



IEI Technology Corp .



MODEL:
AFL-056A/057A-LX

**Fanless All-in-one Panel PC with AMD Geode LX-800 CPU
TFT LCD, Wireless LAN, Touch Screen and IP 64 Protection**

User Manual

Rev. 2.10 February 2012



Revision

Date	Version	Changes
February, 2012	2.10	Updated for R21 version (Bluetooth function optional)
October, 2011	1.02	Added RS-232/422/485 pinouts
February, 2009	1.01	Added serial port cable removal instructions
April, 2008	1.00	Initial release

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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 AFOLUX LX 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 AFOLUX LX. 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 AFOLUX LX. Please take caution messages seriously.

AFOLUX LX Panel PC

A black triangle containing a yellow checkmark.

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:

A black triangle containing a yellow checkmark.

NOTE:

This is an example of a note message. Notes should always be read. Notes contain critical information about the AFOLUX LX. 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 AFOLUX LX from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the AFOLUX LX package.

- 1 x AFOLUX LX
- 1 x Power adapter
- 1 x Power cord
- 1 x Touch pen
- 2 x RJ-45 to D-sub 9-pin connector
- 1 x Utility CD (user manual and drivers)
- 1 x QIG (quick installation guide)

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

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Chapter

1

Introduction

1.1 AFOLUX LX Flat Panel PC Overview



Figure 1-1: AFOLUX LX

The AFOLUX LX flat panel PC is a flexible, multi-functional and fanless flat panel PC that can be applied in diverse operational environments and implemented in multi-faceted applications. The AFOLUX LX comes fully kitted with a high-performance motherboard and a host of other peripheral interface connectors. The integrated wireless LAN module ensures an uninterrupted wireless connection. The flexible AT/ATX power mode selection allows the AFOLUX series to meet multiple application requirements. The AFOLUX LX is designed for ease of use and easy installation.

1.1.1 Model Variations

The models of AFOLUX LX are listed in **Table 1-1**.

Model	LCD	Resolution	Brightness	Memory	Wireless LAN	Touch screen
AFL-056B-LX/WT-R/256MB	5.6"	320 x 234	350 cd/m ²	256 MB	Yes	Yes
AFL-056B-LX/WT-R/512MB	5.6"	320 x 234	350 cd/m ²	512 MB	Yes	Yes
AFL-057B-LX/WT-R/256MB	5.7"	640 x 480	400 cd/m ²	256 MB	Yes	Yes
AFL-057B-LX/WT-R/512MB	5.7"	640 x 480	400 cd/m ²	512 MB	Yes	Yes

Table 1-1: Model Variations

AFOLUX LX Panel PC

1.1.2 Applications

The AFOLUX LX 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
- 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 standard features of the AFOLUX LX flat panel PC include:

- Fanless Design
- AMD® Geode LX-800 processor
- Rugged mechanism design with ABS/PC case
- IP 64 dustproof and waterproof front panel
- One 256 MB / 512 MB DDR memory module pre-installed
- AT/ATX power mode supported

- Bluetooth module (optional)
- Wireless LAN integrated with PIFA antenna
- Dual 10/100Mbps Ethernet support
- One CompactFlash® Type I/II slot
- Simplified installation process
- RoHS compliance

1.2 External Overview

1.2.1 General Description

The AFOLUX LX is a stylish flat panel PC that comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). 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 LAN, USB 2.0, serial port, power connector and power switch.

1.2.2 Front Panel

The front side of the AFOLUX LX is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame.

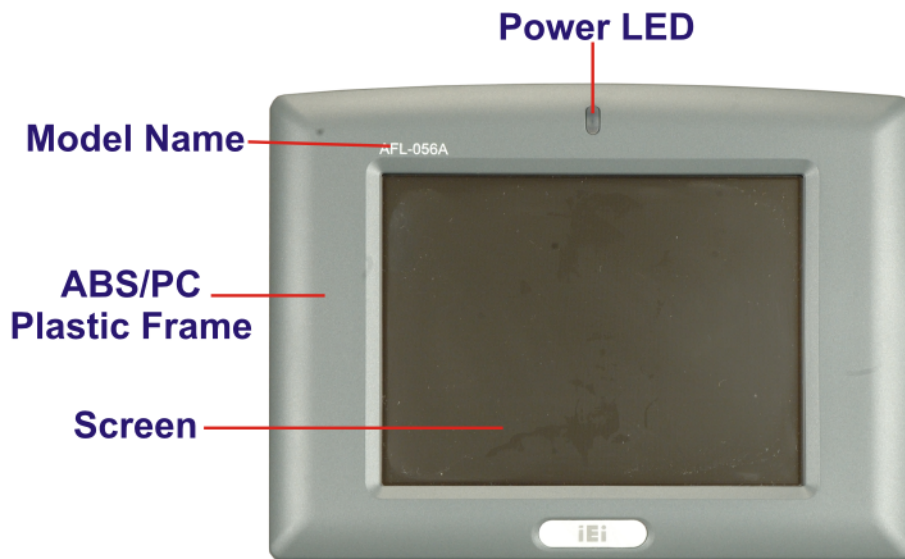


Figure 1-2: Front View

AFOLUX LX Panel PC

1.2.3 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

1.2.4 Top Panel and Side Panels

The top panel and side panels of AFOLUX LX provides access to slots that support panel mount and rack mount (**Figure 1-4** and **Figure 1-5**).

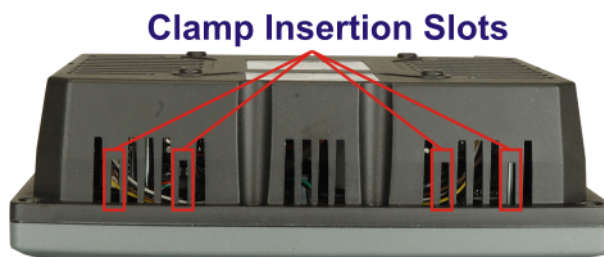


Figure 1-4: Top View

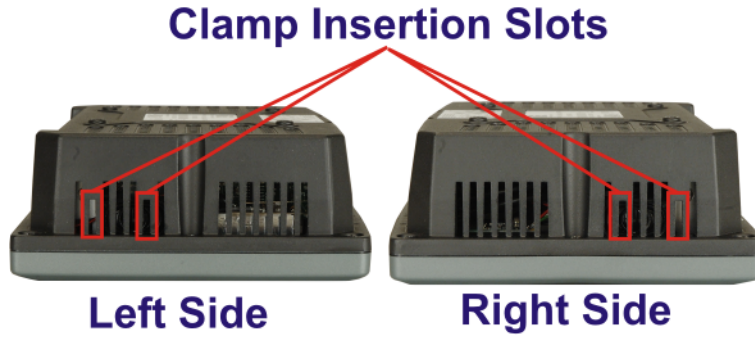


Figure 1-5: Side View

1.2.5 Bottom Panel

The bottom panel of the AFOLUX LX has the following I/O interfaces (**Figure 1-6**):

- 1 x RS-232 serial port connector
- 1 x RS-232 or RS-422/485 serial port connector (selected by a jumper)
- 1 x AC power adapter connector
- 1 x RJ-45 Gigabit Ethernet connectors
- 2 x USB 2.0 connectors
- 1 x AT/ATX switch
- 1 x Power switch

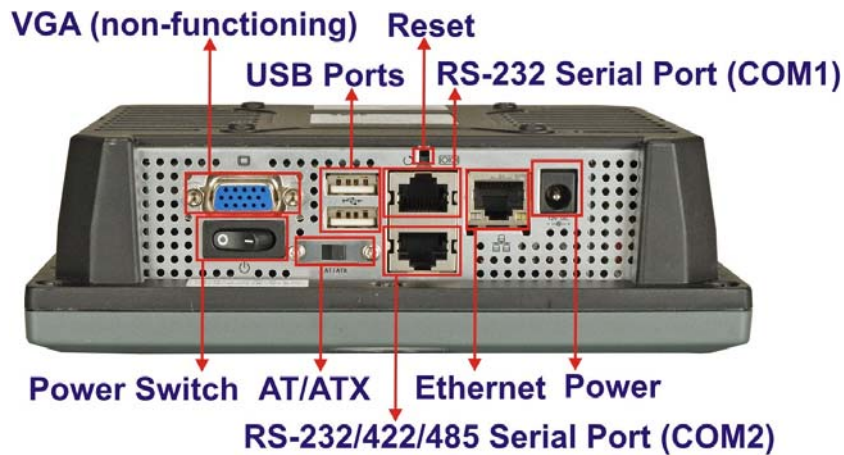


Figure 1-6: AFOLUX LX Bottom View

AFOLUX LX Panel PC

1.3 Internal Overview

The AFOLUX LX internal components are protected in a plastic back cover. An AT/ATX switch is in the left side of the aluminum chassis inside the plastic cover. Other internal components, the motherboard, wireless LAN module and DDR memory module, are installed in the aluminum chassis on a metal sheet that protects the rear of the TFT LCD screen. Below the metal sheet is a circuit board that is connected to the screen and the motherboard.

1.4 Specifications

1.4.1 Preinstalled Hardware Components

The AFOLUX LX flat panel PC has the following preinstalled components:

- 1 x Motherboard
- 1 x TFT LCD screen
- 1 x Touch screen
- 1 x Inverter
- 1 x Wireless LAN module
- 1 x DDR memory module
- 1 x Bluetooth module (optional)
- 1 x AT/ATX switch

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 AFOLUX LX systems are listed in **Table 1-2**.

SPECIFICATION	AFL-056-LX	AFL-057-LX
Chipset	AMD Geode™ LX 800 and AMD Geode™ CS5536	
Motherboard	AFLMB-LX2-800	
Front Panel	ABS/PC plastic front panel	
LCD Size	5.6"	5.7"
Resolution	320 x 234	640 x 480

SPECIFICATION	AFL-056-LX	AFL-057-LX
Brightness	350 cd/m ²	400 cd/m ²
Contrast Ratio	400:1	500:1
Colors	262K	
Pixel Pitch (H x V)	0.118 x 0.362	0.06 x 0.18
Viewing Angle (H-V)	100/60	140/100
Backlight MTBF	30000 hrs	50000 hrs
Touch Screen	4-wire resistive type	
Extension	1 x Wireless LAN module (USB 2.0 interface) 1 x Optional Bluetooth module (USB 2.0 interface)	
SSD	CompactFlash® Type I/II	
Audio	AMP 1.5W + AMP 1.5W (internal speaker)	
I/O	1 x RS-232 serial port 1 x RS-232 or RS-422/485 serial port 1 x 10/100 Mbps Ethernet port 2 x USB 2.0 port 1 x Power switch 1 x Reset switch 1 x AT/ATX power switch	
Power	12V, 36W DC power adapter	
Power Consumption	17 W	15 W
Mounting Feature	Panel, Wall, Arm, Stand (VESA 75 mm x 75 mm)	
Operating Temperature	0°C ~ 50°C	
Relative Humidity	5% ~ 80% RH, non-condensing	
Vibration	5 - 17Hz, 0.1" double amplitude displacement. 17 - 640Hz, 1.5G acceleration, peak to peak.	
Shock	10G Acceleration, peak to peak (11ms)	
Dimension (W x H x D)	180 x 135 x 35	
Net/Gross Weight	0.8 Kg	
Front Panel Protection	IP 64 compliant	
Safety	Meets UL and CB standards	
EMC	Meets CE, FCC and CCC standards	

Table 1-2: AFOLUX LX System Specifications

AFOLUX LX Panel PC

1.4.3 Motherboard Specifications

The AFOLUX LX come with an AFLMB-LX2-R10 motherboard. The technical specifications of the motherboard are listed in **Table 1-3**.

Specification	AFLMB-LX2-R10
CPU	AMD Geode™ LX 800 500Mhz
Southbridge Chipset	AMD Geode™ CS5536
Display	CRT integrated in AMD Geode™ LX800 24-bit TTL integrated in AMD Geode™ LX800
Memory	Supports one 1GB DDR 333/400 200-pin SO-DIMM SDRAM module
BIOS	Award BIOS
SSD	CFII
Audio	AC'97 Codec Realtek ALC203, AMP 1-2W
LAN	10/100 Base-T dual RTL8100C
COM	Two RS-232 serial ports
IDE	CFII
Touch Screen Controller	DMC9000
Power Supply	12V ATX power support
Dimensions	102mm x 186mm

Table 1-3: Motherboard Specifications

1.4.4 Flat Panel Screen Specifications

The AFOLUX LX 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 in **Table 1-4** below.

