



MODEL:

AFL-W15A/17D-GM45

**Panel PC with Touch Screen Intel® CPU
Gigabit Ethernet, USB, Audio, RS-232/422/485, SATA
RoHS Compliant, IP 64 Protection**

User Manual

Revision

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Table of Contents

1 INTRODUCTION.....	1
1.1 OVERVIEW.....	2
1.2 MODEL VARIATIONS	3
1.3 FEATURES.....	3
1.4 EXTERNAL OVERVIEW.....	3
1.4.1 Front Panel	3
1.4.2 Rear Panel	4
1.4.3 Bottom Panel.....	5
1.5 INTERNAL OVERVIEW.....	5
1.6 SPECIFICATIONS	6
1.7 DIMENSIONS.....	7
1.7.1 AFL-W15A-GM45 Dimensions.....	7
1.7.2 AFL-17D-GM45 Dimensions.....	8
2 INSTALLATION	9
2.1 UNPACK THE PANEL PC.....	10
2.2 PACKING LIST.....	11
2.3 HARD DRIVE INSTALLATION.....	12
2.4 COMPACTFLASH® INSTALLATION	14
2.5 JUMPER SETTINGS	16
2.5.1 COM1 Pin-9 Setup.....	16
2.5.2 COM3 Pin-9 Setup.....	17
2.5.3 COM3 RS-232/422/485 Setup.....	17
2.5.4 COM3 422/485 Setup.....	18
2.6 MOUNTING THE SYSTEM	19
2.7 BOTTOM PANEL CONNECTORS	19
2.7.1 LAN Connection.....	20
2.7.2 Serial Device Connection	21
2.7.3 USB Device Connection.....	21
2.7.4 VGA Monitor Connection	22
2.8 POWER CONNECTION	23

AFL-W15A/17D-GM45 Panel PC

2.9 DRIVER INSTALLATION.....	23
3 BIOS.....	25
3.1 INTRODUCTION.....	26
3.1.1 Starting Setup.....	26
3.1.2 Using Setup.....	26
3.1.3 Getting Help.....	27
3.1.4 Unable to Reboot After Configuration Changes.....	27
3.1.5 BIOS Menu Bar.....	27
3.2 MAIN.....	28
3.3 ADVANCED.....	29
3.3.1 CPU Configuration.....	30
3.3.2 IDE Configuration.....	31
3.3.2.1 IDE Master, IDE Slave.....	32
3.3.3 Hardware Health Configuration.....	37
3.3.4 AHCI Configuration.....	40
3.3.4.1 AHCI Port n.....	41
3.3.5 Remote Access Configuration.....	42
3.3.6 USB Configuration.....	46
3.3.6.1 USB Mass Storage Device Configuration.....	48
3.3.7 Power Configuration.....	50
3.3.7.1 ACPI Settings.....	51
3.3.8 Super IO Configuration.....	52
3.4 PCI/PNP.....	54
3.5 BOOT.....	57
3.5.1 Boot Settings Configuration.....	57
3.5.2 Boot Device Priority.....	62
3.5.3 Hard Disk Drives.....	63
3.5.4 Removable Drives.....	63
3.5.5 CD/DVD Drives.....	64
3.6 SECURITY.....	65
3.7 CHIPSET.....	66
3.7.1 Northbridge Configuration.....	67
3.7.2 Southbridge Configuration.....	69
3.8 EXIT.....	70

4 SYSTEM MAINTENANCE	72
4.1 SYSTEM MAINTENANCE INTRODUCTION	73
4.2 MOTHERBOARD REPLACEMENT	73
4.3 COVER REMOVAL	73
4.4 MEMORY MODULE REPLACEMENT	74
A SAFETY PRECAUTIONS	76
A.1 SAFETY PRECAUTIONS	77
<i>A.1.1 General Safety Precautions</i>	<i>77</i>
<i>A.1.2 Anti-static Precautions</i>	<i>78</i>
<i>A.1.3 Product Disposal</i>	<i>79</i>
A.2 MAINTENANCE AND CLEANING PRECAUTIONS	79
<i>A.2.1 Maintenance and Cleaning</i>	<i>79</i>
<i>A.2.2 Cleaning Tools</i>	<i>80</i>
B BIOS OPTIONS	81
C ONE KEY RECOVERY	85
C.1 ONE KEY RECOVERY INTRODUCTION	86
<i>C.1.1 System Requirement</i>	<i>87</i>
<i>C.1.2 Supported Operating System</i>	<i>88</i>
C.2 SETUP PROCEDURE FOR WINDOWS	89
<i>C.2.1 Hardware and BIOS Setup</i>	<i>90</i>
<i>C.2.2 Create Partitions</i>	<i>90</i>
<i>C.2.3 Install Operating System, Drivers and Applications</i>	<i>94</i>
<i>C.2.4 Build-up Recovery Partition</i>	<i>95</i>
<i>C.2.5 Create Factory Default Image</i>	<i>97</i>
C.3 AUTO RECOVERY SETUP PROCEDURE	102
C.4 SETUP PROCEDURE FOR LINUX	107
C.5 RECOVERY TOOL FUNCTIONS	110
<i>C.5.1 Factory Restore</i>	<i>112</i>
<i>C.5.2 Backup System</i>	<i>113</i>
<i>C.5.3 Restore Your Last Backup</i>	<i>114</i>
<i>C.5.4 Manual</i>	<i>115</i>
C.6 RESTORE SYSTEMS FROM A LINUX SERVER THROUGH LAN	116
<i>C.6.1 Configure DHCP Server Settings</i>	<i>117</i>

AFL-W15A/17D-GM45 Panel PC

C.6.2 Configure TFTP Settings.....	118
C.6.3 Configure One Key Recovery Server Settings.....	119
C.6.4 Start the DHCP, TFTP and HTTP.....	120
C.6.5 Create Shared Directory.....	120
C.6.6 Setup a Client System for Auto Recovery.....	121
C.7 OTHER INFORMATION	124
C.7.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller	124
C.7.2 System Memory Requirement	126
D TERMINOLOGY	127
E WATCHDOG TIMER.....	131
F HAZARDOUS MATERIALS DISCLOSURE.....	134
F.1 HAZARDOUS MATERIALS DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY	135

List of Figures

Figure 1-1: AFL-W15A/17D-GM45	2
Figure 1-2: Front Panel	4
Figure 1-3: Rear Panel.....	4
Figure 1-4: Bottom Panel	5
Figure 1-5: AFL-W15A-GM45 Dimensions (units in mm).....	7
Figure 1-6: AFL-17D-GM45 Dimensions (units in mm).....	8
Figure 2-1: Aluminum Back Cover Retention Screws	12
Figure 2-2: HDD Bracket Retention Screws.....	13
Figure 2-3: HDD Retention Screws	13
Figure 2-4: HDD Installation	14
Figure 2-5: Remove CompactFlash® Cover	15
Figure 2-6: CompactFlash® Install	15
Figure 2-7: Connectors	20
Figure 2-8: LAN Connection	20
Figure 2-9: Serial Device Connector.....	21
Figure 2-10: USB Device Connection	22
Figure 2-11: VGA Connector	23
Figure 4-1: Back Cover Retention Screws	74
Figure 4-2: DDR SO-DIMM Module Installation.....	75
Figure C-1: IEI One Key Recovery Tool Menu	86
Figure C-2: Launching the Recovery Tool	91
Figure C-3: Recovery Tool Setup Menu	91
Figure C-4: Command Mode.....	92
Figure C-5: Partition Creation Commands.....	93
Figure C-6: Launching the Recovery Tool	95
Figure C-7: Manual Recovery Environment for Windows	95
Figure C-8: Building the Recovery Partition.....	96
Figure C-9: Press Any Key to Continue	96
Figure C-10: Press F3 to Boot into Recovery Mode.....	97
Figure C-11: Recovery Tool Menu	97

AFL-W15A/17D-GM45 Panel PC

Figure C-12: About Symantec Ghost Window	98
Figure C-13: Symantec Ghost Path	98
Figure C-14: Select a Local Source Drive	99
Figure C-15: Select a Source Partition from Basic Drive	99
Figure C-16: File Name to Copy Image to	100
Figure C-17: Compress Image.....	100
Figure C-18: Image Creation Confirmation	101
Figure C-19: Image Creation Complete	101
Figure C-20: Image Creation Complete	101
Figure C-21: Press Any Key to Continue	102
Figure C-22: Auto Recovery Utility	103
Figure C-23: Disable Automatically Restart.....	103
Figure C-24: Launching the Recovery Tool	104
Figure C-25: Auto Recovery Environment for Windows	104
Figure C-26: Building the Auto Recovery Partition.....	105
Figure C-27: Factory Default Image Confirmation	105
Figure C-28: Image Creation Complete	106
Figure C-29: Press any key to continue	106
Figure C-30: Partitions for Linux.....	108
Figure C-31: System Configuration for Linux.....	109
Figure C-32: Access menu.lst in Linux (Text Mode).....	109
Figure C-33: Recovery Tool Menu	110
Figure C-34: Recovery Tool Main Menu	111
Figure C-35: Restore Factory Default.....	112
Figure C-36: Recovery Complete Window	112
Figure C-37: Backup System.....	113
Figure C-38: System Backup Complete Window	113
Figure C-39: Restore Backup	114
Figure C-40: Restore System Backup Complete Window	114
Figure C-41: Symantec Ghost Window	115
Figure C-42: Disable Automatically Restart.....	122

List of Tables

Table 1-1: System Specifications.....	6
Table 2-1: Packing List.....	12
Table 2-2: COM1 Pin-9 Setup.....	16
Table 2-3: COM1 Pinouts	17
Table 2-4: COM3 Pin-9 Setup.....	17
Table 2-5: COM3 RS-232/422/485 Setup	18
Table 2-6: COM3 RS-232/422/485 Setup	18
Table 2-7: COM3 Pinouts	18
Table 2-8: COM3 422/485 Setup	19
Table 3-1: BIOS Navigation Keys	27

BIOS Menus

BIOS Menu 1: Main	28
BIOS Menu 2: Advanced	29
BIOS Menu 3: CPU Configuration	30
BIOS Menu 4: IDE Configuration	31
BIOS Menu 5: IDE Master and IDE Slave Configuration	32
BIOS Menu 6: Hardware Health Configuration	37
BIOS Menu 7: AHCI Configuration	40
BIOS Menu 8: AHCI Port n Configuration Menu	41
BIOS Menu 9: Remote Access Configuration	42
BIOS Menu 10: USB Configuration	46
BIOS Menu 11: USB Mass Storage Device Configuration	48
BIOS Menu 12: APM Configuration	50
BIOS Menu 13: ACPI Settings	51
BIOS Menu 14: Super IO Configuration	52
BIOS Menu 15: PCI/PnP Configuration	55
BIOS Menu 16: Boot	57
BIOS Menu 17: Boot Settings Configuration	57
BIOS Menu 18: Boot Device Priority Settings	62
BIOS Menu 19: Hard Disk Drives	63
BIOS Menu 20: Removable Drives	63
BIOS Menu 21: CD/DVD Drives	64
BIOS Menu 22: Security	65
BIOS Menu 23: Chipset	66
BIOS Menu 24: Northbridge Chipset Configuration	67
BIOS Menu 25: Southbridge Chipset Configuration	69
BIOS Menu 26: Exit	70
BIOS Menu 27: IEI Feature	107

Chapter

1

Introduction

1.1 Overview



Figure 1-1: AFL-W15A/17D-GM45

The Afolux panel PCs are all-in-one panel PCs with all the elements of a desktop computer contained in a single, slim package, no bigger than a thick monitor. The Afolux panel PCs can be mounted on a desktop monitor stand and save a huge amount of desktop space by including all the computer components behind the screen. All models include a touch screen interface.

The Afolux is a self-contained system, with all parts, excluding the power supply, contained inside the casing allowing a completely interactive panel PC with only a single power cable. Network access is enabled through an 802.11b/g/n wireless adapter. Wired options are always available on the rear panel, with two serial ports and four USB ports for peripherals and two Gigabit Ethernet slots for networking.

The Afolux includes both audio and visual multimedia capabilities. All models have a VGA output for connecting another monitor to the system, and audio outputs for external audio. There is also a built-in 2-megapixel webcam and a microphone input jack.

AFL-W15A/17D-GM45 Panel PC

1.2 Model Variations

The AFL-17D-GM45 also supports a built-in slim-type SATA optical disk drive.

1.3 Features

Some of the standard features of the AFL-W15A/17D-GM45 flat panel PC include:

- Fully self-contained, only power from the external power supply required
- Touch screen
- Wireless LAN
- Gigabit Ethernet
- Bluetooth (optional)
- IP64 protection
- RoHS compliant

1.4 External Overview

The AFL-W15A/17D-GM45 consists of a screen and rear panel that covers the back, sides and top. The rear panel contains a smaller access panel, all the cable connections and the mounting holes.

1.4.1 Front Panel

The front side of the AFL-W15A/17D-GM45 is a flat panel LCD screen surrounded by a plastic frame.

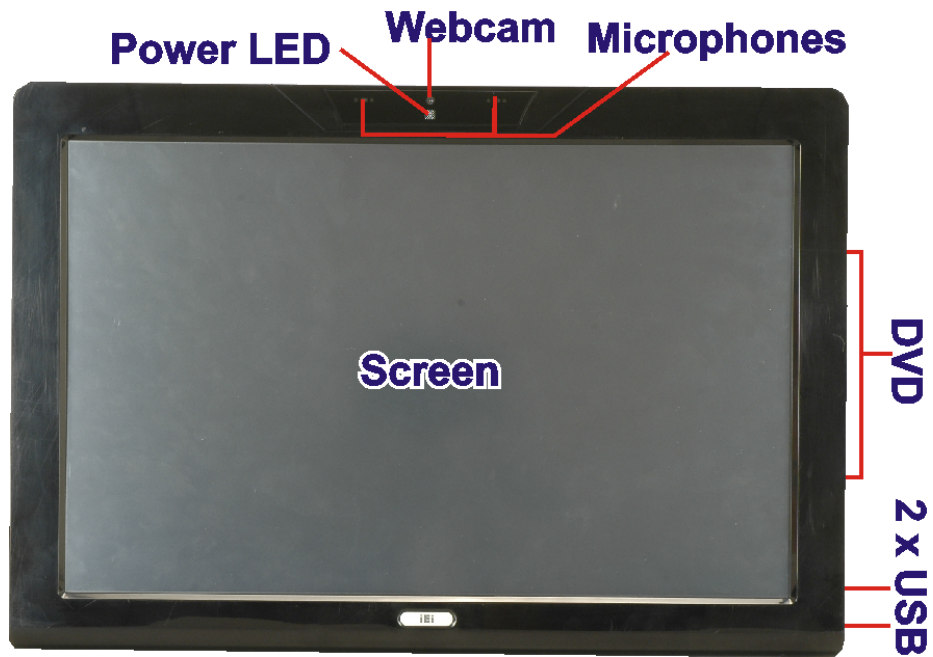


Figure 1-2: Front Panel

1.4.2 Rear Panel

The rear panel provides access to retention screw holes that support the wall mounting. Refer to Figure 1-3.

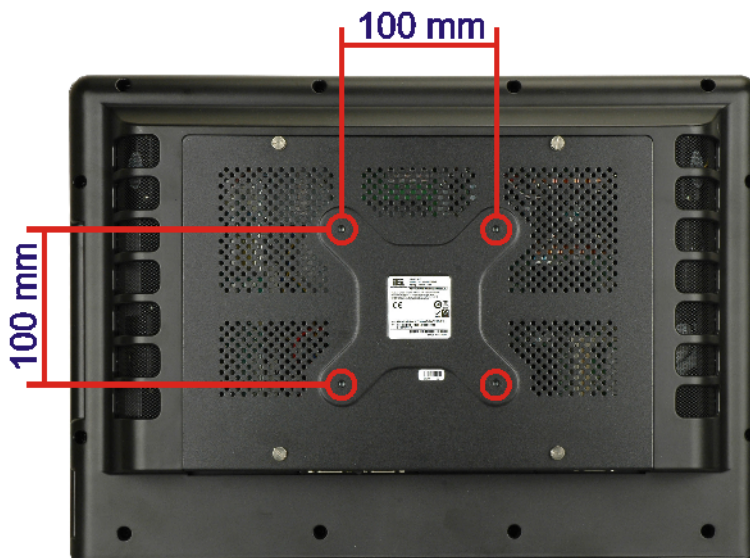


Figure 1-3: Rear Panel

AFL-W15A/17D-GM45 Panel PC

1.4.3 Bottom Panel

The bottom panel has the following slots, buttons and switches (Figure 1-4):

- 2 x Gigabit LAN
- 1 x Line output (audio)
- 1 x OSD keypad
- 1 x Power switch
- 1 x Power input (12 V)
- 1 x Reset button
- 1 x RS-232
- 1 x RS-232/422/485
- 4 x USB ports
- 1 x VGA port

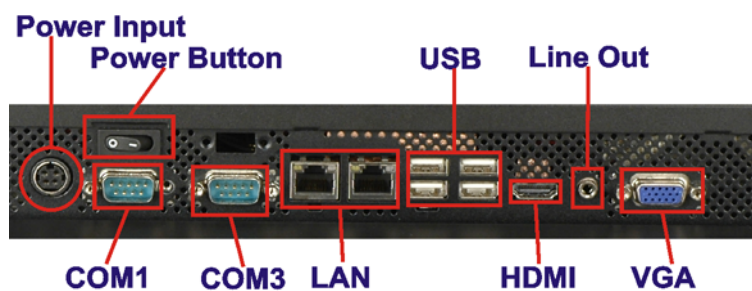


Figure 1-4: Bottom Panel

1.5 Internal Overview

All the components are contained under the rear panel. The internal components include the touch panel module and the motherboard. The motherboard has memory, a wireless module and a hard drive. Optionally, an HSDPA module can be installed in any of the models.

1.6 Specifications

The technical specifications for the AFL-W15A/17D-GM45 systems are listed in **Table 1-1**.

SPECIFICATION	AFL-W15A-GM45	AFL-17D-GM45
Mainboard	AFLMB2-GM45	
CPU	2.0 GHz Intel® Celeron® M 575 2.26 GHz Intel® Core™2 Duo P8400 2.53 GHz Intel® Core™2 Duo T9400	
LCD Panel	15.6"	17"
Resolution	1366 x 768	1280 x 1024
Brightness	300	300
Contrast Ratio	500:1	800:1
LCD Colors	16.7 million	16.7 million
Pixel Pitch	0.252 x 0.252	0.264 x 0.264
Viewing Angle (H/V)	170/160	160/160
Backlight MTBF	50000	50000
Touch Screen	5-wire resistive touch panel	
Wireless	802.11b/g/n	
IP Level	IP 64 front panel	
I/O	2 x Gigabit LAN 1 x Line output (audio) 1 x Power input (12 V) 1 x RS-232 1 x RS-232/422/485 4 x USB ports 1 x VGA port	
Power Adapter	100-240 VAC input, 12 V output	
Mounting Feature	VESA 100x100	
Operating Temp.	0°C ~ 40°C	
Dimension (WxHxD)	400 x 273 x 62.9	410 x 349 x 83
Net/Gross Weight	3.3 kg	6.2 kg
Front Panel Protection	IP 64 compliant	
EMC and Safety	CE, FCC, CB, CCC	

Table 1-1: System Specifications

AFL-W15A/17D-GM45 Panel PC

1.7 Dimensions

1.7.1 AFL-W15A-GM45 Dimensions

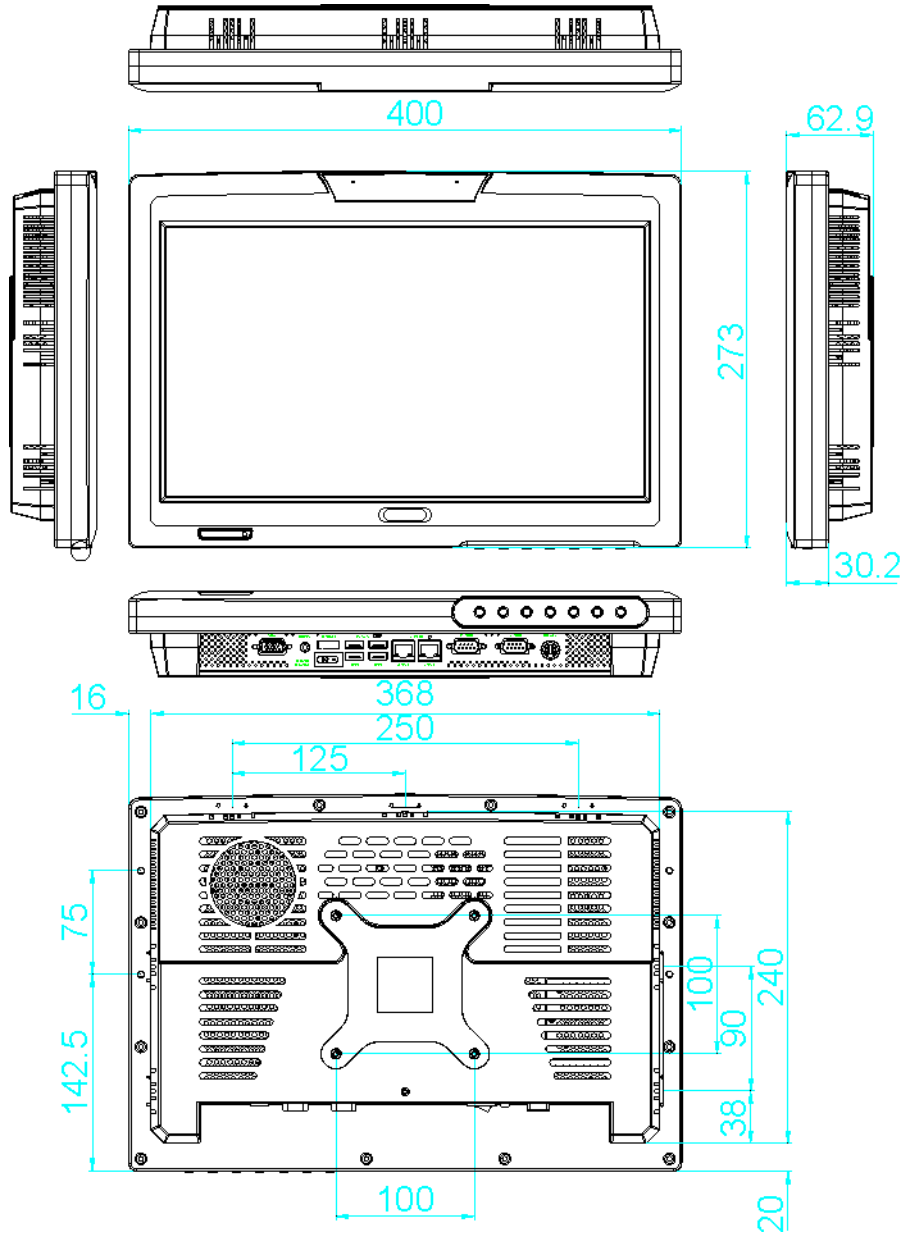


Figure 1-5: AFL-W15A-GM45 Dimensions (units in mm)

