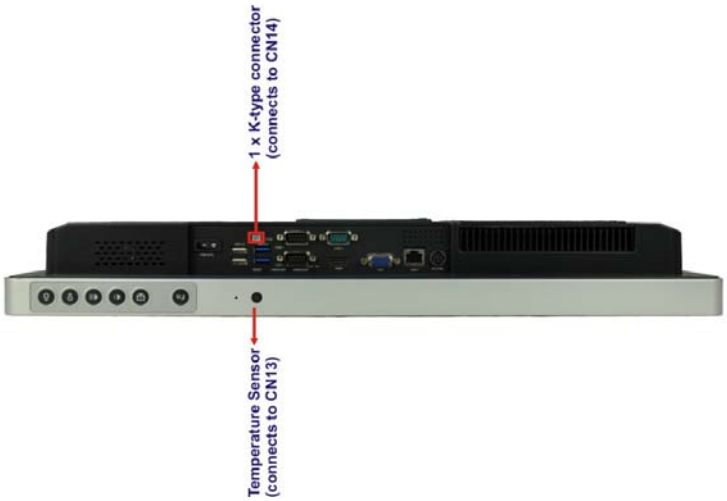


Figure 5-17: K Type Thermocouple Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	D1-/D2-	2	D1+/D2+

Table 5-14: K Type Thermocouple Connector Pinouts

5.2.15 LVDS Connector

CN Label: LVDS1

CN Type: 30-pin crimp

CN Location: See **Figure 5-18**

CN Pinouts: See **Table 5-15**

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

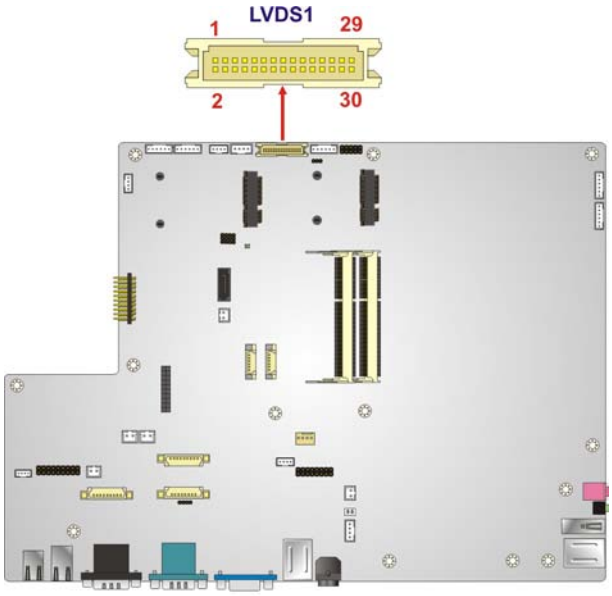


Figure 5-18: LVDS Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	A0P_C	4	A0M_C
5	A1P_C	6	A1M_C
7	A2P_C	8	A2M_C

9	CLK1P_C	10	CLK1M_C
11	A3P_C	12	A3M_C
13	GND	14	GND
15	A4P_C	16	A4M_C
17	A5P_C	18	A5M_C
19	A6P_C	20	A6M_C
21	CLK2P_C	22	CLK2M_C
23	A7P_C	24	A7M_C
25	GND	26	GND
27	VCC	28	VCC
29	VCC	30	VCC

Table 5-15: LVDS Connector Pinouts

5.2.16 LVDS Backlight Inverter Connector

CN Label: INVERTER1

CN Type: 6-pin wafer

CN Location: See **Figure 5-19**

CN Pinouts: See **Table 5-16**

The LVDS backlight inverter connectors provide power to LCD panels.

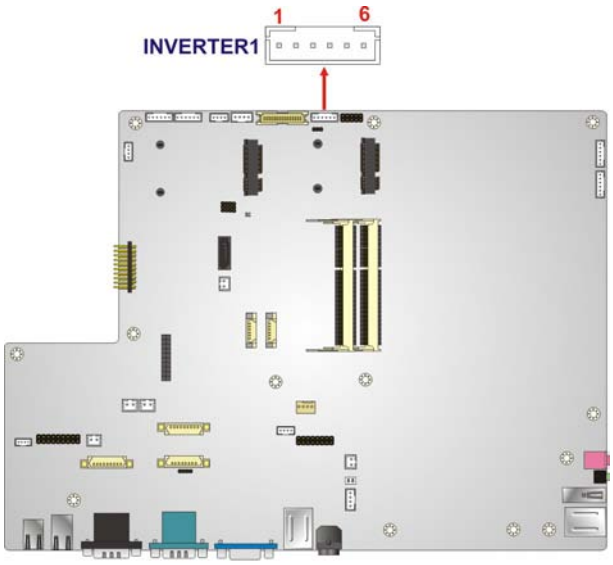


Figure 5-19: LVDS Backlight Inverter Connector Location

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

Table 5-16: LVDS Backlight Inverter Connector Pinouts

5.2.17 LED Connector

CN Label: LEDCN1

CN Type: 16-pin header

CN Location: See **Figure 5-20**

CN Pinouts: See **Table 5-17**

The LED connector connects to the LED module on the front panel.

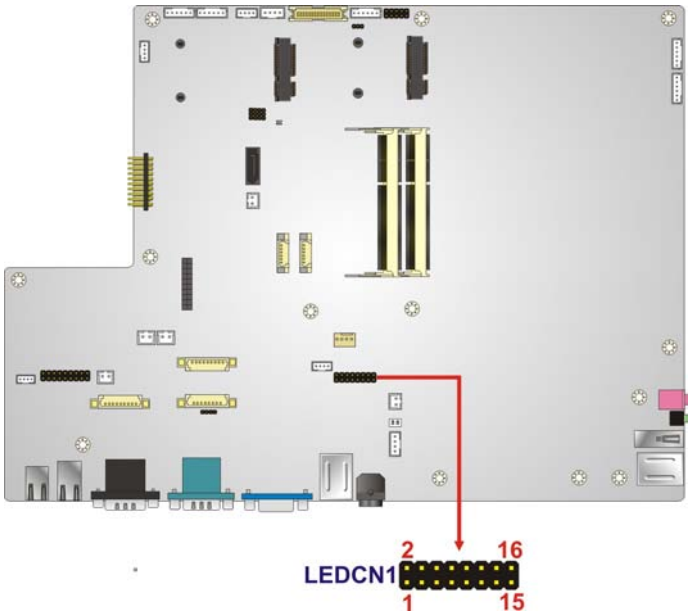


Figure 5-20: LED Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	AUDIO_LED#	2	PWRLED01#
3	MIC_LED#	4	PWRLED02#
5	CPU_LED02#	6	AT_LED#
7	CPU_LED01#	8	ATX_LED#
9	AD_LED#	10	+V3.3S
11	WiFi_LED#	12	+V3.3S
13	BT_LED#	14	+V3.3A_EC
15	VCC_RFID	16	GROUND

Table 5-17: LED Connector Pinouts

5.2.18 Light Bar Connectors

CN Label: CN1, CN2, CN3, CN4

CN Type: 6-pin wafer

CN Location: See **Figure** 4-21

CN Pinouts: See **Table 5-18**

The Light bar connectors connect to the LED bar module.

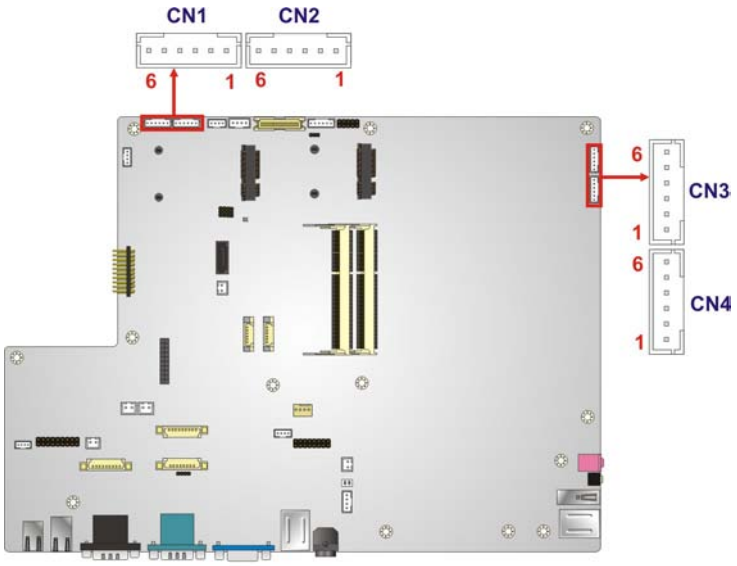


Figure 5-21: LED Bar Connectors Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SMBCLK_MAIN
3	SMBDATA_MAIN	4	+V5S

Table 5-18: LED Bar Connectors Pinouts

5.2.19 LOGO LED Connector

CN Label: LOGO_LED

CN Type: 2-pin wafer

CN Location: See **Figure 5-22**

CN Pinouts: See **Table 5-19**

The LOGO LED connector connects to the LOGO LED on the front panel.

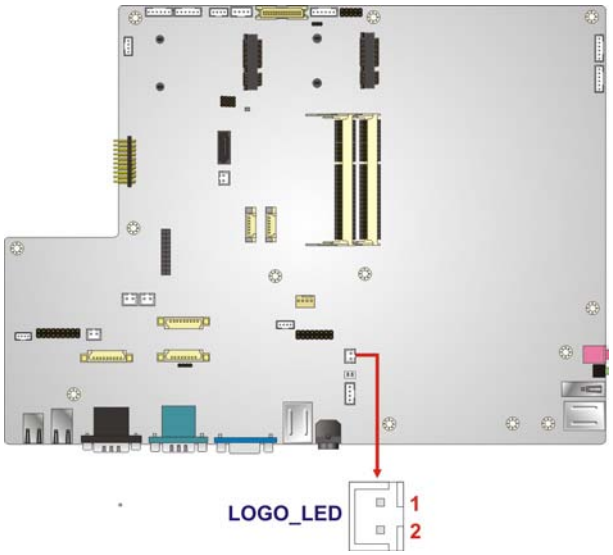


Figure 5-22: LOGO LED Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3.3S

Table 5-19: LOGO LED Connector Pinouts

5.2.20 Mini USB Connector

CN Label: MINUSB1, MINUSB2

CN Type: 4-pin wafer

CN Location: See **Figure 5-23, Figure 5-24**

CN Pinouts: See **Table 5-20**

The Mini USB connector connects to USB devices.

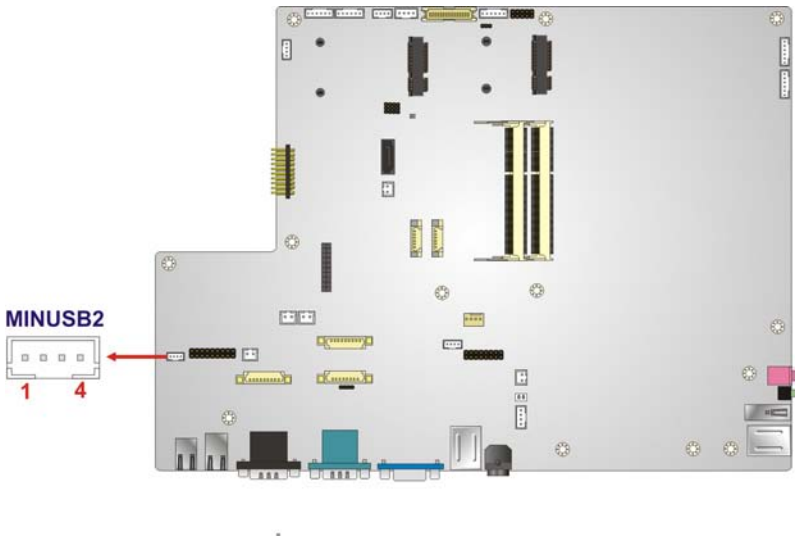


Figure 5-23: Mini USB Connector Location (MINUSB2)

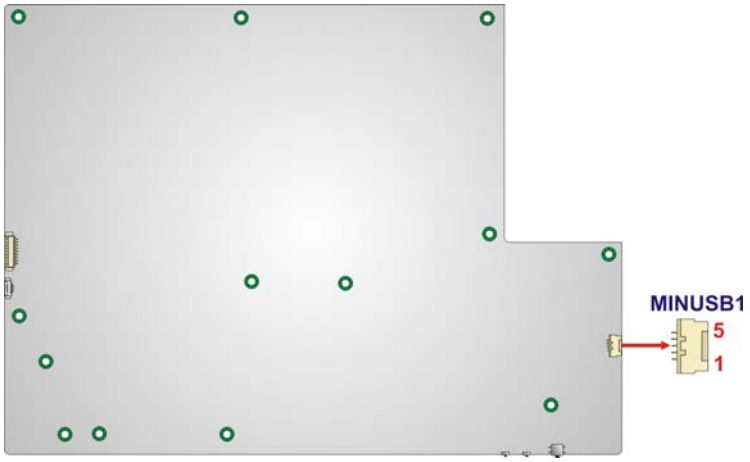


Figure 5-24: Mini USB Connector Location (MINUSB1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	-DATA4
3	+DATA4	4	GND

Table 5-20: Mini USB Connector Pinouts (MINUSB2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	-DATA8
3	+DATA8	4	GND
5	3VCC		

Table 5-21: Mini USB Connector Pinouts (MINUSB1)

5.2.21 PCIe Mini Card Slot

CN Label: MINI_PCIE1, MINI_PCIE2

CN Type: PCIe Mini card slot

CN Location: See **Figure 5-25**

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 IEI PCIe Mini disk on module (DOM) SSD cards.

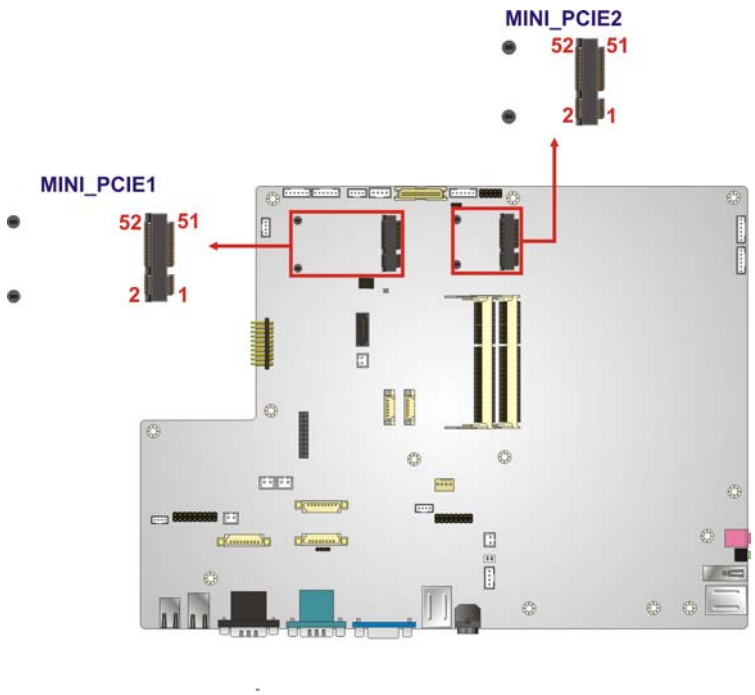


Figure 5-25: PCIe Mini Card Slot Location

5.2.22 Power Button Connector

CN Label: PW_BT1

CN Type: 2-pin wafer

CN Location: See **Figure 5-26**

CN Pinouts: See **Table 5-22**

The power button connector connects to the power button on the bottom panel.

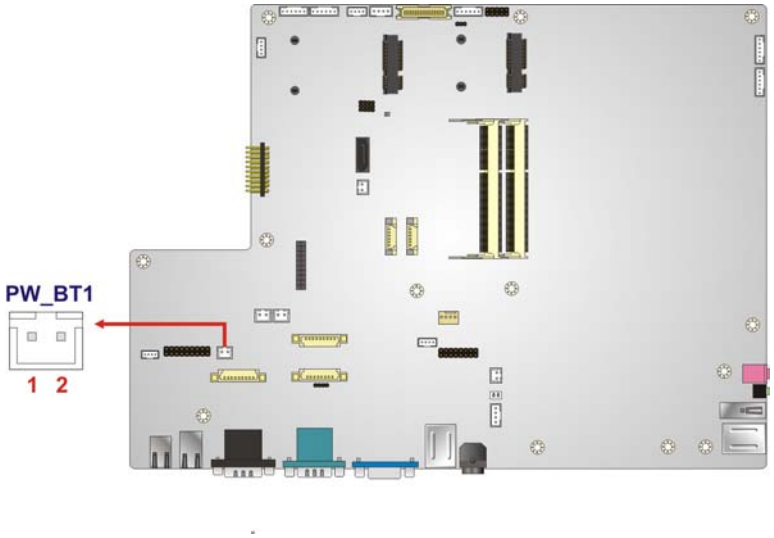


Figure 5-26: Power Button Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EX_PWRBTSW-	2	GND

Table 5-22: Power Button Connector Pinouts

5.2.23 RFID Connector

CN Label: RFID_USB1

CN Type: 4-pin wafer

CN Location: See **Figure 5-27**

CN Pinouts: See **Table 5-23**

The RFID connector connects to a RFID module.

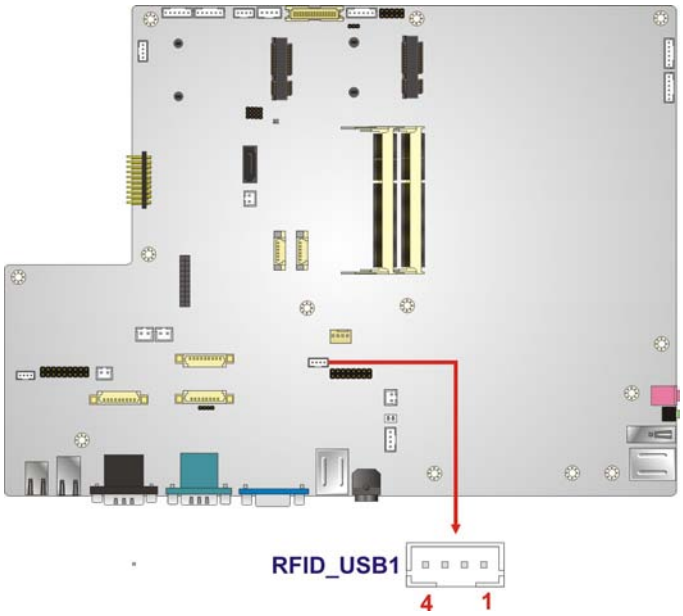


Figure 5-27: RFID Connector Location

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

Table 5-23: RFID Connector Pinouts

5.2.24 SATA 3Gb/s Drive Connectors

CN Label: SATA1

CN Type: 7-pin SATA connector

CN Location: See **Figure 5-28**

CN Pinouts: See **Table 5-24**

The SATA drive connectors can be connected to SATA drives and support up to 3Gb/s data transfer rate.

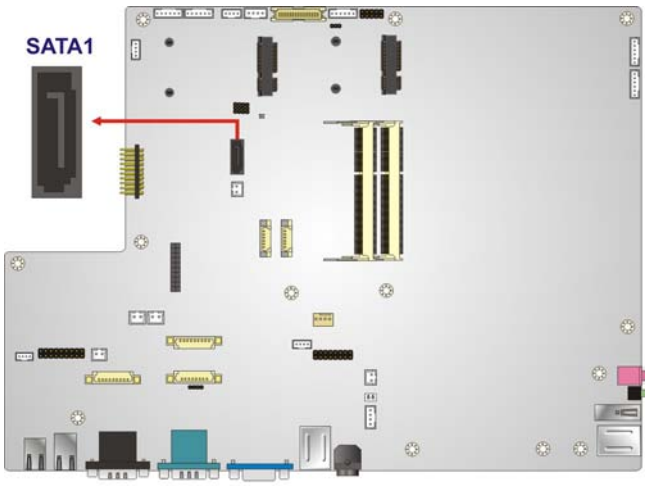


Figure 5-28: SATA 3Gb/s Drive Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SATA20_PTX_P0
3	SATA20_PTX_N0	4	GND
5	SATA20_PRX_N0	6	SATA20_PRX_P0
7	GND		

Table 5-24: SATA 3Gb/s Drive Connector Pinouts

5.2.25 SATA Power Connector

CN Label: **CN8**

CN Type: 2-pin wafer

CN Location: See **Figure 5-29**

CN Pinouts: See **Table 5-25**

The SATA power connector provide +5V power output to the SATA connector.

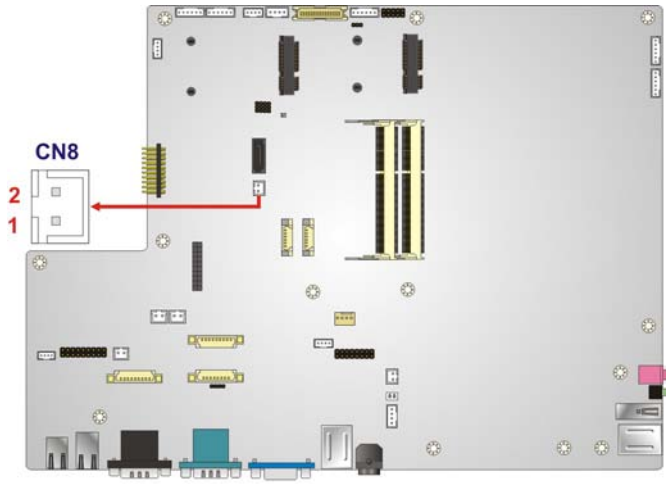


Figure 5-29: SATA Power Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V5S	2	GND

Table 5-25: SATA Power Connector Pinouts

5.2.26 Speaker Connector

CN Label: SPK_CN13

CN Type: 4-pin wafer

CN Location: See **Figure 5-30**

CN Pinouts: See **Table 5-26**

The speaker connector connects to the internal speakers.

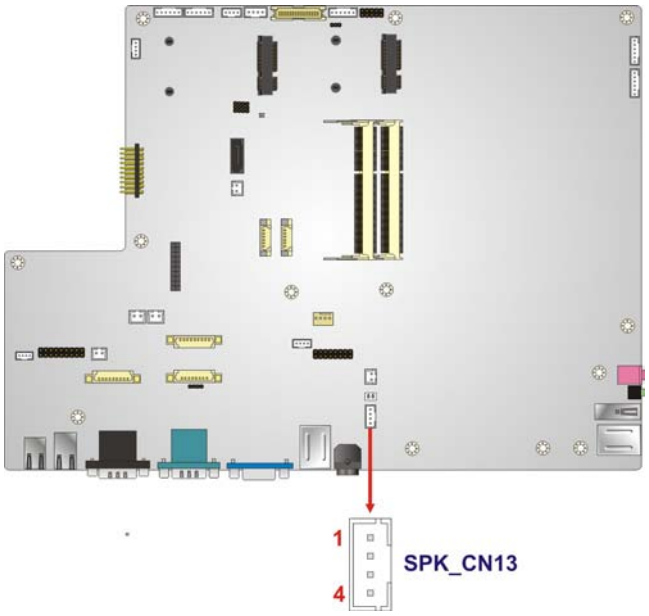


Figure 5-30: Speaker Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPK_L	2	Analog_GND
3	Analog_GND	4	SPK_R

Table 5-26: Speaker Connector Pinouts

5.2.27 Touch panel connector (5-wire resistive type)

CN Label: TS1

CN Type: 9-pin wafer

CN Location: See **Figure 5-31**

CN Pinouts: See **Table 5-27**

This connector is for a 5-wire resistive type touch screen connected to the board.

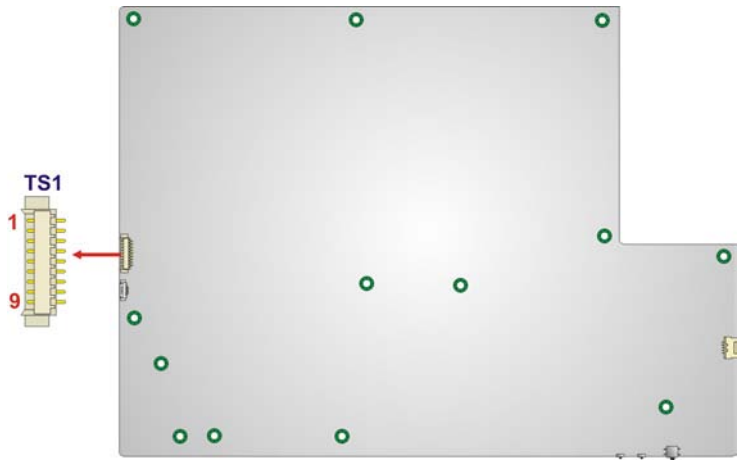


Figure 5-31: Touch Panel Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	-DATA1
3	+DATA1	4	GND

Table 5-27: Touch Panel Connector Pinouts

5.2.28 Touch panel connector (projected capacitive type)

CN Label: TOUCH1

CN Type: 4-pin wafer

CN Location: See **Figure 5-32**

CN Pinouts: See **Table 5-28**

This connector is for a projected capacitive type touch screen connected to the board.

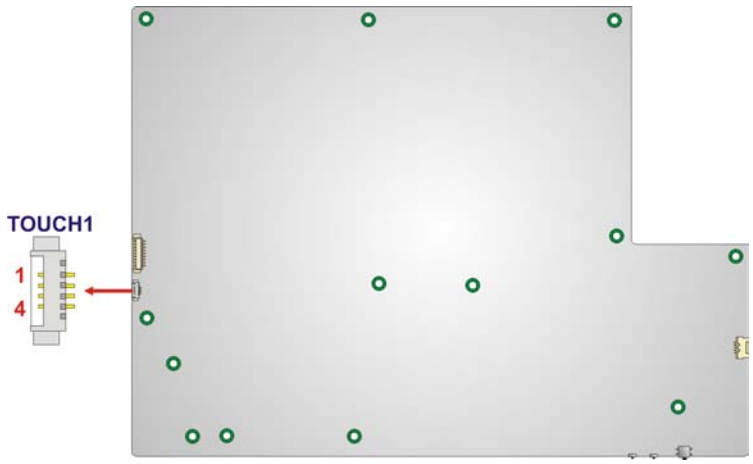


Figure 5-32: Touch Panel Connector Location

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

Table 5-28: Touch Panel Connector Pinouts

5.2.29 TPM Connector

CN Label: TPM1

CN Type: 20-pin header

CN Location: See **Figure 5-33**

CN Pinouts: See **Table 5-29**

The TPM connector connects to a TPM module.

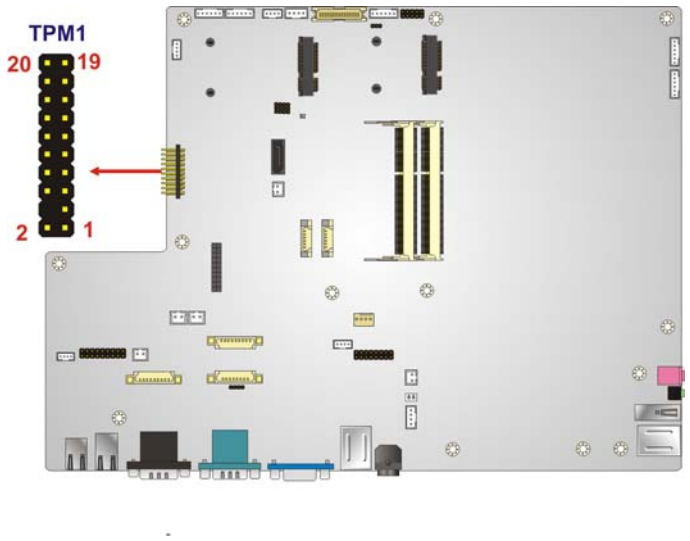


Figure 5-33: TPM Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TPMPCLK	2	GND
3	LPC_FRAME#	4	NC
5	BUF_PLT_RST#	6	+V5S
7	LPC_AD3	8	LPC_AD2
9	+V3.3S	10	LPC_AD1
11	LPC_AD0	12	GND
13	SMBCLK_MAIN	14	SMBDATA_MAIN
15	+V3.3A	16	INT_SERIRQ
17	GND	18	PM_CLKRUN#
19	PM_SUS_STAT#	20	SIO_DRQ#0

Table 5-29: TPM Connector Pinouts

5.2.30 Web Camera Connector

CN Label: WEBCAMER1

CN Type: 4-pin wafer

CN Location: See **Figure 5-34**

CN Pinouts: See **Table 5-30**

The web camera connector connects to the web camera on the front panel.

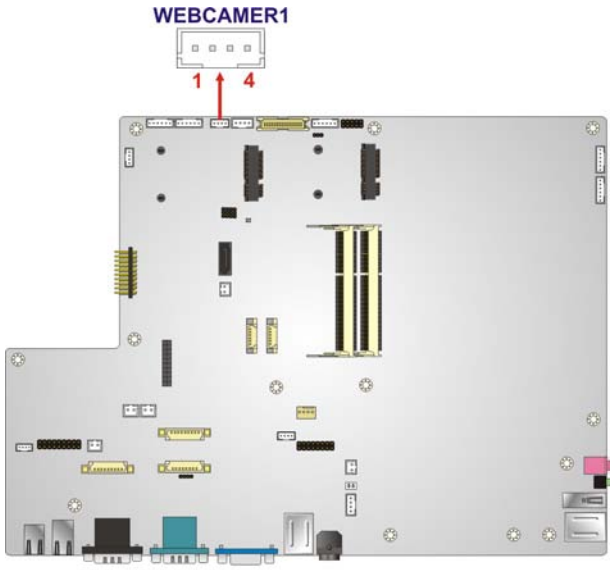


Figure 5-34: Web Camera Connector Location

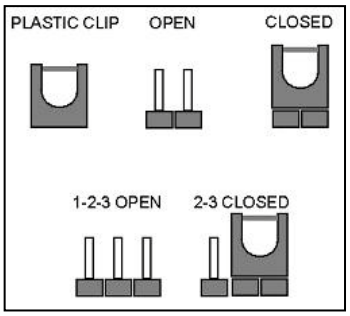
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	-DATA10
3	+DATA10	4	GND

Table 5-30: Web Camera Connector Pinouts

5.3 Jumper Settings

NOTE:

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



The following jumpers can be found on the motherboard installed in the AFL2-W21A/AB-H61. Before the AFL2-W21A/AB-H61 is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the AFL2-W21A/AB-H61 motherboard are listed in **Table 5-31**.

Description	Label	Type
LVDS voltage selection	DJ2	3-pin header
LCD panel selection	DJ3, DJ4, DJ5, DJ6	2-pin header

Table 5-31: Jumpers

5.3.1 LVDS Voltage Selection

Jumper Label: **DJ2**

Jumper Type: 3-pin header

Jumper Settings: See **Table 5-32**

Jumper Location: See **Figure 5-35**

Use the LVDS voltage selection jumper to select the voltage of the LVDS connector.

PIN NO.	DESCRIPTION
Short 1-2	+3.3 V
Short 2-3	+5 V (Default)

Table 5-32: LVDS Voltage Selection Jumper Settings

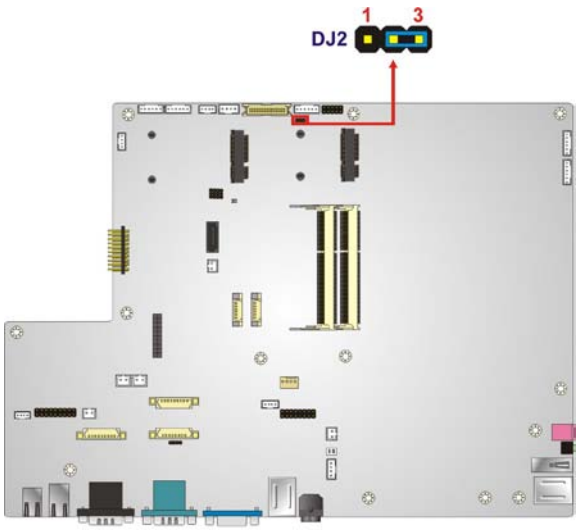


Figure 5-35: LVDS Voltage Selection Jumper Location

5.3.2 LCD panel selection

Jumper Label: **DJ3, DJ4, DJ5, DJ6**

Jumper Type: 3-pin header

Jumper Settings: See **Table 5-33**

Jumper Location: See **Figure 5-36**

Use the LCD panel selection jumper to select the LCD panel. The 19” LCD panel must be set to 1010 (DJ3~DJ6).