SPECIFICATION	AFL-056A-LX	AFL-057A-LX
Model	DATA IMAGE FG050605DNCWAG12	DATA IMAGE FG050720DSSWDG01
Size	5.6"	5.7"
Resolution	320 x 234	640 x 480 (VGA)
Active Area (mm)	113.28 x 84.708	115.2 x 86.4
Pixel Pitch (mm)	0.118 x 0.362	0.06 x 0.18
View Angel (H/V)	100/60	140/100

SPECIFICATION	AFL-056A-LX	AFL-057A-LX
Brightness (cd/m ²)	500	400
Contrast Ratio	400:1	300:1
Response Time (ms)	15(Tr) / 20(Tf)	15(Tr) / 35(Tf)
Supply Voltage (V)	3.3	3.3
Backlight	1 CCFL	1 CCFL
Backlight MTBF (hrs.)	30000	30000
Dimensions (mm)	126.5 x 100 x 11.1	127 x 98.43 x 7

Table 1-4: TFT LCD Monitor Specifications

1.4.5 Touch Screen Specifications

The AFOLUX LX come with an analog resistive type touch panel. **Table 1-5** lists the touch panel specifications.

SPECIFICATION	AFL-056A-LX	AFL-057A-LX
Model	PANJIT 1070404C	
Type	Analog Resistive Type Touch Panel	
Wire Type	4-wire	
Viewing Area (mm)	154.90 x 93.94	
Active Area (mm)	152.40 x 91.44	
Total Transmission	78%	
Maximum Voltage	DC7V	
Connector Type	FPC.	
Operating Temperature	-10°C ~ 60°C	
Operating Humidity	20% ~ 90% RH	
Storage Temperature	-20°C ~ 70°C	
Storage Humidity	20% ~ 90% RH	
Dimensions	165 x 104 x 1.4	

Table 1-5: Touch Panel Specifications

AFOLUX LX Panel PC

1.4.6 Bluetooth Module Specifications (Optional)

The optional 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
- Keyboard and mouse

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 1Mbps π/4-DQPSK for 2Mbps 8-DPSK for 3Mbps
Spread Spectrum	FHSS (Frequency Hopping Spread Spectrum)
RF Output Power	Class 2 (under 4dBm)
Antenna Terminal	50 Ohms
DC Power	DC 3.3V or DC 5V
I/O Interface	USB 2.0 interface
Two GPIO Interface	LED link indicator interface
Dimensions	35mm x 11mm
Operating System	Windows XP, Windows 2000, Windows 98SE, Windows Me

Table 1-6: Bluetooth Module Specifications

1.4.7 Wi-Fi Module Specifications

The AFOLUX LX are all integrated with a Wi-Fi module. The Wi-Fi module enables the AFOLUX LX to connect to a wireless network.

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

Specification	Wi-Fi Module
Standards	IEEE 802.11b (11 Mb/s) IEEE 802.11g (54 Mb/s)
Frequency Band	2.4 – 2.5 GHz
Data Rate	Automatically modulated 6, 9, 12, 18, 24, 36, 48 or 54 Mb/s for IEEE 802.11g 1, 2, 5.5 or 11 Mb/s for IEEE 802.11b
Security	64/128 bit WEP WPA 1.0/2.0
Network Types	Access point (infrastructure) Peer-to-peer (ad-hoc)
Operating System	Windows XP, Windows 2000, Windows 98SE, Windows Me

Table 1-7: Wi-Fi Module Specifications

AFOLUX LX Panel PC

1.5 Dimensions

The dimensions of the AFL-056A-LX and AFL-057-LX flat panel PC are shown in **Figure 1-7** below.

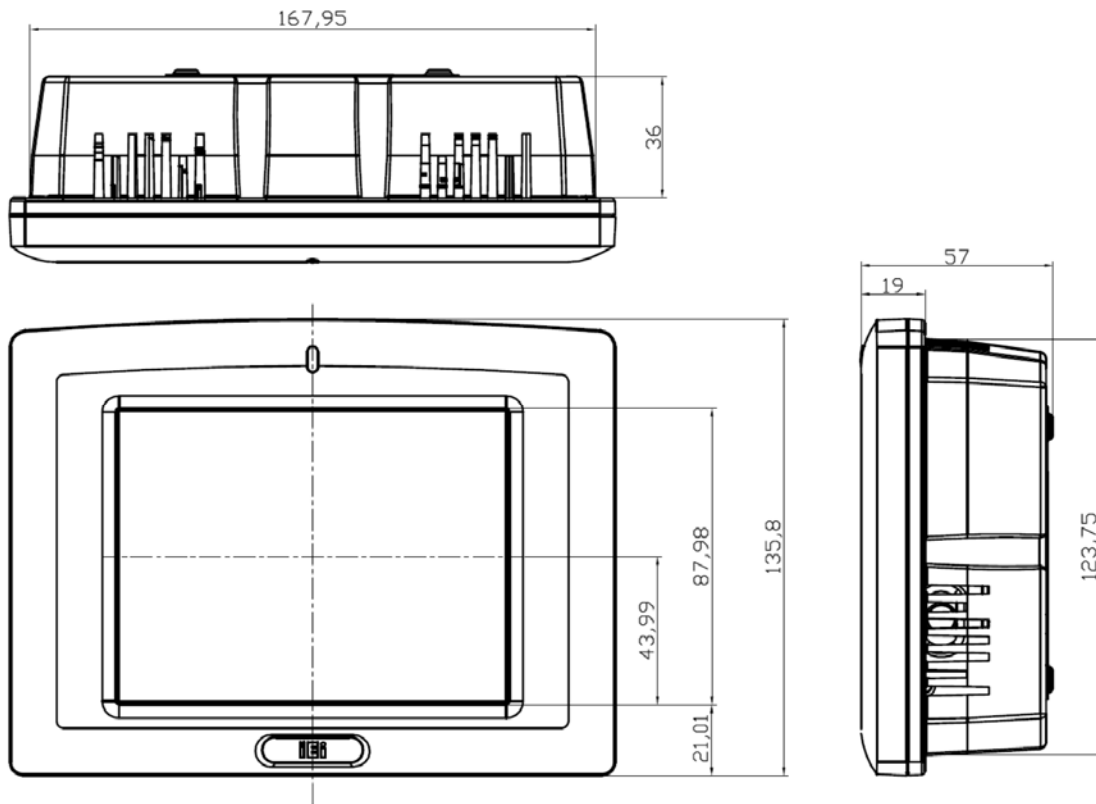


Figure 1-7: Dimensions (units in mm)

Chapter

2

Motherboard

2.1 Introduction

The AFOLUX LX flat screen PC contains the AFLMB-LX2-R10 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-LX2-R10 motherboard.

2.2 CPU Support

The AFLMB-LX2-R10 motherboard comes with a preinstalled AMD Geode™ LX 800 500MHz CPU.

2.2.1 AMD Geode™ LX 800 500MHz Specifications

The specifications for the 500MHz AMD Geode™ LX 800 are listed below

- x86/x87-compatible core
- Processor frequency up to 500 MHZ
- 64K I/64K D L1 cache and 128K L2 cache
- Split I/D cache/TLB (Translation Look-Aside Buffer)
- 64-bit DDR Memory interface up to 400MHz (LX 800), up to 333MHz (LX 700)
- Integrated FPU that supports the Intel MMX® and AMD 3DNow!™ Technology instruction sets
- 9 GB/s internal GeodeLink™ Interface Unit (GLIU)
- Security Block
 - 128-bit AES (CBC/ECB)
 - True Random Number Generator
- High-resolution CRT and TFT outputs (simultaneous operation)
 - Support for High Definition (HD) and Standard Definition (SD) standards
 - Support 1920x1440 in CRT mode and 1600x1200 in TFT mode
- VESA 1.1 and 2.0 VIP/VDA support
- 0.13 micron process
- 481-terminal PBGA (Plastic Ball Grid Array) with internal heatspreader

2.2.2 AMD Geode™ LX 800 500MHz Power Management

The power management for the 500MHz AMD Geode™ LX 800 is listed below:

- 1.8W Typical (3.9W TDP) @ 500MHz
- GeodeLink active hardware power management
- Hardware support for standard ACPI software power management
- I/O companion SUSP#/SUSPA# power controls
- Lower power I/O
- Wakeup on SMI/INTR

2.3 System Chipset

The AFLMB-LX2-R10 motherboard has a preinstalled AMD Geode™ CS5536 system chipset. The system chipset features are listed below.

- **GeodeLink™ Interface Unit**
 - 64-bit, 66MHz operation
 - PCI VSM (Virtual System Module) that makes the interface transparent to applications software and BIOS
 - Programmable routing descriptors, use and activity monitors, and SSMI (Synchronous System Management Interrupt)
- **ATA-6 Controller**
 - 100 MB/second IDE Controller in UDMA mode per the ATA-6 specification
 - 5V interface
- **Flash Interface**
 - Multiplexed with IDE interface Connects to an array of industry standard NAND Flash and/or NOR Flash
- **USB Controller**
 - 4 USB ports (two internal and two external)
 - Supports both USB 1.1 and USB 2.0
 - 3 host ports
 - 1 host/device
- **Audio Codec 97 (AC97) Controller**
 - AC97 specification v2.3 compliant interface to multiple audio codecs: Serial In, Serial Out, Sync Out, Bit Clock In
 - Legacy “PC Beep” support
- **Diverse Device**
 - 82xx Legacy Devices

AFOLUX LX Panel PC

- IR Communication Port
- System Management Bus (SMB) Controller
- LPC (Low Pin Count) Port
- General Purpose I/Os (GPIOs)
- 8 Multi-Function General Purpose Timers (MFGPTs)
- Real-Time Clock (RTC) with CMOS RAM
- Power Management Controller
- ACPI v2.0 compliant

2.4 Graphics Support

The Geode LX processor's Graphics Processor is a BitBLT/vector engine that supports pattern generation, source expansion, pattern/source transparency, 256 ternary raster operations, alpha blenders to support alpha- BLTs, incorporated BLT FIFOs, a GeodeLink interface and the ability to throttle BLTs according to video timing. New features added to the Graphics Processor include:

- Command buffer interface
- Hardware accelerated rotation BLTs
- Color depth conversion
- Paletized color
- Full 8x8 color pattern buffer
- Separate base addresses for all channels
- Monochrome inversion

Table 2-1 lists a complete list of Geode LX graphics features. For more details, please refer to the AMD website or the Geode LX series data book available from AMD.

Feature	AMD Geode™ LX Processor
Color Depth	8, 16, 32 bpp (A) RGB 4 and 8-bit indexed
ROPs	256 (2-src, dest and pattern)
BLT Buffers	FIFOs in Graphics Processor
BLT Splitting	Managed by hardware
Video Synchronized BLT/Vector	Throttle by VBLANK

Feature	AMD Geode™ LX Processor
Bresenham Lines	Yes
Patterned (stippled) Lines	Yes
Screen to Screen BLT	Yes
Screen to Screen BLT with mono expansion	Yes
Memory to Screen BLT	Yes (throttled rep movs writes)
Accelerated Text	No
Pattern Size (Mono)	8x8 pixels
Pattern Size (Color)	8x8 pixels
Monochrome Pattern	Yes (with inversion)
Dithered Pattern (4 color)	No
Color Pattern	8, 16, 32 bpp
Transparent Pattern	Monochrome
Solid Fill	Yes
Pattern Fill	Yes
Transparent Source	Monochrome
Color Key Source Transparency	Y with mask
Variable Source Stride	Yes
Variable Destination Stride	Yes
Destination Write Bursting	Yes
Selectable BLT Direction	Vertical and Horizontal
Alpha BLT	Yes (constant α , α/pix , or sep. α channel)
VGA Support	Decodes VGA Register
Pipeline Depth	Unlimited
Accelerated Rotation BLT	8, 16, 32 bpp
Color Depth Conversion	5:6:5, 1:5:5:5, 4:4:4:4, 8:8:8:8

Table 2-1: Geode LX Graphics Features

2.5 Ethernet Controller Specifications

2.5.1 Overview

The Realtek RTL8100BL is a single-chip Fast Ethernet controller. It is enhanced with an ACPI (Advanced Configuration Power Interface) management function for PCI that provides efficient power management for operating systems with OSPM (Operating System Directed Power Management). The RTL8100BL also supports remote wake-up (including AMD Magic Packet™ and Microsoft® Wake-up frame) to increase cost-efficiency in network maintenance and management

2.5.2 Features

- Integrates Fast Ethernet MAC, physical chip, and transceiver onto a single chip
- 10Mbps and 100Mbps operation
- Supports 10Mbps and 100Mbps N-way auto-negotiation
- Supports 25MHz Crystal or 25MHz OSC as the internal clock source
- Complies with PC99/PC2001 standards
- Supports ACPI power management
- Provides PCI bus master data transfer
- Provides PCI memory space or I/O space mapped data transfer
- Supports PCI clock speed of 16.75MHz-40MHz
- Advanced power saving mode
- Supports Wake-on-LAN and remote wake-up (AMD Magic Packet™, Link Change, and Microsoft® Wake-up frame)
- Half/Full duplex capability
- Supports Full Duplex Flow Control (IEEE 802.3x)
- Provides interface to 93C46 EEPROM to store resource configuration and ID parameters
- Provides PCI clock run pin
- Provides LED pins for network operation status indication
- 2.5/3.3V power supply with 5V tolerant I/Os

2.6 Peripheral Device Interfaces, Connectors, and Slots

The peripheral device connectors, interfaces and slots on the AFLMB-LX2-R10 motherboard are listed in the sections below.