1.7.2 AFL-17D-GM45 Dimensions

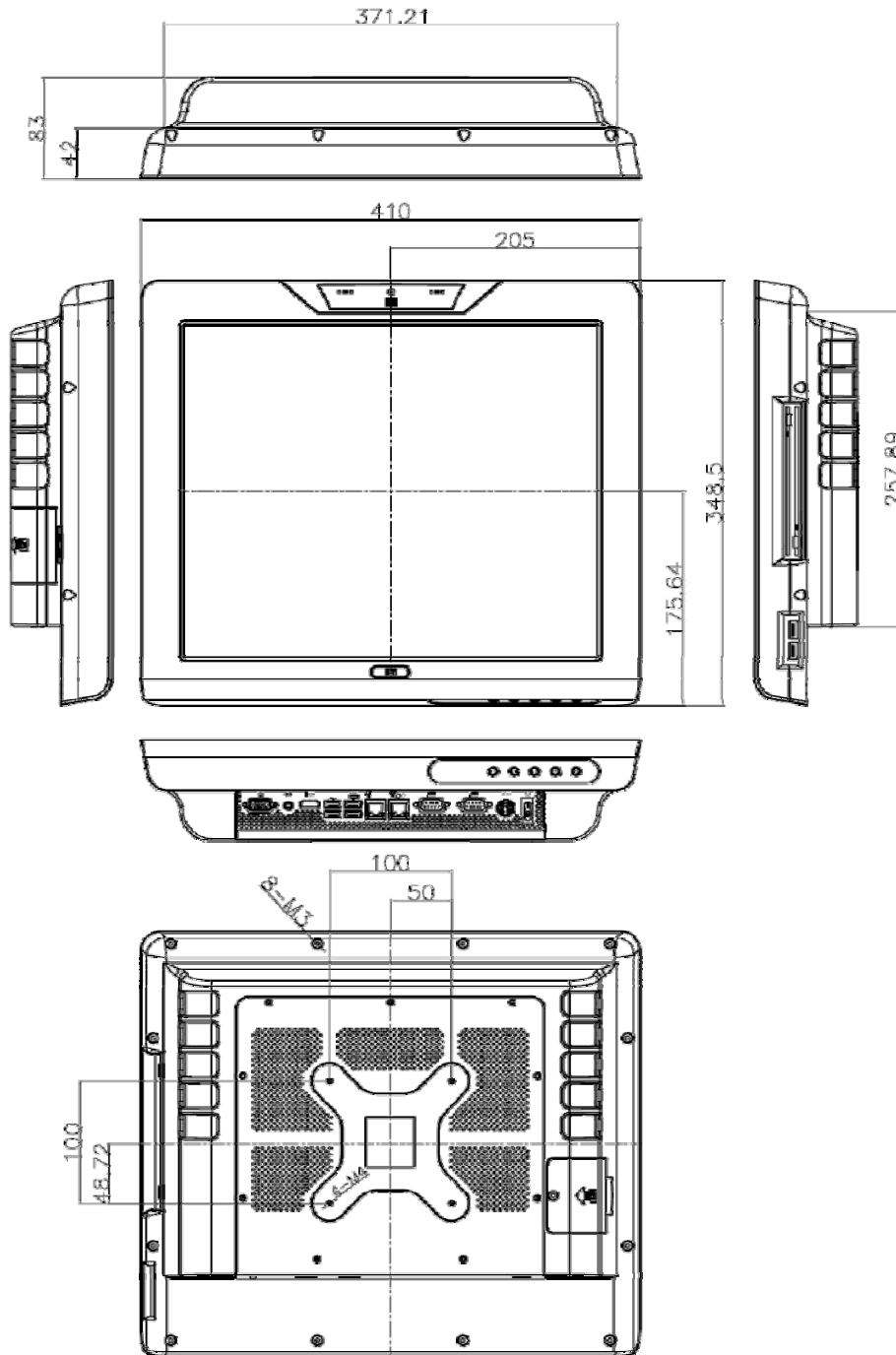


Figure 1-6: AFL-17D-GM45 Dimensions (units in mm)

Chapter

2

Installation

**WARNING:**

When installing the AFL-W15A/17D-GM45, make sure to:

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

The installation steps below should be followed in order.

Step 1: Unpack the flat panel PC

Step 2: Check all the required parts are included

Step 3: Install the hard drive

Step 4: Install the CompactFlash® card

Step 5: Mount the flat panel PC

Step 6: Connect peripheral devices to the bottom panel of the flat panel PC

Step 7: Connect the power cable

Step 8: Configure the system

2.1 Unpack the Panel PC

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

AFL-W15A/17D-GM45 Panel PC



WARNING!

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

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

Step 2: Open the outside box.

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

Step 4: Open the inside box.

Step 5: Lift the monitor out of the boxes.

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

2.2 Packing List

The AFL-W15A/17D-GM45 flat panel PC is shipped with the following components:

Quantity	Item	Image
1	AFL-W15A/17D-GM45	
1	Power adapter	
1	Power cord	
1	Screw set	
1	Touch screen pen	


Quantity	Item	Image
1	Utility CD	

Table 2-1: Packing List

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

2.3 Hard Drive Installation

This section outlines the installation of the hard drive in the AFL-W15A/17D-GM45. To install the hard drive, please follow the steps below:

Step 1: Remove the plastic back cover.

Step 2: Unfasten the four silver retention screws. The screws will not separate from the cover, just loosen as much as possible (Figure 2-1).

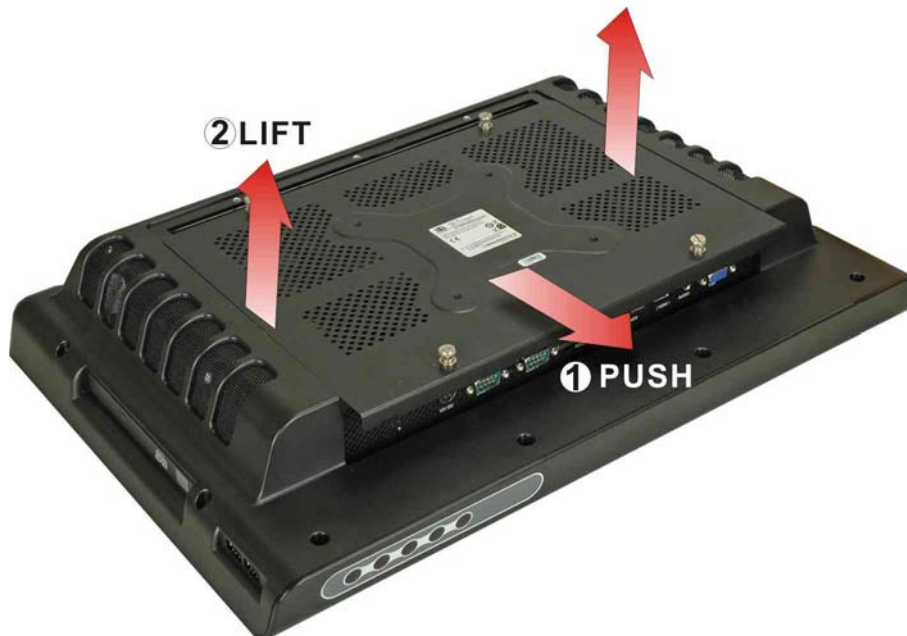


Figure 2-1: Aluminum Back Cover Retention Screws

Step 3: Slide the cover down, then lift to remove.

AFL-W15A/17D-GM45 Panel PC

Step 4: Remove the four HDD bracket retention screws (Figure 2-2) and lift the HDD brackets out of the panel PC.



Figure 2-2: HDD Bracket Retention Screws

Step 5: Attach the HDD brackets to the HDD. The brackets are different for each side. Make sure the side with the hard drive screw hole further from the end goes at the SATA connector end as shown in Figure 2-3.



Figure 2-3: HDD Retention Screws

Step 6: Install the hard drive in the same position it was before.

Step 7: Slide down from the top to connect the motherboard SATA connector to the hard drive SATA connector.



Figure 2-4: HDD Installation

Step 8: Fasten the screws.

Step 9: A CompactFlash® card can also be installed in the CompactFlash® slot shown in Figure 2-4 above.

2.4 CompactFlash® Installation

The installation for the AFL-17D-GM45 is shown in this section. The CompactFlash® card installation for the AFL-W15A-GM45 is shown in the hard drive installation section above.

Step 1: Undo the CompactFlash® slot screw.

Step 2: Slide the cover upwards to remove.

AFL-W15A/17D-GM45 Panel PC



Figure 2-5: Remove CompactFlash® Cover

Step 3: Install the CompactFlash® in the slot inside.



Figure 2-6: CompactFlash® Install

Step 4: Slide the cover back on, then fasten the screw.

2.5 Jumper Settings



NOTE:

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

The motherboard jumpers are listed below.

- COM1 pin 9 setup
- COM3 pin 9 setup
- COM3 RS-232/422/485 selection

2.5.1 COM1 Pin-9 Setup

Jumper Label:	JP11
Jumper Type:	10-pin header
Jumper Settings:	See Table 2-2

The pin-9 signal can be selected as 12 V, 5 V or Ring.

Pin	Description
1-3	12 V
3-5	5 V
7-9	RI

Table 2-2: COM1 Pin-9 Setup

The pinouts for the COM1 connector are shown below.

AFL-W15A/17D-GM45 Panel PC

Pin	Description
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Table 2-3: COM1 Pinouts

2.5.2 COM3 Pin-9 Setup

Jumper Label:	J5
Jumper Type:	10-pin header
Jumper Settings:	See Table 2-4

The pin-9 signal can be selected as 12 V, 5 V or Ring.

Pin	Description
1-2	12 V
3-4	RI
5-6	5 V

Table 2-4: COM3 Pin-9 Setup

2.5.3 COM3 RS-232/422/485 Setup

Jumper Label:	J3 and J4
Jumper Type:	8-pin and 12-pin headers
Jumper Settings:	See Table 2-5 and Table 2-6

This serial port can be set to use RS-232, RS-422 or RS-485 communication methods. Set all the jumpers to the same settings.

J3	Description
1-2	According to BIOS settings
3-4	RS-232
5-6	RS-422
7-8	RS-485

Table 2-5: COM3 RS-232/422/485 Setup

J4	Description
1-2, 4-5, 7-8, 10-11	RS-232
2-3, 5-6, 8-9, 11-12	RS-422/485

Table 2-6: COM3 RS-232/422/485 Setup

The pinouts for RS-232, RS-422 and RS-485 communication are shown below.

Pin	RS-232 Desc.	RS-422 Desc.	RS-485 Desc.
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX		
4	DTR		
5	GND		
6	DSR	RX-	
7	RTS	RX+	
8	CTS		
9	RI		

Table 2-7: COM3 Pinouts

2.5.4 COM3 422/485 Setup

- Jumper Label:** J6
- Jumper Type:** 6-pin header
- Jumper Settings:** See Table 2-5 and Table 2-6

Use this jumper to set RS-422 or RS-485 communication methods.

AFL-W15A/17D-GM45 Panel PC

J6	Description
1-3	RS-422 TX-
3-5	RS-485 D-
2-4	RS-422 TX+
4-6	RS-485 D+

Table 2-8: COM3 422/485 Setup

2.6 Mounting the System



WARNING!

The panel PC is very heavy. Two or more people should mount the panel PC. Dropping or bumping the panel PC during installation can cause serious or irreparable damage to the panel PC.

The following installation options are available:

- Lift stand
- Wall arm
- Wall mount
- Ceiling mount
- Mobile mount

The installation instructions are included with the stand, arm or mount.

2.7 Bottom Panel Connectors

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

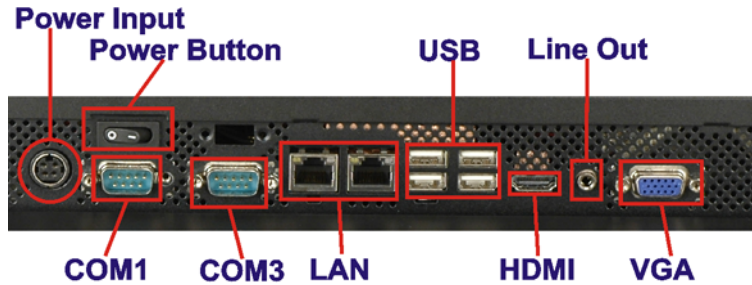


Figure 2-7: Connectors

2.7.1 LAN Connection

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

Step 1: Locate the RJ-45 connector on the bottom panel of the AFL-W15A/17D-GM45.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel of the AFL-W15A/17D-GM45. See Figure 2-8.

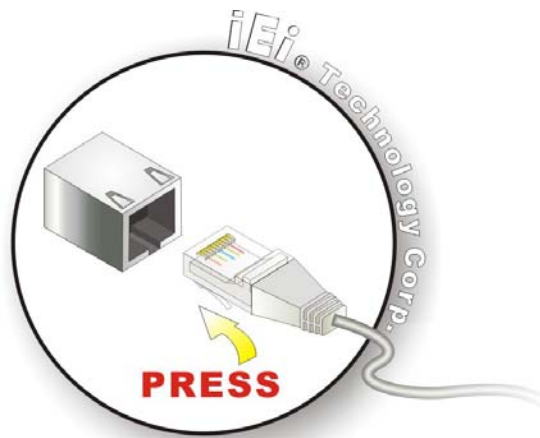


Figure 2-8: LAN Connection

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

AFL-W15A/17D-GM45 Panel PC

2.7.2 Serial Device Connection

The serial device connectors are for connecting serial devices to the AFL-W15A/17D-GM45. Follow the steps below to connect a serial device to the AFL-W15A/17D-GM45 panel PC.

Step 1: Locate the DB-9 connector. The location of the DB-9 connector is shown in **Figure 2-7**.

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 2-9**.

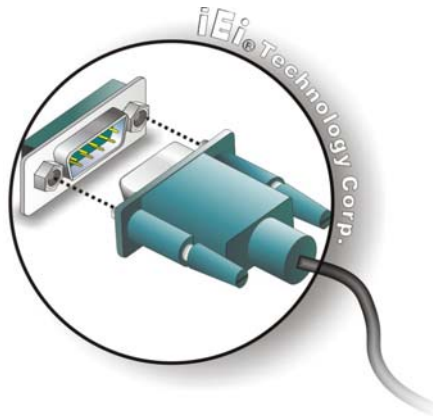


Figure 2-9: Serial Device Connector

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

2.7.3 USB Device Connection

To connect USB devices to the AFL-W15A/17D-GM45, please follow the instructions below.

Step 1: Located the USB connectors. The locations of the USB connectors are shown in **Figure 2-7**.

Step 2: Align the connectors. Align the USB device connector with one of the connectors on the bottom panel. See **Figure 2-10**.

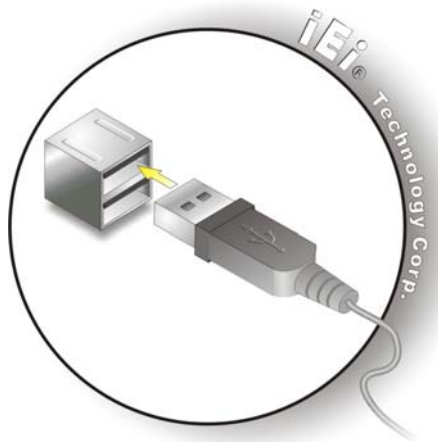


Figure 2-10: USB Device Connection

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

2.7.4 VGA Monitor Connection

The VGA output can be connected to an external VGA monitor. To connect the VGA monitor to the AFL-W15A/17D-GM45, please follow the instructions below.

Step 1: **Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Figure 2-7**.

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 AFL-W15A/17D-GM45. See Figure 2-11.

AFL-W15A/17D-GM45 Panel PC

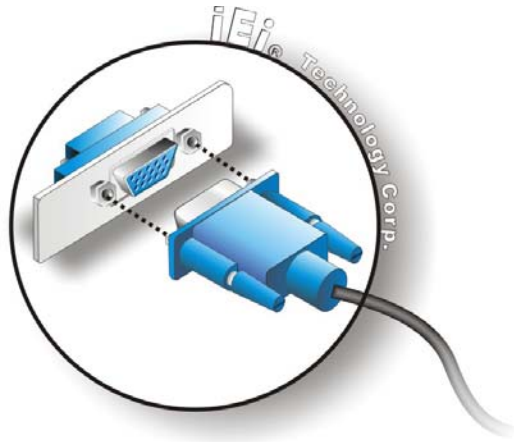


Figure 2-11: VGA Connector

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

2.8 Power Connection

The power cable connects the panel PC to the power supply. The power cable is required for operation of the panel PC.

Step 1: Connect one end to the panel PC.

Step 2: Connect the other end to the included power supply

2.9 Driver Installation



NOTE:

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

The following drivers can be installed on the system. Each driver is in its own directory on the driver CD:

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

**NOTE:**

When installing the Wireless LAN card driver, make sure to select the **RT3092** folder which indicates the WLAN card model installed on the system.

Chapter

3

BIOS

3.1 Introduction

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

3.1.1 Starting Setup

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

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Del to enter SETUP**” message appears on the screen.

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

3.1.2 Using Setup

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

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

AFL-W15A/17D-GM45 Panel PC

Key	Function
F2 /F3 key	Change color from total three colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 3-1: BIOS Navigation Keys

3.1.3 Getting Help

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

3.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, disconnect the battery inside the system to clear CMOS.

3.1.5 BIOS Menu Bar

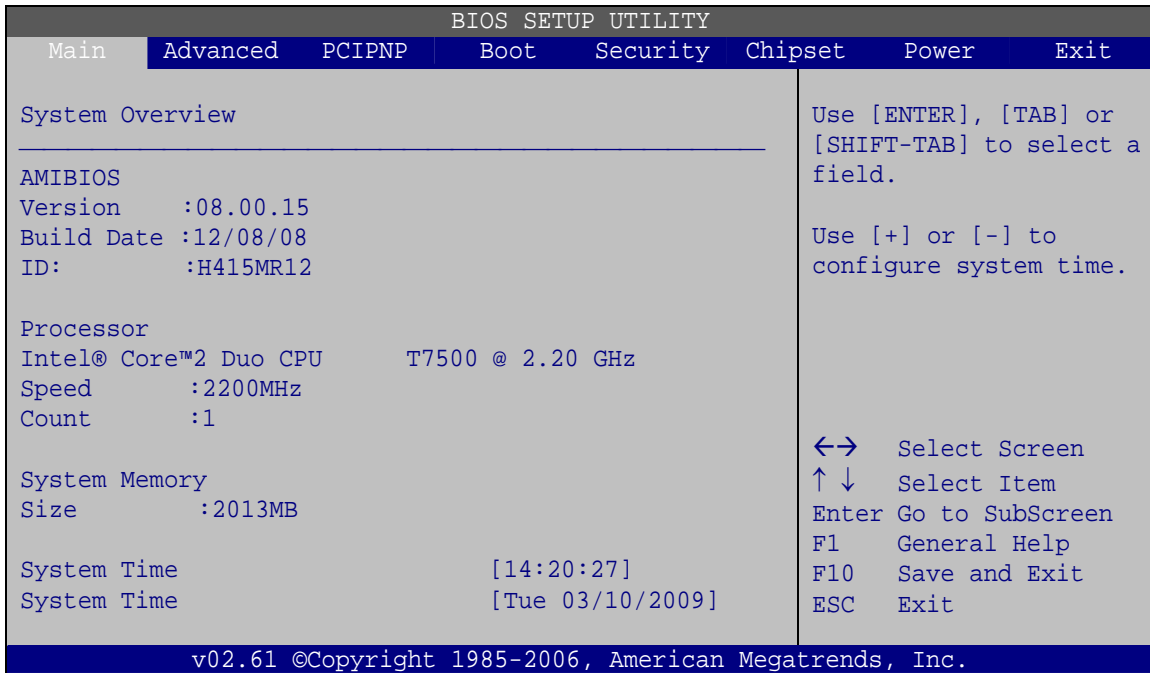
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- PCIPnP – Changes the advanced PCI/PnP Settings
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Chipset – Changes the chipset settings.
- Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

3.2 Main

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



BIOS Menu 1: Main

→ System Overview

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

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

AFL-W15A/17D-GM45 Panel PC

The System Overview field also has two user configurable fields:

→ **System Time [xx:xx:xx]**

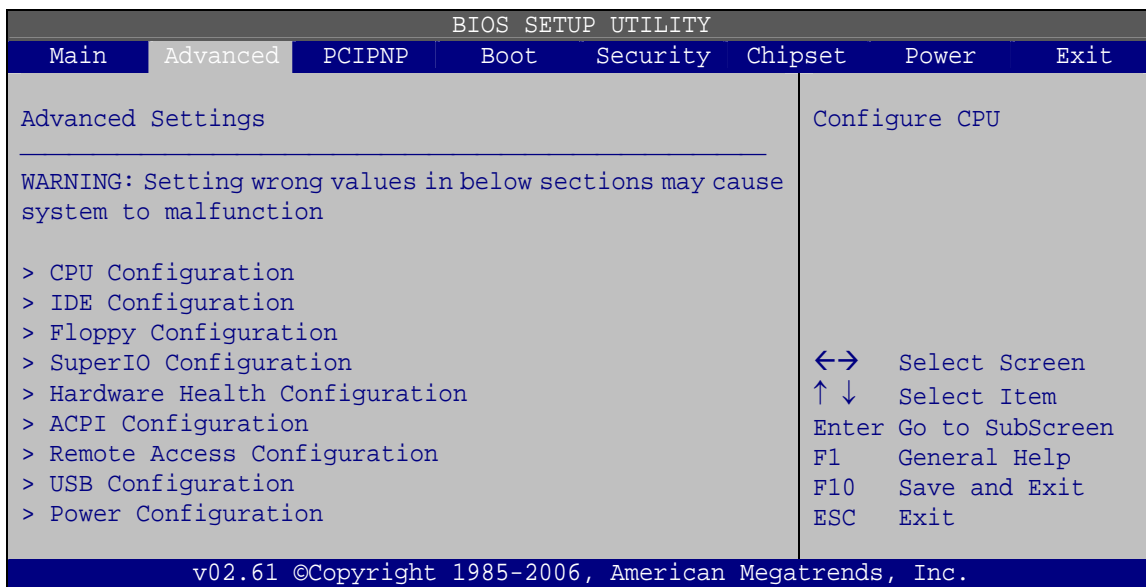
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