PIN NO.	DESCRIPTION
Short 1-2	High(1)
Short 2-3	GND(0)

Table 5-33: LCD panel Selection Jumper Settings

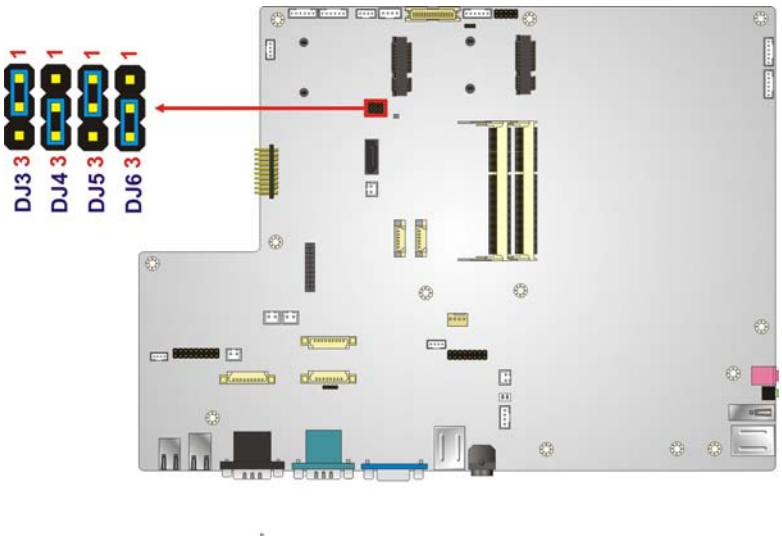


Figure 5-36: LCD panel Selection Jumper Location

Chapter

6

System Maintenance

6.1 System Maintenance Introduction

If the components of the AFL2-W21A/AB-H61 fail they must be replaced. Components that can be replaced include:

- SO-DIMM module
- WLAN module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL2-W21A/AB-H61 are described below.

6.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the AFL2-W21A/AB-H61 may result in permanent damage to the AFL2-W21A/AB-H61 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-W21A/AB-H61. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-W21A/AB-H61 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL2-W21A/AB-H61, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL2-W21A/AB-H61.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

6.3 Turn off the Power

WARNING:

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

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

To power off the system, follow the steps below:

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

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

6.4 Opening the System

6.4.1 Removing the Back Cover

WARNING:

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

To access the AFL2-W21A/AB-H61 internally the back cover must be removed. To remove the back cover, please follow the steps below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Remove a total of fifteen (15) retention screws from the back cover (**Figure 6-1**).

Figure 6-1: Back Cover Retention Screws

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

6.4.2 Removing the Internal Aluminum Cover

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

Step 1: Remove the seven (7) retention screws securing the internal aluminum cover to the chassis (**Figure 6-2**).

Figure 6-2: Internal Cover Retention Screws

Step 2: Lift the aluminum cover off the AFL2-W21A/AB-H61.

Step 3: The internal parts will all be viewable.

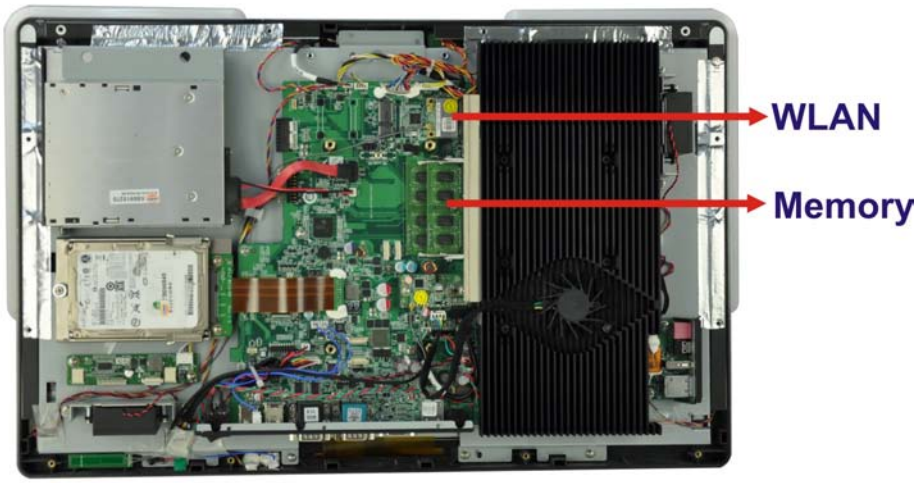


Figure 6-3: Internal Components

6.5 Replacing Components

6.5.1 Memory Module Replacement

The flat bezel panel PC is preinstalled with two 2.0 GB DDR3 memory module. If the memory module fails, follow the instructions below to replace the memory module.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3.**

Step 3: Remove the back cover. See **Section 6.4.1** above.

Step 4: Remove the internal aluminum back cover. See **Section 6.4.2** above.

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

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

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

Step 8: Install the new DDR3 memory module by pushing it into the socket at an angle (**Figure 6-4**).

Step 9: Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR memory module down (**Figure 6-4**).

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

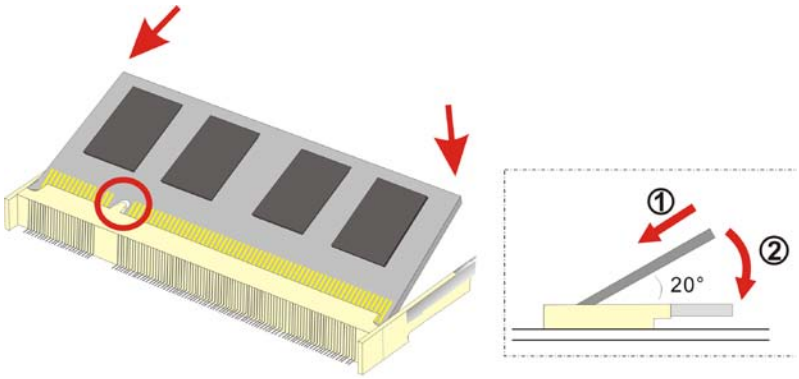


Figure 6-4: DDR SO-DIMM Module Installation

Step 11: Replace the internal aluminum cover and secure it to the chassis using seven (7) retention screws.

Step 12: Replace the back cover and secure it using fifteen (15) previously removed retention screws.

6.5.2 WLAN Card Replacement

The AFL2-W21A/AB-H61 has one WLAN card slot. To replace the WLAN card, follow the instructions below.

Step 1: Follow all anti-static procedures. See **Section 6.2**.

Step 2: Turn off the power. See **Section 6.3**.

Step 3: Remove the back cover. See **Section 6.4.1** above.

Step 4: Remove the internal back cover. See **Section 6.4.2** above.

Step 5: Locate the WLAN card.

Step 6: Disconnect the main and auxiliary antennas on the WLAN module and push the two spring clips in to release the WLAN card (**Figure 6-5**).

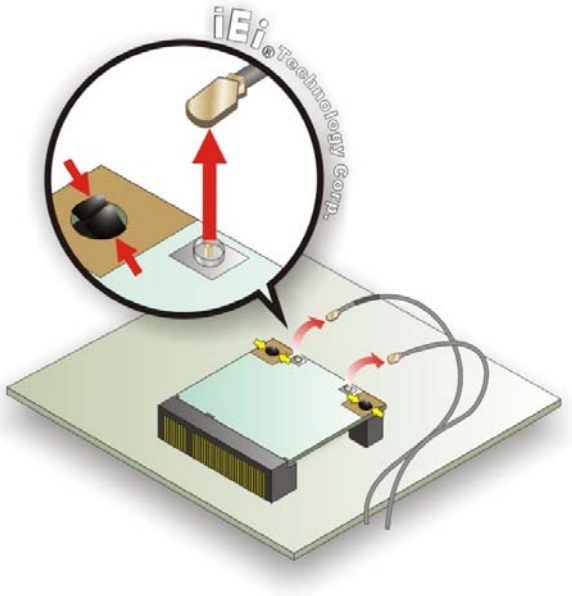


Figure 6-5: Releasing the WLAN Card

Step 7: Grasp the WLAN card by the edges and carefully pull it out of the socket (**Figure 6-6**).

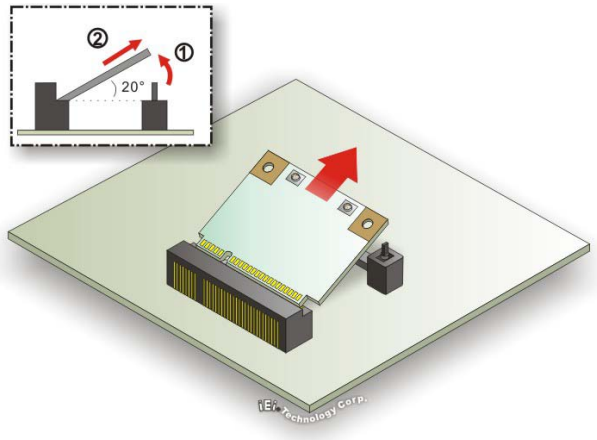


Figure 6-6: Removing the WLAN card

Step 8: Install a new WLAN card by inserting the card into the slot at an angle

Step 9: Push the WLAN card down until the spring retainer clips lock into place.

Step 10: Connect the main (1) and auxiliary (2) antennas. The main antenna is indicated with a strip of black electrical tape. See **Figure 6-7**.

NOTE:

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

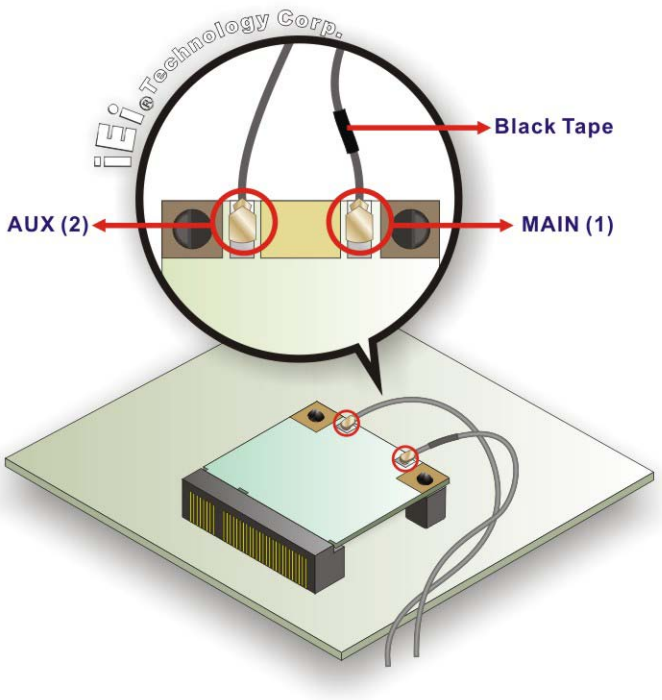


Figure 6-7: Attaching the Antennas

Step 11: Replace the internal cover and secure it to the chassis using the previously removed retention screws.

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

6.6 Reinstalling the Covers

WARNING:

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

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

- Aluminum internal cover
- Plastic back cover

Chapter

7

BIOS Setup

7.1 Introduction

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

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

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

7.1.2 Using Setup

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

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

F2 key	Load previous values.
F3 key	Load optimized defaults
F4 key	Save changes and Exit BIOS
Esc key	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

Table 7-1: BIOS Navigation Keys

7.1.3 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.

7.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults.

7.1.5 BIOS Menu Bar

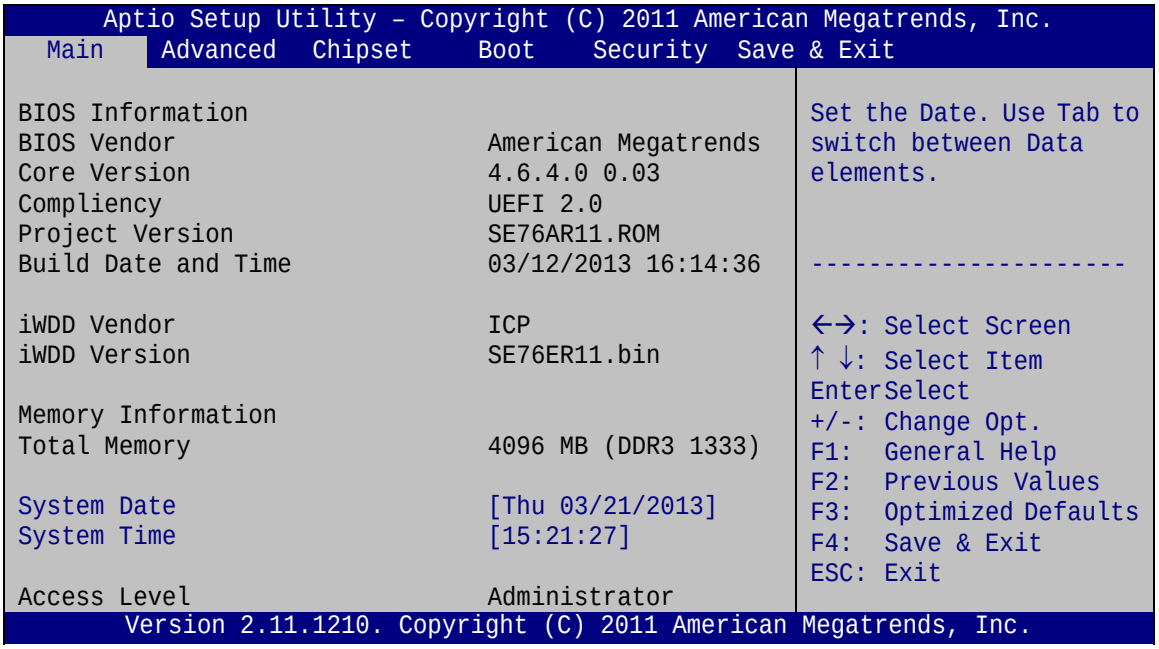
The **menu bar** on top of the BIOS screen has the following main items:

- 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.

7.2 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
- **Compliency:** Current compliant version
- **Project Version:** the board version
- **Build Date and Time:** Date the current BIOS version was made

➔ iWDD Vendor

- The **iWDD Vendor** displays the installed iWDD vendor. The fields in **iWDD Vendor** cannot be changed.

➔ iWDD Version

- The **iWDD Version** displays the current iWDD version. The fields in **iWDD Version** cannot be changed.

➔ Memory Information

The **Memory Information** lists a brief summary of the on-board memory. The fields in **Memory Information** cannot be changed.

- **Total Memory:** Displays the auto-detected system memory size and type.

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]

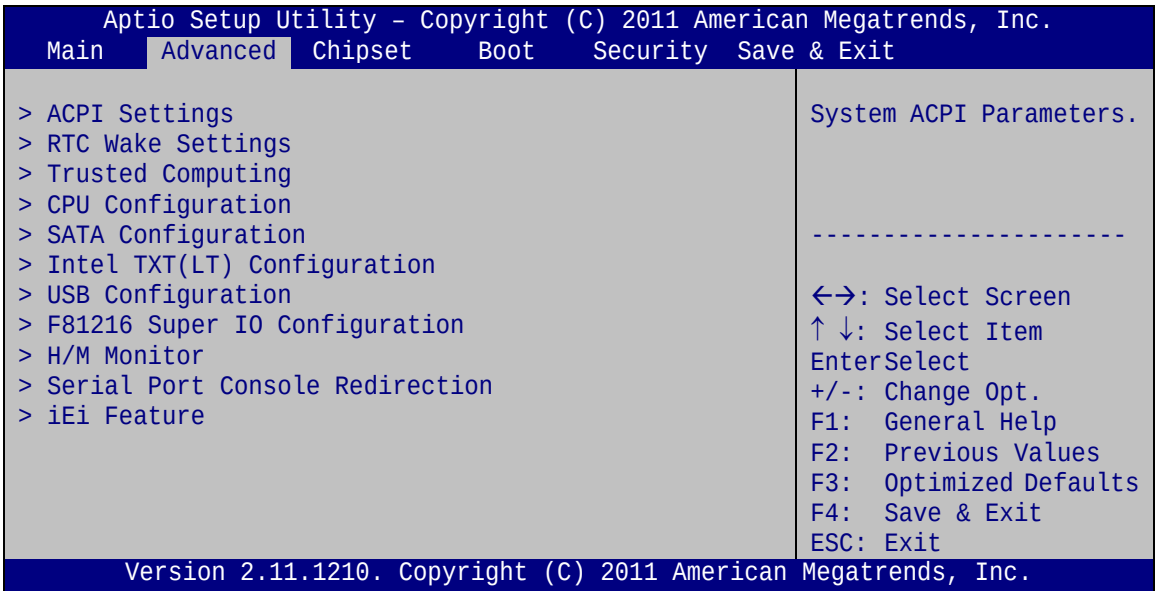
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

7.3 Advanced

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

WARNING:

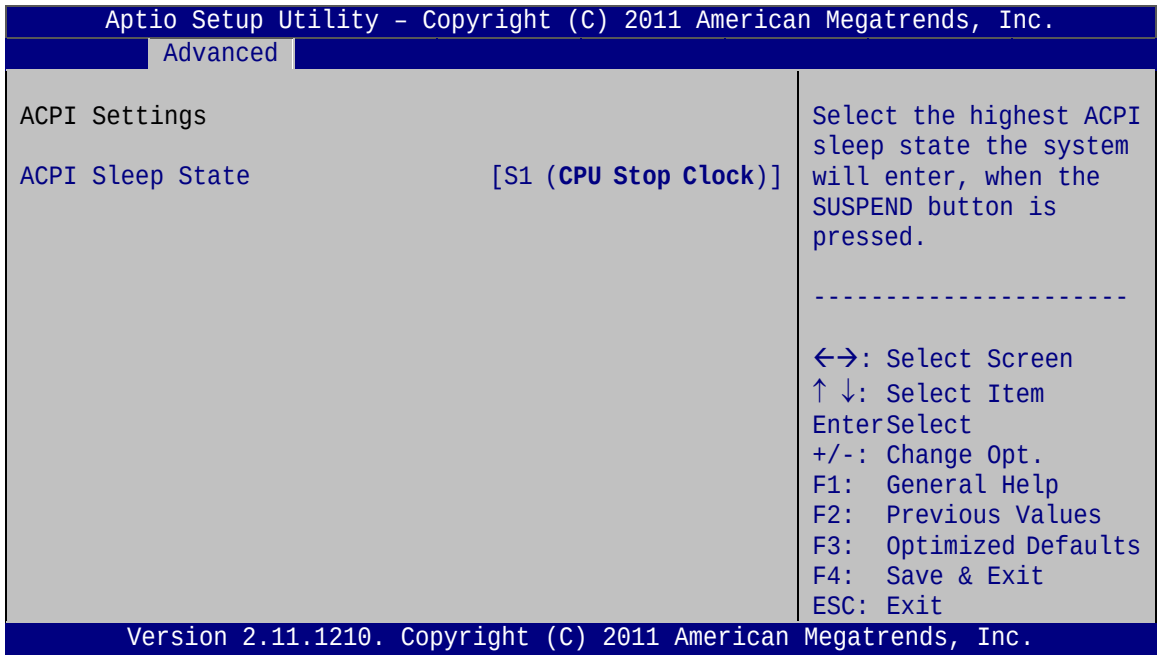
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

7.3.1 ACPI Settings

The **ACPI Settings** 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.

7.3.2 RTC Wake Settings

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

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
            Advanced

Wake system with Fixed Time      [Disabled]      Enable or disable System
                                                 wake on alarm event. When
                                                 enabled, System will
                                                 wake on the
                                                 dat::hr::min::sec
                                                 specified

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

                                                 ←→: Select Screen
                                                 ↑ ↓: Select Item
                                                 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 4: RTC Wake Settings

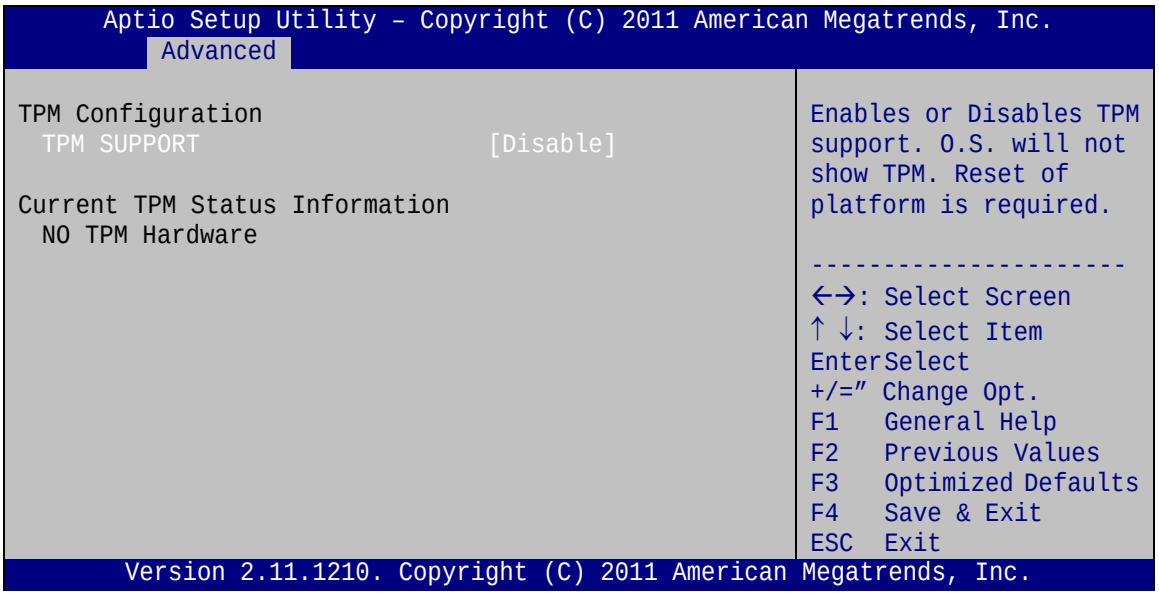
➔ Wake system with Fixed Time [Disabled]

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

➔ **Disabled**	**DEFAULT**	The real time clock (RTC) cannot generate a wake event
➔ **Enabled**		If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected: 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.

7.3.3 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 5**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 5: TPM Configuration

➔ TPM Support [Disable]

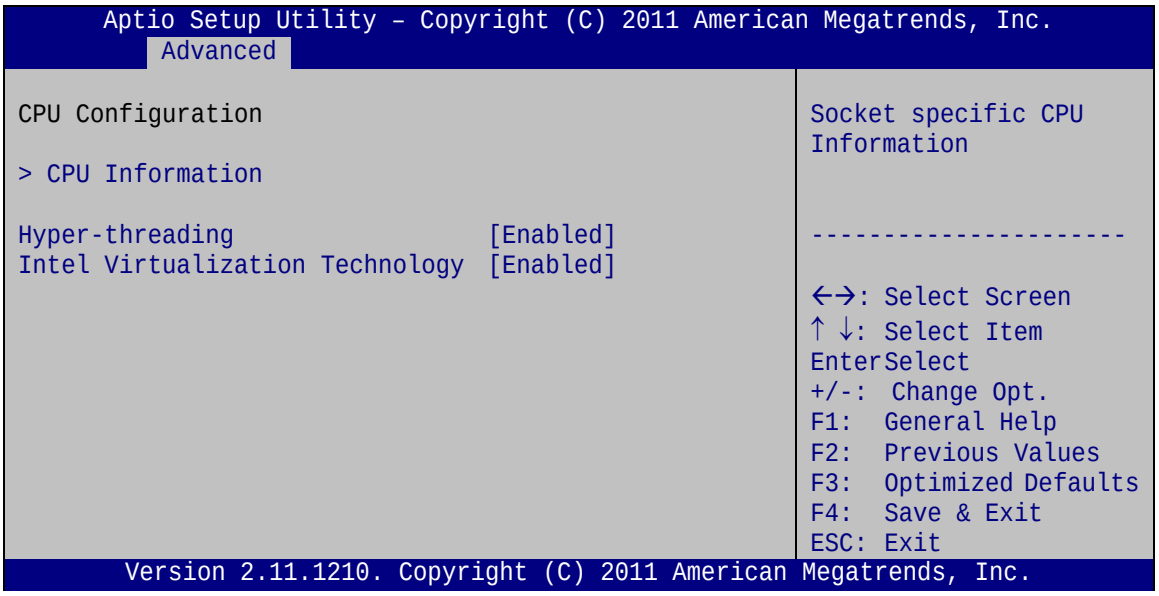
Use the **TPM Support** option to configure support for the TPM.

➔ **Disable** **DEFAULT** TPM support is disabled.

➔ **Enable** TPM support is enabled.

7.3.4 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 6**) to enter the **CPU Information** submenu or enable Intel Virtualization Technology.



BIOS Menu 6: CPU Configuration

➔ Hyper-threading [Enabled]

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

➔	**Disabled**		Disables the use of hyper-threading technology
➔	**Enabled**	**DEFAULT**	Enables the use of hyper-threading technology

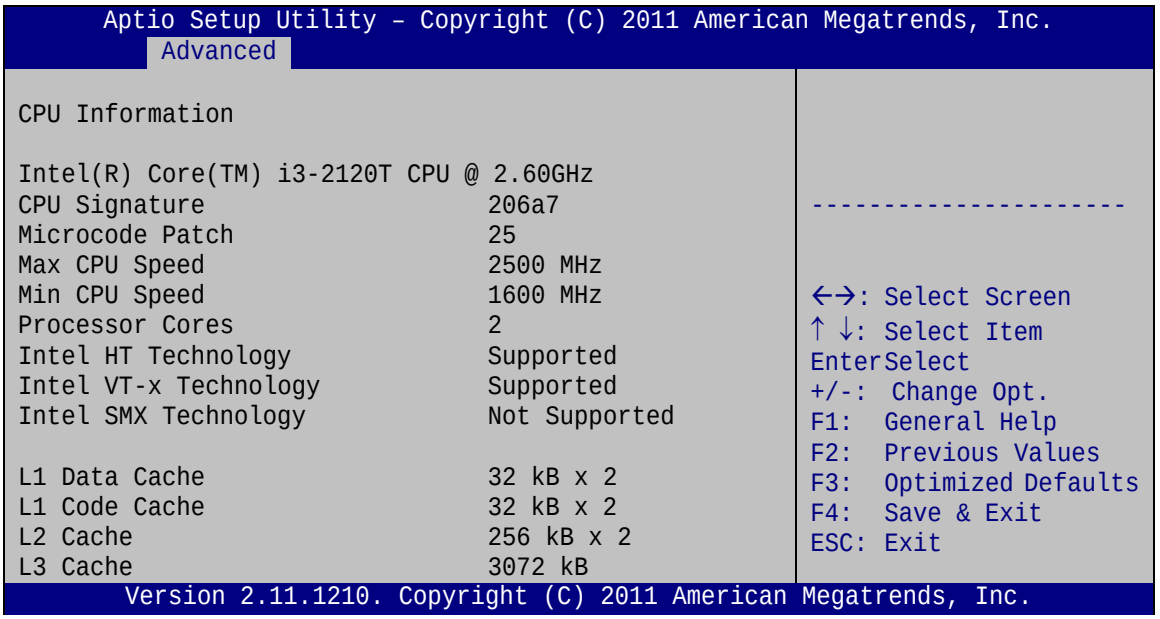
➔ Intel Virtualization Technology [Enabled]

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

➔	**Disabled**		Disables Intel Virtualization Technology.
➔	**Enabled**	**DEFAULT**	Enables Intel Virtualization Technology.

7.3.4.1 CPU Information

Use the **CPU Information** submenu (**BIOS Menu 7**) to view detailed CPU specifications and configure the CPU.



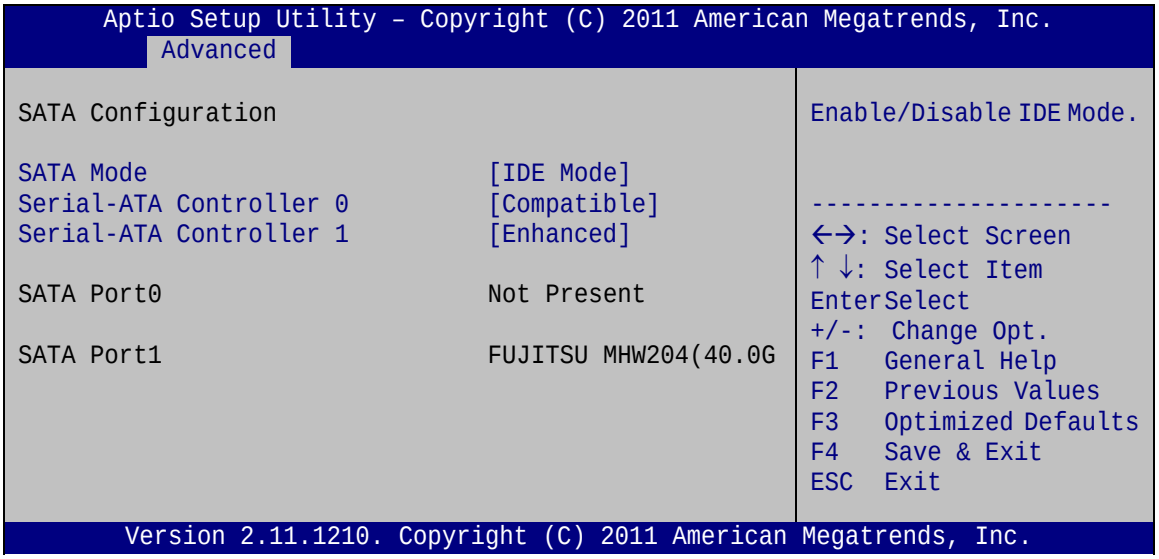
BIOS Menu 7: CPU Configuration

The CPU Configuration menu (**BIOS Menu 7**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- CPU Signature: Lists the CPU signature value.
- Microcode Patch: Lists the microcode patch being used.
- Max CPU Speed: Lists the maximum CPU processing speed.
- Min CPU Speed: Lists the minimum CPU processing speed.
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.
- Intel VT-x Technology: Indicates if Intel VT-x Technology is supported by the CPU.
- Intel SMX Technology: Indicates if Intel SMX Technology is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.
- L1 Code Cache: Lists the amount of code storage space on the L1 cache.
- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.

7.3.5 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 8**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 8: IDE Configuration

➔ SATA Mode [IDE Mode]

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

➔ **Disable** Disables SATA devices.

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

➔ Serial-ATA Controller 0 [Compatible]

Use the **Serial-ATA Controller 0** option to configure the Serial-ATA controller mode when the SATA mode is set to IDE Mode.

➔ **Enhanced** Configures the Serial-ATA controller to be in enhanced mode. In this mode, IDE channels and SATA channels are separated. Some legacy OS do not support this mode.

➔ **Compatible** **DEFAULT** Configures the Serial-ATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels.

➔ Serial-ATA Controller 1 [Enhanced]

Use the **Serial-ATA Controller 1** option to configure the Serial-ATA controller mode when the SATA mode is set to IDE Mode.

➔ **Disable** Disables Serial-ATA controller.

➔ **Enhanced** **DEFAULT** Configures the Serial-ATA controller to be in enhanced mode. In this mode, IDE channels and SATA channels are separated. Some legacy OS do not support this mode.

