

FW-7650 Series

***19" 1U Intel Pentium4 / Celeron Rackmount
Network Security Platform***

User's Manual

Copyright and Disclaimers

© Copyright 2004 - Lanner Electronics Inc.
All Rights Reserved

The contents in this publication have been thoroughly checked and considered accurate. The publisher and manufacturer of this product, Lanner Electronics, is not responsible for any violation of patents or other rights of third parties resulting from its use. Neither does Lanner Electronics assume any responsibility for any inaccuracies contained in this manual, nor make any commitment to keep the information in this document up-to-date.

Lanner reserves the right to make improvements to this document and/or this product at any given time without notice.

No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise, without the formal consent from Lanner.

Trademark Acknowledgments

All products and/or brand names stated in this publication are the trademarks of their rightful and associated companies.

Radio Frequency Emissions Notice

This equipment has been tested and found to comply with the digital device limits pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when operate in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be required to correct the interference at his expense.

Safety Instructions

The following information relates to the safety of installation and maintenance personnel. Read all instructions before attempting to unpack, install or operate this equipment, especially before connecting the power adapter.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not apply power into FW-7650 before installation or when disconnecting this product from its original system setup.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Locate a safe and dry location to place this product. Keep it away from wet surfaces/surroundings.
- Never push an object of any kind into this product through openings or empty slots, as you may damage parts.
- Do not attach the power supply cabling to building surfaces. Do not allow anything to rest on the power cabling or allow it to be abused by persons walking on it.
- Distance your working area from moist floors, ungrounded power extension cables, and unavailable safety grounds.
- Avoid installation of this product during a lightning storm.
- Damages caused by electrostatic discharge may result in total or intermittent system failures. To minimize the possibility of ESD damage, an anti-static strap is highly recommended.
- When cleaning or servicing this unit, avoid using highly toxic or aerosol cleaners. Use a clean damp cloth when wiping its surfaces.
- Do not place this device in a tight and sealed location. Place the unit where it can access sufficient airflow to its vent holes (openings along its sides). Never block or cover these openings.
- Do not disassemble this product on your own.

Getting Technical Assistance

Should you encounter questions or problems with your FW-7650, Lanner Electronics is ready to assist you within the guidelines of our product support programs. First, check the electronic product documentation for assistance. If you still cannot find the solution to your problem, contact Lanner sales team with the following information handy:

- FW-7650 model name
- Part number
- Local network configuration details
- The abnormal behavior and/or error messages reported by your network system
- Your questions, or a description of the problem you are experiencing

Call, fax, or e-mail Lanner Electronics for technical support.

Phone: 886-2-8692-6060

Fax: 886-2-8692-6101

E-mail: sales@lannerinc.com

About this Manual

This target audience of this manual includes users, administrators and technicians. This publication is a useful reference when installing, configuring, operating and managing the FW-7650. This breakdown and short descriptions of this manual's contents are as follows:

- Chapter 1 – Introduction provides an overview of the FW-7650 19" 1U Rackmount network security appliance, including its related features, application usage and technical specifications list. The chapter also guides users through the pre and post installation process by listing safety tips plus an overall detailed description of the control board and system and their vital components.
- Chapter 2 – Introduce Hardware Installation
- Chapter 3 – Award BIOS Setup
- *Appendix A – summarizes the specification of the power supply*
- *Appendix B – Watchdog Timer Introduction*
- *Appendix C – Console Redirection*
- *Appendix D – LCD Module and Key Pad*

Table of Contents

Copyright and Disclaimers	ii
Trademark Acknowledgments	ii
Radio Frequency Emissions Notice.....	ii
Safety Instructions.....	iii
Getting Technical Assistance.....	iv
About this Manual.....	iv
Table of Contents.....	v
Chapter 1	1
Getting Started 1	
1.1 Introduction.....	1
1.1.1 Features.....	1
1.2 Technical Specifications.....	2
1.3 Packing Contents.....	3
1.4 MB-X71 System Board.....	4
1.4.1 Board Layout.....	4
1.4.2 Jumper Settings and I/O Connector.....	5
1.4.3 Connector Pin Assignments.....	6
SFC1:Master/Slave Select.....	6
CMOS1:Clear CMOS Data.....	6
FAN1~3 : 3 Pin FAN Connector.....	6
LANA1~2 :Type 1 (RJ-45).....	6
LANA3~6 :Type 1 (RJ-45).....	7
COMA1: RS-232 Serial Port #1 Connector (D-Sub).....	7
PKMB1:PS/2 Keyboard & Mouse Connector (2x4 Header 2.54mm).....	7
PSA1:20 Pin ATX Power Connector.....	7
PSA1:20 Pin ATX Power Connector.....	8
PS4P1:4-Pin Power Connector (P4-4P Male).....	8
KPA1 : LCM Keypad.....	8
LCMA1 : LCM CONNECTOR.....	8
VGAB1 : External VGA Connector (12 Pin Header).....	9
IDEA1 : IDE Interface Connector (44Pin 2.0mm Pitch Header).....	9
PLRS1:Power LED,HD LED,Reset,Speaker Connector(11 Pin 2.54mm).....	10
FDCA1 : Floppy Interface Connector (34 Pin Header).....	10
CF1:Compact Flash Connector.....	11
LEDE1 : 2x22 Pin.....	12
IDEB1 : IDE Interface Connector (40Pin 2.54mm Pitch Header).....	13
PCIB1:124 Pin Mini PCI Socket.....	14
PCIB1:124 Pin Mini PCI Socket(Continued last page).....	15
1.5 FW-7650 19" 1U Rackmount Firewall Mechanisms.....	16
1.5.1 Face Panel.....	16
1.5.3 Rear View.....	17
Chapter 2	18
FW-7650 Hardware Installation Guide	18
2.1 Hardware Installation Guide.....	18
Chapter 3	22
Award BIOS Setup	22
3.1 BIOS Setup.....	22
3.2 CMOS Setup Utility.....	23
3.3 Standard CMOS Features.....	25

3.4	BIOS Features Setup	27
3.5	Chipset Features Setup.....	30
3.6	Integrated Peripherals	32
3.7	Power Management Setup	34
3.8	PnP/PCI Configuration	36
3.9	PC Health Status.....	40
3.10	Load Optimized Defaults	41
3.11	Supervisor/User Password Setting	41
3.12	Save and Exit Setup	41
3.13	Exit Without Saving	42
Appendix A.....		43
Power Supply 43		
Appendix B		44
Watchdog Timer 44		
Appendix C.....		46
Console Redirection		46
Appendix D		47
LCD Module and Key Pad For FW-7650.....		47
	Terms and Conditions.....	49
Warranty Policy 49		
RMA Service 49		

Chapter 1

Getting Started

1.1 Introduction



Figure 1 – FW-7650 Outlook

The FW-7650 is a 1U rackmount network security solution targeting the Enterprise market. The FW-7650 supports Pentium4 /Celeron processor with 400/533MHz FSB. It is designed with an Intel 845GV as its northbridge and ICH4(82801DB) as its southbridge.; To enhance network security appliance, FW-7650 comes with Intel 82540EM & 82551QM Ethernet chips and six Ethernet LAN ports from 10/100Mbit up to Gigabit to provide an ideal price/performance solution for building a wide range of desktop and set top boxes to thin clients and web terminals powerful computing and multimedia performance for all the most popular productivity and Internet applications.

Designed with the Plug-and-Serve concept in mind, the FW-7650 Series offers two DDR 200/266/333 DIMM Socket support up to 2GB RAM which provide full functionality and performance to be used "exactly" where you need it as well. In addition, one ATA mode CompactFlash type II socket used in installing OS avoiding service disruption caused by hard disk's mechanical/magnetic failures.

The FW-7650 has a Mini PCI slot, users can expand their specifications and performance by simply adding add-on cards to the slot. The FW-7650 is a powerful and flexible unit that can meet the vast and various hardware requirement and performance needs of System Integrators, OEM customers and software developers.

1.1.1 Features

Listed below are the key features of FW-7650.

- Supports 2.5" HDD
- Socket 478 for Intel® Pentium™ 4/Celeron Processor, up to 2.4GHz, 400/ 533MHZ FSB
- Two DDR200/266/333 DIMM Socket, up to 2GB RAM
- Supports Two Gigabit Ethernet ports, with two Intel 82540EM chipset. And Four 10/100 Ethernet ports, with four intel 82551QM chipset
- Supports Compact Flash, Serial(RS-232), and Mini PCI.
- 19"1U Rackmount network security appliance
- Suitable Network applications; Virtual Private Network(VPN), Firewall, IDS, ...