→ **System Date [xx/xx/xx]**

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

3.3 Advanced

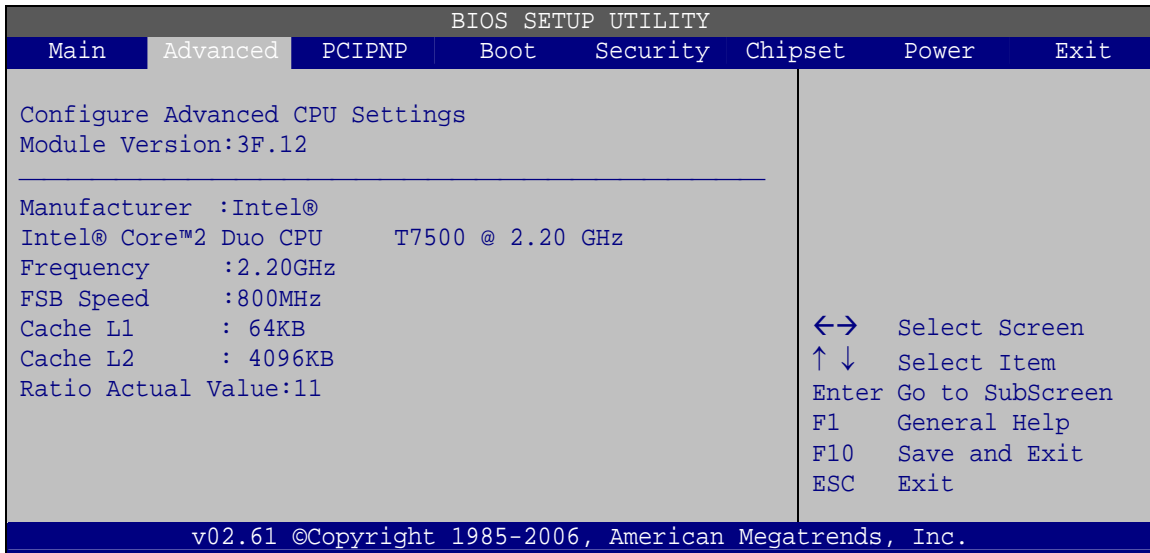
Use the **Advanced** menu (BIOS Menu 2) to configure the CPU and peripheral devices



BIOS Menu 2: Advanced

3.3.1 CPU Configuration

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



BIOS Menu 3: CPU Configuration

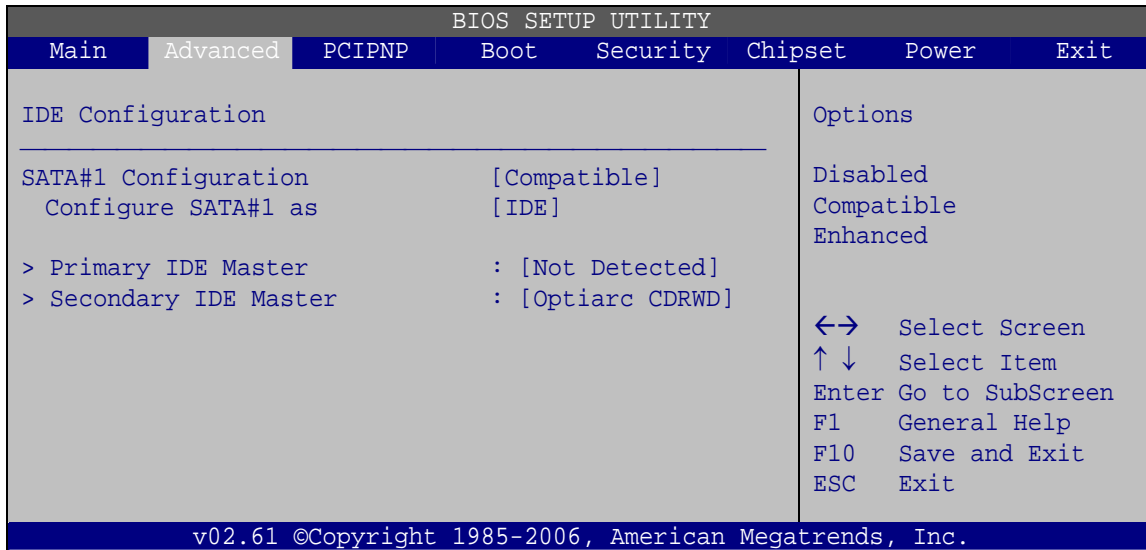
The CPU Configuration menu (BIOS Menu 3) lists the following CPU details:

- Manufacturer: Lists the name of the CPU manufacturer
- Brand String: Lists the brand name of the CPU being used
- Frequency: Lists the CPU processing speed
- FSB Speed: Lists the FSB speed
- Cache L1: Lists the CPU L1 cache size
- Cache L2: Lists the CPU L2 cache size

AFL-W15A/17D-GM45 Panel PC

3.3.2 IDE Configuration

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



BIOS Menu 4: IDE Configuration

→ SATA#1 Configuration [Compatible]

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

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

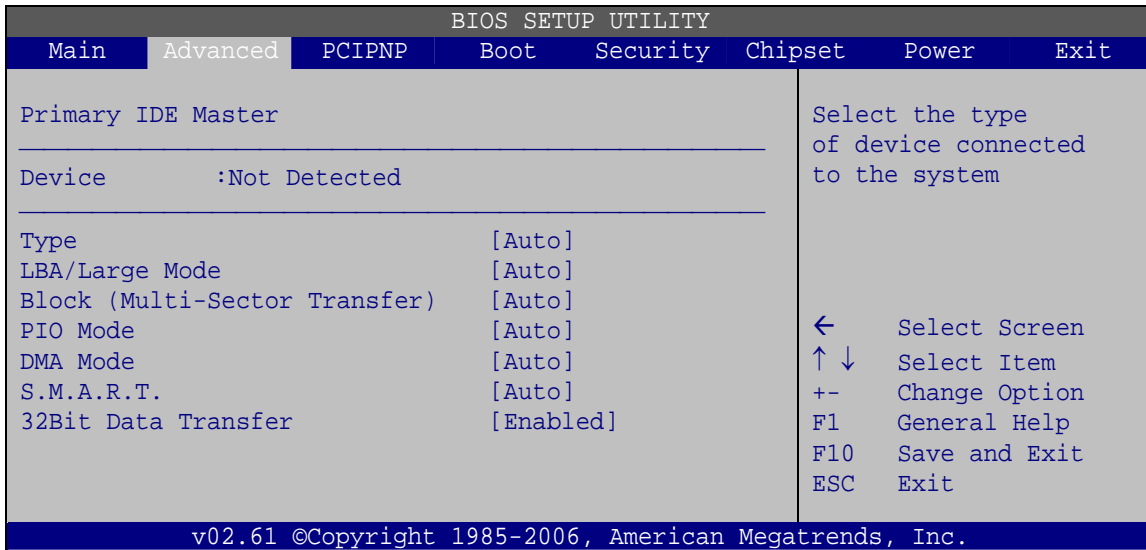
→ Configure SATA as [IDE]

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

- **IDE** **DEFAULT** Configures SATA devices as normal IDE device.
- **RAID** Used when a RAID setup is installed
- **AHCI** Enables advanced SATA drive features

3.3.2.1 IDE Master, IDE Slave

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



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ Auto-Detected Drive Parameters

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

- Device: Lists the device type (e.g. hard disk, CD-ROM etc.)
- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.
- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- PIO Mode: Indicates the PIO mode of the installed device.

AFL-W15A/17D-GM45 Panel PC

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

→ Type [Auto]

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

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

→ LBA/Large Mode [Auto]

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

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

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

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

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

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

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

→ **PIO Mode [Auto]**

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

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

→ **0** PIO mode 0 selected with a maximum transfer rate of 3.3 MB/s

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

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

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

→ **4** PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s
(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

AFL-W15A/17D-GM45 Panel PC

→ DMA Mode [Auto]

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- | | | | |
|---|---------------|----------------|---|
| → | Auto | DEFAULT | BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined. |
| → | SWDMA0 | | Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s |
| → | SWDMA1 | | Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s |
| → | SWDMA2 | | Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s |
| → | MWDMA0 | | Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s |
| → | MWDMA1 | | Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s |
| → | MWDMA2 | | Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s |
| → | UDMA0 | | Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6 MB/s |
| → | UDMA1 | | Ultra DMA mode 1 selected with a maximum data transfer rate of 25 MB/s |
| → | UDMA2 | | Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3 MB/s |
| → | UDMA3 | | Ultra DMA mode 3 selected with a maximum data transfer rate of 44 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.) |
| → | UDMA4 | | Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.) |

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

→ **S.M.A.R.T [Auto]**

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

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

→ **32Bit Data Transfer [Enabled]**

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

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

AFL-W15A/17D-GM45 Panel PC

3.3.3 Hardware Health Configuration

The **Hardware Health Configuration** menu (BIOS Menu 6) shows the operating temperature, fan speeds and system voltages.

BIOS SETUP UTILITY		
Main	Advanced	Exit
Hardware Health Event Monitoring		
CPU_FAN1 Mode Setting		[Automatic Mode]
CPU Temp. Limit of OFF		[000]
CPU Temp. Limit of Start		[020]
CPU_FAN1 Start PWM		[070]
Slope PWM 1		[0.5 PWM]
SYS_FAN1 Mode Setting		[Automatic Mode]
PWM Temp. Limit of OFF		[000]
PWM Temp. Limit of Start		[020]
SYS_FAN1 Start PWM		[070]
Slope PWM 2		[0.5 PWM]
SYS_FAN2 Mode Setting		[Automatic Mode]
PWM Temp. Limit of OFF		[000]
PWM Temp. Limit of Start		[020]
CPU_FAN1 Start PWM		[070]
Slope PWM 1		[0.5 PWM]
CPU Temperature		:47°C/116°F
System Temperature		:55°C/131°F
CPU Fan		:4821 RPM
SYS Fan 1 Speed		:4218 RPM
SYS Fan 2 Speed		:4218 RPM
CPU Core		:1.306 V
+1.05V		:1.564 V
+3.30V		:3.500 V
+5.00V		:4.892 V
+12.0V		:12.342 V
+1.50V		:2.645 V
+1.80V		:1.225 V
		←→ Select Screen
		↑ ↓ Select Item
		Enter Go to SubScreen
		F1 General Help
		F10 Save and Exit
		ESC Exit
v02.61 ©Copyright 1985-2006, American Megatrends, Inc.		

BIOS Menu 6: Hardware Health Configuration

→ Mode Setting [Full On Mode]

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

→ **Full On Mode** **DEFAULT** Fan is on all the time

→ **Automatic mode**

The fan adjusts its speed using these settings:

Temp. Limit of OFF

Temp. Limit of Start

Fan Start PWM

Slope PWM 1

→ **PWM Manual mode**

The fan spins at the speed set in:

Fan PWM control

→ **Temp. Limit of OFF [000]**



WARNING:

CPU failure can result if this value is set too high

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

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

→ **Temp. Limit of Start [020]**



WARNING:

CPU failure can result if this value is set too high

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

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

→ **Start PWM [070]**

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

- PWM Minimum Mode: 0

AFL-W15A/17D-GM45 Panel PC

- PWM Maximum Mode: 127

→ Slope PWM [1 PWM]

A bigger value will increase the fan speed in big amounts. A smaller value will increase the speed more gradually.

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

→ CPU Fan PWM Control [070]

This value specifies the speed of the fan.

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

→ Monitored Values

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

- The following system temperatures are monitored:
 - CPU temperature
 - System temperature
- The following fan speeds are monitored:
 - CPU fan speed
 - SYS fan 1 speed
 - SYS fan 2 speed
- The following core voltages are monitored:
 - CPU core
 - +1.05V

- +3.30V
- +5.00V
- +12.0V
- +1.5V
- +1.8V

3.3.4 AHCI Configuration



NOTE:

Advanced Host Controller Interface (AHCI) is a new programming interface for SATA host controllers. AHCI systems do not have master/slave designation for SATA devices, each device is treated as a master, and hardware-assisted native command queuing.

Use the **AHCI Settings** menu (BIOS Menu 7) to report on the auto-detection of devices connected to the onboard SATA drive connectors.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Power  Exit
-----
AHCI Settings
-----
> AHCI Port0 [Not Detected]
> AHCI Port1 [Not Detected]

While entering setup,
BIOS auto detects the
presence of IDE device.
This displays the status
of auto detection of IDE
devices.

<=>  Select Screen
↑↓   Select Item
Enter Go to SubScreen
F1   General Help
F10  Save and Exit
ESC  Exit

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```

BIOS Menu 7: AHCI Configuration

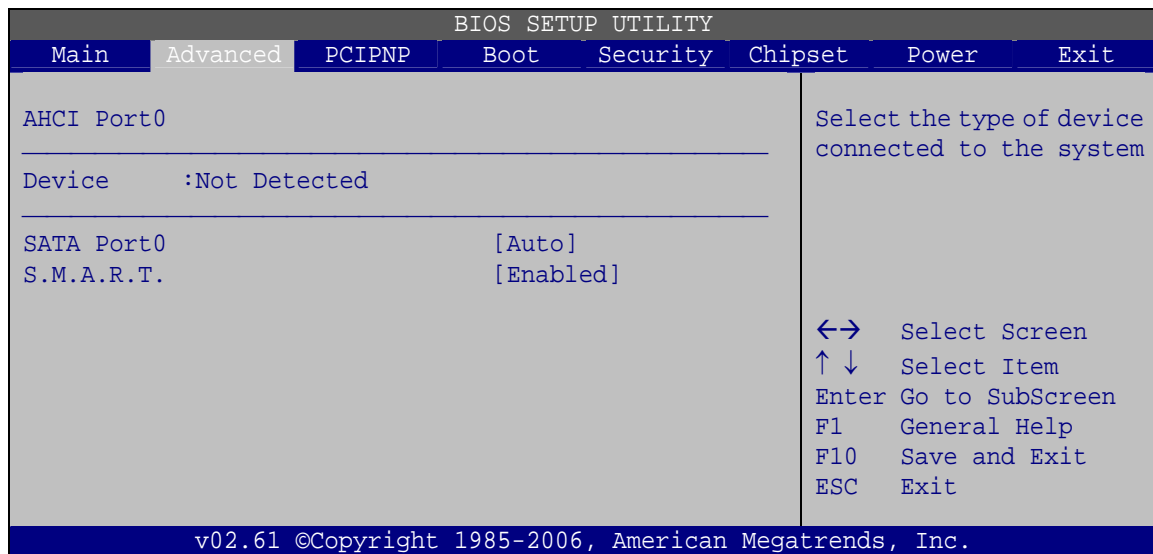
AFL-W15A/17D-GM45 Panel PC

→ AHCI Port n [Not Detected]

Use the **AHCI Port n** BIOS option to check what AHCI (Advanced Host Controller Interface) devices are detected to a specified SATA drive connector. If a device is detected, selecting the BIOS option, e.g. “**AHCI Port 3**” opens a new window.

3.3.4.1 AHCI Port n

Use the **AHCI Port n** configuration menu (BIOS Menu 8) to configure the drive connected to SATA connector n.



BIOS Menu 8: AHCI Port n Configuration Menu

→ SATA Port n [Auto]

Use the **SATA Port n** option to enable the system to auto-detect the type of drive connected to SATA drive connector n.

→ S.M.A.R.T [Enabled]

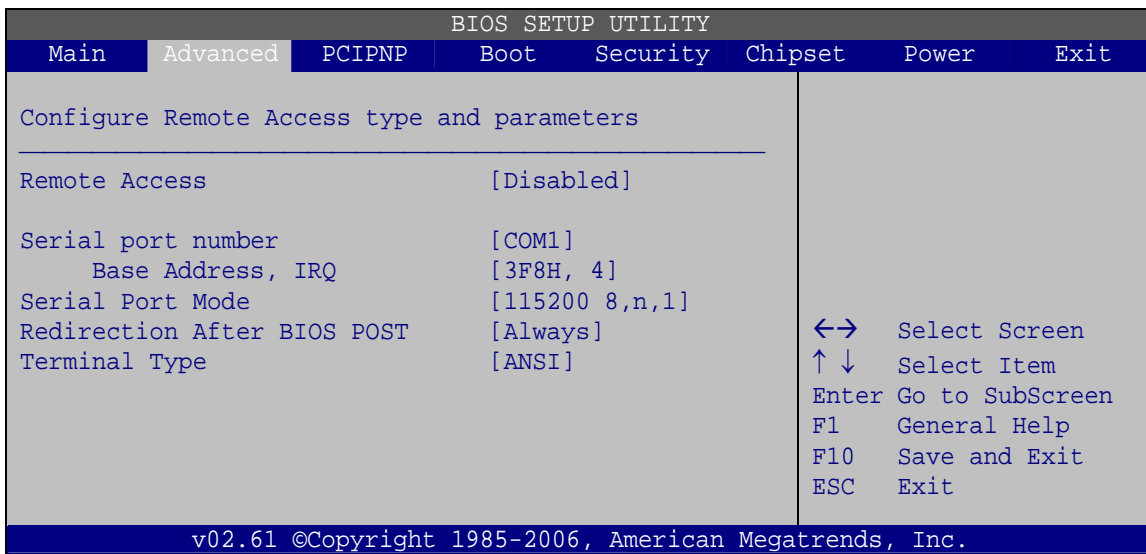
Use the **S.M.A.R.T** option to enable S.M.A.R.T (Self-Monitoring, Analysis, and Reporting Technology) on the drive connected to SATA drive connector n.

- **Enabled** **DEFAULT** S.M.A.R.T is enabled on the drive connected to SATA drive connector n on the system

- ➔ **Disabled** S.M.A.R.T is disabled on the drive connected to SATA drive connector n on the system

3.3.5 Remote Access Configuration

Use the **Remote Access Configuration** menu (BIOS Menu 9) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 9: Remote Access Configuration

- ➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

- ➔ **Disabled** **DEFAULT** Remote access is disabled.

AFL-W15A/17D-GM45 Panel PC

→ Enabled

Remote access configuration options shown below appear:

Serial Port Number

Serial Port Mode

Flow Control

Redirection after BIOS POST

Terminal Type

VT-UTF8 Combo Key Support

These configuration options are discussed below.

→ Serial Port Number [COM1]

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

→ COM1 DEFAULT System is remotely accessed through COM1

→ COM2 System is remotely accessed through COM2

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

→ Base Address, IRQ [2F8h,3]

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

→ Serial Port Mode [115200 8,n,1]

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

**NOTE:**

Identical baud rate setting must be set on the host (a management computer running a terminal software) and the slave

→ Flow Control [None]

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

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

→ Redirection After BIOS POST [Always]

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

- **Disabled** The console is not redirected after POST
- **Boot Loader** Redirection is active during POST and during Boot Loader
- **Always** **DEFAULT** Redirection is always active (Some Oses may not work if set to Always)

→ Terminal Type [ANSI]

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

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

AFL-W15A/17D-GM45 Panel PC

→ VT-UTF8 Combo Key Support [Disabled]

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

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

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

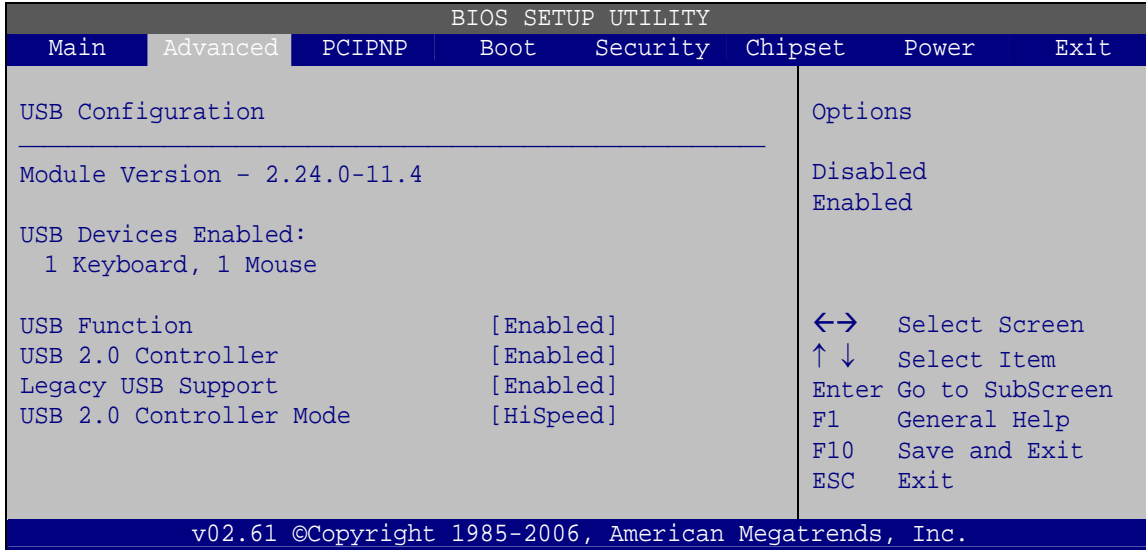
→ Sredir Memory Display Delay [Disabled]

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

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

3.3.6 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 Configuration

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

- Module Version: x.xxxxx.xxxxx

→ USB Devices Enabled

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

→ USB Function [Enabled]

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

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

AFL-W15A/17D-GM45 Panel PC

→ USB 2.0 Controller [Enabled]

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

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

→ USB Function [Enabled]

Use the **USB Function** BIOS option to enable or disable a specified number of USB ports. If only two USB ports are being used, disabling the remaining six USB frees up system resources that can be redirected elsewhere.

- **Disabled** USB function support disabled
- **2 USB Ports** Two USB ports are enabled
- **4 USB Ports** Four USB ports are enabled
- **5 USB Ports** Five USB ports are enabled
- **8 USB Ports** **DEFAULT** Eight USB ports are enabled

→ Legacy USB Support [Enabled]

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

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

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

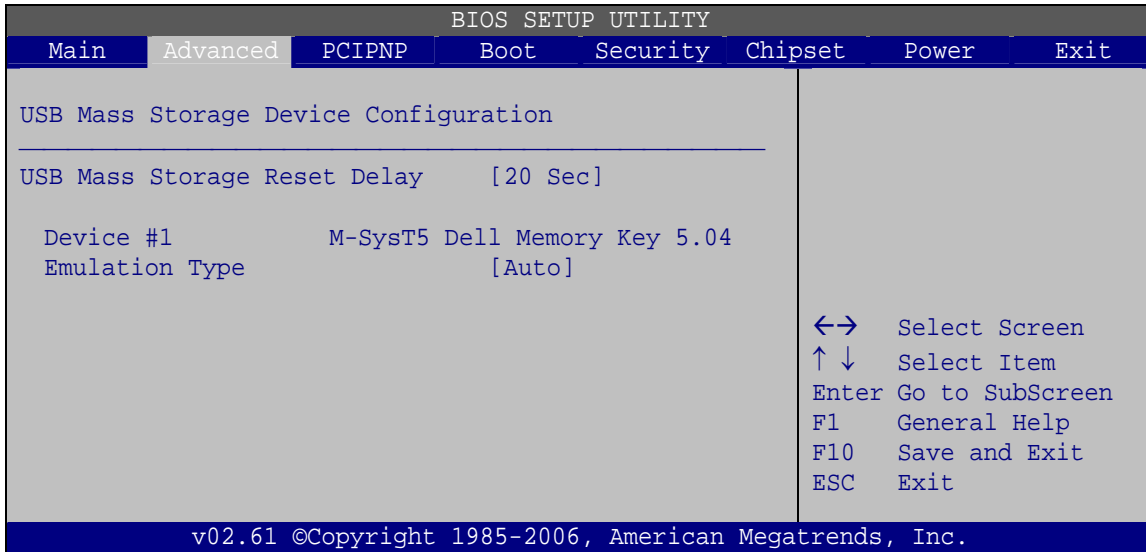
➔ **USB2.0 Controller Mode [HiSpeed]**

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

- ➔ **FullSpeed** The controller is capable of operating at 12 Mb/s
- ➔ **HiSpeed** **DEFAULT** The controller is capable of operating at 480 Mb/s

3.3.6.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (BIOS Menu 11) to configure USB mass storage class devices.



