IEI Technology Corp.

MODEL:

AFL-xxx-9103

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

User Manual

RoHS Lead Free

Revision

Date	Version	Changes
September, 2008	1.00	Initial release

Copyright

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Manual Conventions

WARNING!

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word "warning" is written as "**WARNING**," both capitalized and bold and is followed by text. The text is the warning message. A warning message is shown below:

WARNING:

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the AFL-xxx-9103 or personal injury to the user. Please take warning messages seriously.

CAUTION!

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the AFL-xxx-9103. Cautions are easy to recognize. The word "caution" is written as "**CAUTION**," both capitalized and bold and is followed. The text is the cautionary message. A caution message is shown below:

CAUTION:

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the AFL-xxx-9103. Please take caution messages seriously.

NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes. Notes are easy to recognize. The word "note" is written as "**NOTE**," both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:

NOTE:

This is an example of a note message. Notes should always be read. Notes contain critical information about the AFL-xxx-9103. Please take note messages seriously.

Packing List

> **NOTE:**
>
> If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the AFL-xxx-9103 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to <u>sales@iei.com.tw</u>.

The items listed below should all be included in the AFL-xxx-9103 package.

- 1 x AFL-xxx-9103
- 1 x Screw kit
- 1 x Power adapter
- 1 x Power cable
- 1 x User's manual CDROM
- 1 x Touch panel pen

Images of the above items are shown in **Chapter 3**.

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1

Introduction

1.1 Overview

Figure 1-1: AFL-xxx-9103

The AFL-xxx-9103 is a fanless flat panel PC for in-car entertainment or logistics, digital surveillance, self-service kiosks, ATMs, general ticketing machines and home automation. The touch screen interface allows the AFL-xxx-9103 to be operated without a keyboard or mouse by simply pressing on the screen. The AFL-xxx-9103 comes with an energy efficient Intel® Celeron processor and Intel® 910GMLE / Intel® ICH6M system chipset, providing all of the features of an everyday computer, with better energy efficiency.

Multiple forms of connectivity are included. Wireless LAN allows connection to a wireless network. Gigabit Ethernet allows a 1.0 Gb/s connection to a wired network when speed is needed more than the convenience of wireless. USB ports and Bluetooth allow connections to peripheral devices like PDAs, Bluetooth headsets, Bluetooth GPS modules and any other device supporting Bluetooth or USB. Finally, an RS-232 port and an RS-232/422/485 serial port allow customized output.

1.1.1 Model Variations

The AFL-xxx-9103 models are listed in **Table 1-1**.

Model	LCD	CPU	Memory	Wireless LAN	Touch screen
AFL-10A-9103-R10	10.4″	Intel® Celeron	1.0 GB DDR2	Yes	Yes
AFL-12B-9103-R10	12.1″				

Table 1-1: Model Variations

1.1.2 Applications

The AFL-xxx-9103 all-in-one panel PC is designed for multiple applications. Its durability and strength makes it an ideal choice for public access computers. Some possible applications include:

- Vehicle Interior device
  - Truck PC
  - Logistic car PC
  - In-car entertainment
- General computing
  - PC based testing center
  - Distance learning
- Industrial applications
  - Plant environment monitoring system
  - Factory automation platform
  - Manufacturing shop flow
  - Equipment and device control
- Home and building automation
  - Digital surveillance system
  - E-home platform
  - Home IA control terminal
- Self-Service Kiosk
  - Receptionist kiosk in hotel and business premises
  - Self registration terminal in hospital and airport
  - Ticket vending machine for transportation use

1.1.3 Standard Features

Some of the features of the AFL-xxx-9103 flat panel PC include:

- Intel® Celeron processor
- Rugged mechanism design with ABS/PC case
- IP 64 dustproof and waterproof front panel
- One 1.0 GB DDR2 memory module pre-installed
- AT/ATX power mode supported
- Wireless LAN module and Bluetooth module integrated
- Dual GbE LAN support
- One CompactFlash® socket
- Optional HSDPA module
- Simple installation process
- RoHS compliance

1.2 External Overview

The AFL-xxx-9103 is a stylish flat panel PC that comprises of a screen, rear panel, and bottom panel. An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. The bottom panel provides access to external interface connectors that include Gigabit LAN, USB 2.0 ports, serial ports, reset button, power connector and power switch.

1.2.1 Front Panel

The front side of the AFL-xxx-9103 is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame.
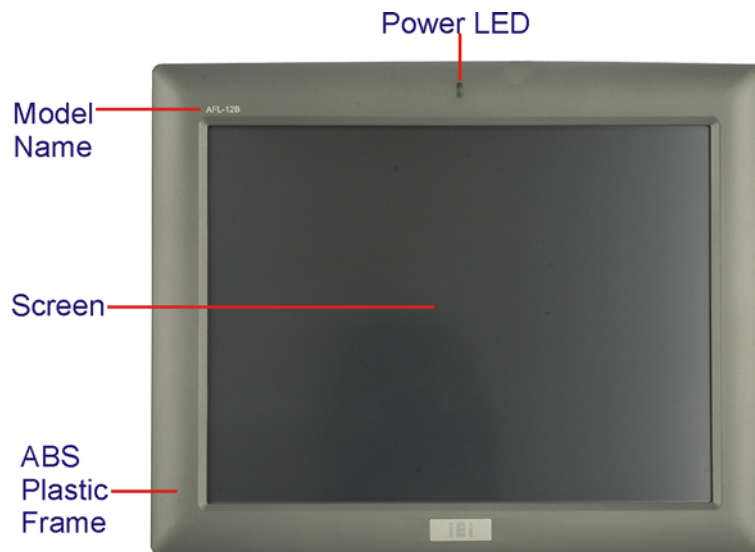
Figure 1-2: Front View

1.2.2 Rear Panel

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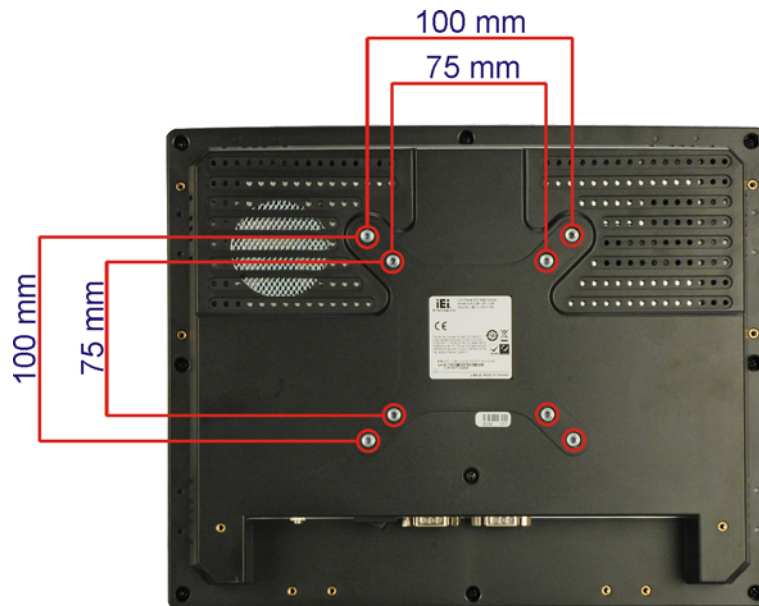
Figure 1-3: Rear View

1.2.3 Bottom Panel

The bottom panel of the AFL-xxx-9103 has the following I/O interfaces (Figure 1-4):

- 1 x Audio out
- 4 x USB 2.0 connectors
- 1 x Power connector
- 1 x Power switch
- 1 x RS-232 serial port
- 1 x RS-232/422/485 serial port
- 1 x RJ-45 GbE connector
- 1 x Reset button
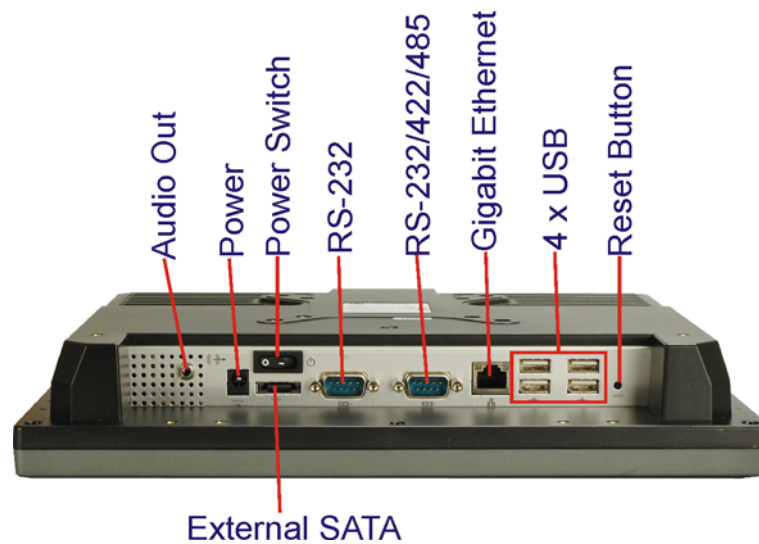
Figure 1-4: Bottom View

1.3 Internal Overview

The AFL-xxx-9103 internal components are protected in an aluminum chassis inside the plastic back cover. An AT/ATX switch is located on the side of the aluminum chassis inside the plastic cover. The motherboard, wireless LAN module, Bluetooth module and DDR2 memory module are installed on a metal sheet that protects the rear of the TFT LCD screen (**Figure 1-5**). Below the metal sheet is a circuit board that is connected to the screen and the motherboard.
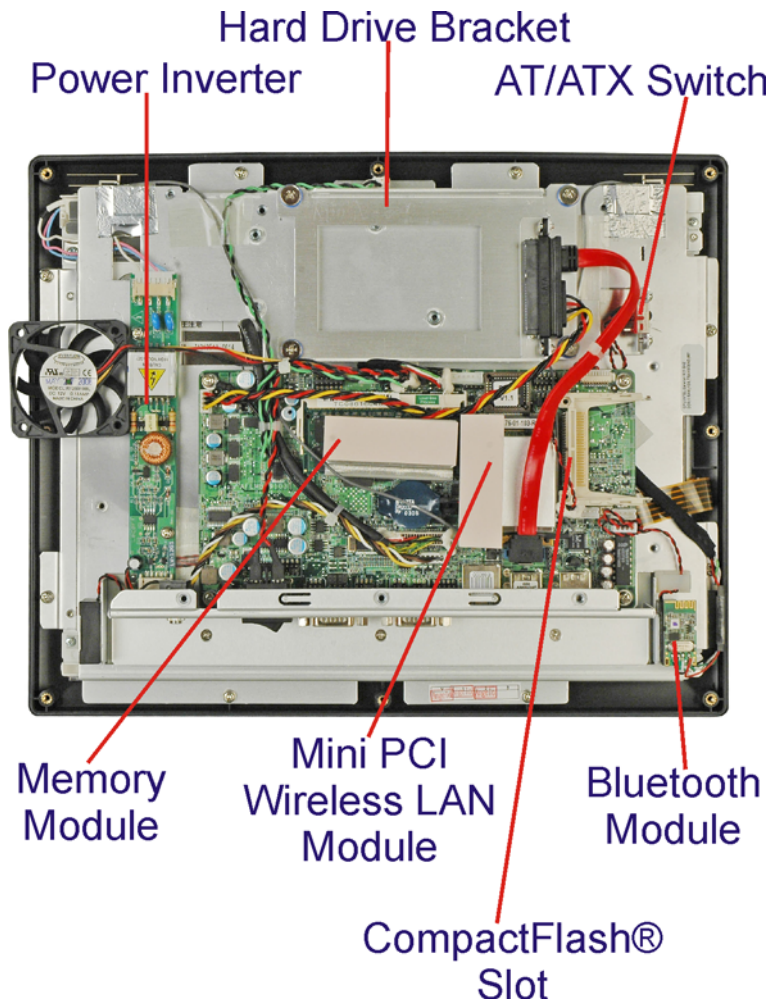
- ▪ 1 x DDR2 memory module
- ▪ 1 x AT/ATX switch
- ▪ 1 x HSDPA module (optional)

The technical specifications for some of these components and the system are shown in the sections below.

1.4.2 System Specifications

The technical specifications for the AFL-xxx-9103 are listed in **Table 1-2.**

SPECIFICATION	AFL-10A-9103-R10	AFL-12B-9103-R10
Front Panel	ABS/PC plastic front panel	
Chassis	Aluminum chassis	
LCD Panel	10.4"	12.1"
Resolution	800 x 600	1024 x 768
Brightness (cd/m^2)	400	400
Contrast Ratio	500:1	500:1
Viewing Angle (H-V)	120/100	160/160
Backlight MTBF	50000	50000
Touch Screen	5-wire resistive type	
SSD	CompactFlash®	
Audio	AMP 1.5 W + AMP 1.5 W (internal speaker)	
Extension	1 x PCIe Mini (for wireless LAN module) 1 x Bluetooth module (USB interface, Bluetooth v2.0)	
HSDPA Module	Optional	
I/O	1 x Audio out 4 x USB 2.0 ports 1 x Power switch 1 x Power input 1 x External SATA port 1 x RS-232 serial port 1 x RS-232/422/485 serial port 1 x Gigabit Ethernet port 1 x Reset button	

SPECIFICATION	AFL-10A-9103-R10	AFL-12B-9103-R10
Power	12 V, 60 W DC power adapter	
Power Consumption	41 W	46 W
Mounting Feature	Panel, Rack, Wall, Arm, Stand	
Operating Temperature	0ºC ~45ºC	
Storage Temperature	-20ºC ~60ºC	
Relative Humidity	10% ~ 80% RH, non-condensing	
Dimension (W x H x D)	276 x 226.9 x 50.7	304 x 246 x 56
Net Weight	1.4 kg	1.8 kg
Front Panel Protection	IP 64 compliant	
Safety & EMI	CE / FCC / CCC / UL / CB	

Table 1-2: System Specifications

1.4.3 Motherboard Specifications

The AFL-xxx-9103 series come with an AFLMB-9103GME motherboard. The technical specifications of the motherboard are listed in **Table 1-3**.

Specification	AFLMB-9103GME
CPU	Intel® Celeron
Chipset	Intel® 910GMLE and Intel® ICH6M
Display	CRT integrated in Intel® 910GMLE Supports panel resolution from VGA to UXGA (1400 x 1050) Supports one Dual-Channel LVDS panel
Memory	Supports one 200-pin 400 MHz DDR2 SDRAM SO-DIMM module up to 2.0 GB
Extension	One PCIe Mini slot
BIOS	AMI BIOS
SSD	CompactFlash®
Super I/O	ITE8712F
Audio	Realtek RTL ALC888 (High Definition Audio), with TDA1517
LAN	Realtek RTL8111CP PCIe Gigabit Ethernet
COM	1 x RS-232 serial port 1 x RS-232/422/485 serial port

Specification	AFLMB-9103GME
Touch Screen Controller	DMC9000
Power Supply	DC 12 V In
Dimensions	102 mm x 186 mm

Table 1-3: Motherboard Specifications

1.4.4 Flat Panel Screen Specifications

The AFL-xxx-9103 series come with a TFT LCD monitor at the front of the flat panel PC (see **Figure 1-2**).   The specifications for the LCD monitor are shown below.

1.4.4.1 AFL-10A-9103-R10

SPECIFICATION	AFL-10A-9103-R10
Model	Toshiba LTA104D182F
Size	10.4″
Resolution	800 x 600
Active Area (mm)	211.2 x 158.4
Pixel Pitch (mm)	0.264 x 0.264
LCD Color	262K
View Angel (H/V)	120/100
Brightness (cd/m^2)	400
Contrast Ratio	500:1
Supply Voltage (V)	3.3 V
Backlight	2 CCFL
Backlight MTBF (hrs.)	50000
Dimensions (WxHxD)(mm)	242 x 178.45 x 13.2

Table 1-4: AFL-10A-9103-R10 TFT LCD Monitor Specifications

1.4.4.2 AFL-12B-9103-R10

SPECIFICATION	AFL-12B-9103-R10
Model	Toshiba LTA121C50F
Size	12.1″

SPECIFICATION	AFL-12B-9103-R10
Resolution	1024 x 768
Active Area (mm)	245.76 x 184.32
Pixel Pitch (mm)	0.24 x 0.24
LCD Color	262K
View Angel (H/V)	120/100
Brightness (cd/m^2)	400
Contrast Ratio	500:1
Supply Voltage (V)	3.3 V
Backlight	2 CCFL
Backlight MTBF (hrs.)	50000
Dimensions (WxHxD)(mm)	278.3 x 209.0 x 12.0

Table 1-5: AFL-12B-9103-R10 TFT LCD Monitor Specifications

1.4.5 Touch Screen Specifications

The AFL-xxx-9103 series come with an analog resistive type touch panel. **Table 1-6** lists the touch panel specifications.

SPECIFICATION	AFL-10A-9103-R10	AFL-12B-9103-R10
Model	75200-1104502A-RS	75200-1121505B-RS
Type	Analog Resistive Type Touch Panel	
Wire Type	5-wire	
Viewing Area (mm)	219.8 x 166.8	188.0 x 250.0
Active Area (mm)	212.1 x 159.3	185.0 x 246.0
Total Transmission	78%	
Maximum Voltage	DC 7 V	
Connector Type	FPC.	
Operating Temperature	-10°C ~ 50°C	
Operating Humidity	20% ~ 90% RH	
Storage Temperature	-20°C ~ 70°C	
Storage Humidity	20% ~ 90% RH	

SPECIFICATION	AFL-10A-9103-R10	AFL-12B-9103-R10
Dimensions	238.8x 188.7 x 2.6	204 x 268 x 2.1

Table 1-6: Touch Panel Specifications

1.4.6 Bluetooth Module Specifications

The AFL-xxx-9103 series are all integrated with a Bluetooth module. The Bluetooth module enables the transmission between various peripheral devices through a Bluetooth network. The peripheral devices may include:

- Headsets
- Barcode readers
- PDA
- Printers
- Cell phones

The technical specifications of the Bluetooth module are listed in **Table 1-7**.

Specification	Bluetooth Module
Standard	Bluetooth v2.0
Frequency Band	2.402GHz~2.480GHz unlicensed ISM band
Modulation Method	GFSK for 1 Mb/s π/4-DQPSK for 2 Mb/s 8-DPSK for 3 Mb/s
Spread Spectrum	FHSS (Frequency Hopping Spread Spectrum)
RF Output Power	Class 2 (under 4dBm)
Antenna Terminal	50 Ohms
DC Power	DC 3.3 V or DC 5 V
I/O Interface	USB 2.0 interface
Two GPIO Interface	LED link indicator interface
Dimensions	35 mm x 11 mm
Operating System	Windows XP, Windows 2000, Windows 98SE, Windows Me

Table 1-7: Bluetooth Module Specifications

1.4.7 Optional HSDPA Module Specifications

The HSDPA module is one of the OEM options for the AFL-xxx-9103. The technical specifications of the HSDPA module are listed in **Table 1-8**.

Specification	HSDPA Module
EDG/HSDPA/GSM Air Interface	Quad-band operation GSM850, EGSM 900, DCS 1800, PCS 1900 GSM Power Class 4 (2 W) for 850/900 bands GSM Power Class 1 (1 W) for 1800/1900 bands EDFE class E2 (+27dBm in 850/900 bands, +26dBm in 1800/1900 bands) GSM/HSDPA Rel '97; PCS 1900 Rel '98; EHSDPA Rel '99 compliant
EHSDPA/HSDPA (PS) Feature Set	HSDPA Class 10, coding schemes 1-4 EDGE Class 10, Multi-slot classes 1-9 HSDPA/EHSDPA Class B type 1 MT Link Adaptation Incremental redundancy (IR)
USB Interface	USB 2.0 +5 V DC
SIM Card Interface	3.0 V interface
Temperature	-30°C ~ +65°C
Humidity	Up to 95%, non-condensing
Dimensions	109.3 mm x 42.7 mm x 17.7 mm
Operating System	Windows 2000/XP Home/XP Professional

Table 1-8: HSDPA Module Specifications

1.5 Dimensions

The dimensions of all the AFL-xxx-9103 models are shown in the subsections below.

1.5.1 AFL-10A-9103-R10 Dimensions

The dimensions of the AFL-10A-9103-R10 are shown in **Figure 1-6** below.
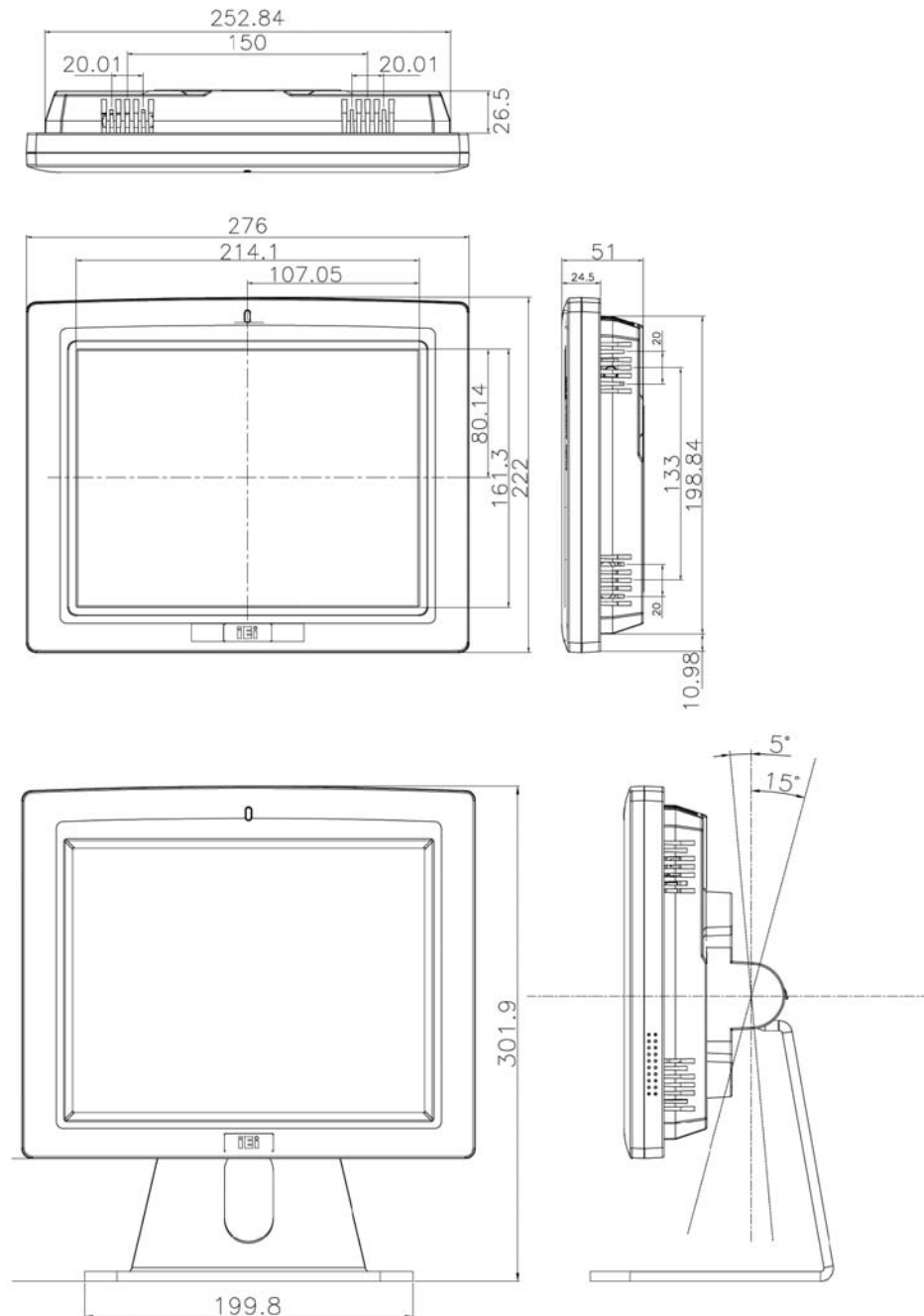
Figure 1-6: AFL-10A-9103-R10 Dimensions (units in mm)

1.5.2 AFL-12B-9103-R10 Dimensions

The dimensions of the AFL-12B-9103-R10 are shown in **Figure 1-7** below.
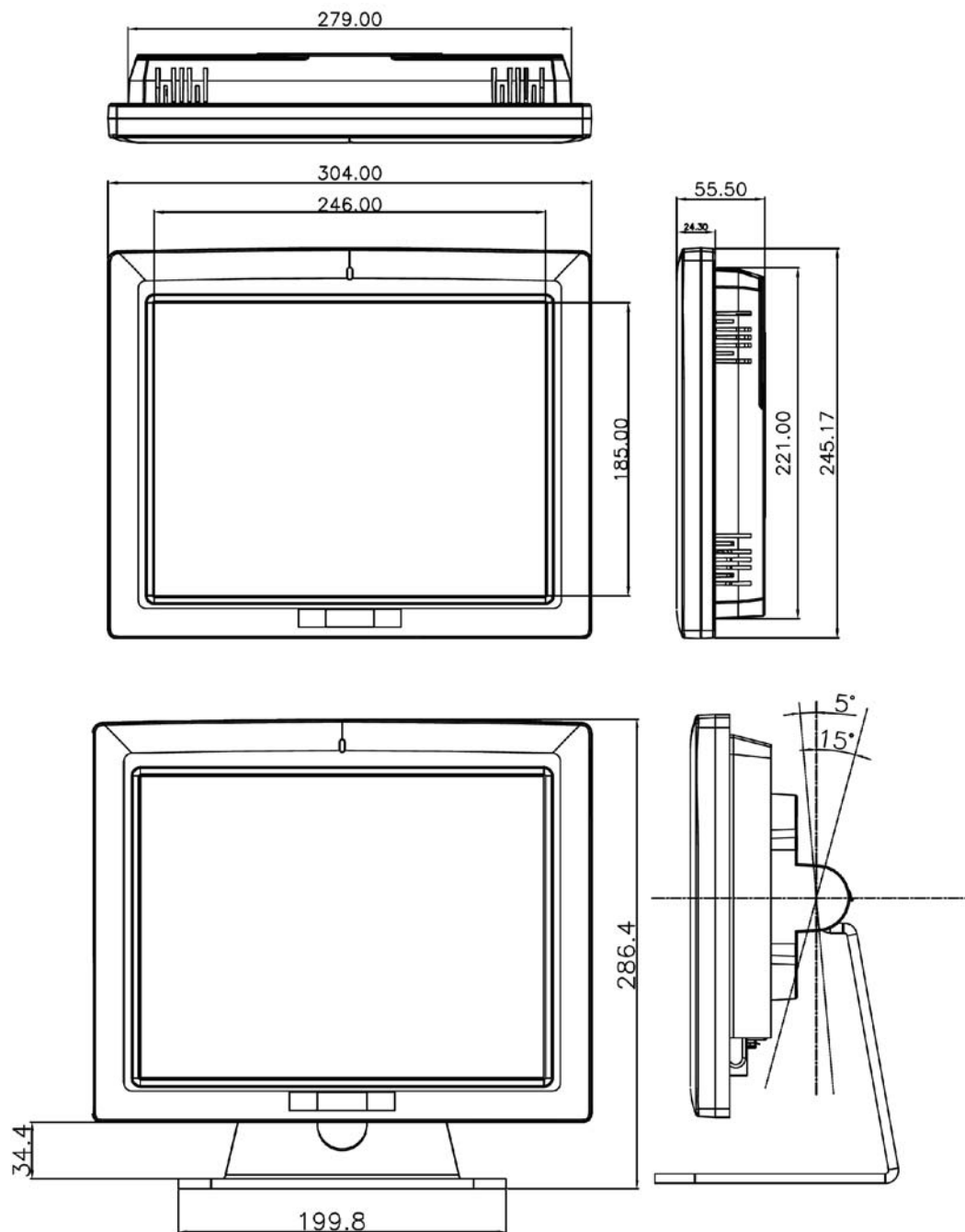
Figure 1-7: AFL-12B-9103-R10 Dimensions (units in mm)

Chapter

2

Motherboard

2.1 Introduction

The AFL-xxx-9103 contains the AFLMB-9103GME motherboard. The motherboard is the heart of any computer and is responsible for transmitting, receiving and processing data as well as driving the different onboard devices. This chapter gives a brief introduction to the AFLMB-9103GME motherboard.