1.2 Technical Specifications

Model Name	FW-7650
SBC	
SBC	MB-X71
CPU	Socket 478 for Intel® Pentium™ 4/Celeron Processor, up to 2.4GHz,533MHZ FSB
Chipset	Intel® 845GV chipset (pin-to-pin compatible with 845G series); 82801DB I/O Controller Hub 4 (ICH4)
BIOS	Award BIOS
Memory	Two DDR200/266/333 DIMM Socket, up to 2GB RAM
Network interface	A. Two Intel 82540EM 32bit Gb Ethernet Controller (Colay with 82551QM) B. Four Intel 82551QM 10/100 Mb Ethernet Controller
SSD	Two CompactFlash TypeII Socket
I/O Interface	One DB-9 RS-232 connector
Expansion Slot	One Mini-PCI slot
RTC	Internal RTC with LI battery
Power	200W ATX Power Supply
Mechanical/ Environmental	
Form Factor	19" 1U Rackmount
Operating Temperature	0 °C – 40 °C
Storage Temperature	-20 °C – 70 °C
Humidity	5% - 95% RH, non-condensing
Chassis Material	Steel
Dimension	428x303x44 mm
Net Weight	5.4 KGS
Certification	CE, FCC CLASS A
Software support	Linux 6.5 and above, Windows 2000/2003/ XP

1.3 Packing Contents

Carefully unpack your package and make sure that you have the following items.

- FW-7650 Network security Platform
- Console cable
- 1.8 meters long cross-over Ethernet cable
- 1.8 meters long straight-through Ethernet cable
- Face panel name plate label
- Power cable
- Drivers and User's Manual CD
- Screw Set
- Slid & Bracket Set

If you find anything missing or damaged, promptly contact your dealer for assistance.

1.4 MB-X71 System Board

MB-X71 is the system board bundled with the FW-7650 Network security platform. The succeeding sections list all MB-X71 related jumper settings and connector pin assignments.

1.4.1 Board Layout

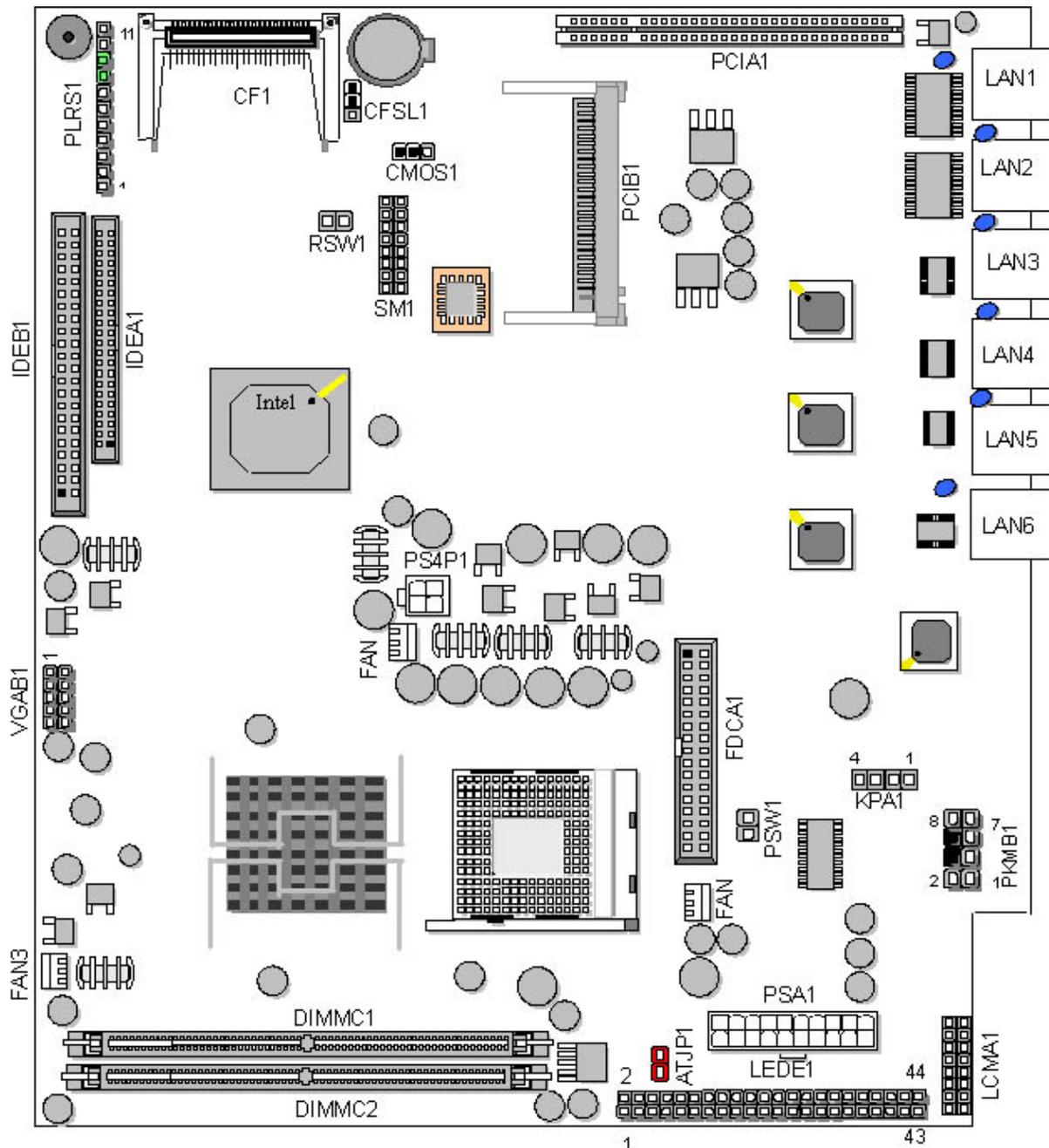


Figure 3 – MB-X71 Jumpers and Connectors

1.4.2 Jumper Settings and I/O Connector

The onboard jumper settings and I/O connector of MB-X71 are custom-tailored to fit the FW-7650 functionality. Changing the jumper settings may result in system malfunction or unforeseen damages.

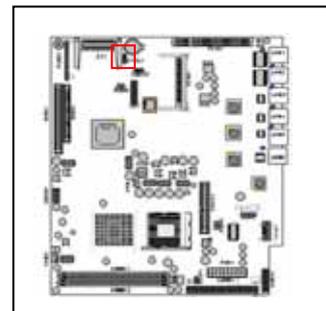
Jumper Settings and I/O Connector Summary for MB-X71

JUMPER	FUNCTION
CMOS1	Clear CMOS Data
SCF1	Master/Slave Select
FAN1-3	3 Pin Fan Connector
LANA1~2	Type 1 (RJ-45)
LANA3~6	Type 1 (RJ-45)
COM1	RS232 Serial Port #1 Connector (D-Sub)
PKMB1	PS/2 Keyboard & Mouse Connector (2x4 Header 2.54mm)
PSA1	20 Pin ATX Power Connector
PS4P1	4-Pin Power Connector (P4-4P Male)
KPA1	LCM Keypad
LCMA1	LCM CONNECTOR
VGAB1	External VGA Connector (12 Pin Header)
IDEA1	IDE Interface Connector (44 Pin 2.0mm Pitch Header)
IDEB1	IDE Interface Connector (40 Pin 2.54mm Pitch Header)
PLRS1	Power LED, Reset, Speaker Connector
FDCA1	Floppy Interface Connector (34 Pin Header)
CF1	Compact Flash Connector
LEDE1	2x22 Pin
PCIB1	124 Pin Mini PCI Socket

1.4.3 Connector Pin Assignments

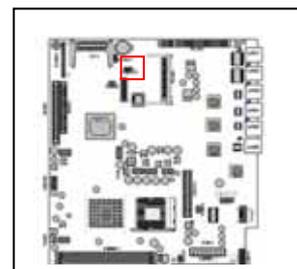
SFC1: Master/Slave Select

Compact Flash Card	ATA Disk Chip	SCF1
Master	Slave	1-2
Slave	Master	2-3(Default)