BIOS Menu 11: USB Mass Storage Device Configuration

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

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

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

AFL-W15A/17D-GM45 Panel PC

→ **30 Sec** POST waits 30 seconds for the USB mass storage device after the start unit command.

→ **40 Sec** POST waits 40 seconds for the USB mass storage device after the start unit command.

→ **Device ##**

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

→ **Emulation Type [Auto]**

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

→ **Auto** **DEFAULT** BIOS auto-detects the current USB.

→ **Floppy** The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.

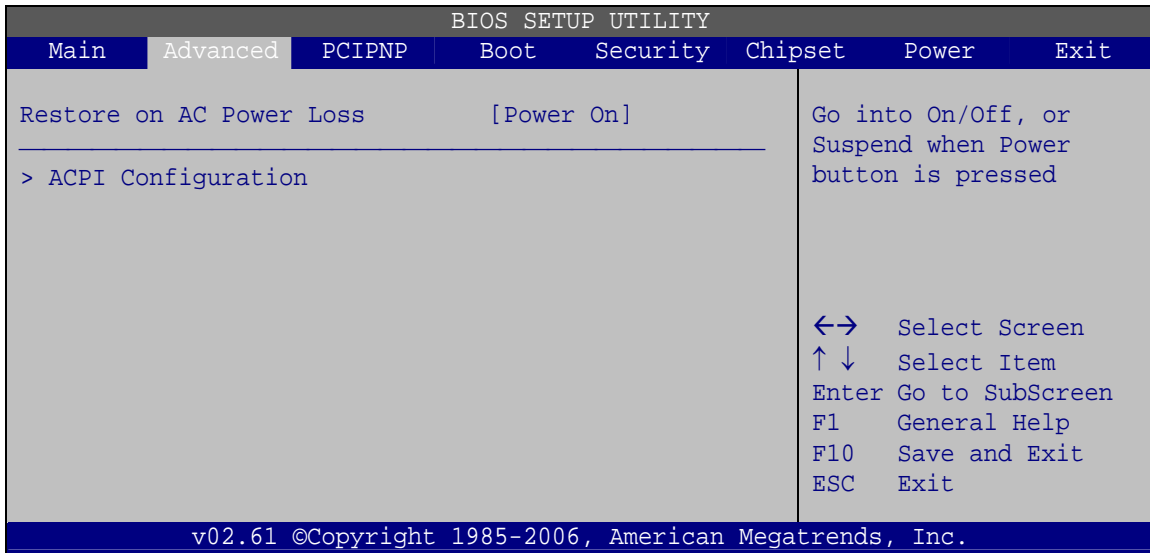
→ **Forced FDD** Allows a hard disk image to be connected as a floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.

→ **Hard Disk** Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.

→ **CDROM** Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this option.

3.3.7 Power Configuration

The **APM Configuration** menu (BIOS Menu 12) allows the advanced power management options to be configured.



BIOS Menu 12: APM Configuration

→ Restore on AC Power Loss [Last State]

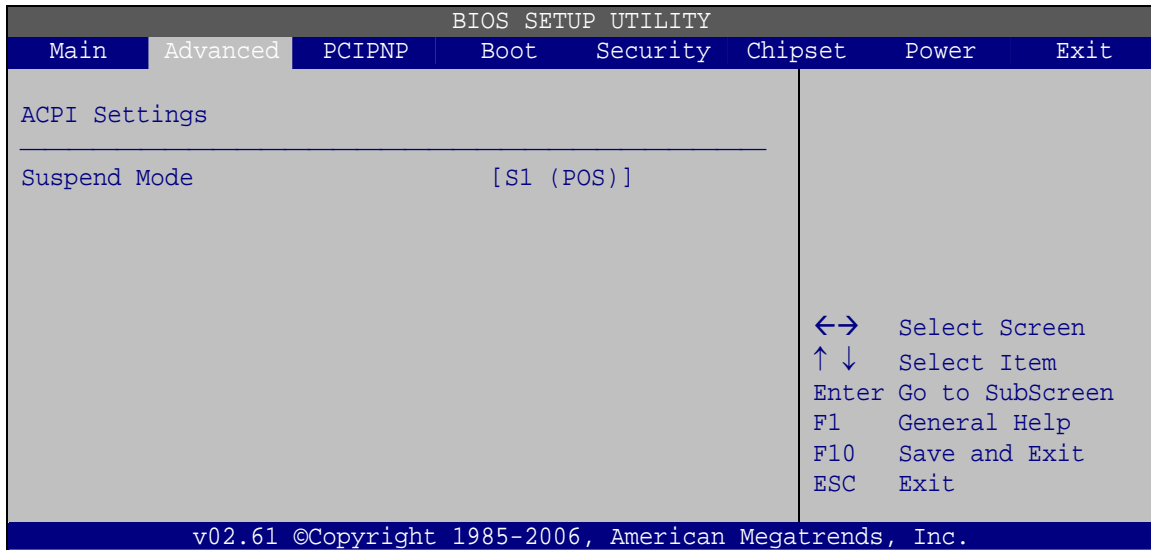
Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

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

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3.3.7.1 ACPI Settings

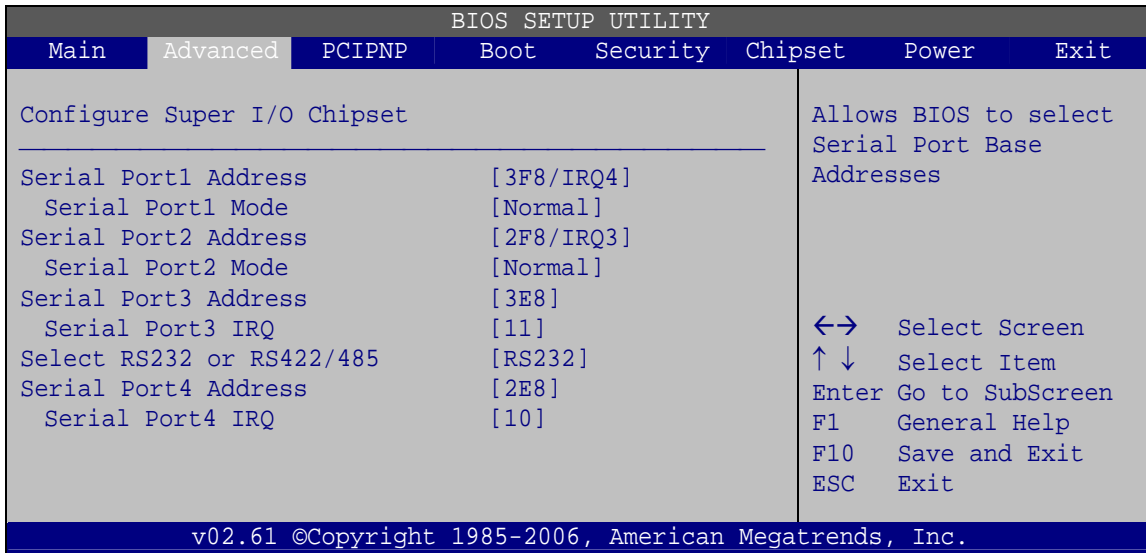
Use the **ACPI Settings** menu (BIOS Menu 13) to select the ACPI state when the system is suspended.

**BIOS Menu 13: ACPI Settings****→ Suspend Mode [S1(POS)]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

3.3.8 Super IO Configuration

Use the **Super IO Configuration** menu (BIOS Menu 14) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 14: Super IO Configuration

→ Serial Port1 Address [3F8/IRQ4]

Selects the serial port base address.

- **Disabled** No base address
- **3F8/IRQ4** **DEFAULT** I/O address 3F8 and interrupt address IRQ4
- **3E8/IRQ4** I/O address 3E8 and interrupt address IRQ4
- **2E8/IRQ3** I/O address 2E8 and interrupt address IRQ3

→ Serial Port1 Mode [Normal]

Selects the mode for the serial port.

- **Normal** **DEFAULT** Normal mode
- **IrDA** IrDA mode
- **ASK IR** ASKIR mode

AFL-W15A/17D-GM45 Panel PC

→ **Serial Port2 Address [2F8/IRQ3]**

Selects the serial port base address.

- **Disabled** No base address
- **2F8/IRQ3** **DEFAULT** I/O address 2F8 and interrupt address IRQ3
- **3E8/IRQ4** I/O address 3E8 and interrupt address IRQ4
- **2E8/IRQ3** I/O address 2E8 and interrupt address IRQ3

→ **Serial Port2 Mode [Normal]**

Selects the mode for the serial port.

- **Normal** **DEFAULT** Normal mode
- **IrDA** IrDA mode
- **ASK IR** ASKIR mode

→ **Serial Port3 Address [3E8]**

Selects the serial port base address.

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

→ **Serial Port3 IRQ [11]**

Selects the serial port interrupt address.

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

→ **Select RS232 or RS422/RS485 [RS/232]**

Select the communication method for Serial Port 3.

- **RS232** **DEFAULT** Serial Port 2 signaling mode is RS-232
- **RS485** Serial Port 2 signaling mode is RS-485
- **RS422** Serial Port 2 signaling mode is RS-422

→ **Serial Port4 Address [2E8]**

Selects the serial port base address.

- **Disabled** No base address
- **2E8** **DEFAULT** I/O address 2E8

→ **Serial Port4 IRQ [10]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- **10** **DEFAULT** IRQ address 10

3.4 PCI/PnP

Use the **PCI/PnP** menu (BIOS Menu 15) to configure advanced PCI and PnP settings.



WARNING!

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

AFL-W15A/17D-GM45 Panel PC

BIOS SETUP UTILITY							
Main	Advanced	PCIPNP	Boot	Security	Chipset	Power	Exit
Advanced PCI/PnP Settings						Available: Specified IRQ is available to be use the PCI/PnP devices	
IRQ3						[Reserved]	
IRQ4						[Reserved]	
IRQ5						[Available]	
IRQ7						[Available]	
IRQ9						[Available]	
IRQ10						[Reserved]	
IRQ11						[Reserved]	
IRQ14						[Available]	
IRQ15						[Available]	
DMA Channel 0						[Available]	
DMA Channel 1						[Available]	
DMA Channel 3						[Available]	
DMA Channel 5						[Available]	
DMA Channel 6						[Available]	
DMA Channel 7						[Available]	
Reserved Memory Size						[Disabled]	
						←→ Select Screen ↑ ↓ Select Item Enter Go to SubScreen F1 General Help F10 Save and Exit ESC Exit	
v02.61 ©Copyright 1985-2006, American Megatrends, Inc.							

BIOS Menu 15: PCI/PnP Configuration

→ IRQ# [Available]

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

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

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10

- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

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

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

Available DMA Channels are:

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

➔ **Reserved Memory Size [Disabled]**

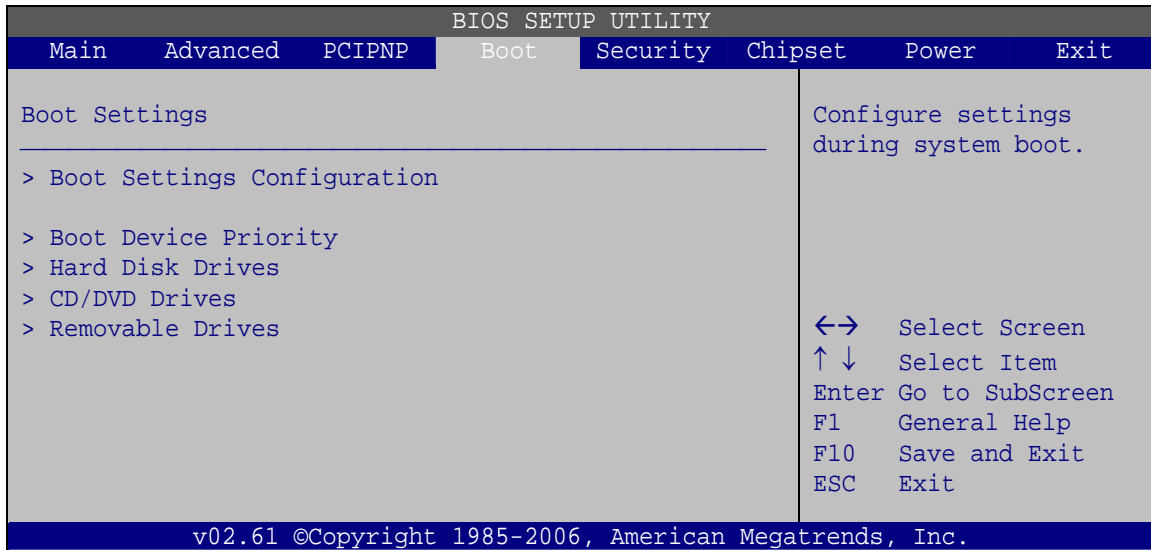
Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

- ➔ **Disabled** **DEFAULT** No memory block reserved for legacy ISA devices
- ➔ **16K** 16 KB reserved for legacy ISA devices
- ➔ **32K** 32 KB reserved for legacy ISA devices
- ➔ **64K** 64 KB reserved for legacy ISA devices

AFL-W15A/17D-GM45 Panel PC

3.5 Boot

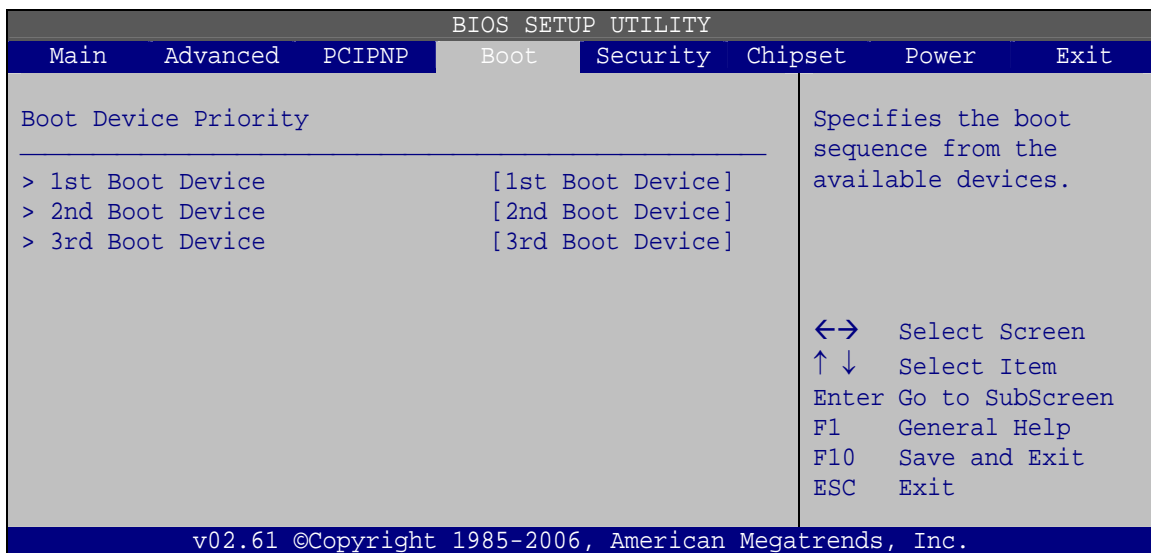
Use the **Boot** menu (BIOS Menu 16) to configure system boot options.



BIOS Menu 16: Boot

3.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (BIOS Menu 17) to configure advanced system boot options.



BIOS Menu 17: Boot Settings Configuration

→ **Quick Boot [Enabled]**

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

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

→ **Boot From LAN Support [Disabled]**

Use the **BOOT From LAN Support** option to enable the system to be booted from a remote system.

- **Disabled DEFAULT** Cannot be booted from a remote system through the LAN
- **Enabled DEFAULT** Can be booted from a remote system through the LAN

→ **Quiet Boot [Disabled]**

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

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

→ **AddOn ROM Display Mode [Force BIOS]**

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

- **Force BIOS DEFAULT** The system forces third party BIOS to display during system boot.
- **Keep Current** The system displays normal information during system boot.

AFL-W15A/17D-GM45 Panel PC

→ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

- **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
- **On DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

→ **Boot From LAN Support (82573L) [Disabled]**

Use the **BOOT From LAN Support (82573L)** option to enable the Intel® 82573L PCIe GbE controller to boot the system.

- **Disabled** Cannot be booted from a remote system through the Intel® 82573L PCIe GbE controller
- **Enabled DEFAULT** Can be booted from a remote system through the Intel® 82573L PCIe GbE controller

→ **Boot From IDE Controller [Disabled]**

Use the **Boot From IDE Controller** option to enable the IDE controller to boot the system.

- **Disabled** Cannot be booted from the IDE controller
- **Enabled DEFAULT** Can be booted from the IDE controller

→ Display System Configuration [Enabled]

Use the **Display System Configuration** option to select whether or not system configuration information is shown on screen after POST.

→ Disabled System configuration information is not shown on screen after POST.

→ Enabled **DEFAULT** System configuration information is shown on screen after POST.

→ PS/2 Mouse Support [Enabled]

Use the **PS/2 Mouse Support** option adjusts PS/2 mouse support capabilities.

→ Disabled PS/2 mouse support is disabled and prevented from using system resources.

→ Enabled **DEFAULT** Allows the system to use a PS/2 mouse.

→ Auto The system auto-adjusts PS/2 mouse support.

→ Wait For 'F1' If Error [Enabled]

Use the **Wait For 'F1' if Error** option to specify how the system responds when the system detects an error on boot up.

→ Disabled If there is an error when booting up, the system does not wait for user intervention but continues to boot up in the operating system. Only use this setting if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached.

→ Enabled **DEFAULT** If there is an error during boot up, the system waits for a user to press "F1" and enter the BIOS to rectify the problem. The BIOS can then be adjusted to the correct settings.

AFL-W15A/17D-GM45 Panel PC

→ Hit 'DEL' Message Display [Enabled]

Use the **Hit "DEL" Message Display** option to specify whether the instruction to hit the delete button to enter BIOS during POST appears or not.

- **Disabled** No message displayed during POST
- **Enabled** **DEFAULT** Displays "**Press DEL to run Setup**" message in POST

→ Interrupt 19 Capture [Disabled]

Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

- **Disabled** **DEFAULT** Does not allow optional ROM to trap interrupt 19
- **Enabled** Allows optional ROM to trap interrupt 19

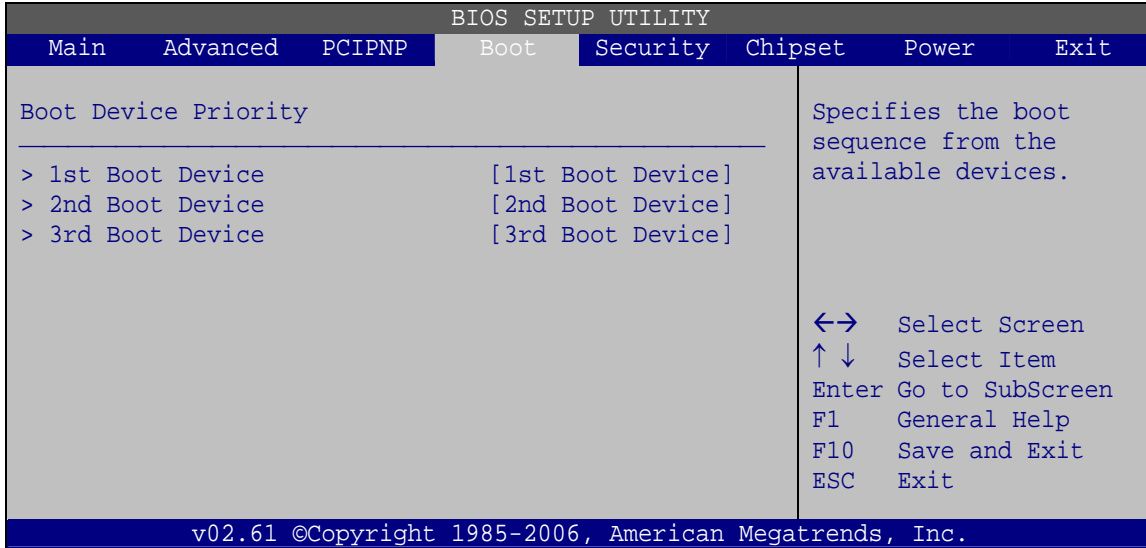
→ Spread Spectrum Mode [Disabled]

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

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

3.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (BIOS Menu 18) to specify the boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

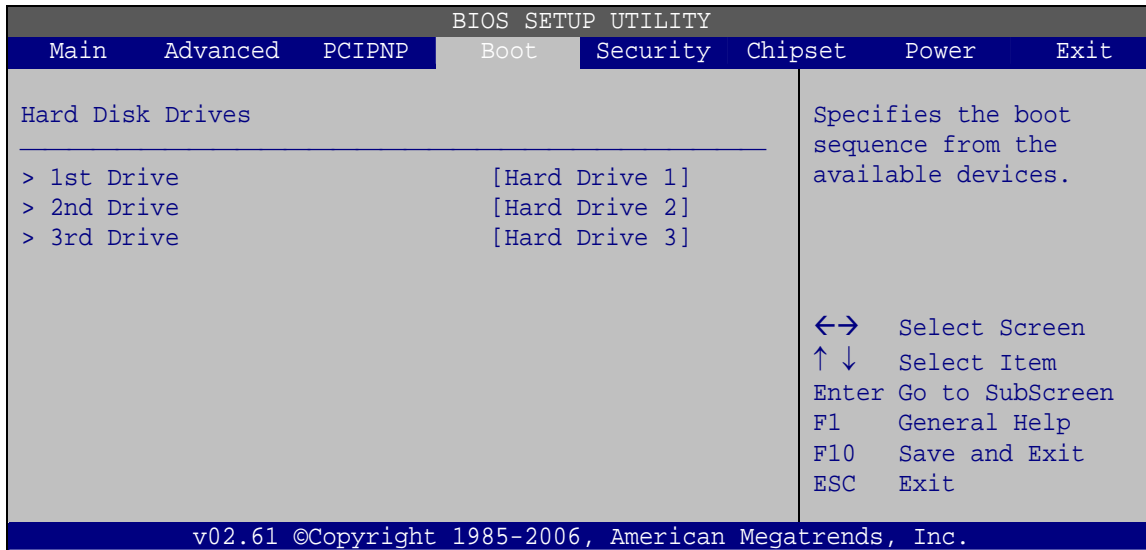


BIOS Menu 18: Boot Device Priority Settings

AFL-W15A/17D-GM45 Panel PC

3.5.3 Hard Disk Drives

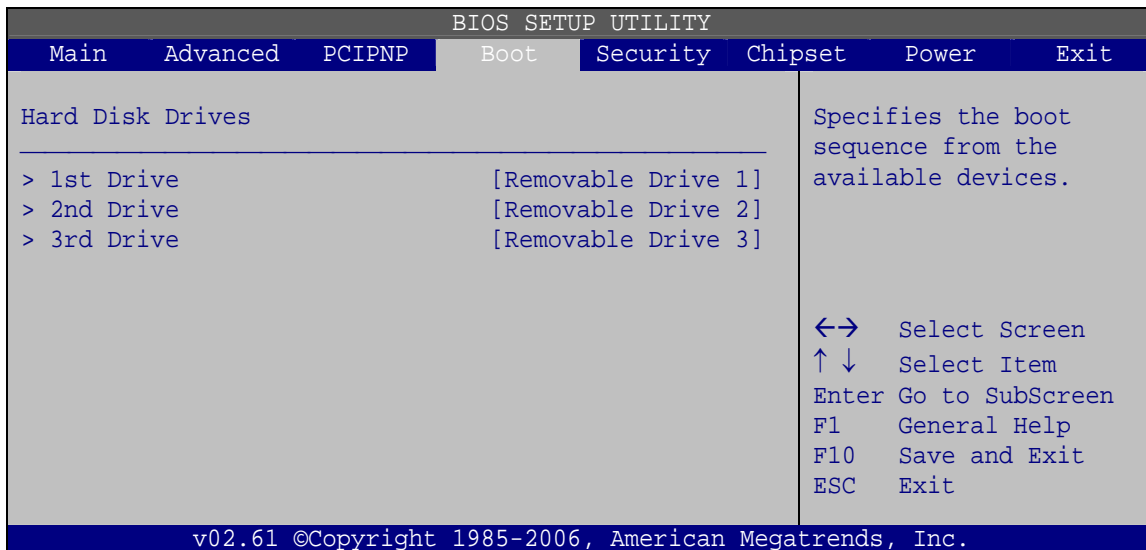
Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. Only installed hard drives are shown.