2.2 CPU Support

The AFL-xxx-9103 motherboard comes with a preinstalled Intel® Celeron CPU. The specifications for the Intel® Celeron CPU are listed below

- 5.5 watts power consumption
- 512 KB of L2 cache
- Advanced branch prediction
- Power optimized processor system bus
- Low average power consumption with cache and processor bus power management

2.2.1 Intel® 910GMLE Northbridge

The Intel® 910GMLE Northbridge chipset has the Generation 3.1 Intel Integrated Graphics Engine and the Intel® Graphics Media Accelerator 950 (Intel® GMA 950). The integrated graphics and memory controller hub (GMCH) facilitates the flow of information primarily between the following four interfaces:

- Front Side Bus (FSB)
- System Memory Interface
- Graphics Interface
- Direct Media Interface (DMI)

2.2.2 Intel® ICH6M Southbridge

The Intel® ICH6M Southbridge chipset is connected to the Intel® 910GMLE Northbridge GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH6M are listed below.

- Complies with PCI Express Base Specification, Revision 1.0a

- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33 MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
    - Enhanced DMA controller
    - Interrupt controller
    - Timer functions
- Integrated SATA host controller with DMA operations interfaced to two SATA connectors on the AFL-xxx-9103AFL-915AAFL-xxx-9103
- Integrated IDE controller supports Ultra ATA 100/66/33
- Supports the four USB 2.0 devices on the AFL-915 A with four UHCI controllers and one EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Audio Codec '97 (AC'97) Revision 2.3
- Supports Intel® High Definition Audio
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface

2.3 Graphics Support

The Intel® 910GMLE Northbridge chipset has an integrated graphics engine that supports the following display devices:

- Analog CRT
- Digital LVDS
- TV-Out
- SDVO ports

Only the VGA and LVDS interfaces are implemented.

2.3.1 LVDS Interface

The LVDS interface is connected to the LCD panel.

2.4 Gigabit Ethernet

A highly integrated and cost-effective single-chip, fast Realtek RTL8111CP GbE controller is interfaced through first the PCI bus to the CPU and system chipset.
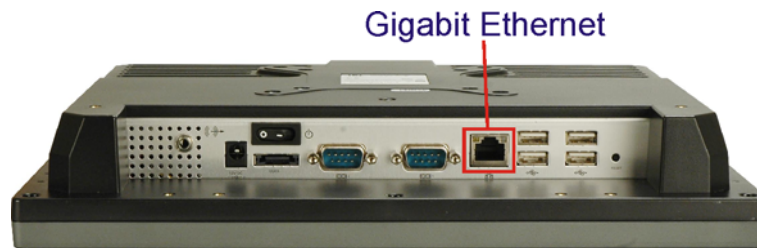
Figure 2-1: Gigabit Ethernet

The Realtek RTL8111CP controller provides 10 Mb/s, 100 Mb/s or 1000 Mb/s Ethernet connectivity to the AFLMB-9103GME. Some of the Gigabit Ethernet controller specifications are shown below.

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI rev.2.3, 32-bit, 33/66 MHz
- Supports pair swap/polarity/skew correction
- Crossover Detection & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Microsoft® NDIS5 Checksum Offload (IP, TCP, UDP) and largesend offload support
- Supports Full Duplex flow control (IEEE 802.3x)
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- 3.3 V signaling, 5 V PCI I/O tolerant
- Transmit/Receive FIFO (8K/64K) support
- Supports power down/link down power saving
- Supports PCI Message Signaled Interrupt (MSI)

2.5 Memory

The Intel® 910GMLE in the AFL-xxx-9103 contains an internal DDR2 controller. The DDR2 controller has the following features:

- Low-latency, high-bandwidth
- 400 MHz 128-bit DDR2 SDRAM controller
- Supports one un-buffered DDR2 SO-DIMM
- Each SO-DIMM has a maximum capacity of 2.0 GB

The DDR2 controller on the Northbridge is interfaced to one SO-DIMM socket on the AFL-xxx-9103.
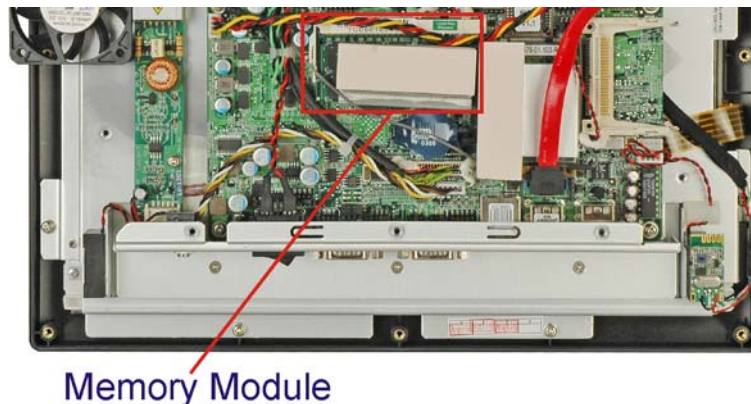
Figure 2-2: SO-DIMM Socket

2.6 Storage

There following storage options are available:

- 2.6.1 CompactFlash®
- 2.6.2 Hard Drive

2.6.1 CompactFlash®

The CompactFlash® socket supports standard CompactFlash® Type I and CompactFlash® Type II cards. The chipset flash interface is multiplexed with an IDE interface and can be connected to an array of industry standard NAND Flash or NOR Flash devices. The CompactFlash® slot location is shown below.
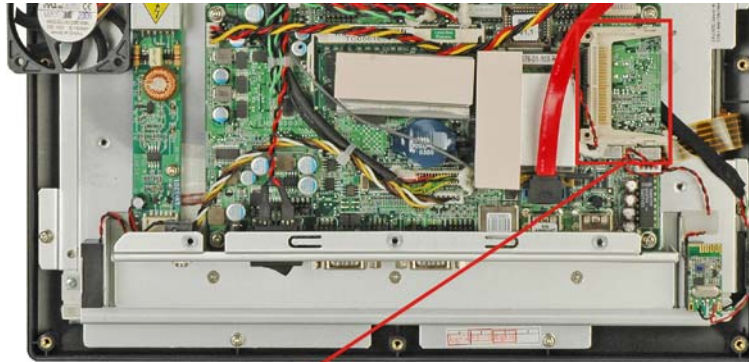
Figure 2-3: CompactFlash® Slot

2.6.2 Hard Drive

The AFL-xxx-9103 supports a single SATA or IDE hard drive. This hard drive is installed internally and connected to the SATA port or IDE connector on the AFLMB-9103GME motherboard. A second SATA connector is implemented externally through an eSATA connector.
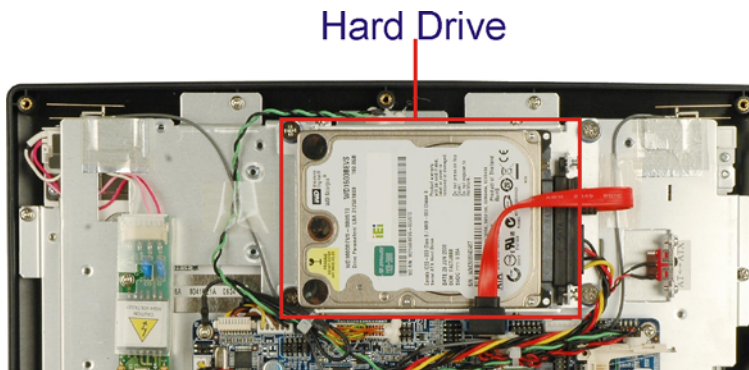
Figure 2-4: Hard Drive Slot

Figure 2-5: External SATA Hard Drive

2.7 Bluetooth Module

The AFL-xxx-9103 are all integrated with a Bluetooth module. The Bluetooth module enables the transmission between various peripheral devices through a Bluetooth network.

Figure 2-6: Bluetooth Module

Bluetooth enabled peripheral devices include:

- Headsets
- Barcode readers
- PDAs
- Printers
- Cell phones
- Keyboards and mice

Some of the major features of the Bluetooth module are listed below:

- Bluetooth v2.0 compliant
- Uses 2.402 GHz – 2.480 GHz unlicensed ISM band
- Class 2 output power (under 4 dBm)
- USB 2.0 interface

2.8 HSDPA Module (Optional)

The HSDPA module is one of the OEM options for the AFL-xxx-9103.
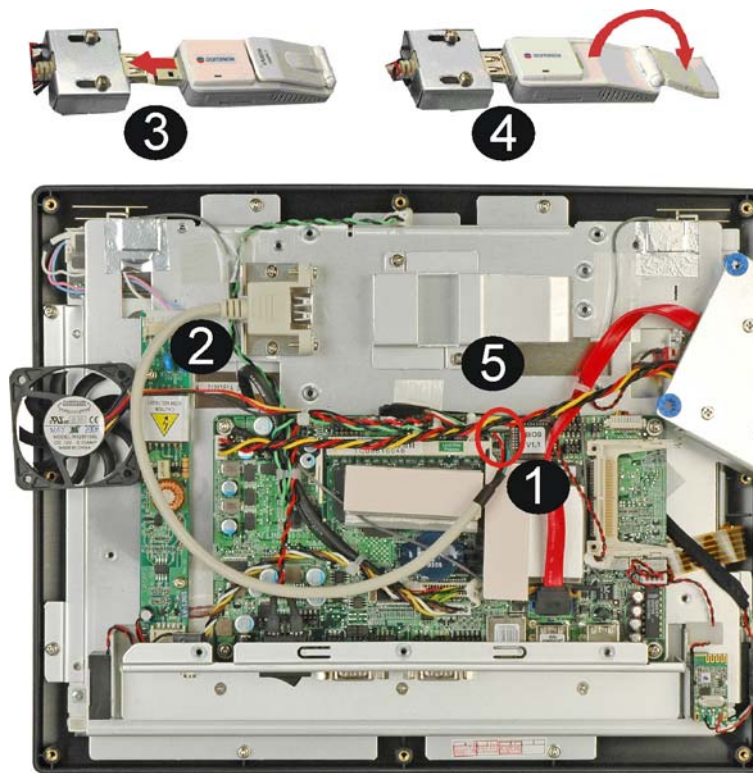
Figure 2-7: HSDPA Module

The HSDPA module connects to 3G and 3.5G cellular networks. The connectivity provided by the HSDPA module allows the AFL-xxx-9103 to connect through the Internet to remote networks, allowing the AFL-xxx-9103 to send and receive from wherever there is cellular coverage.

2.9 Wireless LAN

The IEEE 802.11a/b/g compliant wireless module is pre-installed in the system and provides wireless connectivity at up to 54 Mb/s. The wireless module is interfaced to the system chipset through the PCIe Mini slot.
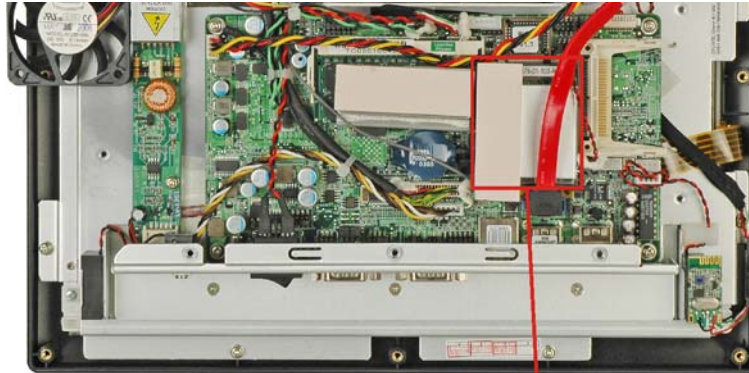
Figure 2-8: Wireless LAN Module

Some of the features of the wireless module are listed below.

- Compliant with IEEE 802.11a, 802.11b and 802.11g standards
- PCIe Mini interface
- VIA® Solomon VT6656 wireless LAN controller

2.10 Front Panel

The front panel of the AFL-xxx-9103 consists of an LCD monitor and a touch screen panel.

2.10.1 LCD Screen

The AFL-xxx-9103 comes with a TFT LCD monitor. The tough construction of the TFT monitor allows the AFL-xxx-9103 to withstand the conditions it is likely to be exposed to during regular use. Some of the specifications of the TFT monitors are shown below:

- Pixel pitch of 0.297 mm or less
- 700:1 contrast ratio or better
- 300 cd/m^2 or greater

- 8 msec optical response time or less
- 0°C to 50°C operating temperature

2.10.2 Touch Screen

The touch screen panel on the AFL-xxx-9103 allows complete user interaction without the need for a keyboard or mouse. Some of the features of the touch panel are listed below.

- 5-wire analog resistive type
- 78% transmission
- Control chipset built onto the motherboard
- -10°C to 50°C operating temperature
- 7 V maximum voltage

2.11 Internal Peripheral Device Connectors

The peripheral device connectors listed below are located on the AFLMB-9103GME motherboard. **Figure 2-9** shows the overview of the internal connectors.

- 1 x Audio connector
- 1 x Inverter connector
- 1 x LCD interface connector
- 1 x LED connector
- 1 x Power switch connector
- 1 x Touch screen connector
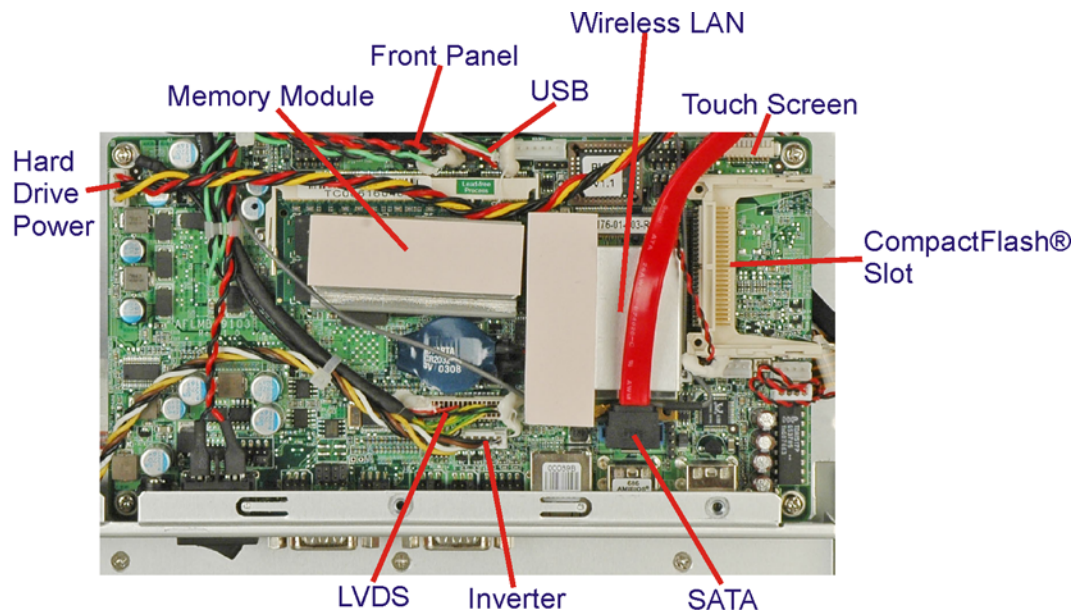
Figure 2-9: AFLMB-9103GME Connector Overview

2.11.1 Touch Screen Connector

CN Label:	**PANEL**
CN Type:	9-pin connector
CN Location:	See Figure 2-9
CN Pinouts:	See Table 2-1

The touch screen connector connects to the touch screen on the front panel of the AFL-xxx-9103.

PIN	DESCRIPTION
1	X+
2	X-
3	Y+
4	SENSE
5	X+
6	X-
7	Y+
8	Y-

PIN	DESCRIPTION
9	GND

Table 2-1: Touch Screen Connector

2.11.2 GPIO Connector

CN Label: JP3

CN Type: 10-pin connector

CN Location: See Figure 2-9

CN Pinouts: See Table 2-2

The GPIO connector is connected to external devices and can be programmed for external machine control. As standard, the GPIO connector is not used in the AFL-xxx-9103, but is still functional.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	VCC5
3	GPO0	4	GPO1
5	GPO2	6	GPO3
7	GPI0	8	GPI1
9	GPI2	10	GPI3

Table 2-2: GPIO Connector

2.11.3 Front Panel Connectors

CN Label: JP2

CN Type: 8-pin connector

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-3**

The front panel connectors connect to the buttons and indicators on the front panel. These include the power and reset buttons, and the hard drive and power LEDs.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	POWER_LED_G	2	HDD_POWER
3	GND	4	HDD_LED-
5	POWER_LED_O	6	GND
7	PS_ON	8	GND

Table 2-3: Front Panel Connectors

2.11.4 Keypad Connector

CN Label: **JP16**

CN Type: 10-pin connector

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-4**

The keypad connector connects to a numeric keypad for access control systems.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MCLR	2	VOL+
3	+5 V	4	VOL-
5	GND	6	BRIGHT+
7	ICSPCLK	8	BRIGHT-
9	ICSPDAT	10	LCD ON_OFF

Table 2-4: Front Panel Connectors

2.11.5 PCIe Mini Connector

CN Label: **MINI-PCIE1**

CN Type: 10-pin connector

CN Location: See **Figure 2-9**

CN Pinouts: See Table 2-5

The keypad connector connects to a numeric keypad for access control systems.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	WAKE#	2	VCC3
3	RESERVED	4	GND
5	RESERVED	6	VCC1.5
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK-	12	NC
13	REFCLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PERST#
23	PERn0	24	VCC3_AUX
25	PERp0	26	GND
27	GND	28	VCC1.5
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_DATA-
37	RESERVED	38	USB_DATA+
39	RESERVED	40	GND
41	RESERVED	42	LED_WWAN#
43	RESERVED	44	LED_WLAN#
45	RESERVED	46	LED_WPAN#
47	RESERVED	48	VCC1.5
49	RESERVED	50	GND
51	RESERVED	52	VCC3

Table 2-5: Front Panel Connectors

2.11.6 Backlight Connector

CN Label: **CN5**

CN Type: 6-pin box header

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-6**

The backlight connector provides power for the LCD panel backlight.

PIN	DESCRIPTION
1	INV VCC
2	INV VCC
3	LCDBKTCT
4	Brightness
5	GND
6	GND

Table 2-6: Backlight Connector

2.11.7 VGA Connector

CN Label: **CN6**

CN Type: 10-pin box header

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-7**

The VGA connector can connect to an external monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	DDCDAT
3	GREEN	4	DDCCLK
5	BLUE	6	GND
7	VSYNC	8	GND
9	HSYNC	10	GND

Table 2-7: VGA Connector

2.11.8 Hard Drive Power Connector

CN Label:	**CN3**
CN Type:	4-pin box header
CN Location:	See **Figure 2-9**
CN Pinouts:	See **Table 2-8**

The hard drive power connector provides power to an hard drive installed in the AFL-xxx-9103. The hard drive power connector is specifically intended to be used with an installed SATA hard drive.

PIN	DESCRIPTION
1	+5 V
2	GND
3	GND
4	+12 V

Table 2-8: Hard Drive Power Connector

2.11.9 CompactFlash® Connector

CN Label:	**CN10**
CN Type:	CompactFlash® connector
CN Location:	See **Figure 2-9**
CN Pinouts:	See **Table 2-9**

The CompactFlash® slot allows a Type I/II CompactFlash® card to be installed in the AFL-xxx-9103.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14

PIN	DESCRIPTION	PIN	DESCRIPTION
6	DATA 7	31	DATA 15
7	HDC_CS1#	32	HDC_CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC5
12	N/C	37	IRQ15
13	VCC_COM	38	VCC5
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	PA2	43	PDREQ
19	PA1	44	PDACK#
20	PA0	45	NC
21	DATA 0	46	66DET
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

Table 2-9: CompactFlash® Connector

2.11.10 Audio Output Connector

CN Label:	**CN4**
CN Type:	4-pin connector
CN Location:	See **Figure 2-9**
CN Pinouts:	See **Table 2-10**

The audio output connector connects to speakers.

PIN	DESCRIPTION
1	Line-out-L
2	GND
3	GND
4	Line-out-R

Table 2-10: Audio Output Connector

2.11.11 Microphone Input Connector

CN Label: **MIC1**

CN Type: 2-pin connector

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-11**

The microphone input connector connects to a microphone for audio input.

PIN	DESCRIPTION
1	MIC_IN
2	GND

Table 2-11: Microphone Input Connector

2.11.12 12 V Power Connector

CN Label: **CN7**

CN Type: 3-pin box header

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-12**

The 12 V power connector provides 12 V of power to connected devices.

PIN	DESCRIPTION
1	12 V
2	GND

PIN	DESCRIPTION
3	GND

Table 2-12: 12 V Power Connector

2.11.13 COM3 RS-232/422/485 Serial Port Connector

CN Label:	**COM3**
CN Type:	DB-9 male
CN Location:	See **Figure 2-9**
CN Pinouts:	See **Table 2-13**

The COM3 serial port connector provides an RS-232, RS-422 or RS-485 data connection to an attached device.

PIN	RS-232 mode	RS-422 mode	RS-485 mode
1	DCD3	TX-	D-
2	RX3	TX+	D+
3	TX3		
4	DTR3		
5	GND		
6	DSR3	RX-	
7	RTS3	RX+	
8	CTS3		
9	RI3		

Table 2-13: COM3 Serial Port Connector

2.11.14 COM1 RS-232 Serial Port Connector

CN Label:	**COM1**
CN Type:	DB-9 male
CN Location:	See **Figure 2-9**
CN Pinouts:	See **Table 2-14**

The COM1 serial port connector provides an RS-232 data connection to attached devices.

PIN	DESCRIPTION
1	DCD1
2	RX1
3	TX1
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	RI1

Table 2-14: COM1 Serial Port Connector

2.11.15 SATA Ports

CN Label: SATA1

CN Type: SATA connector

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-15**

The SATA connector connects to SATA hard drives and SATA CD-ROMs.

PIN	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	GND
9	GND

PIN	DESCRIPTION
10	GND
11	GND

Table 2-15: SATA1 Connector

2.11.16 SATA Ports

CN Label: **SATA2**

CN Type: SATA connector

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-16**

The SATA connectors connect to SATA hard drives and SATA CD-ROMs.

PIN	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	GND
9	GND

Table 2-16: SATA Connector

2.11.17 PS/2 Keyboard & Mouse Connector

CN Label: **KB/PS1**

CN Type: 6-pin box header

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-17**

CN Pinouts: See Table 2-19

The fan connects to a system fan. The system fan provides cooling for the computer. The fan speed is read by the computer and then adjusted according to temperature and fan settings.

PIN	DESCRIPTION
1	Fan Speed Detect
2	+12 V
3	GND

Table 2-19: Fan Connector

2.11.20 LVDS Connector

CN Label: **LVDS2**

CN Type: 30-pin crimp

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-20**

The LVDS connector connects to the LCD panel and provides the data for the display of images on the screen.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	GND
3	LVDSB0+	4	LVDSB0-
5	LVDSB1+	6	LVDSB1-
7	LVDSB2+	8	LVDSB2-
9	LVDSBCLK+	10	LVDSBCLK-
11	LVDSB3+	12	LVDSB3-
13	GND	14	GND
15	LVDS0+	16	LVDSO-
17	LVDS1+	18	LVDS1-
19	LVDS2+	20	LVDS2-
21	LVDSCLK+	22	LVDSCLK-

PIN	DESCRIPTION	PIN	DESCRIPTION
23	LVDS3+	24	LVDS3-
25	GND	26	GND
27	VCCLCD	28	VCCLCD
29	VCCLCD	30	VCCLCD

Table 2-20: LVDS Connector

2.11.21 USB Connectors (Internal)

CN Label: **USB3**

CN Type: 8-pin header

CN Location: See **Figure 2-9**

CN Pinouts: See **Table 2-21**

The USB connectors connect to USB devices.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USBVCC0	5	GND
2	D0F-	6	D1F+
3	D0F+	7	D1F-
4	GND	8	USBVCC0

Table 2-21: USB Connectors

Chapter

3

Installation

3.1 Installation Precautions

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

- **Power turned off**: When installing the flat panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard components.
- **Mounting**: The flat panel PC is a heavy device. When mounting the system onto a rack, panel, wall or arm please make sure that at least two people are assisting with the procedure.
- **Anti-static Discharge**: If a user opens the rear panel of the flat panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

3.2 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD screen
- 1.0 GB DDR2 memory module
- Resistive type touch screen
- Wireless LAN module
- Bluetooth module
- Power switch

Preinstalled OEM customizations may include the following.

- Different DDR2 memory module
- Hard disk drive
- HSDPA module

Installation of some of the components is described in **the following sections.**

3.3 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the flat panel PC

Step 2: Install CompactFlash® card

Step 3: Install HDD

Step 4: Mount the flat panel PC

Step 5: Connect peripheral devices to the bottom panel of the flat panel PC

Step 6: Configure the system

3.4 Unpacking

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

WARNING!

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

Step 1: Use box cutters, a knife or a sharp pair of scissors to cut the seals of the outer box.

Step 2: Open the outer box.

Step 3: Open the inner box.

Step 4: Lift the monitor out of the boxes.

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

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

Step 7: Open the small box inside and make sure all the components listed in the packing list are present.

3.4.1 Packing List

The AFL-xxx-9103 is shipped with the following components:

Quantity	Item	Image
1	AFL-xxx-9103	
1	60 W power adapter	
1	Power cord	
1	eSATA cable	
1	User manual CD and driver CD	
1	Screw set	
1	Touch pen	

Table 3-1: Packing List

3.4.2 Optional Items

These optional extras are available for the AFL-xxx-9103

Quantity	Item	Image
1	Wall mounting kit	
4 (6)	Panel mounting kit (AFL-12B-9103-R10)	
1	Stand mounting kit	
1	128 MB CompactFlash® card with Windows CE 5.0 pre-installed and SDK	
1	1.0 GB CompactFlash® card with Windows XPE pre-installed	

Table 3-2: Optional Items

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

3.5 CompactFlash® Card Installation

The AFL-xxx-9103 has one CompactFlash® slot inside the rear panel. To install the CompactFlash® card, follow the instructions below.

Step 1: Remove the retention screws (**Figure 3-1** and **Figure 3-2**) and lift the plastic cover off the flat panel PC.

Figure 3-1: AFL-10A-9103-R10 Cover Retention Screws

Figure 3-2: AFL-12B-9103-R10 Back Cover Retention Screws

Step 2: Locate the CompactFlash® card slot. Insert a CompactFlash® card into the slot (**Figure 3-3**).

Figure 3-3: CompactFlash® Card Slot Location

Step 3: Replace the plastic back cover. Once replaced, fasten the previously removed

retention screws.

3.6 Hard Drive Installation

The AFL-12B-9103-R10 has space for a hard drive. To install the hard drive, please follow
the steps below:

Step 1: Remove the plastic back cover. See **Section 3.5** above.