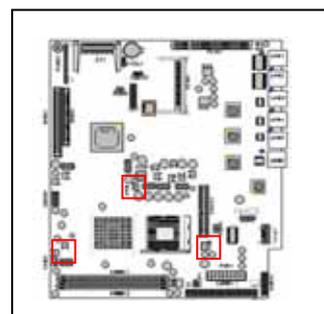
CMOS1: Clear CMOS Data

CMOS1	Description
1-2	Normal (Default)
2-3	Clear CMOS



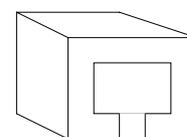
FAN1~3 : 3 Pin FAN Connector

Pin No.	Description
1	Ground
2	+12V
3	FAN Status



LANA1~2 : Type 1 (RJ-45)

Pin No.	Description	
	Fast Ethernet	Giga Ethernet
1	TX+	MD0+
2	TX-	MD0-
3	RX+	MD1+
4	T45	MD2+
5	T45	MD2-
6	RX-	MD1-
7	T78	MD3+
8	T78	MD3-



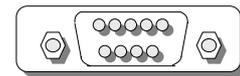
LANA1~2

LANA3~6 :Type 1 (RJ-45)

Pin No.	Description
1	TX+
2	TX-
3	RX+
4	T45
5	T45
6	RX-
7	T78
8	T78

COMA1: RS-232 Serial Port #1 Connector (D-Sub)

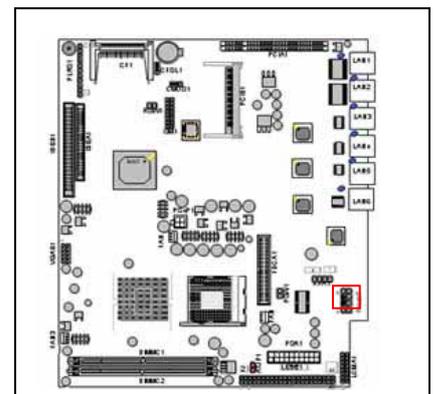
Pin No.	Description
1	Data Carrier Detect (DCDA #)
2	Receive Data (RXDA)
3	Transmit Data (TXDA)
4	Data Terminal Ready (DTRA #)
5	Ground (GND)
6	Data Set Ready (DSRA #)
7	Request To Send (RTSA #)
8	Clear To Send (CTSA #)
9	Ring Indicator (RIA #)



COMA1

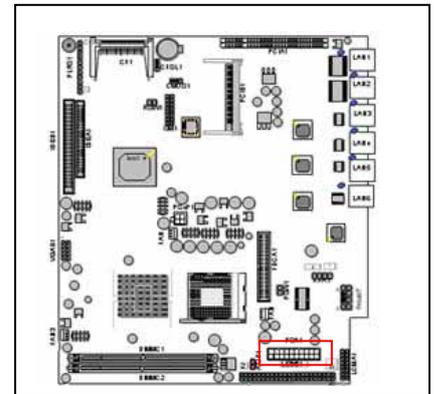
PKMB1:PS/2 Keyboard & Mouse Connector (2x4 Header 2.54mm)

Pin No.	Description	Pin No.	Description
1	KBCLK	2	GND
3	NC	4	KBDATA
5	NC	6	MSDATA
7	MSCLK	8	VCC



PSA1:20 Pin ATX Power Connector

Pin No.	Description	Pin No.	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	SWITCH
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	-5V
9	Stand-By 5V	19	+5V
10	+12V	20	+5V



PS4P1:4-Pin Power Connector (P4-4P Male)

Pin No.	Description
1	GND
2	GND
3	+12V
4	+12V



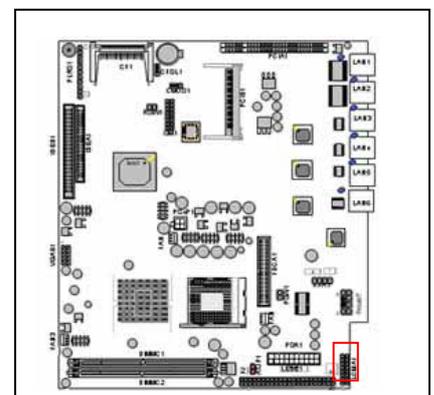
KPA1 : LCM Keypad

Pin No.	Description
1	KPA1
2	KPA2
3	KPA3
4	KPA4



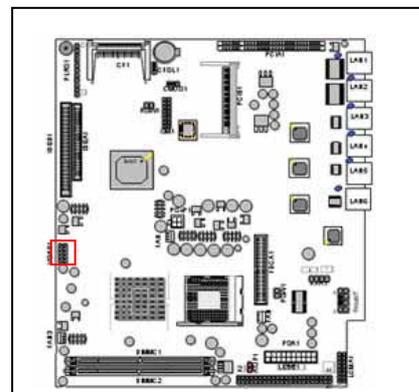
LCMA1 : LCM CONNECTOR

Pin No.	Description	Pin No.	Description
1	VCC	2	PGND
3	LSTIN-	4	VEE
5	LAFD-	6	LINIT-
7	LPD1	8	LPD0
9	LPD3	10	LPD2
11	LPD5	12	LPD4
13	LPD7	14	LPD6
15	LCD	16	VCC



VGAB1 : External VGA Connector (12 Pin Header)

Pin No.	Description	Pin No.	Description
1	R	2	Ground
3	G	4	Ground
5	B	6	Ground
7	H-SYNC	8	Ground
9	V-SYNC	10	Ground
11	Detect-display Data	12	Detect-display CLOCK



IDEA1 : IDE Interface Connector (44Pin 2.0mm Pitch Header)

Pin No.	Description	Pin No.	Description
1	Reset #	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	DMA REQ #	22	Ground
23	IOW #	24	Ground
25	IOR #	26	Ground
27	IOCHRDY	28	Ground
29	DMA ACK #	30	Ground
31	Interrupt	32	NC
33	SA 1	34	NC
35	SA 0	36	SA 2
37	HDC CS 0#	38	HDC CS 1#
39	HDD Active	40	Ground
41	VCC	42	VCC
43	Ground	44	NC

PLRS1: Power LED, HD LED, Reset, Speaker Connector (11 Pin 2.54mm)

Pin No.	Description
1	Power LED +
2	Power LED +
3	GND
4	HDD LED +
5	HDD LED -
6	RESET SW +
7	RESET SW - (GND)
8	External Speaker -
9	Internal Buzzer -
10	NC
11	External Speaker +

FDCA1 : Floppy Interface Connector (34 Pin Header)

Pin No.	Description	Pin No.	Description
1	Ground	2	Density Select
3	Ground	4	NC
5	Ground	6	DS1
7	Ground	8	Index #
9	Ground	10	Motor Enable A #
11	Ground	12	Drive Select B #
13	Ground	14	Drive Select A #
15	Ground	16	Motor Enable B #
17	Ground	18	Direction #
19	Ground	20	Step #
21	Ground	22	Write Data #
23	Ground	24	Write Gate #
25	Ground	26	Track 0 #
27	Ground	28	Write Protect #
29	NC	30	Read Data #
31	Ground	32	Head Side Select #
33	NC	34	Disk Change #

CF1: Compact Flash Connector

Pin No.	Description	Pin No.	Description
1	GND	26	CD1-
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CE1#	32	CE2#
8	A10	33	VS1#
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	READY#
13	CFVCC3	38	CFVCC3
14	A6	39	CSEL
15	A5	40	VS2#
16	A4	41	RESET
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	DASP#
21	DATA0	46	DIAG#
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	WP	49	DATA10
25	CD2-	50	GND

LEDE1 : 2x22 Pin

Pin No.	Description	Pin No.	Description
1	POWER LED	2	POWER LED
3	POWER LED STATUS	4	POWER LED STATUS
5	Lan1 Link/Active LED-	6	Lan1 Link/Active LED+
7	Lan1 100 LED-	8	Lan1 100 LED+
9	Lan1 1G LED-	10	Lan1 1G LED+
11	Lan2 Link/Active LED-	12	Lan2 Link/Active LED+
13	Lan2 100 LED-	14	Lan2 100 LED+
15	Lan2 1G LED-	16	Lan2 1G LED+
17	Lan3 Link/Active LED-	18	Lan3 Link/Active LED+
19	Lan3 100 LED-	20	Lan3 100 LED+
21	Lan3 1G LED-	22	Lan3 1G LED+
23	Lan4 Link/Active LED	24	Lan4 Link/Active LED
25	Lan4 100 LED	26	Lan4 100 LED
27	Lan4 1G LED	28	Lan4 1G LED
29	Lan5 Link/Active LED	30	Lan5 Link/Active LED
31	Lan5 100 LED	32	Lan5 100 LED
33	Lan5 1G LED	34	Lan5 1G LED
35	Lan6 Link/Active LED	36	Lan6 Link/Active LED
37	Lan6 100 LED	38	Lan6 100 LED
39	Lan6 1G LED	40	Lan6 1G LED
41	NC	42	NC
43	NC	44	NC