BIOS Menu 19: Hard Disk Drives

3.5.4 Removable Drives

Use the **Removable Drives** menu (BIOS Menu 20) to specify the boot sequence of the removable drives. Only connected drives are shown.



BIOS Menu 20: Removable Drives

3.5.5 CD/DVD Drives

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

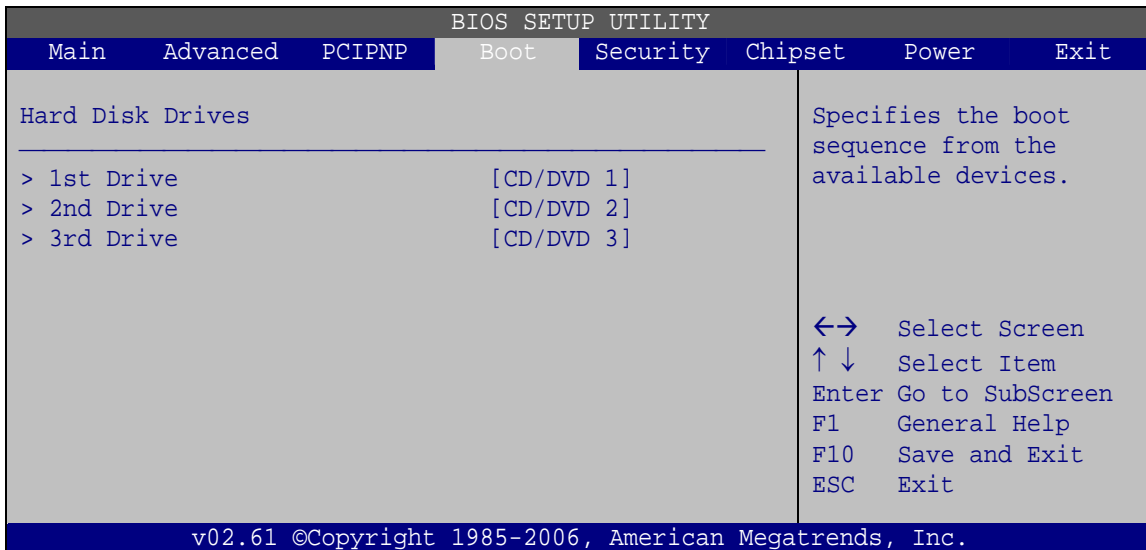
- 1st Drive [CD/DVD: PM-(part ID)]
- 2nd Drive [HDD: PS-(part ID)]
- 3rd Drive [HDD: SM-(part ID)]
- 4th Drive [HDD: SM-(part ID)]



NOTE:

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

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

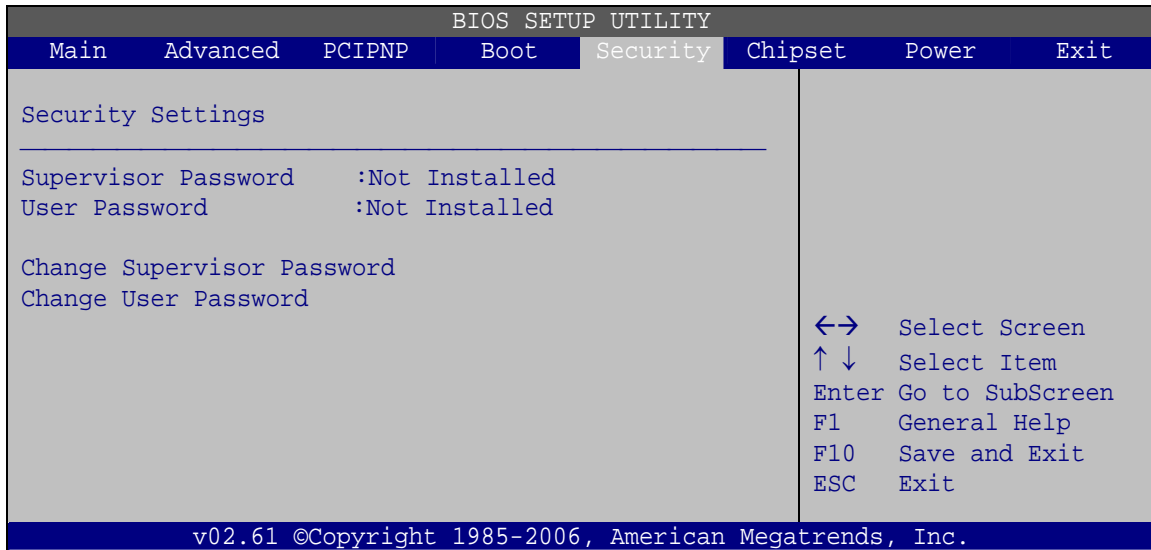


BIOS Menu 21: CD/DVD Drives

AFL-W15A/17D-GM45 Panel PC

3.6 Security

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



BIOS Menu 22: Security

→ Change Supervisor Password

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

→ Change User Password

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

→ Clear User Password

Use the **Clear User Password** to clear a user's password. The default for this option is **Not Installed**. If a user password must be cleared, use this option.

→ **Boot Sector Virus Protection [Disabled]**

Use the **Boot Sector Virus Protection** to enable or disable boot sector protection.

- **Disabled** **DEFAULT** Disables the boot sector virus protection
- **Enabled** Enables the boot sector virus protection

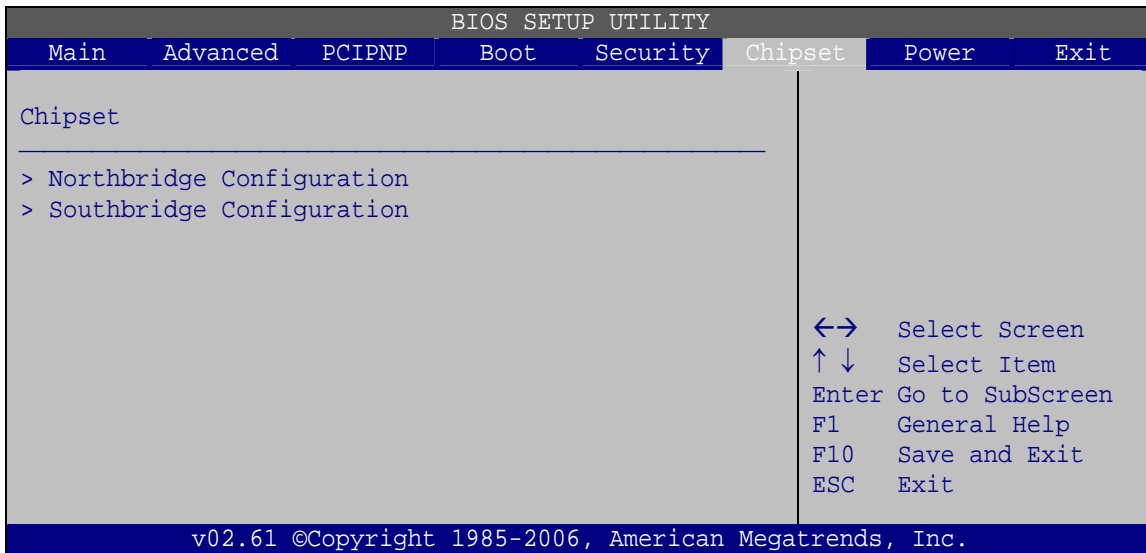
3.7 Chipset

Use the **Chipset** menu (BIOS Menu 23) to access the Northbridge and Southbridge configuration menus



WARNING!

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

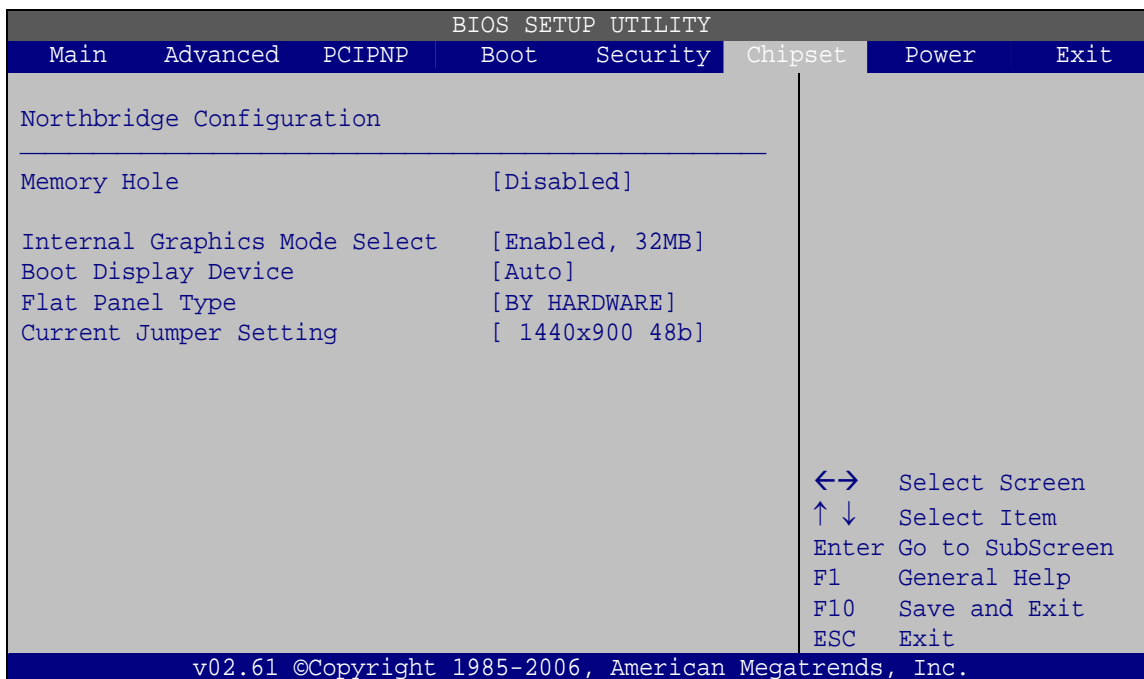


BIOS Menu 23: Chipset

AFL-W15A/17D-GM45 Panel PC

3.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (BIOS Menu 24) to configure the Northbridge chipset.



BIOS Menu 24:Northbridge Chipset Configuration

→ Memory Hole [Disabled]

Use the **Memory Hole** option to reserve memory space between 15 MB and 16 MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

- **Disabled** **DEFAULT** Memory is not reserved for ISA expansion cards
- **15 MB–16 MB** Between 15 MB and 16 MB of memory is reserved for ISA expansion cards

→ Internal Graphics Mode Select [Enable, 32 MB]

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

- **Disable**
- **Enable, 32 MB** **DEFAULT** For computers with at least 256 MB memory
- **Enable, 64 MB** For computers with at least 512 MB memory
- **Enable, 128 MB** For computer with at least 1.0 GB memory

→ **Boot Display Device [Auto]**

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

- Auto **DEFAULT**
- CRT
- HDMI
- LVDS

→ **Flat Panel Type**

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

- 640x480 18b
- 800x600 18b
- 1024x768 18b
- 1024x768 24b
- 1024x768 48b
- 1280x1024 48b
- 1600x1200 48b
- 1280x768 18b
- 1280x800 18b
- 1366x768 18b
- 1280x800 18b
- 1366x768 24b
- 1440x900 36b
- 1440x900 48b
- 1680x1050 48b

AFL-W15A/17D-GM45 Panel PC

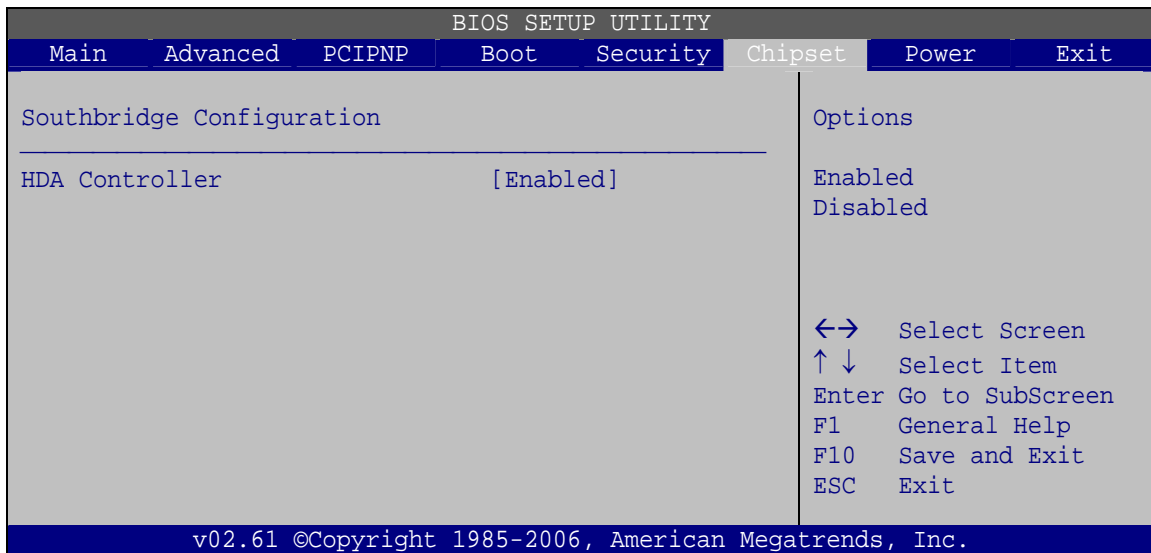
- 1920x1080 48b
- 1920x1200 48b
- BY HARDWARE **DEFAULT**

➔ Current Jumper Setting

Shows current value of the hardware jumper setting for the LVDS resolution. This is the value used when "BY HARDWARE" is selected in the setting above.

3.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (BIOS Menu 25) the Southbridge chipset to be configured.



BIOS Menu 25:Southbridge Chipset Configuration

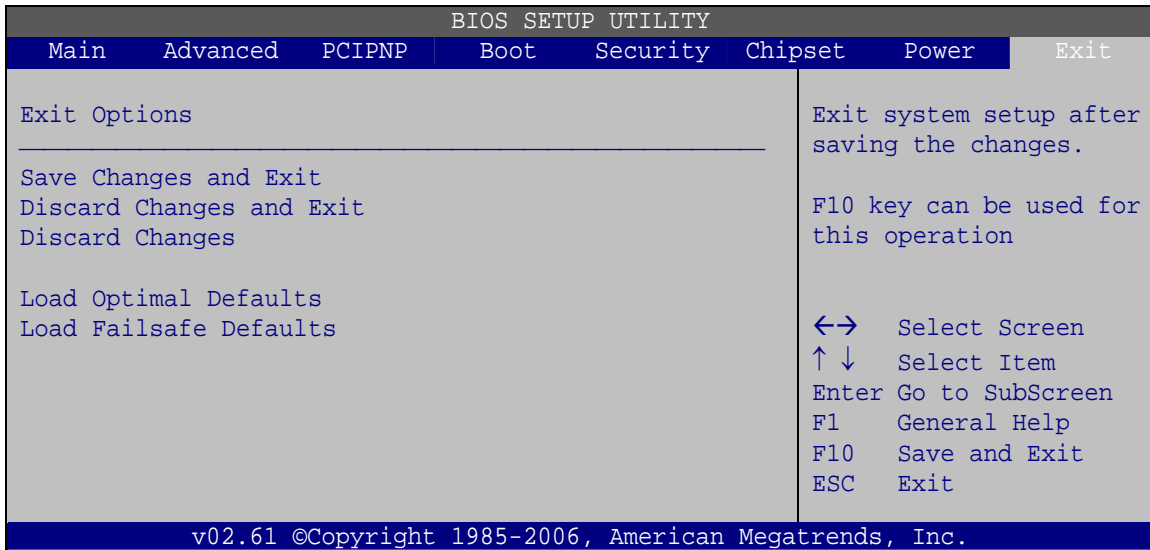
➔ HDA Controller [Enabled]

Use the **HDA Controller** option to enable or disable High Definition audio codec.

- ➔ **Disabled** Audio is disabled
- ➔ **Enabled** **DEFAULT** High Definition Audio is enabled

3.8 Exit

Use the **Exit** menu (BIOS Menu 26) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 26:Exit

→ Save Changes and Exit

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

→ Discard Changes and Exit

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

→ Discard Changes

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

→ Load Optimal Defaults

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

AFL-W15A/17D-GM45 Panel PC

→ Load Failsafe Defaults

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

4

System Maintenance

AFL-W15A/17D-GM45 Panel PC

4.1 System Maintenance Introduction

If the components of the AFL-W15A/17D-GM45 fail they must be replaced, such as the wireless LAN module or the motherboard. Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions and jumper settings for the AFL-W15A/17D-GM45 are described below.

4.2 Motherboard Replacement

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

4.3 Cover Removal



WARNING!

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



WARNING!

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

To replace any of the following components,

- Memory module
- Wireless LAN module
- Inverter

The back cover of the AFL-W15A/17D-GM45 must be removed. To remove the back cover, loosen the four silver screws, slide the cover down and then lift to remove.

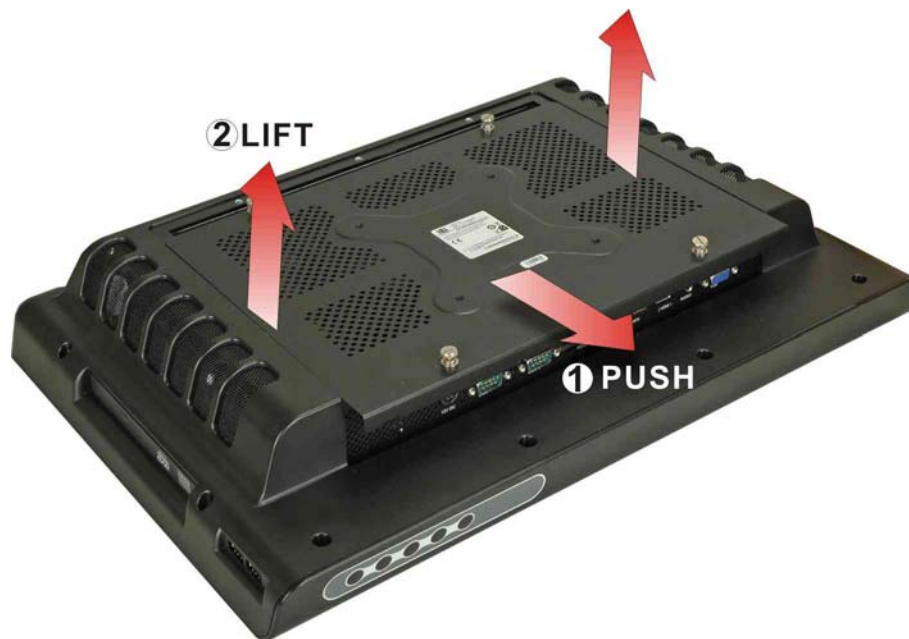


Figure 4-1: Back Cover Retention Screws

4.4 Memory Module Replacement

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

- Step 1:** Remove the back cover. See **Section 4.3** above.
- Step 2:** Locate the memory module on the motherboard of the flat panel PC
- Step 3:** Remove the memory module by pulling both the spring retainer clips outward from the socket.
- Step 4:** Grasp the memory module by the edges and carefully pull it out of the socket.
- Step 5:** Install the new memory module by inserting it at an angle, then pushing down until the clips snap into place (Figure 4-2).

AFL-W15A/17D-GM45 Panel PC

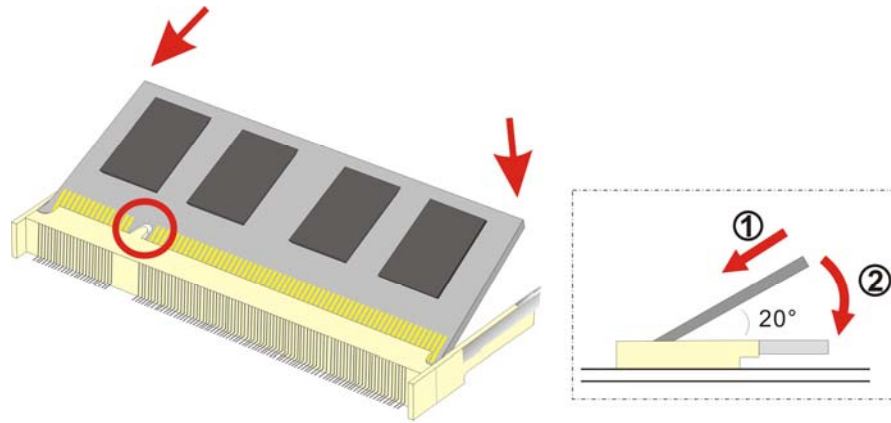


Figure 4-2: DDR SO-DIMM Module Installation

Appendix

A

Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL-W15A/17D-GM45.