Step 2: Remove the retention screws securing the internal aluminum cover (**Figure 3-4**)

and lift the aluminum cover off the panel PC.
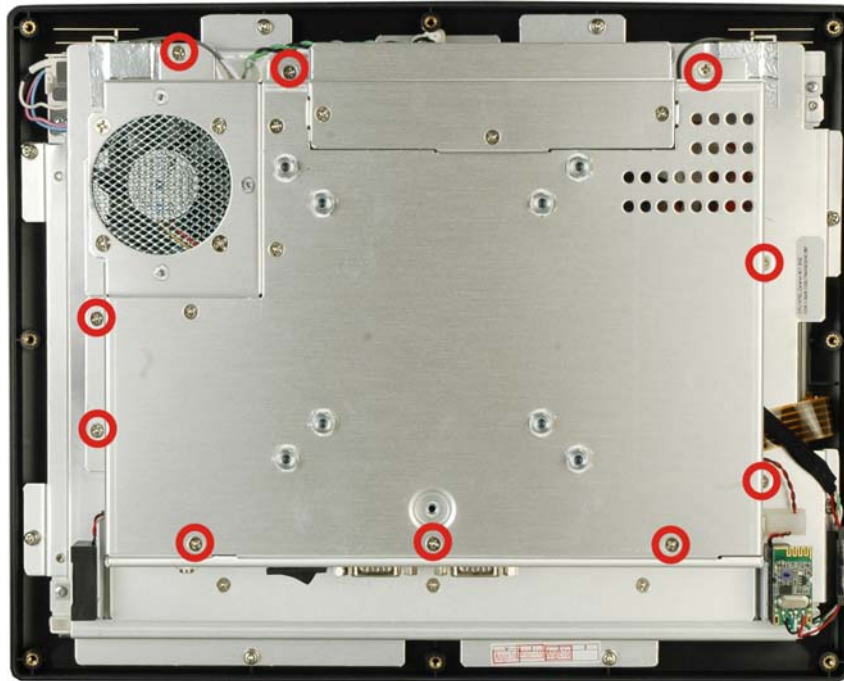
Figure 3-4: AFL-12B-9103-R10 Cover Retention Screws

Step 3: Remove the four hard drive bracket retention screws (**Figure 3-5**) and lift the

hard drive bracket off the panel PC.
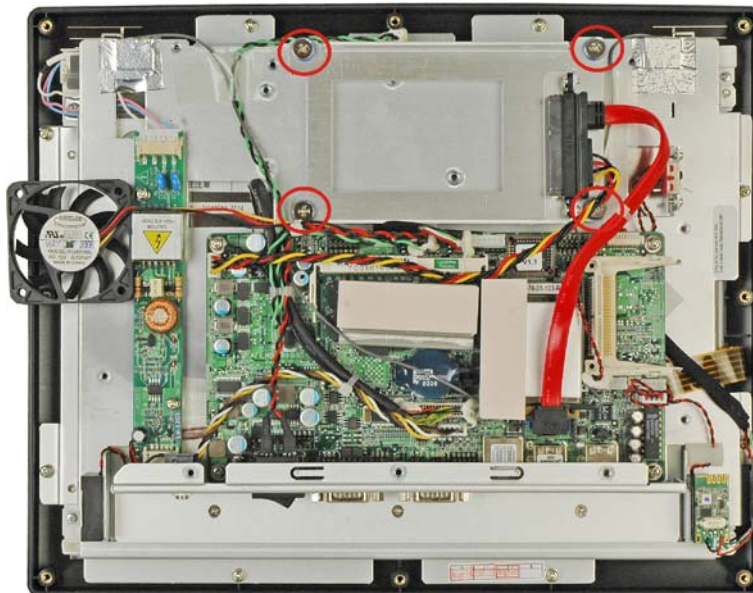
Figure 3-5: AFL-12B-9103-R10 Bracket Retention Screws

Step 4: Attach the hard drive bracket to the hard drive. To do this, align the four retention screw holes in the both sides of the hard drive bracket with the retention screw holes on the sides of the hard drive. Insert four retention screws into the hard drive bracket (**Figure 3-6**).
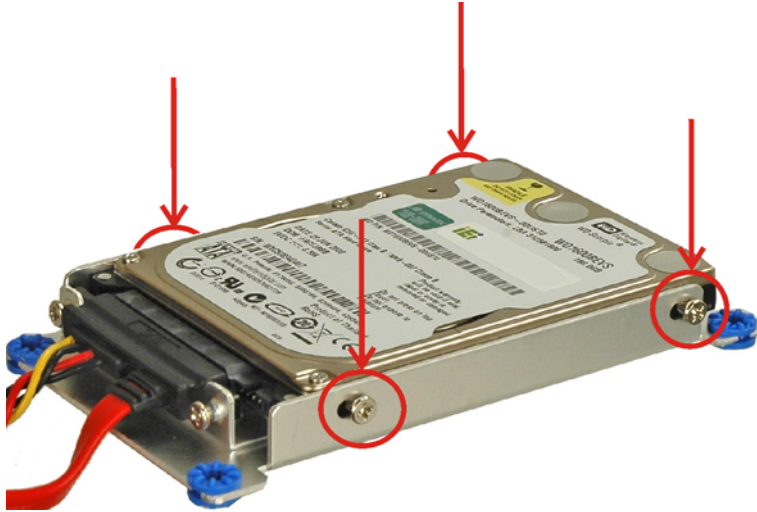
Figure 3-6: AFL-xxx-9103 Hard Drive Retention Screws

Step 5: Connect the SATA/IDE cable to the rear of hard drive.

Step 6: Install the hard drive into the panel PC by aligning the retention screw holes in the hard drive brackets with the retention screw holes on the chassis. Insert the four retention screws.

Step 7: Replace the aluminum back cover to the chassis.

Step 8: Replace the plastic back cover.

3.7 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFL-xxx-9103. The selection is made through an AT/ATX switch on the aluminum chassis inside the plastic back cover (Figure 3-7). To select AT mode or ATX mode, follow the steps below.

Step 1: Remove the plastic back cover. See **Section 3.5** above.

Step 2: Locate the AT/ATX switch on the aluminum chassis (**Figure 3-7**).

Figure 3-7: AT/ATX Switch Location

Step 3: Adjust the AT/ATX switch.

3.7.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL-xxx-9103 turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

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

3.7.2 ATX Power Mode

With the ATX mode selected, the AFL-xxx-9103 goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time

for each panel PC can be set individually and controlled remotely. Other possible application includes

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

3.8 Mounting the System

  WARNING!

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

The four methods of mounting the AFL-xxx-9103 are listed below.

- Wall mounting
- Stand/Arm mounting

The four mounting methods are described below.

3.8.1 Wall Mounting

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

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

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

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

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

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 3-8**).
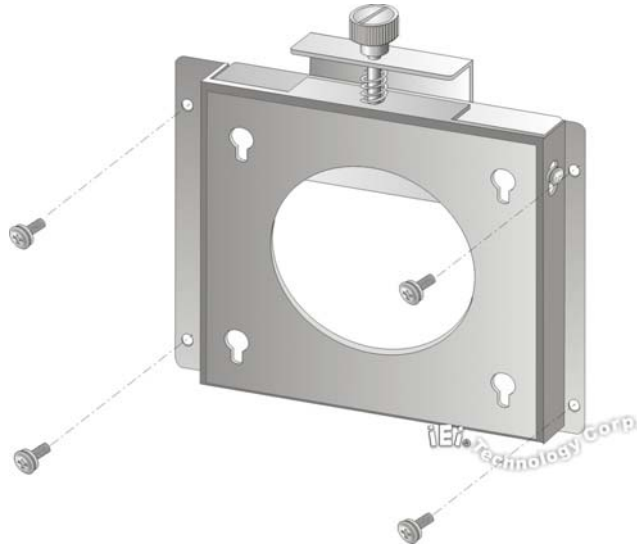
Figure 3-8: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the flat panel PC and tighten until the screw shank is secured against the rear panel (**Figure 3-9**).

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

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 3-9**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.
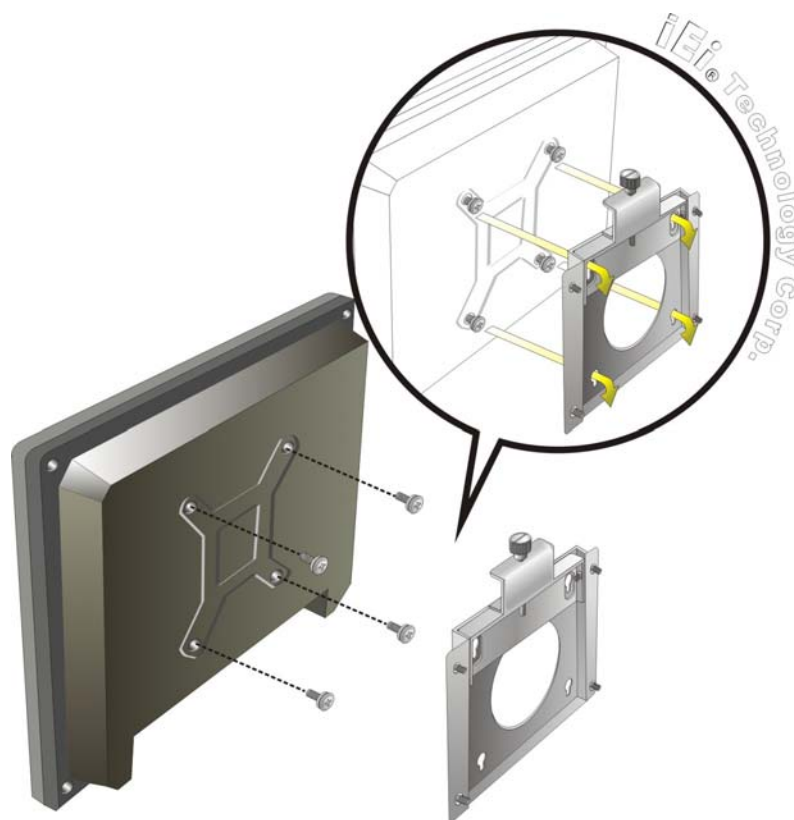
Figure 3-9: Chassis Support Screws

![NOTE icon] **NOTE:**

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

Step 9: Secure the panel PC by fastening the retention screw of the wall-mounting bracket. (**Figure 3-10**).
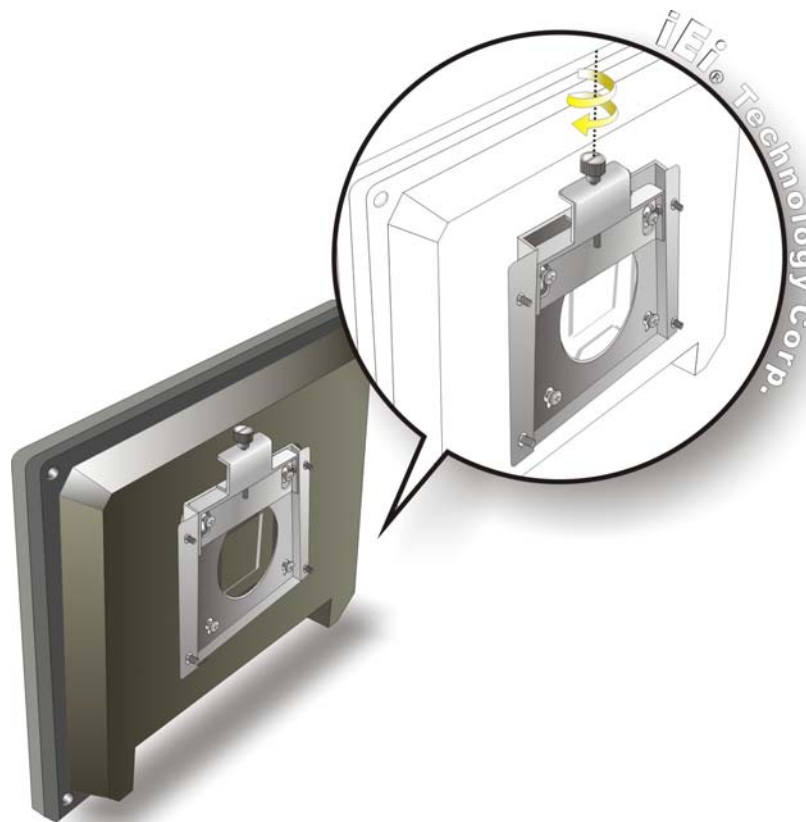
Figure 3-10: Secure the Panel PC

3.8.2 Arm Mounting

The AFL-xxx-9103 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a VESA compliant interface pad. To mount the AFL-xxx-9103 series on an arm, please follow the steps below.

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

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has the correct interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL-xxx-9103.

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

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The AFL-xxx-9103 arm mount retention screw holes are shown in **Figure 3-11**.
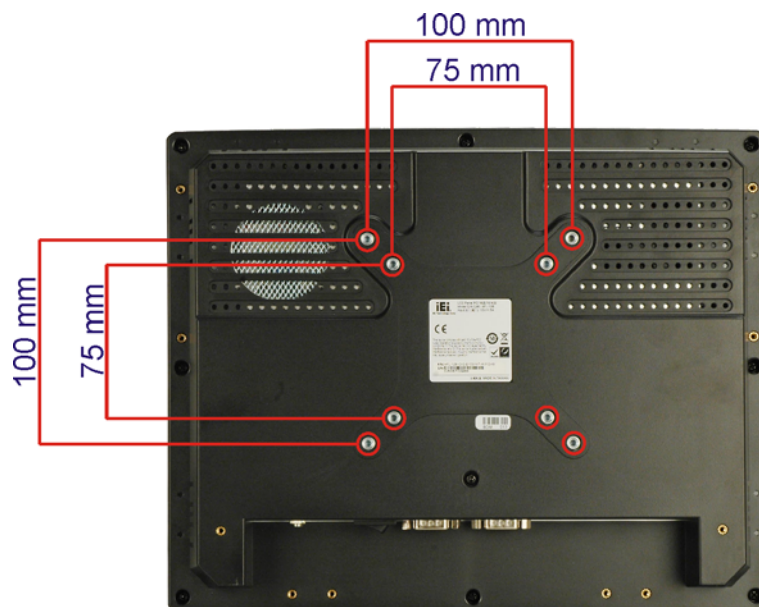
Figure 3-11: Arm Mounting Screw Holes

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

3.8.3 Panel Mounting

To mount the AFL-xxx-9103 into a panel, please follow the steps below.

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

Step 2:   Cut out a section from the panel that corresponds to the rear panel dimensions of the flat panel PC. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the flat panel PC but just large enough for the rear panel of the flat panel PC to fit through (**Figure 3-12** and **Figure 3-13**).
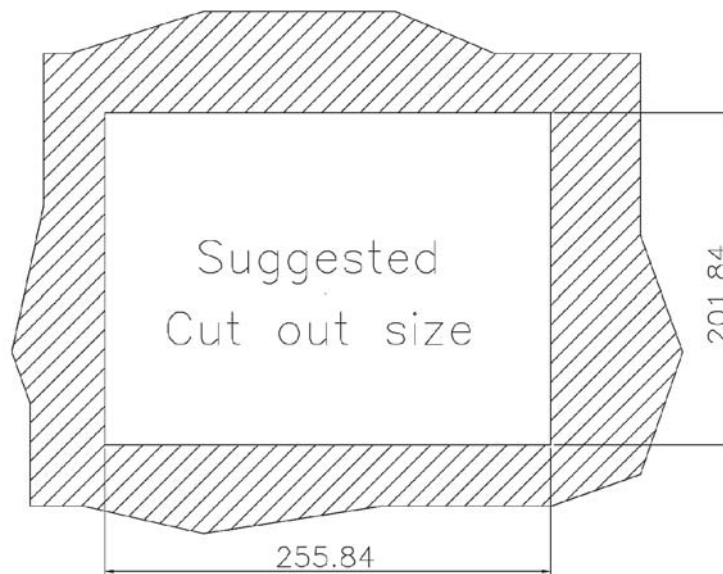
Figure 3-12: AFL-10A-9103-R10 Panel Opening
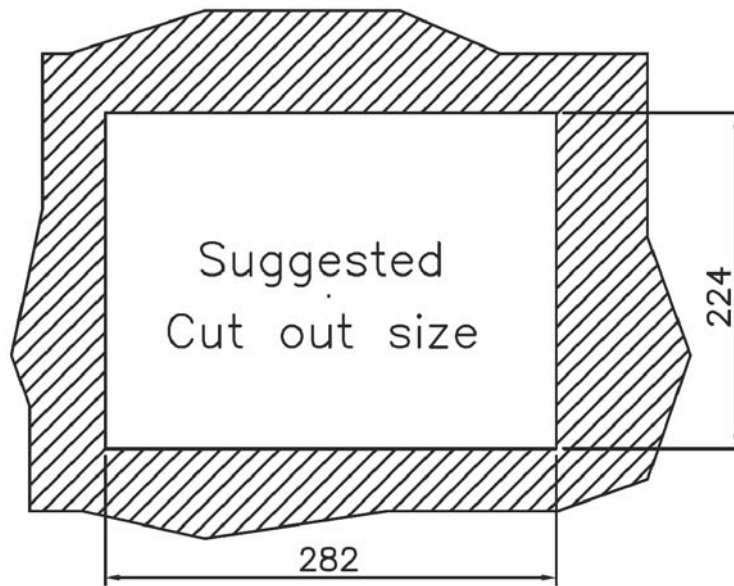
Figure 3-13: AFL-12B-9103-R10 Panel Opening

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

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the aluminum frame. There are a total of 6 panel mounting clamps for AFL-xxx-9103.

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 3-14**).
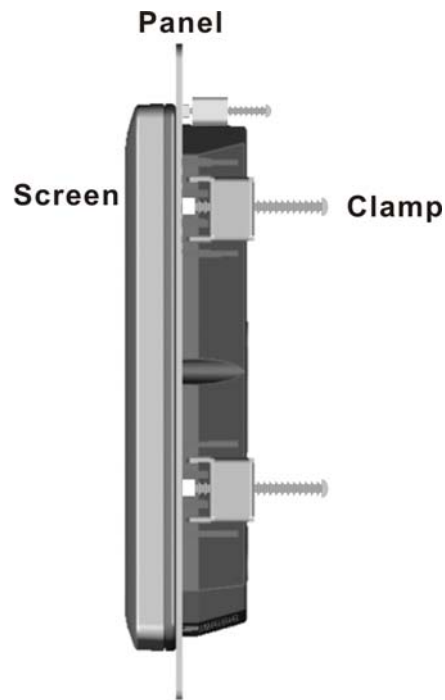
Figure 3-14: Tighten the Panel Mounting Clamp Screws

3.8.4 Cabinet and Rack Installation

The AFL-xxx-9103 can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:

NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the AFL-xxx-9103 flat panel PC and the rack/cabinet into which the AFL-xxx-9103 is installed.

Step 1: Slide the rear chassis of the AFL-xxx-9103 through the rack/cabinet bracket until the aluminum frame is flush against the front of the bracket (**Figure 3-15**).
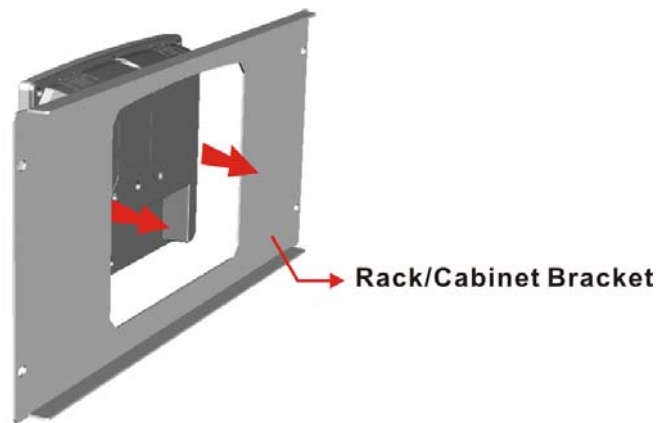
Figure 3-15: The Rack/Cabinet Bracket

Step 2: Insert the rack mounting clamps into the pre-formed holes along the edges of the flat panel PC, behind the ABS/PC plastic frame. There are a total of 6 rack mounting clamps for the AFL-xxx-9103.

Step 3: Tighten the screws that pass through the rack mounting clamps until the plastic caps at the front of all the screws are firmly secured to the bracket (**Figure 3-16**).
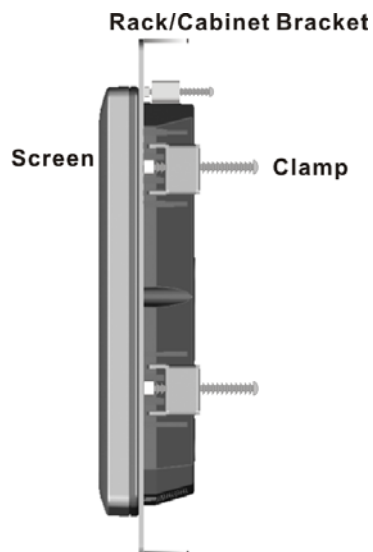
Figure 3-16: Secure the Rack/Cabinet Bracket

Step 4: Slide the flat panel PC with the attached rack/cabinet bracket into a rack or cabinet (**Figure 3-17**).
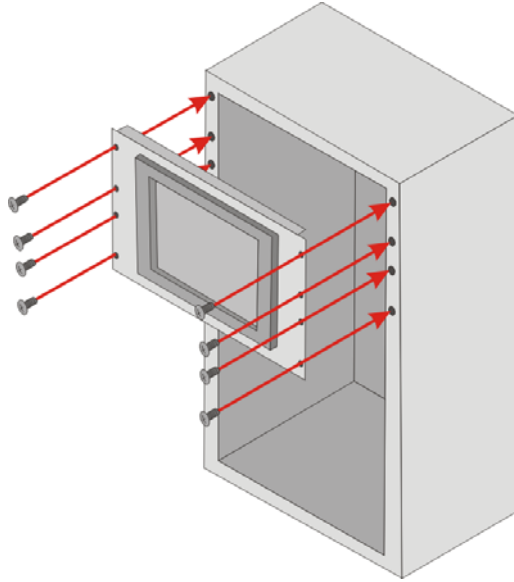
Figure 3-17: Install into a Rack/Cabinet

Step 5: Once the flat panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 3-17**).

3.9 Bottom Panel Connectors

3.9.1 LAN Connection

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

Step 1: **Locate the RJ-45 connectors** on the bottom panel of the AFL-xxx-9103 Series.

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-xxx-9103. See **Figure 3-18**.
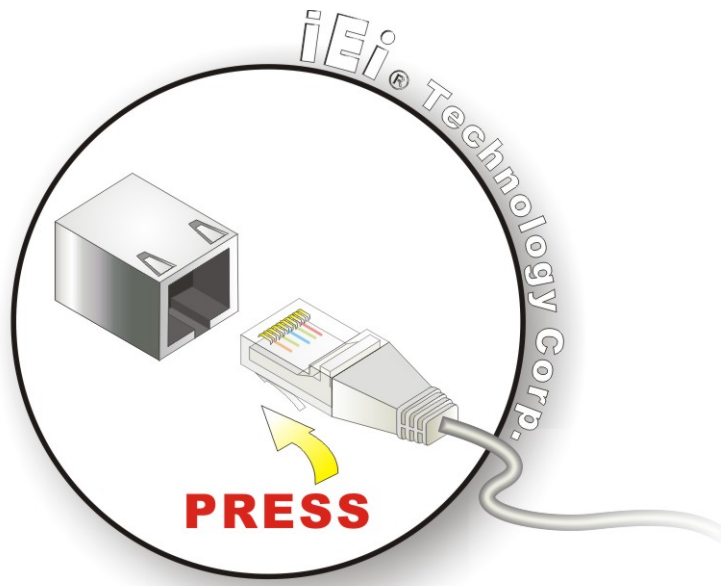
Figure 3-18: LAN Connection

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

3.9.2 Serial Device Connection

The AFL-xxx-9103 has two single female DB-9 connectors on the bottom panel for a serial device. Follow the steps below to connect a serial device to the AFL-xxx-9103 Series panel PC.

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

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 3-19**.
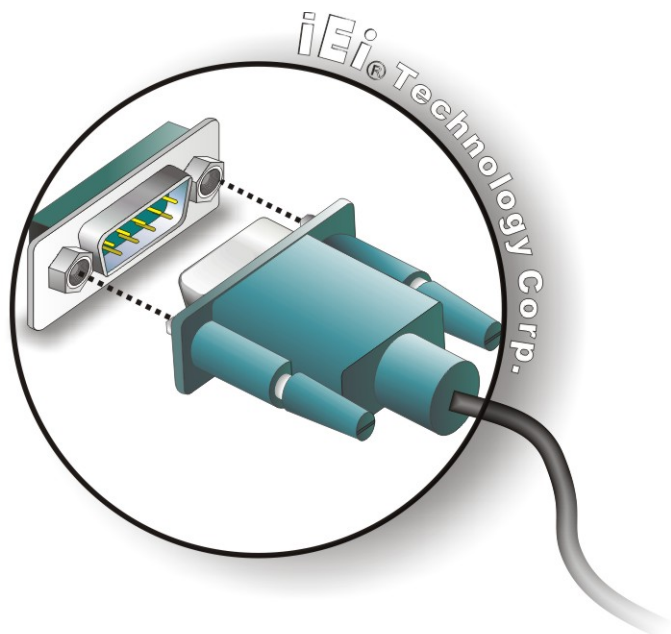
Figure 3-19: Serial Device Connector

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.

3.9.3 USB Device Connection

There are four external USB 2.0 connectors. All connectors are perpendicular to the
AFL-xxx-9103. To connect a USB 2.0 or USB 1.1 device, please follow the instructions
below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown

in **Chapter 2**.

Step 2: **Align the connectors.** Align the USB device connector with one of the

connectors on the bottom panel. See **Figure 3-20**.
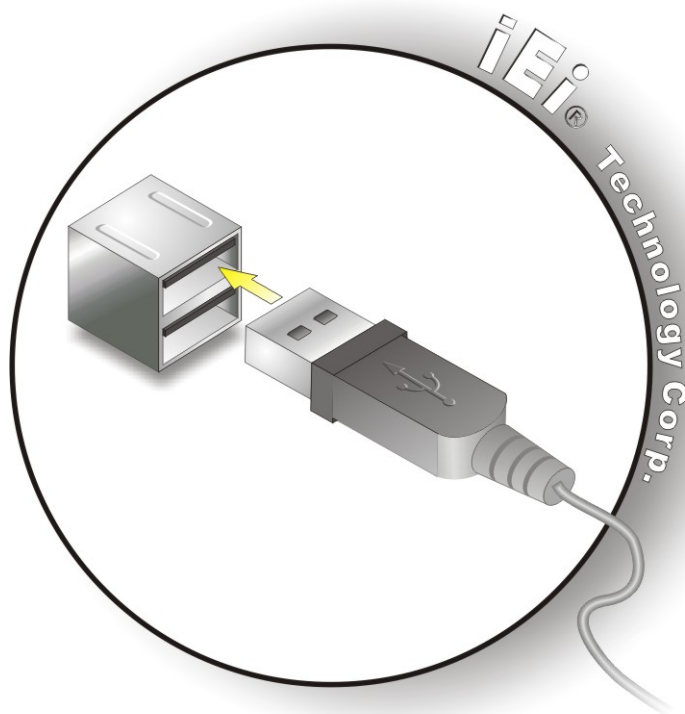
Figure 3-20: USB Device Connection

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

connector into the onboard connector.

Chapter

4

System Maintenance

4.1 System Maintenance Introduction

If the components of the AFL-xxx-9103 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-xxx-9103 are described below.

4.2 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

4.3 Internal Aluminum Cover Removal

 WARNING!

Before removing the back cover, make sure the power if off. Failing to do so may lead to severe damage of AFL-xxx-9103 series and injury to the body.

 WARNING!

Please take antistatic precautions when working with the internal components. The interior of the AFL-xxx-9103 contains very sensitive electronic components. These components are easily damaged by electrostatic discharge (ESD). Before working with the internal components make sure all the anti-static precautions described earlier have been observed.

To replace any of the following components,

▪ Motherboard

- ▪ DDR2 memory module
- ▪ Wireless LAN module
- ▪ Bluetooth module
- ▪ HSDPA module
- ▪ Inverter

The internal aluminum back cover of the AFL-xxx-9103 series must be removed. To remove the aluminum back cover, please follow the steps below.

Step 1: Remove the retention screws securing the internal aluminum cover (**Figure 4-1** and **Figure 4-2**).
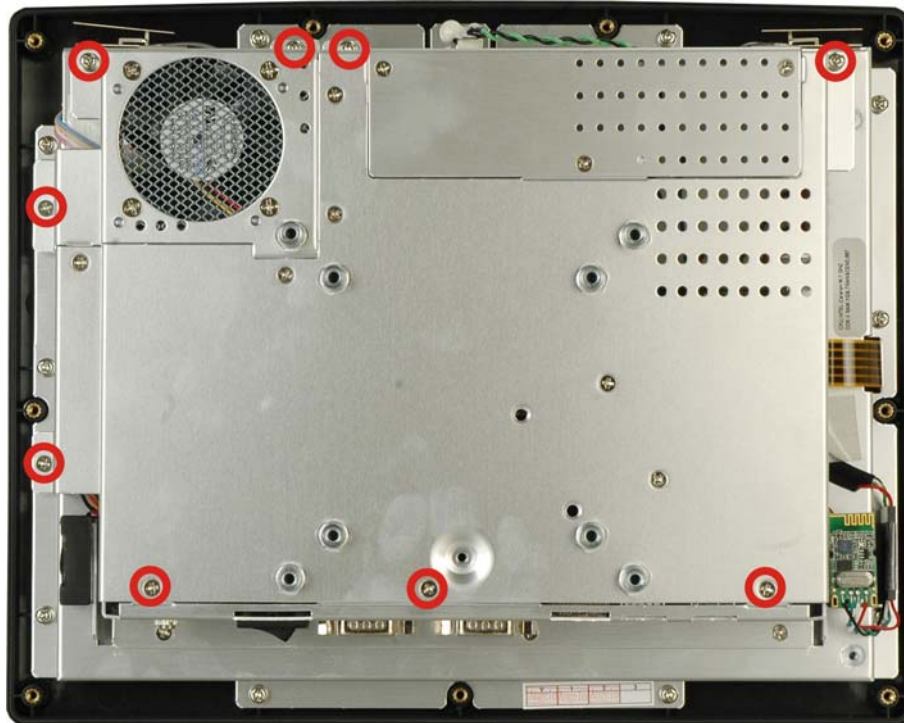
Figure 4-1: AFL-10A-9103-R10 Aluminum Back Cover Retention Screws
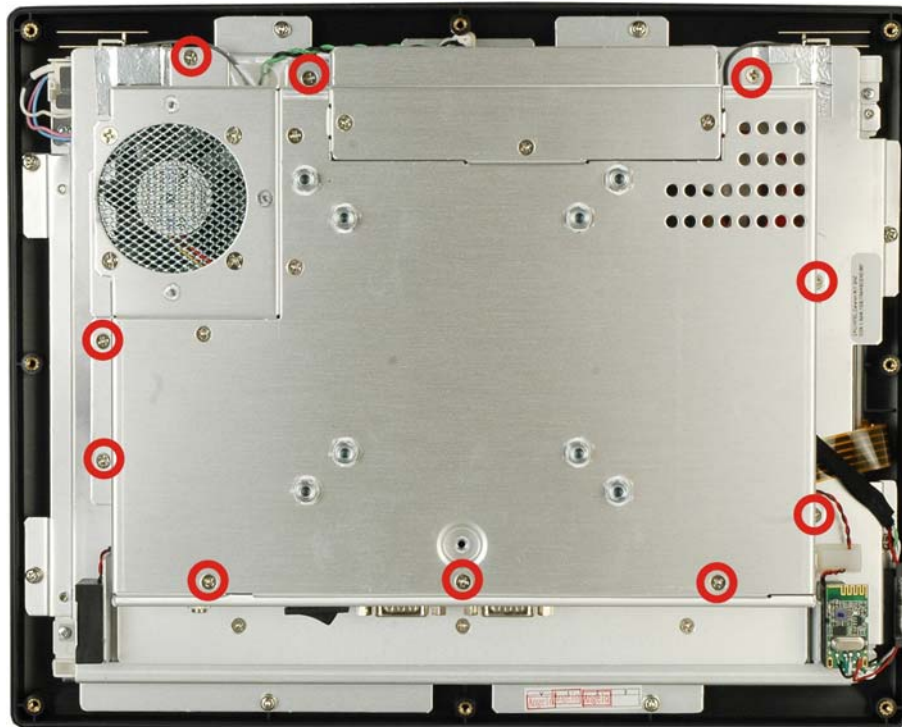
Figure 4-2: AFL-12B-9103-R10 Aluminum Back Cover Retention Screws

Step 2: Lift the aluminum cover off the AFL-xxx-9103. The AT/ATX switch on the aluminum cover is connected to the motherboard. Be careful when lifting the cover off.