IDEB1 : IDE Interface Connector (40Pin 2.54mm Pitch Header)

Pin No.	Description	Pin No.	Description
1	Reset #	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	DMA REQ#	22	Ground
23	IOW #	24	Ground
25	IOR #	26	Ground
27	IOCHRDY	28	Ground
29	DMA ACK #	30	Ground
31	Interrupt	32	NC
33	SA1	34	PD80P / SD80P
35	SA0	36	SA2
37	HDC CS0 #	38	HDC CS1 #
39	HDD Active LED #	40	Ground

PCIB1:124 Pin Mini PCI Socket

Pin No.	Description	Pin No.	Description
1	TIP	2	RING
3	8PMJ-3	4	8PMJ-1
5	8PMJ-6	6	8PMJ-2
7	8PMJ-7	8	8PMJ-4
9	8PMJ-8	10	8PMJ-5
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELP
15	CHSGND	16	RESERVED
17	INT-B	18	+5V
19	+3.3V	20	INT-A
21	RESERVED	22	RESERVED
23	GROUND	24	3.3VAUX
25	CLK	26	RST
27	GROUND	28	+3.3V
29	REO	30	GNT
31	+3.3V	32	GROUND
33	AD31	34	PME
35	AD29	36	RESERVED
37	GROUND	38	AD30
39	AD27	40	+3.3V
41	AD25	42	AD28
43	RESERVED	44	AD26
45	C_BE-3	46	AD24
47	AD23	48	IDSEL
49	GROUND	50	GROUND
51	AD21	52	AD22
53	AD19	54	AD20
55	GROUND	56	PAR
57	AD17	58	AD18
59	C_BE-2	60	AD16

PCIB1:124 Pin Mini PCI Socket (Continued last page)

Pin No.	Description	Pin No.	Description
61	IRDY	62	GROUND
63	+3.3V	64	FRAME
65	CLKRUN	66	TRDY
67	SERR	68	STOP
69	GROUND	70	+3.3V
71	PERR	72	DEVSEL
73	C_BE-1	74	GROUND
75	AD14	76	AD15
77	GROUND	78	AD13
79	AD12	80	AD11
81	AD10	82	GROUND
83	GROUND	84	AD9
85	AD8	86	C_BE-0
87	AD7	88	+3.3V
89	+3.3V	90	AD6
91	AD5	92	AD4
93	RESERVED	94	AD2
95	AD3	96	AD0
97	+5V	98	RESERVED-WIP
99	AD1	100	RESERVED-WIP
101	GROUND	102	GROUND
103	AC_SYNC	104	M66EN
105	AC_SDATA_IN	106	AC_SDATA_OUT
107	AC_BIT_CLK	108	AC_CODEC_ID0
109	AC_CODEC_ID1	110	AC_RESET
111	MOD_AUDIO_MON	112	RESERVED
113	AUDIO_GND	114	GROUND
115	SYS_AUDIO_OUT	116	SYS_AUDIO_IN
117	SYS_AUDIO_OUT GND	118	SYS_AUDIO_IN GND
119	AUDIO_GND	120	AUDIO_GND
121	RESERVED	122	MPCIACT
123	VCC5VA	124	3.3AUX

1.5 FW-7650 19" 1U Rackmount Firewall Mechanisms

This section of the manual describes the mechanical and device nomenclature of FW-7650.

1.5.1 Face Panel

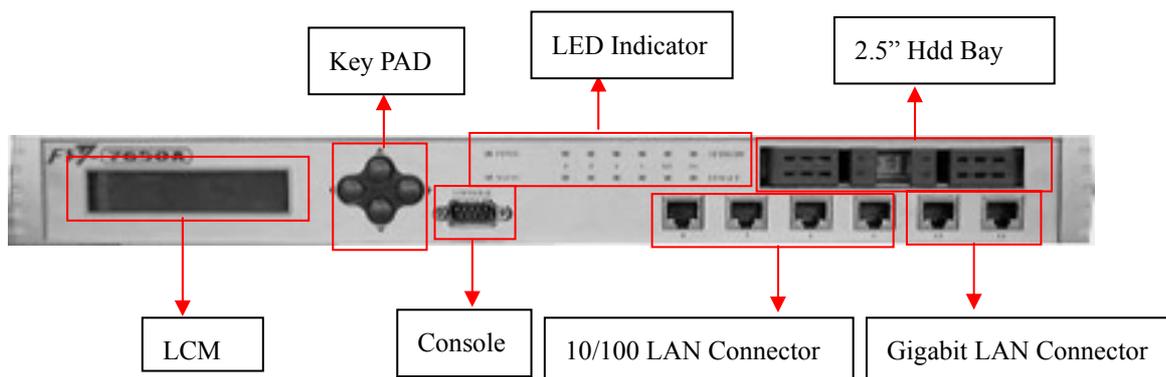


Figure 5 – FW-7650 Face Panel

Face Panel LED Status and Behavior

The following table lists and explains the behavior of each LED on the FW-7650 front panel.

LED	Color	Status	Description
PWR	Green	On	When FW-7650 power is switched ON
	N/A	Off	No power connected
Status	Green/Red		Programmable via GPIO
Ethernet Ports	N/A		The speed of LAN is 10Mbit/s
	Green		The speed of LAN is 100Mbit/s
	Orange		The speed of LAN is 1000Mbit/s
Ethernet Ports Link/ACT	Green	On	When LAN is connected
	Orange	Flash	When Data is accessing

Lanner provide the LED status sample in the path [//FW-7650_MB-X71/LED_Sample_Code](#)

- **Console Port:** via the console port cable, this connector attaches FW-7650 to the host PC. The Default baud rate is 115200.
- **LAN Connector:** Ethernet RJ-45 connector, connected to networking environment using a RJ-45 Ethernet cable
- **LCM & Keypad** Please reference the Appendix B

1.5.3 Rear View

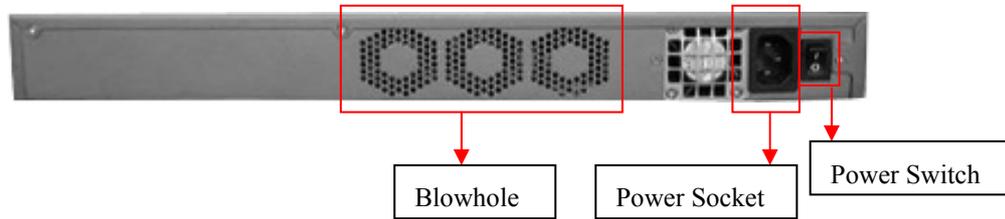


Figure 6 – FW-7650 Rear View

- **Power Switch:** Click the Power Switch , and the system will be power on.



Faulty or improper use of the power adaptor may cause permanent damage to the power supply and the FW-7650. Plug the adaptor to an electrical wall outlet that matches its specifications.

Chapter 2

FW-7650 Hardware Installation Guide

2.1 Hardware Installation Guide

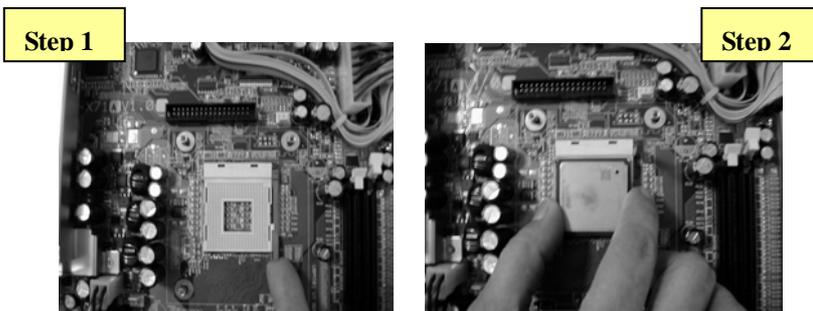
Inside of FW-7650



- CPU Installation

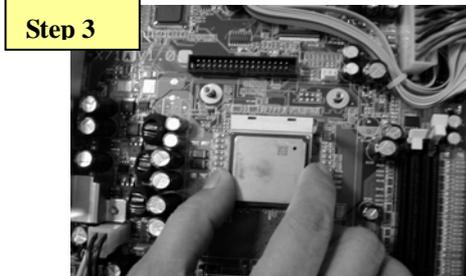
Step 1: Locate the ZIF socket and open it by first pulling the lever of socket upward.