7.3.6 Intel TXT (LT) Configuration

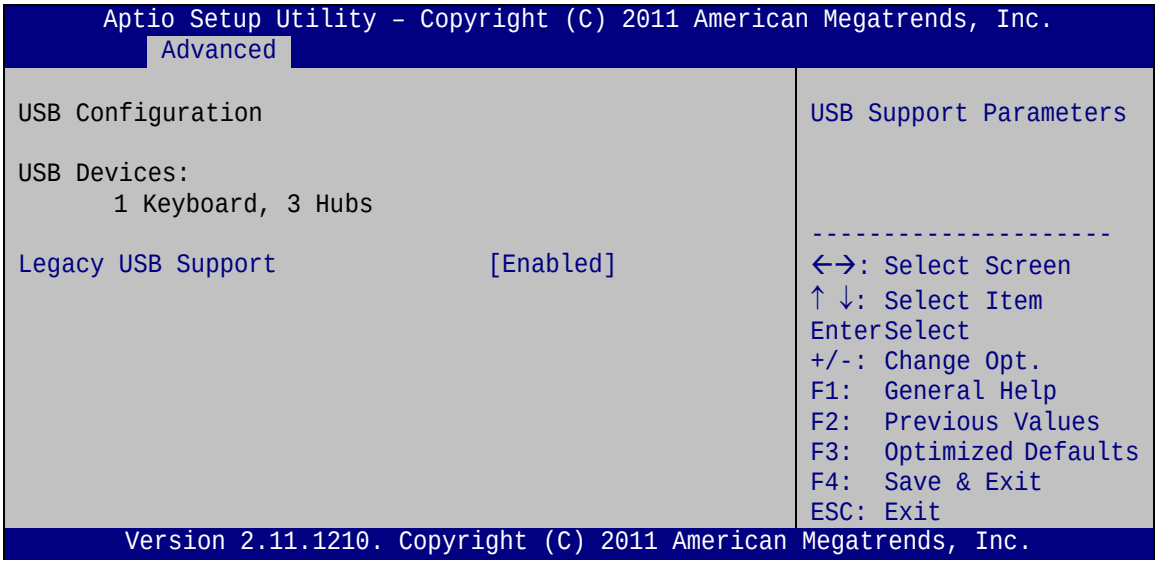
Use the **Intel TXT (LT) Configuration** menu (**BIOS Menu 9**) to configure Intel Trusted Execution Technology support.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Advanced
Intel Trusted Execution Technology Configuration

Intel TXT support only can be enabled /disabled if SMX
is enabled. VT and VT-d support must also be enabled prior
to TXT.

Secure Mode Extensions (SMX)     Disabled

                                  ---------------------
                                  ←→: Select Screen
                                  ↑ ↓: Select Item
                                  EnterSelect
                                  +/-:  Change Opt.
                                  F1:   General Help
                                  F2:   Previous Values
                                  F3:   Optimized Defaults
                                  F4:   Save & Exit
                                  ESC:  Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 9: Intel TXT(LT) Configuration

7.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 10**) to read USB configuration information and configure the USB settings.



BIOS Menu 10: 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

7.3.8 F81216 Super IO Configuration

Use the **F81216 Super IO Configuration** menu (**BIOS Menu 11**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
    Advanced
F81216 Super IO Configuration                  Set Parameters of Serial
                                               Port 0 (COMA)
Super IO Chip                    Fintek F81216
> Serial Port 1 Configuration
> Serial Port 2 Configuration                  ---------------------
> Serial Port 3 Configuration                  ←→: Select Screen
                                               ↑ ↓: Select Item
                                               EnterSelect
                                               +/-: Change Opt.
                                               F1:  General Help
                                               F2:  Previous Values
                                               F3:  Optimized Defaults
                                               F4:  Save & Exit
                                               ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 11: Super IO Configuration

7.3.8.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 12**) to configure the serial port n.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
    Advanced
Serial Port 0 Configuration                    Enable or Disable Serial
                                               Port (COM)
Serial Port                      [Enabled]
Device Settings                  IO=3F8h; IRQ=4
                                               ---------------------
Change Settings                  [Auto]        ←→: Select Screen
                                               ↑ ↓: Select Item
                                               EnterSelect
                                               +/-: Change Opt.
                                               F1:  General Help
                                               F2:  Previous Values
                                               F3:  Optimized Defaults
                                               F4:  Save & Exit
                                               ESC: Exit
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 12: Serial Port n Configuration Menu

7.3.8.1.1 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, 7,10**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 7, 10
➔ **IO=2F8h; IRQ=3, 4, 7,10**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 7, 10

7.3.8.1.2 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, 7,10**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 7, 10
➔ **IO=2F8h; IRQ=3, 4, 7,10**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 7, 10

7.3.8.1.3 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=7**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ7
➔ **IO=3E8h; IRQ=3, 4, 7,10**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 7, 10

➔ **IO=2E8h; IRQ=3, 4, 7,10**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 7, 10

➔ Device Mode [RS422]

Use the **Device Mode** option to select the serial port mode.

➔ **RS422**	**DEFAULT**	Enables serial port RS-422 support.
➔ **RS485**		Enables serial port RS-485 support.

7.3.9 H/W Monitor

The H/W Monitor menu (**BIOS Menu 13**) shows the hardware health status.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Advanced

CPU Temperature                 :+62 C      The Temperature of
Environment temperature 1       :+29 C      Fanless can be set after
Environment temperature 2       :+30 C      this item has been
SYSTEM temperature              :+61 C      enabled.

CPU FAN Speed                   :3166 RPM   ---------------------
                                            ←→: Select Screen
CPU Smart Fan control           [Auto Mode] ↑ ↓: Select Item
Temperature of Start(°C)        75          EnterSelect
Temperature of Off(°C)          60          +/-: Change Opt.
Start PWM                       50          F1:  General Help
Slope(PWM)                      [4(PWM)]    F2:  Previous Values
                                            F3:  Optimized Defaults
Fanless Temp. Overwrite Control [Enabled]   F4:  Save & Exit
Temperature of Fanless          [32 C]      ESC: Exit

Fanless Temperature Reading     :+24 C
        Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 13: Hardware Health Configuration

➔ PC Health Status

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

- System Temperatures:
  - CPU Temperature

- Environment Temperature 1 (CN13)
- Environment Temperature 2 (CN14)
- System Temperature

- Fan Speeds:
  - CPU Fan Speed

➔ CPU Smart Fan control [Auto Mode]

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

➔ **Full Mode**		Fan is on all the time
➔ **Manual Mode by PWM**		The fan spins at the speed set in the manual PWM setting
➔ **Auto Mode**	**DEFAULT**	The fan adjusts its speed using these settings: Temperature of Start Temperature of Off Start PWM Slope (PWM)

➔ Temperature of Start [75]

WARNING:

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

The **Temperature of Start** option can only be set if the **CPU Smart Fan control** option is set to **Auto Mode**. When the **CPU Temperature** is higher than **Temperature of Start**, the fan will be rotate at full speed. To set a value, select the **Temperature of Start** option and enter a decimal number between 0 and 150. The temperature range is specified below.

- Minimum Value: 0°C

- Maximum Value: 150°C

➔ Temperature of Off [60]

WARNING:

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

The **Temperature of Off** option can only be set if the **CPU Smart Fan control** option is set to **Auto Mode**. When the **CPU Temperature** is higher than **Temperature of Off**, the fan will be speed up. To set a value, select the **Temperature of Off** option and enter a decimal number between 0 and 150. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 150°C

➔ Start PWM [50]

The **Start PWM** option can only be set if the **CPU Smart Fan control** option is set to **Auto Mode**. Use the **Start PWM** option to set the PWM start value. To set a value, select the **Start PWM** option and enter a decimal number between 0 and 100. The temperature range is specified below.

- Minimum Value: 0
- Maximum Value: 100

➔ Slope (PWM) [4]

The **Slope (PWM)** option can only be set if the **CPU Smart Fan control** option is set to **Auto Mode**. Use the **Slope (PWM)** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

- 0 (PWM)

- 1 (PWM)
- 2 (PWM)
- 4 (PWM)
- 8 (PWM)
- 16 (PWM)
- 32(PWM)

➔ Fanless Temp. Overwrite Control [Enabled]

Use the **Fanless Temp. Overwrite Control** option to enable or disable Fanless Temp. Overwrite control function. The Temperature of Fanless can be set after this item has been enabled.

➔	**Enabled**		Enables the Fanless Temp. Overwrite control function.
➔	**Disabled**	**DEFAULT**	Disables the Fanless Temp. Overwrite control function.

➔ Temperature Of Fanless [32 C]

NOTE:

If the Temperature of Fanless is enabled, the fan will only turn on when the Environment Temperature 1 reaches to the temperature set in the following Temperature of Fanless option.

For safety reason, the fan will turn on automatically to cool down the system when the CPU temperature exceeds 80 ºC, no matter the Temperature of Fanless is enabled or not.

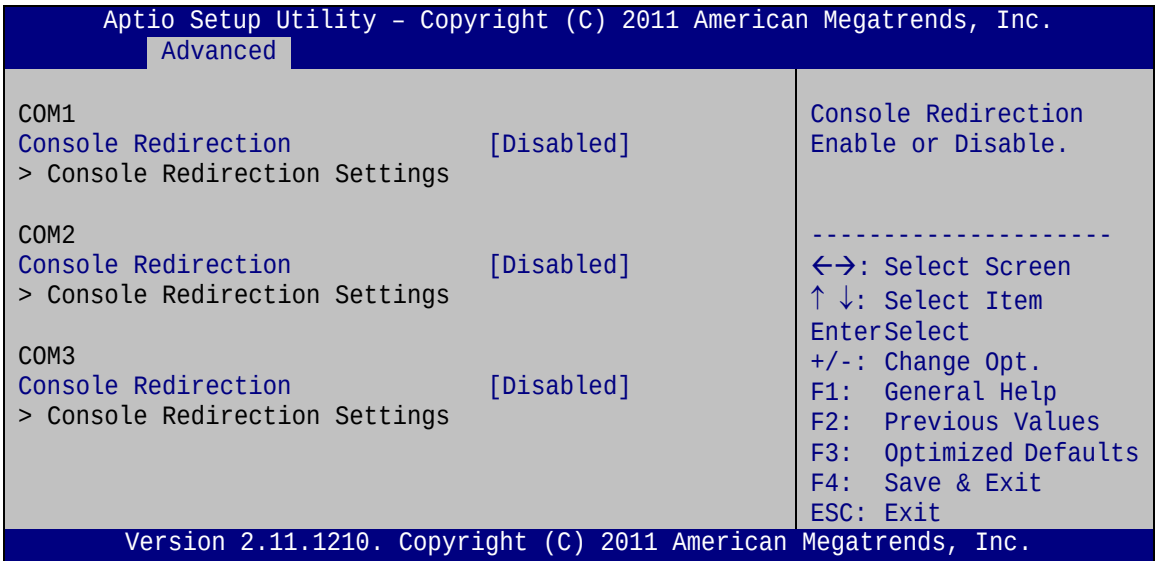
Use the **Temperature Of Fanless** option to configure default temperature setting. When the environment temperature is lower than default temperature setting, the fan will be switched off. When the environment temperature is higher than default temperature setting, the fan will be switched on. (The environment temperature depends on the **Environment Temperature 1**.) A list of available options is shown below:

➔	**Disabled**	Disabled the Temperature Of Fanless function

➔ **4 C**		When the environment temperature is lower than 4 C, the fan will be switched off.
➔ **8 C**		When the environment temperature is lower than 8 C, the fan will be switched off.
➔ **12 C**		When the environment temperature is lower than 12 C, the fan will be switched off.
➔ **16 C**		When the environment temperature is lower than 16 C, the fan will be switched off.
➔ **20 C**		When the environment temperature is lower than 20 C, the fan will be switched off.
➔ **24 C**		When the environment temperature is lower than 24 C, the fan will be switched off.
➔ **28 C**		When the environment temperature is lower than 28 C, the fan will be switched off.
➔ **32 C**	**DEFAULT**	When the environment temperature is lower than 32 C, the fan will be switched off.
➔ **36 C**		When the environment temperature is lower than 36 C, the fan will be switched off.
➔ **40 C**		When the environment temperature is lower than 40 C, the fan will be switched off.

7.3.10 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 14**) 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 14: Serial Port Console Redirection

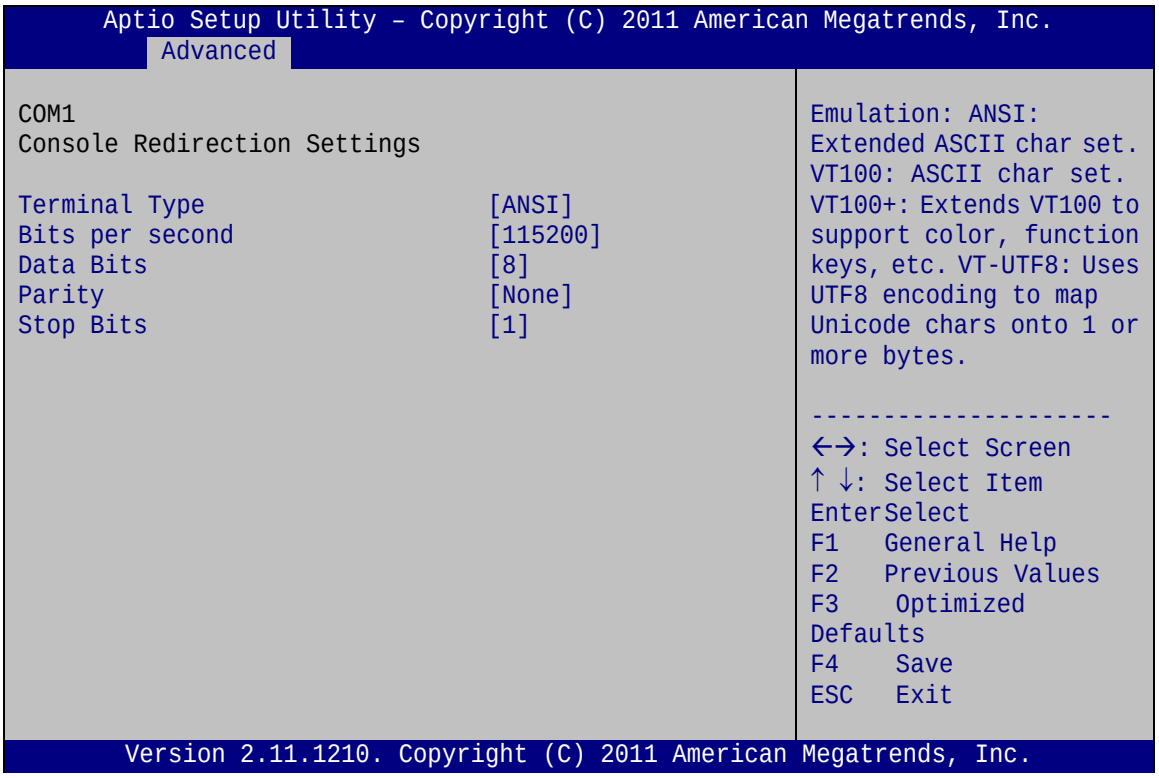
➔ Console Redirection [Disabled]

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

7.3.10.1 Console Redirection Settings

The **Console Redirection Settings** menu (**BIOS Menu 15**) allows the console redirection options to be configured. The option is active when Console Redirection option is enabled.



BIOS Menu 15: Console Redirection Settings

➔ Terminal Type [ANSI]

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

➔ **VT100**		The target terminal type is VT100
➔ **VT100+**		The target terminal type is VT100+
➔ **VT-UTF8**		The target terminal type is VT-UTF8
➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI

➔ Bits per second [115200]

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

➔ **9600**	Sets the serial port transmission speed at 9600.
➔ **19200**	Sets the serial port transmission speed at 19200.

- ➔ **38400** — Sets the serial port transmission speed at 38400.
- ➔ **57600** — Sets the serial port transmission speed at 57600.
- ➔ **115200** **DEFAULT** — Sets the serial port transmission speed at 115200.

➔ Data Bits [8]

Use the **Data Bits** option to specify the number of data bits.

- ➔ **7** — Sets the data bits at 7.
- ➔ **8** **DEFAULT** — Sets the data bits at 8.

➔ Parity [None]

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- ➔ **None** **DEFAULT** — No parity bit is sent with the data bits.
- ➔ **Even** — The parity bit is 0 if the number of ones in the data bits is even.
- ➔ **Odd** — The parity bit is 0 if the number of ones in the data bits is odd.
- ➔ **Mark** — The parity bit is always 1. This option does not provide error detection.
- ➔ **Space** — The parity bit is always 0. This option does not provide error detection.

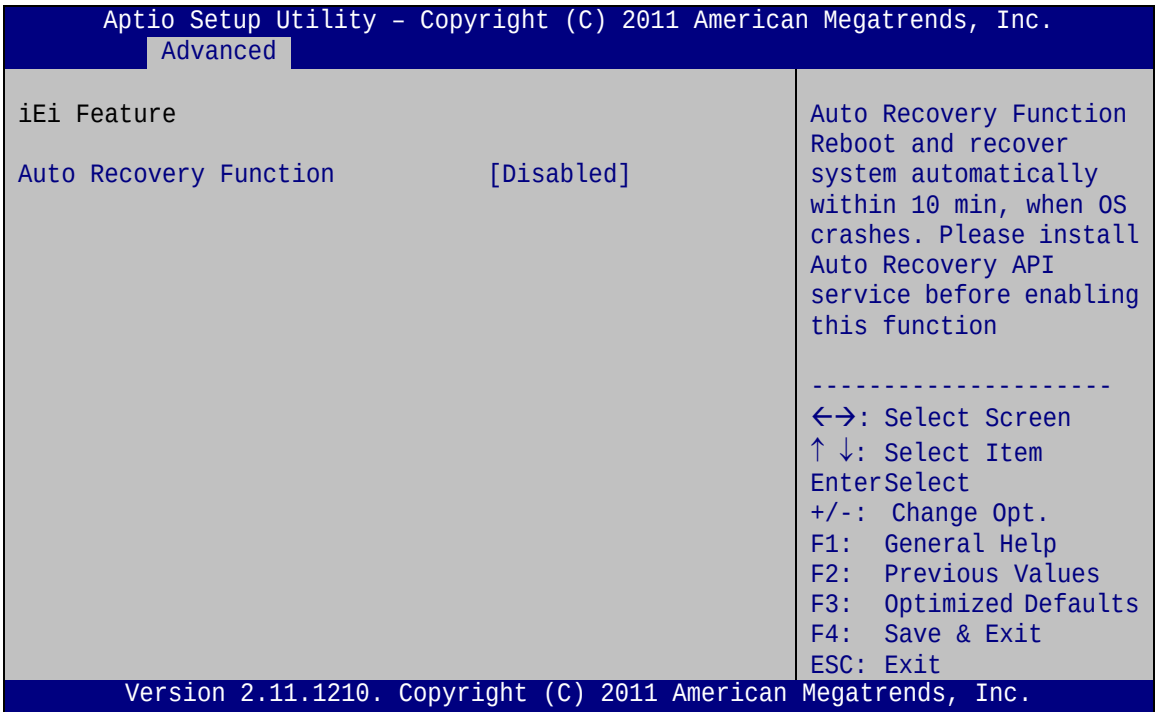
➔ Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

- ➔ **1** **DEFAULT** — Sets the number of stop bits at 1.
- ➔ **2** — Sets the number of stop bits at 2.

7.4 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 16**) to configure the auto recovery function.



BIOS Menu 16: iEi Feature

➔ Auto Recovery Function [Disabled]

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

➔ **Disabled** **DEFAULT** Auto Recovery Function support disabled

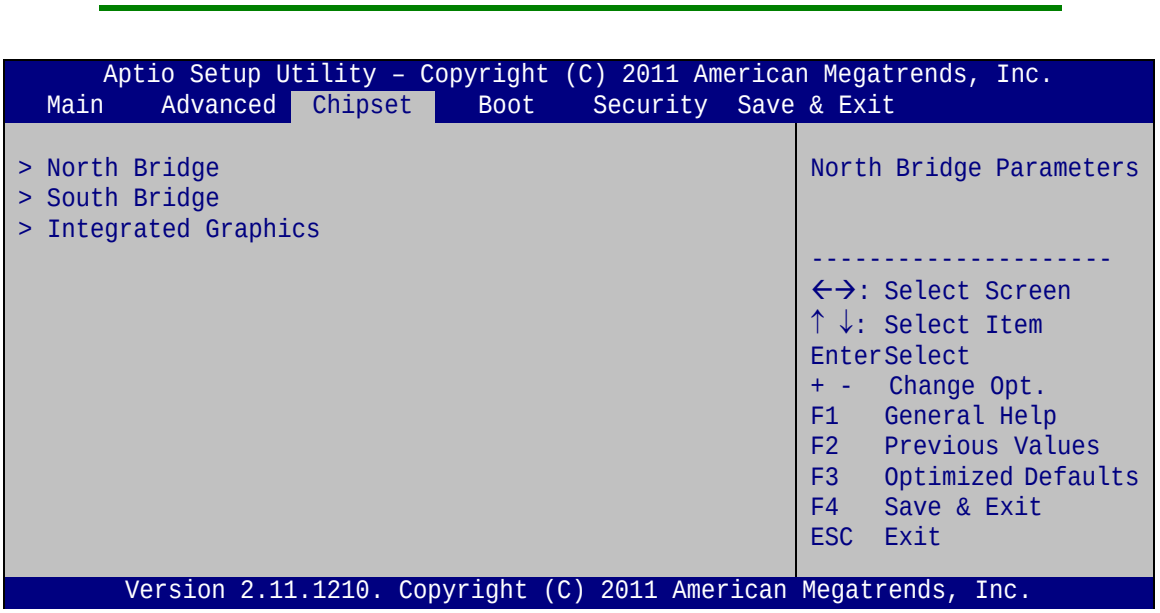
➔ **Enabled** Auto Recovery Function support enabled

7.5 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the North Bridge, South Bridge, Integrated Graphics, and ME Subsystem configuration menus.

WARNING!

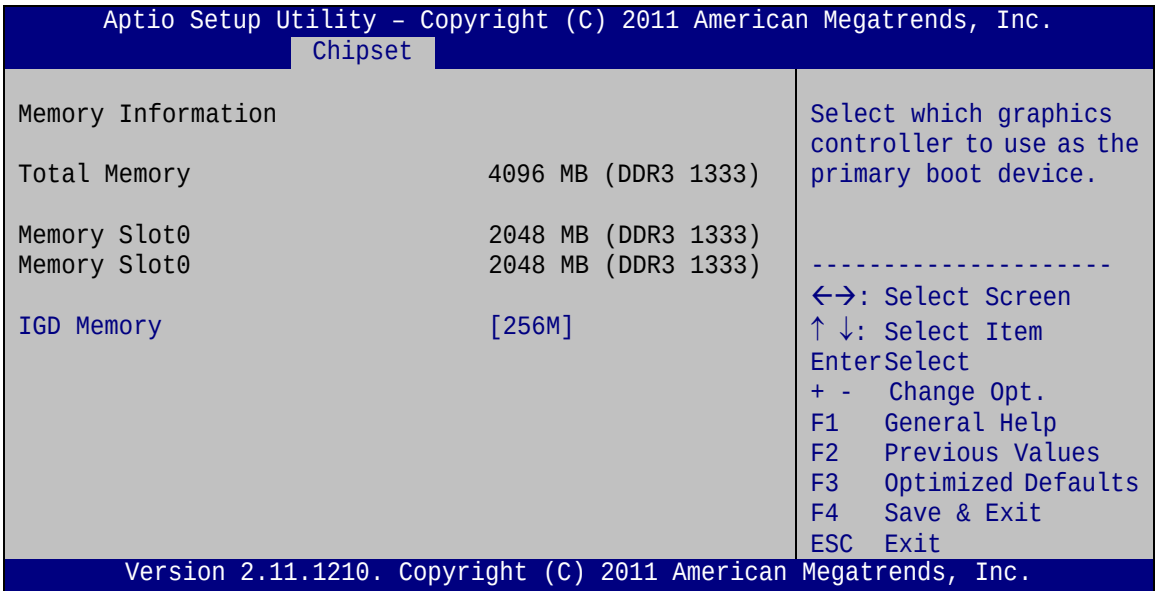
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 17: Chipset

7.5.1 Northbridge Configuration

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



BIOS Menu 18: Northbridge Chipset Configuration

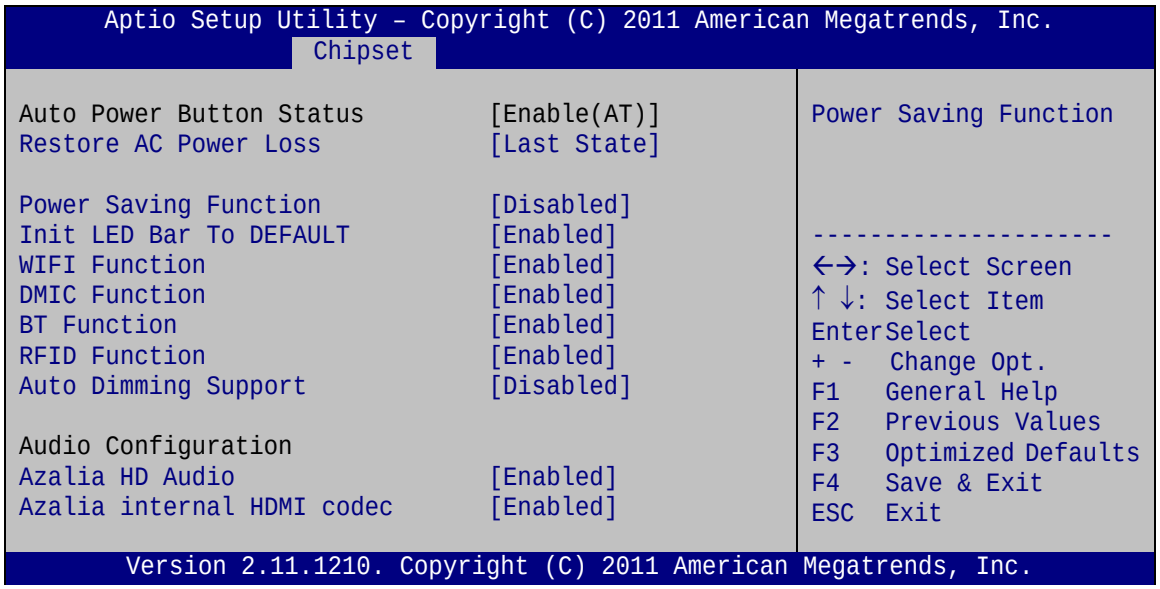
➔ IGD Memory [256M]

Use the **IGD Memory** option to specify the amount of system memory that can be used by the internal graphics device.

➔ **32M**		32 MB of memory used by internal graphics device
➔ **64M**		64 MB of memory used by internal graphics device
➔ **128M**		128 MB of memory used by internal graphics device
➔ **256M**	**DEFAULT**	256 MB of memory used by internal graphics device
➔ **512M**		512 MB of memory used by internal graphics device

7.5.2 Southbridge Configuration

Use the **South Bridge** menu (**BIOS Menu 19**) to configure the Southbridge chipset.



BIOS Menu 19: Southbridge Chipset Configuration

➔ Restore AC Power Loss [Last State]

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

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

➔ Power Saving Function [Disabled]

Use the **Power Saving Function** BIOS option to enable or reduce power consumption in the S5 state. When enabled, the system can only be powered-up using the power button.

➔ **Disabled**	**DEFAULT**	Power saving function support disabled
➔ **Enabled**		Power saving function support enabled

➔ Init LED Bar to DEFAULT [Enabled]

Use the **Init LED Bar to DEFAULT** BIOS option to enable or reduce Init LED bar to default function.

- ➔ **Disabled** Init LED bar to default function disabled
- ➔ **Enabled** **DEFAULT** Init LED bar to default function enabled

➔ WIFI Function [Enabled]

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

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

➔ DMIC Function [Enabled]

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

- ➔ **Disabled** Microphone function disabled
- ➔ **Enabled** **DEFAULT** Microphone function enabled

➔ BT Function [Enabled]

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

- ➔ **Disabled** BT function disabled
- ➔ **Enabled** **DEFAULT** BT function enabled

➔ RFID Function [Enabled]

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

- ➔ **Disabled** RFID function disabled
- ➔ **Enabled** **DEFAULT** RFID function enabled

➔ Auto Dimming Support [Disabled]

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

➔ **Disabled**	**DEFAULT**	Auto dimming function disabled
➔ **Enabled**		Auto dimming function enabled

➔ Azalia HD Audio [Enabled]

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

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

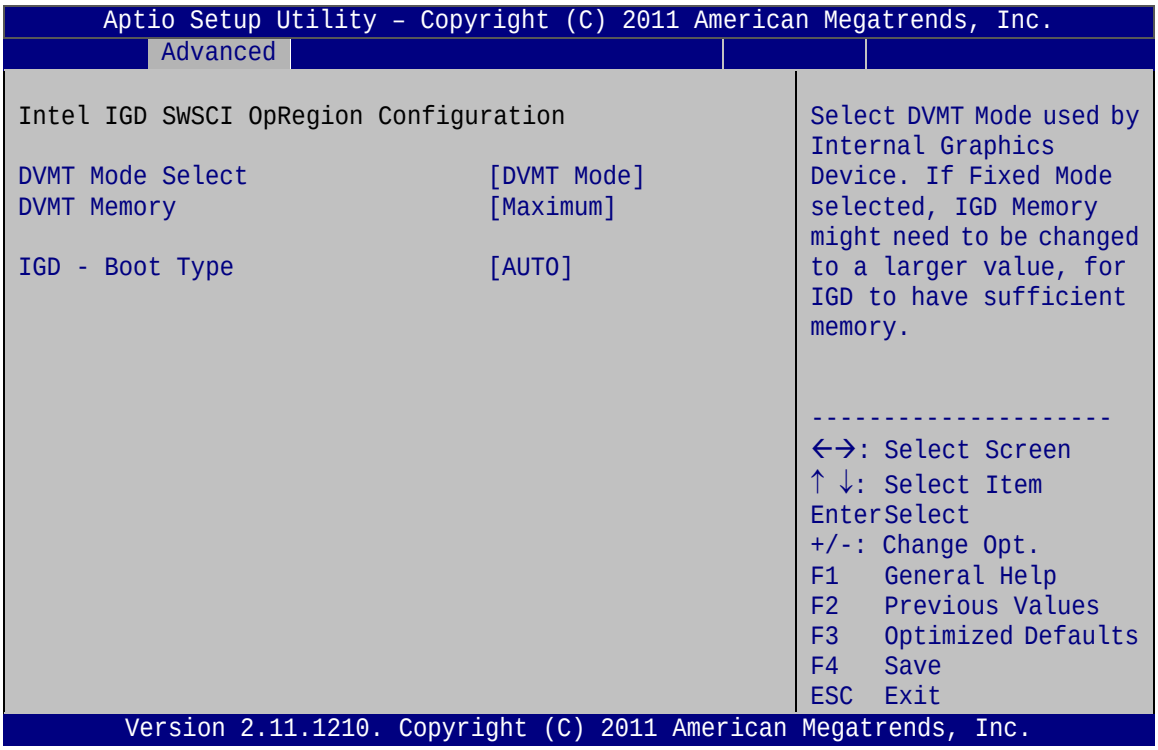
➔ Azalia internal HDMI codec [Enabled]

Use the **Azalia internal HDMI codec** option to enable or disable the internal HDMI codec for High Definition Audio.

➔ **Disabled**		Disables the internal HDMI codec for High Definition Audio
➔ **Enabled**	**DEFAULT**	Enables the internal HDMI codec for High Definition Audio

7.5.3 Integrated Graphics

Use the **Integrated Graphics** menu (**BIOS Menu 20**) to configure the video device connected to the system.