4.4 Memory Module Replacement

The flat panel PC is preinstalled with a 512 MB DDR2 memory module. If the memory module fails, follow the instructions below to replace the memory module.

Step 1: Remove the back cover. See **Section 3.5** above.

Step 2: Remove the internal aluminum back cover. See **Section 4.3** above.

Step 3: Locate the DDR2 memory module on the motherboard of the flat panel PC (**Figure 4-3**).
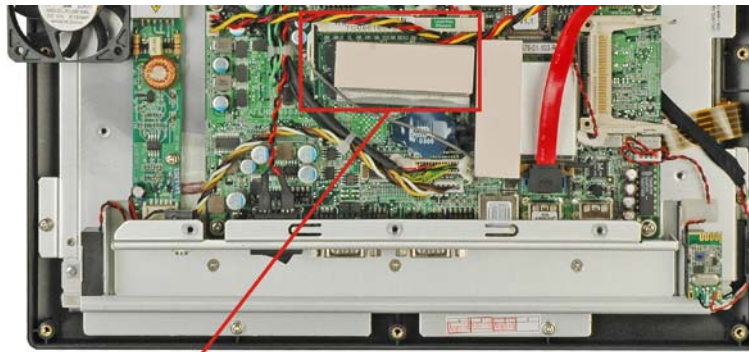
Figure 4-3: SO-DIMM Socket Location

Step 4: Remove the thermal pad off the memory module.

Step 5: Remove the DDR2 memory module by pulling both the spring retainer clips outward from the socket.

Step 6: Grasp the DDR2 memory module by the edges and carefully pull it out of the socket.

Step 7: Install the new DDR2 memory module by pushing it into the socket at an angle (**Figure 4-4**).

Step 8: Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR2 memory module down (**Figure 4-4**).

Step 9: Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR2 memory module in the socket.
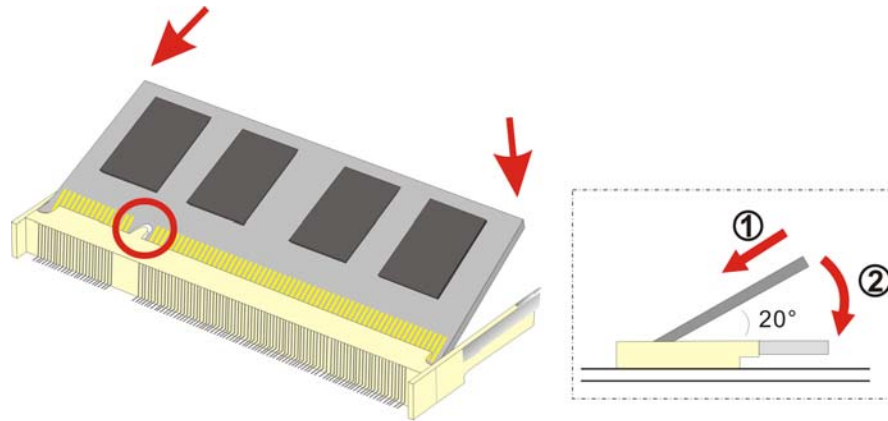
Figure 4-4: DDR2 SO-DIMM Module Installation

Step 10: Re-attach the thermal pad into the memory module.

4.5 Jumper Settings

  NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them.   To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.
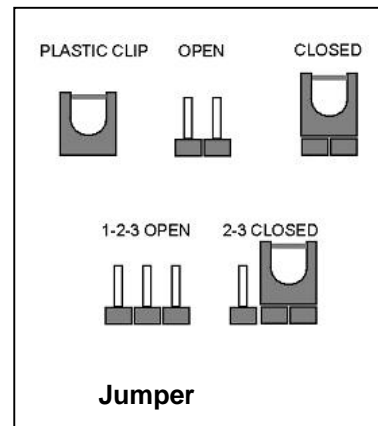
The jumpers on the AFLMB-9103GME are listed below.

The jumper locations are shown in Figure 4-5.
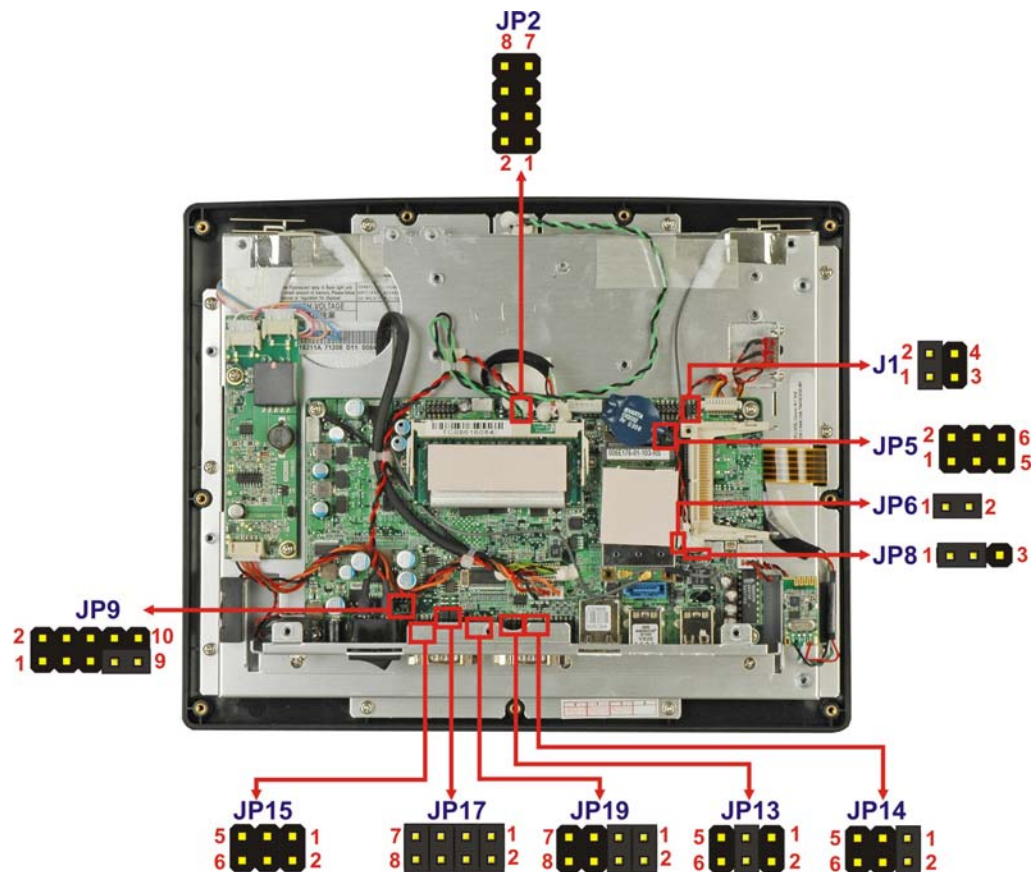
Figure 4-5: Jumper Locations

4.5.1 AT/ATX Power Selection

This jumper sets the power as using AT power or ATX power.

JP10	Description
1-2 closed	AT power
1-2 open	ATX power

Table 4-1: AT/ATX Power Selection

JP12	Description
1-2 closed	ATX
1-2 open	AT

Table 4-2: AT/ATX Power Selection

4.5.2 Clear CMOS

The Clear CMOS jumper is for resetting the BIOS. To reset the BIOS, turn off the computer, move the jumper to the "Clear CMOS setup" position, turn on the computer for 5 seconds, turn off, then set the jumper to the normal position. The BIOS is then returned to default settings.

JP8	DESCRIPTION
1-2	Normal operation
2-3	Clear CMOS setup

Table 4-3: Clear CMOS

4.5.3 CompactFlash® Master/Slave Selection

This jumper sets the CompactFlash® disk as the IDE master or the IDE slave.

JP6	Description
Closed	Master
Open	Slave

Table 4-4: CompactFlash® Master/Slave Selection

4.5.4 COM1 Pin-9 Setting

Pin 9 on serial port COM1 can be set to provide 5 V or 12 V of power, or as the ring indicator.

JP9	Description
1-3	12 V
3-5	5 V
7-9	RI

Table 4-5: COM1 Pin-9 Setting

4.5.5 COM2 Pin-9 Setting

Pin 9 on serial port COM2 can be set to provide 5 V or 12 V of power, or as the ring indicator.

JP9	Description
2-4	12 V
4-6	5 V
8-10	RI

Table 4-6: COM2 Pin-9 Setting

4.5.6 COM3 Settings

The following jumpers are used to set up the COM3 serial port.

4.5.6.1 COM3 Pin-9 Setting

Pin 9 on serial port COM3 can be set to provide 5 V or 12 V of power, or as the ring indicator.

JP13	Description
1-2	12 V
3-4	RI
5-6	5 V

Table 4-7: COM3 Pin-9 Setting

4.5.6.2 COM3 RS-422/485 Select

This jumper sets COM3 as either RS-422 or RS-485. This jumper should be set in conjunction with the other COM3 jumpers.

JP15	Description
1-3, 2-4	RS-422
3-5, 4-6	RS-485

Table 4-8: COM3 Mode Select

4.5.6.3 COM3 Pin-12 Signal Setting

The Pin-12 signal setting sets the signal type used on pin 12.

JP17	Description
1-2, 4-5, 7-8, 10-11	RS-232
2-3, 5-6, 8-9, 11-12	RS-422/485

Table 4-9: COM3 Pin-12 Signal Settings

4.5.6.4 COM3 Pin-8 Signal Setting

The Pin-8 signal setting sets the signal type used on pin 8.

JP19	Description
3-4	RS-232
1-2, 5-6	RS-422
1-2, 7-8	RS-485

Table 4-10: COM3 Pin-12 Signal Settings

4.5.6.5 COM3 Long Distance RS-422/485

This jumper helps to correct communication problems in long cables.

J2	Description
Open	Normal
1-3	RS-422
2-4	RS-485

Table 4-11: COM3 Long Distance RS-422/485 Settings

4.5.7 LCD Voltage Selection

WARNING!

Do not change this voltage. This voltage has been preset and is compatible with the currently installed LCD screen. Changing this jumper setting may cause damage to the system.

The LCD Voltage Setup jumper sets the voltage for the LCD screen. This setting MUST NOT be changed.

JP14	DESCRIPTION
1-2	+3.3 V
3-4	+5 V
5-6	+12 V

Table 4-12: LCD Voltage Setup Jumper Settings

4.5.8 Panel Resolution

This jumper selects the video resolution.

JP5	Description
Open	800 x 600, 18-bit
1-2	1024 x 768, 18-bit
3-4	1280 x 1024, 36-bit
5-6	1280 x 1024, 48-bit

Table 4-13: Panel Resolution Settings

4.5.9 Touch Panel Type

The touch panel type selects whether the connected touch panel is a 4-wire or 5-wire touch panel.

J1	DESCRIPTION
1-2	5-wire
3-4	4-wire

Table 4-14: Touch Panel Type

Chapter

5

BIOS Setup

5.1 Introduction

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

5.1.1 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.

5.1.2 Using Setup

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

Key	Function
Up arrow	Move to 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

Key	Function
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors.　F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

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

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 4**, **Section 4.5**.

5.1.5 BIOS Menu Bar

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

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

5.2 Main

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

```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

  System Overview                                   Use [ENTER], [TAB] or
                                                    [SHIFT-TAB] to select
  AMIBIOS                                           a field.
  Version    :08.00.12
  Build Date:07/03/08                               Use [+] or [-] to
  ID         :H296MR10                              configure system
  0                                                 Time.

  Processor
  Type       :Intel(R) Celeron(R) M processor
  Speed      :1000MHz
  Count      :1
                                                    ←→    Select Screen
  System Memory                                     ↑↓    Select Item
  Size       :1016MB                                +-    Change Field
                                                    Tab   Select Field
  System Time                 [14:20:27]            F1    General Help
  System Date                 [Tue 05/06/2008]      F10   Save and Exit
                                                    ESC   Exit

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```

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.
  - o **Size**: Lists memory size

The **System Overview** field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

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

➔ **System Date [xx/xx/xx]**

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

5.3 Advanced

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

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

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

   Advanced Settings                              Configure CPU

   WARNING: Setting wrong values in below sections
            may cause system to malfunction

   ▶ CPU Configuration
   ▶ IDE Configuration
   ▶ SuperIO Configuration
   ▶ Hardware Health Configuration
   ▶ Remote Access Configuration
   ▶ USB Configuration
                                                  ←→    Select Screen
                                                  ↑↓    Select Item
                                                  Enter Go to SubScreen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit


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```
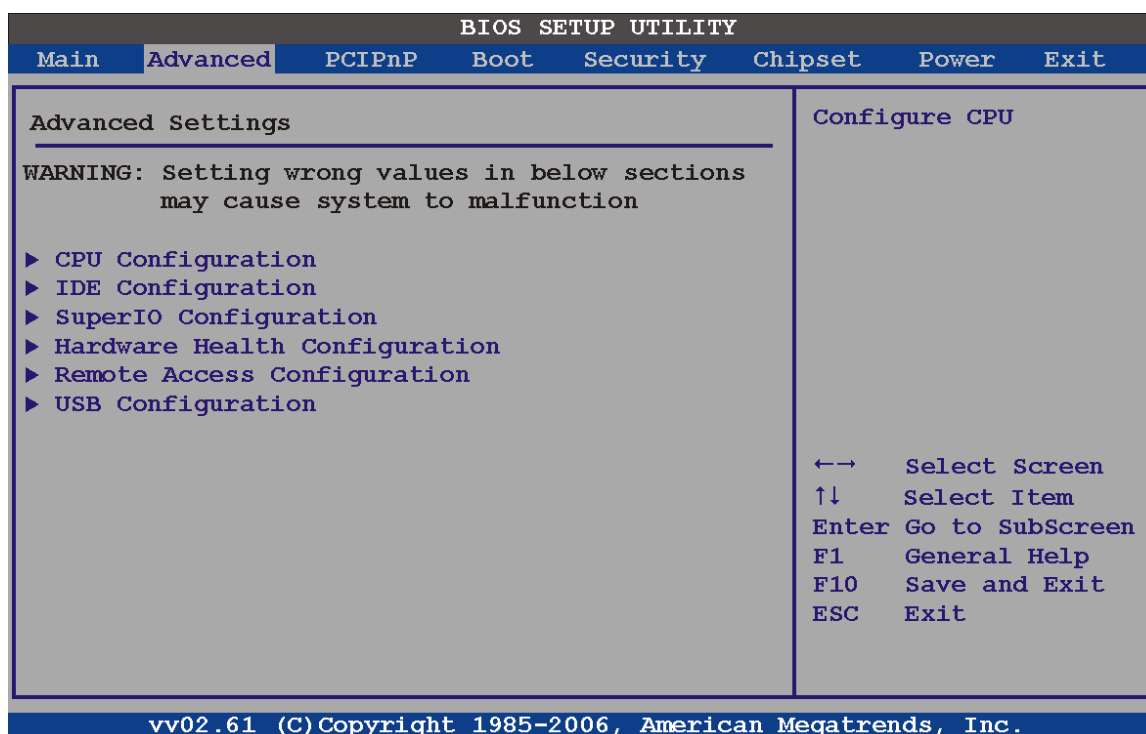
BIOS Menu 2: Advanced

5.3.1 CPU Configuration

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

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

 Configure advanced CPU settings
 Module Version -13.04

Manufacturer:Intel
Brand String:Intel(R) Celeron(R) M processor
Frequency   :1.00GHz
FSB Speed   :400MHz

Cache L1    :32 KB
Cache L2    :512 KB

                                                  ←→   Select Screen
                                                  ↑↓   Select Item
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

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```

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

5.3.2 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 SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

   IDE Configuration

   ATA/IDE Configuration        [Compatible]
     Legacy IDE Channels        [SATA Pri, PATA, Sec]

   ▶ Primary IDE Master            : [Not Detected]
   ▶ Primary IDE Slave             : [Not Detected]
   ▶ Secondary IDE Master          : [Not Detected]
   ▶ Secondary IDE Slave           : [Not Detected]
   ▶ Third IDE Master              : [Not Detected]
   ▶ Third IDE Slave               : [Not Detected]
                                                      ←→    Select Screen
                                                      ↑↓    Select Item
                                                      +-    Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit

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```

BIOS Menu 4: IDE Configuration

➔ IDE Master and IDE Slave

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave
- Third IDE Master
- Third IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu (BIOS Menu 5) to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

```
                          BIOS SETUP UTILITY
   Main     Advanced    PCIPnP    Boot    Security   Chipset    Power     Exit

   Primary IDE Master                              Select the type of
                                                   device connected to
   Device      :Not Detected                       the system.

   Type                          [Auto]
   LBA/Large Mode                [Auto]
   Block (Multi-Sector Transfer) [Auto]
   PIO Mode                      [Auto]
   DMA Mode                      [Auto]
   S.M.A.R.T.                    [Auto]
   32Bit Data Transfer           [Enabled]

                                                   ←→    Select Screen
                                                   ↑↓    Select Item
                                                   +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit

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```

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.)

- **Vendor**: Lists the device manufacturer
- **Size**: List the storage capacity of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

➔ **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

è	**1**	PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s
è	**2**	PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s
è	**3**	PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s
è	**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.)

è **DMA Mode [Auto]**

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

è	**Auto**	DEFAULT	BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
è	**SWDMA0**		Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s
è	**SWDMA1**		Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s
è	**SWDMA2**		Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s
è	**MWDMA0**		Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s
è	**MWDMA1**		Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s
è	**MWDMA2**		Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s

➔ **UDMA1**　　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.

5.3.3 Super IO Configuration

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

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

   Configure ITE8712 Super IO Chipset                 Allows BIOS to select
                                                      Serial Port1 Base
   Serial Port1 Address         [3F8/IRQ4]            Addresses.
     Serial Port1 Mode          [Normal]
   Serial Port2 Address         [2F8/IRQ3]
     Serial Port2 Mode          [Normal]
   Serial Port3 Address         [3E8]
     Serial Port3 IRQ           [10]
   Select RS232 or RS422/485    [by H/W]


                                                      ←→    Select Screen
                                                      ↑↓    Select Item
                                                      +-    Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit


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```

BIOS Menu 6: Super IO Configuration

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the I/O port address and interrupt address.

➔ **Disabled**   No base address is assigned to Serial Port 1

➔ **3F8/IRQ4**   DEFAULT   I/O port address is 3F8, interrupt address is IRQ4

➔ **3E8/IRQ4**   I/O port address is 2F8, interrupt address is IRQ4

➔ **2E8/IRQ3**   I/O port address is 2E8, interrupt address is IRQ3

➔ **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

➔ **Normal**   DEFAULT   Serial Port 1 mode is normal

➔ **IrDA**   Serial Port 1 mode is IrDA

➔ **ASK IR**   Serial Port 1 mode is ASK IR

➔ **Serial Port2 Address [3F8/IRQ4]**

Use the **Serial Port2 Address** option to select the I/O port address and interrupt address.

➔ **Disabled**   No base address is assigned to Serial Port 2

➔ **2F8/IRQ3**   DEFAULT   I/O port address is 2F8, interrupt address is IRQ3

➔ **3E8/IRQ4**   I/O port address is 2F8, interrupt address is IRQ4

➔ **2E8/IRQ3**   I/O port address is 2E8, interrupt address is IRQ3

➔ **Serial Port2 Mode [Normal]**

Use the **Serial Port2 Mode** option to select the transmitting and receiving mode for the first serial port.

➔ **Normal**   DEFAULT   Serial Port 2 mode is normal

➔ **IrDA**   Serial Port 2 mode is IrDA

➔ **ASK IR**   Serial Port 2 mode is ASK IR

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the base addresses for serial port 3

➔ **Disabled**   No base address is assigned to serial port 3

➔ **3E8**   DEFAULT   Serial port 3 I/O port address is 3E8

➔ **2E8**   Serial port 3 I/O port address is 2E8

➔ **Serial Port3 IRQ [11]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

➔ **10** DEFAULT Serial port 3 IRQ address is 10

➔ **Select RS232 or RS422/RSS485 [by H/W]**

Use the **Select RS232 or RS422/RSS485** to select the communication mode of the serial port.

➔ **By H/W** DEFAULT Chosen by the hard ware settings

➔ **RS232** Communication method is RS-232

➔ **RS422/RS485** Communication method is RS-422 or RS-485

5.3.4 Hardware Health Configuration

Use the **Hardware Health Configuration** menu (BIOS Menu 7) to set the advanced power controls.


```
                         BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

 Hardware Health Configuration                      Fan configuration
                                                    mode setting
 Fan 1 Mode Setting              [Automatic mode]
 CPU Temperature               :42C/107F
 System Temperature #1         :52C/125F
 System Temperature #2         :57C/134F

 CPU Fan                       :N/A

 CPU Core                      :0.912 V
 VccP                          :1.024 V
 Vcc1.5V                       :1.504 V
 VccSM                         :1.760 V          ←→    Select Screen
 Vcc3                          :3.184 V          ↑↓    Select Item
 Vcc5                          :4.864 V          F1    General Help
 +12V                          :11.176 V         F10   Save and Exit
 Vcc3                          :3.184 V          ESC   Exit
 VBAT                          :3.008 V



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```

BIOS Menu 7: Hardware Health Configuration

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

- Fan Speeds: The CPU cooling fan speed is monitored.
  - Fan1 speed
- System Temperatures: The following system temperatures are monitored
  - CPU temperature
  - System temperature 1
  - System temperature 2
- Voltages: The following system voltages are monitored
  - CPU Core
  - VccP

o Vcc1.5V

o VccSM

o Vcc3

o Vcc5

o +12V

o Vcc3

o VBAT

5.3.5 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 8**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.

```
                        BIOS SETUP UTILITY
 Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

 Configure Remote Access type and parameters        Select Remote Access
                                                     type.
 Remote Access                    [Enabled]

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


                                                     ←→     Select Screen
                                                     ↑↓     Select Item
                                                     +-     Change Option
                                                     F1     General Help
                                                     F10    Save and Exit
                                                     ESC    Exit


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```

BIOS Menu 8: Remote Access Configuration

➔ **Remote Access [Enabled]**

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

➔ **Disabled**   Remote access is disabled.

➔ **Enabled**   DEFAULT   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 [3F8h,4]**

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

➔ **Serial Port Mode [115200 8,n,1]**

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

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

> **NOTE:**
>
> Identical baud rate setting musts be set on the host (a management computer running terminal software) and the slave

---

➔ **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

5.3.6 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 9**) to read USB configuration information and configure the USB settings.

```
                          BIOS SETUP UTILITY
    Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

    USB Configuration

    Module Version - 2.24.0-11.4                          Disabled
                                                          Enabled
    USB Devices Enabled :
      1 Keyboard

    USB Functions                 [Enabled]
    USB 2.0 Controller            [Enabled]
    Legacy USB Support            [Enabled]
    USB 2.0 Controller Mode       [HiSpeed]

                                                     ←→    Select Screen
                                                     ↑↓    Select Item
                                                     +-    Change Option
                                                     F1    General Help
                                                     F10   Save and Exit
                                                     ESC   Exit

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```

BIOS Menu 9: USB Configuration

➔ **USB Devices Enabled**

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

➔ **USB 1.1 Ports Configuration [USB 6 Ports]**

Use the **USB Ports Configuration** BIOS option to specify how many of the USB ports are USB 1.1 compatible.

➔ **Disabled**   None of the ports are USB 1.1 compatible

➔ **USB 2 Ports**   Two ports are USB 1.1 compatible

➔ **USB 4 ports**   Four ports are USB 1.1 compatible

➔ **USB 6 ports** D EFAULT Six ports are USB 1.1 compatible

➔ **USB 2.0 Ports Enable [Enabled]**

Use the **USB 2.0 Ports Enable** BIOS option to enable or disable the USB 2.0 ports

➔ **Disabled** USB 2.0 ports disabled

➔ **Enabled** D EFAULT USB 2.0 ports 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** D EFAULT 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** D EFAULT The controller is capable of operating at 480 Mb/s

5.3.6.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (**BIOS Menu 10**) to configure USB mass storage class devices.

```
                          BIOS SETUP UTILITY
   Main     Advanced     PCIPnP    Boot    Security   Chipset    Power     Exit

   USB Mass Storage Device Configuration          Enables USB host
                                                  controllers.
   USB Mass Storage Reset Delay    [20 Sec]

      Device #1           M-SysT5 Dell Memory Key 5.04
      Emulation Type                  [Auto]





                                                  ←→    Select Screen
                                                  ↑↓    Select Item
                                                  +-    Change Option
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit


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```

BIOS Menu 10: 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**   D<small>EFAULT</small>   POST waits 20 seconds for the USB mass storage device after the start unit command.

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

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

è **Device ##**

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

è **Emulation Type [Auto]**

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

  NOTE:

Please note that the device's formatted type and the emulation type provided by the BIOS must match for a device to boot properly. If both types do not match then device's behavior is undefined. To make sure both types match, format the device using BIOS INT13h calls after selecting the proper emulation option in BIOS setup. The FORMAT utility provided by Microsoft® MS-DOS®, Microsoft® Windows® 95, and Microsoft® Windows® 98 can be used for this purpose.

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

è **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.

è **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.

è **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.

5.4 PCI/PnP

Use the **PCI/PnP** menu (BIOS Menu 11) to configure advanced PCI and PnP settings.

⚡ **WARNING!**

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

```
                         BIOS SETUP UTILITY
   Main    Advanced   PCIPnP    Boot    Security   Chipset    Power    Exit

  Advanced PCI/PnP Settings                          Available: Specified
                                                     IRQ is available to
  IRQ3                        [Reserved]             be use by PCI/PnP
  IRQ4                        [Reserved]             devices.
  IRQ5                        [Available]            Reserved: Specified
  IRQ7                        [Available]            IRQ is reserved for
  IRQ9                        [Available]            use by legacy ISA
  IRQ10                       [Reserved]             devices.
  IRQ11                       [Available]
  IRQ14                       [Available]
  IRQ15                       [Available]


  DMA Channel 0               [Available]            ←→   Select Screen
  DMA Channel 1               [Available]            ↑↓   Select Item
  DMA Channel 3               [Available]            +-   Change Option
  DMA Channel 5               [Available]            F1   General Help
  DMA Channel 6               [Available]            F10  Save and Exit
  DMA Channel 7               [Available]            ESC  Exit


  Reserved Memory Size        [Disabled]


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```

BIOS Menu 11: PCI/PnP Configuration

➔ **IRQ# [Available]**

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

➔ **Available**   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   [Reserved]
- IRQ4   [Reserved]
- IRQ5   [Available]
- IRQ7   [Available]
- IRQ9   [Available]
- IRQ10   [Available]
- IRQ 11   [Available]
- IRQ 14   [Available]
- IRQ 15   [Available]

➔ **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**   54 KB reserved for legacy ISA devices

5.5 Boot

Use the **Boot** menu (**BIOS Menu 12**) to configure system boot options.