2.6.1 OEM Options

Many of the peripheral device connectors listed below are not connected to any devices. These connectors are reserved for OEM customizations. For a customized option, please contact the vendor, reseller or IEI sales representative.

2.6.2 Internal Slots

The slots listed below can all be found on the AFLMB-LX2-R10 motherboard.

- 1 x 200-pin DDR SO-DIMM socket
- 1 x CompactFlash® slot

2.6.3 Internal Peripheral Device Connectors

The peripheral device connectors listed below are located on the AFLMB-LX2-R10 motherboard and used for the AFOLUX LX.

- 1 x Audio connector
- 1 x CompactFlash® slot
- 1 x Inverter connector
- 1 x LCD interface connector
- 1 x LED connector
- 1 x Power switch connector
- 1 x Touch screen connector

2.6.4 External Peripheral Device Connectors

The peripheral device connectors listed below are located on the rear panel of the AFLMB-LX2-R10 motherboard.

- 1 x Ethernet connectors
- 2 x USB connectors
- 2 x Serial port connectors

AFOLUX LX Panel PC

- 1 x Power connector

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 functionalities.
- **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 open the rear panel of the flat panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear an anti-static wristband.

3.2 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD screen
- 256 MB / 512 MB DDR memory module
- Resistive type touch screen
- Wireless LAN module
- Bluetooth module (optional)
- AT/ATX power switch

Preinstalled OEM customizations may include the following.

- Different DDR memory 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 CF card
- Step 3:** Mount the flat panel PC
- Step 4:** Connect peripheral devices to the bottom panel of the flat panel PC
- Step 5:** 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 that seals the top side of the external (second) box.
 - Step 2:** Open the external (second) box.
 - Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
 - Step 4:** Lift the monitor out of the boxes.
 - Step 5:** Remove both polystyrene ends, one from each side.
 - Step 6:** Pull the plastic cover off the flat panel PC.
 - Step 7:** Make sure all the components listed in the packing list are present.

AFOLUX LX Panel PC

3.4.1 Packing List

The AFOLUX LX flat panel PC is shipped with the following components:

Quantity	Item	Image
Standard		
1	AFOLUX LX	
1	Power adapter	
1	Power cord	
1	User manual CD and driver CD	
1	Touch pen	
2	RJ-45 to D-sub 9-pin connector	
Optional		
1	Wall mounting kit	
1	Bluetooth adapter driver CD	

Quantity	Item	Image
1	128MB CompactFlash® card with Windows CE 5.0 pre-installed and SDK	
1	1GB CompactFlash® card with Windows XPE pre-installed	

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

3.5 CF Card Installation

The AFOLUX LX has one CF Type II slot inside the rear panel. To install the CF card, follow the instructions below.

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



Figure 3-1: Back Cover Retention Screws

Step 2: Lift the cover off and pull down the cover a bit to make it possible to lift the cover further more after removing the nine retention screws. Push the power switch while lifting the back cover. More strength is required to separate the cover from the chassis.

AFOLUX LX Panel PC

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



Figure 3-2: CF Card Location

Step 4: Replace the plastic back cover. A bit of force is needed when pushing the bottom part of the cover down to the chassis.

Step 5: Once replaced reinsert the nine previously removed retention screws.

3.6 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFOLUX LX. The selection is made through an AT/ATX switch on the rear panel (**Figure 3-3**). To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the aluminum chassis (**Figure 3-3**).



Figure 3-3: AT/ATX Switch Location

Step 2: Adjust the AT/ATX switch.

3.6.1 AT Power Mode

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

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

3.6.2 ATX Power Mode

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

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

3.7 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 three methods of mounting the AFOLUX LX are listed below.

- Wall mounting

AFOLUX LX Panel PC

- Panel mounting
- Arm/Stand mounting

The four mounting methods are described below.

3.7.1 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 3-4**).

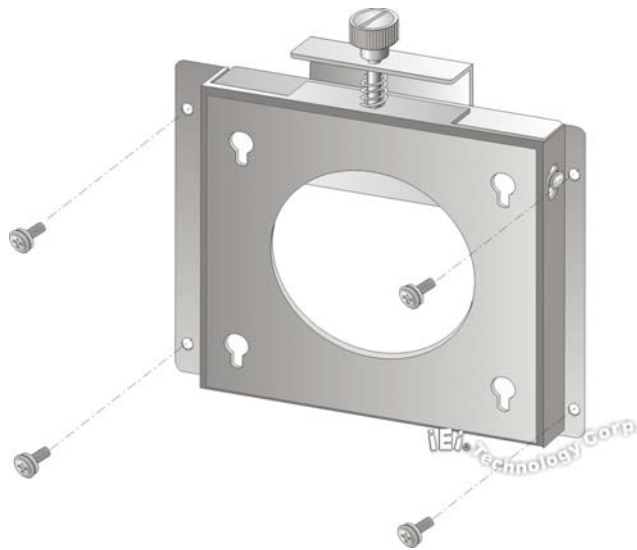


Figure 3-4: Wall-mounting Bracket

- Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the rear panel of the flat panel PC and tighten until the screw shank is secured against the rear panel (**Figure 3-5**).
- 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 3-5**). Ensure that all four of the mounting screws fit snugly into their respective slotted holes.

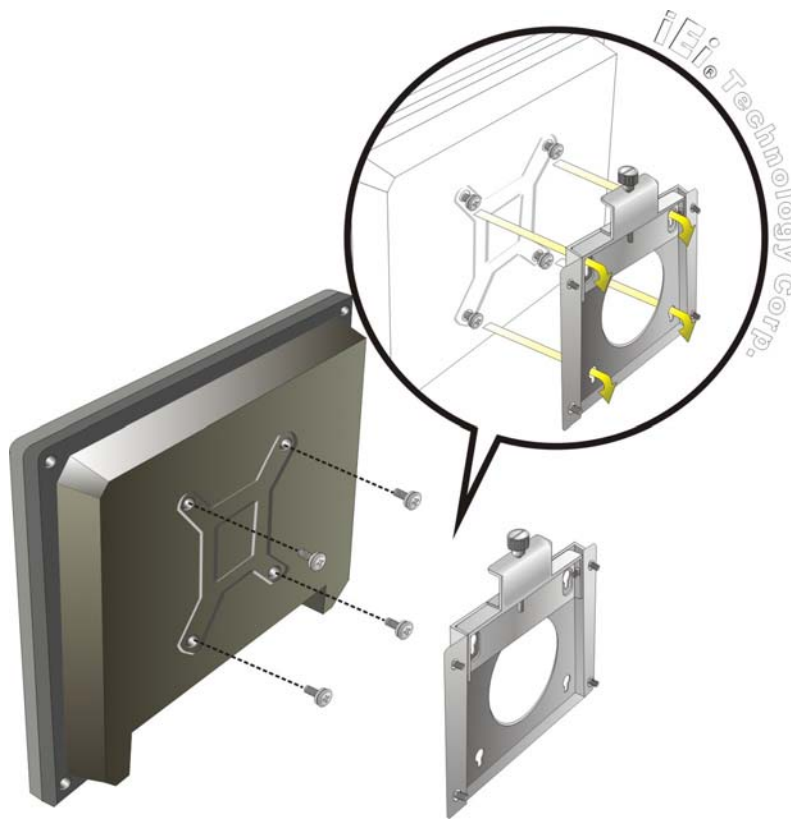


Figure 3-5: Chassis Support Screws

AFOLUX LX Panel PC



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 3-6).

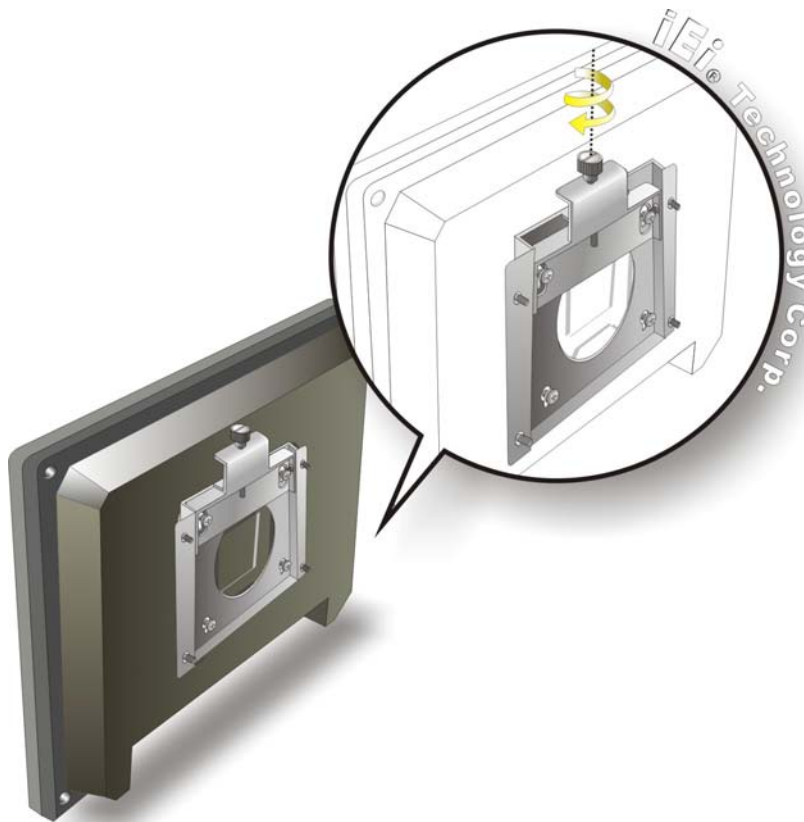


Figure 3-6: Secure the Panel PC

3.7.2 Panel Mounting

To mount the AFOLUX LX flat panel PC 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 3-7**).

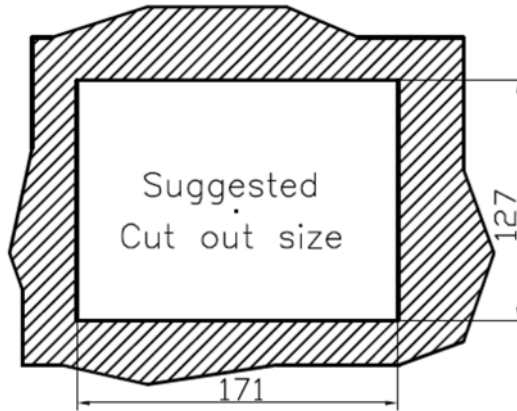


Figure 3-7: Panel Opening

- 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 4 panel mounting clamps on the AFOLUX LX.
- 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 3-8**).