A.1 Safety Precautions

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

A.1.1 General Safety Precautions

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

- **Follow the electrostatic precautions** outlined below whenever the AFL-W15A/17D-GM45 is opened.
- **Make sure the power is turned off and the power cord is disconnected** whenever the AFL-W15A/17D-GM45 is being installed, moved or modified.
- **Do not apply voltage levels that exceed the specified voltage range.** Doing so may cause fire and/or an electrical shock.
- **Electric shocks can occur** if the AFL-W15A/17D-GM45 chassis is opened when the AFL-W15A/17D-GM45 is running.
- **Do not drop or insert any objects** into the ventilation openings of the AFL-W15A/17D-GM45.
- **If considerable amounts of dust, water, or fluids enter the AFL-W15A/17D-GM45**, turn off the power supply immediately, unplug the power cord, and contact the AFL-W15A/17D-GM45 vendor.
- **DO NOT** do the following:
 - **DO NOT** drop the AFL-W15A/17D-GM45 against a hard surface.
 - **DO NOT** strike or exert excessive force onto the LCD panel.
 - **DO NOT** touch any of the LCD panels with a sharp object
 - **DO NOT** use the AFL-W15A/17D-GM45 in a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the installation of the AFL-W15A/17D-GM45 may result in permanent damage to the AFL-W15A/17D-GM45 and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-W15A/17D-GM45. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-W15A/17D-GM45 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.

AFL-W15A/17D-GM45 Panel PC

A.1.3 Product Disposal

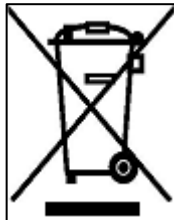


CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords.

When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

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

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL-W15A/17D-GM45, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL-W15A/17D-GM45, please read the details below.

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

A.2.2 Cleaning Tools

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

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

Appendix

B

BIOS Options

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

System Overview	28
System Time [xx:xx:xx]	29
System Date [xx/xx/xx]	29
SATA#1 Configuration [Compatible]	31
Configure SATA as [IDE]	31
Auto-Detected Drive Parameters	32
Type [Auto]	33
LBA/Large Mode [Auto]	33
Block (Multi Sector Transfer) [Auto]	34
PIO Mode [Auto]	34
DMA Mode [Auto]	35
S.M.A.R.T [Auto]	36
32Bit Data Transfer [Enabled]	36
Mode Setting [Full On Mode]	37
Temp. Limit of OFF [000]	38
Temp. Limit of Start [020]	38
Start PWM [070]	38
Slope PWM [1 PWM]	39
CPU Fan PWM Control [070]	39
Monitored Values	39
AHCI Port n [Not Detected]	41
SATA Port n [Auto]	41
S.M.A.R.T [Enabled]	41
Remote Access [Disabled]	42
Serial Port Number [COM1]	43
Base Address, IRQ [2F8h,3]	43
Serial Port Mode [115200 8,n,1]	43
Flow Control [None]	44
Redirection After BIOS POST [Always]	44
Terminal Type [ANSI]	44
VT-UTF8 Combo Key Support [Disabled]	45
Sredir Memory Display Delay [Disabled]	45
USB Configuration	46

AFL-W15A/17D-GM45 Panel PC

USB Devices Enabled	46
USB Function [Enabled].....	46
USB 2.0 Controller [Enabled].....	47
USB Function [Enabled].....	47
Legacy USB Support [Enabled].....	47
USB2.0 Controller Mode [HiSpeed].....	48
USB Mass Storage Reset Delay [20 Sec]	48
Device ##.....	49
Emulation Type [Auto].....	49
Restore on AC Power Loss [Last State]	50
Suspend Mode [S1(POS)].....	51
Serial Port1 Address [3F8/IRQ4]	52
Serial Port1 Mode [Normal].....	52
Serial Port2 Address [2F8/IRQ3]	53
Serial Port2 Mode [Normal].....	53
Serial Port3 Address [3E8].....	53
Serial Port3 IRQ [11]	53
Select RS232 or RS422/RS485 [RS/232]	54
Serial Port4 Address [2E8].....	54
Serial Port4 IRQ [10]	54
IRQ# [Available]	55
DMA Channel# [Available]	56
Reserved Memory Size [Disabled]	56
Quick Boot [Enabled]	58
Boot From LAN Support [Disabled]	58
Quiet Boot [Disabled]	58
AddOn ROM Display Mode [Force BIOS]	58
Bootup Num-Lock [On]	59
Boot From LAN Support (82573L) [Disabled]	59
Boot From IDE Controller [Disabled]	59
Display System Configuration [Enabled]	60
PS/2 Mouse Support [Enabled].....	60
Wait For 'F1' If Error [Enabled].....	60
Hit 'DEL' Message Display [Enabled]	61
Interrupt 19 Capture [Disabled]	61

Spread Spectrum Mode [Disabled]	61
Change Supervisor Password	65
Change User Password	65
Clear User Password	65
Boot Sector Virus Protection [Disabled]	66
Memory Hole [Disabled]	67
Internal Graphics Mode Select [Enable, 32 MB]	67
Boot Display Device [Auto]	68
Flat Panel Type	68
Current Jumper Setting	69
HDA Controller [Enabled]	69
Save Changes and Exit	70
Discard Changes and Exit	70
Discard Changes	70
Load Optimal Defaults	70
Load Failsafe Defaults	71

Appendix

C

One Key Recovery

C.1 One Key Recovery Introduction

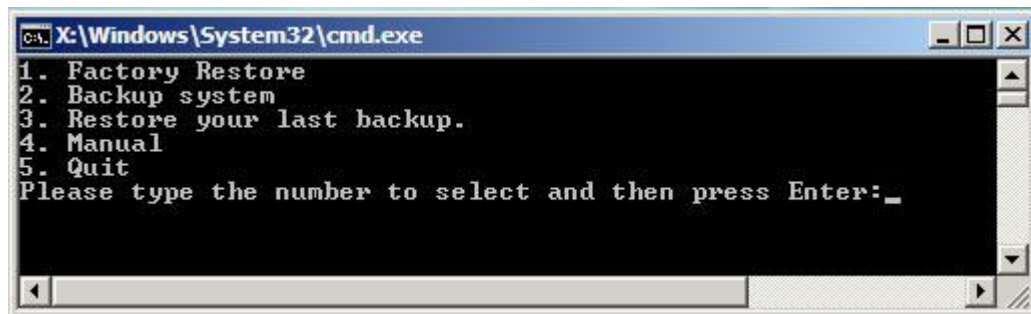
The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. This tool provides quick and easy shortcuts for creating a backup and reverting to that backup or reverting to the factory default settings.



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.



```
C:\X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter: _
```

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-up recovery partition (see **Section C.2.4**)
5. Create factory default image (see **Section C.2.5**)

AFL-W15A/17D-GM45 Panel PC

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:

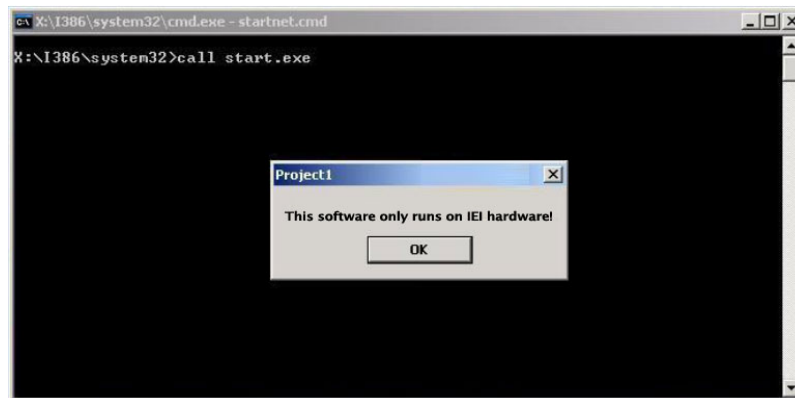
The initial setup procedures for Linux system are described in **Section C.3**.

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 system (OS). The supported OS versions are listed below.

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



NOTE:

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

AFL-W15A/17D-GM45 Panel PC

- 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.

AFL-W15A/17D-GM45 Panel PC

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!

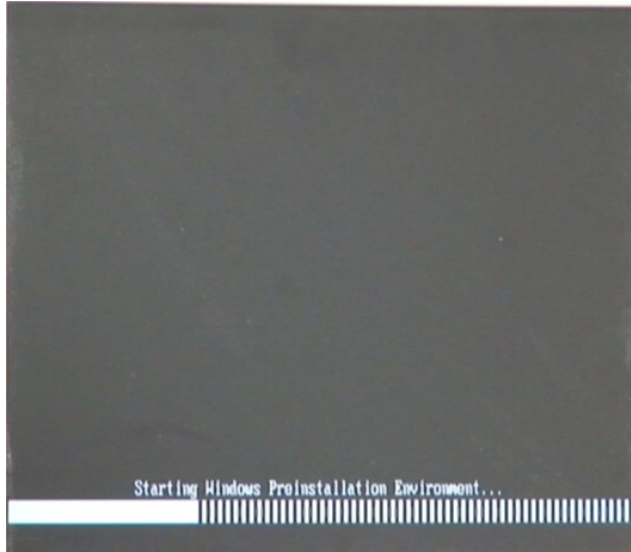


Figure C-2: Launching the Recovery Tool

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

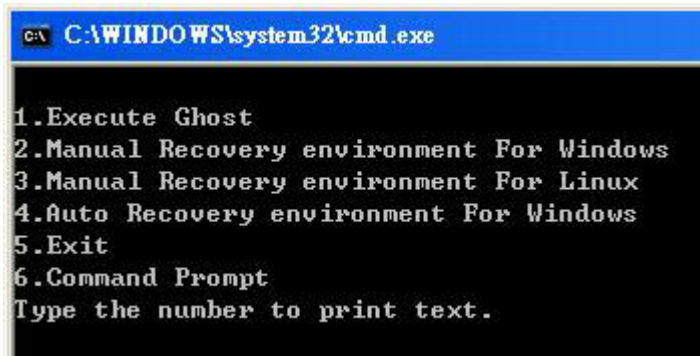
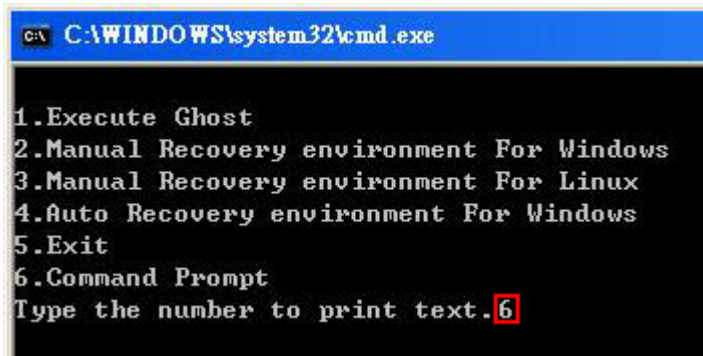


Figure C-3: Recovery Tool Setup Menu

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



```
C:\WINDOWS\system32\cmd.exe

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

Figure C-4: Command Mode

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
```


AFL-W15A/17D-GM45 Panel PC

```

X:\I386\SYSTEM32\CMD.EXE
X:\I386\SYSTEM32>diskpart → Starts the Microsoft disk partitioning tool.
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> list vol → Show partition information

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

DISKPART> sel disk 0 → Select a disk
Disk 0 is now the selected disk.

DISKPART> create part pri size=2000 → Create partition 1 and assign a size.
This partition is for OS installation.
DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=N → Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.

DISKPART> create part pri size=1800 → Create partition 2 and assign a size.
This partition is for recovery images.
DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=F → Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.

DISKPART> exit → Exit diskpart
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y → Format partition 1 (N) as NTFS format.
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
2048254 KB total disk space.
2035620 KB are available.

X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y → Formate partition 2 (F) as NTFS formate and
name it as "Recovery".
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
1847474 KB total disk space.
1835860 KB are available.

X:\I386\SYSTEM32>exit → Exit Windows PE
  
```

Figure C-5: Partition Creation Commands

**NOTE:**

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

```
X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> sel disk 0
Disk 0 is now the selected disk.

DISKPART> list part

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

DISKPART> exit
```

Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build the Recovery Partition.

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.

AFL-W15A/17D-GM45 Panel PC

C.2.4 Build-up 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!

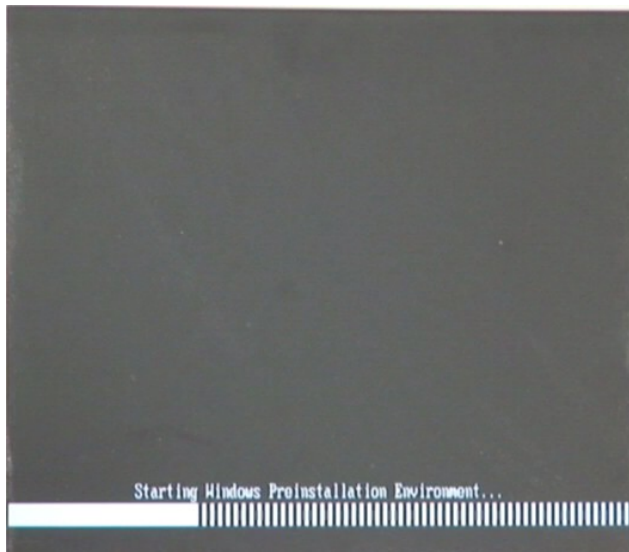


Figure C-6: Launching the Recovery Tool

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

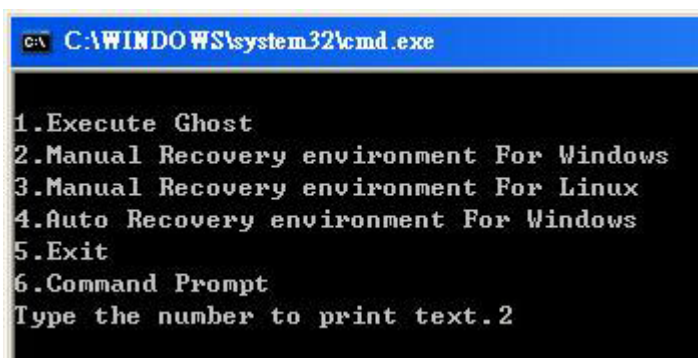


Figure C-7: Manual Recovery Environment for Windows

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.

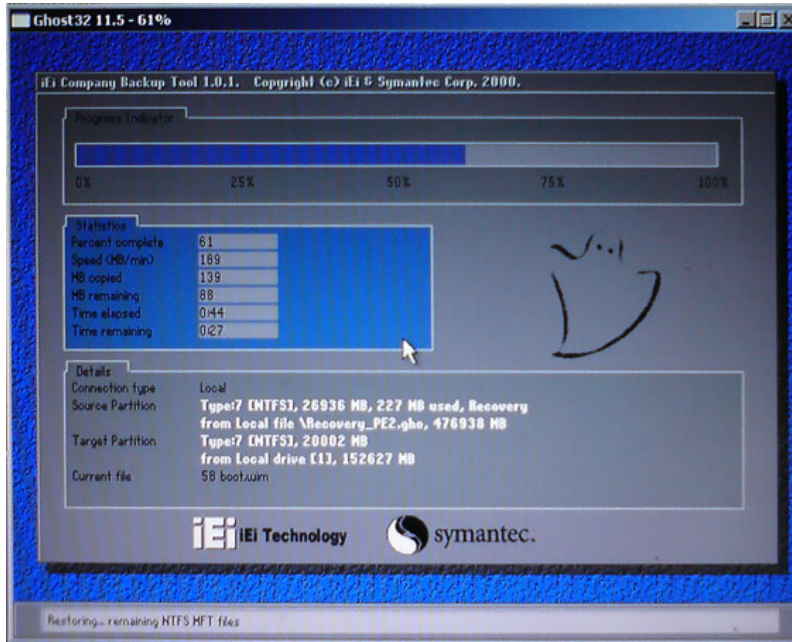


Figure C-8: Building the Recovery Partition

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

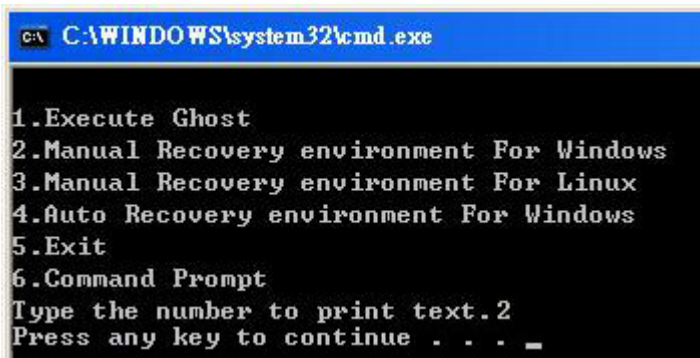


Figure C-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

AFL-W15A/17D-GM45 Panel PC

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.

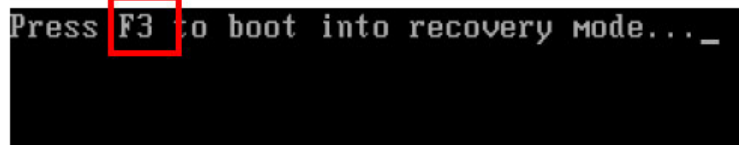


Figure C-10: Press F3 to Boot into Recovery Mode

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

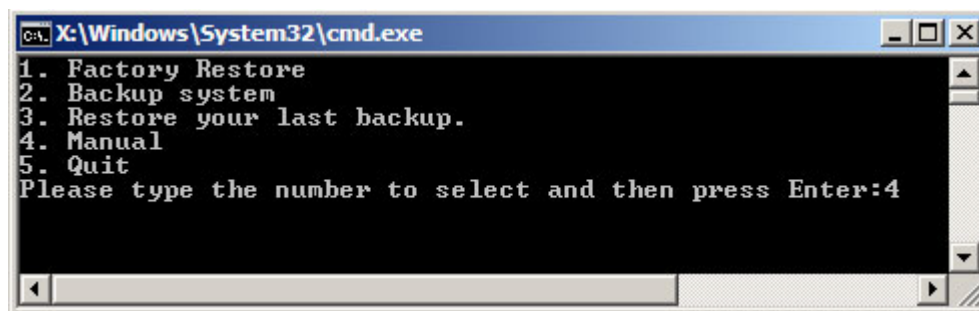


Figure C-11: Recovery Tool Menu

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

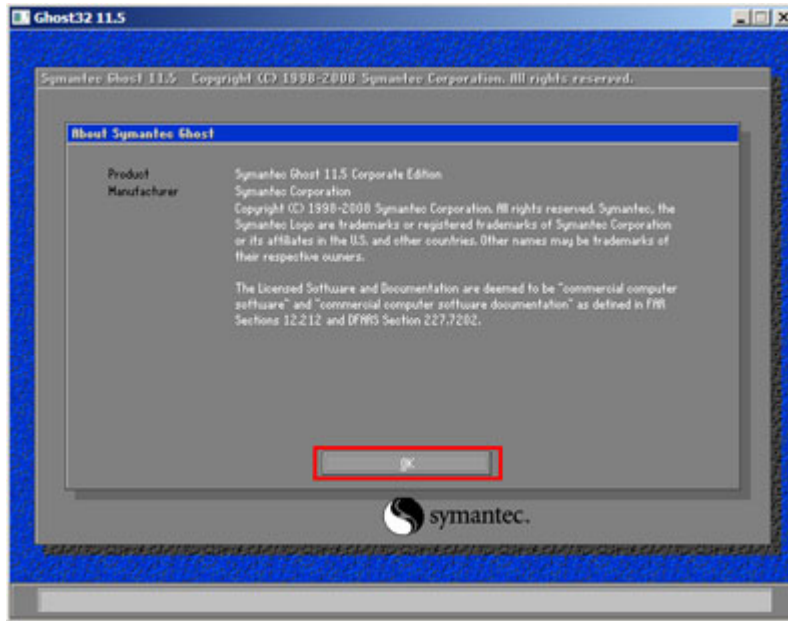


Figure C-12: About Symantec Ghost Window

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

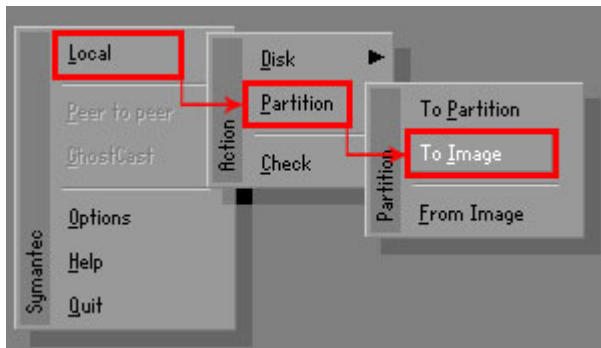


Figure C-13: Symantec Ghost Path

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

AFL-W15A/17D-GM45 Panel PC

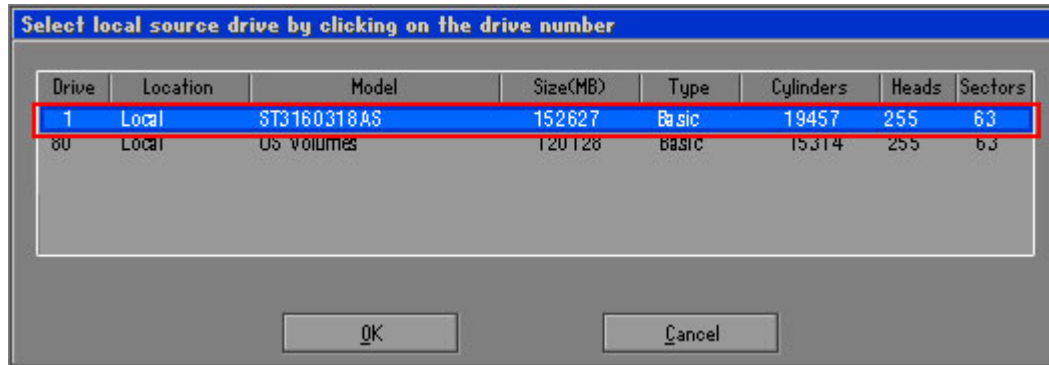


Figure C-14: Select a Local Source Drive

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

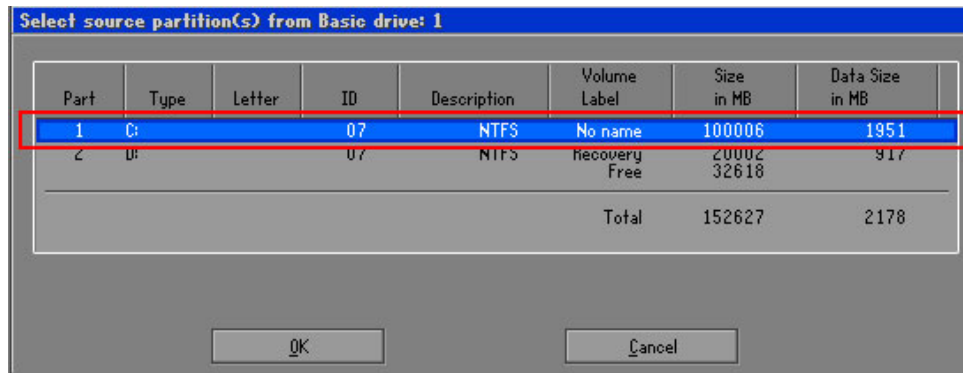


Figure C-15: Select a Source Partition from Basic Drive

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**.