```
                        BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security   Chipset   Power   Exit

  Boot Settings                                  Configure Settings
  ─────────────────────────────────────         during System Boot
  ▶ Boot Settings Configuration

  ▶ Boot Device Priority
  ▶ Hard Disk Drives
  ▶ Removable Drives



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


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```
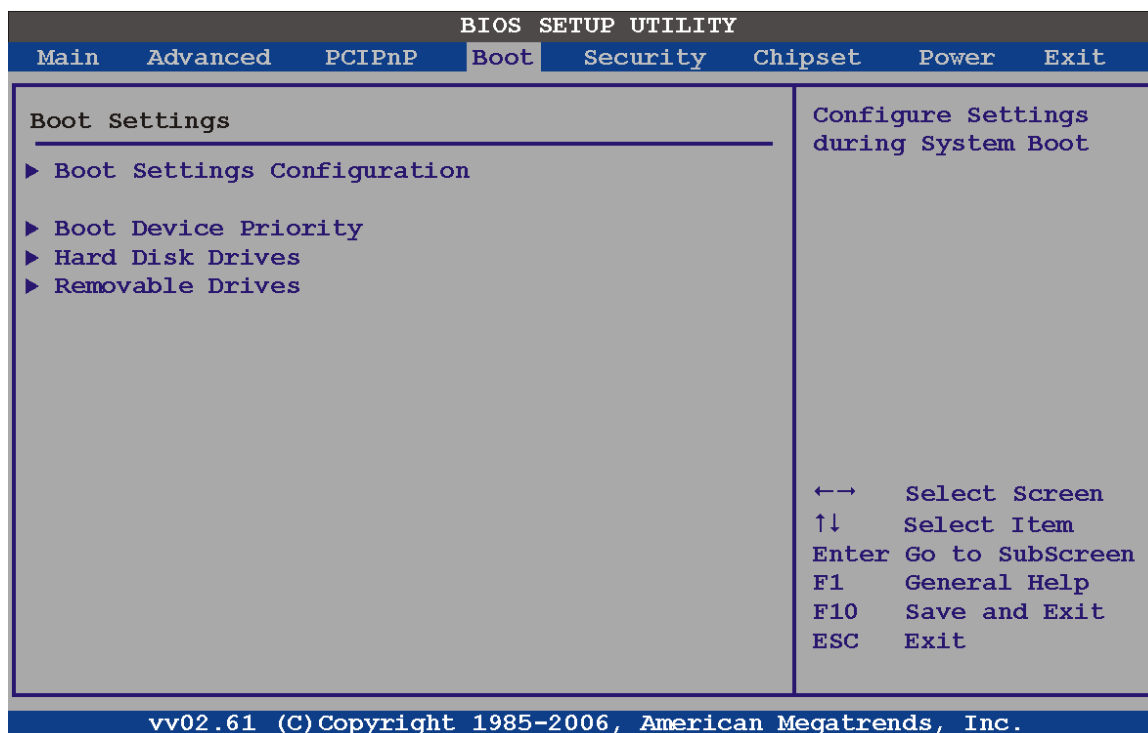
BIOS Menu 12: Boot

5.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (BIOS Menu 13) to configure advanced system boot options.

```
                         BIOS SETUP UTILITY
   Main     Advanced    PCIPnP    Boot   Security   Chipset    Power    Exit

   Boot Settings Configuration                        Allows BIOS to skip
   ─────────────────────────────────                 certain tests while
   Quick Boot                  [Enabled]              booting. This will
   Quiet Boot                  [Enabled]              decrease the time
   AddOn ROM Display Mode      [Keep Current]         needed to boot the
   Bootup Num-Lock             [On]                   system.
   LAN Boot                    [Disabled]



                                                      ←→    Select Screen
                                                      ↑↓    Select Item
                                                      +-    Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit

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```
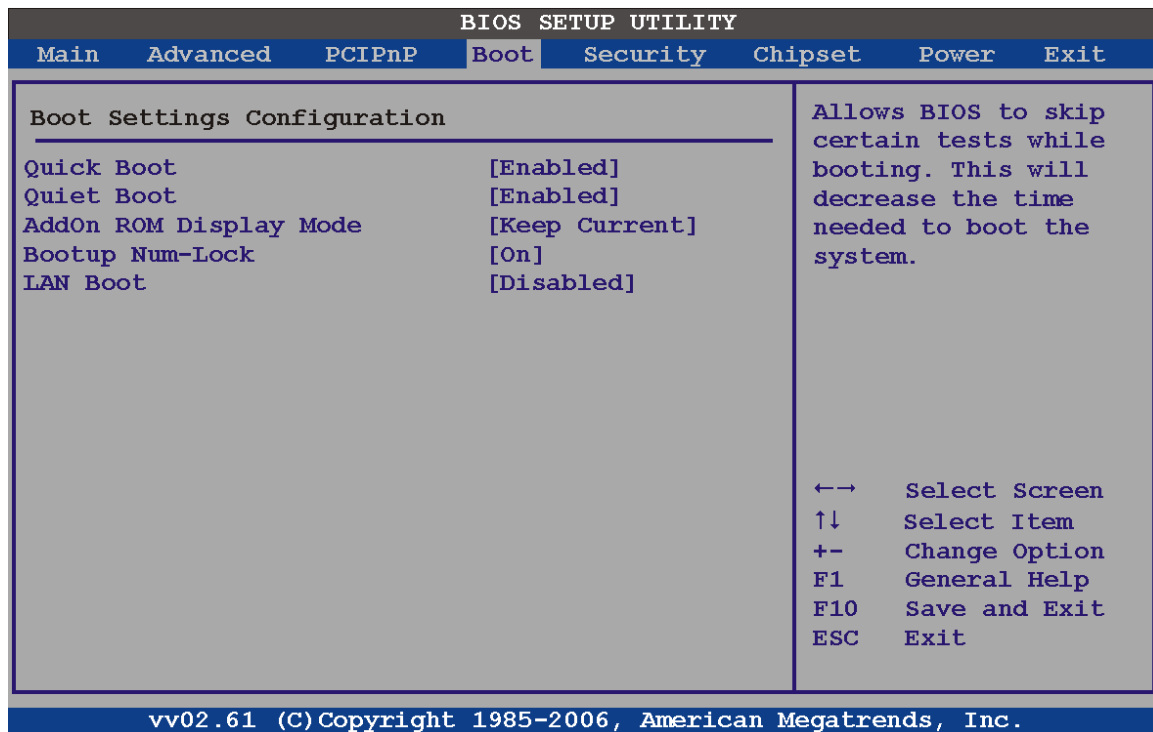
BIOS Menu 13: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

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

➔ **Disabled**   No POST procedures are skipped

➔ **Enabled**   DEFAULT   Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [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 [Keep Current]**

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

➔ **Force BIOS**   The system forces third party BIOS to display during system boot.

➔ **Keep Current**   DEFAULT   The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

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

➔ **Off**   Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On**   DEFAULT   Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **LAN Boot**

The **LAN Boot** option is for listening for a turn-on signal over the network. The network is kept in a semi-active state, simply listening for the correct signal.

➔ **Disabled**   DEFAULT   The network port does not listen for signals over the network
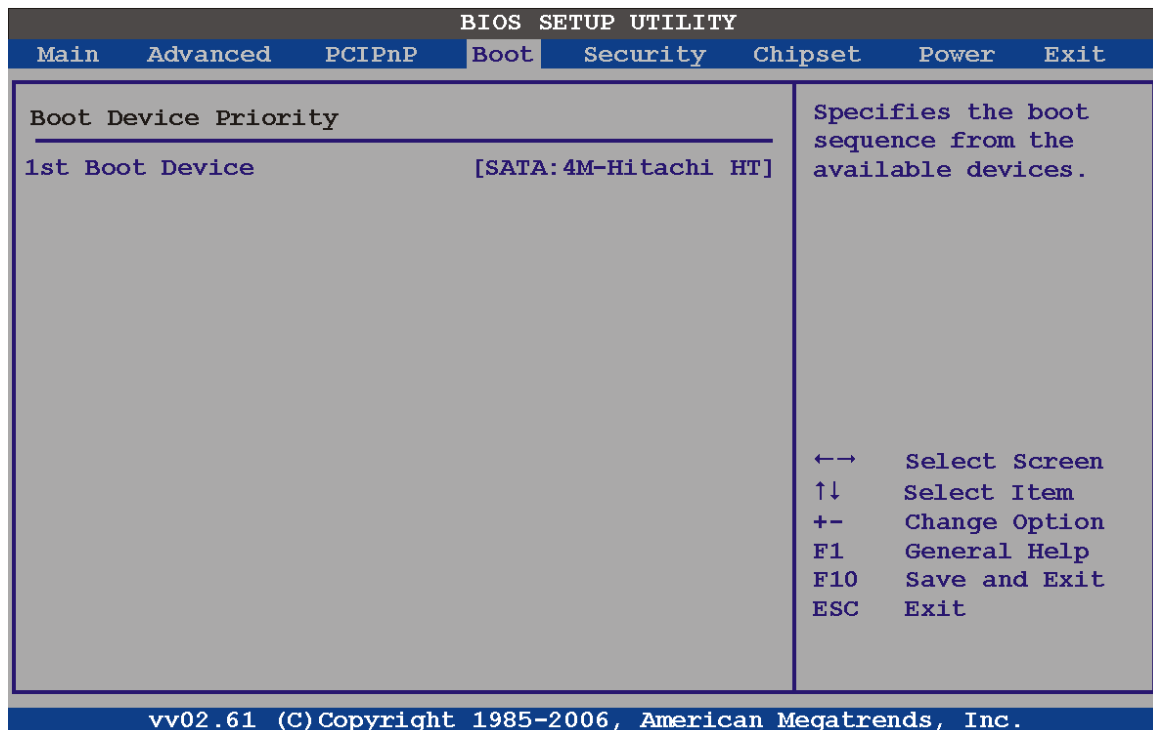
→ **Enabled** The network port listens for signals over the network

5.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 14**) to specify the boot sequence from the available devices. Possible boot devices may include:

- HDD
- CD/DVD

```
                          BIOS SETUP UTILITY
  Main     Advanced     PCIPnP     Boot    Security    Chipset    Power    Exit

  Boot Device Priority                            Specifies the boot
                                                  sequence from the
  1st Boot Device              [SATA:4M-Hitachi HT]  available devices.




                                                  ←→    Select Screen
                                                  ↑↓    Select Item
                                                  +-    Change Option
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit


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```

BIOS Menu 14: Boot Device Priority Settings
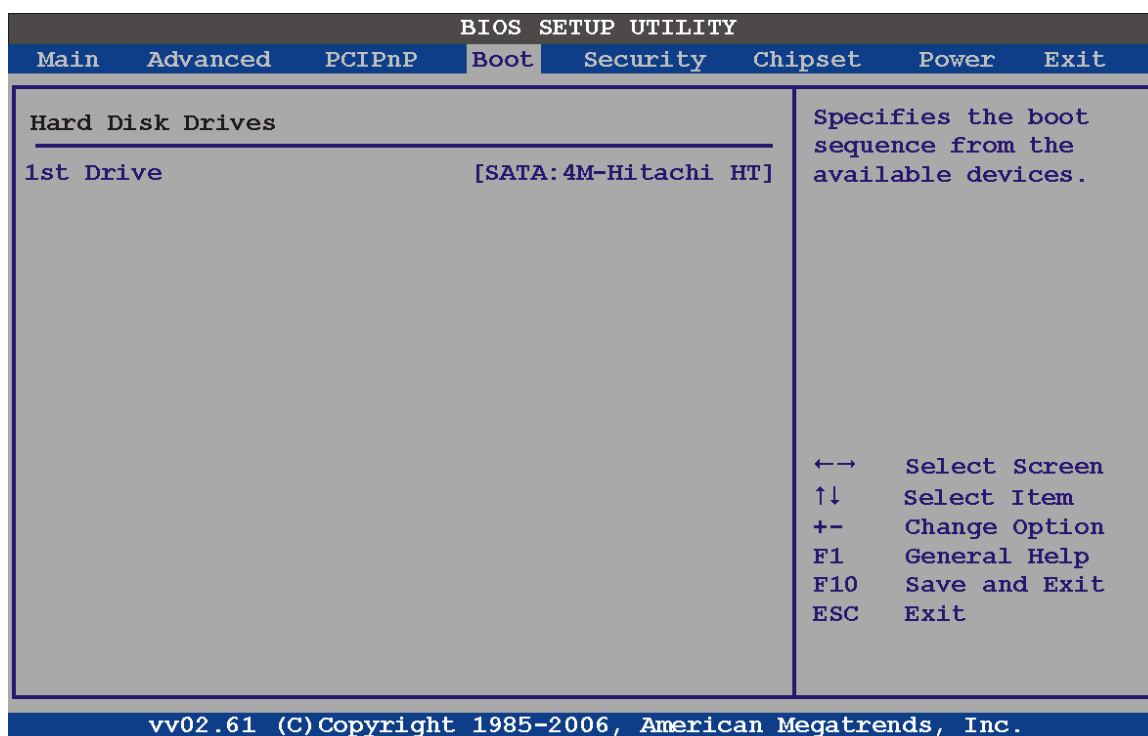
5.5.3 Hard Disk Drives

Use the **Hard Disk Drives** menu (BIOS Menu 15) to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

- 1st Drive [HDD: PM-(part number)]

![NOTE icon] **NOTE:**

Only the drives connected to the system are shown. For example, if only two HDDs 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 HDDs is shown. Select the first HDD the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.

```
                        BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

   Hard Disk Drives                              Specifies the boot
   ─────────────────────────────────────        sequence from the
   1st Drive                  [SATA:4M-Hitachi HT]   available devices.




                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


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```

BIOS Menu 15: Hard Disk Drives

5.5.4 Removable Drives

Use the **Removable Drives** menu (**BIOS Menu 16**) to specify the boot sequence of the removable drives. When the menu is opened, the FDDs connected to the system are listed as shown below:
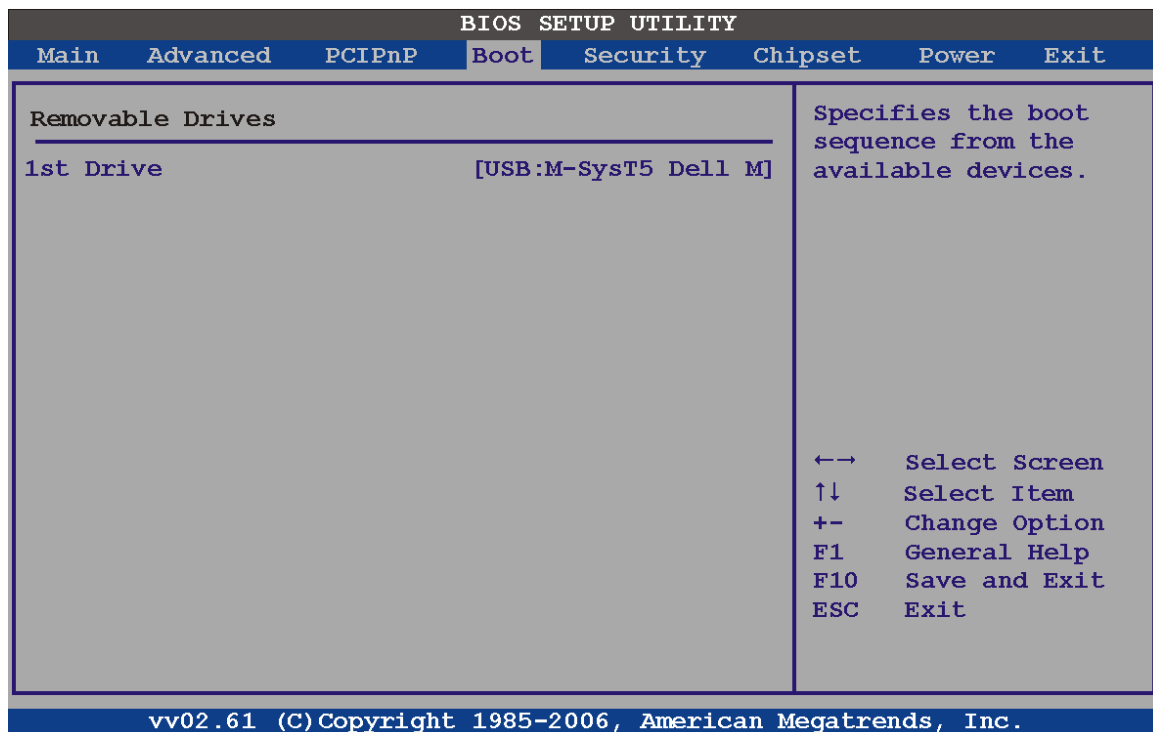
- 1st Drive   [Removable drive 1]
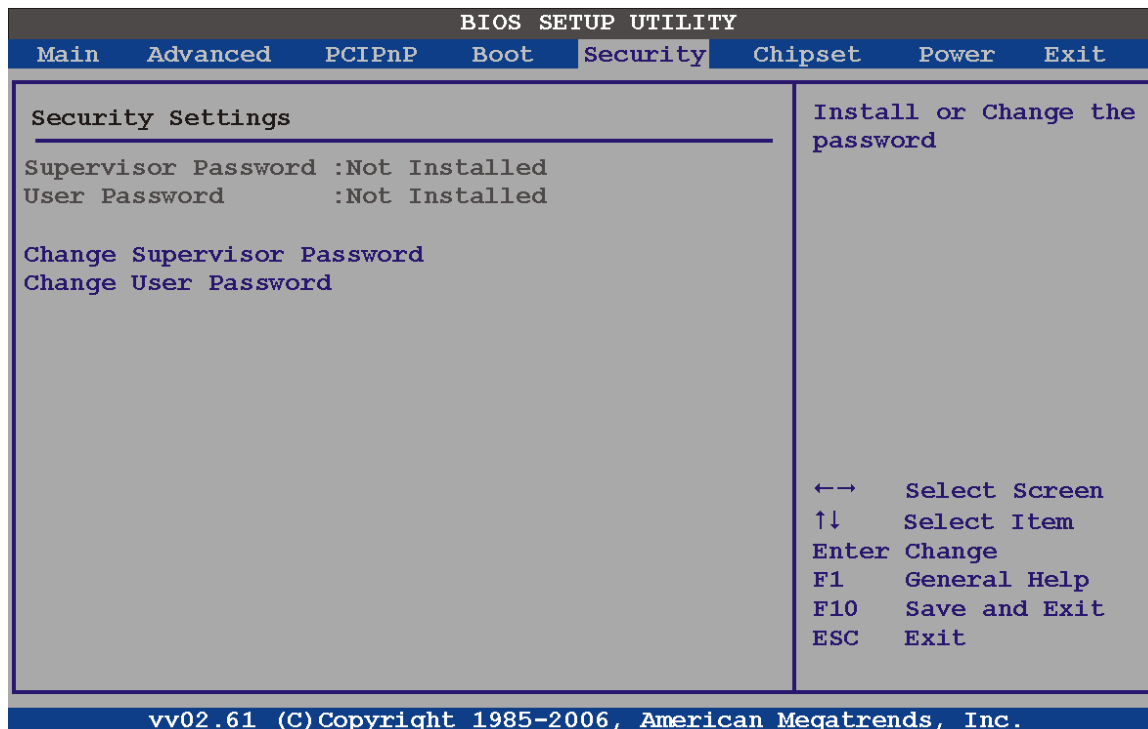- 2nd Drive   [Removable drive 2]

NOTE:

Only the drives connected to the system are shown. For example, if only one device is connected only "**1st Drive**" is listed.

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

```
                     BIOS SETUP UTILITY
 Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

 Removable Drives                        Specifies the boot
 ─────────────────────────────           sequence from the
 1st Drive                 [USB:M-SysT5 Dell M]    available devices.




                                         ←→    Select Screen
                                         ↑↓    Select Item
                                         +-    Change Option
                                         F1    General Help
                                         F10   Save and Exit
                                         ESC   Exit


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```

BIOS Menu 16: Removable Drives

5.6 Security

Use the **Security** menu (**BIOS Menu 17**) to set system and user passwords.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

   Security Settings                              Install or Change the
   ─────────────────────────────                 password
   Supervisor Password :Not Installed
   User Password       :Not Installed

   Change Supervisor Password
   Change User Password




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

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```

BIOS Menu 17: 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**.

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 18**) 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 SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security  Chipset    Power    Exit

  Advanced Chipset Settings                      Configure Northbridge
  ─────────────────────────────────             Features
  WARNING: Setting wrong values in below sections
           may cause system to malfunction

  ▶ Northbridge Configuration
  ▶ Southbridge Configuration


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


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```

BIOS Menu 18: Chipset

5.7.1 Northbridge Configuration

Use the Northbridge Chipset Configuration menu (**BIOS Menu 19**) to check the Northbridge chipset settings.

```
                         BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security  Chipset   Power    Exit

  Northbridge Chipset Configuration              Options

  Memory Hole                    [Disabled]      Disabled
                                                 15MB-16MB
  Internal Graphics Mode Select  [Enabled, 8MB]
    Aperture Size Select         [256MB]
  Boot Display Device            [Auto]
  LVDS Panel Type                [H/W JUMP SETTINGS]




                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit

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```

BIOS Menu 19: Northbridge Chipset Configuration

The **Northbridge Chipset Configuration** menu has no configurable options. The Northbridge Chipset configuration menu shows the following Northbridge chipset settings:

➔ **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15MB and 16MB 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

➔ **15MB – 16MB**   Between 15MB and 16MB of memory is reserved for
                                     ISA expansion cards

➔ **Internal Graphics Mode Select [Enable, 8MB]**

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, 1MB**   1MB of memory used by internal graphics device

➔ **Enable, 8MB**   DEFAULT   8MB of memory used by internal graphics device

➔ **Aperture Size Select/Graphic Win Size [256MB]**

Use the **Aperture Size Select/Graphic Win Size** option to select the size of the AGP aperture and the size of the GART (Graphics Address Relocation Table). The aperture is a portion on the PCI memory address range dedicated for use as AGP memory address space and the GART is a translation table that translates the AGP memory addresses into actual addresses. The following options are available.

- 32MB
- 64MB
- 128MB
- 256MB   Default

➔ **Boot Display Device [Auto]**

Use the **Boot Display Device** BIOS feature to determine what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

- Auto   DEFAULT
- CRT
- LVDS
- LVDS + CRT

➔ **LVDS Panel Type**

The **LVDS Panel Type** setting chooses the type of display. Options are shown below.

- 800 x 600
- 1024 x 768
- 1280 x 1024
- 1600 x 1200
- 1400 x 1050
- H/W JUMP SETTING DEFAULT

5.7.2 Southbridge Configuration

The Southbridge Configuration menu (**BIOS Menu 20**) allows the Southbridge chipset to be configured.

```
                        BIOS SETUP UTILITY
 Main    Advanced    PCIPnP    Boot    Security  Chipset   Power    Exit

 Southbridge Chipset Configuration                    Options

 Spectrum                          [Disabled]         Enable/Disable
 Azalia/AC'97 Selection            [Azalia]           Spectrum




                                                      ←→    Select Screen
                                                      ↑↓    Select Item
                                                      +-    Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit


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```
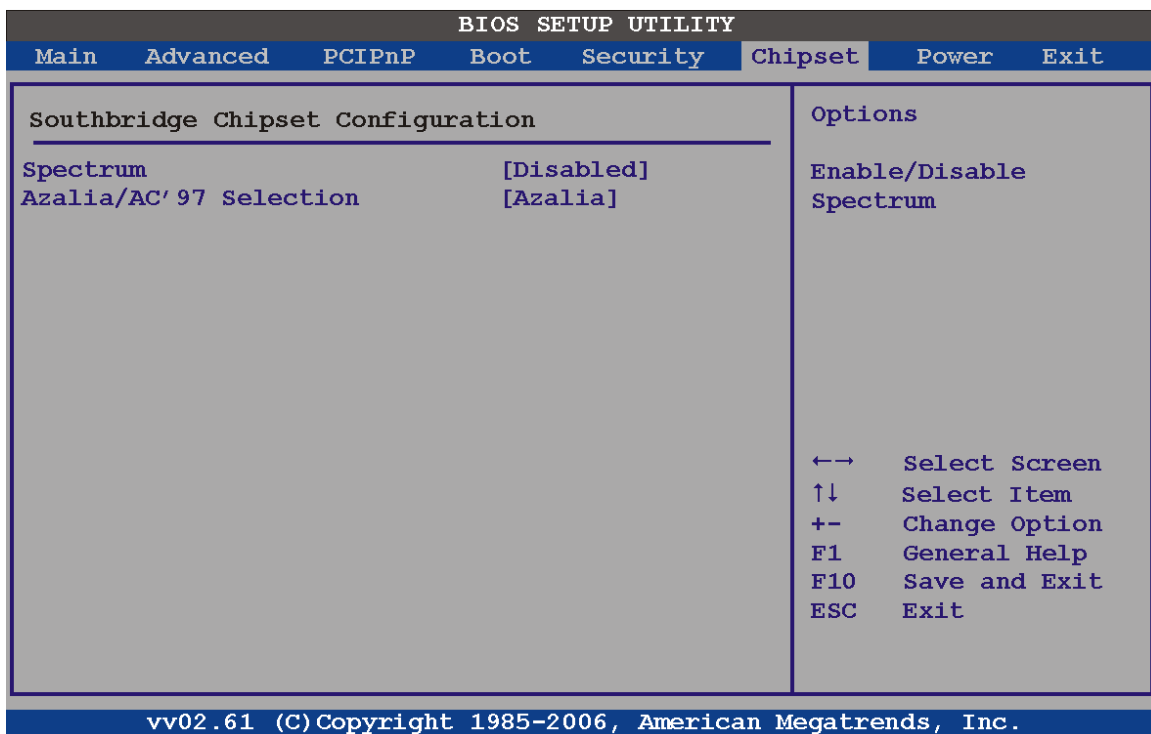
BIOS Menu 20:Southbridge Chipset Configuration

➔   **Spectrum [Disabled]**

Use the **Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔   **Disabled**   DEFAULT   EMI not reduced

➔   **Enabled**   EMI reduced

➔   **Azalia/AC'97 Selection [Azalia]**

The **Azalia/AC'97 Selection** option enables or disables the audio controller.

➔   **Disabled**   The on-board high definition audio controller is disabled.

➔   **Azalia**   DEFAULT   The on-board high definition audio controller is automatically detected and enabled.