AFOLUX LX Panel PC

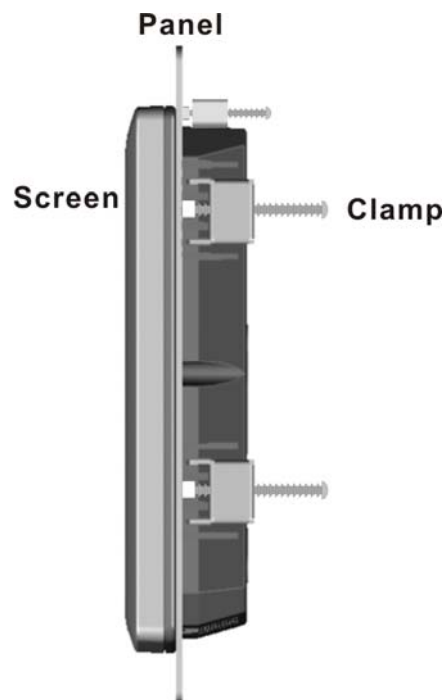


Figure 3-8: Tighten the Panel Mounting Clamp Screws

3.7.3 Arm/Stand Mounting

The AFOLUX LX is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75mm interface pad. To mount the AFOLUX LX on an arm, please follow the steps below.

Step 1: The arm/stand is a separately purchased item. Please correctly mount the arm/stand. To do this, refer to the installation documentation that came with the mounting arm.



NOTE:

When purchasing the arm/stand please ensure that it is VESA compliant and that the arm has a 75mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFOLUX LX flat panel PC.

Step 2: Once the mounting arm/stand 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 arm mount retention screw holes are shown in **Figure 3-9**.

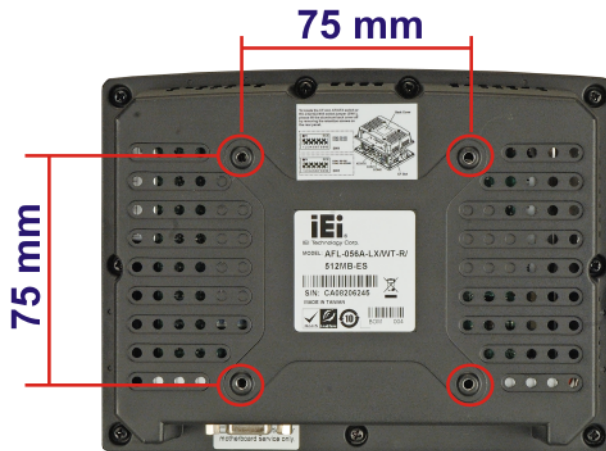


Figure 3-9: Arm/Stand Mounting Retention Screw Holes

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 Bottom Panel Connectors

3.8.1 LAN Connection

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

Step 1: **Locate the RJ-45 connector** on the bottom panel of the AFOLUX LX.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with the RJ-45 connector on the bottom panel of the AFOLUX LX. See **Figure 3-10**.

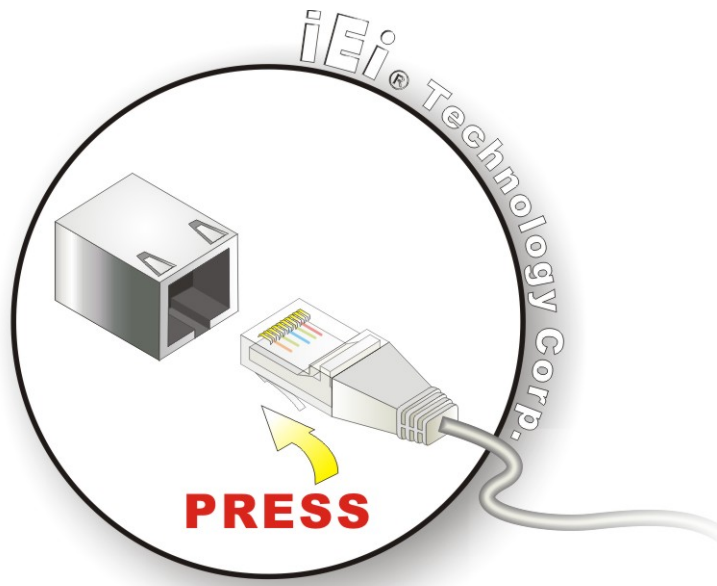


Figure 3-10: LAN Connection

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.

3.8.2 Serial Device Connection

The AFOLUX LX has two serial device connectors on the bottom panel. The two serial device slots (RJ-45) connect to a cable with a standard DB-9 connector at the other end (cables included). Follow the steps below to connect a serial device to the AFOLUX LX panel PC.

Step 1: Locate the RJ-45 connector. The location of the RJ-45 serial port connector is shown in **Chapter 2**. The RJ-45 connectors for the serial ports can be identified easily as the RJ-45 for the network has two LEDs on the port, while the connectors for the serial cables don't.

Step 2: Insert the RJ-45 to DB-9 cable.

Step 3: Insert the serial connector. Insert the DB-9 connector of a serial device into the DB-9 connector on the cable. See **Figure 3-11**.

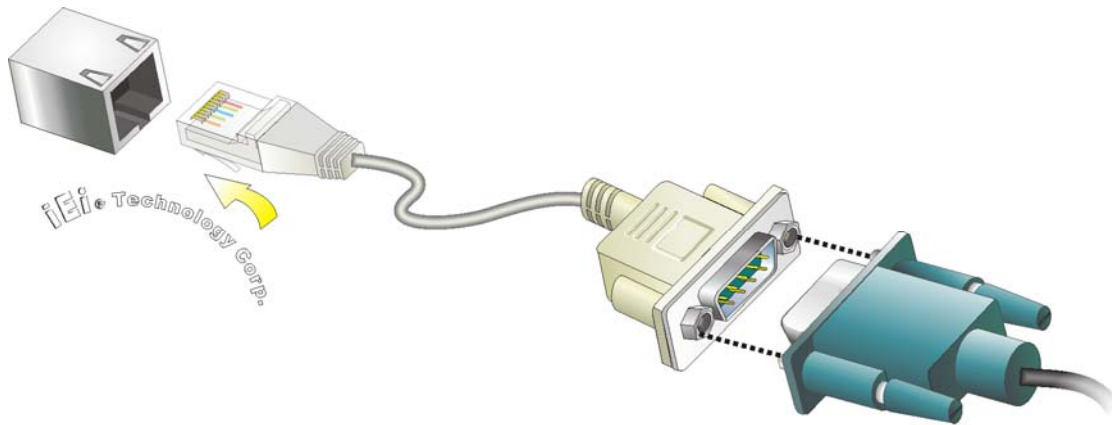


Figure 3-11: Serial Device Connector

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

To remove the serial device cable, follow the instructions below.

Step 1: Pull back the cover on the RJ-45 plug.

Step 2: Insert a screwdriver between the case and the clip on the RJ-45 plug.

Step 3: Twist the screwdriver and pull the plug to release.



Figure 3-12: Serial Cable Removal

3.8.2.1 RJ-45 Serial Port Pinouts

The pinouts for RS-232, RS-422 and RS-485 communication are shown below. The COM1 serial port is RS-232 only.

PIN NO.	RS-232	RS-422	RS-485
1	DCD	TX-	D-
2	DSR	RX-	
3	RX	TX+	D+
4	RTS	RX+	
5	TX		
6	CTS		
7	DTR		
8	RI		
SHIELD	GND		

Table 3-1: RJ-45 Serial Port Pinouts

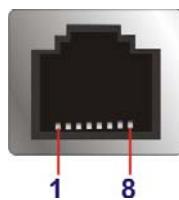


Figure 3-13: RJ-45 Serial Port Pinout Location

3.8.2.2 RS-232, RS-422 and RS-485 Pinouts

The pinouts for RS-232, RS-422 and RS-485 operation of external serial ports COM1 and COM2 using a RJ-45 to DB-9 cable are detailed below. The COM1 serial port is RS-232 only.

PIN NO.	RS-232	RS-422	RS-485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX		
4	DTR		
5	GND		

PIN NO.	RS-232	RS-422	RS-485
6	DSR	RX-	
7	RTS	RX+	
8	CTS		
9	RI		

Table 3-2: RS-232/422/485 Pinouts

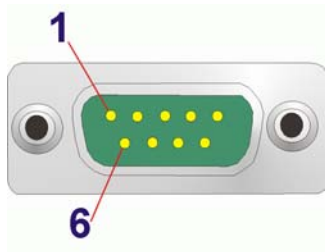


Figure 3-14: Serial Port Pinout Location

3.8.3 USB Device Connection

There are two external USB 2.0 connectors. 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 3-15**.

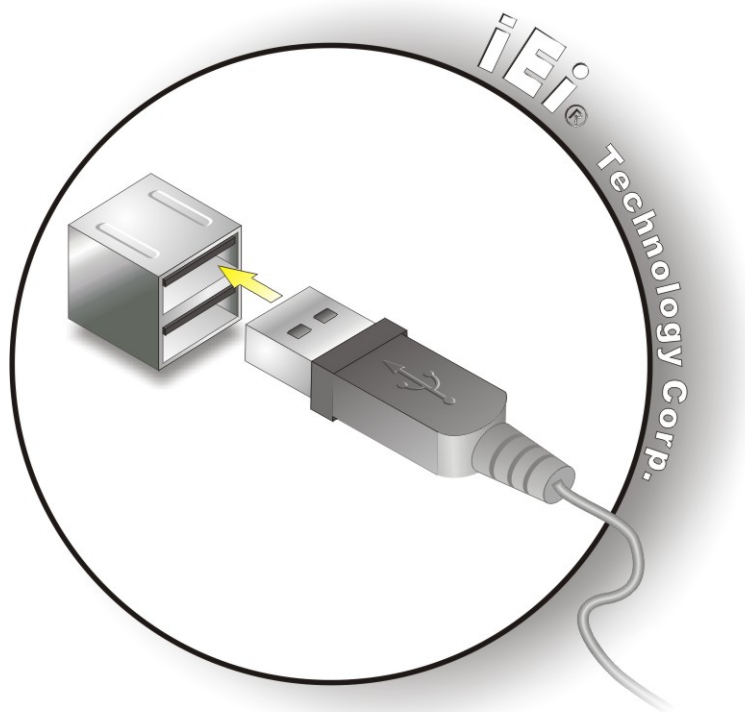


Figure 3-15: USB Device Connection

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

Chapter

4

System Maintenance

AFOLUX LX Panel PC

4.1 System Maintenance Introduction

If the components of the AFOLUX LX 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 AFOLUX LX are described below.

4.2 Motherboard Replacement

A user cannot replace the 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 Motherboard Removal



WARNING!

Before removing the motherboard, make sure the power is off.

Failing to do so may lead to severe damage of AFOLUX LX and injury to the body.



WARNING!

Please take antistatic precautions when working with the internal components. The interior of the AFOLUX LX 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,

- DDR memory module
- Bluetooth module (optional)
- Wireless LAN module

- Inverter

To remove the motherboard for parts replacement, follow the steps below.

Step 1: Remove the motherboard retention screws holding down the motherboard (Figure 4-1).



Figure 4-1: Motherboard Retention Screws

Step 2: Remove the two retention screws holding the bottom panel (Figure 4-2).

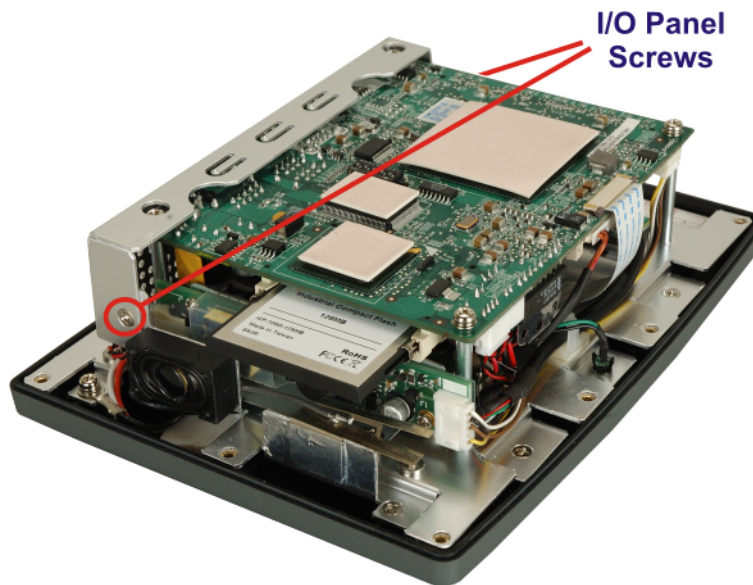


Figure 4-2: Aluminum Back Cover Retention Screws

AFOLUX LX Panel PC

Step 3: Remove the two hexagonal pillars on the bottom panel (**Figure 4-3**).