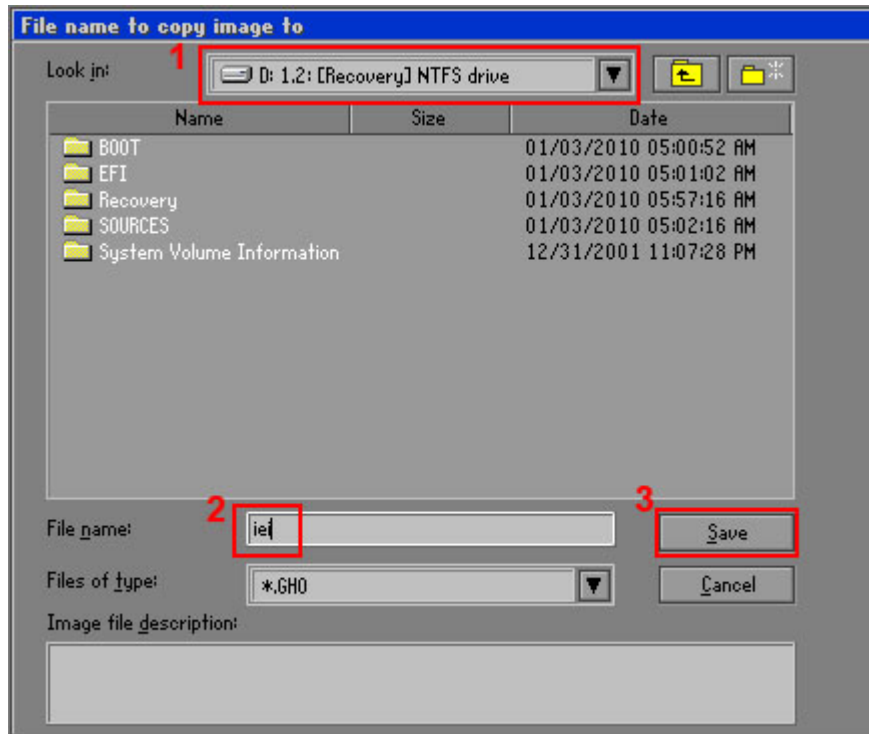


Figure C-16: File Name to Copy Image to

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

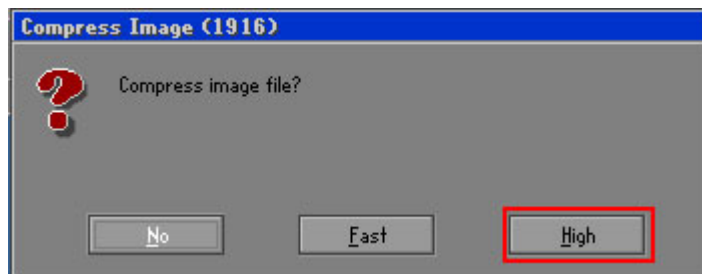


Figure C-17: Compress Image

AFL-W15A/17D-GM45 Panel PC

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

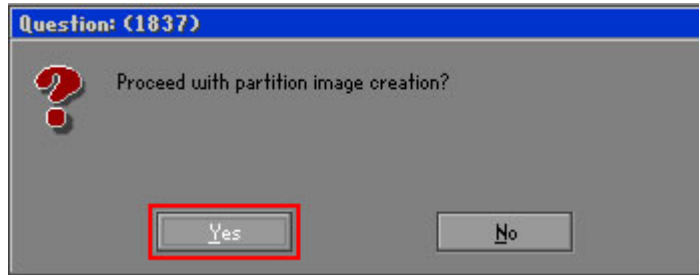


Figure C-18: Image Creation Confirmation

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

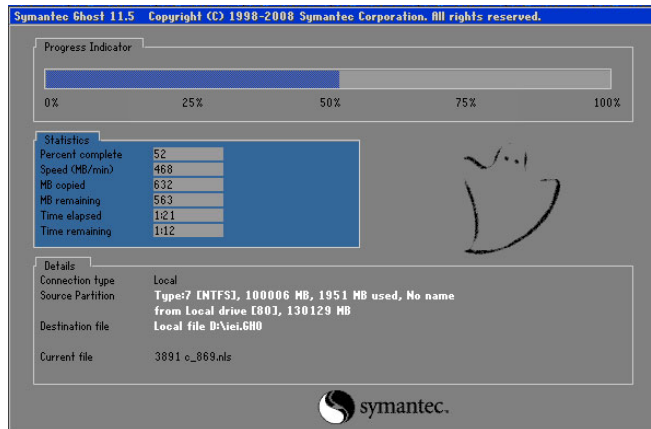


Figure C-19: Image Creation Complete

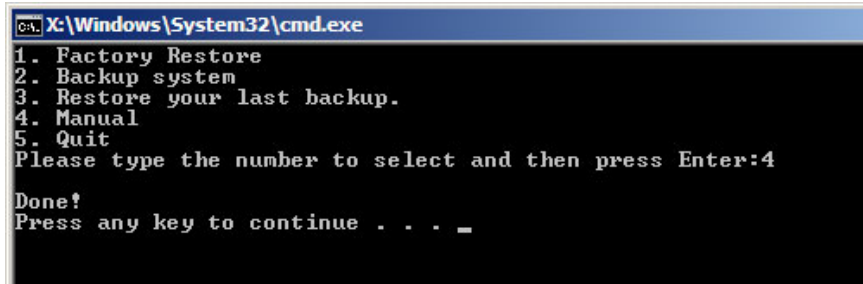
Step 11: When the image creation completes, a screen prompts as shown in **Figure C-20**.

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.



```
C:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4
Done!
Press any key to continue . . . _
```

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

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



CAUTION:

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

AFL-W15A/17D-GM45 Panel PC

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

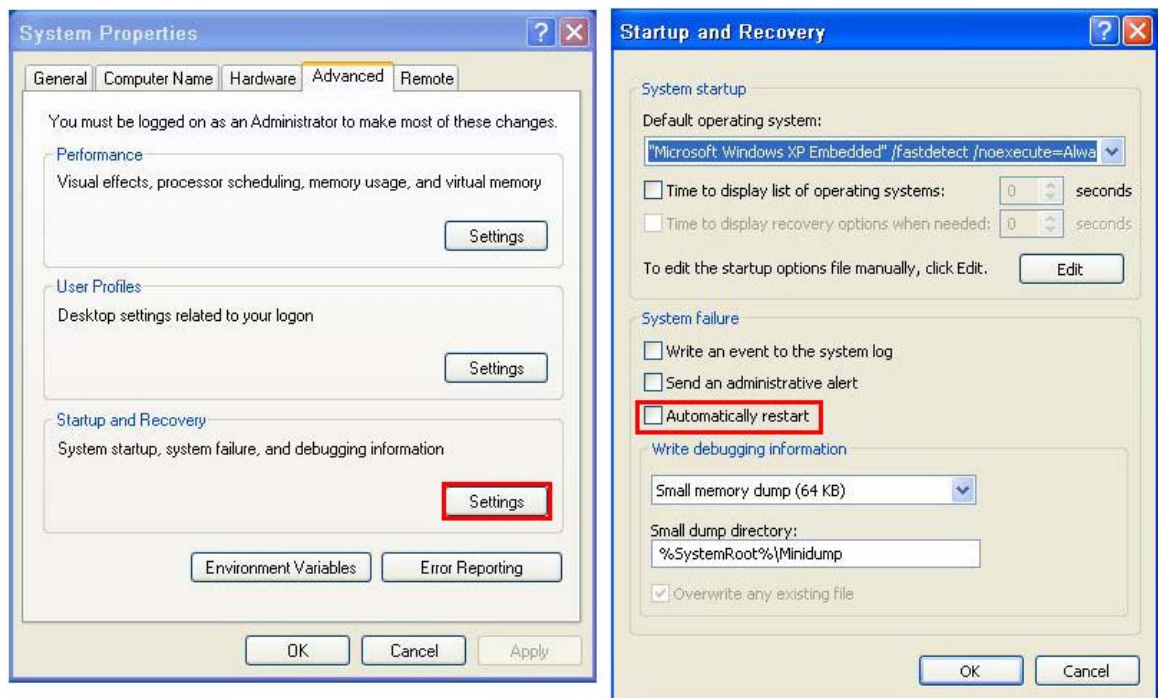


Figure C-23: Disable Automatically Restart

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

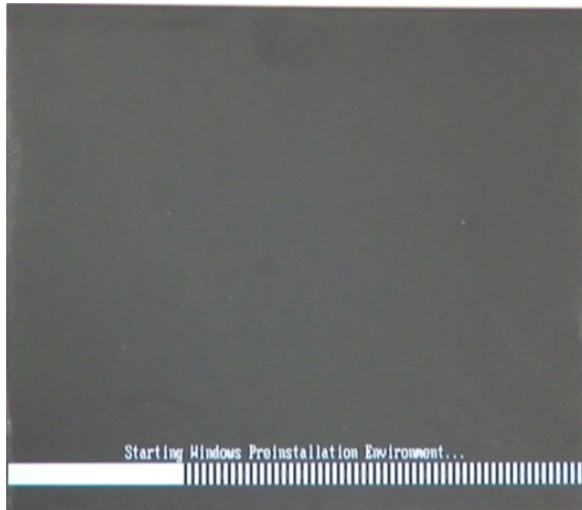


Figure C-24: Launching the Recovery Tool

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

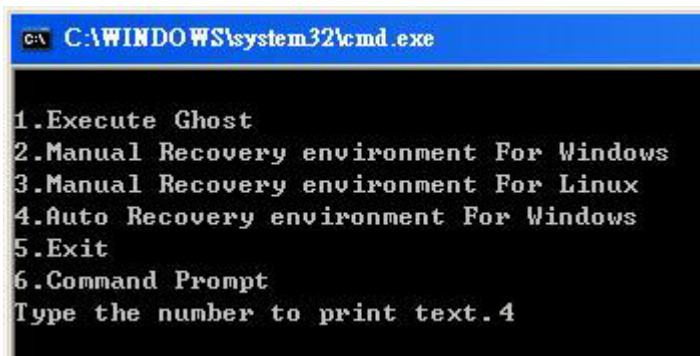


Figure C-25: Auto Recovery Environment for Windows

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

AFL-W15A/17D-GM45 Panel PC

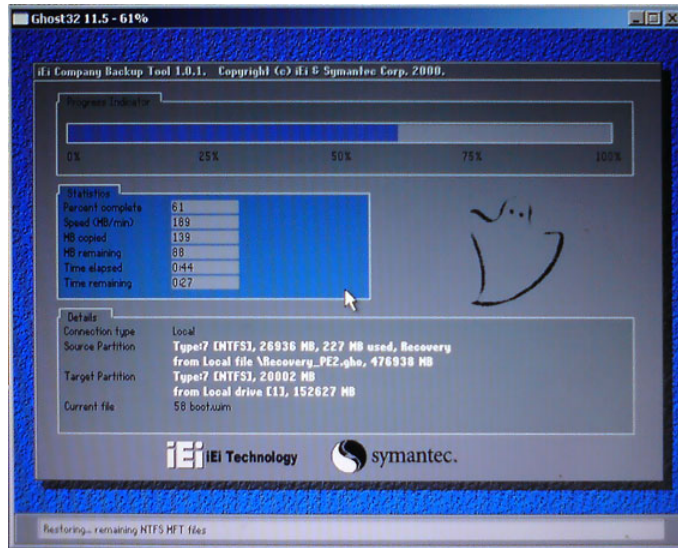


Figure C-26: Building the Auto Recovery Partition

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



Figure C-27: Factory Default Image Confirmation

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

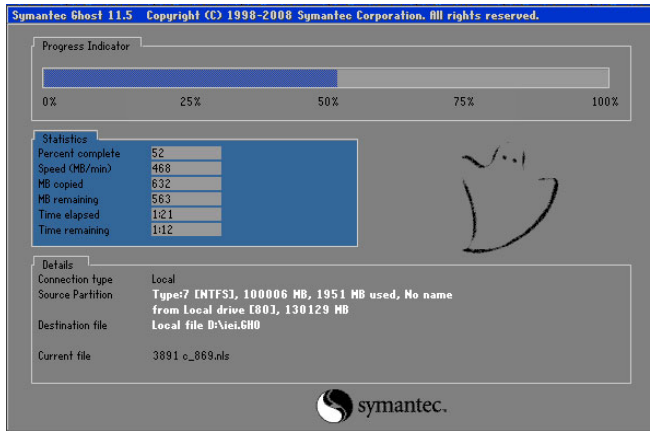


Figure C-28: Image Creation Complete

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

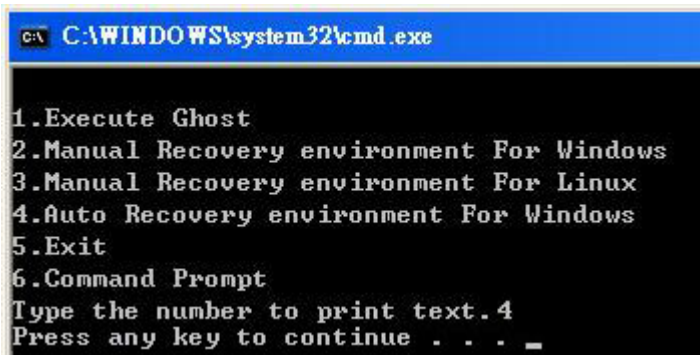


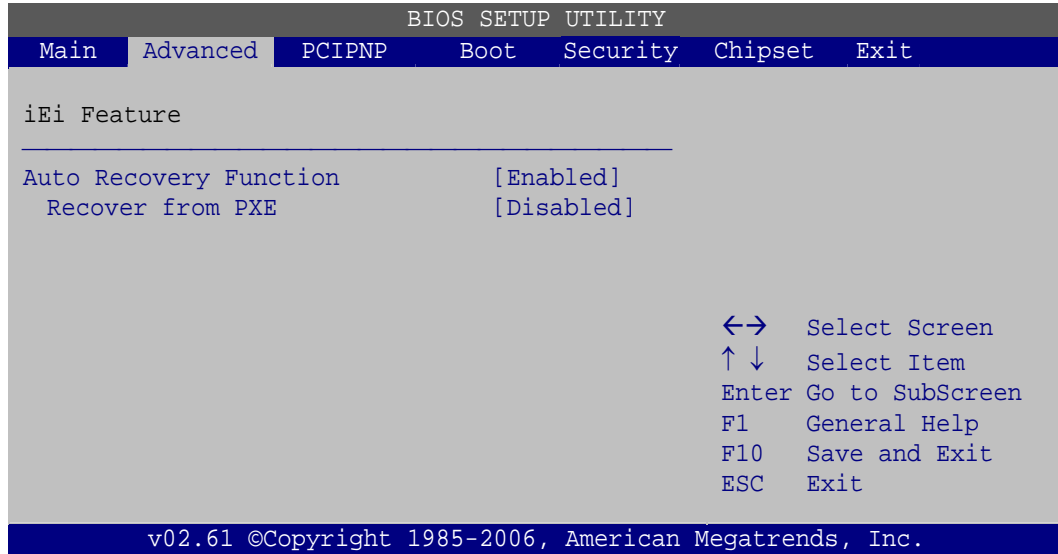
Figure C-29: Press any key to continue

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

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

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

AFL-W15A/17D-GM45 Panel PC

**BIOS Menu 27: IEI Feature**

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

C.4 Setup Procedure for Linux

The initial setup procedures for a Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup the 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.

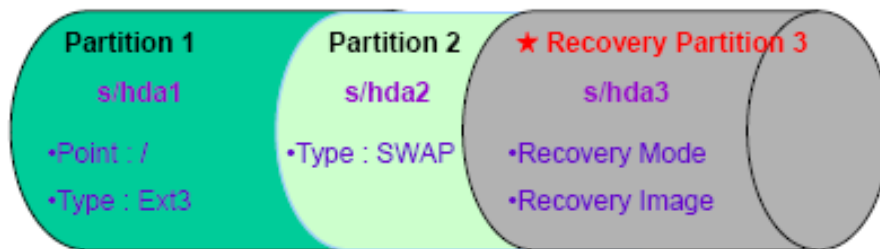


Figure C-30: Partitions for Linux

Step 3: Create a recovery partition. Insert the recovery CD into the optical disk drive.

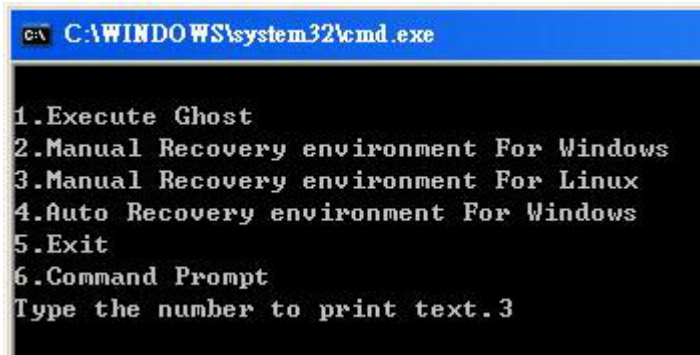
Follow **Step 1 ~ Step 3** described in **Section C.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

```
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-up 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-31**). The Symantec Ghost window appears and starts configuring the system to build-up a

AFL-W15A/17D-GM45 Panel PC

recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.



```
C:\WINDOWS\system32\cmd.exe

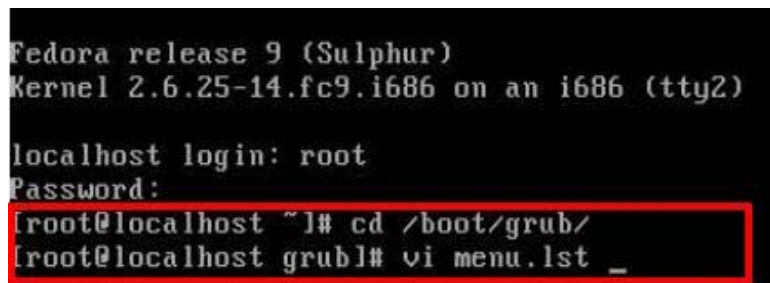
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.3
```

Figure C-31: System Configuration for Linux

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

```
cd /boot/grub
```

```
vi menu.lst
```



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

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

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

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

```
#boot=/dev/sda
default=0
timeout=10 ← Modify timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
    root (hd0,0)
    kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
ac38b5c78910 rhgb quiet
    initrd /initrd-2.6.25-14.fc9.i686.img