BIOS Menu 20: Integrated Graphics

➔ DVMT Mode Select [DVMT Mode]

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

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

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

➔ DVMT Memory [Maximum]

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

- 128 MB
- 256 MB
- Maximum **DEFAULT**

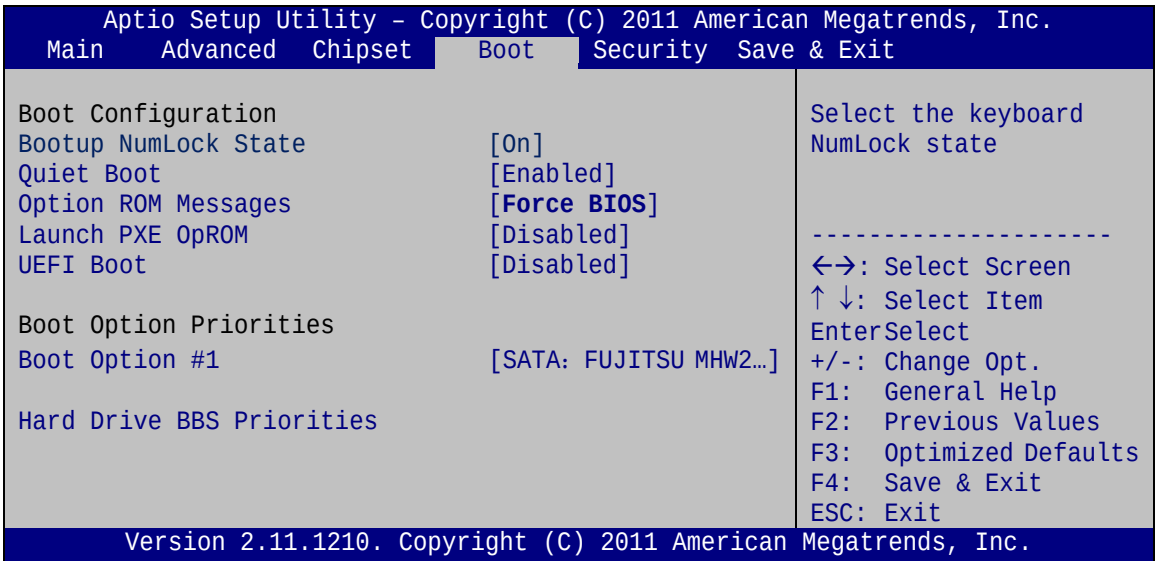
➔ IGD - Boot Type [AUTO]

Use the **IGD - Boot Type** option to select the display device used by the system when it boots. For dual display support, select “Auto.” Configuration options are listed below.

- AUTO **DEFAULT**
  LVDS
  CRT
  HDMI

7.6 Boot

Use the **Boot** menu (**BIOS Menu 21**) to configure system boot options.



BIOS Menu 21: 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

➔ Option ROM Messages [Keep Current]

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

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

➔ 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.

➔ UEFI Boot [Disabled]

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

➔ **Enabled** Boot from UEFI devices is enabled.

➔ **Disabled** **DEFAULT** Boot from UEFI devices is disabled.

➔ Boot Option Priority

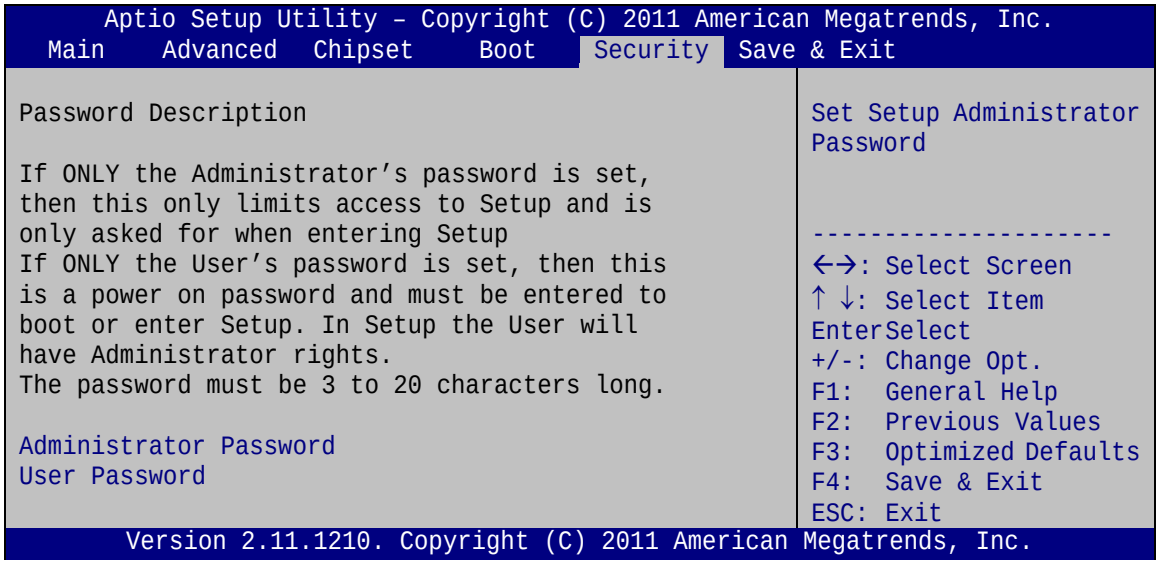
Use the **Boot Option Priority** function to set the system boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

➔ Hard Drive BBS Priorities

Use the **Hard Drive BBS Priorities** option to set the order of the legacy devices in this group.

7.7 Security

Use the **Security** menu (**BIOS Menu 22**) to set system and user passwords.



BIOS Menu 22: Security

➔ Administrator Password

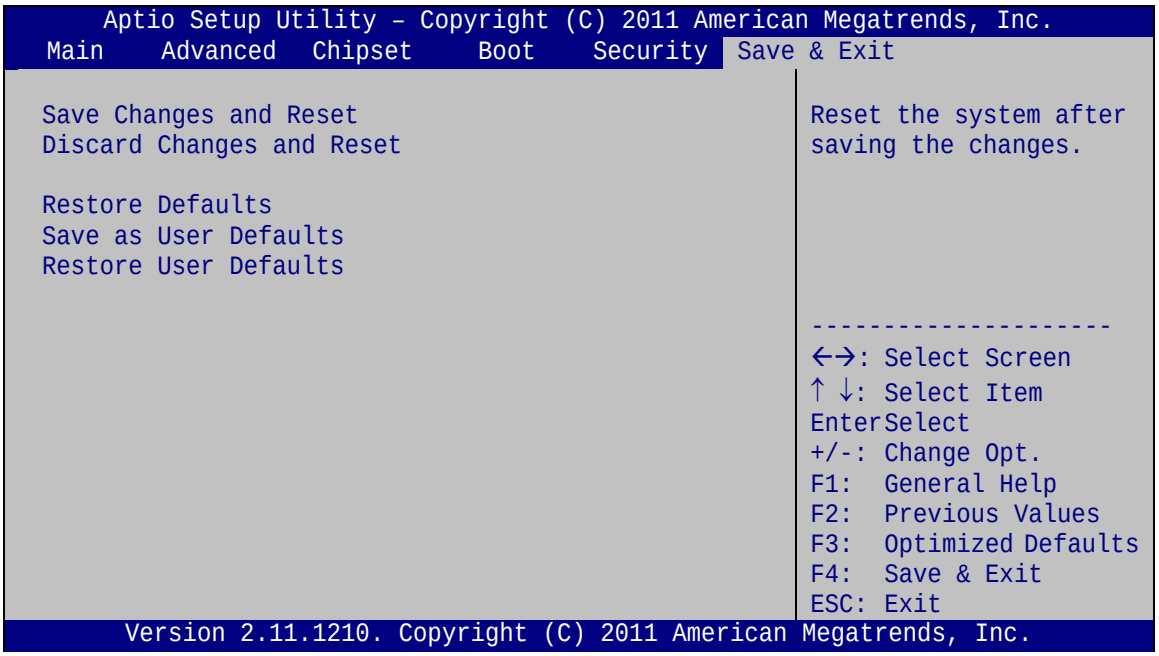
Use the **Administrator Password** field to set or change an administrator password.

➔ User Password

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

7.8 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 23**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 23: Exit

➔ Save Changes and Reset

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

➔ Discard Changes and Reset

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

➔ Restore Defaults

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

➔ Save as User Defaults

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

➔ Restore User Defaults

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

Chapter

8

Software Drivers

8.1 Available Software Drivers

NOTE:

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

The following drivers can be installed on the system:

- Chipset
- Graphic
- Audio
- LAN
- Intel® Management Engine Components driver
- USB 3.0
- Wi-Fi
- LED Bar
- Camera

Installation instructions are given below.

8.2 Starting the Driver Program

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

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

Step 2: Click **AFL2-W21A/AB-H61 Driver**.

Step 3: A list of available drivers appears.

Figure 8-1: Drivers

8.3 Chipset Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

Step 2: Click "**Chipset**."

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

Step 4: The setup files are extracted as shown in **Figure 8-2**.

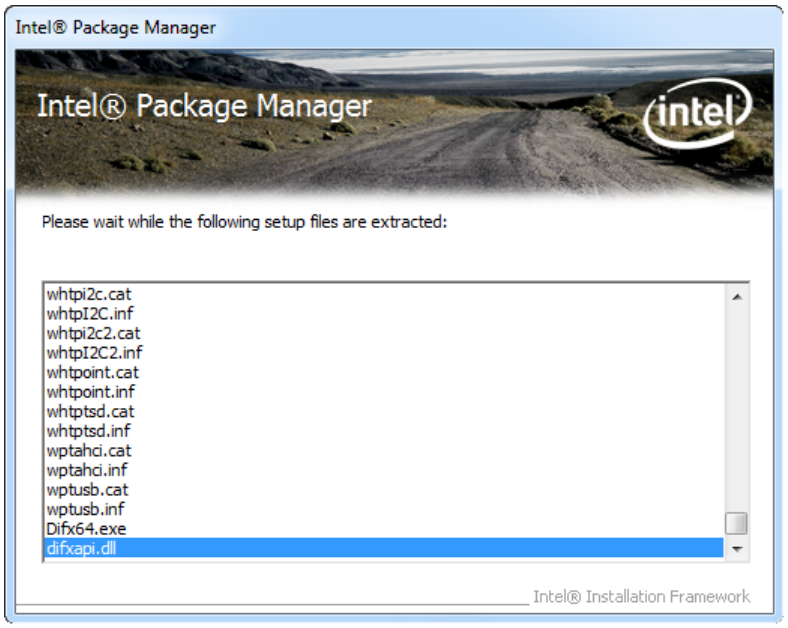


Figure 8-2: Chipset Driver Screen

Step 5: When the setup files are completely extracted the **Welcome Screen** in **Figure 8-3** appears.

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

Figure 8-3: Chipset Driver Welcome Screen

Step 7: The license agreement in **Figure 8-4** appears.

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

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

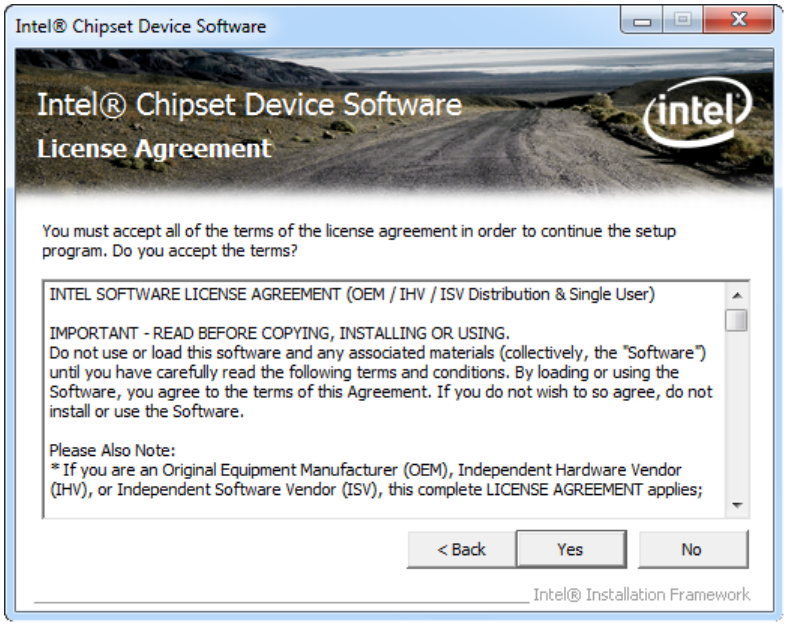


Figure 8-4: Chipset Driver License Agreement

Step 10: The **Read Me** file in **Figure 8-5** appears.

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

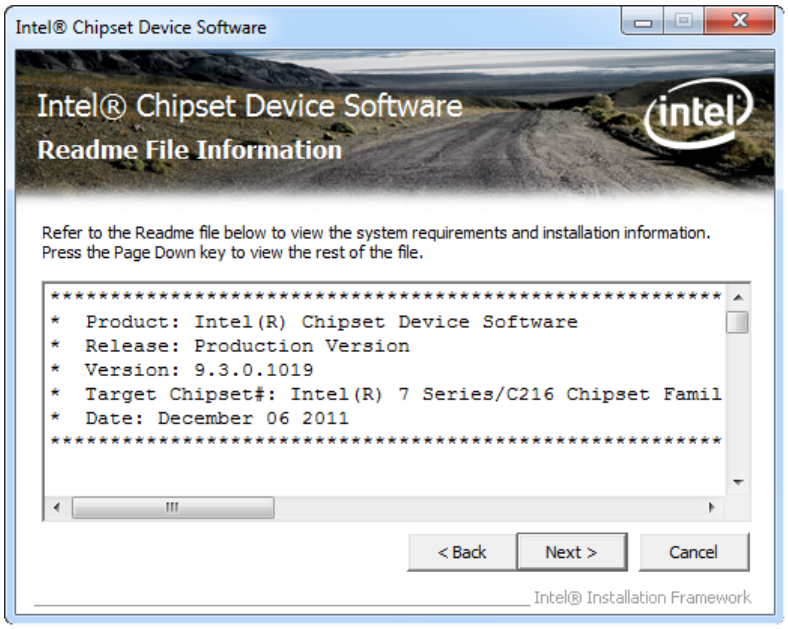


Figure 8-5: Chipset Driver Read Me File

Step 12: **Setup Operations** are performed as shown in **Figure 8-6**.

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

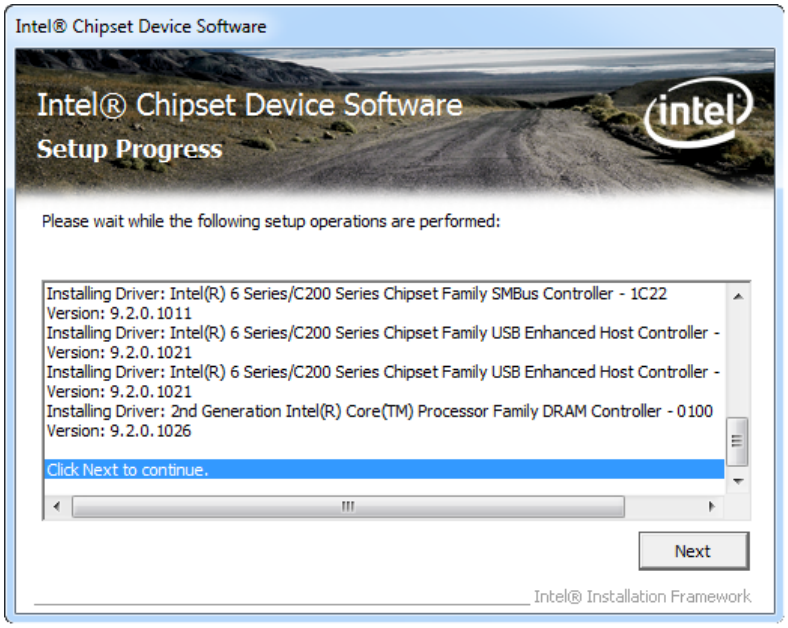


Figure 8-6: Chipset Driver Setup Operations

Step 14: The **Finish** screen in **Figure 8-7** appears.

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

Figure 8-7: Chipset Driver Installation Finish Screen

8.4 Graphics Driver Installation

To install the Graphics driver, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

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

Step 3: Double click the setup file.

Step 4: The **Read Me** file in **Figure 8-8** appears.

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

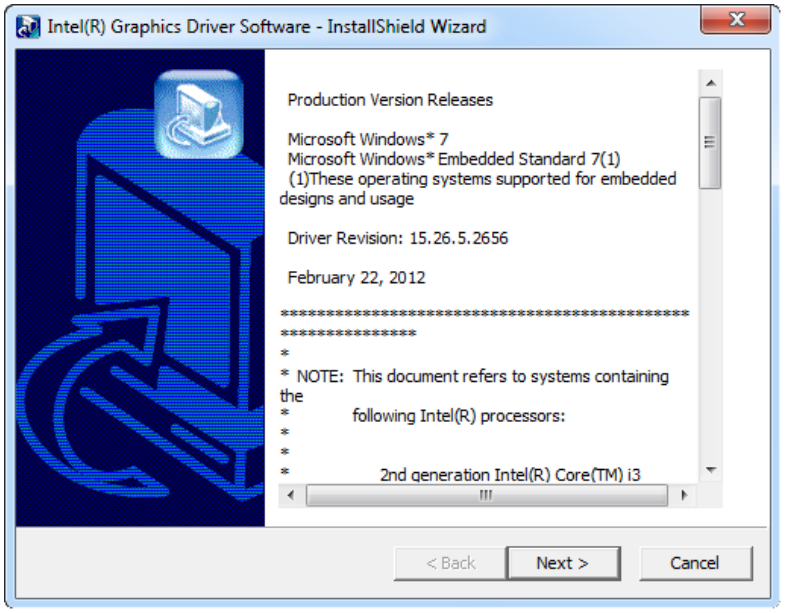


Figure 8-8: Graphics Driver Read Me File

Step 6: The installation files are extracted. See **Figure 8-9**.

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

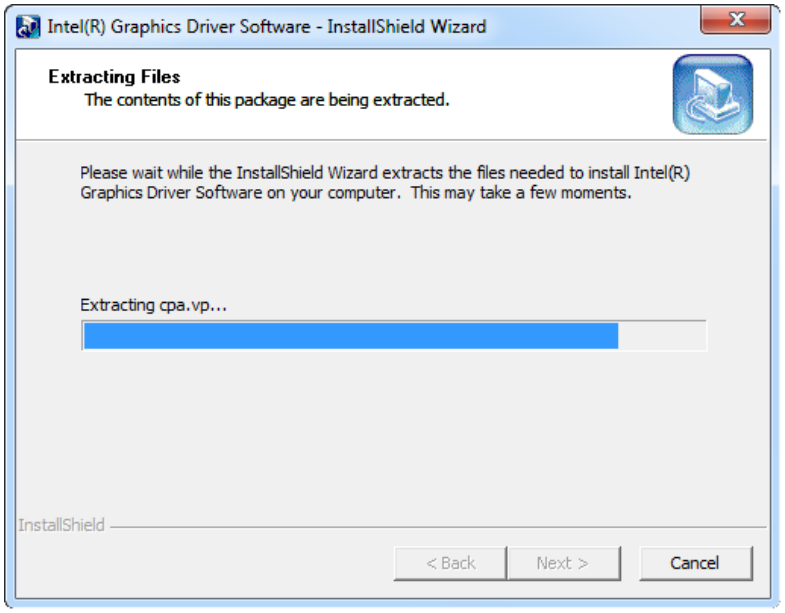


Figure 8-9: Graphics Driver Setup Files Extracted

Step 8: The **Welcome Screen** in **Figure 8-10** appears.

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

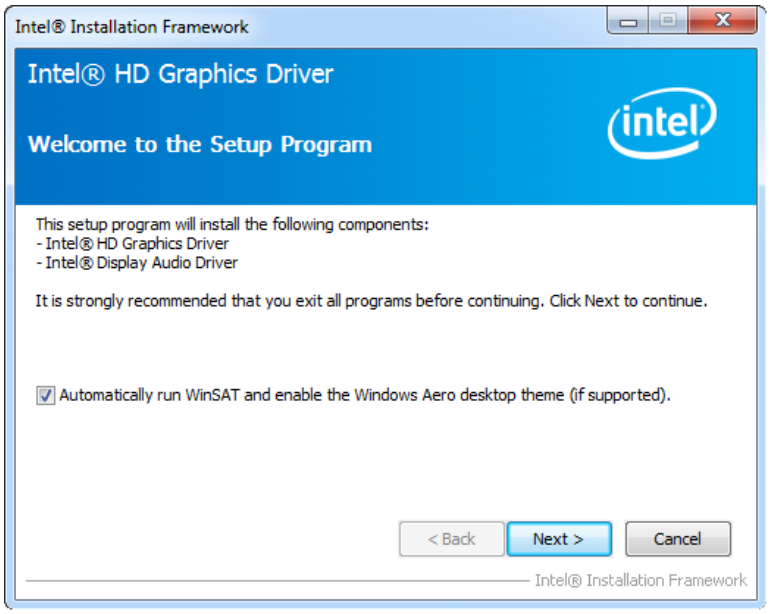


Figure 8-10: Graphics Driver Welcome Screen

Step 10: The **License Agreement** in **Figure 8-11** appears.

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

Figure 8-11: Graphics Driver License Agreement

Step 12: The **Read Me** file in **Figure 8-12** appears.

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

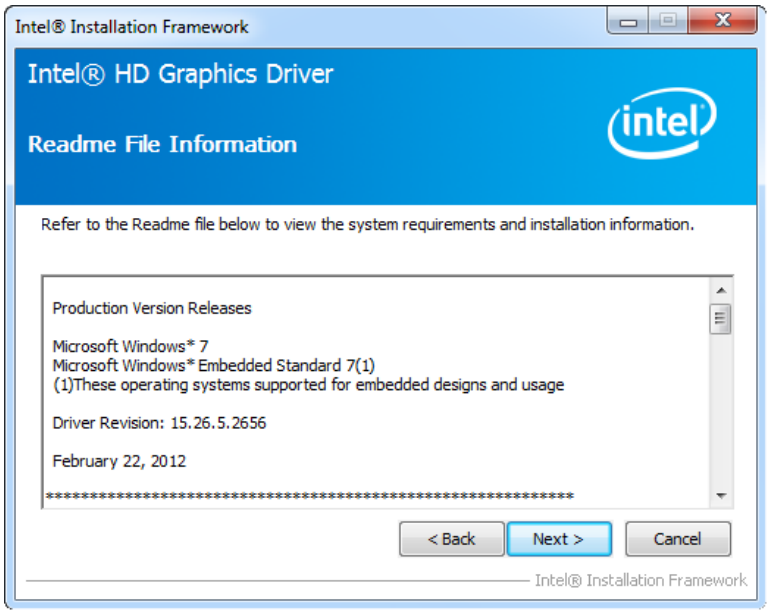


Figure 8-12: Graphics Driver Read Me File

Step 14: **Setup Operations** are performed as shown in **Figure 8-13**.

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

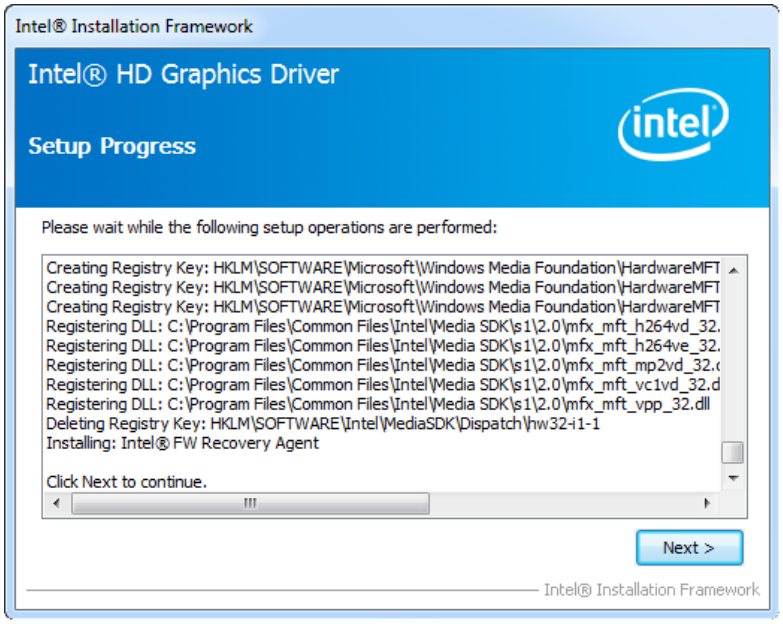


Figure 8-13: Graphics Driver Setup Operations

Step 16: The **Finish Screen** in **Figure 8-14** appears.

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

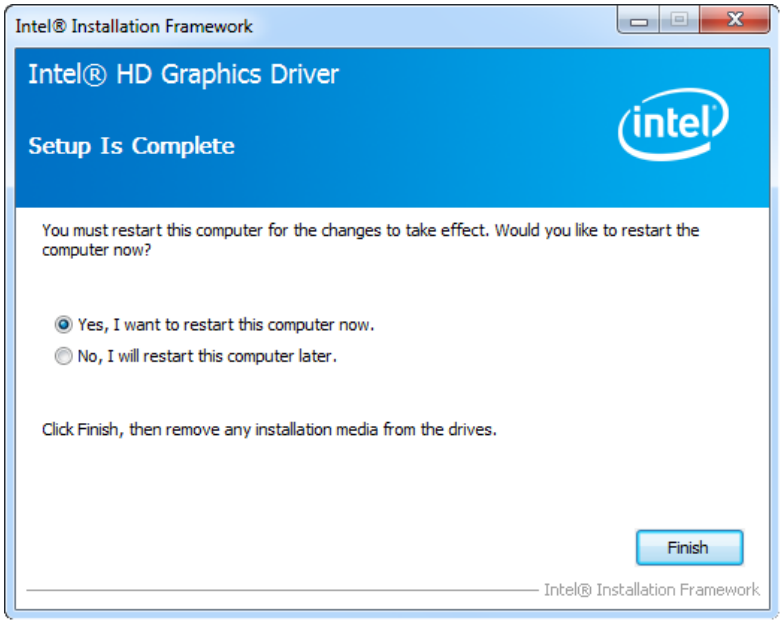


Figure 8-14: Graphics Driver Installation Finish Screen

8.5 Audio Driver Installation

To install the audio driver, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

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

Step 3: Double click the setup file.

Step 4: The **Audio Driver Welcome Screen** in **Figure 8-15** appears.

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

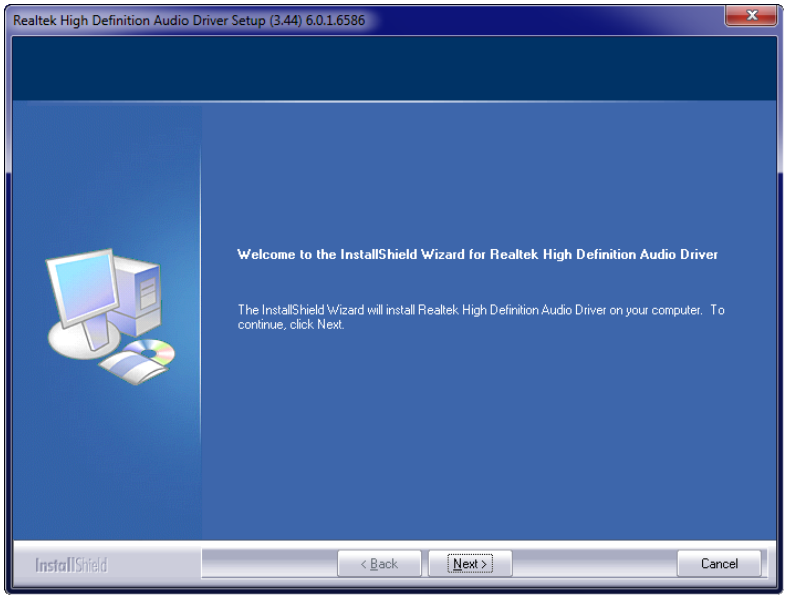


Figure 8-15: Audio Driver Welcome Screen

Step 6: The audio driver installation begins. See **Figure 8-16**.

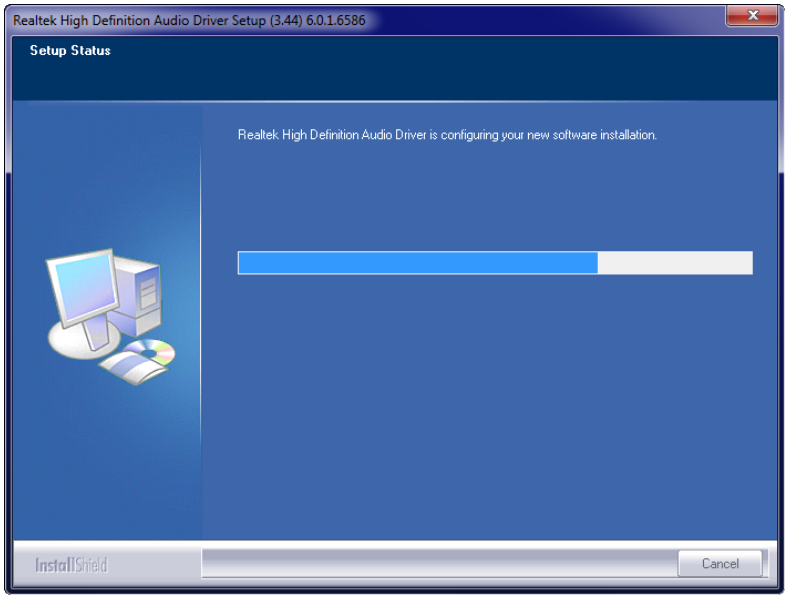


Figure 8-16: Audio Driver Installation

Step 7: When the installation is complete, the screen in **Figure 8-17** appears.

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

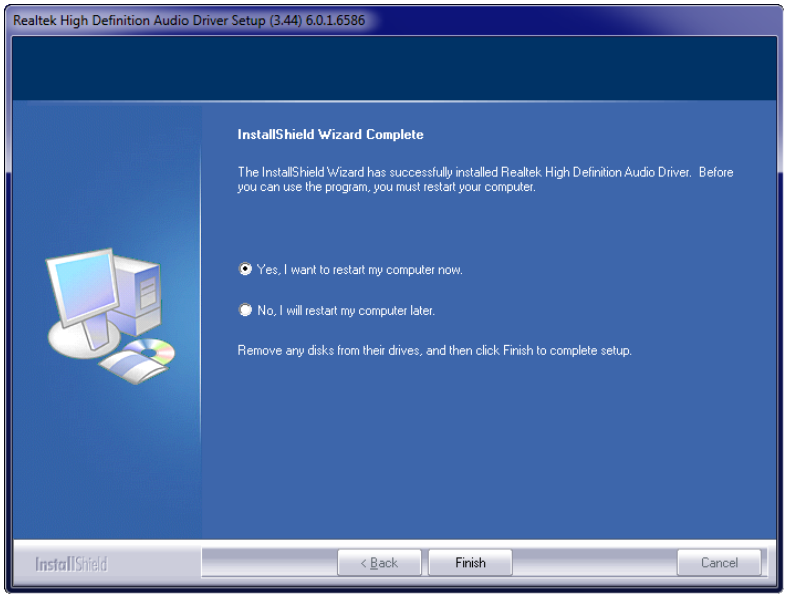


Figure 8-17: Audio Driver Installation Complete

8.6 LAN Driver Installation

To install the LAN driver, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

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

Step 3: Double click the setup file.

Step 4: The **Welcome** screen in **Figure 8-18** appears.