Figure 4-3: Two Hexagonal Pillars on the Bottom Panel

Step 4: Push the external interface connector apart from the aluminum cover and lift the aluminum cover off the AFL-07A-LX.

Step 5: Disconnect the power switch cable from the motherboard and remove the aluminum cover.

4.4 Memory Module Replacement

The flat panel PC is preinstalled with a 256 MB, 512 MB or 1.0 GB DDR 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 motherboard. See **Section 4.3** above.

Step 3: Locate the DDR memory module on the motherboard of the flat panel PC (**Figure 4-4**).

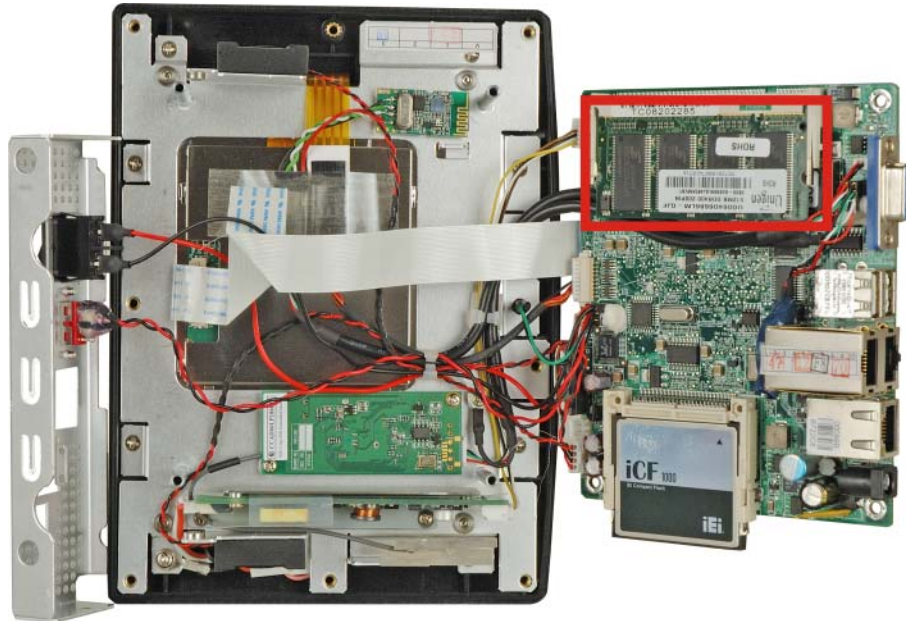


Figure 4-4: SO-DIMM Socket Location

- Step 4:** Remove the DDR memory module by pulling both the spring retainer clips outward from the socket.
- Step 5:** Grasp the DDR memory module by the edges and carefully pull it out of the socket.
- Step 6:** Install the new DDR memory module by pushing it into the socket at an angle (**Figure 4-5**).
- Step 7:** Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR memory module down (**Figure 4-5**).
- Step 8:** Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR memory module in the socket.

AFOLUX LX Panel PC

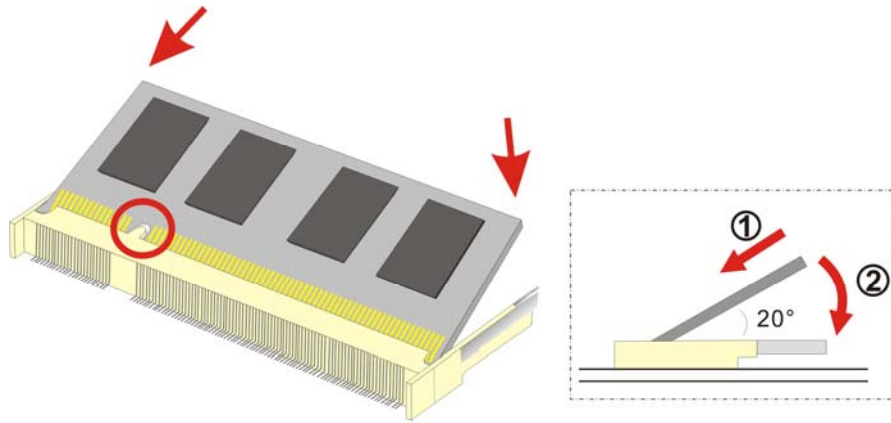


Figure 4-5: DDR SO-DIMM Module Installation



Chapter

5

BIOS Setup

5.1 Introduction

A licensed copy of Phoenix Award 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 Phoenix Award 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, 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 below.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+ / Page up	Increase the numeric value or make changes
- / Page down	Decrease the numeric value or make changes
Esc	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

Key	Function
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Item help
F5	Previous values for the page menu items
F6	Fail-safe defaults for the current page menu items
F7	Optimized defaults for the current page menu items
F9	Menu in BIOS
F10	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

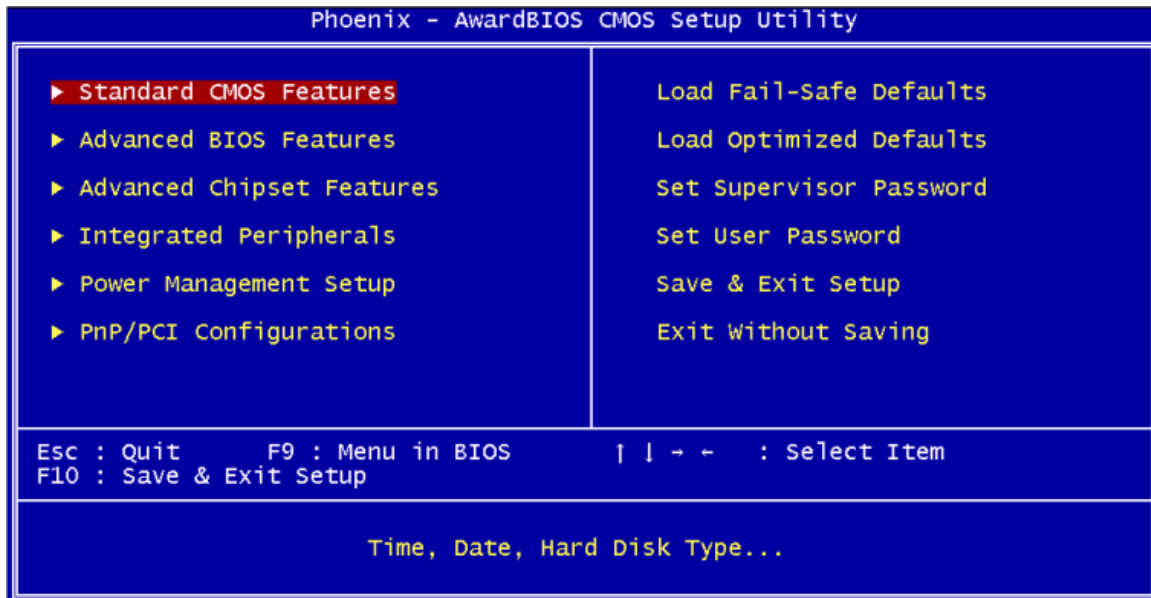
5.1.3 Getting Help

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

AFOLUX LX Panel PC

5.1.4 Main BIOS Menu

Once the BIOS opens, the main menu (BIOS Menu 1) appears.



BIOS Menu 1: Award BIOS CMOS Setup Utility



NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are seen in **BIOS Menu 1**.

- **Standard CMOS Features:** Changes the basic system configuration.
- **Advanced BIOS Features:** Changes the advanced system settings.
- **Advanced Chipset Features:** Changes the chipset configuration features.
- **Integrated Peripherals:** Changes the settings for integrated peripherals.
- **Power Management Setup:** Configures power saving options.
- **PnP/PCI Configurations:** Changes the advanced PCI/PnP settings.
- **PC Health Status:** Monitors essential system parameters.

The following user configurable options are also available in **BIOS Menu 1**:

→ **Load Fail-Safe Defaults**

Use the **Load Fail-Safe Defaults** option to load failsafe default values for each BIOS parameter in the setup menus. Press **F6** for this operation on any page.

→ **Load Optimized Defaults**

Use the **Load Optimized Defaults** option to load optimal default values for each BIOS parameter in the setup menus. Press **F7** for this operation on any page.

→ **Set Supervisor Password**

Use the **Set Supervisor Password** option to set the supervisor password. By default, no supervisor password is set. To install a supervisor password, select this field and enter the password. After this option is selected, a red dialogue box appears with “**Enter Password:**”. Type the password and press **ENTER**. Retype the original password into the “**Confirm Password:**” dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the “**Enter Password:**” dialogue box, then press any key in the “**Password Disabled !!!**” dialogue box.

→ **Set User Password**

Use the **Set User Password** option to set the user password. By default no user password is set. To install a user password, select this field and enter the password. After this option is selected, a red dialogue box appears with “**Enter Password:**”. Type the password and press **ENTER**. Retype the original password into the “**Confirm Password:**” dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the “**Enter Password:**” dialogue box, then press any key in the “**Password Disabled !!!**” dialogue box.

→ **Save & Exit Setup**

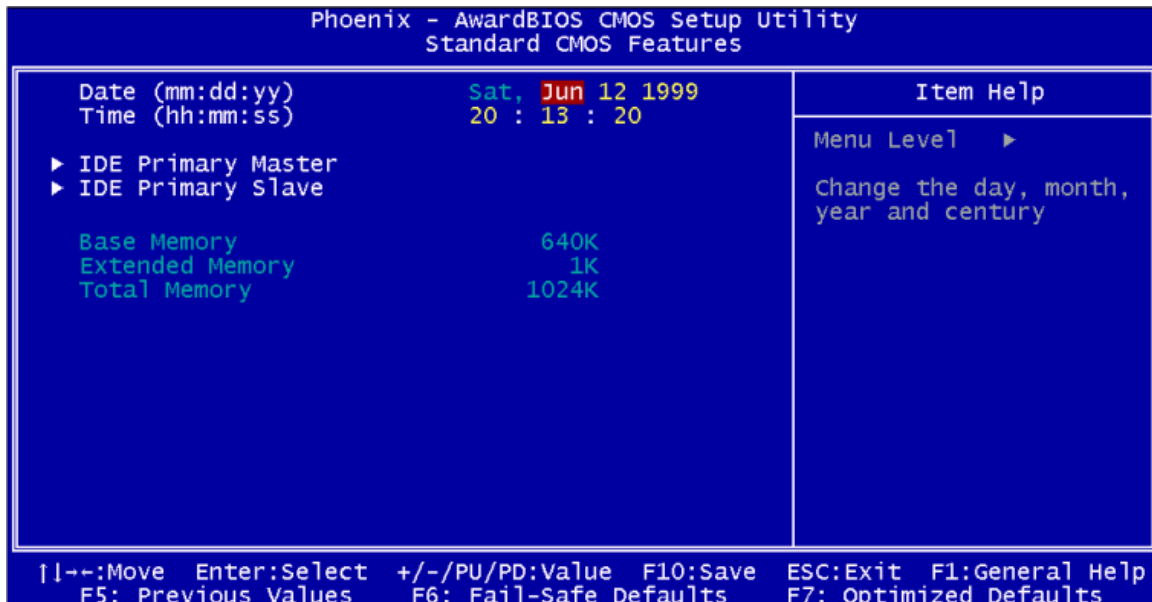
Use the **Save & Exit Setup** option to save any configuration changes made and exit the BIOS menus.

→ **Exit Without Saving**

Use the **Exit Without Saving** option to exit the BIOS menus without saving any configuration changes.

5.2 Standard CMOS Features

Use the Standard CMOS Features BIOS menu (**BIOS Menu 2**) to set basic BIOS configuration options.



BIOS Menu 2: Standard CMOS Features

➔ **Date [Day mm:dd:yyyy]**

Use the **Date** option to set the system date.

➔ **Time [hh/mm/ss]**

Use the **Time** option to set the system time.

➔ **IDE Master and IDE Slave**

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

- IDE Primary Master
- IDE Primary Slave

IDE device configurations are changed or set in the IDE Configuration menu. If an IDE device is detected, and one of the above listed two BIOS configuration options is selected, the IDE configuration options shown in **Section 5.2.1** appear.

→ **Base Memory:**

The **Base Memory** is NOT user configurable. The POST determines the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed, or 640K for systems with 640K or more memory installed.

→ **Extended Memory**

The **Extended Memory** is NOT user configurable. The BIOS determines how much extended memory is present during the POST. This is the amount of memory above 1MB located in the memory address map of the CPU.