5.8 Power

The **Power** menu (**BIOS Menu 21**) allows the advanced power management options to be configured.

```
                          BIOS SETUP UTILITY
   Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

    ADVANCED SMI ENABLE CONTROLS                        Go into On/Off
    ─────────────────────────────────                  or Suspend when
    Power Button Mode              [On/Off]             Power button
    Restore on AC Power Loss       [Last State]         is pressed.

    PME Resume                     [Disabled]
    RTC Resume                     [Disabled]
    Resume On Keyboard/Mouse       [Disabled]



                                                        ←→    Select Screen
                                                        ↑↓    Select Item
                                                        +-    Change Option
                                                        F1    General Help
                                                        F10   Save and Exit
                                                        ESC   Exit


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```

BIOS Menu 21:Power

➔ **Power Button Mode [On/Off]**

Use the **Power Button Mode** BIOS to specify how the power button functions.

➔ **On/Off** **DEFAULT** When the power button is pressed the system is either turned on or off

➔ **Suspend** When the power button is pressed the system goes into suspend mode

➔ **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.

➔ **PME Resume [Disabled]**

Use the **PME Resume** BIOS option to enable activity on the PCI PME (power management event) controller to rouse the system from a suspend or standby state.

- **Disabled**   DEFAULT   Wake event not generated by PCI PME controller activity

- **Enabled**   Wake event generated by PCI PME controller activity

➔ **RTC Resume [Disabled]**

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

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

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

    RTC Alarm Date (Days)

    System Time

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

➔ **Resume on Keyboard/Mouse [Disabled]**

Use the **Resume on Keyboard/Mouse** BIOS option to enable keyboard or mouse use to rouse the system from a suspend state. The system will turn on when a mouse or keyboard is used.

➔ **Disabled**   DEFAULT   Wake event not generated by keyboard/mouse

➔ **Enabled**   Wake event generated by keyboard/mouse

5.9 Exit

Use the **Exit** menu (**BIOS Menu 22**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security   Chipset    Power    Exit

  Exit Options                                   Exit system setup
                                                 after saving the
  Save Changes and Exit                          changes.
  Discard Changes and Exit
  Discard Changes                                F10 key can be used
                                                 for this operation.
  Load Optimal Defaults
  Load Failsafe Defaults



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


        vv02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 22:Exit

➔ **Save Changes and Exit**

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

➔ **Discard Changes and Exit**

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

➔ **Discard Changes**

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

➔ **Load Optimal Defaults**

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

➔ **Load Failsafe Defaults**

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

Chapter

6

Driver Installation

6.1 Available Software Drivers

NOTE:

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

The following drivers can be installed on the system:

Installation instructions are given below.

6.2 Driver CD Auto-run

All the drivers for the AFL-xxx-9103 are on the CD that came with the system. To install the drivers, please follow the steps below.

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

NOTE:

If the system does not initiate the "autorun" program when the CD is inserted, click the Start button, select Run, then type E:\autorun.exe (where E:\ is the system CD drive) to access the IEI Driver CD main menu.

Step 2: The driver screen appears. Drivers for the AFL-xxx-9103 are in the section

indicated in Figure 6-1.

Figure 6-1: Available Drivers

Step 3: Select the driver to install from the list in **Figure 6-1**. Detailed driver installation

instructions follow below.

6.3 Chipset Driver

To install the chipset driver, please follow the steps below.

Step 1: Select **Chipset** from the list in **Figure 6-1**.

Step 2: The browser window opens (Figure 6-2).
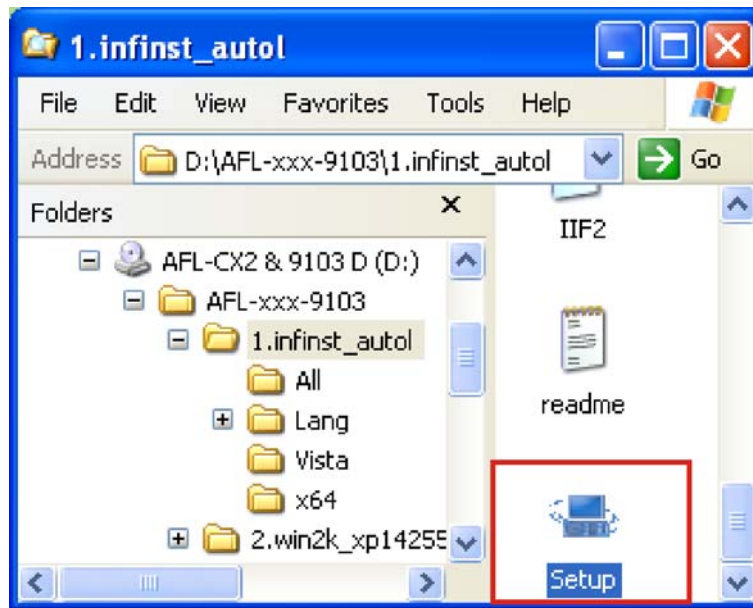
**Figure 6-2: Chipset Driver Icon**

Step 3: Double-click the **SETUP** icon to start the driver installation program (Figure 6-2).

Step 4: The chipset installation driver welcome screen in Figure 6-3 appears.

Figure 6-3: Chipset Driver Welcome Screen

Step 5: Click NEXT to continue the installation process. (Figure 6-3)

Step 6: The license agreement in Figure 6-4 appears.

Figure 6-4: Chipset Driver License Agreement

Step 7: Read the license agreement carefully. Click YES to accept the terms of the

license agreement and continue with the installation (Figure 6-4).

Step 8: The **Readme File Information** window appears (Figure 6-5).
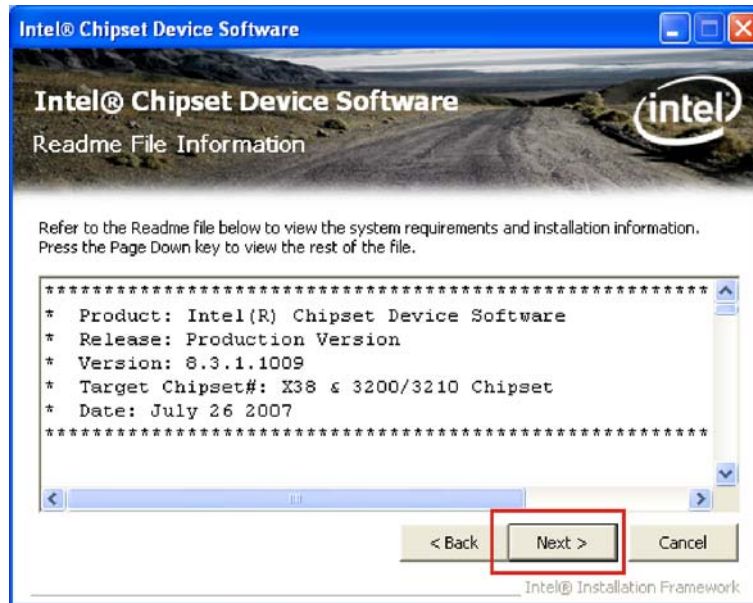
Figure 6-5: Chipset Driver Readme File

Step 9: Click NEXT to continue the installation process (Figure 6-5).

Step 10: When the drivers are installed, the window in Figure 6-5 appears.

Figure 6-6: Chipset Drivers Installed

Step 11: Click NEXT to continue the installation process (Figure 6-6).

Step 12: The **Setup is Complete** window appears (Figure 6-7).

Figure 6-7: Chipset Driver Installed Drivers

Step 13: The driver installation is now finished. Click FINISH to complete the installation.

6.4 Graphics Driver

To install the graphics driver, please follow the steps below.

Step 1: Select **Graphics** from the list in **Figure 6-1**.

Step 2: The browser window opens (Figure 6-8).
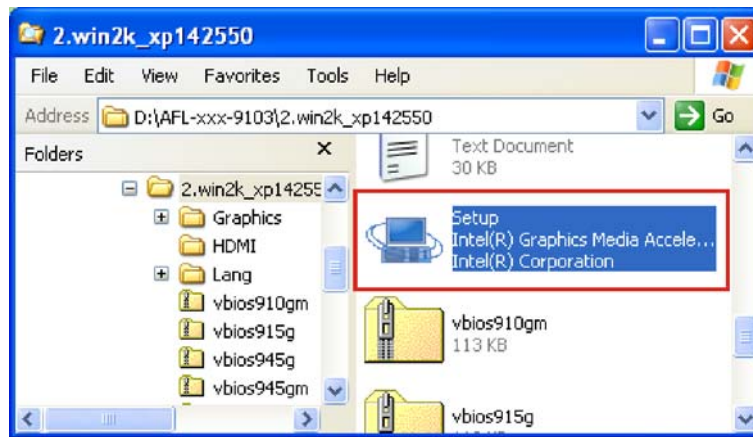
Figure 6-8: Graphics Driver Installation

Step 3: Double-click **setup** in Figure 6-8to begin the driver installation.

Step 4: The **Graphics Media Accelerator Driver** welcome screen appears (Figure 6-9).
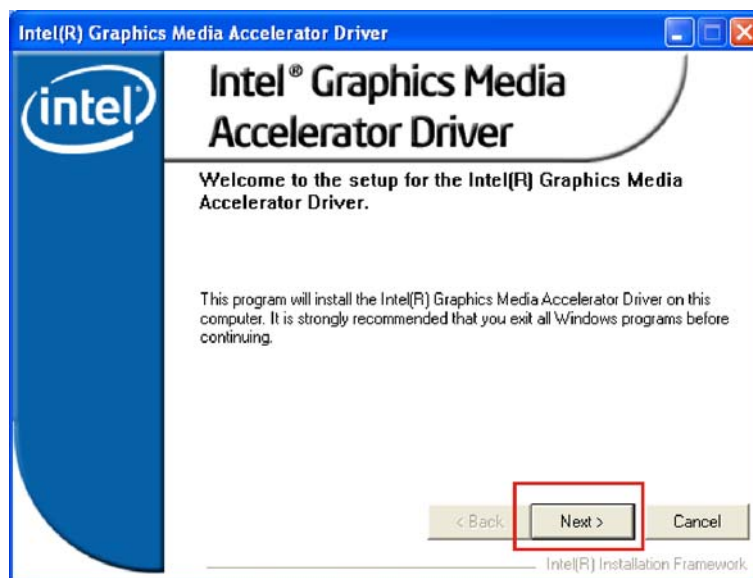
Figure 6-9: Graphics Media Accelerator Driver

Step 5: Click NEXT to continue with the graphics driver installation (Figure 6-9).

Step 6: The License Agreement windows appears (Figure 6-10).
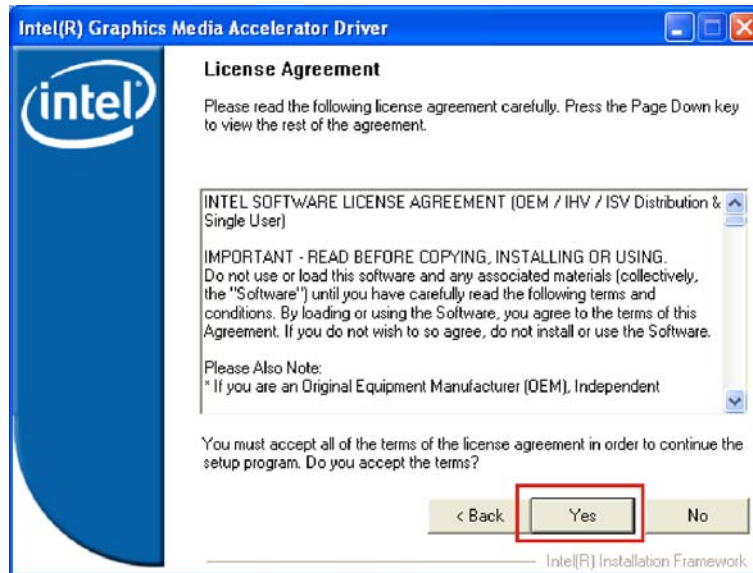
Figure 6-10: Graphics License Agreement

Step 7: Click Yes to accept the license agreement and continue with the Intel® Graphics Media Driver Installation (Figure 6-10).

Step 8: The Readme File Information window appears (Figure 6-11).
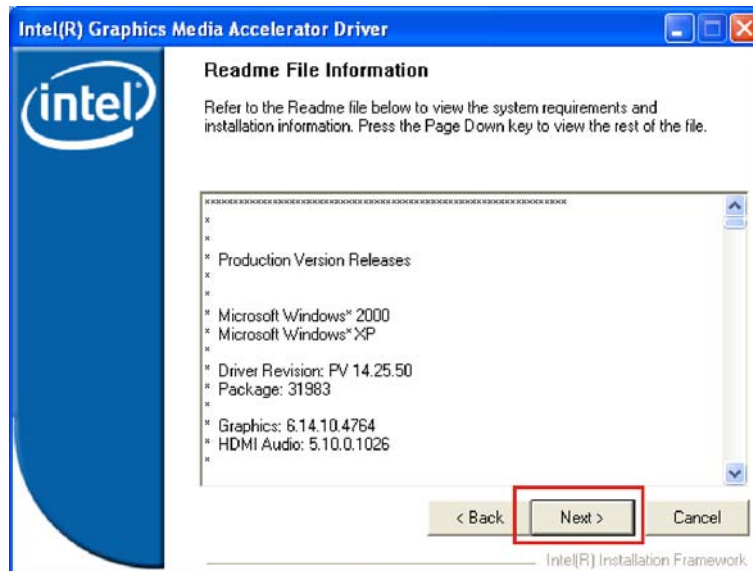
Figure 6-11: Graphics Readme File Information

Step 9: Click NEXT to start installing the graphics drivers (Figure 6-11).

Step 10: The **Setup Progress** window appears (Figure 6-12).
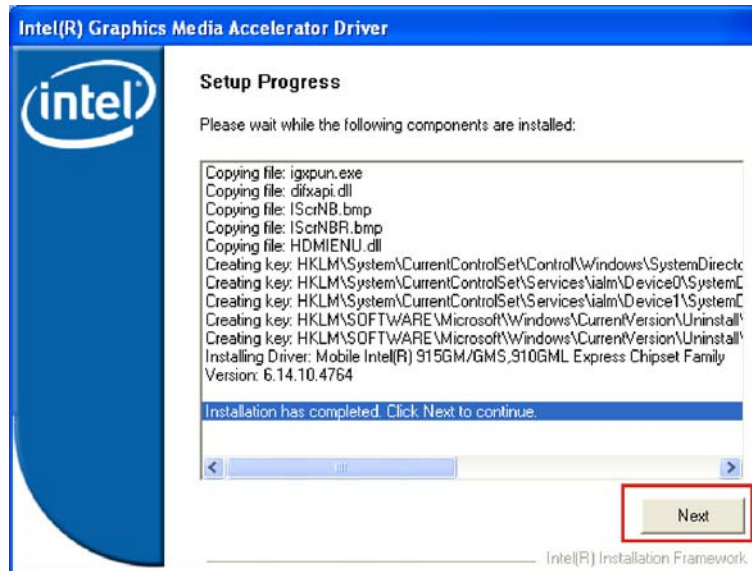
Figure 6-12: Graphics Setup Progress

Step 11: The setup progress window shows the progress of the driver installation. Click
NEXT when the drivers are all installed (Figure 6-12).

Step 12: The **Graphics Installation Complete** window appears (Figure 6-13).
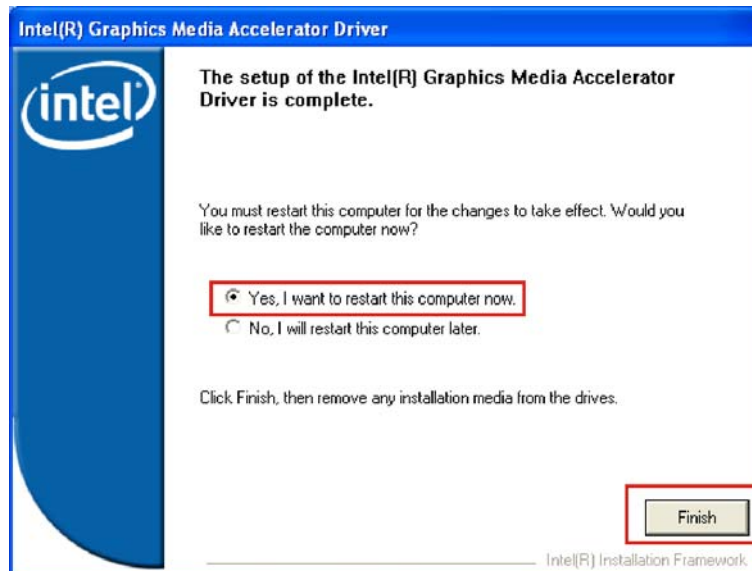
Figure 6-13: VGA Driver

Step 13: The computer must be restarted for the changes to take effect.

Step 14: Save any open documents.

Step 15: Exit all open programs.

Step 16: Select "**Yes, I want to restart my computer now**," and click FINISH to exit the graphics installation wizard and restart the computer.

6.5 Gigabit Ethernet Driver

To install the Gigabit Ethernet driver, please follow the steps below.

Step 1: Select **Wireless Lan** from the list in **Figure 6-1**.

Step 2: The browser window appears (Figure 6-14).
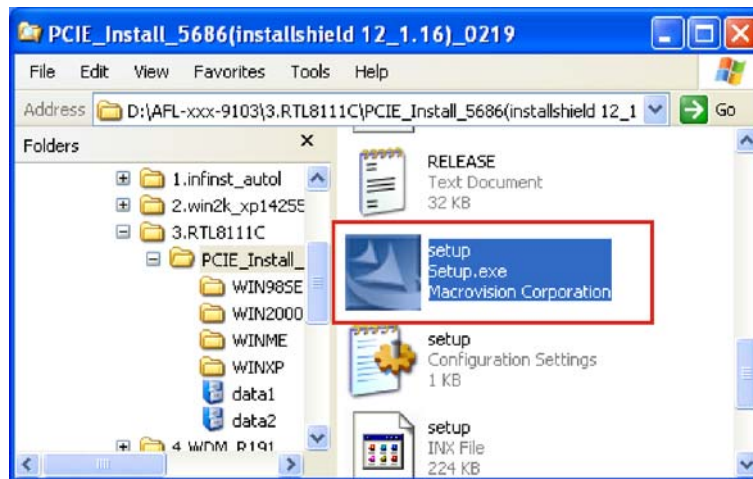
Figure 6-14: Gigabit Ethernet Driver Installation

Step 3: Double-click the **Setup** icon to start the Gigabit Ethernet driver installation wizard (Figure 6-14).

Step 4: The Gigabit Ethernet driver installation wizard welcome screen appears (Figure 6-15)
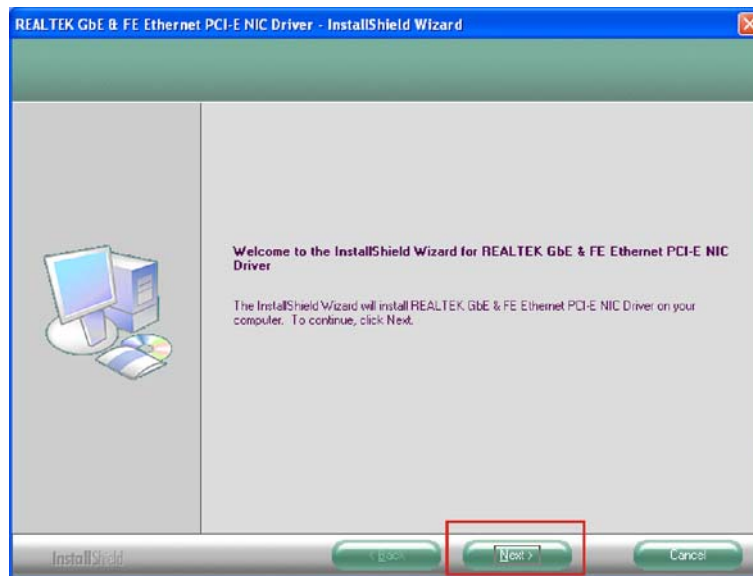
Figure 6-15: Gigabit Ethernet Driver Welcome Screen