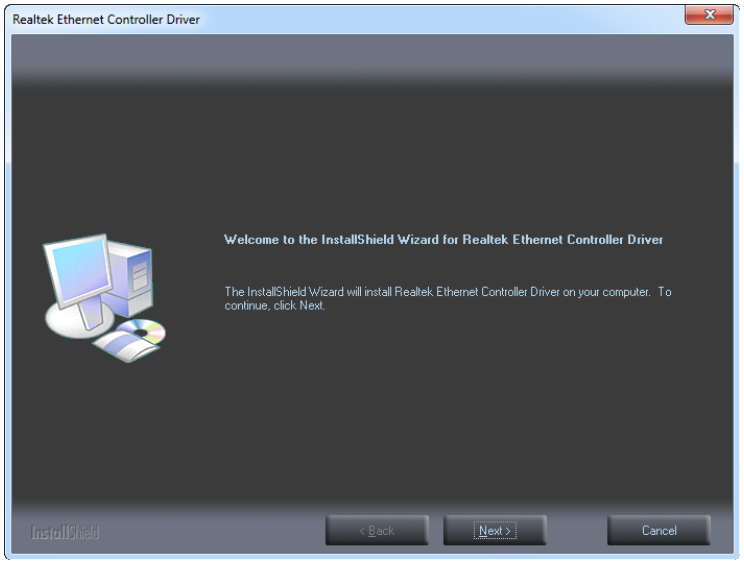


Figure 8-18: LAN Driver Welcome Screen

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

Step 6: The **Ready to Install the Program** Screen in **Figure 8-19** appears.

Step 7: Click **Install** to proceed with the installation.

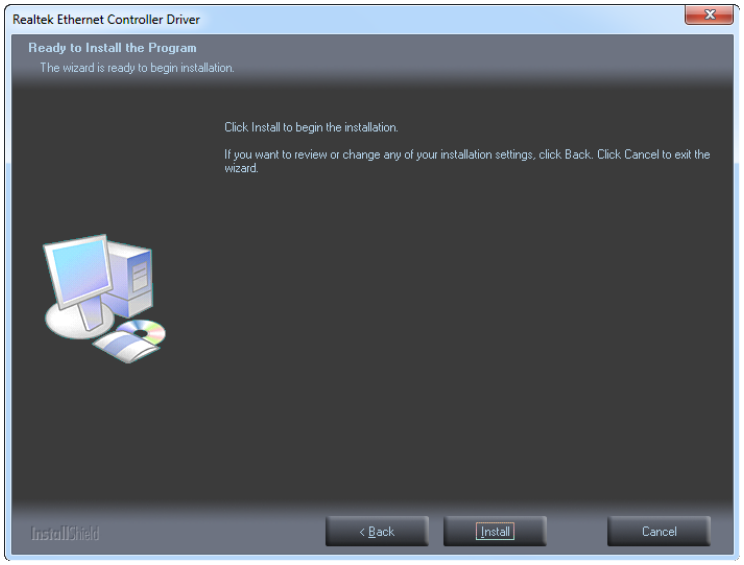


Figure 8-19: LAN Driver Ready to Install Screen

Step 8: The program begins to install.

Step 9: The **Setup Status** screen in **Figure 8-20** appears.

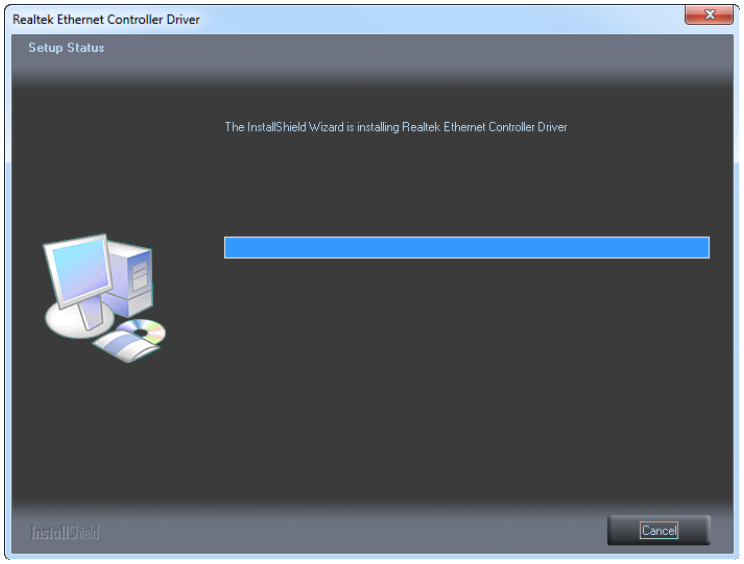


Figure 8-20: LAN Driver Setup Status Screen

Step 10: When the driver installation is complete, the screen in **Figure 8-21** appears.

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

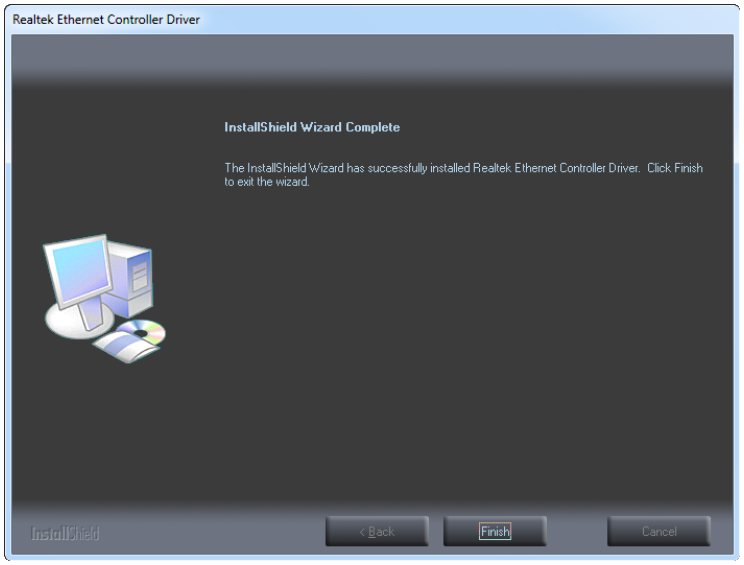


Figure 8-21: LAN Driver Installation Complete

8.7 Intel® Management Engine Components Installation

The package of the Intel® ME components includes

- Intel® Management Engine Interface
- Local Management Service
- User Notification Service

To install these Intel® ME components, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

Step 2: Click "**Intel ME**".

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

Step 4: When the setup files are completely extracted the **Welcome Screen** in **Figure 8-22** appears.

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

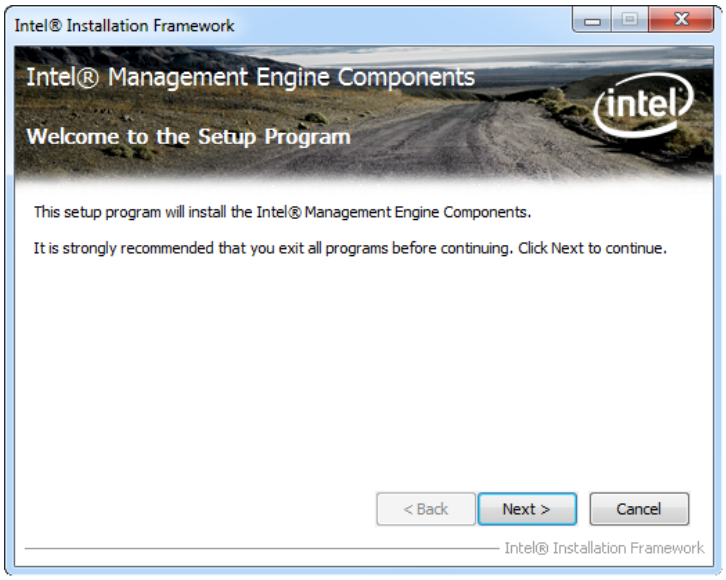


Figure 8-22: Intel® ME Driver Welcome Screen

Step 6: The license agreement in **Figure 8-23** appears.

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

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

Figure 8-23: Intel® ME Driver License Agreement

Step 9: The **Read Me** file in **Figure 8-24** appears.

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

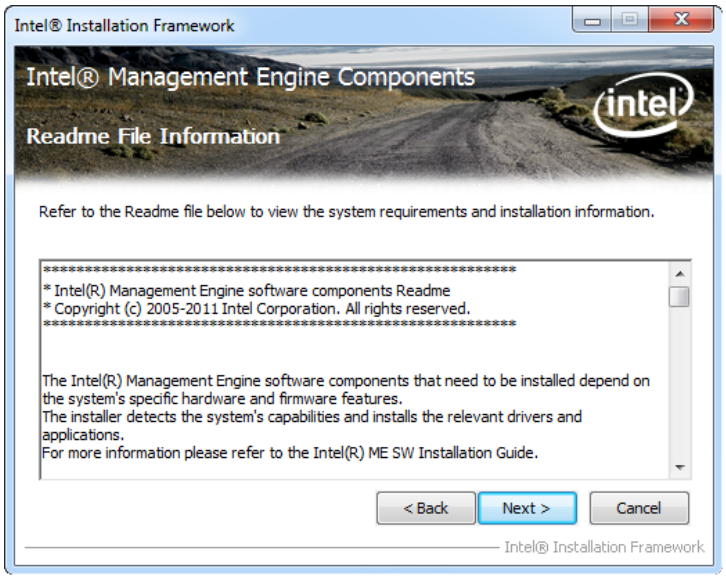


Figure 8-24: Intel® ME Driver Read Me File

Step 11: **Setup Operations** are performed as shown in **Figure 8-25**.

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

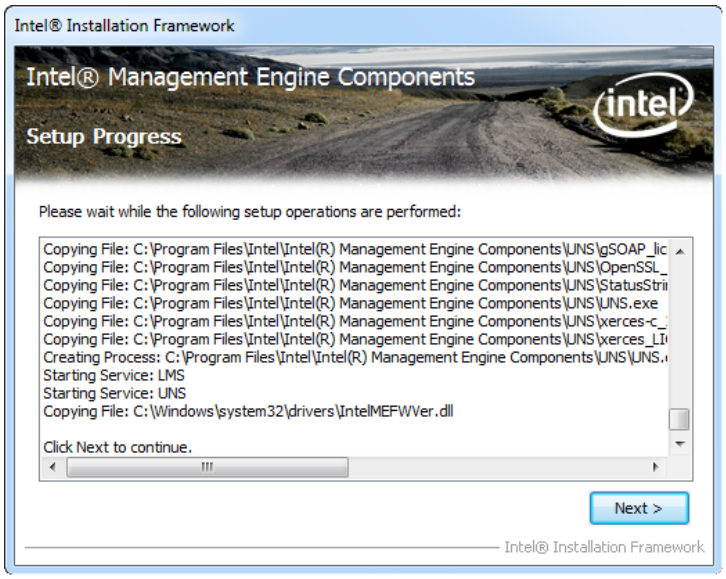


Figure 8-25: Intel® ME Driver Setup Operations

Step 13: The **Finish** screen in **Figure 8-26** appears.

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

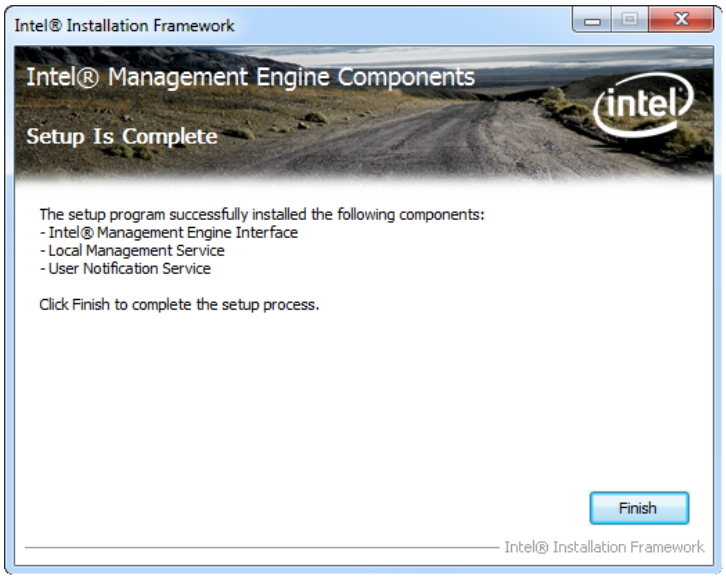


Figure 8-26: Intel® ME Driver Installation Finish Screen

8.8 USB 3.0 Driver Installation

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

Step 1: Access the driver list. (See **Section 8.2**)

Step 2: Click "**USB 3.0**".

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

Step 4: A **Welcome Screen** appears (**Figure 8-27**).

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

Figure 8-27: USB 3.0 Driver Welcome Screen

Step 6: The **License Agreement** shown in **Figure 8-28** appears.

Step 7: Accept the agreement by selecting "I accept the terms in the license agreement".

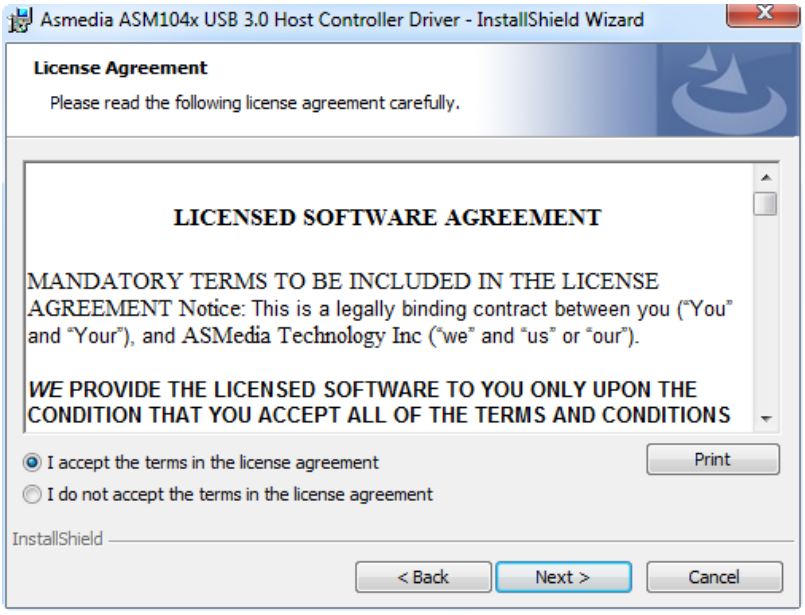


Figure 8-28: USB 3.0 Driver License Agreement

Step 8: Click NEXT to continue.

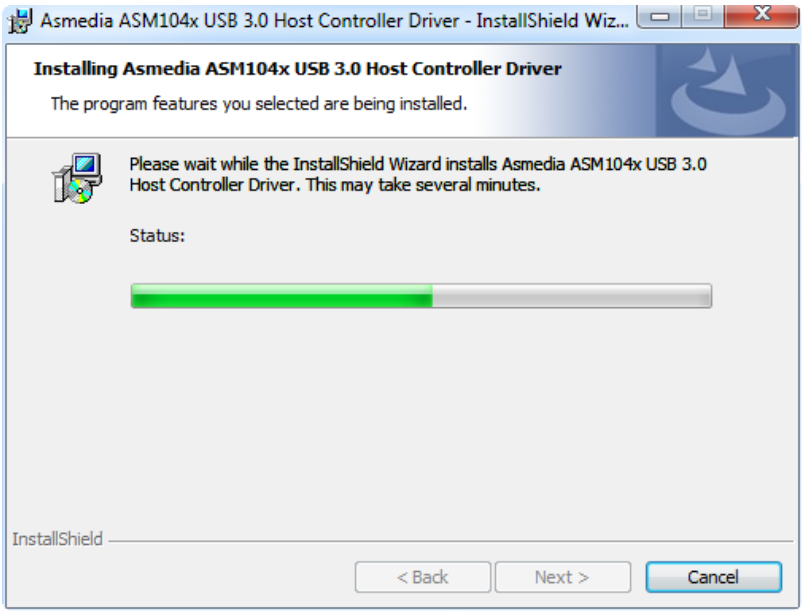


Figure 8-29: USB 3.0 Driver Installation

Step 9: The **Install** screen appears and displays the progress of the installation.

Step 10: When the installation is complete, click **Finish** to exit setup. (**Figure 8-30)**.

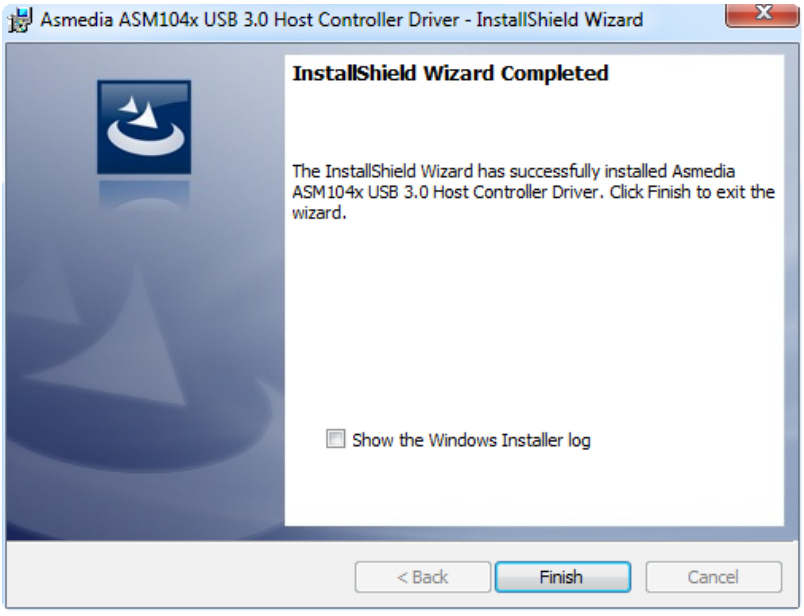


Figure 8-30: USB 3.0 Driver Update Complete

8.9 Wi-Fi Driver Installation

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

Step 1: Access the driver list. (See **Section 8.2**)

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

Step 3: The **License Agreement** screen in **Figure 8-31** appears.

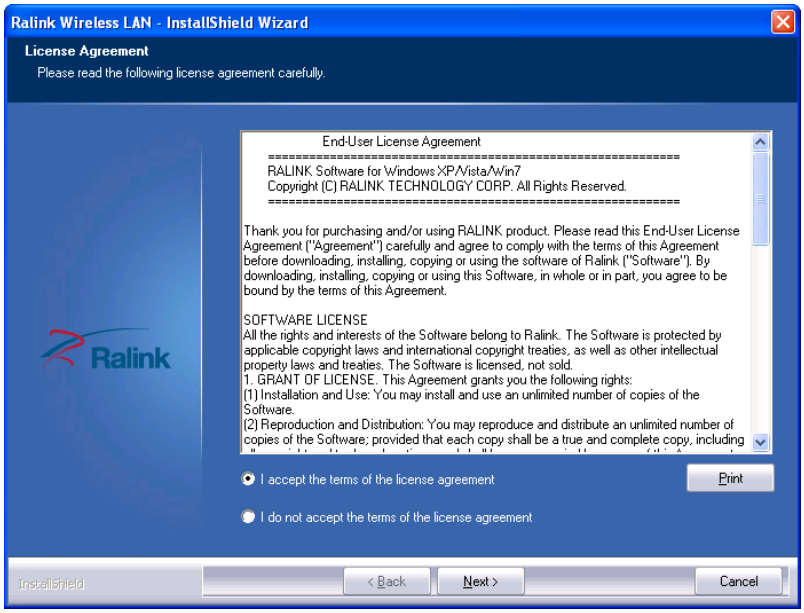


Figure 8-31: License Agreement

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

Step 5: The **Setup Type** screen in **Figure 8-32** appears.

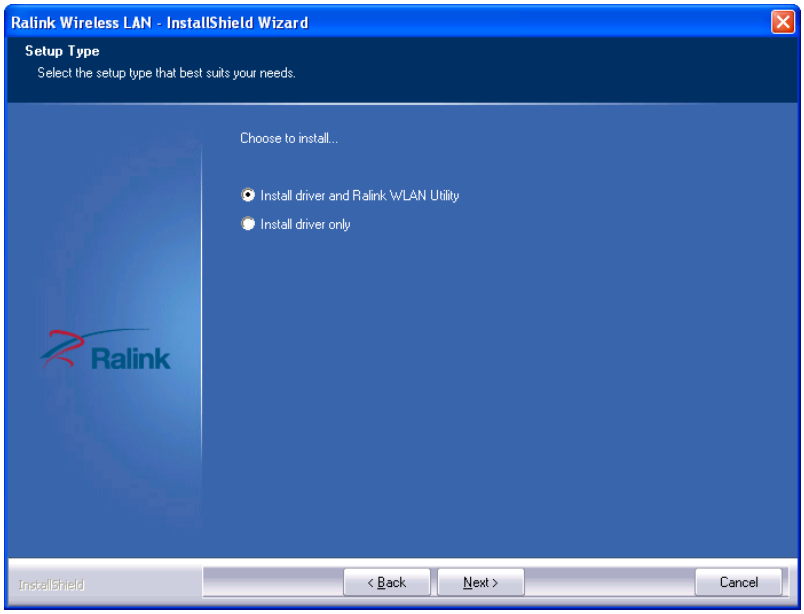


Figure 8-32: Setup Type

Step 6: Select **"Install driver and Ralink WLAN Utility"** and click **NEXT** to continue.

Step 7: The **Configuration Tool** screen in **Figure 8-33** appears.

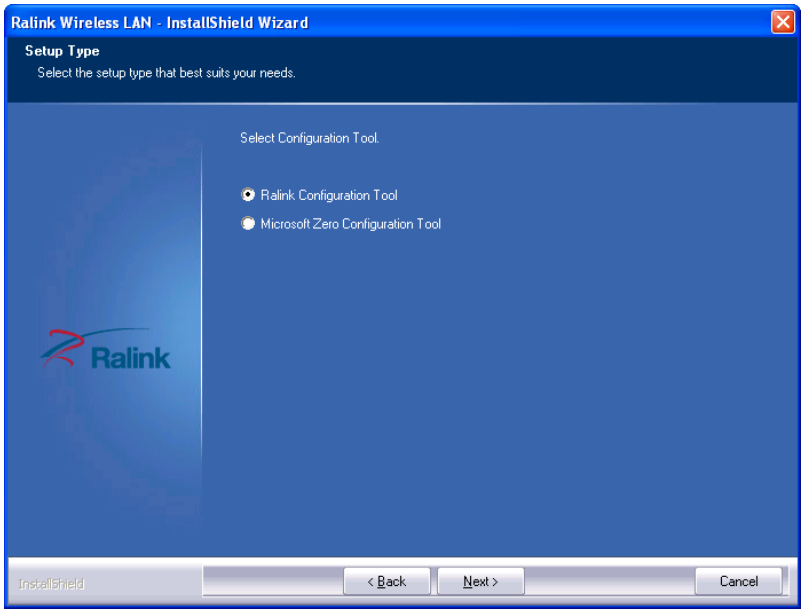


Figure 8-33: Configuration Tool

Step 8: Select "**Ralink Configuration Tool**" and click **NEXT** to continue.

Step 9: The **Ready to Install the Program** screen in **Figure 8-34** appears.

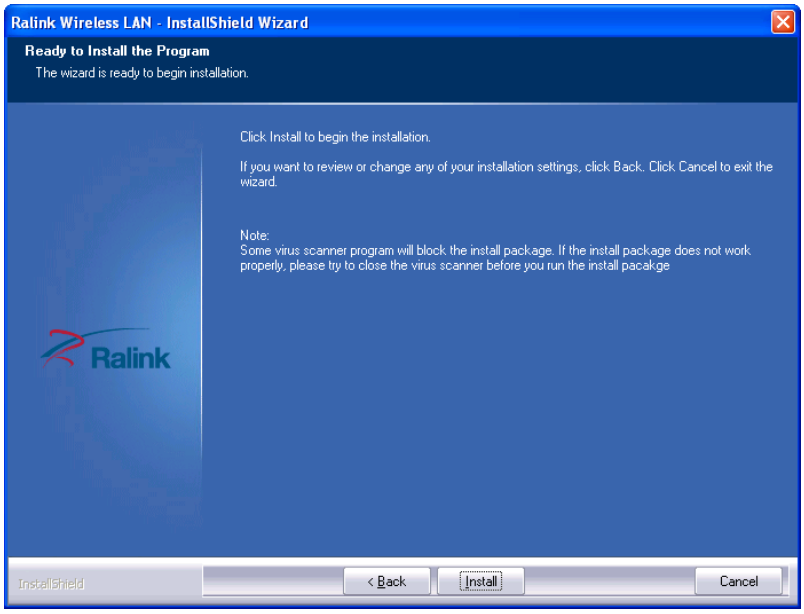


Figure 8-34: Ready to Install the Program

Step 10: Click **Install** to proceed with the installation.

Step 11: The **Setup Status** screen in **Figure 8-35** appears and displays the progress of the installation.

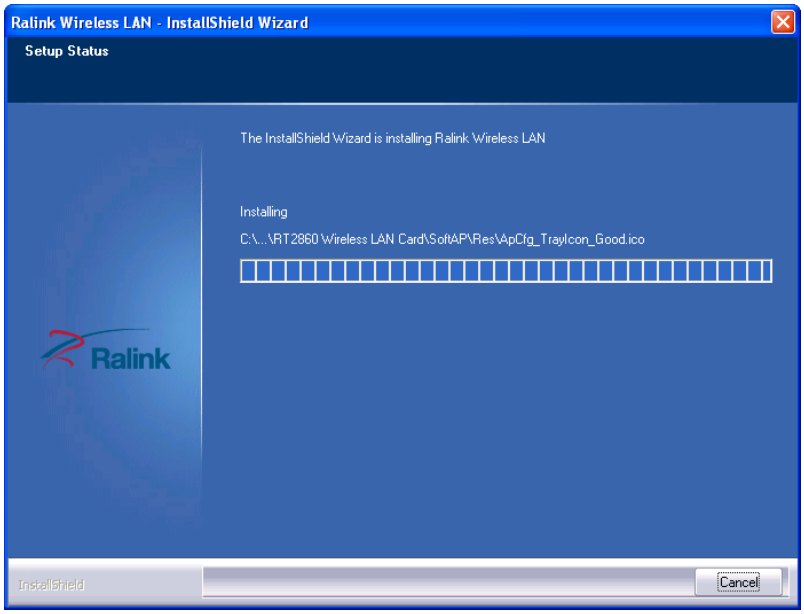


Figure 8-35: Setup Status

Step 12: When the driver installation is complete, the screen in **Figure 8-36** appears.

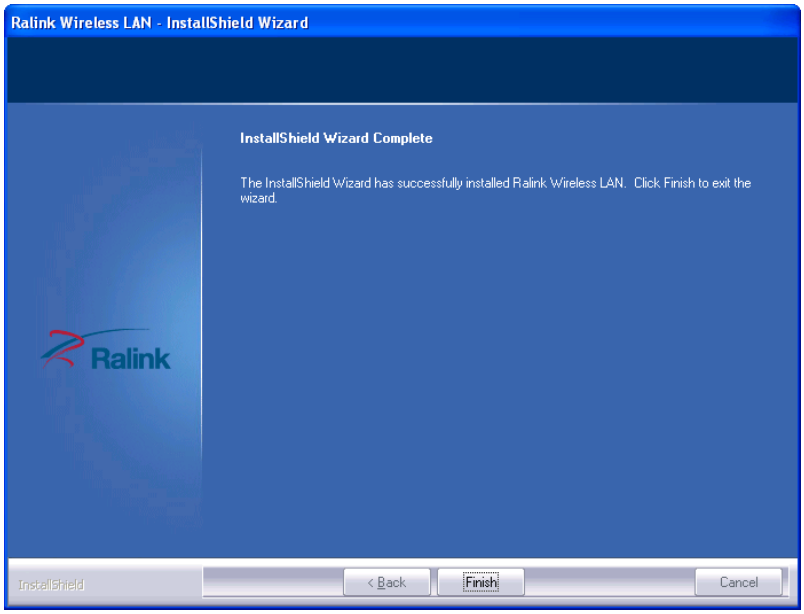


Figure 8-36: Installation Complete

Step 13: Click **FINISH** to complete installation.

8.10 LED Bar Driver Installation

To install the LED bar driver, please do the following.

Step 1: Access the driver list shown in **Figure 8-1** (See **Section 8.2**).

Step 2: Click "**LED Bar**".

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

Step 4: The **InstallShield Wizard** starts (**Figure 8-37**).

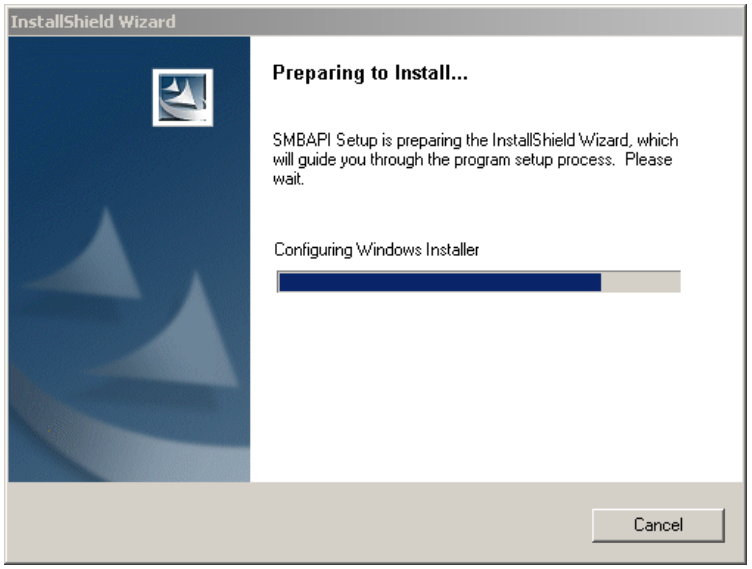


Figure 8-37: The InstallShield Wizard Starts

Step 5: The **Welcome** screen in **Figure 8-38** appears.

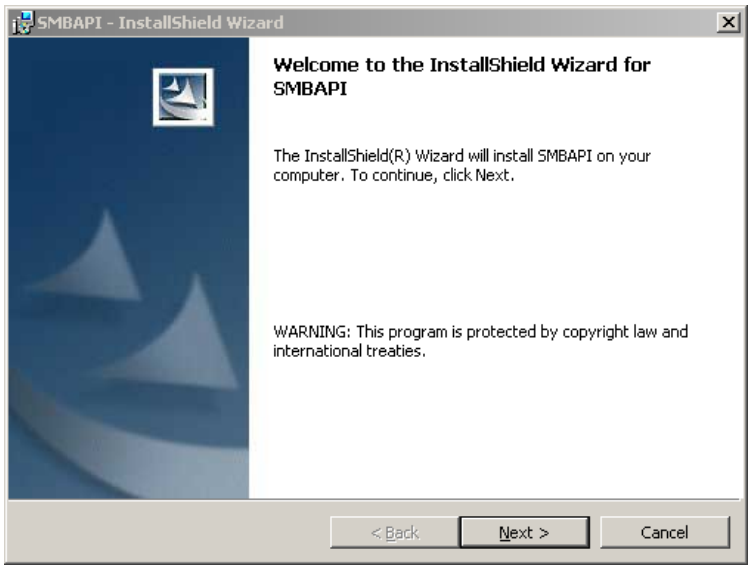


Figure 8-38: Welcome Screen

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

Step 7: The **Ready to Install** screen in **Figure 8-39** appears.

Step 8: Click **Install** to proceed with the installation.

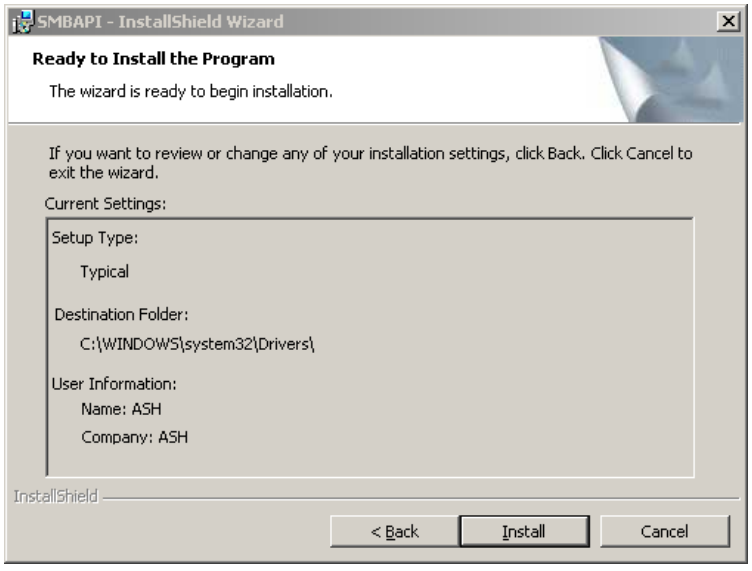


Figure 8-39: Ready to Install

Step 9: The program begins to install.