title Recovery Partition
root (hd0,2)
makeactive ← Type command
chainloader +1
```

- Type command:
title Recovery Partition
root (hd0,2)
makeactive
chainloader +1

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

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

Figure C-33: 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.

AFL-W15A/17D-GM45 Panel PC

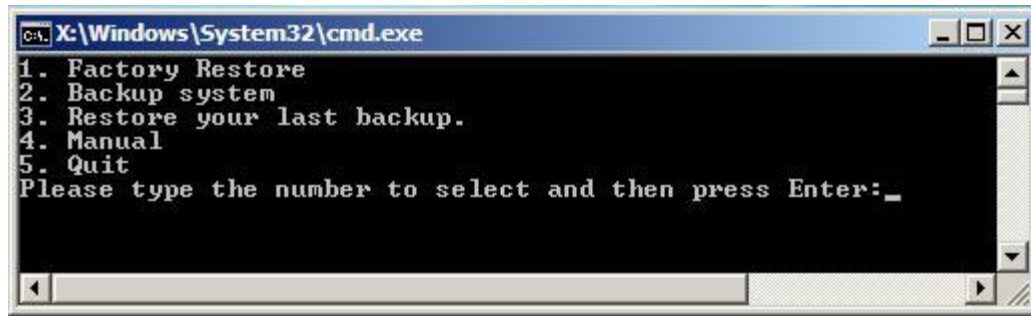


Figure C-34: Recovery Tool Main Menu

The recovery tool has several functions including:

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

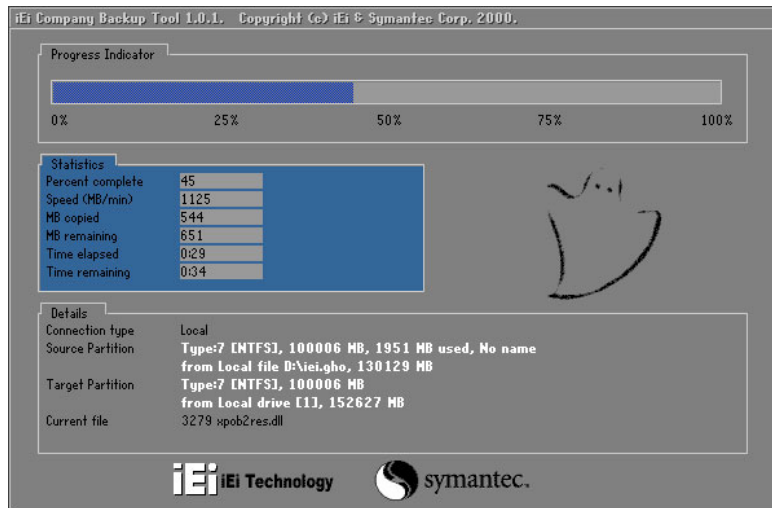


Figure C-35: Restore Factory Default

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

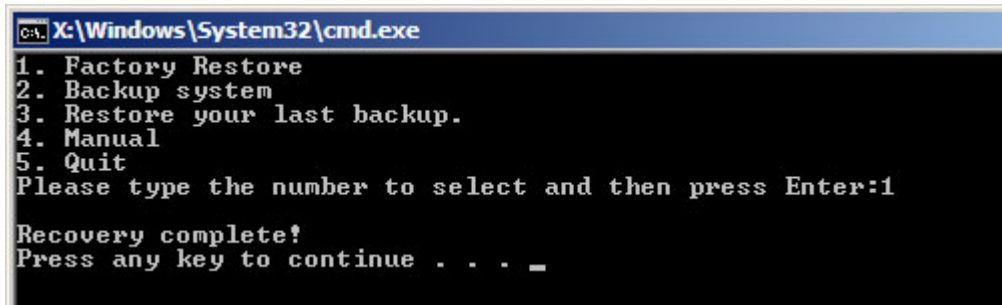


Figure C-36: Recovery Complete Window

AFL-W15A/17D-GM45 Panel PC

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.

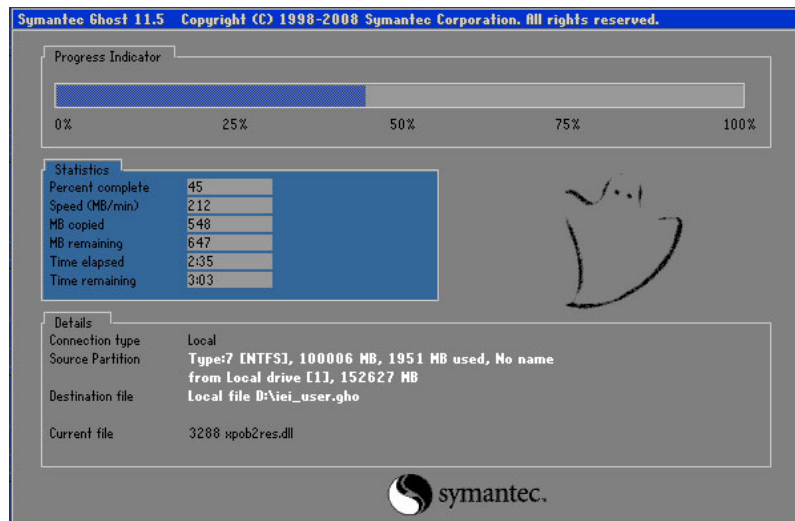


Figure C-37: Backup System

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

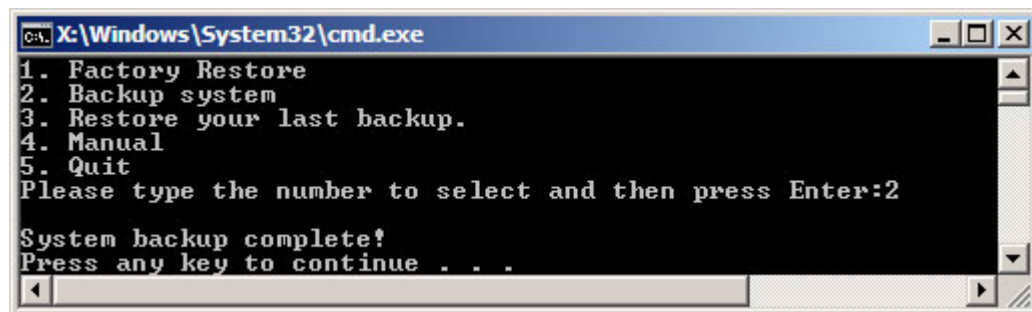


Figure C-38: System Backup Complete Window

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).

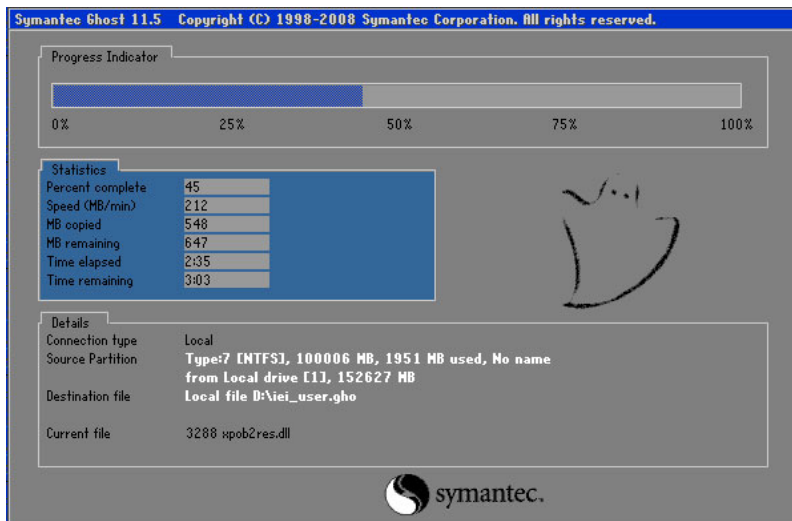


Figure C-39: Restore Backup

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

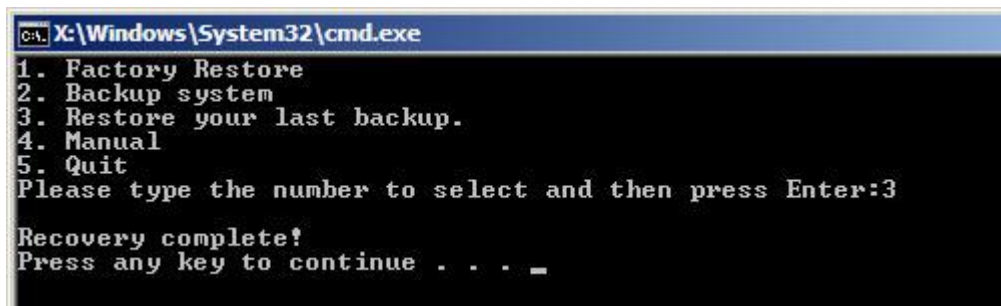


Figure C-40: Restore System Backup Complete Window

AFL-W15A/17D-GM45 Panel PC

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.

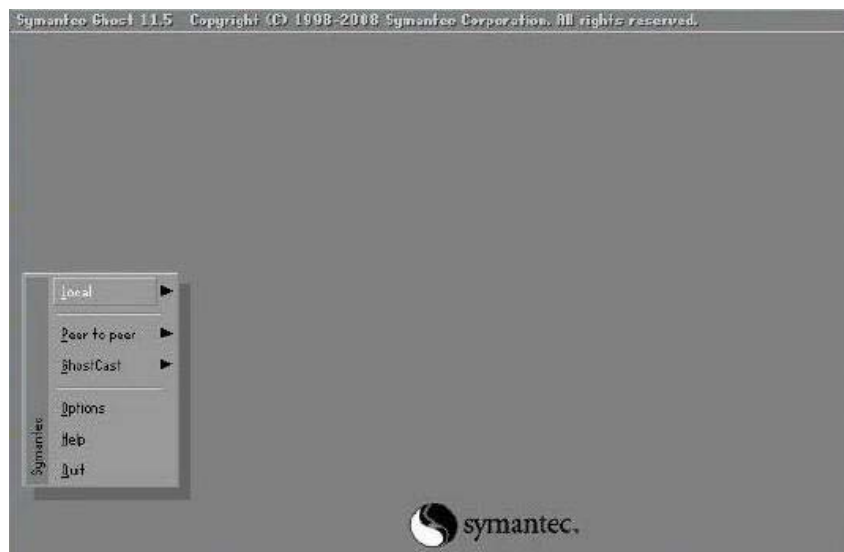
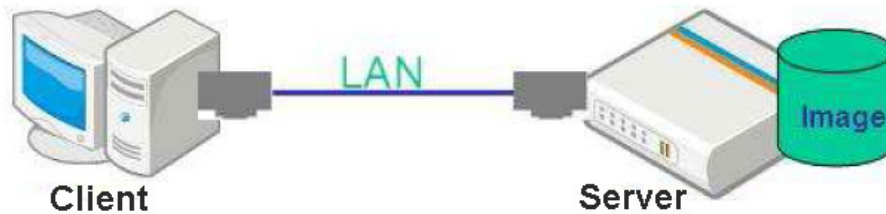


Figure C-41: Symantec Ghost Window

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.



CAUTION:

The supported client OS includes:

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

Prior to restoring client systems from a Linux server, a few setup procedures are required.

Step 1: Configure DHCP server settings

Step 2: Configure TFTP settings

Step 3: Configure One Key Recovery server settings

Step 4: Start DHCP, TFTP and HTTP

Step 5: Create a shared directory

Step 6: Setup a client system for auto recovery

The detailed descriptions are described in the following sections. In this document, two types of Linux OS are used as examples to explain the configuration process – CentOS 5.5 (Kernel 2.6.18) and Debian 5.0.7 (Kernel 2.6.26).

AFL-W15A/17D-GM45 Panel PC

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:

```
# DHCP Server Configuration file.
# see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
```

Use the following command to copy the DHCP server sample to etc/dhcpd.conf:

`#cp /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf`

`#vi /etc/dhcpd.conf`

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {
# --- default gateway
    option routers                192.168.0.2;
    option subnet-mask            255.255.255.0;

    option nis-domain             "domain.org";
    option domain-name            "domain.org";
    option domain-name-servers    192.168.0.1;
    next-server 192.168.0.6;
    filename "pxelinux.0";
    option time-offset            -18000; # Eastern Standard Time
    option ntp-servers            192.168.1.1;
    option ntp-servers            192.168.1.1;
}
```

Debian

`#vi /etc/dhcpd.conf`

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

`next-server PXE server IP address;`


```
filename "pxelinux.0";
```

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {
# --- default gateway
    option routers                192.168.0.2;
    option subnet-mask           255.255.255.0;

    option nis-domain            "domain.org";
    option domain-name           "domain.org";
    option domain-name-servers   192.168.0.1;
    next-server 192.168.0.6;
    filename "pxelinux.0";
    option time-offset           -18000; # Eastern Standard Time
    option ntp-servers           192.168.1.1;
}
```

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_
```

```
socket_type      = dgram
protocol         = udp
wait            = yes
user            = root
server          = /usr/sbin/in.tftpd
server_args     = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
disable         = no
per_source      = 11
cps             = 100 2
flags           = IPv4
```

AFL-W15A/17D-GM45 Panel PC

Debian

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

`#vi /etc/inetd.conf`

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

```
#:BOOT: TFTP service is provided primarily for booting. Most sites
# run this only on machines acting as "boot servers."
#tftp dgram udp wait root /usr/sbin/in.tftpd /usr/sbin/in.tftpd -s
/var/lib/tftpboot
```

`#vi /etc/xinetd.d/tftp`

```
socket_type      = dgram
protocol        = udp
wait            = yes
user            = root
server          = /usr/sbin/in.tftpd
server_args     = -s /tftpboot -n /tftpboot/tftpd.remap -vvv
disable         = no
per_source      = 11
cps             = 100 2
flags           = IPv4
```

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 -xvzf RecoveryR10.tar.bz2
```

Step 3: Copy “pxelinux.0” from “syslinux” and install to “/tftpboot”.

```
#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
```

AFL-W15A/17D-GM45 Panel PC

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

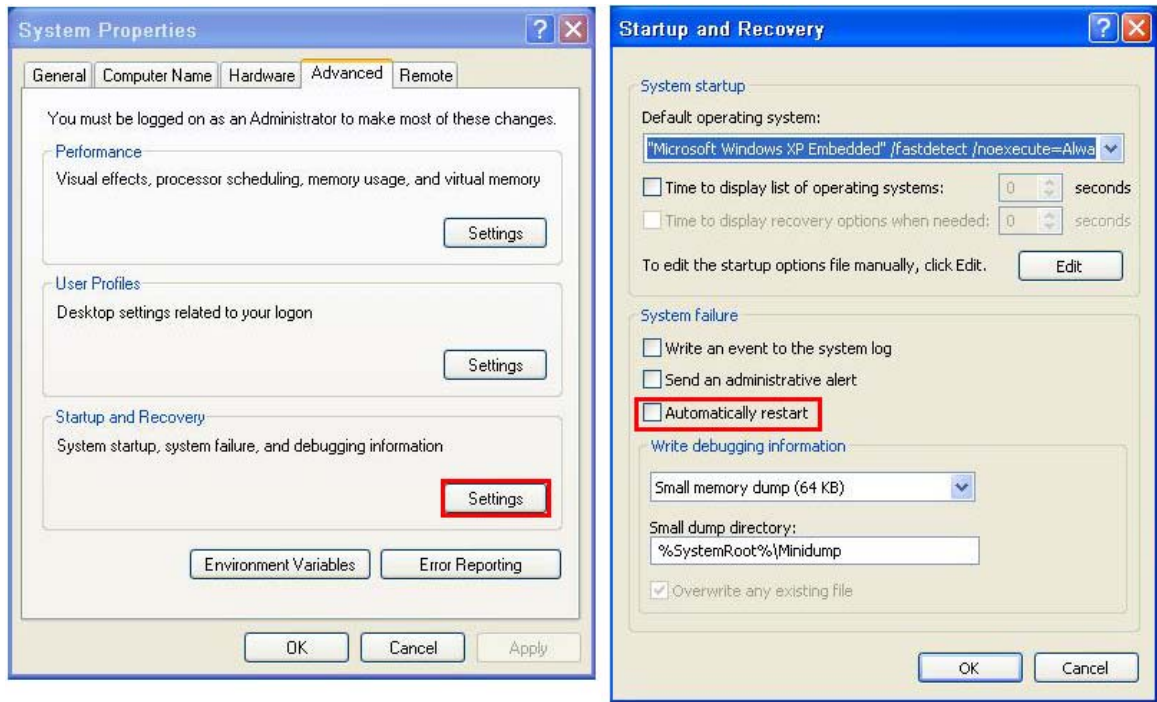


Figure C-42: Disable Automatically Restart

Step 2: Configure the following BIOS options of the client system.

Advanced → iEi Feature → Auto Recovery Function → **Enabled**

Advanced → iEi Feature → Recover from PXE → **Enabled**

Boot → Launch PXE OpROM → **Enabled**

Step 3: Continue to configure the **Boot Option Priorities** BIOS option of the client system:

Boot Option #1 → remain the default setting to boot from the original OS.

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

Step 4: Save changes and exit BIOS menu.

Exit → **Save Changes and Exit**

Step 5: Install the auto recovery utility into the system by double clicking the

Utility/AUTORECOVERY-SETUP.exe in the One Key Recovery CD. This utility

AFL-W15A/17D-GM45 Panel PC

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



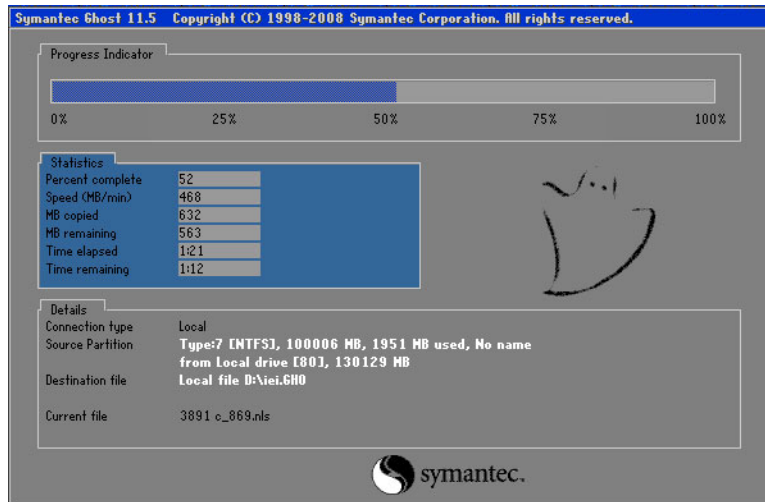
Step 6: Restart the client system from LAN. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image. The following screens will show when the system starts auto recovering.

```
Realtek PCIe GBE Family Controller Series v2.35 (06/14/10)
CLIENT MAC ADDR: 00 18 7D 13 E6 89  GUID: 00020003-0004-0005-0006-0007000000
DHCP . ./
```

```
My IP address seems to be C0A80009 192.168.0.9
ip=192.168.0.9:192.168.0.8:192.168.0.2:255.255.255.0
TFTP prefix:
Trying to load: pxelinux.cfg/00020003-0004-0005-0006-000700000009
Trying to load: pxelinux.cfg/01-00-18-7d-13-e6-89
Trying to load: pxelinux.cfg/C0A80009
Trying to load: pxelinux.cfg/C0A8000
Trying to load: pxelinux.cfg/C0A800
Trying to load: pxelinux.cfg/C0A80
Trying to load: pxelinux.cfg/C0A8
Trying to load: pxelinux.cfg/C0A
Trying to load: pxelinux.cfg/C0
Trying to load: pxelinux.cfg/C
Trying to load: pxelinux.cfg/default
boot:
```

Windows is loading files...

```
IP: 192.168.0.8, File: \Boot\WinPE.wim
```

**NOTE:**

A firewall or a SELinux is not in use in the whole setup process described above. If there is a firewall or a SELinux protecting the system, modify the configuration information to accommodate them.

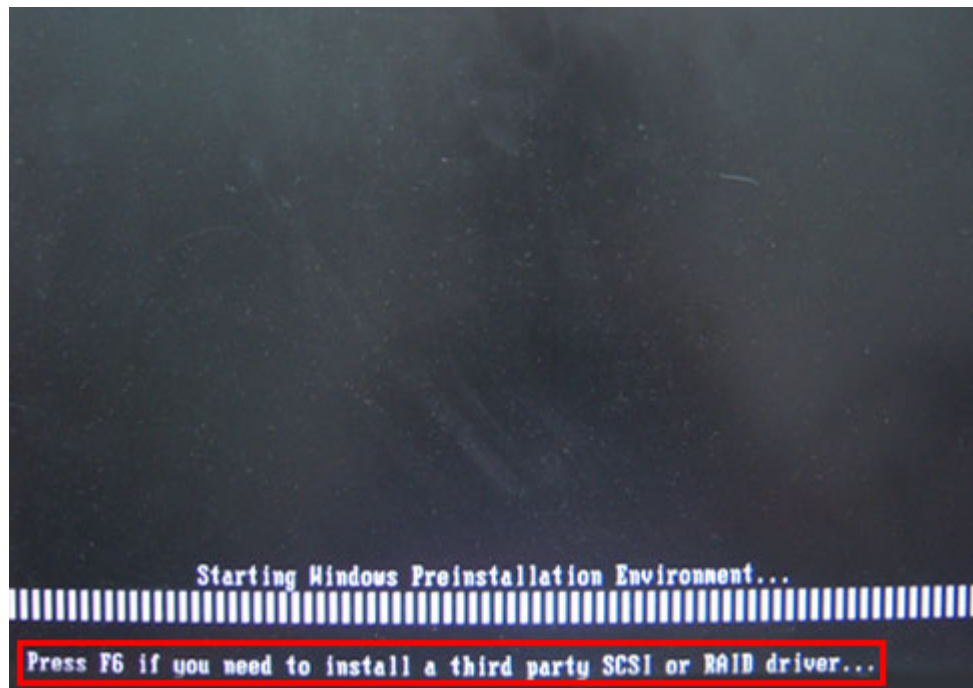
C.7 Other Information

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

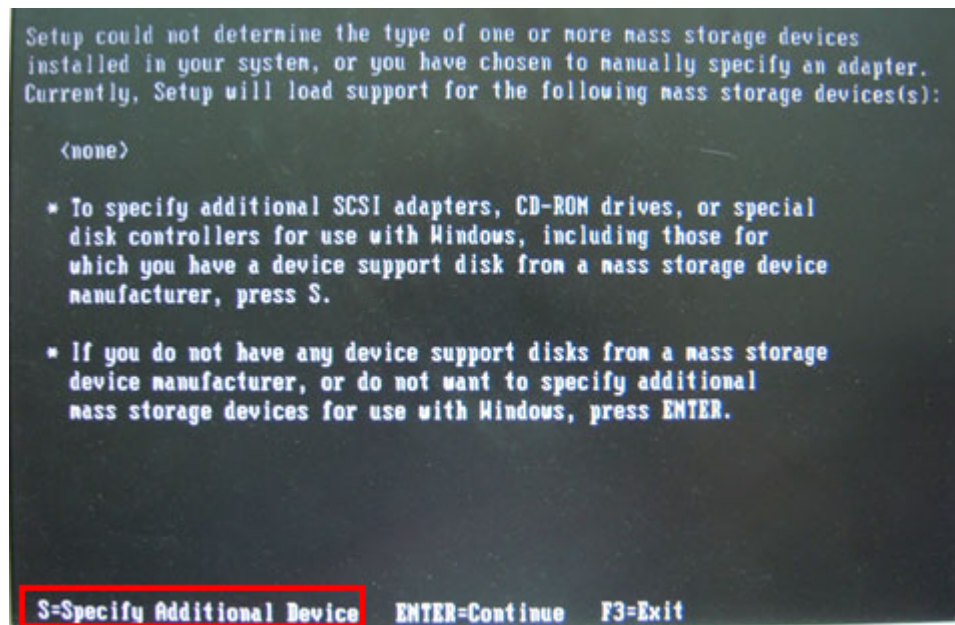
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

- 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>.

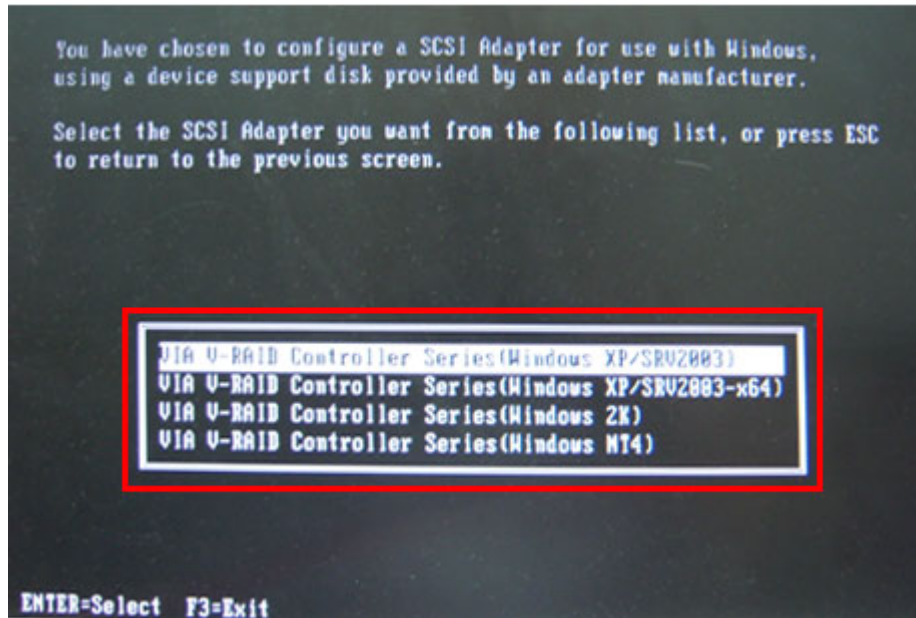
AFL-W15A/17D-GM45 Panel PC



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

Terminology

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

AFL-W15A/17D-GM45 Panel PC

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

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

Appendix

E

Watchdog Timer



NOTE:

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

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

AFL-W15A/17D-GM45 Panel PC

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
```

```
;
```

```
W_LOOP:
```

```

MOV    AX, 6F02H    ;setting the time-out value
MOV    BL, 30      ;time-out value is 48 seconds
INT    15H

```

```
;
```

```
; ADD THE APPLICATION PROGRAM HERE
```

```
;
```

```

CMP    EXIT_AP, 1    ;is the application over?
JNE    W_LOOP       ;No, restart the application

```

```

MOV    AX, 6F02H    ;disable Watchdog Timer
MOV    BL, 0        ;
INT    15H

```

```
;
```

```
; EXIT ;
```

Appendix

F

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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

AFL-W15A/17D-GM45 Panel PC

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。