Step 2: Insert the CPU into the socket. Please keep the lever right angle when inserting CPU.



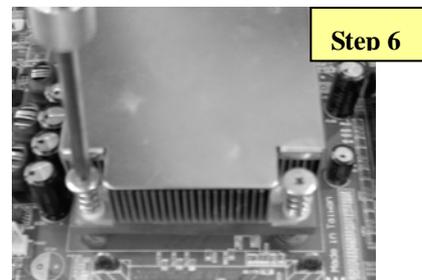
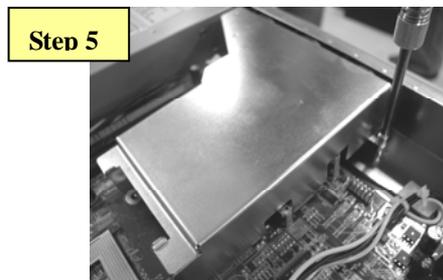
Step 3: When inserting the CPU please note the correct orientation as shown. The notched corner should point toward the end of the lever

Step 4: Push the lever down to close the socket.

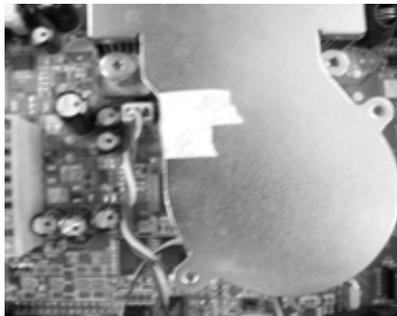


Step 5: Please take the screw off.

Step 6: Please find a cooler (Fan+Heat Sink) within the packing, attach it into the CPU.

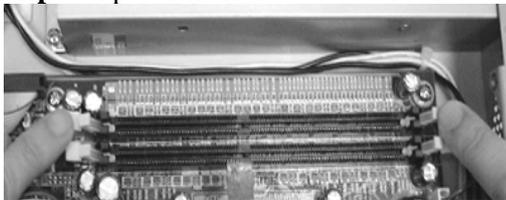


Step 7: Finally, connect the fan cable to the CPU fan header.



- System Memory

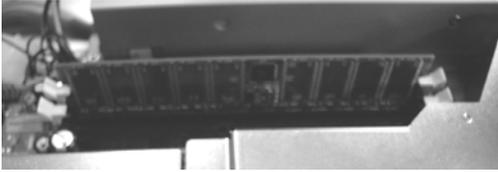
Step 1: Open latches of DIMM socket



Step 2: Insert the RAM module into the DIMM socket.



Step 3: Press the latches into the notches of the RAM module.



How to Remove the Hard Disk Bay

Step 1: Open both latches of mobile rack by press it.



Step 2: Use two hands to pull out the mobile rack.



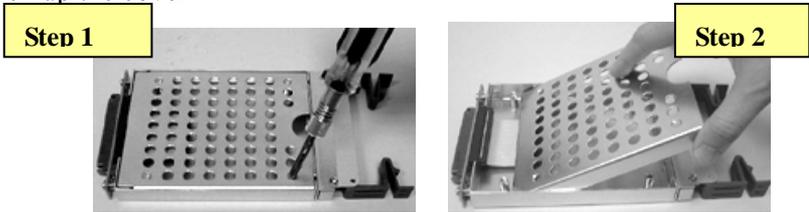
Step 3: Remove the mobile rack straight and smooth.



How to Remove the Hard Disk Bay

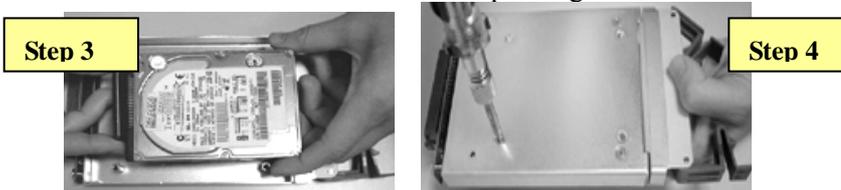
Step 1: Use screwdriver to remove four screws on the cover

Step 2: Pick up the cover



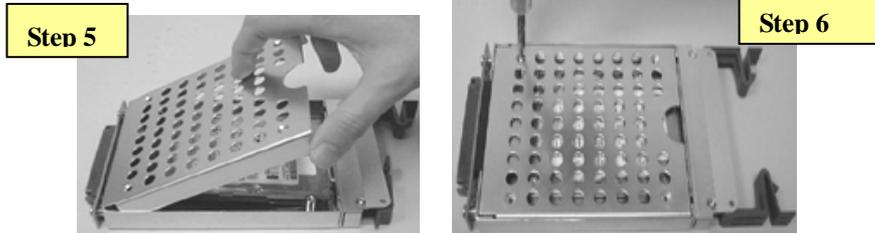
Step 3: Connect the 44pin cable, and insert a 2.5" hard disk.

Step 4: Screw the 2.5" hard disk from the bottom of the mobile rack, you may find the four screws within the packing.



Step 5: Put the cover back.

Step 6: Screw the cover.



- Installing Compact Flash Card

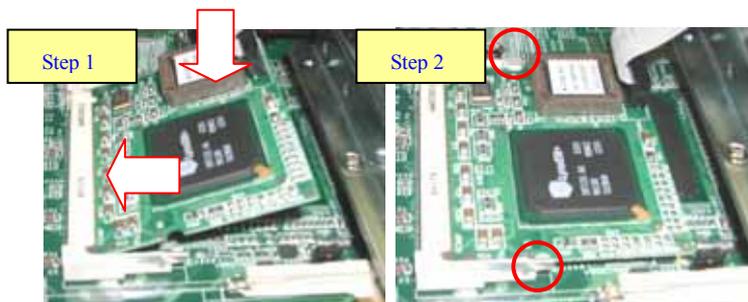
Step 1: Insert the compact flash card into the slot carefully as shown in the picture.



- Installing the Mini-PCI Card

Step 1: Insert the PCI expansion card into the mini-PCI slot at 45 degree.

Step 2: Push down the PCI expansion card and the PCI expansion card is clicked together completely with the PCI expansion slot.



Chapter 3

Award BIOS Setup

3.1 BIOS Setup

Award's ROM BIOS provides a built-in Setup program that allows users to modify the basic system configuration and settings. The modified data will be stored in a battery-backed CMOS RAM so that this data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM remains unchanged unless there is a configuration change in the system, such as hard drive replacement or new equipment installment.

Starting Setup

The AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing immediately after switching the system on, or
2. By pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Using Setup

In general, you 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. The following table provides more detail about how to navigate in the Setup program using the keyboard.