Step 10: The installation progress can be monitored in the progress bar shown in **Figure 8-40.**

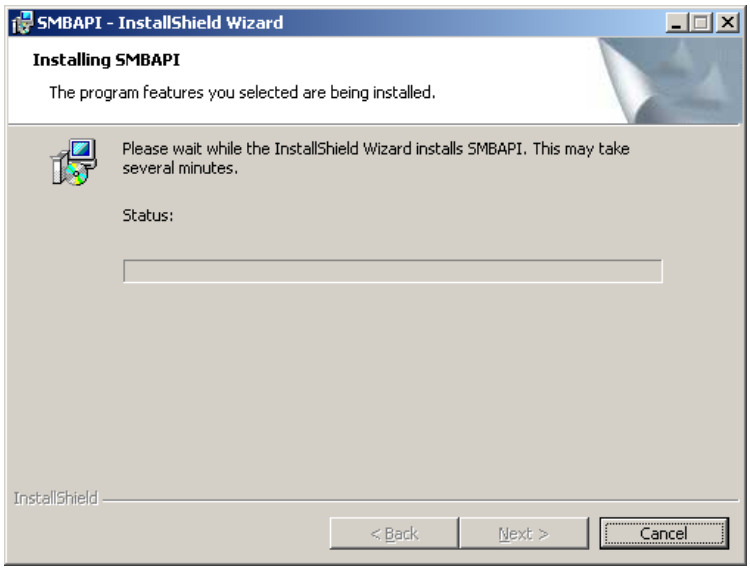


Figure 8-40: Installation

Step 11: When the driver installation is complete, the screen in **Figure 8-41** appears.

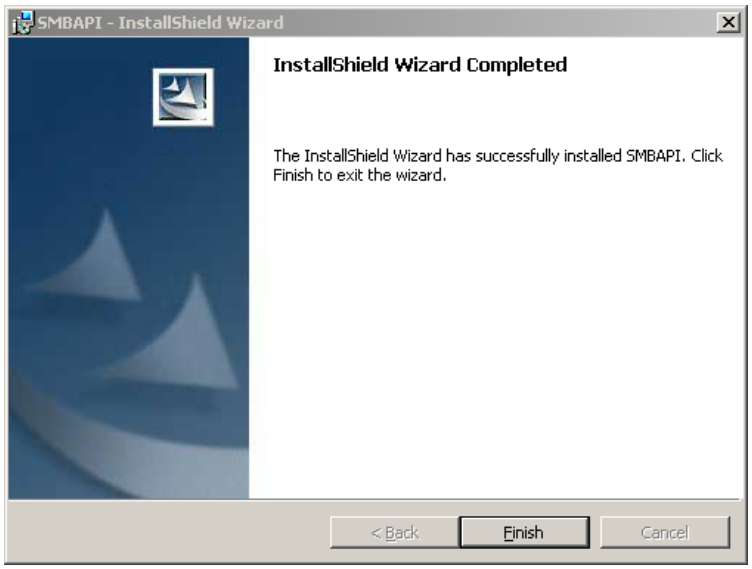


Figure 8-41: Installation Complete

Step 12: Click **FINISH** to complete the installation.

Step 13: You must restart your system for the configuration changes made to SMBAPI to take effect.

8.11 AMCap Driver Installation

To install the AMCap driver, please do the following.

Step 1: Access the driver list. (See **Section 8.2**)

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

Step 3: Double click the setup file.

Step 4: The **Welcome Screen** in **Figure 8-42** appears.

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

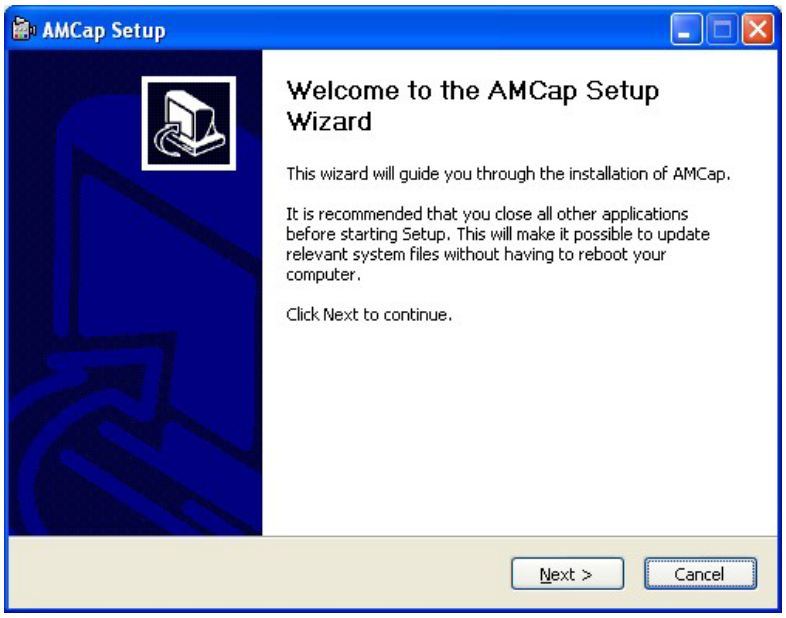


Figure 8-42: AMCap Driver Welcome Screen

Step 6: Browse for an install location or use the one suggested (**Figure 8-43)**.

Step 7: Click INSTALL to continue.

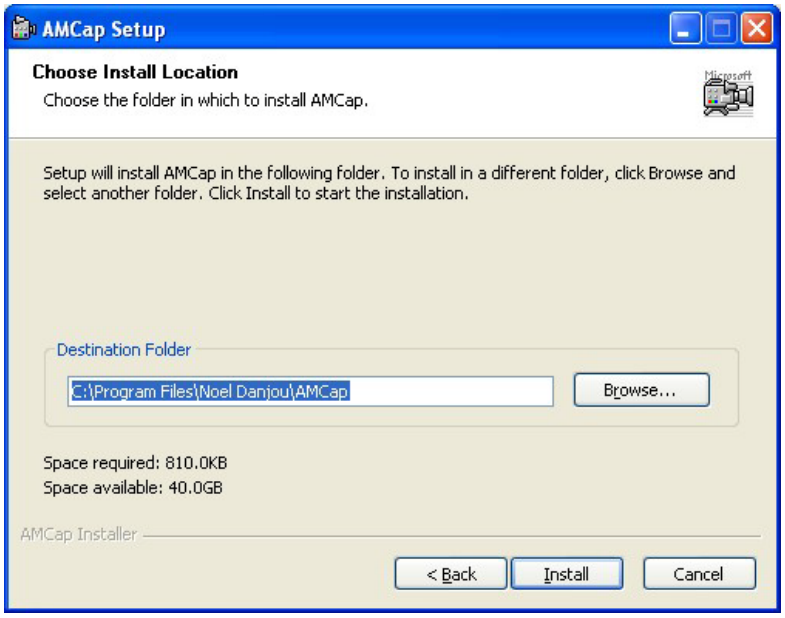


Figure 8-43: AMCap Driver Choose Install Location

Step 8: The program begins to install.

Step 9: When the driver installation is complete, the screen in **Figure 8-44** appears.

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

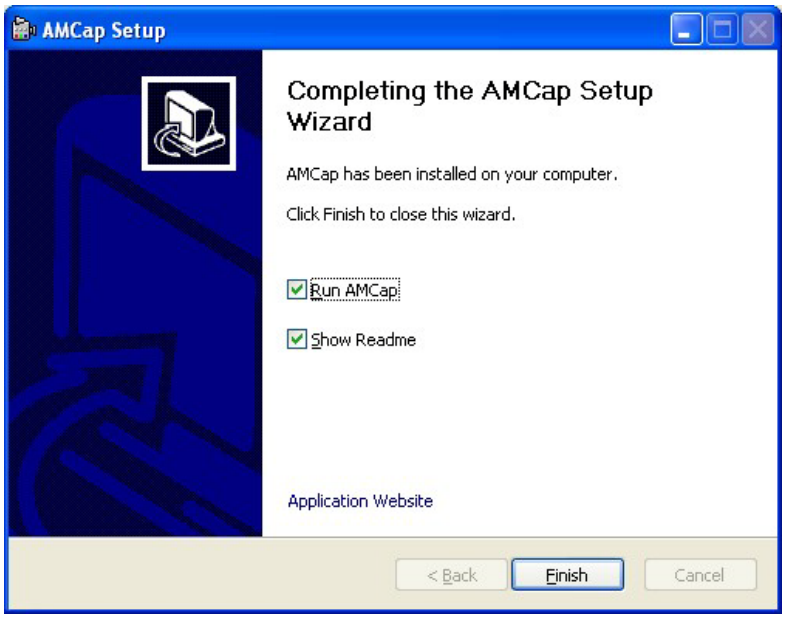


Figure 8-44: AMCap Driver Installation Complete

Chapter

9

Cooling Management Console (iCMC)

9.1 Overview

The iCMC system cooling management console tracks system and CPU temperatures, frequency, cooling fan speeds, and allows users to configure light fanless settings. The iCMC quickly captures and reports system conditions to ensure operators can prevent system damage.

9.1.1 iCMC Installation

To install the iCMC application, please follow the steps below:

NOTE:

The **Microsoft .NET Framework 3.5 SP1** must be installed before installing the iCMC.

Step 1: Insert the driver CD.

Step 2: Locate the iCMC setup file in the driver CD. Double click it.

Step 3: The Cooling Management Console Setup Wizard appears. Click **Next** to start.

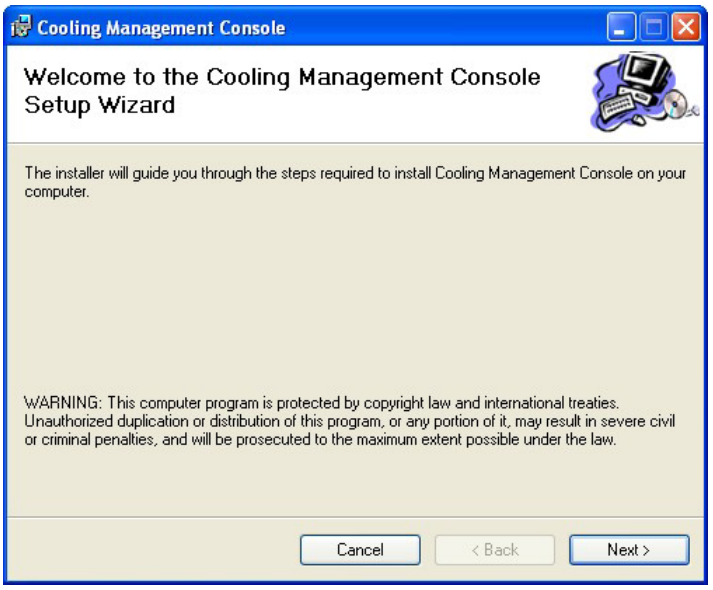


Figure 9-1: Cooling Management Console Setup Wizard

Step 4: Select a folder for Cooling Management Console installation in **Figure 9-2**. Click **Next** to continue.

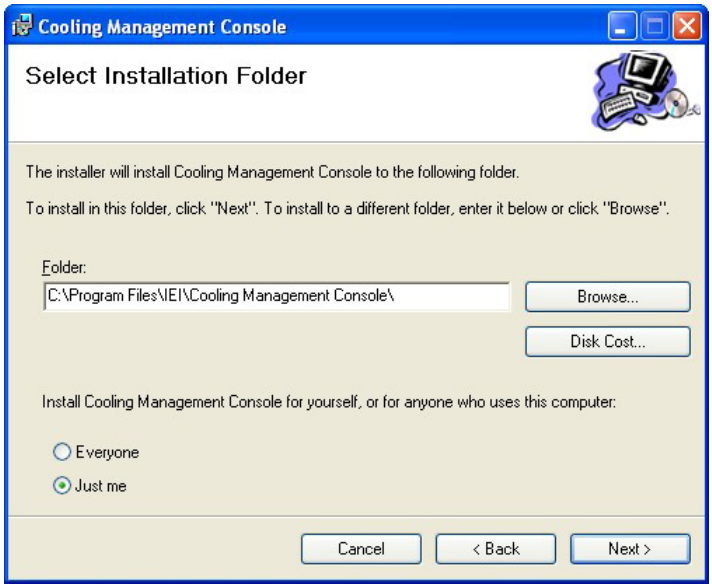


Figure 9-2: Select Installation Folder

Step 5: The following screen appears. Click **Next** to confirm the installation.

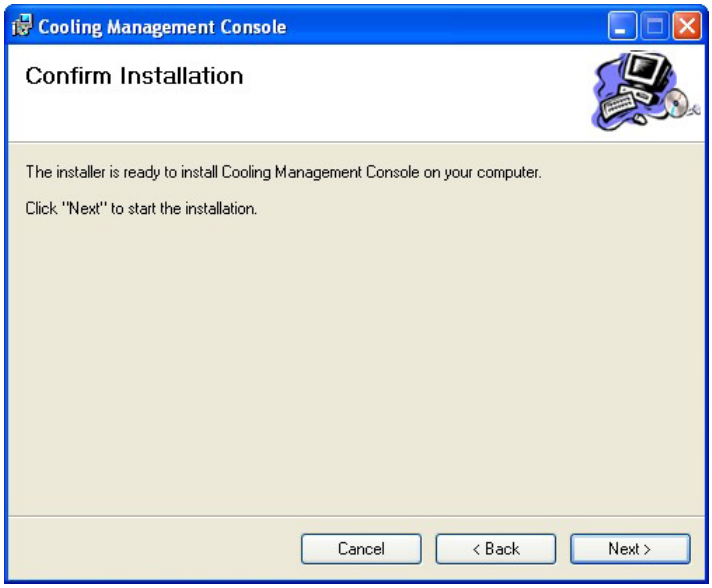


Figure 9-3: Confirm Installation

Step 6: The system starts installing the Cooling Management Console.

Step 7: When the Cooling Management Console is successfully installed, the following window appears. Click **Close** to exit.

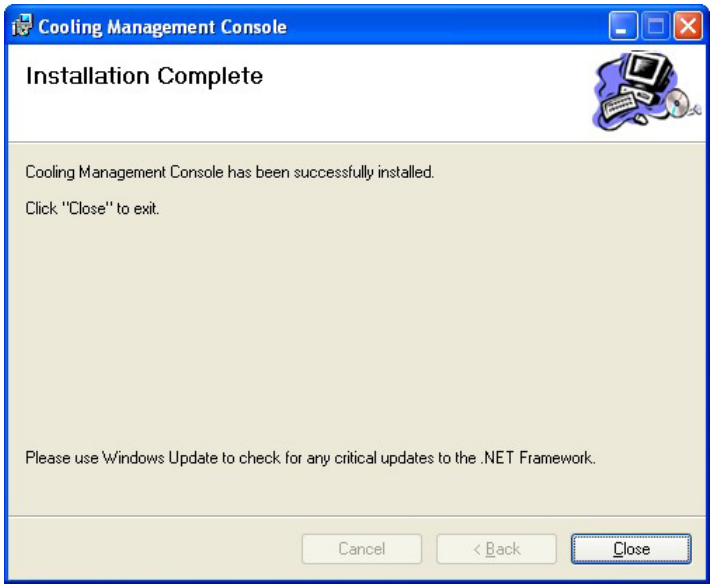


Figure 9-4: Installation Complete

Step 8: The confirmation screen offers the option of restarting the system now or later. For the settings to take effect, the system must be restarted. Click **Yes** to restart the system.

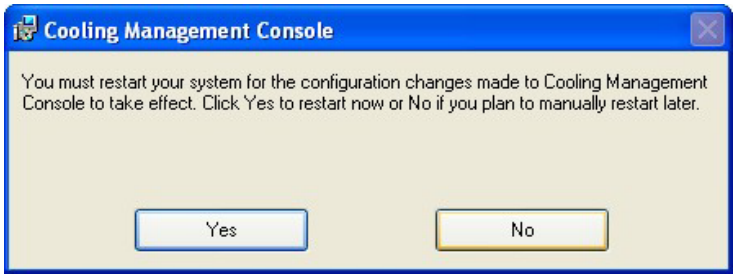


Figure 9-5: Restart the System

Step 9: The Cooling Management Console icon shows on the computer desktop. Double click it to launch the application.

Figure 9-6: Cooling Management Console Icon

9.2 iCMC Overview

Figure 9-7 shows the iCMC interface. The iCMC interface is consisted of two panels: information panel (left) and chart panel (right). The chart panel can be hidden by selecting Chart visible option to “Off”. The following sections describe the two panels in detail.

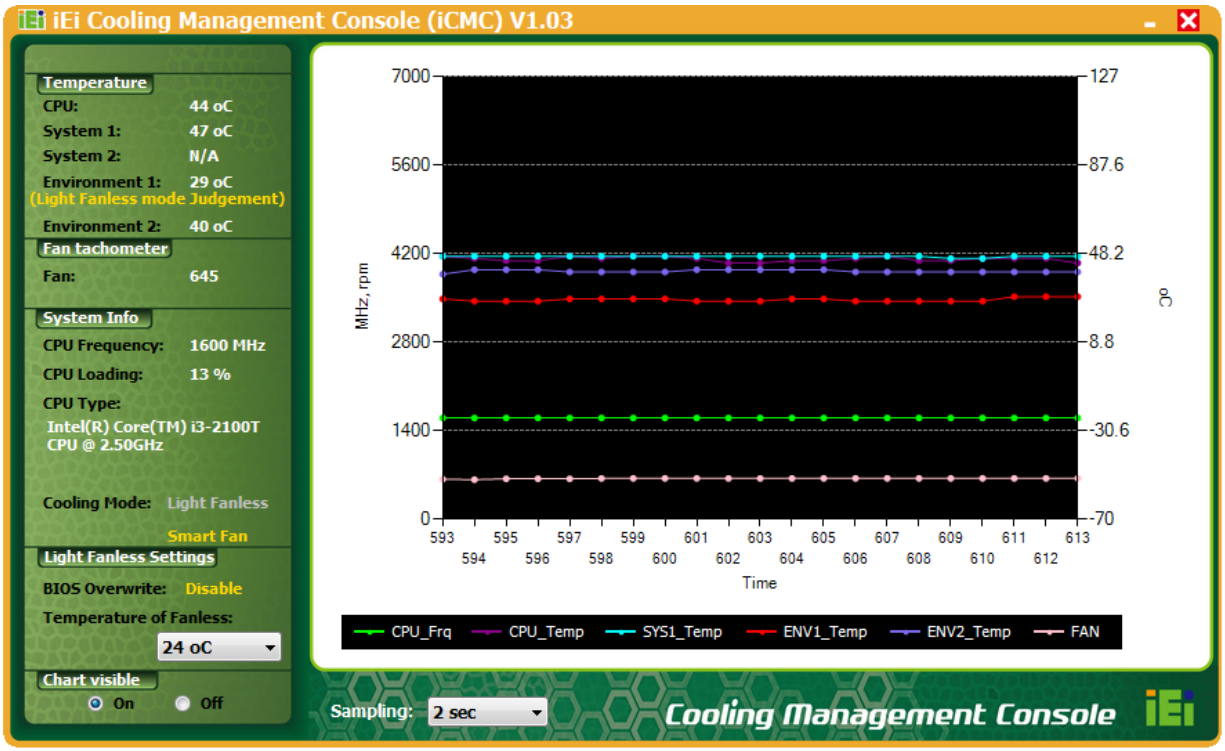


Figure 9-7: iCMC

9.2.1 Information Panel

Figure 9-8 shows the information panel interface. The information descriptions are listed in Figure 9-8.

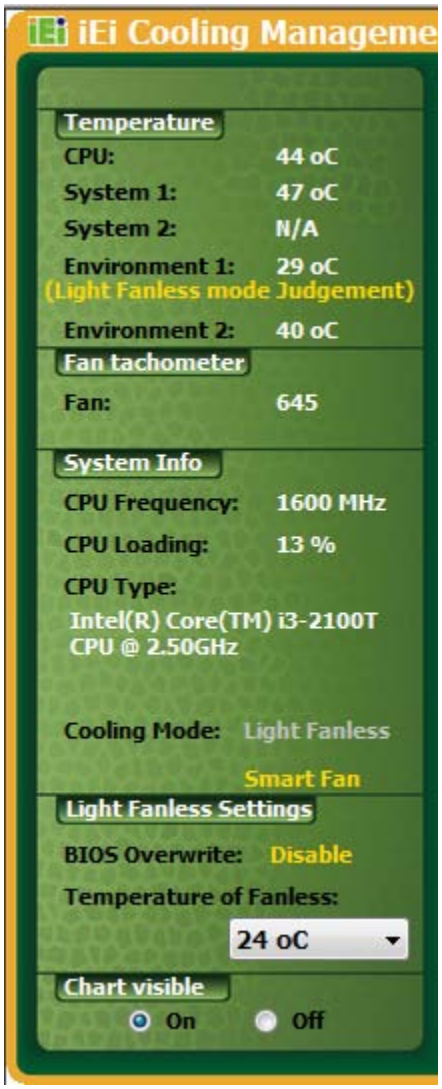


Figure 9-8: iCMC Information Panel

Temperature	
CPU	The current CPU temperature.
System 1	The current system temperature.
System 2	The current system temperature.
Environment 1	The current environment temperature detected by the temperature sensor on the system.
Environment 2	The current environment temperature detected by the temperature sensor on the system.
Fan Tachometer	

Fan	The system fan speed. “0” indicates the fan is off.
System Info	
CPU Frequency	The CPU frequency parameters.
CPU Loading	The CPU loading parameters.
CPU Type	The brand name of the CPU being used in the system.
Light Fanless Settings	
BIOS Overwrite	When the “Temperature of Fanless” value (the following option) set in the iCMC is different from the value set in the BIOS, use this option to determine either to follow the BIOS setting or the iCMC setting for the light fanless operation. The options include: **- Enable:** The light fanless operation will take effect based on the “Temperature of Fanless” set in the BIOS. **- Disable:** The light fanless operation will take effect based on the “Temperature of Fanless” set in the iCMC.
Temperature of Fanless	When the environment temperature 1 is lower than the temperature set here, the fan will turn off. When the environment temperature 1 is higher than the temperature set here, the fan will turn on. A list of available options is shown below: ▪ Disabled ▪ 4°C ▪ 8°C ▪ 12°C ▪ 16°C ▪ 20°C ▪ 24°C ▪ 28°C ▪ 32°C (Default) ▪ 36°C ▪ 40°C For safety reason, the fan will turn on automatically to cool down the system when the CPU temperature exceeds 80 ºC, no matter the Temperature of Fanless is enabled or not.
Chart Visible	
On / Off	**On:** show the chart panel **Off:** hide the chart panel

Table 9-1: iCMC Information Panel Description

9.2.2 Chart Panel

Figure 9-9 shows the chart panel interface. The line chart is used to visualize the system data listed in the information panel. The following information is displayed in different color lines:

- **Green**: CPU frequency
- **Pink**: CPU temperature
- **Blue**: System temperature
- **Yellow**: Environment temperature 1
- **Red**: Environment temperature 2
- **Purple**: Fan speed

The y-axis on the left represents the values for CPU frequency (MHz) and fan speed (RPM) while the y-axis on the right represents the values for CPU, system and environment temperatures.

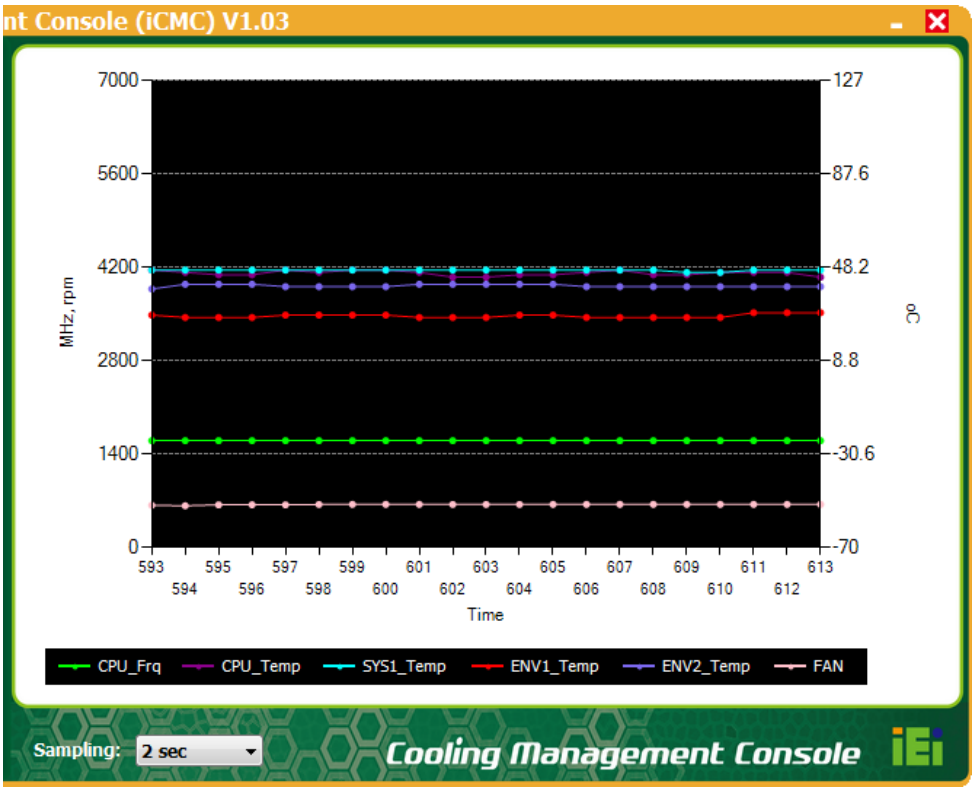


Figure 9-9: iCMC – Chart Panel

The user can adjust the time interval between sampling by selecting the options in the Sampling drop down menu (see **Figure 9-10**). The x-axis of the line chart (Time in seconds) will change according to the adjustment.

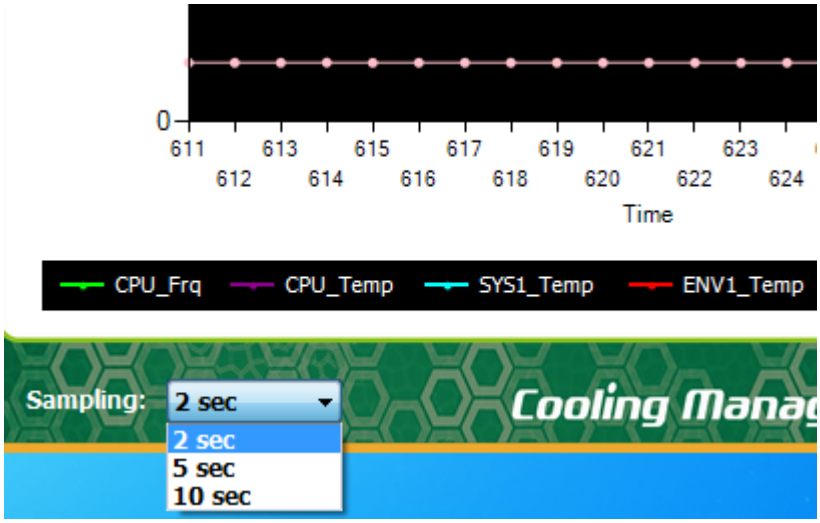


Figure 9-10: iCMC – Time Interval Adjustment

Appendix

A

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL2-W21A/AB-H61.

A.1 Safety Precautions

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

A.1.1 General Safety Precautions

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

- ***Follow the electrostatic precautions*** outlined below whenever the AFL2-W21A/AB-H61 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the AFL2-W21A/AB-H61 is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the AFL2-W21A/AB-H61 chassis is opened when the AFL2-W21A/AB-H61 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the AFL2-W21A/AB-H61.
- ***If considerable amounts of dust, water, or fluids enter the AFL2-W21A/AB-H61***, turn off the power supply immediately, unplug the power cord, and contact the AFL2-W21A/AB-H61 vendor.
- **DO NOT**:
  - Drop the AFL2-W21A/AB-H61 against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the AFL2-W21A/AB-H61 may result in permanent damage to the AFL2-W21A/AB-H61 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL2-W21A/AB-H61. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL2-W21A/AB-H61 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

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

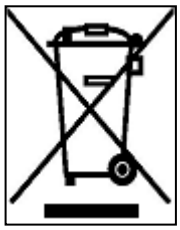
A.1.3 Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL2-W21A/AB-H61, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL2-W21A/AB-H61, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the AFL2-W21A/AB-H61X does not require cleaning. Keep fluids away from the AFL2-W21A/AB-H61 interior.
- Be cautious of all small removable components when vacuuming the AFL2-W21A/AB-H61.
- Turn the AFL2-W21A/AB-H61 off before cleaning the AFL2-W21A/AB-H61.
- Never drop any objects or liquids through the openings of AFL2-W21A/AB-H61.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the AFL2-W21A/AB-H61.
- Avoid eating, drinking and smoking within vicinity of the AFL2-W21A/AB-H61.

A.2.2 Cleaning Tools

Some components in the AFL2-W21A/AB-H61 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the AFL2-W21A/AB-H61.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the AFL2-W21A/AB-H61.
- ***Water***– A cloth moistened with water can be used to clean AFL2-W21A/AB-H61.
- ***Alcohol*** – DO NOT use high concentration alcohol to clean the AFL2-W21A/AB-H61. The concentration ≤75% is recommended.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the AFL2-W21A/AB-H61 as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the AFL2-W21A/AB-H61. Dust and dirt can restrict the airflow in the AFL2-W21A/AB-H61 and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

BIOS Menu Options

Appendix

C

One Key Recovery

C.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 C.3 for the detailed setup procedure.

The IEI One Key Recovery tool menu is shown below.

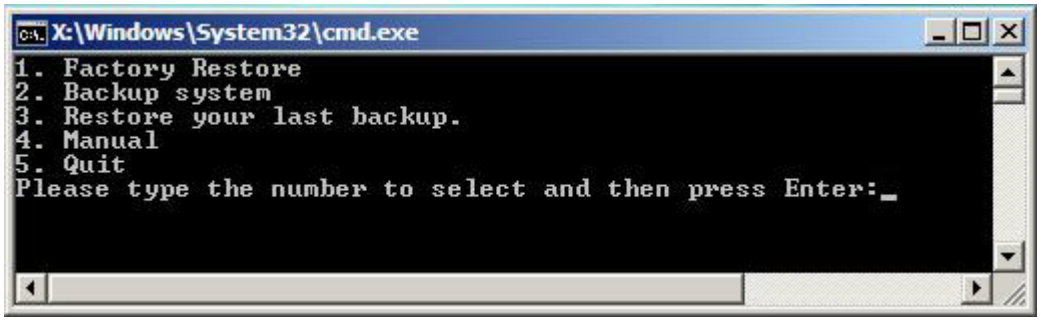


Figure C-1: IEI One Key Recovery Tool Menu

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

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

NOTE:

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

C.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.

C.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 XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- 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.

C.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 C.2.1**)

Step 2: Create partitions (see Section C.2.2)

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

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

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

C.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.

C.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!