Step 5: Click NEXT to continue the installation process (Figure 6-15).

Step 6: The installation window appears (Figure 6-16).
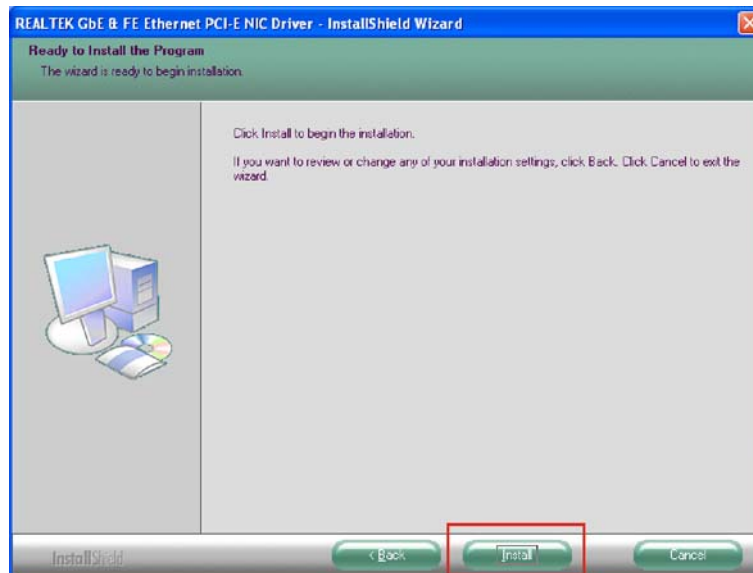
Figure 6-16: Gigabit Ethernet Begin Installation

Step 7: Click INSTALL to begin installing the drivers (Figure 6-16).

Step 8: The driver installation completes and the **InstallShield Wizard Complete**

window appears (Figure 6-17).
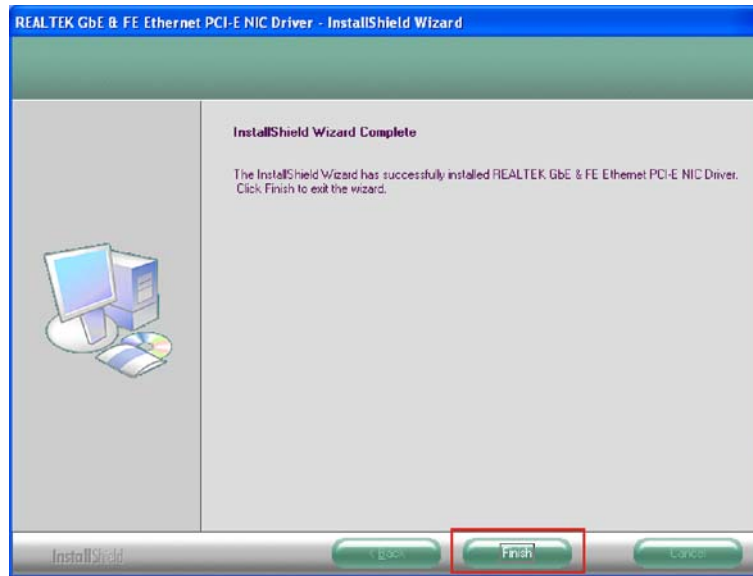
Figure 6-17: Ethernet Controller

Step 9: The installation is finished. Click **FINISH** to exit the installation wizard.

6.6 Audio Driver

To install the audio driver, the audio needs to be enabled in the BIOS and then the software driver can be installed.

6.6.1 BIOS Setup

Step 1: Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

Step 2: Go to the Southbridge Configuration menu. Set the **Audio Controller** option to [auto].

Step 3: Press **F10** to save the changes and exit the BIOS setup. The system reboots.

6.6.2 Driver Installation

To install the audio driver please follow the steps below.

Step 1: Select **Audio** from the list in **Figure 6-1**.

Step 2: The browser window opens (Figure 6-18).
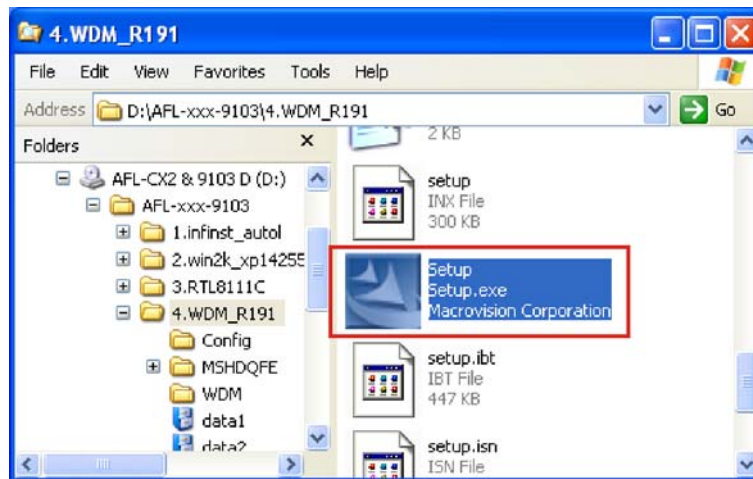
Figure 6-18: Audio Driver Setup File

Step 3: Double-click the **Setup** icon to start the audio driver installation wizard (Figure 6-18).

Step 4: The **Audio Driver InstallShield Wizard** window appears (Figure 6-19).
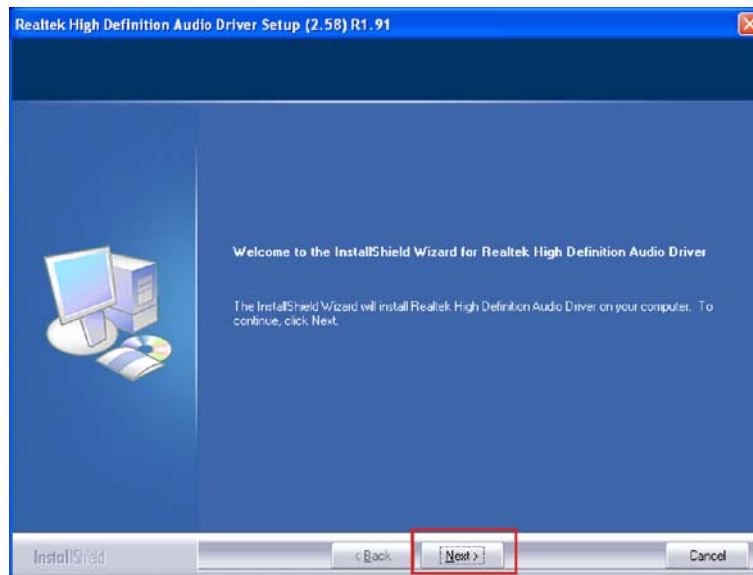
Figure 6-19: Audio Driver InstallShield Wizard

Step 5: Click NEXT to start the audio driver installation (Figure 6-19).

Step 6: The audio driver installation process begins.

NOTE:

Some windows will open automatically during the installation process. These windows will also close automatically. Wait until the installation process is complete.
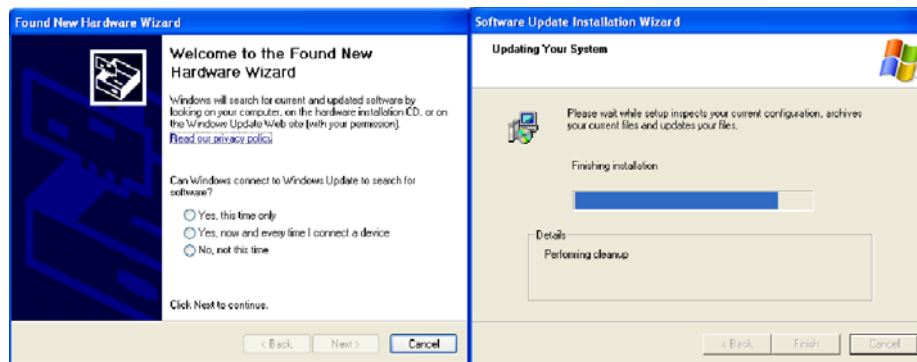
Figure 6-20: Audio Driver Installation Windows

Step 7: The InstallShield Wizard Complete window appears (Figure 6-21).
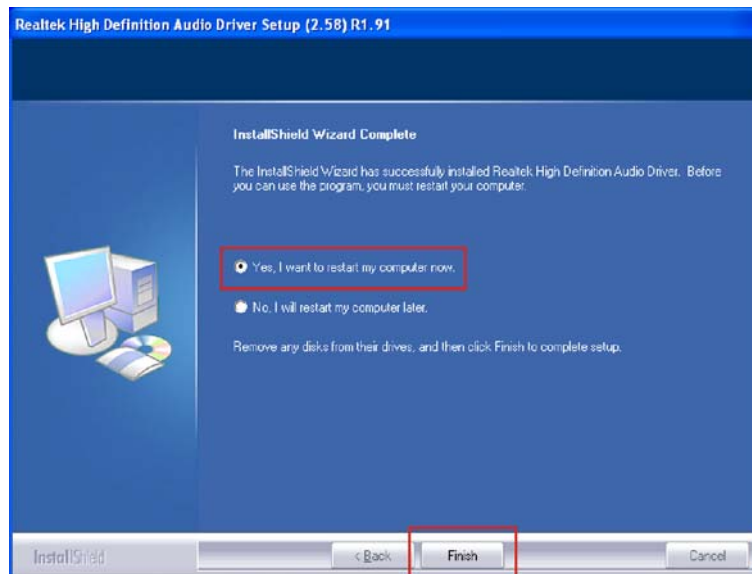
Figure 6-21: InstallShield Wizard Welcome Screen

Step 8: The computer must be restarted for the changes to take effect.

Step 9: Save any open documents or files.

Step 10: Exit all open programs.

Step 11: Select "**Yes, I want to restart my computer now**," and click FINISH to exit the
graphics installation wizard and restart the computer.

6.7 Touch Panel Driver

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

Step 1: Select **Touch** from the list in **Figure 6-1**.

Step 2: A new window appears (Figure 6-22).
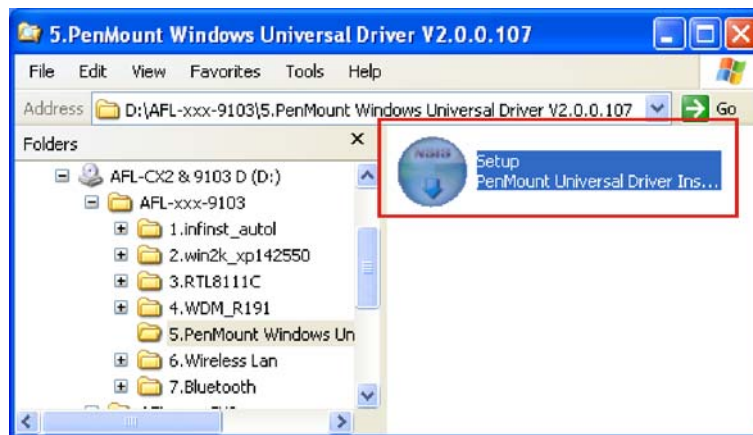
Figure 6-22: S-Video Patch Folder

Step 3: Double-click the **setup** icon (Figure 6-22).

Step 4: The **Touch Panel Driver Installation Wizard** window appears (**Figure 6-23**).
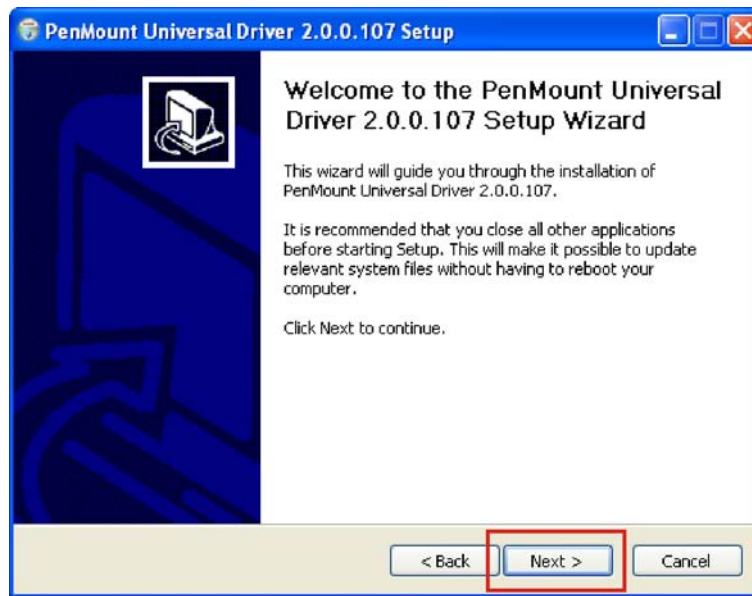
Figure 6-23: Access Startup Folder

Step 5: Click NEXT to begin the touch panel driver installation process (Figure 6-23).

Step 6: The license agreement appears (**Figure 6-24**).
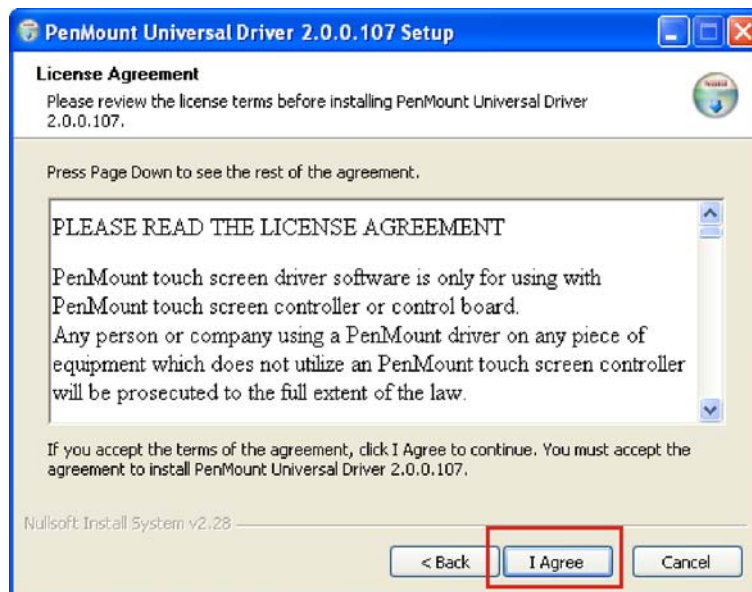
Figure 6-24: Start Touch Panel Driver Installation

Step 7: Click $\boxed{\text{I A}_{GREE}}$ to accept the license agreement and continue the installation process.

Step 8: The Choose Install Location window appears (Figure 6-25).
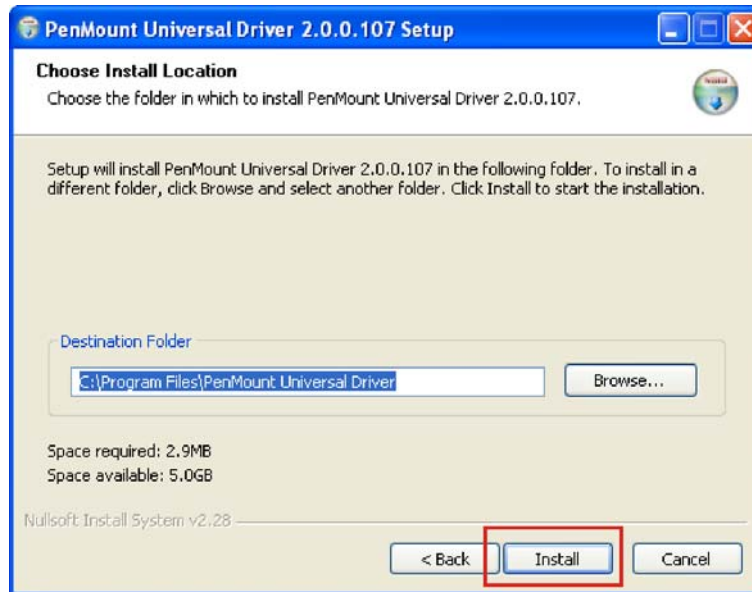
Figure 6-25: Windows Logo Testing

Step 9: Choose the installation directory. The default directory is recommended (Figure 6-25).

Step 10: The **InstallShield Wizard Completed** window appears (**Figure 6-26**).
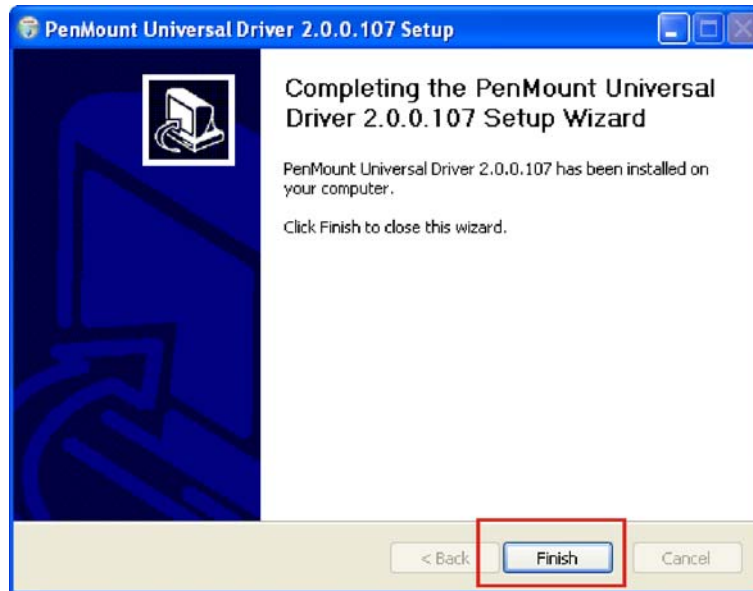
Figure 6-26: Create Shortcut Wizard

Step 11: The touch panel drivers are now installed. Click **FINISH** to complete the

installation process and exit the touch panel driver installation wizard

(Figure 6-26).

6.8 Wireless LAN PCIe Mini Card Driver

Follow the steps below to install the 802.11g Wireless LAN PCIe Mini Card driver and software utility.

Step 1: Select **Wireless LAN** from the list in **Figure 6-1**.

Step 2: The browser window appears (Figure 6-27).
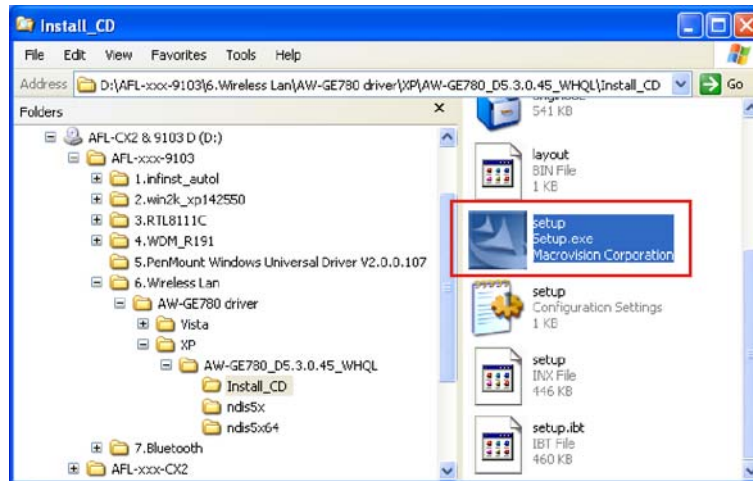
Figure 6-27: Software Driver Folder

Step 3: Double-click the **Setup** icon to start the InstallShield wizard (Figure 6-27).

Step 4: Choose the language from the **Choose Setup Language** window (Figure 6-28).
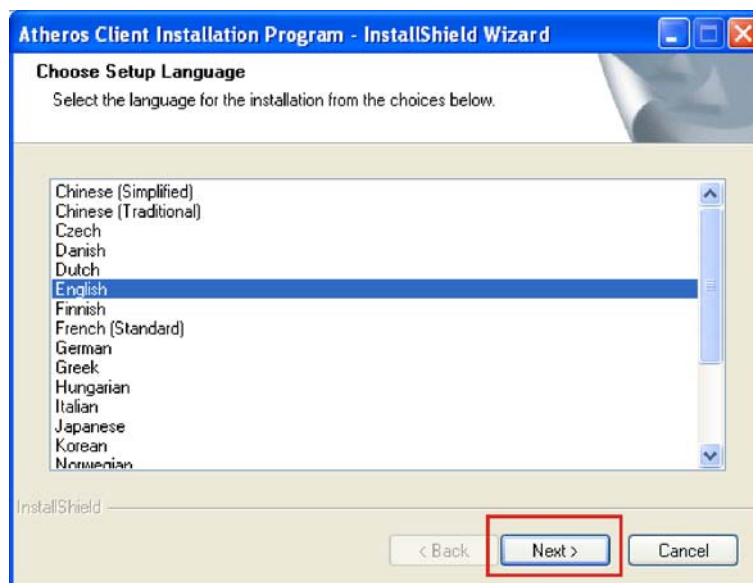
Figure 6-28: Wireless LAN Setup Language

Step 5: Click NEXT to continue the driver installation process (Figure 6-29).
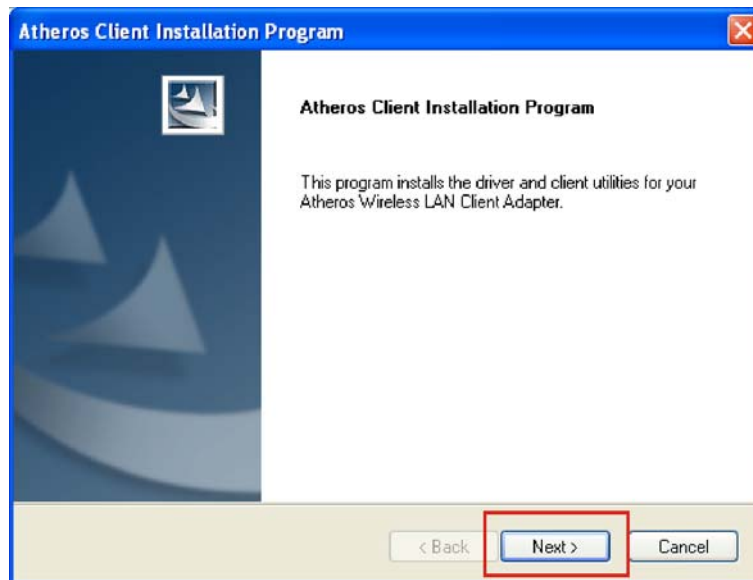
Figure 6-29: Installation Welcome Screen

Step 6: The **Wireless LAN License Agreement** appears (Figure 6-30).
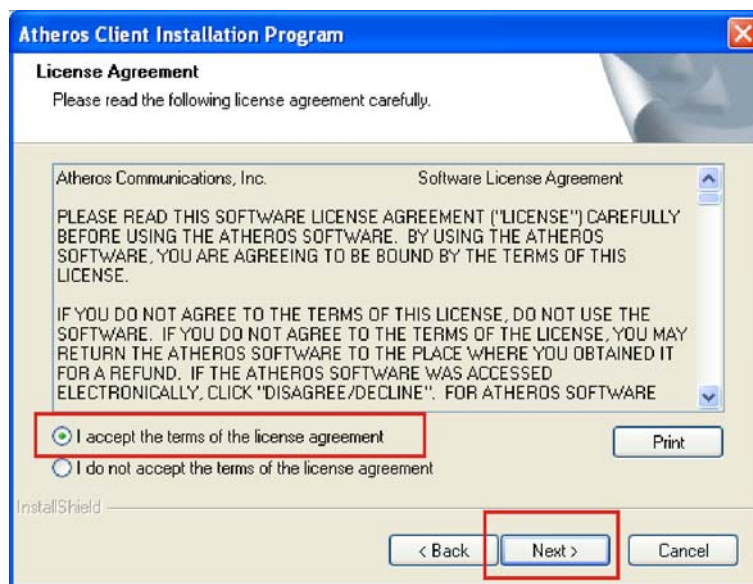
Figure 6-30: Wireless LAN Driver License Agreement

Step 7: Choose "I accept the terms of the license agreement," and click NEXT to continue the installation (Figure 6-30).

Step 8: The **Setup Options** window appears (Figure 6-31).
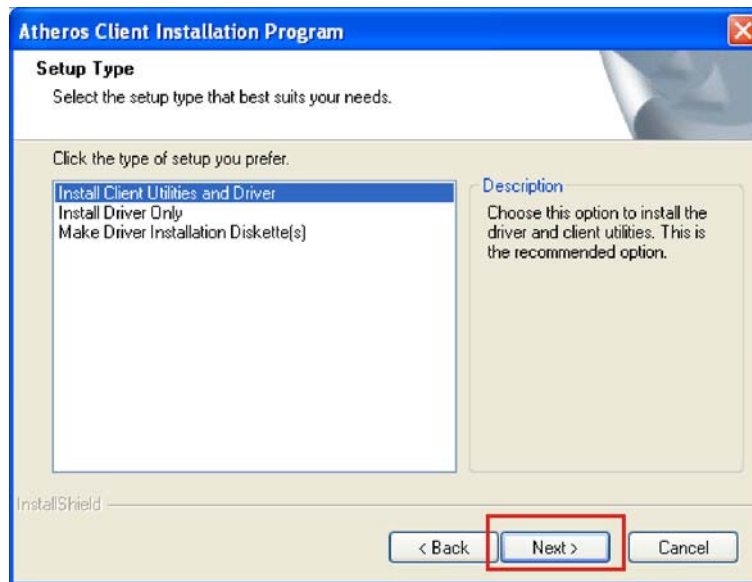
Figure 6-31: Wireless LAN Setup Options

Step 9: Choose the installation options (Figure 6-31).

- **Install Client Utilities and Driver** installs the drivers and the client program
- **Install Driver Only** installs the driver only. A separate client program needs to be installed (for example the Wireless connectivity program in Windows).
- **Make Driver Installation Diskettes** writes the driver files to a floppy disk

Step 10: Click NEXT to continue the installation (Figure 6-31).

Step 11: The **Choose Installation Location** screen appears (Figure 6-32).
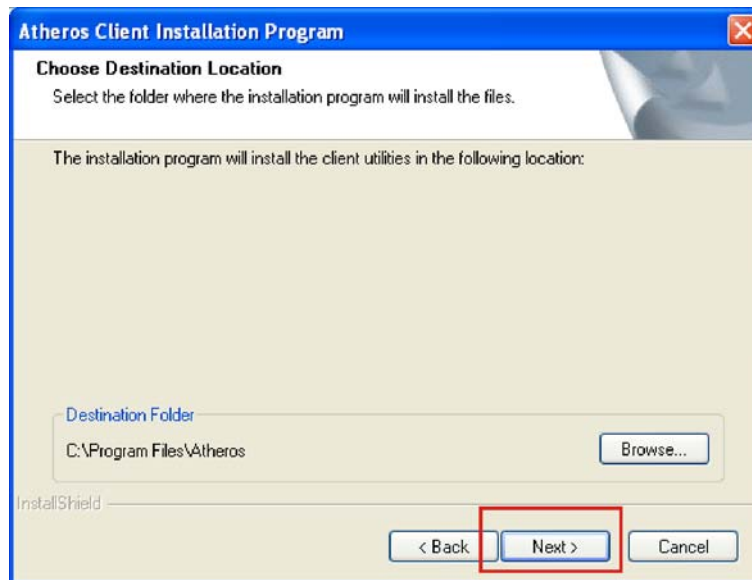
Figure 6-32: Choose Destination Location

Step 12: Select the installation directory (the default is recommended) then click NEXT to

continue (Figure 6-32).

Step 13: The **Select Program Folder** window appears (Figure 6-33).
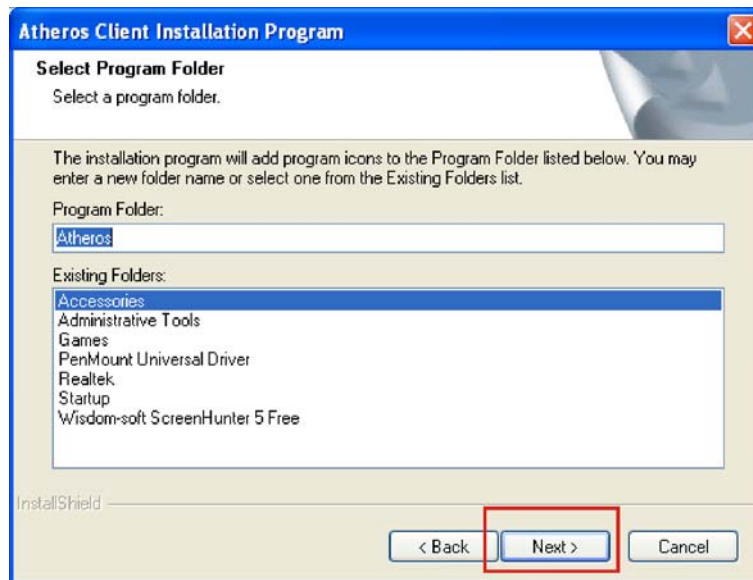
Figure 6-33: Select Program Folder

Step 14: Select the program folder to install the menu shortcuts (default recommended) (Figure 6-34).

Step 15: Read the notice that appears, then click NEXT to continue (Figure 6-34).
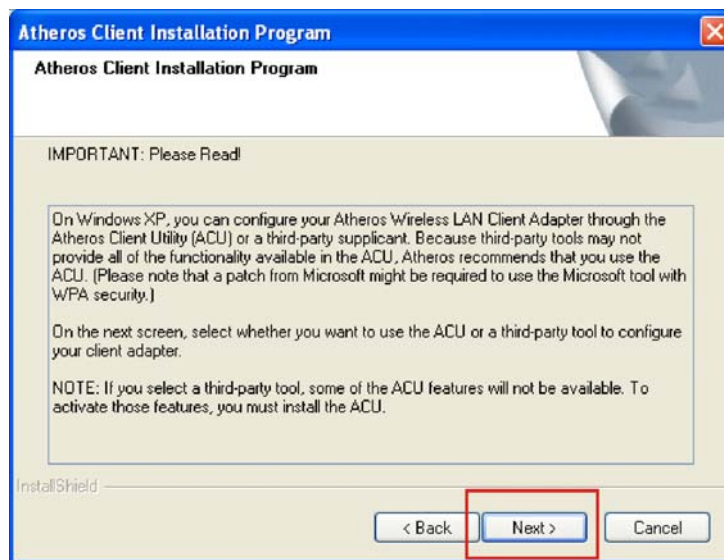
Figure 6-34: Readme File

Step 16: The Choose Configuration Tool window appears (Figure 6-35).
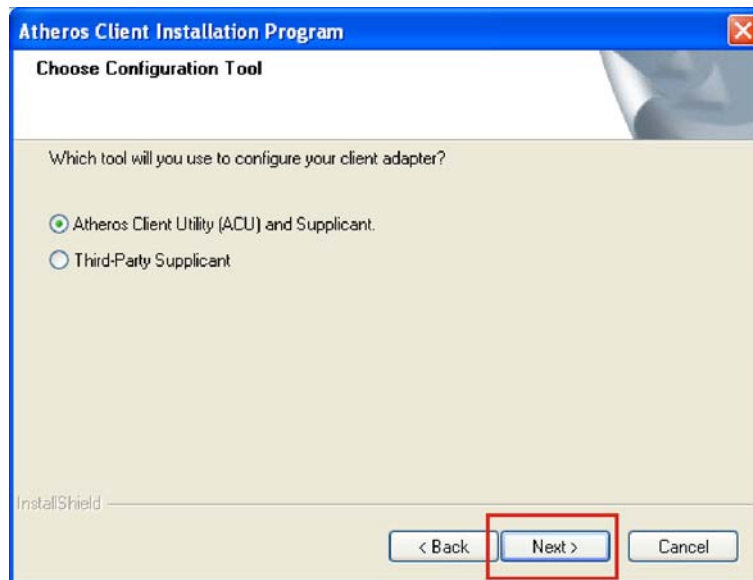
Figure 6-35: Choose Configuration Tool

Step 17: Choose the configuration tool to use (this installation covers the "Atheros Client Utility" setup) (Figure 6-35).

Step 18: Click Next to continue (Figure 6-35).

Step 19: The **Single Sign On** window appears (Figure 6-36).
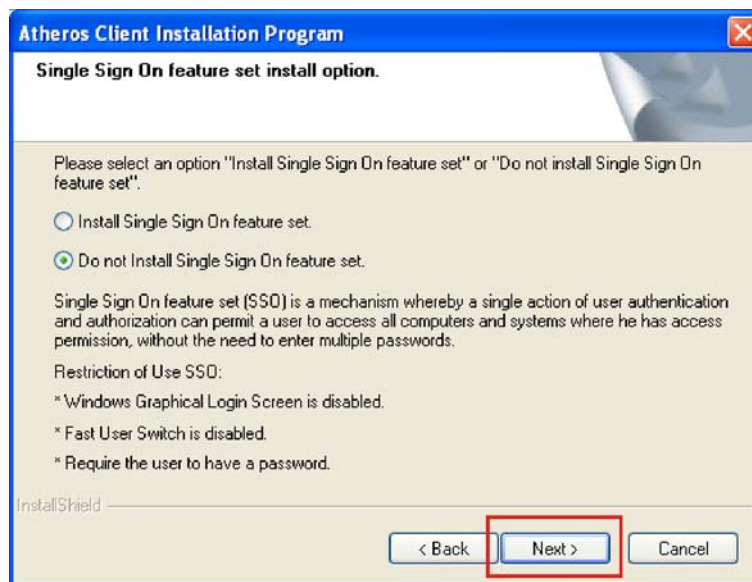
Figure 6-36: Single Sign On Installation

Step 20: The **Single Sign On** stores the passwords used to gain access to other computer on the network and protects them with a single master keyword (Figure 6-36).

Step 21: A client installation message appears (Figure 6-36).

Figure 6-37: Client Installation Program

![NOTE icon] **NOTE:**

When the **Found New Hardware Wizard** appears, press CANCEL to continue the installation process.

Step 22: The installation process takes a few minutes. The installation is finished when

the **InstallShield Wizard Complete** window appears (Figure 6-38).
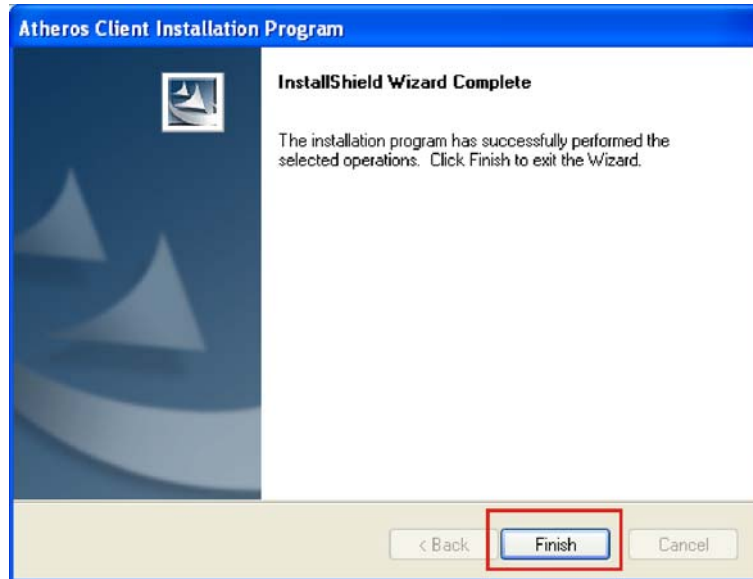
Figure 6-38: InstallShield Wizard Complete

Step 23: Click **FINISH** to exit the installation program.

6.9 Bluetooth Driver

To install the Bluetooth driver, please follow the steps below.

Step 1: Select **Bluetooth** from the list in **Figure 6-1**.

Step 2:   A browser window opens (Figure 6-39).
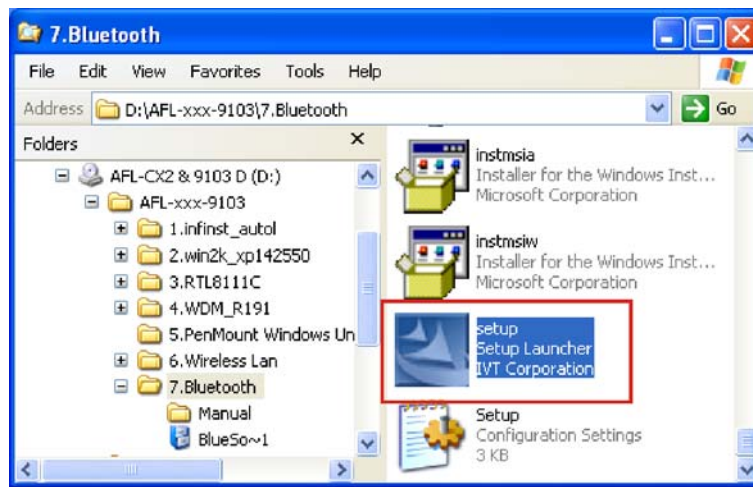
Figure 6-39: Bluetooth Setup

Step 3:   Double-click the **setup** icon to start the installation wizard (Figure 6-39).

Step 4:   The **language selection** window appears (Figure 6-40).

Figure 6-40: Language Selection

Step 5:   Select the desired language from the dropdown list (Figure 6-40).

Step 6:   Click OK to continue the installation process (Figure 6-40).

Step 7: The **Bluetooth InstallShield Wizard** window appears (Figure 6-41).
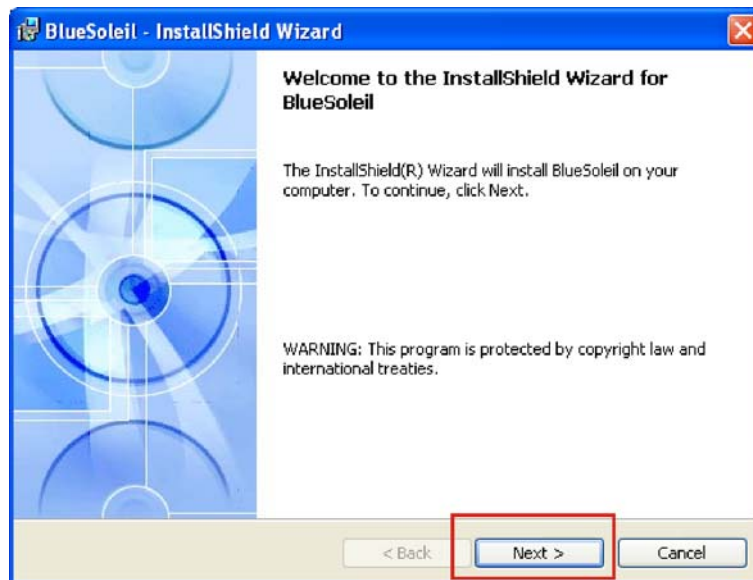
Figure 6-41: Bluetooth InstallShield Wizard

Step 8: Click NEXT to continue (Figure 6-41).

Step 9: The **Bluesoleil End User License Agreement** appears (Figure 6-42).

Figure 6-42: Bluesoleil License Agreement

Step 10: Read the license agreement. To continue the installation choose, "I accept the

terms in the license agreement" then click NEXT.

Step 11: The custom settings screen appears (Figure 6-43).
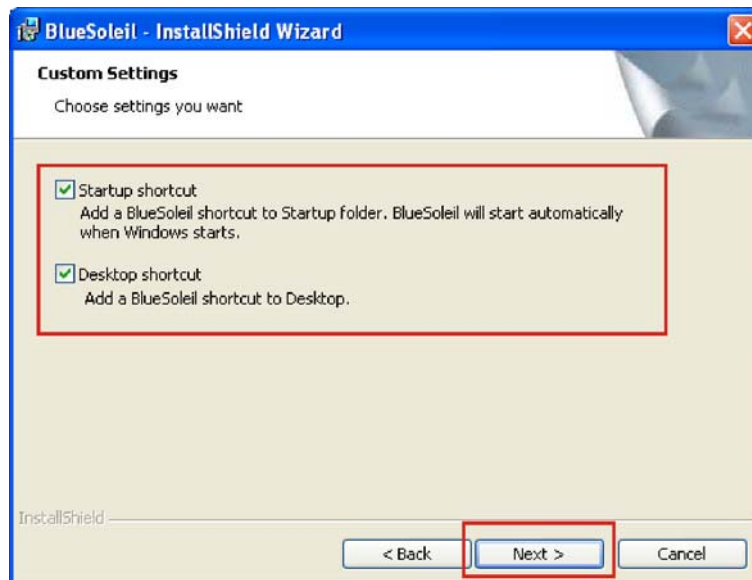
Figure 6-43: Custom Settings