< >	Move to previous item
< >	Move to next item
< >	Move to the item in the left hand
< >	Move to the item in the right hand
Enter	Select item

<Esc>	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
<+/PgUp>	Increase the numeric value or make changes
<-/PgDn>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Item Help
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F7>	Load the Optimized Defaults
<F9>	System Information
<F10>	Save all the CMOS changes, only for Main Menu

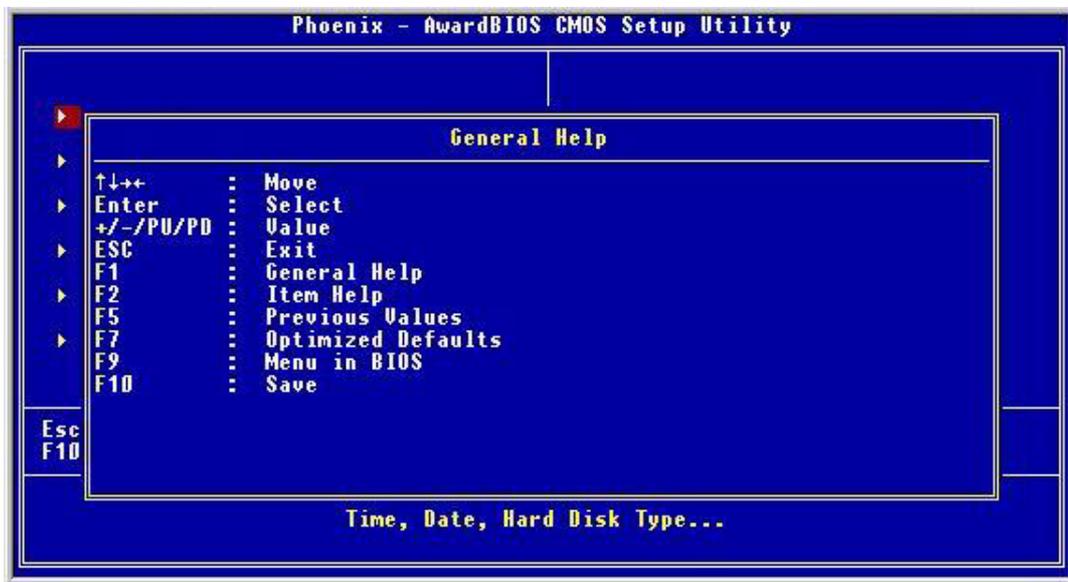
Navigating through the menu bar

Use the left and right arrow keys to choose the menu you want to be in.

To display a sub menu, use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A “!” pointer marks all sub menus.

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.



3.2 CMOS Setup Utility

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

CMOS Setup Utility – Copyright © 1984-2001 Award Software

▶	Standard CMOS Features	▶	PC Health Status
▶	Advanced BIOS Features		Load Optimized Defaults
▶	Advanced Chipset Features		Set Supervisor Password
▶	Integrated Peripherals		Set User Password
▶	Power Management Setup		Save & Exit Setup
▶	PnP/PCI Configurations		Exit Without Saving
Esc	: Quit	↑ ↓ →	: Select Item
F10	: Save & Exit Setup		
Time, Date, Hard Disk Type...			

Listed below are explanation of the keys displayed at the bottom of the screen:

<ESC> : Exit the utility.

<↑ ↓ → ←> : Use arrow keys ↑ ↓ → ← to move cursor to your desired selection.

<F1> : General Help

<F5> : Previous Values

<F6>: Fail-Safe Defaults

<F7>: Optimized Defaults

<F10> : Saves all changes made to Setup and exits program.

+/-/PU/PD : Change Value

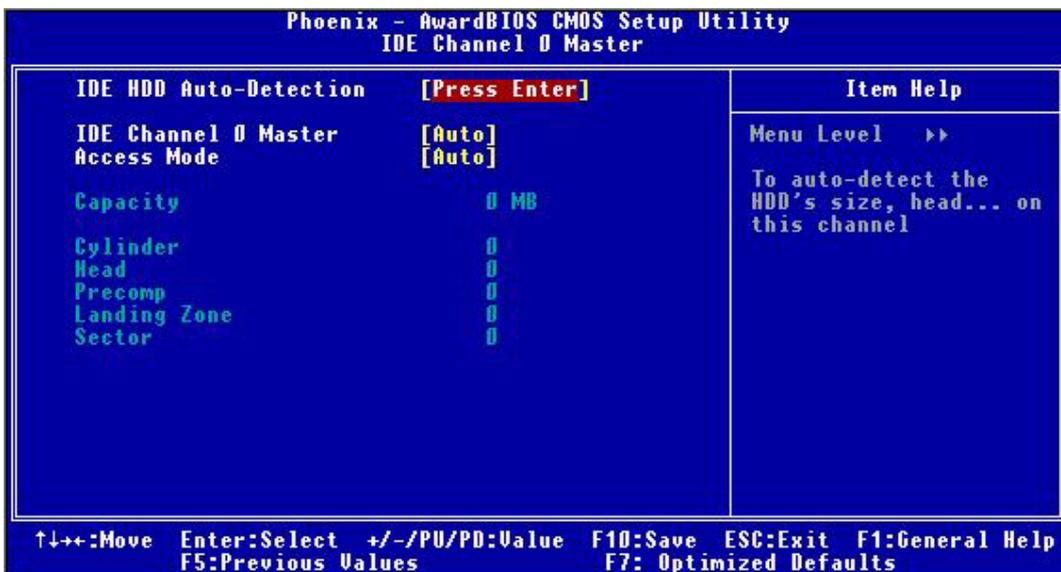
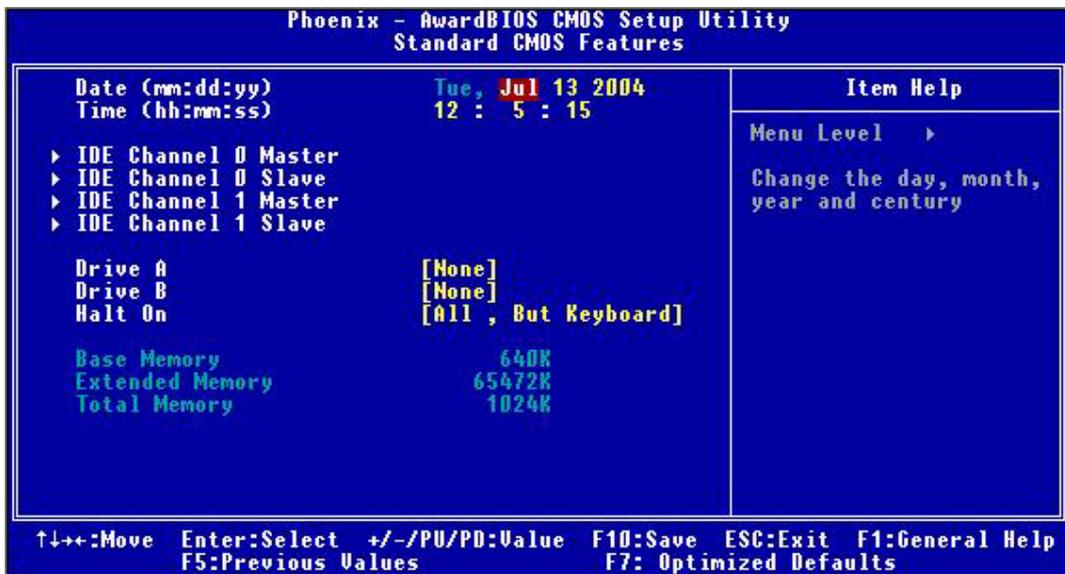
Note that a brief description of each highlighted selection appears at the bottom of the screen.

- **Standard CMOS Setup:** Use this menu for basic system configurations.
- **Advanced BIOS Features:** Use this menu to set the Advanced Features available on your system
- **Advanced Chipset Features:** Use this menu to change the values in the chipset registers and optimize your system's performance
- **Integrated Peripherals:** Use this menu to specify your settings for integrated peripherals.
- **PnP/PCI Configuration:** This entry appears if your system supports PnP/PCI.
- **PC Health Status:** This entry shows your PC health status. If Hardware Monitor Chipset is installed.
- **Load Optimized Defaults:** Use this menu to load the BIOS default values that are factory settings for optimal performance system operations.

- **Set Supervisor Password:** Use this menu to set Supervisor Passwords
- **Set User Password:** Use this menu to set User Passwords.
- **Save & Exit Setup:** Save CMOS value changes to CMOS and exit setup
- **Exit Without Saving:** Abandon all CMOS value changes and exit setup

3.3 Standard CMOS Features

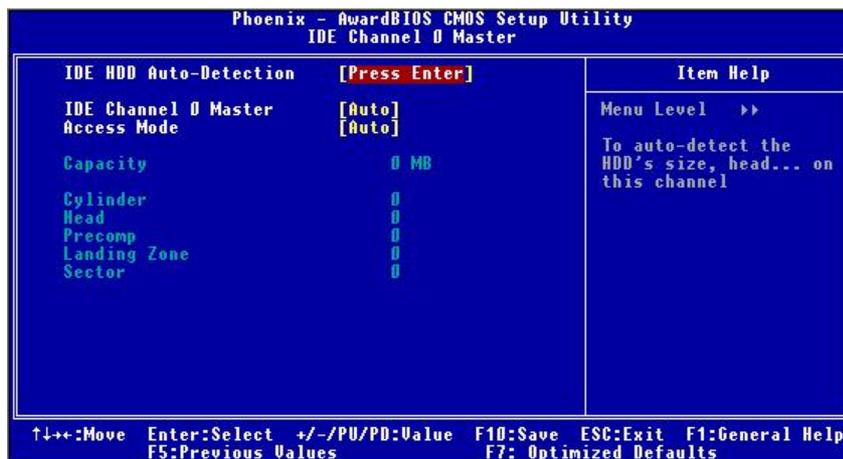
The items in Standard CMOS Setup Menu are divided into 9 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Channel 0 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 1 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 2 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.



IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 1 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

3.4 BIOS Features Setup

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Virus warning	Disabled		Item Help
Quick Power On Self Test	Enabled		Menu Level ►
First Boot Device	Floppy		Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Second Boot Device	HDD-0		
Third Boot Device	CD-ROM		
Boot Other Device	Enabled		
Swap Floppy Drive	Disabled		
Hard Disk Write Protect	Disabled		
Floppy Disk Access Control	R/W		
Boot Up NumLock Status	On		
Security Option	Setup		
PS/2 Mouse Function Control	Enabled		
HDD S.M.A.R.T. Capability	Enabled		
Video BIOS Shadow	Enabled		
C8000 – CBFFF Shadow	Disabled		
CC000 – CFFFF Shadow	Disabled		
D0000 – D3FFF Shadow	Disabled		
D4000 – D7FFF Shadow	Disabled		
D8000 – DBFFF Shadow	Disabled		
DC000 – DFFFF Shadow	Disabled		
Full Screen LOGO Show	Disabled		

Virus Warning: The default setting of Virus Warning is “Disabled”. When it is enabled, any attempt to write the boot sector and partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus free, bootable floppy diskette to reboot, to clean and to investigate your system.

Quick Power On Self Test : The default setting is “Enabled”. This speeds up the Power On Self Test (POST) by skipping some items that are normally checked during the full POST. If your system is functioning normally, you can choose this feature to speed up the booting process.

First / Second / Third / Other Boot Device : The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-2/HDD-3, SCSI, CDROM, LAN, and Disabled

Swap Floppy Drive : The default setting is “Disabled”. This setting gives you an option to swap A and B floppy disks. Normally, the floppy drive A is the one at the end of the cable and drive B is at the other end. If you set this option to “Enabled”, the Drive A will function as Drive B, and vice-versa under the DOS.

Floppy Disk Access Control: This option specifies the read/write access that is set when booting from a Floppy disk drive. The settings are Read/Write or Read-Only. The Optimal and Fail-Safe default settings are Read/Write.

Boot Up Numlock Status : The default setting is “On”. If set “Off”, the cursor controls will function on the numeric keypad.

Security Option : This setting controls the password in the main screen. The options are “Setup” and “System”. Select “Setup” and it will protect the Setup Utility settings from being tampered with. Select “System” if you want to use password feature every time the system boots up. The default setting is “Setup”. You can create your password by using the “SUPERVISOR/USER PASSWORD” utility on the main program screen.

PS/2 Mouse Function Control : When this option is set *Enabled*, AMIBIOS supports a PS/2 type mouse. The settings are *Enabled* or *Disabled*. The default setting is *Disabled*. System Boot Up Sequence.

HDD S.M.A.R.T. for Capability : This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data to a safe place before the hard disk becomes offline. Settings: Enabled and Disabled.

Video BIOS Shadow : The default setting is “Enabled” which will copy the VGA display card BIOS into system DRAM to improve performance.

C8000-CBFFF Shadow to DC000-DFFFF Shadow : The default setting for the shadow feature is “Disabled”. When enabled, the ROM with the specific address is copied into system DRAM. It will also reduce the size of memory available to the system. After you have made your selection in the BIOS FEATURES SETUP, press the <ESC> key to go back to the main program screen.

3.5 Chipset Features Setup

	Spread Spectrum	Disabled	Item Help
X	DRAM Timing Selectable	By SPD	Menu Level ►
X	CAS Latency Times	2	
X	Active to Precharge Delay	6	
	DRAM RAS# to CAS# Delay	3	
	DRAM RAS# Precharge	3	
	Turbo Mode	Enabled	
X	Memory Frequency For	Auto	
	System BIOS Cacheable	Enabled	
	Video BIOS Cacheable	Enabled	
X	Memory Hole At 1.5M-1.6M	Disabled	
X	Delayed Transaction	Enabled	
	Delayed Prior to Thermal	16 Min	
	AGP Aperture Size(MB)	64	
	** OnChip VGA Setting **		
	OnChip VGA	Enabled	
	OnChip Frame Buffer Size	8MB	
	Boot Display	Auto	
	Status LED Control	DARK	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

DRAM Clock : The chipset support synchronous and asynchronous mode between the host clock and DIMM clock.

Host CLK (default)	DIMM clock equal to host clock
66MHz	DIMM clock equal to 66MHz

SDRAM Cycle Length : This item allows you to select the SDRAM cycle length. The settings are 2 or 3.

CAS latency Time: When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

DRAM RAS# to CAS# Delay: This field lets you insert a timing delay

between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance. This field applies only when synchronous DRAM is installed in the system.

DRAM RAS# Precharge Time: If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

System BIOS Cacheable : Selecting “Enabled” allows caching of the system BIOS ROM at F0000h – FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are “Enabled” and “Disabled”.

Video BIOS Cacheable: Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Memory Hole At 15M-16M: You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

AGP Aperture Size : Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation

3.6 Integrated Peripherals

Integrated Peripherals Setup Screen

CMOS Setup Utility – Copyright © 1984-2001 Award Software

Integrated Peripherals			Item Help
	OnChip Primary PCI IDE	Enabled	
	OnChip Secondary PCI IDE	Enabled	Menu Level ►
	USB Controller	Enabled	
	USB 2.0 Controller	Enabled	
	USB Keyboard Support	Disabled	
	USB Mouse Support	Disabled	
	Init Display First	PCI Slot	
	Onboard LAN1 Controller	Enabled	
	Onboard LAN2 Controller	Enabled	
	Onboard LAN3 Controller	Enabled	
	Onboard LAN4 Controller	Enabled	
	Onboard LAN5 Controller	Enabled	
x	Onboard LAN6 Controller	Enabled	
x	Onboard FDD Controller	Enabled	
	Onboard Serial Port 1	3F8/IRQ4	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

On-Chip (Primary/Secondary) PCI IDE : The Intel 82C440BX chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

IDE Prefetch Mode : The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching. The settings are “Enabled” and “Disabled”.

USB Controller: Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals

USB Keyboard Support : Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Init Display First : This item allows you to decide to active whether PCI Slot of VGA card or AGP first. The settings are “PCI Slot” and “AGP Slot”.

Onboard FDD Controller : Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled in this field. The settings are “Enabled” and “Disabled”.

Onboard Serial Port 1 : Select an address and corresponding interrupt for the first and second serial ports. The settings are “3F8/IRQ4”, “2E8/IRQ3”, “3E8/IRQ4”, “2F8/IRQ3”, “Disabled”, “Auto”

3.7 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Power Management Setup Screen

CMOS Setup Utility – Copyright © 1984-2001 Award Software

Power Management Setup

▶	Power Management	User Define	Item Help
	Video Off Method	DPMS	Menu Level ▶
	Video Off In Suspend	Yes	
	Suspend Type	Stop Grant	
	Suspend Mode	Disabled	
	HDD Power down	Disabled	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Power Management :

	Power Management	User Define	Item Help
	HDD Power Down	Disable	Menu Level ▶
	Doze Mode	Disable	
	Suspend Mode	Disable	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode setting

Disable (Default)	No power management. Disables all four modes.
Min. Power Saving	Minimum power management. Doze Mode=1hr. Standby Mode =1hr., Suspend Mode=1hr., and HDD Power Down=15min.
Max. Power Saving	Maximum power management. –Only available for SL CPU’s. Doze Mode=1min., Standby Mode=1min., Suspend Mode=1min., and HDD Power Down=1min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disabled.

Video Off Option : This option is for choosing the setting in which the monitor will turn off. The default setting is “Suspend”

N/A	Always turn on.
Doze	During Doze mode, the monitor will be turned off.
Standby	During Standby mode, the monitor will be turned off.
Suspend	During Suspend mode, the monitor will be turned off.