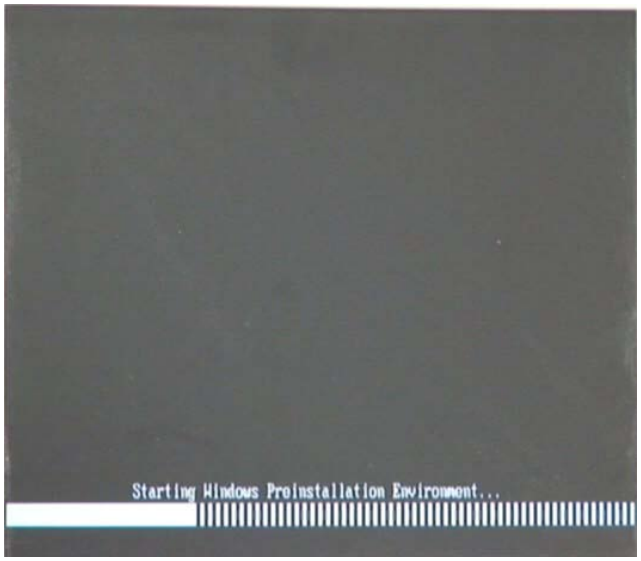


Figure C-2: Launching the Recovery Tool

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

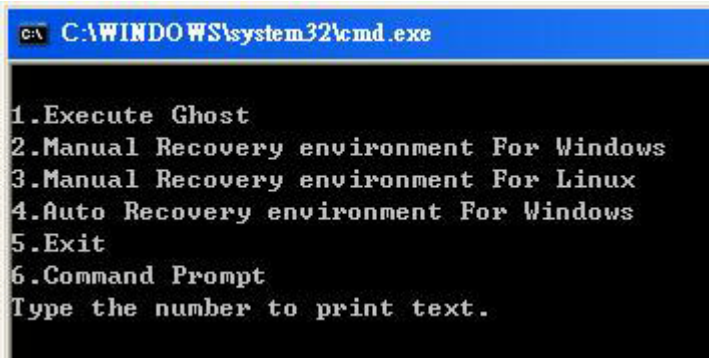


Figure C-3: Recovery Tool Setup Menu

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

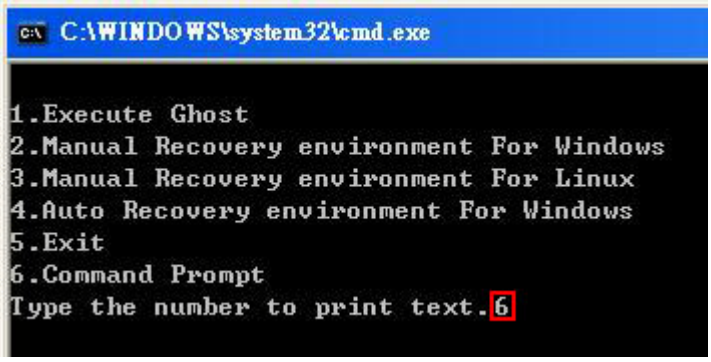


Figure C-4: Command Prompt

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

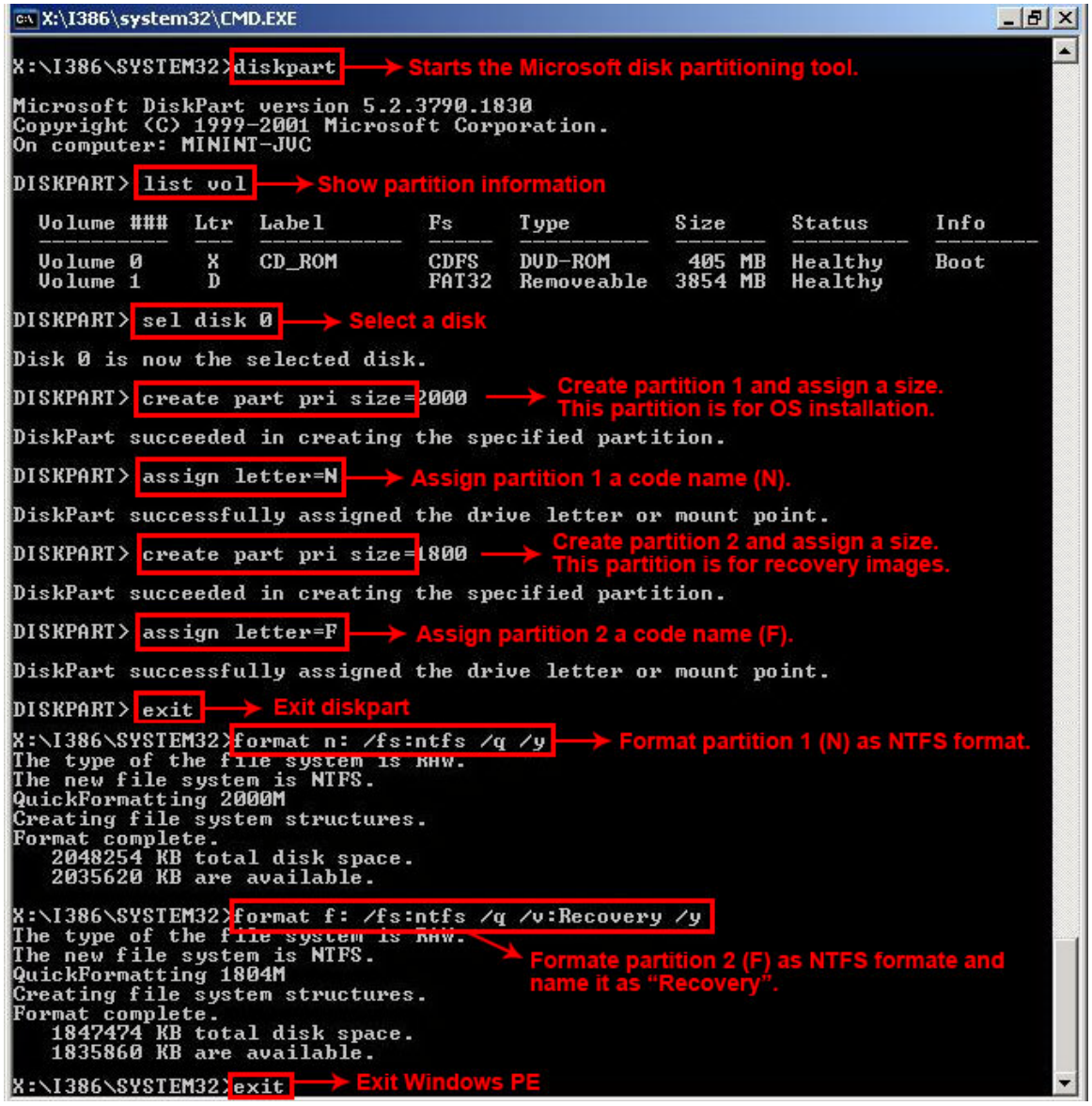
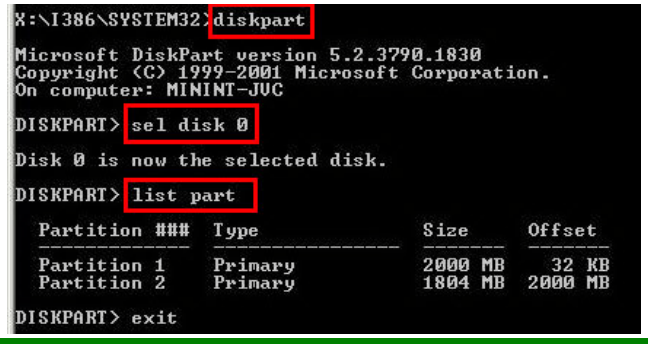


Figure C-5: Partition Creation Commands

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.

C.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.

C.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!

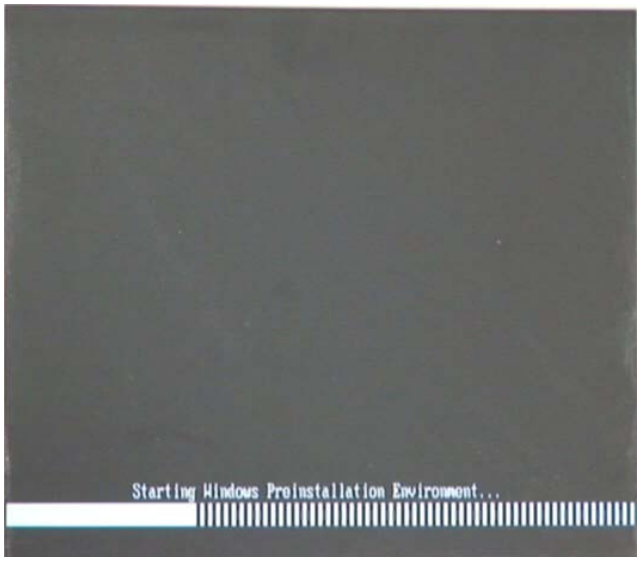


Figure C-6: Launching the Recovery Tool

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

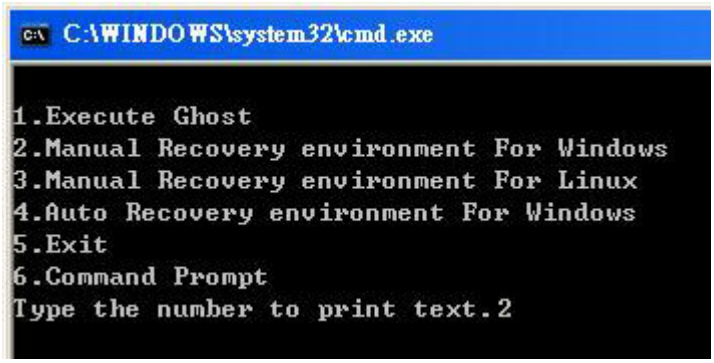


Figure C-7: Manual Recovery Environment for Windows

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

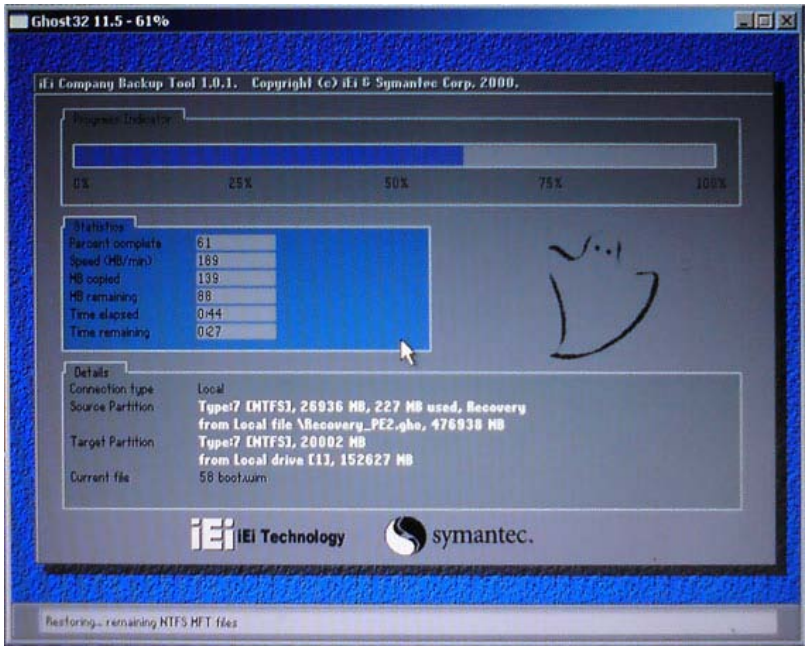


Figure C-8: Building the Recovery Partition

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

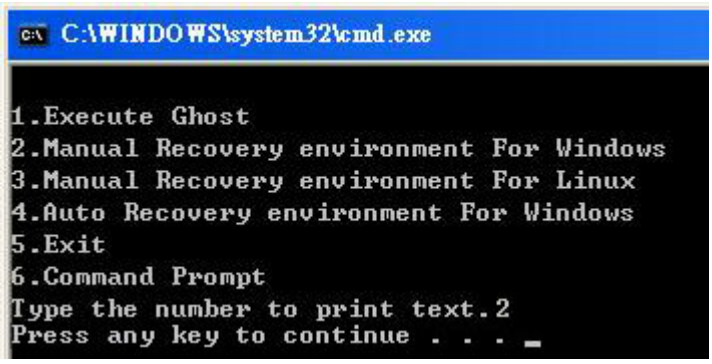


Figure C-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

C.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 C-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.

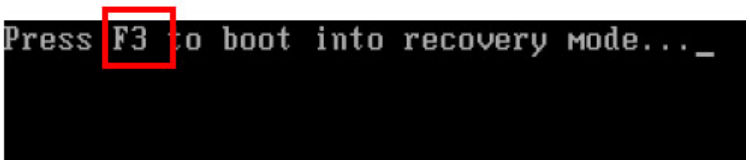


Figure C-10: Press F3 to Boot into Recovery Mode

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

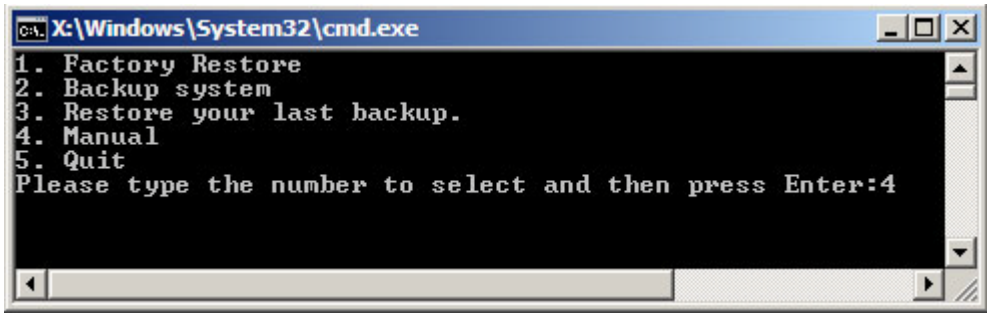


Figure C-11: Recovery Tool Menu

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

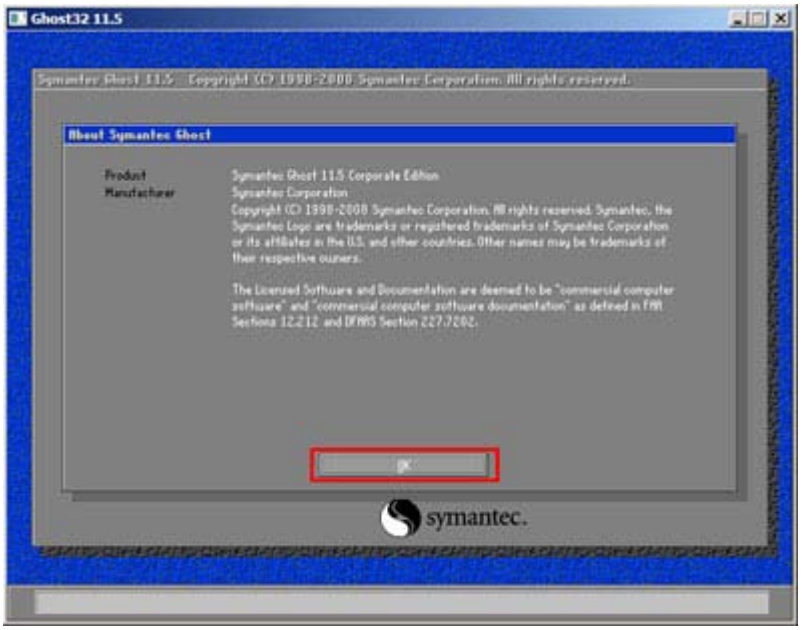


Figure C-12: About Symantec Ghost Window

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

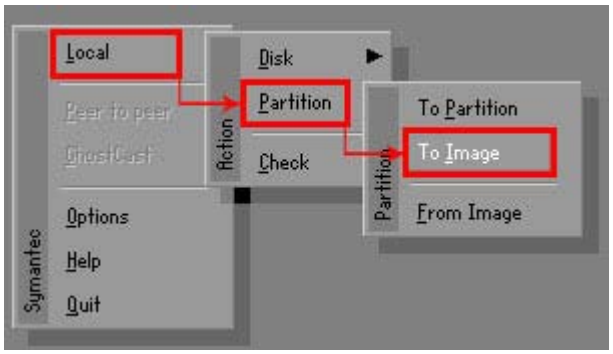


Figure C-13: Symantec Ghost Path

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

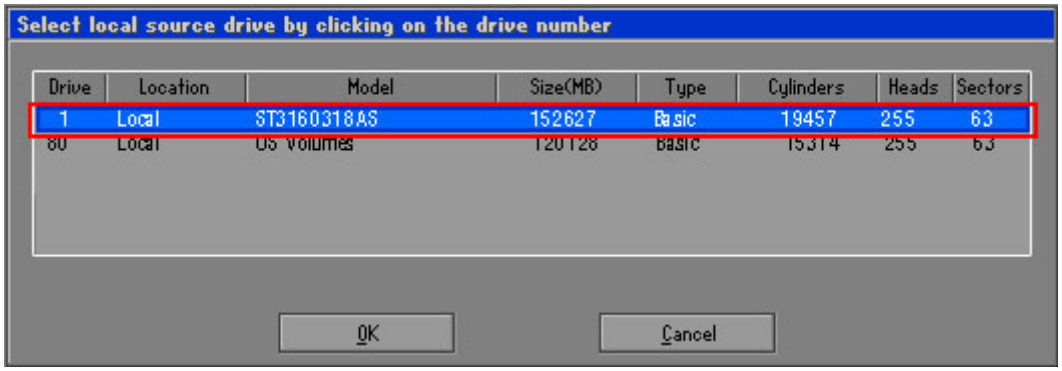


Figure C-14: Select a Local Source Drive

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

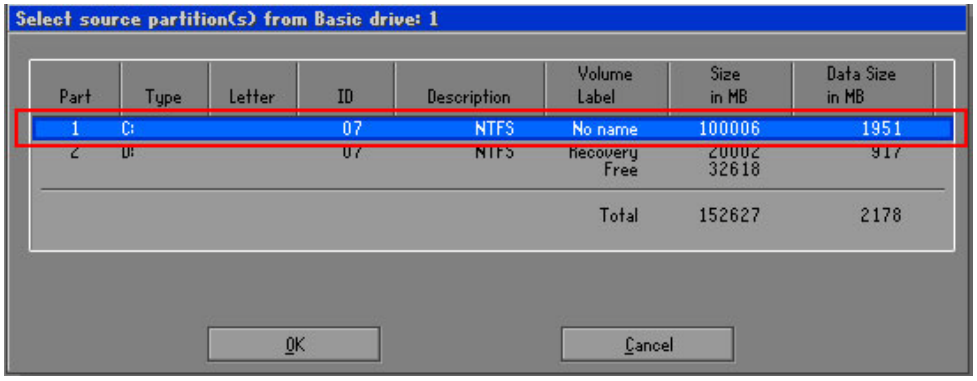


Figure C-15: Select a Source Partition from Basic Drive

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

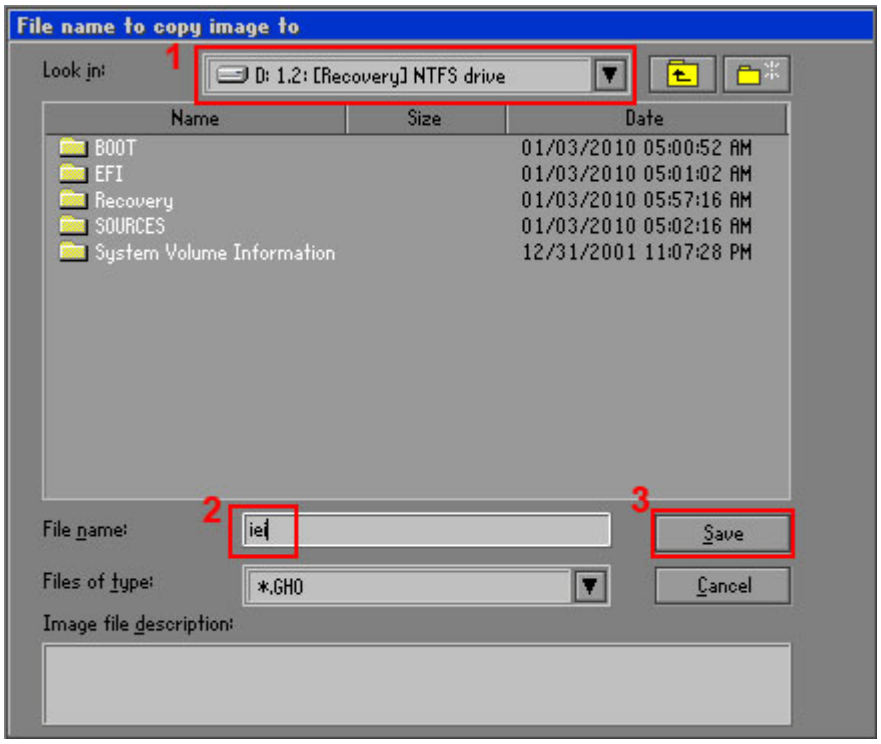


Figure C-16: File Name to Copy Image to

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

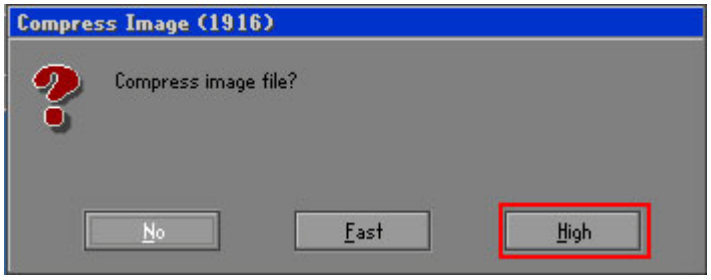


Figure C-17: Compress Image

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

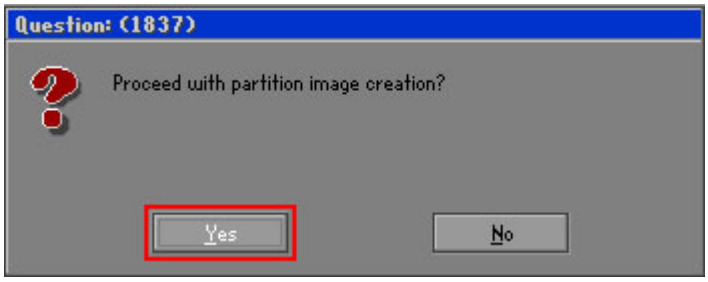


Figure C-18: Image Creation Confirmation

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

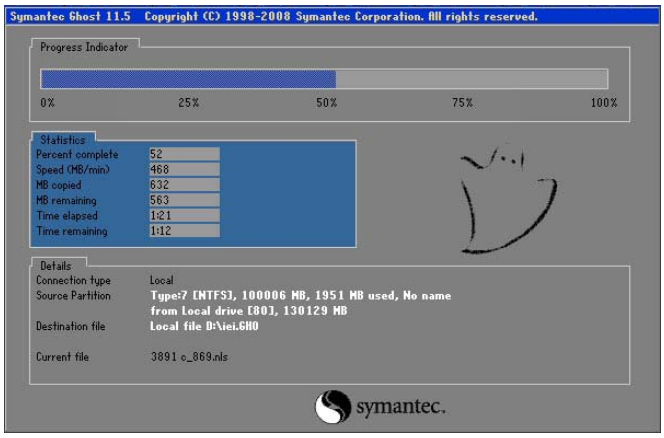


Figure C-19: Image Creation Complete

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

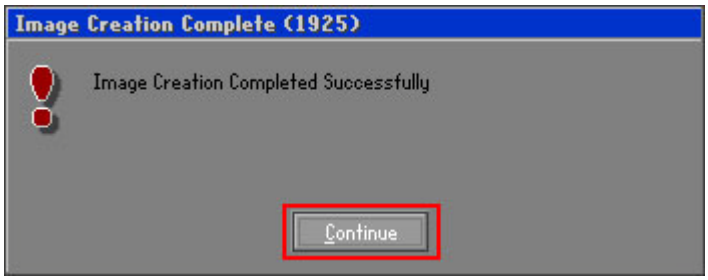


Figure C-20: Image Creation Complete

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

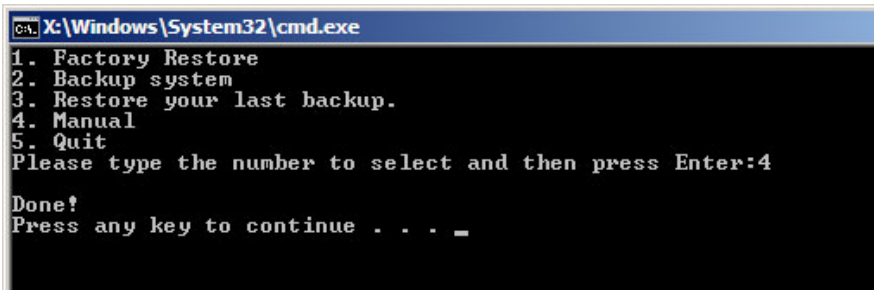


Figure C-21: Press Any Key to Continue

C.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 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 C.2.1 ~ Section C.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 C-22: Auto Recovery Utility

Step 3: 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!

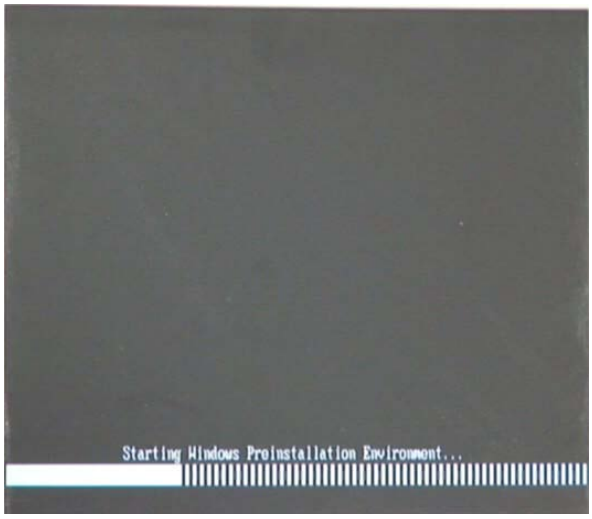


Figure C-23: Launching the Recovery Tool

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

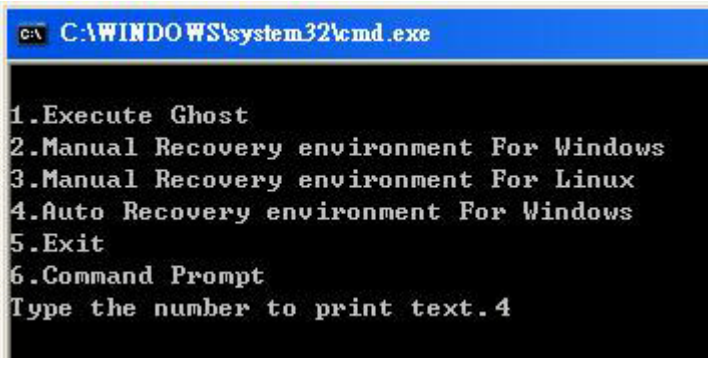


Figure C-24: Auto Recovery Environment for Windows

Step 5: 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 C.2.2** is hidden and the auto recovery tool is saved in this partition.

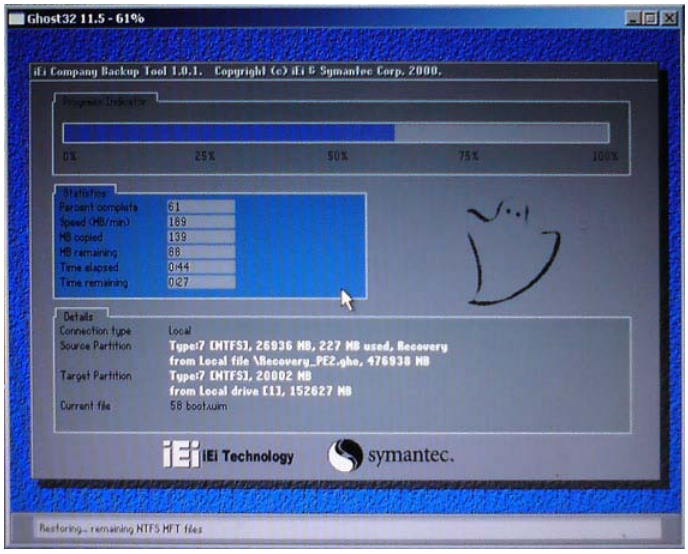


Figure C-25: Building the Auto Recovery Partition

Step 6: 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 C-26: Factory Default Image Confirmation

Step 7: The Symantec Ghost starts to create the factory default image (**Figure C-27**).

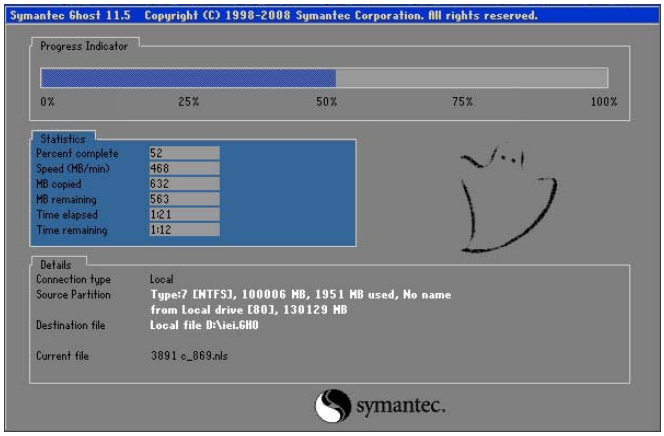


Figure C-27: Image Creation Complete

Step 8: After completing the system configuration, press any key in the following window to restart the system.

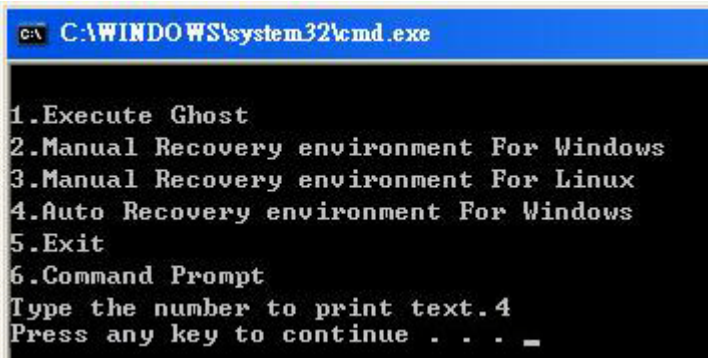
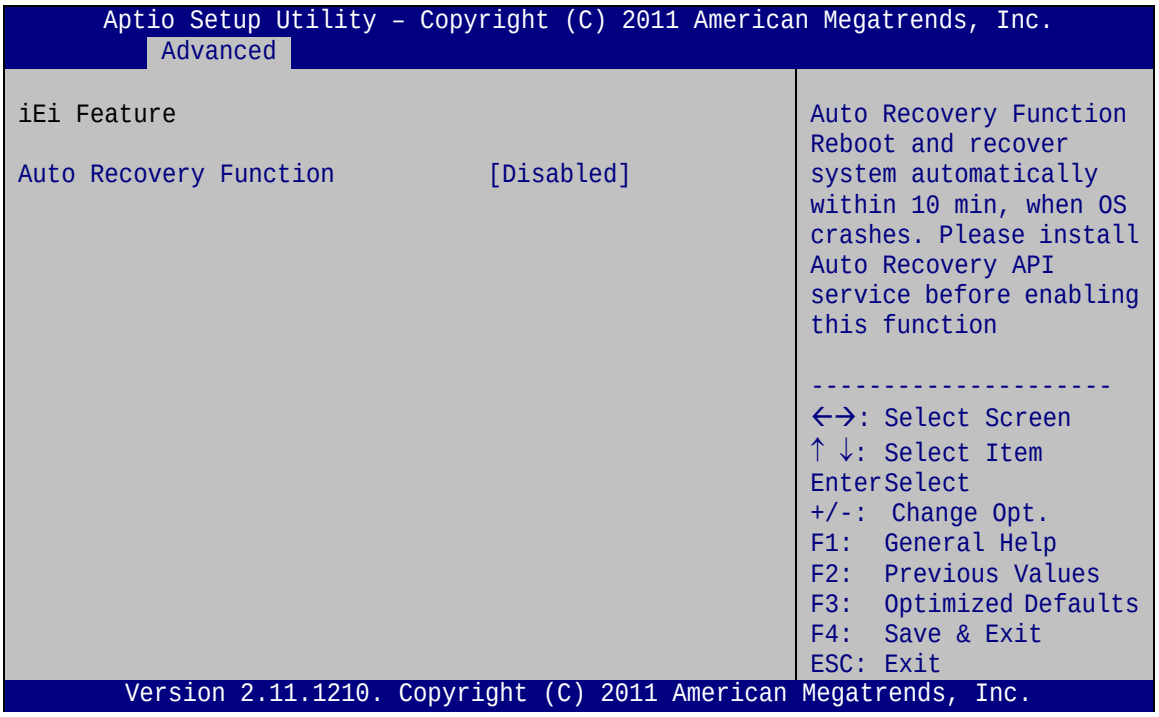


Figure C-28: Press any key to continue

Step 9: Eject the One Key Recovery CD and restart the system.