→ **Total Memory**

The **Total Memory** is NOT user configurable.

5.2.1 IDE Primary Master/Slave

Use the IDE Primary Master/Slave menu to set or change the master/slave IDE configurations.

→ **IDE HDD Auto-Detection [Press Enter]**

Use the **IDE HDD Auto-Detection** option to enable BIOS to automatically detect the IDE settings. Select **IDE HDD Auto-Detection** and press **ENTER**. BIOS automatically detects the HDD type. Do not set this option manually.

→ **IDE Primary Master [Auto]**

Use the **IDE Primary Master** option to activate or deactivate the following drive channels:

- Channel 0 Master
- Channel 0 Slave
- Channel 1 Master

AFOLUX LX Panel PC

- Channel 1 Slave

- **None** If no drives are connected to the IDE channel select this option. Once set, this IDE channel becomes inaccessible and any drives attached to it are undetected.
- **Auto** (Default) Setting this option allows the device to be automatically detected by the BIOS.
- **Manual** Selecting this option allows manual configuration of the device on the IDE channel in BIOS.

→ Access Mode [Auto]

The **Access Mode** option can only be configured if the BIOS configuration option is set to either **Manual** or **Auto**. Use the **Access Mode** option to determine the hard disk BIOS translation modes. Most systems now use hard drives with large capacities and therefore either the LBA translation mode or auto mode should be selected.

- **CHS** Select this mode if the HDD capacity is less than 504MB.
- **LBA** Select this mode if the HDD capacity is more than 8.4GB.
- **Large** This mode is an extended ECHS mode and while it supports HDDs larger than 504MB, it is not recommended.
- **Auto** (Default) If you are unsure of what access mode to set, select this option.

→ Capacity

The **Capacity** specification indicates the storage capacity of the HDD installed in the system.

→ Cylinder

The **Cylinder** specification indicates how many cylinders (tracks) are on the HDD installed in the system.

→ Head

The **Head** specification indicates how many logical heads are on the HDD installed in the system.

→ Precomp

The **Precomp** specification indicates on what track the write precompensation begins.

→ Landing Zone

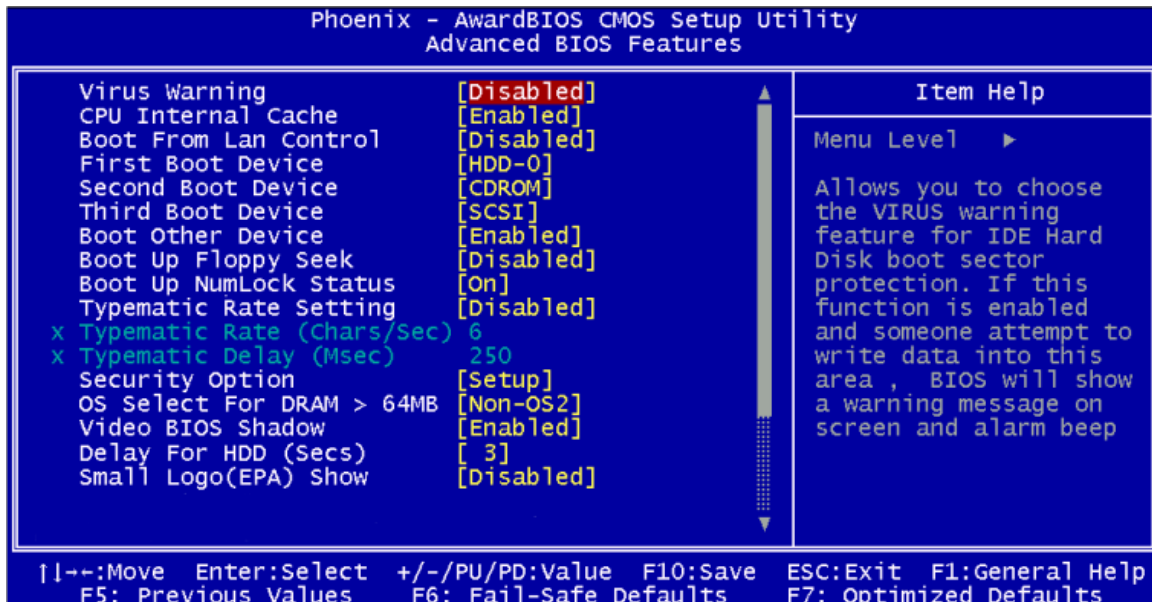
The **Landing Zone** specification indicates where the disk head will park itself after the system powers off.

→ Sector

The **Sector** specification indicates how many logical sectors the HDD has been divided into.

5.3 Advanced BIOS Features

Use the **Advanced BIOS Features** menu (**BIOS Menu 3**) to configure the CPU and peripheral device configuration options.



BIOS Menu 3: Advanced BIOS Features

→ Virus Warning [Disabled]



NOTE:

Many disk diagnostic programs can cause the above warning message to appear when the program attempts to access the boot sector table. If you are running such a program, it is recommended that the virus protection function be disabled beforehand.

Use the **Virus Warning** option to enable BIOS to monitor the boot sector and partition table of the HDD for any attempted modification. If a modification attempt is made, the BIOS halts the system and an error message appears. If necessary, an anti-virus program can then be run to locate and remove the virus before any damage is done.

- ➔ **Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or HDD partition table.
- ➔ **Disabled** (Default) No warning message appears when there is an attempt to access the boot sector or HDD partition table.

➔ **CPU Internal Cache [Enabled]**

Use the **CPU Internal Cache** option to enable or disable the internal CPU cache.

- ➔ **Disabled** The internal CPU cache is disabled.
- ➔ **Enabled** (Default) The internal CPU cache is enabled.

➔ **Boot From LAN Control [Disabled]**

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

- ➔ **Disabled** (Default) The system cannot be booted from a remote system through the LAN.
- ➔ **Enabled** The system can be booted from a remote system through the LAN.

➔ **Boot Device**

Use the **Boot Device** options to select the order of the devices the system boots from. There are three boot device configuration options:

- **First Boot Device** [Default: HDD-0]
- **Second Boot Device** [Default: HDD-1]
- **Third Boot Device** [Default: CDROM]

Using the default values, the system first looks for the first HDD to boot from. If it cannot find the first HDD, it boots from a second HDD. If both the HDD are unavailable, the system boots from a CD-ROM.

AFOLUX LX Panel PC

Boot Device configuration options are:

- LS120
- HDD-0
- SCSI
- CDROM
- HDD-1
- USB-FDD
- USB-ZIP
- USB-CDROM
- USB-HDD
- LAN
- Disabled

→ **Boot Other Device [Enabled]**

Use the **Boot Other Device** option to determine whether the system uses a second or third boot device if the first boot device is not found.

- **Disabled** The system does not look for second and third boot devices if the first one is not found.
- **Enabled** (Default) The system looks for second and third boot devices if the first one is not found.

→ **Boot Up Numlock Status [On]**

Use the **Boot Up Numlock Status** option to specify the default state of the numeric keypad.

- **Off** The keys on the keypad are not activated.
- **On** (Default) Activates the keys on the keypad.

→ **Typematic Rate Setting [Disabled]**

Use the **Typematic Rate Setting** configuration option to specify if only one character is allowed to appear on the screen if a key is continuously held down. When this option is

enabled, the BIOS reports as before, but it then waits a moment, and, if the key is still held down, it begins to report that the key has been pressed repeatedly. This feature accelerates cursor movement with the arrow keys.

- ➔ **Disabled** (Default) Disables the typematic rate.
- ➔ **Enabled** Enables the typematic rate.

➔ **Typematic Rate (Chars/sec) [6]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Rate** option to specify the rate keys are accelerated.

- ➔ **6** (Default) 6 characters per second
- ➔ **8** 8 characters per second
- ➔ **10** 10 characters per second
- ➔ **12** 12 characters per second
- ➔ **15** 15 characters per second
- ➔ **20** 20 characters per second
- ➔ **24** 24 characters per second
- ➔ **30** 30 characters per second

➔ **Typematic Delay (Msec) [250]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Delay** option to specify the delay time between when a key is first pressed and when the acceleration begins.

- ➔ **250** (Default) 250 milliseconds
- ➔ **500** 500 milliseconds
- ➔ **750** 750 milliseconds
- ➔ **1000** 1000 milliseconds

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→ Security Option [Setup]

Use the **Security Option** to limit access to both the system and Setup, or just Setup.

- **Setup** (Default) The system does not boot and access to Setup is denied if the correct password is not entered at the prompt.
- **System** The system boots, but access to Setup is denied if the correct password is not entered at the prompt.



NOTE:

To disable security, select the password setting in the Main Menu. When asked to enter a password, don't type anything, press **ENTER** and the security is disabled. Once the security is disabled, the system boots and Setup can be accessed.

→ OS Select For DRAM > 64MB [Non-OS2]

Use the **OS Select For DRAM > 64MB** option to specify the operating system.

- **Non-OS2** (Default) Select this option when not using the OS/2 operating system.
- **OS2** Specifies the operating system used as OS/2.

→ S.M.A.R.T [Auto]

Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

- **Auto** **DEFAULT** BIOS to auto detects if the hard disk drive supports S.M.A.R.T. Use this setting if the IDE disk drive support cannot be determined.
- **Disabled** Select this value to prevent the BIOS from using the SMART feature.
- **Enabled** Select this value to allow the BIOS to use the SMART

feature on support hard disk drives.

→ **Delay For HDD (Secs)**

Use the **Delay For HDD** option to specify how long the system should wait before trying to access the main drive. If this option is set too low, the system will try to access the disk before it has had adequate time to spin up and become accessible. If warnings like “**Windows – No Disk**” appear, try setting this value larger until the message goes away.

The valid range is **3 – 13 secs (3 default)**.

→ **Small Logo (EPA) Show [Disabled]**

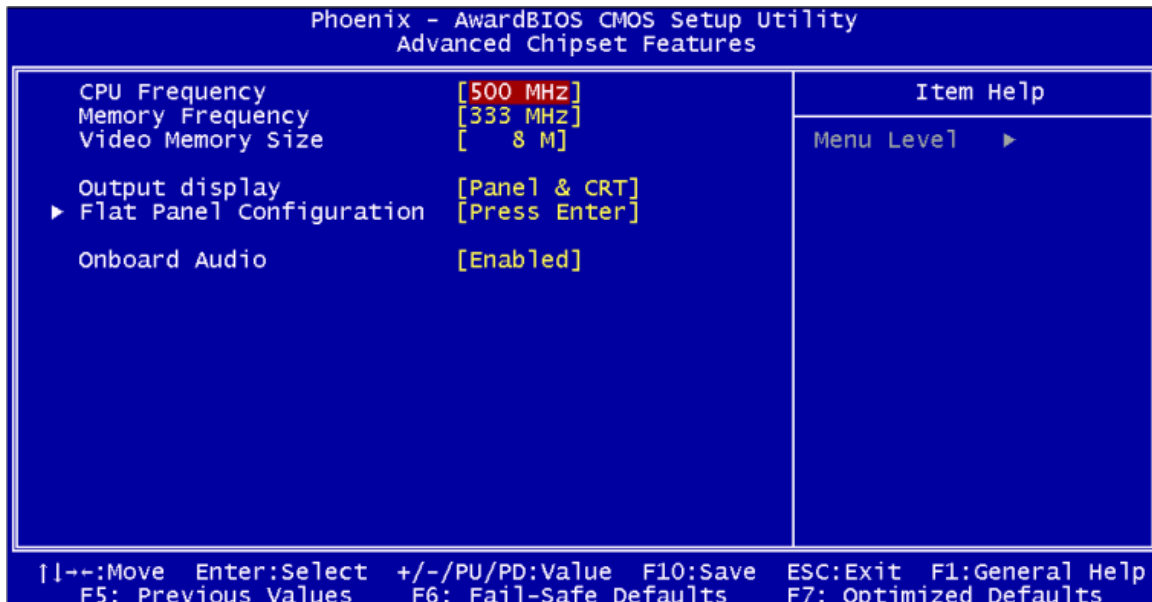
Use the **Small Logo (EPA) Show** option to specify if the Environmental Protection Agency (EPA) logo appears during the system boot-up process. If enabled, the boot up process may be delayed.

- **Disabled** (Default) EPA logo does not appear during boot up.
- **Enabled** EPA logo appears during boot up.