Step 12: Select the shortcuts that the installation program should install (Figure 6-43).

Step 13: Click NEXT to continue (Figure 6-43).
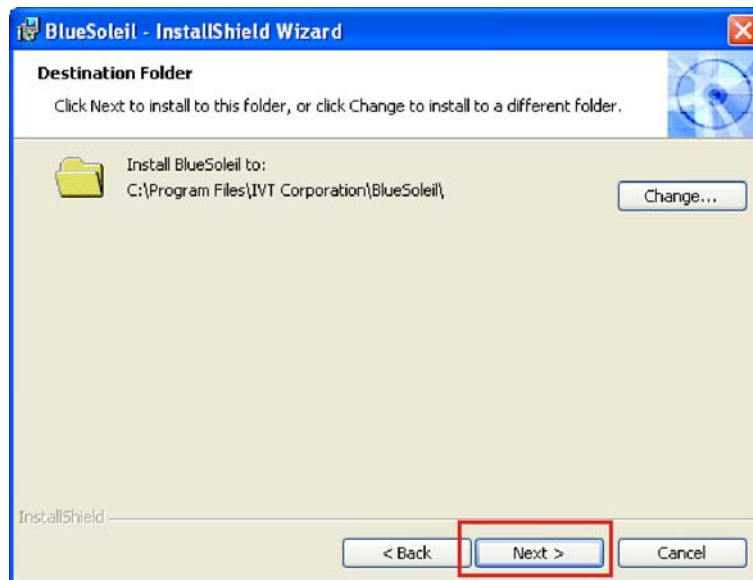
Step 17: The **Ready to Install Program** window appears (Figure 6-45).
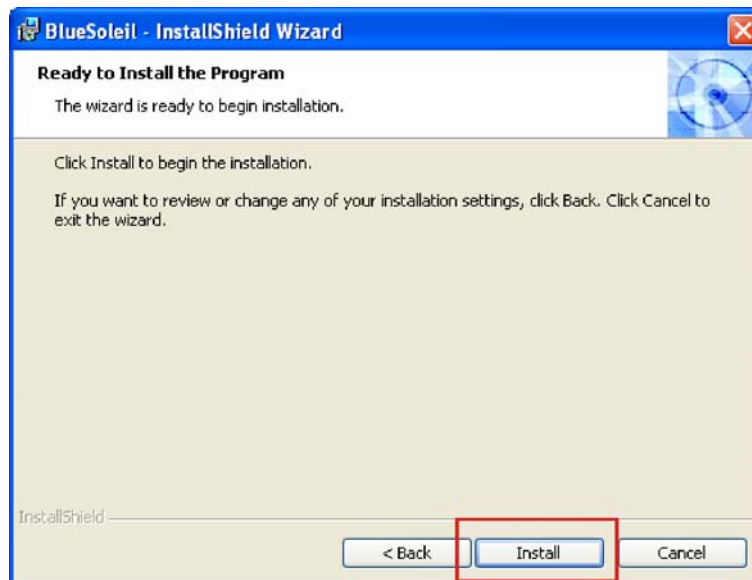
Figure 6-45: Ready to Install Bluetooth

Step 18: Click INSTALL to begin installing the Bluetooth driver (Figure 6-45).

Step 19: The installation process continues without user prompts. When complete the

window below appears (Figure 6-46).
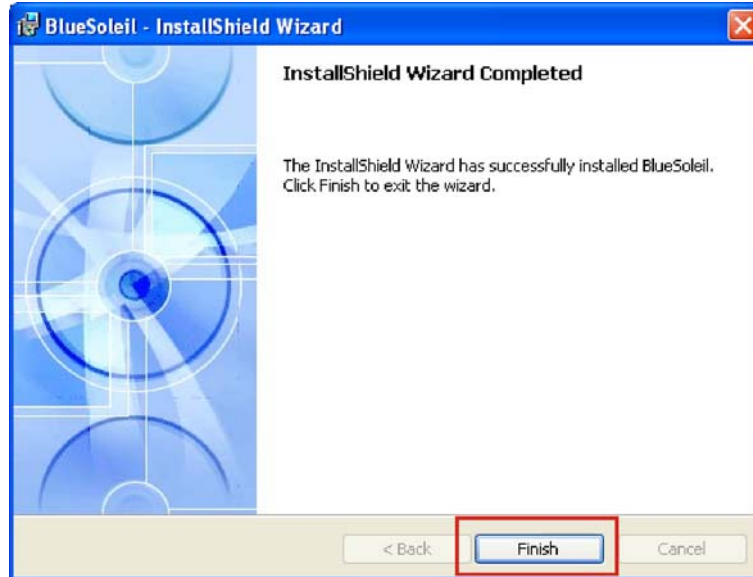
Figure 6-46: USB 2.0 Driver Installed

Step 20: Click FINISH to close the InstallShield wizard (Figure 6-46).

Appendix

A

BIOS Options

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

Appendix

B

Terminology

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

DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MB/s and 16.6 MB/s.
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 Gb/s and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gb/s and the SATA II bus has data transfer speeds of up to 3.0 Gb/s.
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 12 Mb/s data transfer rates and USB 2.0 supports 480 Mb/s data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

C

Digital I/O Interface

C.1 Introduction

The DIO connector on the AFL-xxx-9103 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally 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.

 NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

C.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2
9	Input 1	GP21	General purpose I/O port 2 bit 1
10	Input 0	GP20	General purpose I/O port 2 bit 0

Table C-1: Digital I/O Connector Pinouts

C.3 Assembly Language Samples

C.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	**AX, 6F08H**	Sets the digital port as input
INT	**15H**	Initiates the INT 15H BIOS call

C.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	**AX, 6F09H**	Sets the digital port as output
MOV	**BL, 09H**	
INT	**15H**	Initiates the INT 15H BIOS call

Appendix

D

Watchdog Timer

NOTE:

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

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

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

INT 15H:

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

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

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

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

NOTE:

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

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

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

;
; ADD THE APPLICATION PROGRAM HERE
;

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

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

;
; EXIT ;

Address Mapping

E.1 Direct Memory Access (DMA)

Figure E-1: Direct Memory Access (DMA)

E.2 Input/Output (IO)
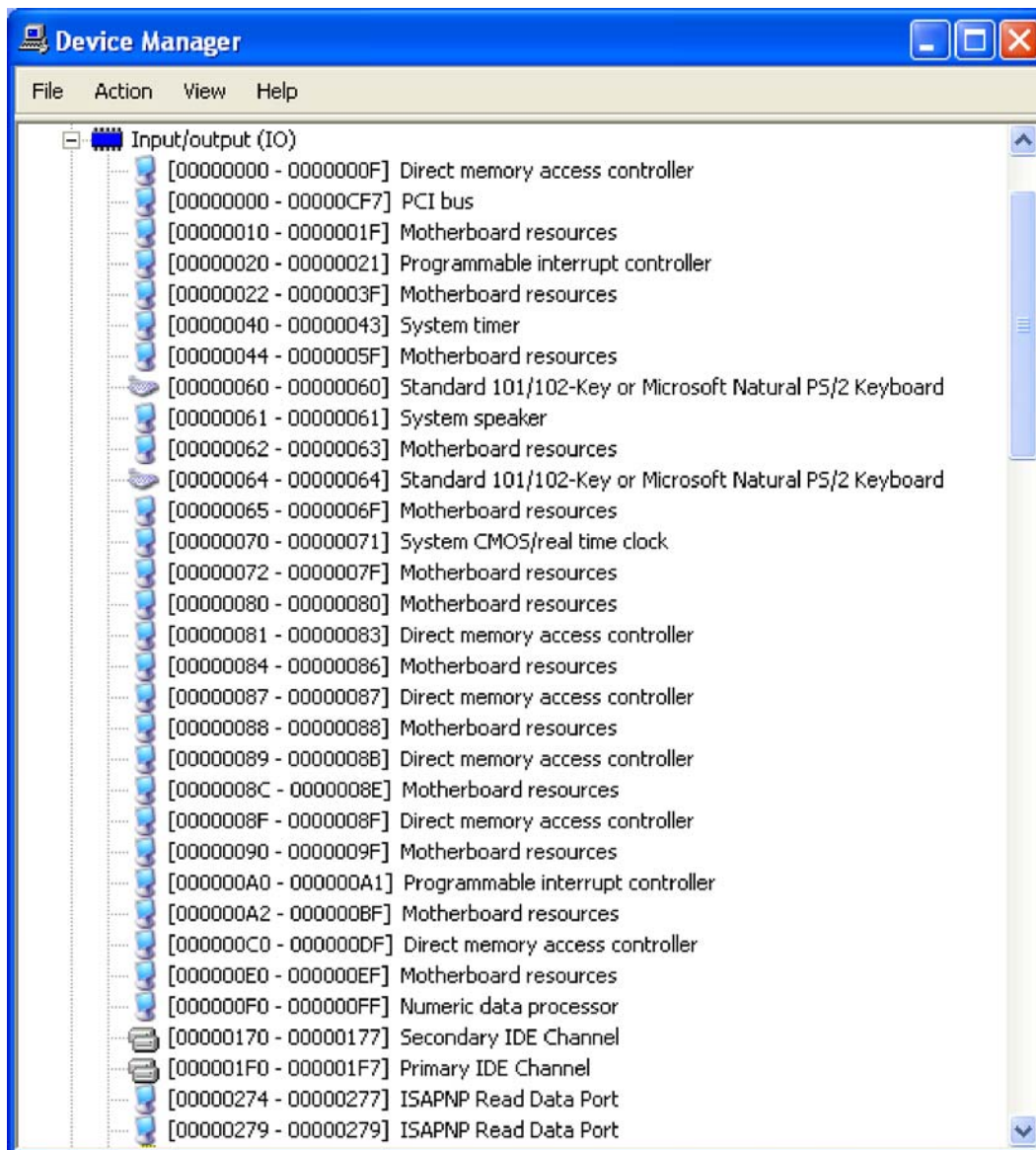
Figure E-2: Input/Output (IO) (1 of 2)
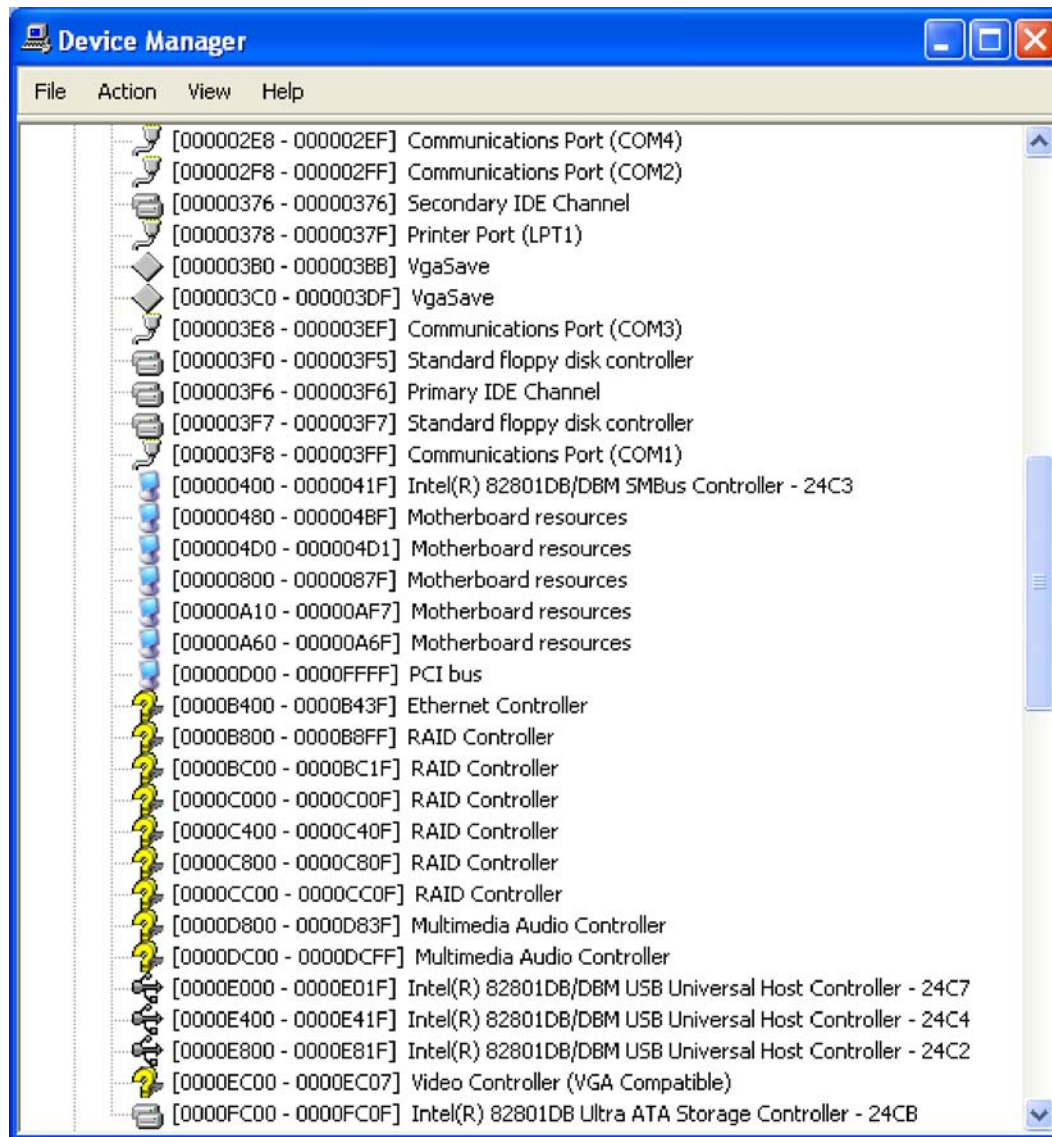
Figure E-3: Input/Output (IO) (2 of 2)

E.3 Interrupt Request (IRQ)
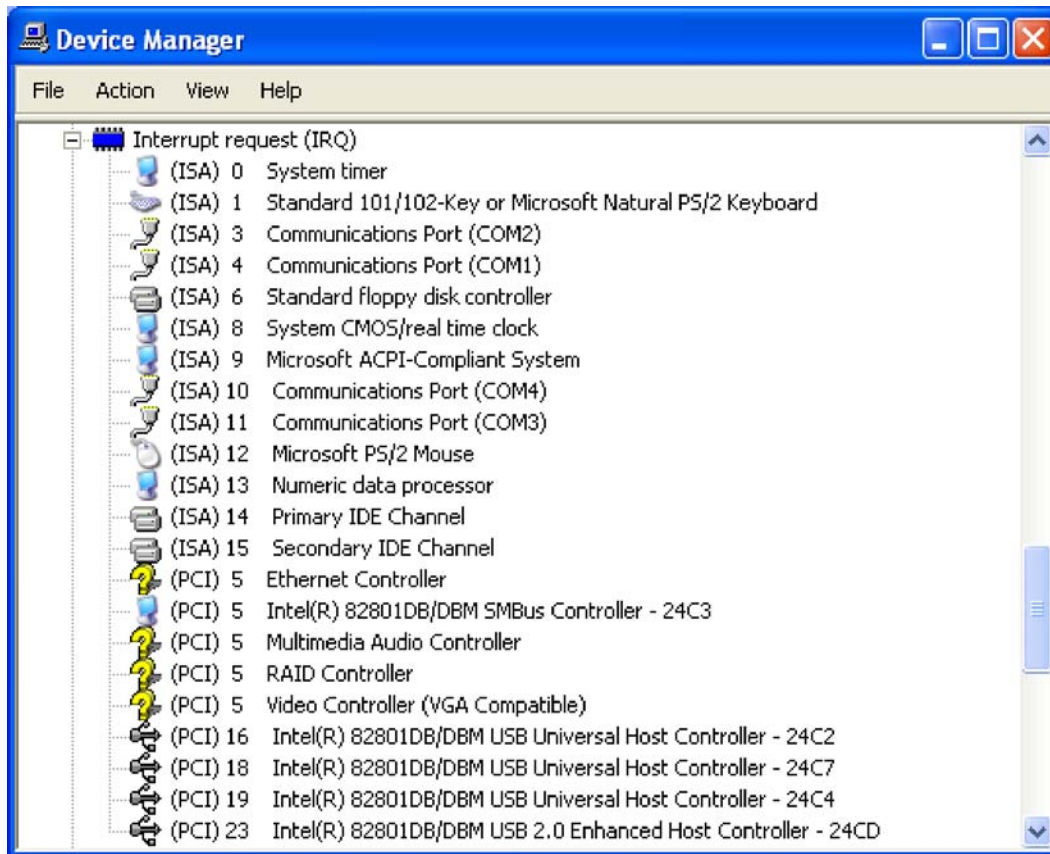
Figure E-4: Interrupt Request (IRQ)

E.4 Memory
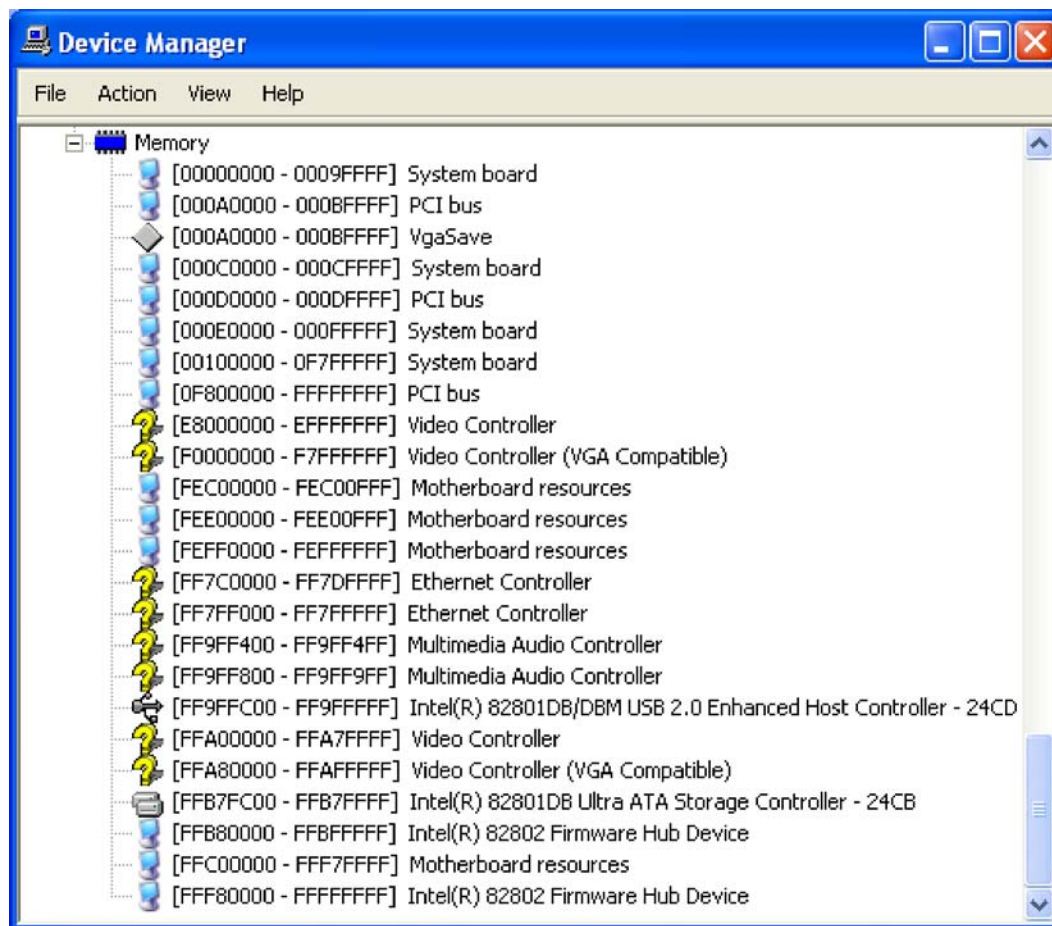
Figure E-5: Memory

Appendix

F

Compatibility

![NOTE icon] **NOTE:**

> The compatible items described here have been tested by the IEI R&D
> team and found to be compatible with the AFL-xxx-9103

F.1 Compatible Operating Systems

The following operating systems have been successfully run on the AFL-xxx-9103.

- MS-DOS 6.22
- Microsoft Windows XP (32-bit)
- Microsoft Windows 2000
- Red Hat 9.0

F.2 Compatible Processors

The following Intel® Socket 478 processors have been successfully tested on the AFL-xxx-9103

CPU	FSB	Frequency	L2 Cache
Intel® Pentium 4	800 MHz	3.2GHz	1 MB

Table F-1: Compatible Processors

F.3 Compatible Memory Modules

![NOTE icon] **NOTE:**

The memory modules listed below have been tested on the AFL-xxx-9103 other memory modules that comply with the specifications may also work on the AFL-xxx-9103 but have not been tested.

The following memory modules have been successfully tested on the AFL-xxx-9103.

Manufacturer	Model No.	Capacity	Speed	Type
Kingston	KVR400X64C3A	512 MB	400 MHz	DDR

Table F-2: Compatible Memory Modules

Appendix

G

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006 X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006						

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

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						

Appendix

H

AC'97 Audio Codec

H.1 Introduction

The motherboard comes with an onboard Realtek ALC655 CODEC. The ALC655 is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC that provides three pairs of stereo outputs with 5-bit volume control, a mono output, and multiple stereo and mono inputs, along with flexible mixing, gain, and mute functions.

H.1.1 Accessing the AC'97 CODEC

The CODEC is accessed through the phone jacks on the rear panel of the motherboard. The phone jacks include:

- LINE IN
- LINE OUT
- MIC IN

H.1.2 Driver Installation

The driver installation has been described in the driver installation section.

After rebooting, the sound effect configuration utility appears in the **Windows Control Panel** (**Figure H-1**). If the peripheral speakers are properly connected, sound effects should be heard.
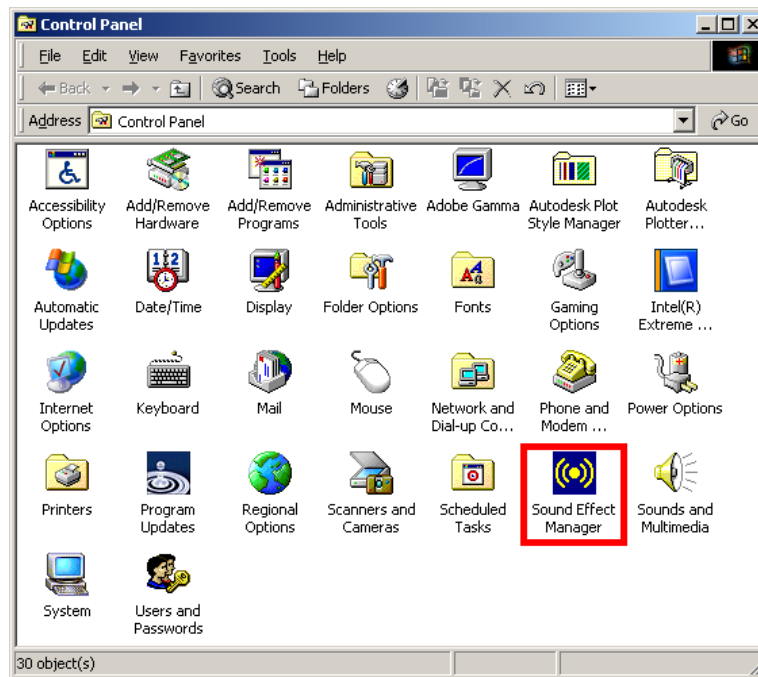
Figure H-1: Control Panel Sound Effect Manager

H.2 Sound Effect Configuration

H.2.1 Accessing the Sound Effects Manager

Follow the steps below to access the **Sound Effect Manager**.

Step 1:   Install the ALC655 audio CODEC driver.

Step 2:   Click the Sound Effect Manager icon in the system task bar (**Figure H-2**).
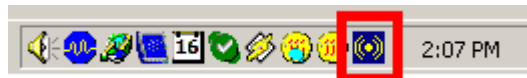
Figure H-2: Sound Effect Manager Icon [Task Bar]

Step 3:   The sound effect manager appears (**Figure H-3**).
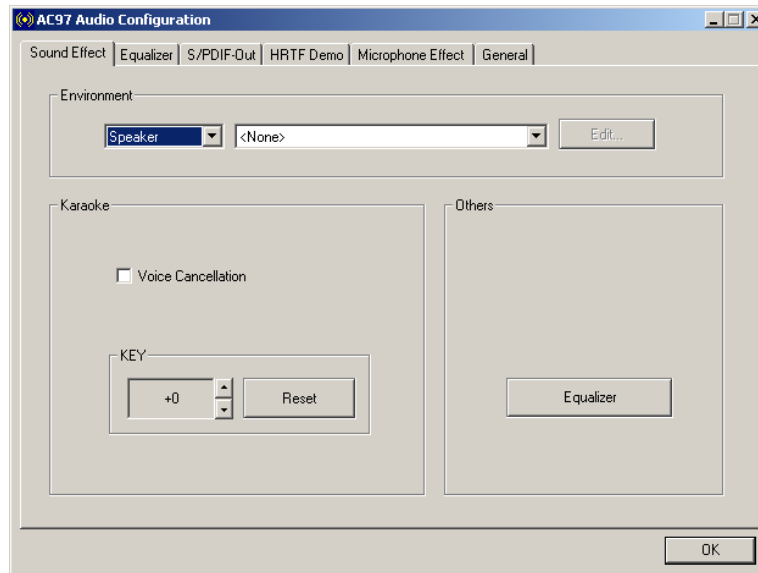
Figure H-3: Sound Effects Manager (ALC655)

![NOTE icon] **NOTE:**

The Sound Effect Manager shown in **Figure H-3** is for the Realtek ALC655 audio Codec. Different Codecs may have different sound manager appearances.

The following section describes the different configuration options in the Sound Effect Manager.

H.2.2 Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** (**Figure H-3**).

![NOTE icon] **NOTE:**

The Karaoke Mode is configured in the Sound Effect menu. To access Karaoke configuration settings, click on the Sound Effect menu tab.

- ▪ Sound Effect
- ▪ Karaoke Mode
- ▪ Equalizer
- ▪ Speaker Configuration
- ▪ Speaker Test
- ▪ S/PDIF-In
- ▪ S/PDIF-Out
- ▪ Connector Sensing
- ▪ HRTF Demo
- ▪ Microphone Effect
- ▪ General

NOTE:

Not all Realtek Sound Effect Managers have all the above listed options. The Sound Effect Manager loaded onto the system may only have some of the options listed above.

Below is a brief description of the available configuration options in the **Sound Effects Manager**.

- ▪ *Sound Effect* - Select a sound effect from the 23 listed options in the drop down menu. Selected sound effect properties can be edited. Click **EDIT** to edit the sound effect.
- ▪ *Karaoke Mode* - **Karaoke Mode** is accessed in the Sound Effect tab. The **Voice Cancellation** disables the vocal part of the music being played. The **Key adjustment** up or down arrow icons enable users to define a key that fits a certain vocal range.
- ▪ *Equalizer Selection* - Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.
- ▪ *Speaker Configuration* - Multi-channel speaker settings are configured in this menu. Configurable options include:
  - ○ Headphone
  - ○ Channel mode for stereo speaker output
  - ○ Channel mode for 4 speaker output

○ Channel mode for 5.1 speaker output

○ Synchronize the phone jack switch with speakers settings

- *Speaker Test* - Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.

- *S/PDIF-In & S/PDIF-Out* - S/PDIF is used to transmit digital and analog audio signals with either a 48 or 44.1 KHz sample rate.

- *HRTF Demo* - Adjust HRTF (Head Related Transfer Functions) 3D positional audio before running 3D applications.

- *Microphone Effect* - Microphone noise suppression is enabled in this menu.

- *General* - General information about the installed AC'97 audio configuration utility is listed here.

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