Step 10: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 11: Enable the Auto Recovery Function option (**Advanced → iEi Feature → Auto Recovery Function**).



BIOS Menu 24: iEi Feature

Step 12: 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.

CAUTION:

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

- Windows XP
- Windows Vista
- Windows 7

C.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 C.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.

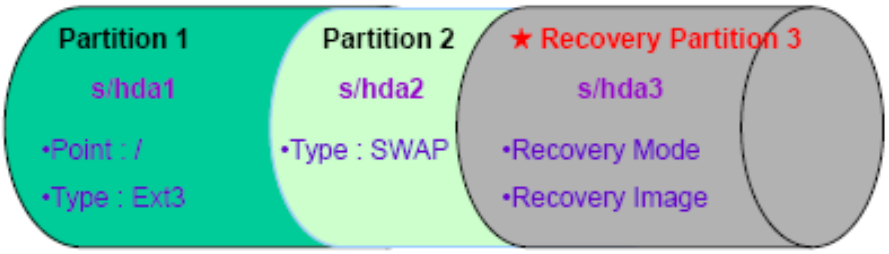


Figure C-29: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section C.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 C-30**). 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.

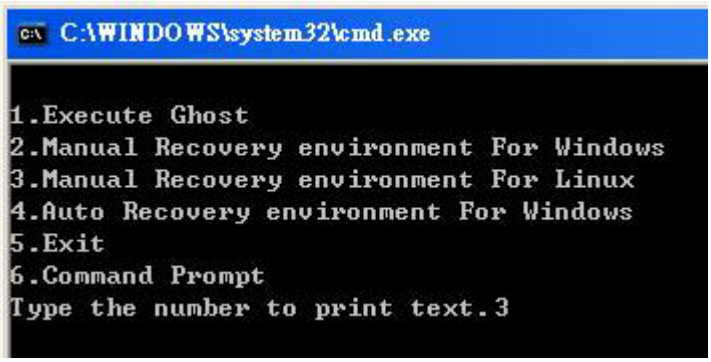


Figure C-30: Manual Recovery Environment for Linux

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

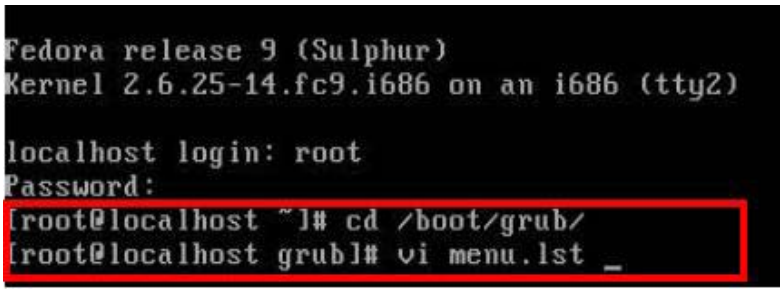
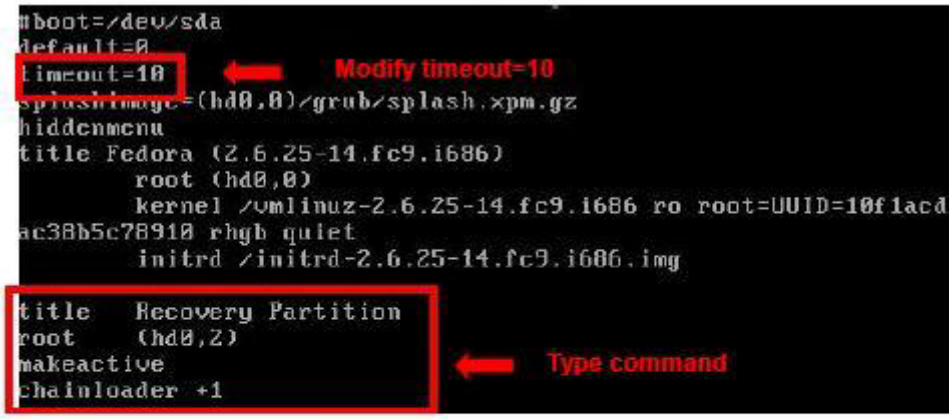


Figure C-31: Access menu.lst in Linux (Text Mode)

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 C-32**)

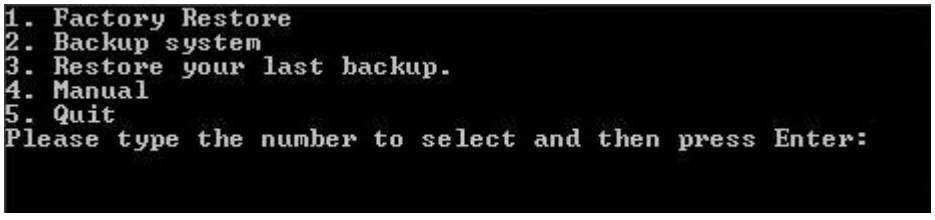


Figure C-32: Recovery Tool Menu

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

C.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 C.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.

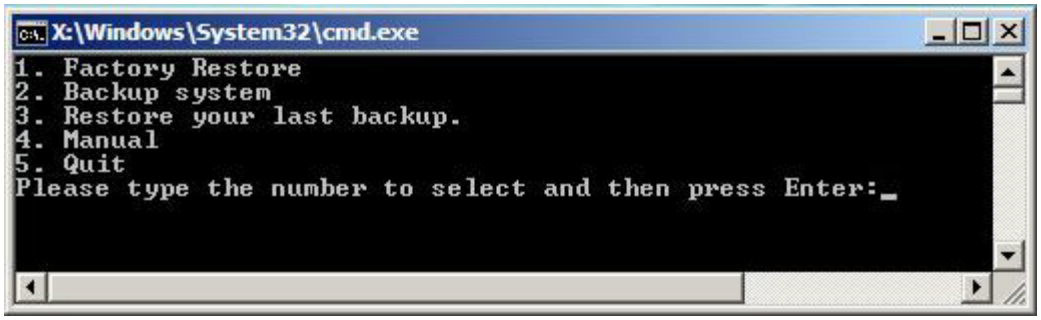


Figure C-33: Recovery Tool Main Menu

The recovery tool has several functions including:

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

C.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.

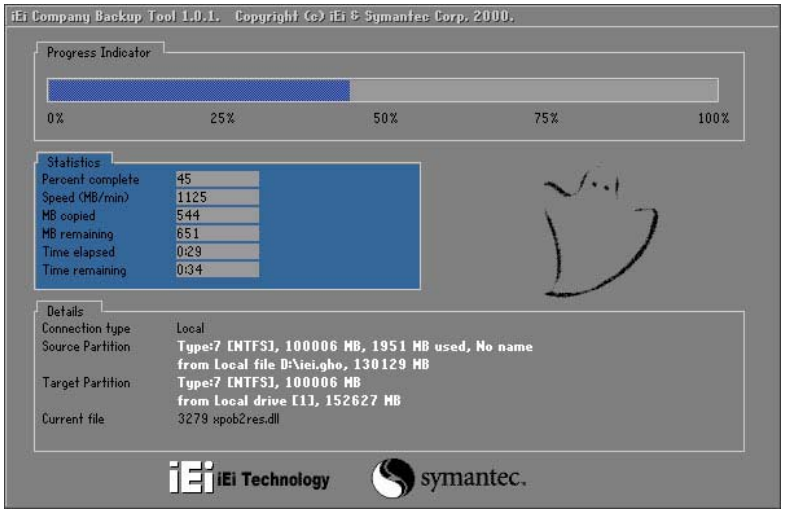


Figure C-34: Restore Factory Default

Step 3: The screen shown in **Figure C-35** appears when completed. Press any key to reboot the system.

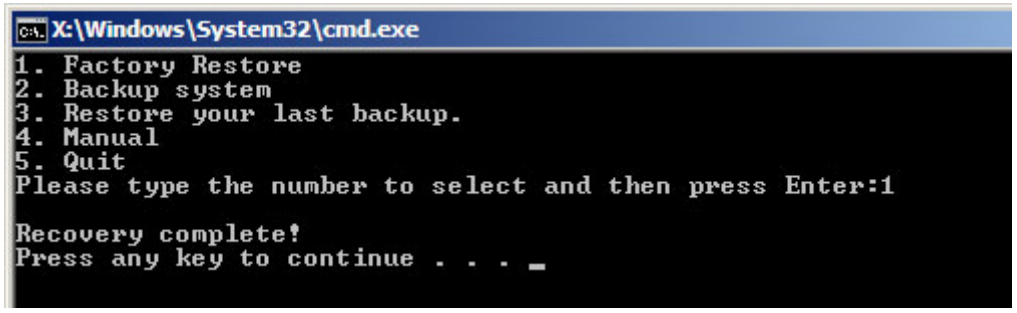


Figure C-35: Recovery Complete Window

C.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.

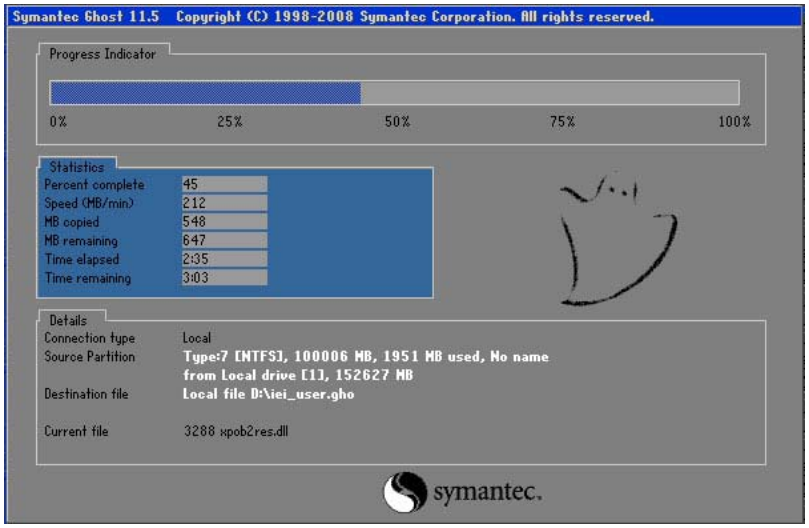


Figure C-36: Backup System

Step 3: The screen shown in **Figure C-37** appears when system backup is complete. Press any key to reboot the system.

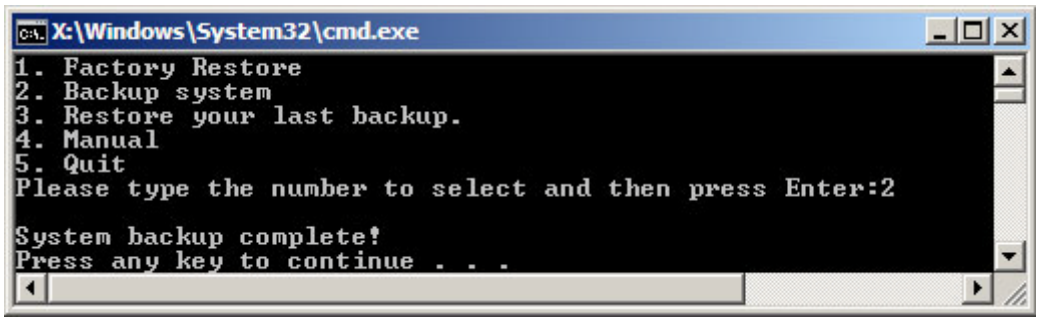


Figure C-37: System Backup Complete Window

C.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).

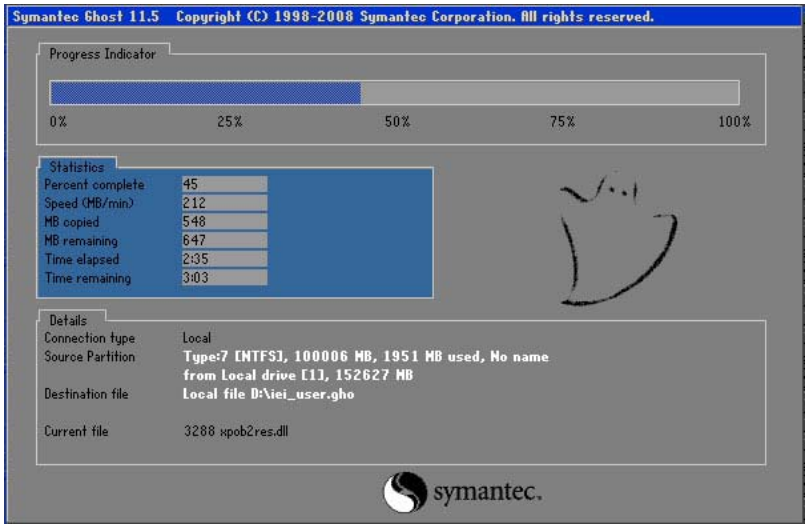


Figure C-38: Restore Backup

Step 3: The screen shown in **Figure C-39** appears when backup recovery is complete. Press any key to reboot the system.

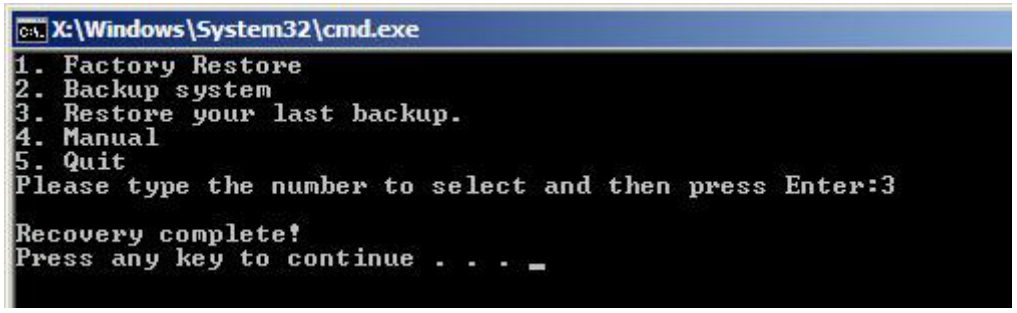


Figure C-39: Restore System Backup Complete Window

C.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.

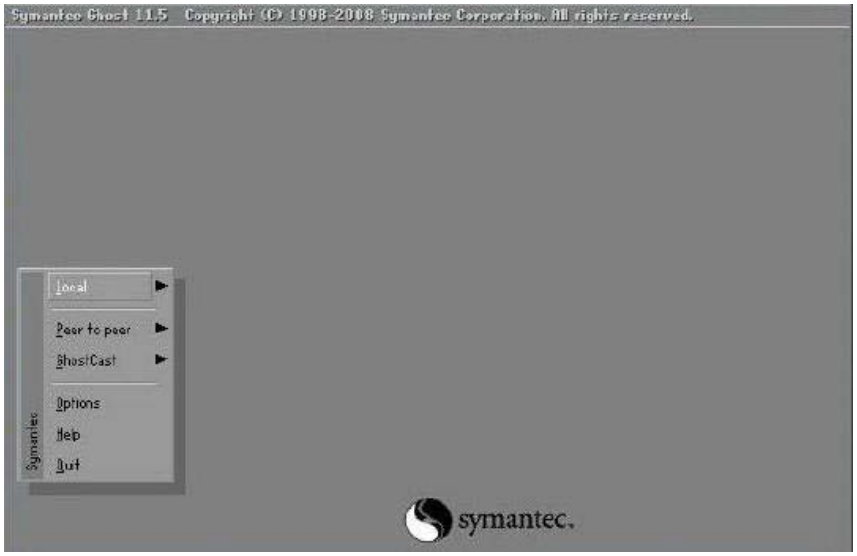
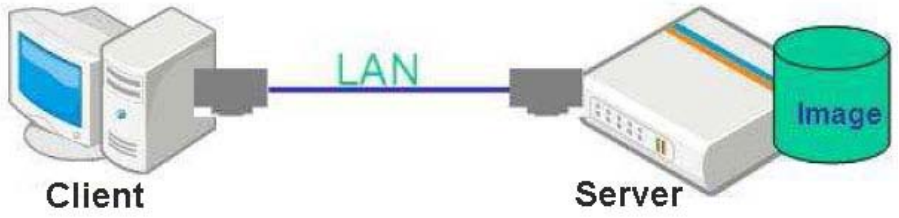


Figure C-40: Symantec Ghost Window

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

C.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.



NOTE:

The supported client OS includes:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows CE
- Windows XP Embedded

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).

C.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:

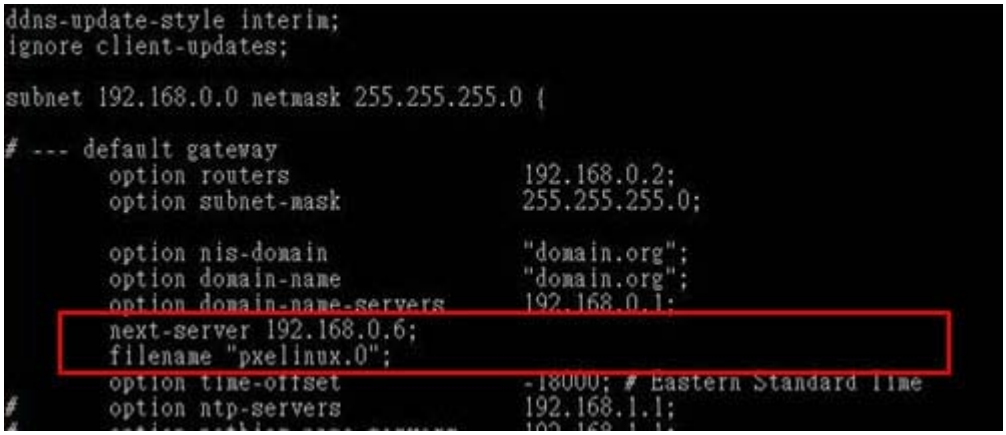
#vi /etc/dhcpd.conf

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



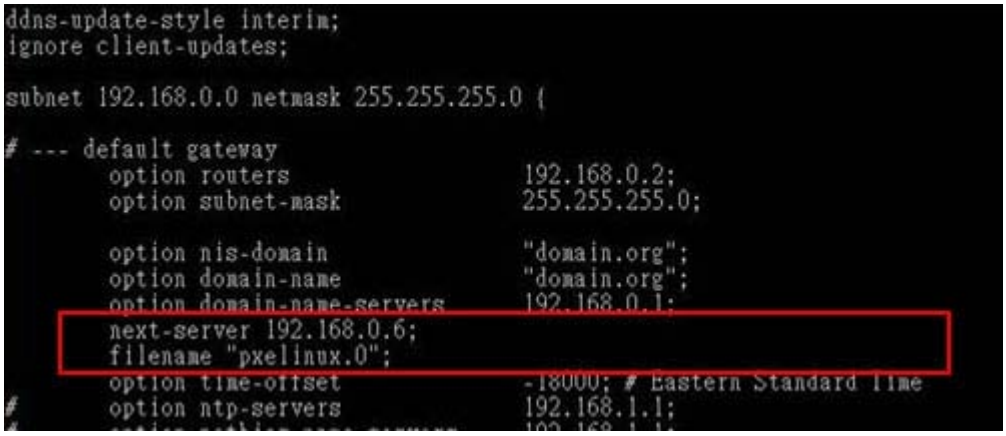
Debian

#vi /etc/dhcpd.conf

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

next-server PXE server IP address;

filename “pxelinux.0”;



C.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:

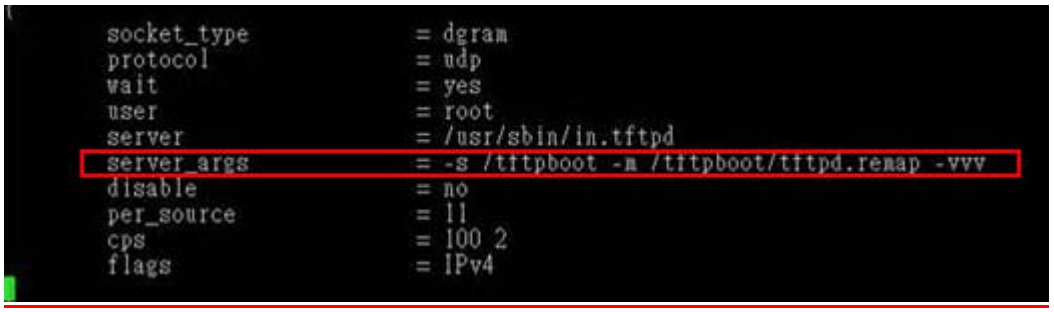
CentOS

#vi /etc/xinetd.d/tftp

Modify:

disable = no

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

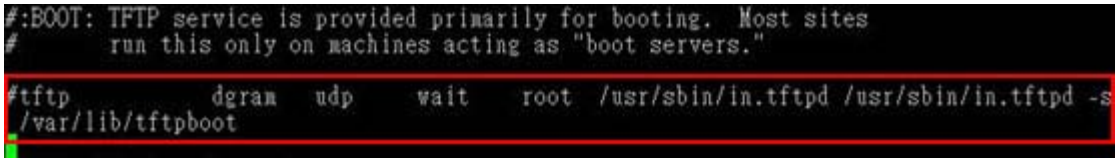


Debian

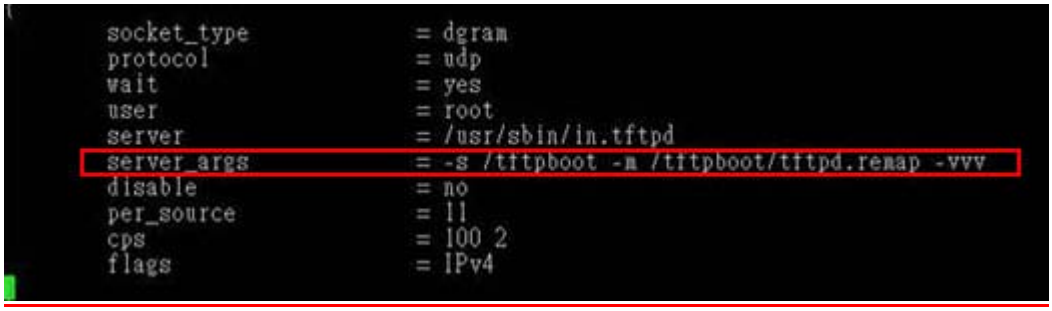
Replace the TFTP settings from “inetd” to “xinetd” and annotate the “inetd” by adding “#”.

#vi /etc/inetd.conf

Modify: #tftp dgram udp wait root /usr/sbin..... (as shown below)



#vi /etc/xinetd.d/tftp



C.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/

C.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

C.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
~
```

C.6.6 Setup a Client System for Auto Recovery

Step 1: 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 2: 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.

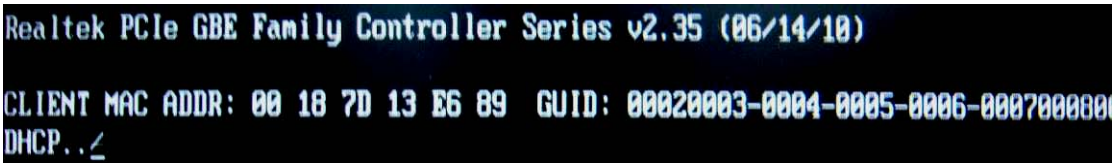
Boot Option #2 → select the boot from LAN option.

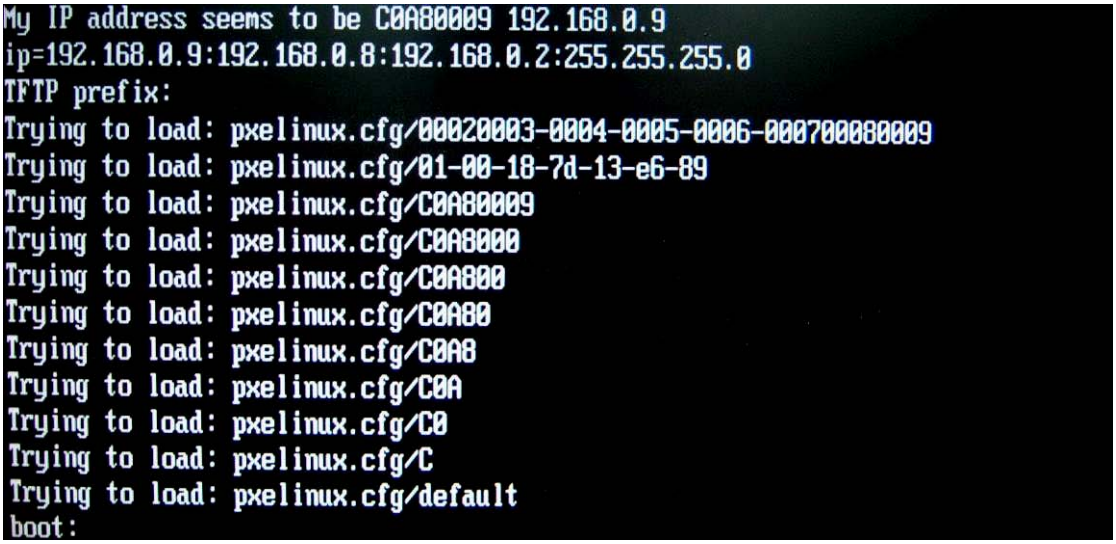
Step 3: Save changes and exit BIOS menu.

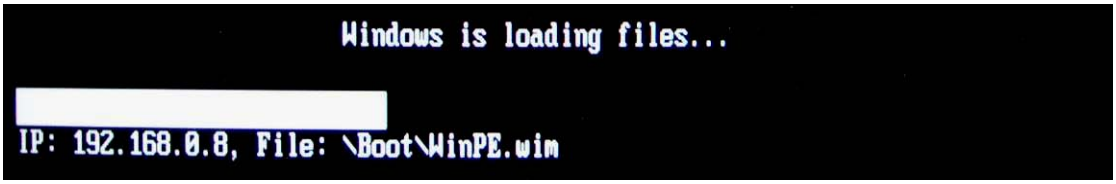
Exit → **Save Changes and Exit**

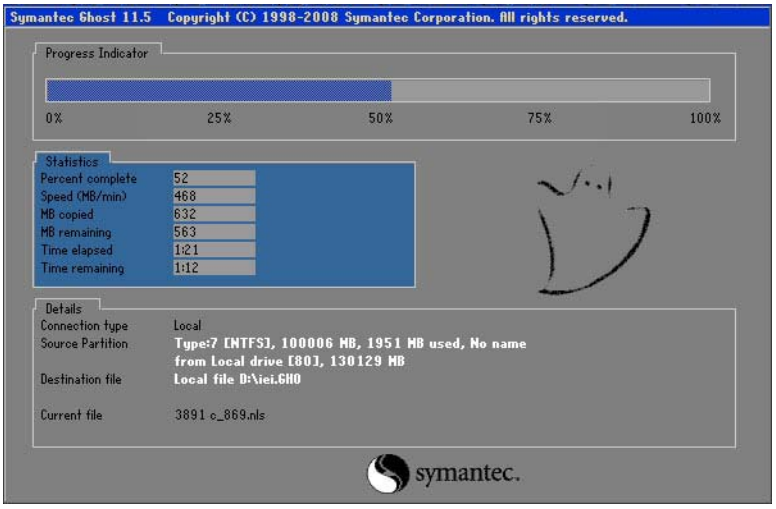
Step 4: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.

Step 5: 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. If there is a firewall or a SELinux protecting the system, modify the configuration information to accommodate them.

C.7 Other Information

C.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.

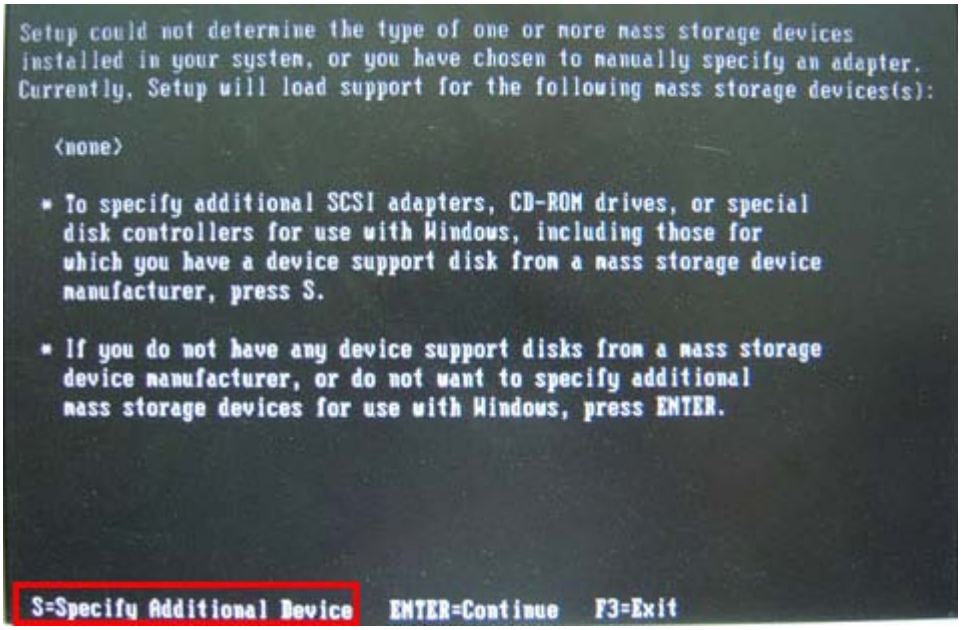
Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

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

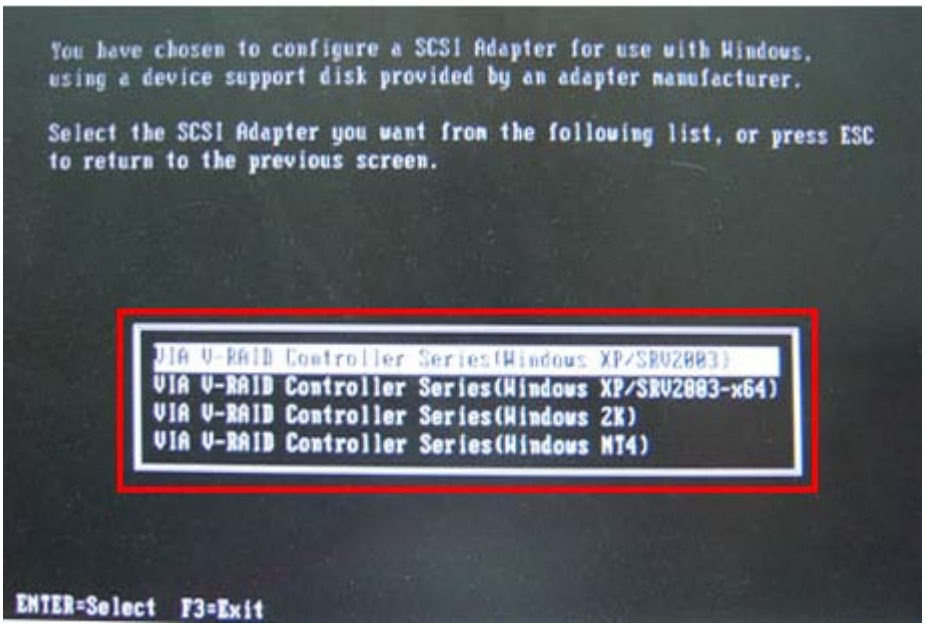
Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

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

C.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

D

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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

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

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

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

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

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