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5.4 Advanced Chipset Features

Use the Advanced Chipset Features menu (**BIOS Menu 4**) to change chipset configuration options.



BIOS Menu 4: Advanced Chipset Features

→ CPU Frequency [500MHz]

Use the **CPU Frequency** option to set the CPU frequency. The **CPU Frequency** options are:

- Auto
- 200MHz
- 333MHz
- 400MHz
- 433MHz
- 500MHz (Default)

→ Memory Frequency [Auto]

Use the **Memory Frequency** option to set the frequency of the installed DRAM modules. The **Memory Frequency** options are:

- Auto (Default)
- 100MHz
- 133MHz
- 166MHz
- 200MHz

→ **Video Memory Size [32M]**

Use the **Video Memory Size** option to determine how much memory is allocated to the video graphics device. The **Video Memory Size** options are:

- None
- 8M
- 16M
- 32M (Default)
- 64M
- 128M
- 254M

→ **Output Display [Panel & CRT]**

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

- Flat Panel
- CRT
- Panel & CRT **DEFAULT**

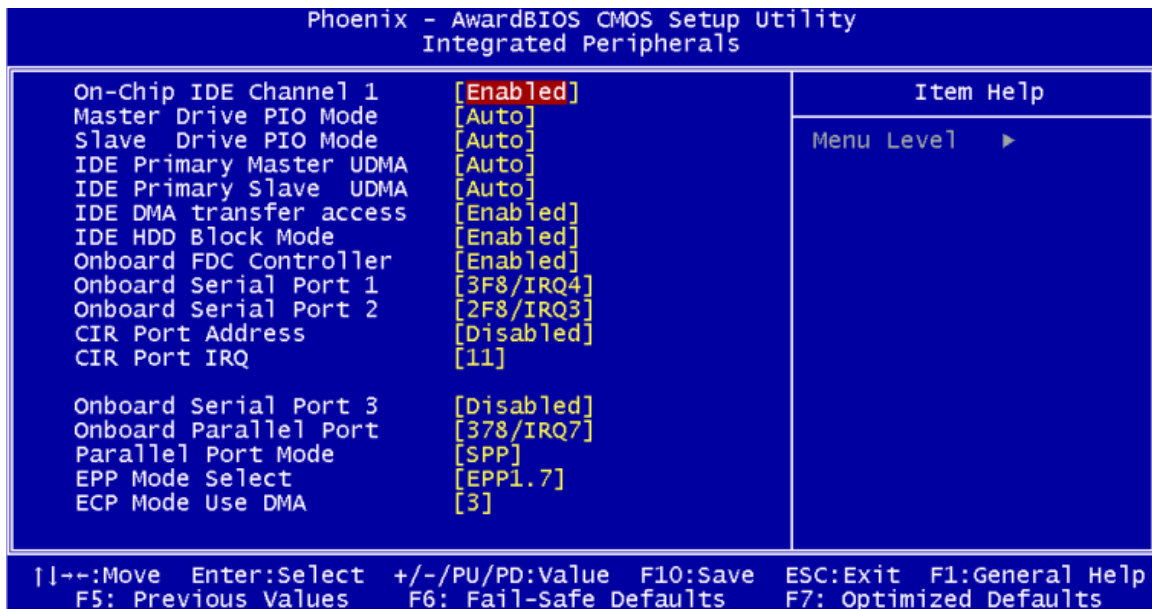
→ **OnBoard Audio [Enabled]**

Use the **OnBoard Audio** option to enable or disable the onboard codec.

- **Disabled** The onboard codec is disabled.
- **Enabled** (Default) The onboard codec is detected and enabled.

5.5 Integrated Peripherals

Use the Integrated Peripherals menu (**BIOS Menu 5**) to change the configuration options for the attached peripheral devices.



BIOS Menu 5: Integrated Peripherals

→ On-Chip IDE Channel 1 [Enabled]

Use the **On-Chip IDE Channel 1** option to specify if the system uses the integrated primary IDE channel or not.

→ **Disabled** The primary IDE channel is not used.

→ **Enabled** (Default) The primary IDE channel is used.

→ Drive PIO Mode [Auto]

Use the **Drive PIO Mode** options below to select the Programmed Input/Output (PIO) mode for the following HDDs:

- Master Drive PIO Mode
- Slave Drive PIO Mode

→ **Auto** (Default) The computer selects the correct mode.

- **Mode 0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps.
- **Mode 1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps.
- **Mode 2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps.
- **Mode 3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps.
- **Mode 4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps.

→ **IDE UDMA [Auto]**

Use the **IDE UDMA** option below to select the Ultra DMA (UDMA) mode for the following HDDs:

- IDE Primary Master UDMA
- IDE Primary Slave UDMA

- **Disabled** The UDMA for the HDD device is disabled.
- **Auto** (Default) The computer selects the correct UDMA.

→ **IDE DMA transfer access [Enabled]**

Use the **IDE DMA transfer access** option to enable or disable DMA support for IDE devices connected to the system.

- **Disabled** All IDE drive DMA transfers are disabled. The IDE drives use PIO mode transfers.
- **Enabled** (Default) All IDE drive DMA transfers are enabled.

→ **IDE HDD Block Mode [Enabled]**

If the drive connected to the system supports block mode, use the **IDE HDD Block Mode** option to enable the system to detect the optimal number of block read/writes per sector the system IDE drive can support. Block mode is also called block transfer, multiple commands, or multiple sector read/write.

- **Disabled** Block mode is not supported.
- **Enabled** (Default) Block mode is supported.

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→ Onboard Serial Port 1 [3F8/IRQ4]

Use the **Onboard Serial Port 1** option to select the I/O address and IRQ for the onboard serial port 1. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 1** options are:

- Disabled
- 3F8/IRQ4 (Default)
- 2F8/IRQ3
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

→ Onboard Serial Port 2 [2F8/IRQ3]

Use the **Onboard Serial Port 2** option to select the I/O address and IRQ for the onboard serial port 2. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 2** options are:

- Disabled
- 3F8/IRQ4
- 2F8/IRQ3 (Default)
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

→ Touch controller Port [2E8]

Use the **Touch controller Port** option to select the I/O address for the onboard touch panel controller port. The touch panel controller port can be disabled or the I/O address can be automatically selected by the BIOS. The **Touch controller Port** options are:

- Disabled
- 3F8
- 2F8
- 3E8
- 2E8 (Default)

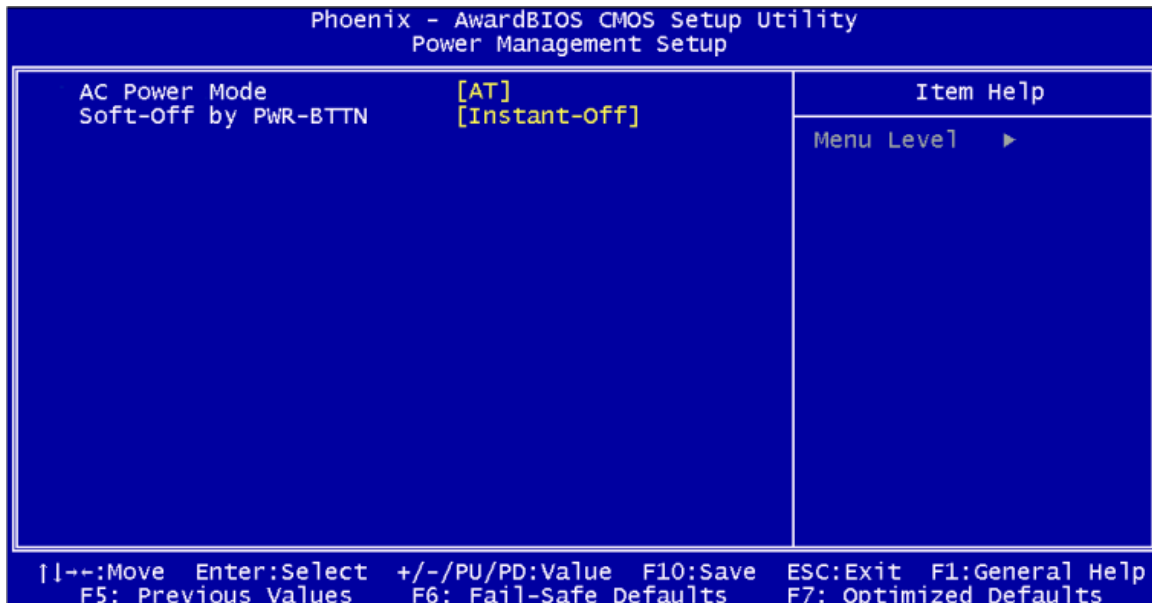
➔ **Touch controller Use IRQ [IRQ7]**

Use the **Touch controller Use IRQ** option to select the IRQ for the onboard touch panel controller port. The touch panel controller port can be disabled or the IRQ can be automatically selected by the BIOS. The **Touch controller Use IRQ** options are:

- IRQ5
- IRQ7 (Default)

5.6 Power Management Setup

Use the **Power Management Setup** menu (BIOS Menu 6) to set the BIOS power management and saving features.



BIOS Menu 6: Power Management Setup

➔ **AC Power Mode [ATX]**

Use the **AC Power Mode** to select whether AT or ATX power mode is used. ATX allows extra power saving features to be used.

- | | | |
|------------|-----------|---------------------------|
| AT | | AT power mode is enabled |
| ATX | (Default) | ATX power mode is enabled |

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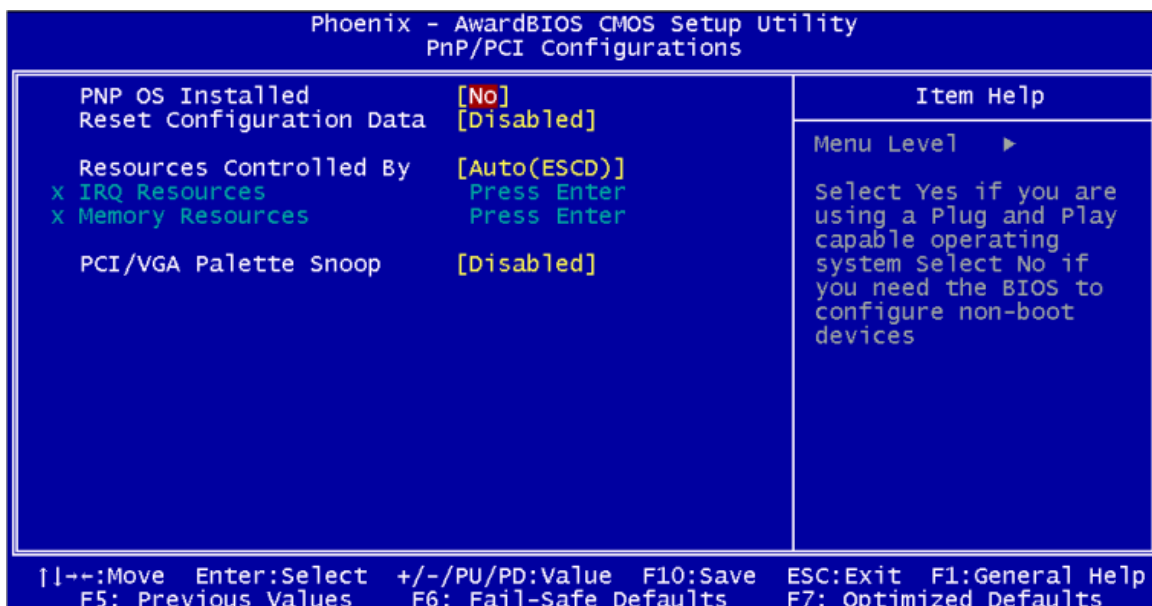
→ Soft-Off by PWR-BTN [Instant-Off]

Use the **Soft-Off by PWR-BTN** BIOS option to specify how the system turns off. These options are only available for ATX mode.

- **Instant-Off** (Default) The system turns off immediately when the power button is pressed.
- **Delay 4 Secs** The power button has to be pressed for 4 seconds to get the system to turn off immediately.

5.7 PnP/PCI Configurations

Use the PnP/PCI Configurations menu (BIOS Menu 7) to set the plug and play, and PCI options.



BIOS Menu 7: PnP/PCI Configurations

→ PNP OS Installed [No]

The **PNP OS Installed** option determines whether the Plug and Play devices connected to the system are configured by the operating system or the BIOS.

- **No** (Default) If the operating system does not meet the Plug and Play

specifications, BIOS configures all the devices in the system.

→ **Yes**

Set this option if the system is running Plug and Play aware operating systems. The operating system changes the interrupt, I/O, and DMA settings.

→ **Reset Configuration Data [Disabled]**

Use the **Reset Configuration Data** option to reset the Extended System Configuration Data (ESCD) when exiting setup if booting problems occur after a new add-on is installed.

→ **Disabled** (Default) ESCD will not be reconfigured

→ **Enabled** ESCD will be reconfigured after you exit setup

→ **Resources Controlled By [Auto (ESCD)]**

Use the **Resources Controlled By** option to either manually configure all the boot and plug and play devices, or allow BIOS to configure these devices automatically. If BIOS is allowed to configure the devices automatically IRQs, DMA and memory base address fields cannot be set manually.

→ **Auto(ESCD)** (Default) BIOS automatically configures plug and play devices as well as boot devices.

→ **Manual** Manually configure the plug and play devices and any other boot devices.

→ **x IRQ Resources [Press Enter]**

The **IRQ Resources** option can only be selected if the Resources Controlled By option is set to Manual.

The **IRQ Resources** menu has the following options:

- IRQ-3 assigned to
- IRQ-4 assigned to
- IRQ-10 assigned to
- IRQ-11 assigned to

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The above options all have the following default options.

- ➔ **PCI Device** (Default) The IRQ is assigned to legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PNP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
- ➔ **Reserved** The IRQ is reserved by BIOS.

➔ **x Memory Resources [Press Enter]**

The **Memory Resources** menu can only be accessed if the Resources Controlled By option is set to Manual. Use **Memory Resources** to select a base address and the length for the memory area used by a peripheral that requires high memory.

The menu has two configurable options:

- Reserved Memory Base
- Reserved Memory Length

➔ **PCI/VGA Palette Snoop [Disabled]**

Use the **PCI/VGA Palette Snoop** option to enable the system to determine whether or not some special VGA cards, high-end hardware MPEG decoders and other similar devices are allowed to look at the VGA palette on the video card so these devices can determine what colors are in use. This option is needed *very rarely* and should be left "Disabled" unless a video device specifically requires the setting to be enabled upon installation.

- ➔ **Disabled** (Default) Does not allow the graphics devices to examine the VGA palette on the graphics card.
- ➔ **Enabled** Allows the graphics devices to examine the VGA palette on the graphics card.

Appendix

A

Safety Precautions

AFOLUX LX Panel PC



WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFOLUX LX.

A.1 Safety Precautions

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

A.1.1 General Safety Precautions

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

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

A.1.2 Anti-static Precautions



WARNING:

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

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

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

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A.1.3 Product Disposal

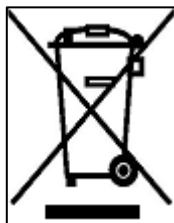


CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

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

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFOLUX LX, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFOLUX LX, please read the details below.

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

A.2.2 Cleaning Tools

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

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

Appendix

B

BIOS Options

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

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S.M.A.R.T [Auto]	59

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Appendix

C

Software Drivers

AFOLUX LX Panel PC

C.1 Remote Management Tool

IEI provides optional pre-installed Windows XP Embedded or Windows CE 5.0 turnkey solutions tailored for the AFOLUX LX series. For information about configuring the operating system, adding remote management tools or additional software and drivers, refer to the software user manuals on IEI AFOLUX LX Utility CD that came with the AFOLUX LX flat panel PC.

C.2 Touch Panel Driver

C.2.1 Introduction

The onboard touch panel controller enables analog resistive touch panels for four-wire, five-wire & eight-wire models. The controller directly communicates with the PC system through the touch panel communications interface. The controller design is superior in sensitivity, accuracy, and friendly operation. The touch panel driver emulates the left mouse button and the right mouse button functions.

The touch panel driver supports the following operating systems:

- Microsoft Windows versions:
 - Microsoft Windows 95
 - Microsoft Windows 98
 - Microsoft Windows ME
 - Microsoft Windows 2000
 - Microsoft Windows NT
 - Microsoft Windows XP
 - Microsoft Windows 3.1
- Microsoft Windows CE
- Linux
- QNX
- DOS.

Driver installation is described below.

C.2.2 Driver Installation

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

Step 1: Insert the driver CD that came with the AFOLUX series into the CD drive.

Step 2: Once the CD drive is installed, the screen in **Figure C-1** appears.



Figure C-1: Driver CD Pop Up Screen

Step 3: Select the operating system installed on the system from the menu on the screen.



NOTE:

The following description is for driver installation using a Windows 2000 OS. If a different OS is installed, please refer to the driver user manual for the relevant OS. The driver user manuals can be accessed by selecting “**User Manual**” from the menu on the left side of the “**Driver CD Pop Up Screen**”.

Step 4: Once the OS system is selected, a welcome screen appears (**Figure C-2**). To continue the installation process click **NEXT**.

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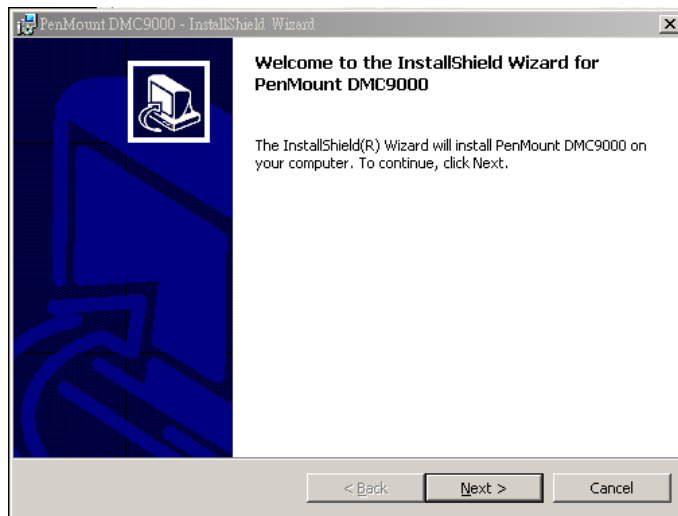


Figure C-2: Welcome Screen

Step 5: The license agreement shown in **Figure C-3** appears. Agree to the license by selecting “I accept the terms in the license agreement”.

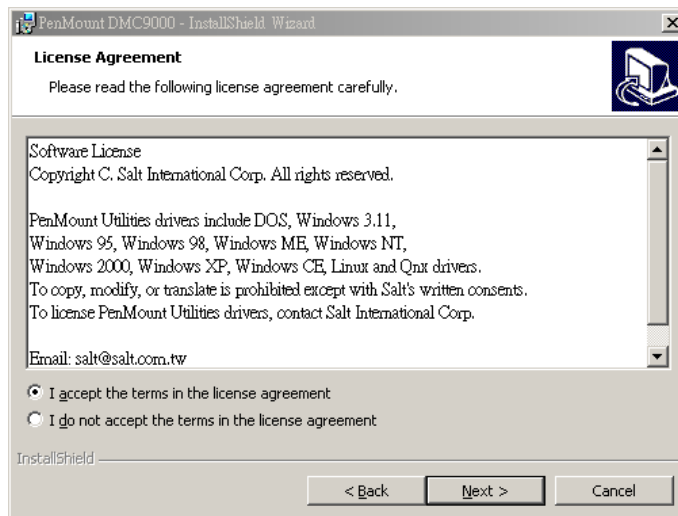


Figure C-3: License Agreement

Step 6: Click **NEXT** and the Installshield Wizard is ready to install the program (**Figure C-4**).

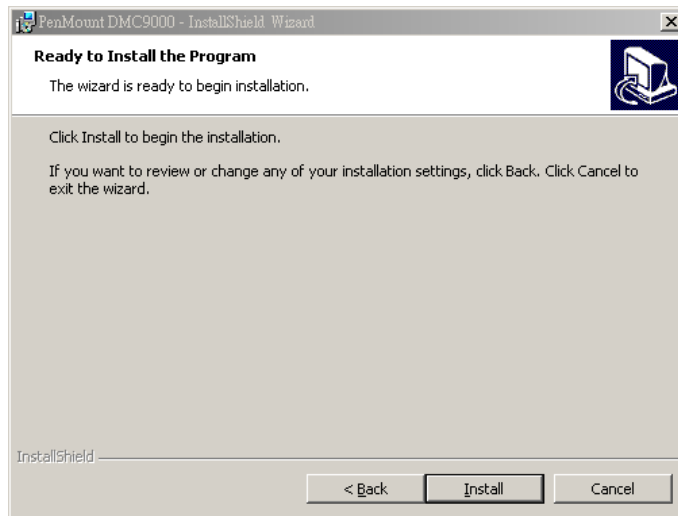


Figure C-4: Ready to Install the Program

Step 7: Click **INSTALL** to continue. The Installing PenMount DMC9000 screen appears as the program is installed (**Figure C-5**).

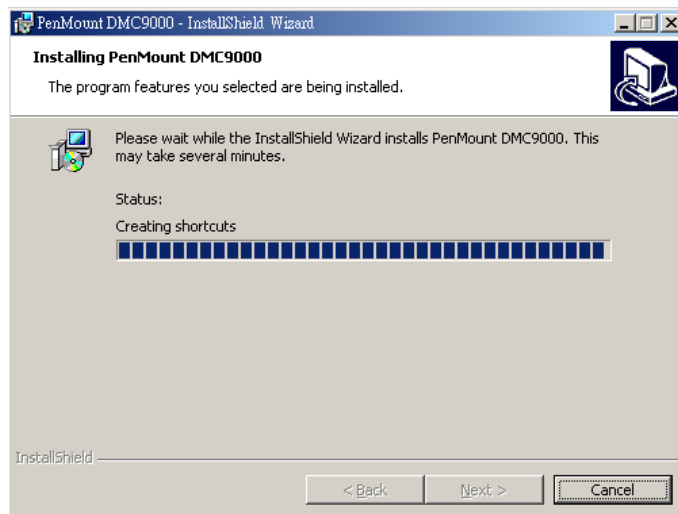


Figure C-5: Installing PenMount DMC9000

Step 8: The user is then prompted to select to restart the computer now or later (**Figure C-6**). For the settings to take effect, the computer must be restarted. Click **Yes** to restart the computer.

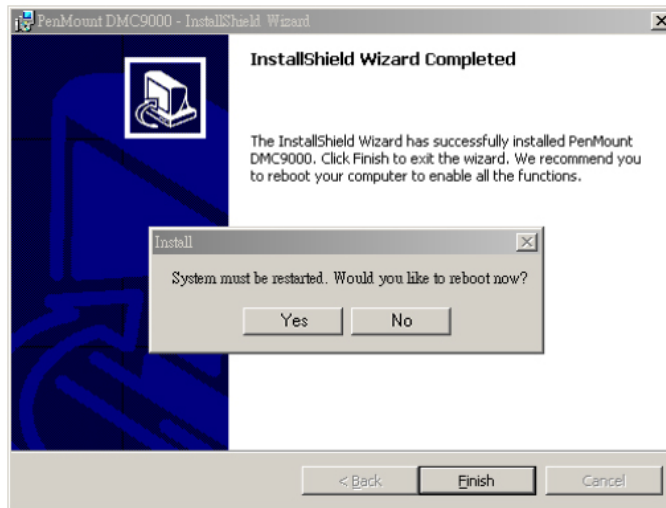


Figure C-6: Reboot the Computer

C.2.3 Touch Panel Driver Configuration

To configure the touch panel driver options, refer to the PenMount user manual located on the driver installation CD.

Appendix

D

Terminology

AFOLUX LX Panel PC

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

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

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

Appendix

E

Digital I/O Interface

AFOLUX LX Panel PC

E.1 Introduction

The DIO connector on the AFOLUX LX is interfaced to GPIO ports on the IT8712F 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 IT8712F Super I/O chipset.

E.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

E.3 Assembly Language Samples

E.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

E.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

F

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 F-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 ;

Appendix

G

Address Mapping

G.1 IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	SiS661CX Graphics Controller
3C0-3DF	SiS661CX Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table G-1: IO Address Map

G.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table G-2: 1st MB Memory Address Map

G.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table G-3: IRQ Mapping Table

G.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table G-4: IRQ Mapping Table

Appendix

H

Hazardous Materials Disclosure

H.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

AFOLUX LX Panel PC

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

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。