Video Off Method : This determines the manner in which the monitor is blanked. The default setting is “V/H SYNC+Blank”.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blank to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Suspend Mode : Option are from “1 Min” to “1 Hour” and “Disable”. The CPU clock will be stopped and the video signal will be suspended, if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

HDD Power Down: Options are from “1 Min”. to “15 Min”. and “Disable”. The IDE hard drive will spin down if it is not accessed within a specified length of time.

3.8 PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

	PnP OS Installed	No	Item Help
	Reset Configuration Data	Disabled	Menu Level ▶
	Resources Controlled By	Manual	Select Yes if you are using a Plug and Play capable operating system.
▶	IRQ Resources	Press Enter	Select No if you need the BIOS to configure non-boot devices.
▶	DMA Resources	Press Enter	
▶	Memory Resources	Press Enter	
	PCI/VGA Palette Snoop	Disabled	
	PCI Latency Timer (CLK)	32	
	INT Pin 1 Assignment	Auto	
	INT Pin 2 Assignment	Auto	
	INT Pin 3 Assignment	Auto	
	INT Pin 4 Assignment	Auto	
	INT Pin 5 Assignment	Auto	
	INT Pin 6 Assignment	Auto	
	INT Pin 7 Assignment	Auto	
	INT Pin 8 Assignment	Auto	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help

PnP OS Installed : When set to “Yes”, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95 or 98. When set to “No”, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS, Netware®), this option must set to “Yes”.

Reset Configuration Data : Normally, you leave this field “Disabled”, Select “Enabled” to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The settings are : “Enabled and Disabled”.

Resource Controlled By : The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®98. If you set this field to “Manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “▶”). The settings are “Auto(ESCD)”, “Manual”.

IRQ Resources : When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt.

IRQs Resources:

			Item Help
IRQ3	assigned to	Legacy ISA	Menu Level ▶▶▶ Legacy ISA for devices compliant with the original PC AT bus specification. PCI/ISAPnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
IRQ4	assigned to	PCI/ISA PnP	
IRQ5	assigned to	PCI/ISA PnP	
IRQ6	assigned to	Legacy ISA	
IRQ7	assigned to	PCI/ISA PnP	
IRQ8	assigned to	PCI/ISA PnP	
IRQ9	assigned to	PCI/ISA PnP	
IRQ10	assigned to	PCI/ISA PnP	
IRQ11	assigned to	PCI/ISA PnP	
IRQ12	assigned to	PCI/ISA PnP	
IRQ13	assigned to	PCI/ISA PnP	
IRQ14	assigned to	PCI/ISA PnP	
IRQ15	assigned to	PCI/ISA PnP	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

IRQ3/4/5/7/9/10/11/14/15: These items specify the bus where the specified IRQ line is used. The settings determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the IRQ pool, the end user can use these settings to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP. If all IRQs are set to ISA/EISA, and IRQ14/15 are allocated to the

onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices. Settings:

ISA/EISA and PCI/PnP.

DMA Resources : The sub menu can let you control the DMA resource.

DMA Resources : The sub menu can let you control the DMA resource.

			Item Help
DMA-0	assigned to	PCI/ISA PnP	Menu Level ►►►
DMA-1	assigned to	PCI/ISA PnP	Legacy ISA for devices
DMA-3	assigned to	PCI/ISA PnP	compliant with the original
DMA-5	assigned to	PCI/ISA PnP	PC AT bus specification.
DMA-6	assigned to	PCI/ISA PnP	PCI/ISAPnP for devices
DMA-7	assigned to	PCI/ISA PnP	compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

↑ ↓ → Move Enter: Select +/-PU/PD: Value F10: Save Esc: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

DMA Channel 0/1/3/5/6/7: These items specify the bus that the system DMA(Direct Memory Access) channel is used. The settings determine if AMIBIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can reserve the DMA by assigning an ISA/EISA setting to it.

Reserved Memory Size : This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are Disabled, 16K, 32K, or 64K. The optimal and Fail-Safe default settings are Disabled.

Reserved Memory Address: This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards. This option does not appear if the Reserved Memory Size option is set to Disabled. The settings are

C0000,C4000,C8000,CC000,D0000,D4000,D8000,or DC000.

PCI/VGA Palette Snoop : Leave this field at “Disabled”. The settings are “Enabled”, “Disabled”.

PCI Latency Timer (PCI Clocks): This option is used to control PCI latency timer period (follow PCI clocks). Based on PCI specification 2.1 or later and PCI bus frequency in system, user can select different timer to meet their PCI bus environment.

3.9 PC Health Status

CMOS Setup Utility – Copyright © 1984-2001 Award Software

PC Health Status

VCORE	1.44V	Item Help
+2.5v	2.46V	Menu Level ►
+3.3V	3.40V	
+5V	5.08V	
+12V	12.03 V	
-12V	(-)12.11 V	
-5V	(-)5.00 V	
+1.5V	1.45V	
System Temperature	28°C	
CPU Temperature	31°C	
Fan 1 Speed	0 RPM	
Fan 2 Speed	0 RPM	
Fan 3 Speed	4963RPM	

↑ ↓ → Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help

F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

CPU Temperature, Fan1 Speed, Fan2 Speed , Fan2 Speed, VCORE, +2.5, +3.3V, +5V, +12V : These items display the current status of all monitored hardware devices/components such as system voltages, temperatures and fan speeds.

3.10 Load Optimized Defaults

When you press “Enter” on this item, you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing “Y” loads the default values that are factory settings for optimal performance system operations

3.11 Supervisor/User Password Setting

The “SUPERVISOR/USER PASSWORD” utility sets the password. The SBC is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt -- enter your new password. The password is case sensitive, and can be up to 8 alphanumeric characters. Press <Enter> after you have finished typing in the password. At the next prompt, confirm the new password by re-typing it and pressing <Enter> again. When you are done, the screen automatically reverts to the main screen. Remember that when you use this feature, the “Security Option” line in BIOS FEATURES SETUP will determine when entering the password will be required.

To disable the password, press the <Enter> key instead of entering a new password when the “Enter Password” in the dialog box appears. A message will appear confirming that the password is disabled.

If you have set both supervisor and user password, only the supervisor password allows you to enter the BIOS SETUP PROGRAM.

Note : If you forget your password, the only way to solve this problem is to discharge the CMOS memory

3.12 Save and Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing “Y” stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

3.13 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Appendix A

Power Supply

Power Supply Specification

AC Input Spec :

VOLTAGE 100 - 240 VAC FULL RANGE (±10% tolerance)

Output Specifications

Output Voltage	Output Current Min.	Output Current Max.	Regulation Load	Regulation Line	Output Ripple & Noise Max
5V	3	25.00	±5%	±1%	50mV
12V	2	8.00	±7%	±1%	100mV
-5V	0.05	0.50	±10%	±1%	120mV
-12V	0.05	0.50	±10%	±1%	150mV
3.3V	1	1.4	±5%	±1%	50mV
+5VSB	0.1	1.5	±5%	±1%	50mV

Feature :

- *Active PFC (full range), MEET IEC-1000-3-2 CLASS D
- *TEMPERATURE RANGE: OPERATING 00C ---500C.
- *EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- *SAFETY: UL 1950, CSA 22.2 NO/ 950, TUV IEC 950
- *Remote on/off control
- *Cooling: ONE 40 mm DC Fan
- *3.3V /5V Remote sensing
- *Extend AC cable (optional)
- *Serial ATA optional

Appendix B

Watchdog Timer

Introduction

Most systems need to be self-reliant. It's not usually possible to wait for someone to reboot them if there are some component wrong. Some system designs, such as space probes, are simply not accessible to human operators. If the system ever hangs, such systems are permanently disabled. In other cases, the speed with which a human operator might reset the system would be too slow to meet the uptime requirements of the product.

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor if any occur. Generally speaking, a watchdog timer is based on a counter that counts down from some initial value to zero. The software selects the counter's initial value and periodically restarts it. If the counter ever reaches zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. The processor will be restarted as if a human operator had cycled the power.



Detail Register, Bit, and Pin Descriptions

A watchdog action consists of a series of watchdog instructions. A watchdog instruction is the operation on a register region. This section describes the detail register in LPC I/O(IT8712F).

The features of Watch dog timer in LPC I/O (IT8712F) is as below description.

- Time resolution 1 minute or 1 second, maximum 255 minutes or 255 seconds
- Output to KRST# when expired.

The Watch Dog Timer(WDT) function is constituted by a time counter, a time-out status register, and the timer reset control logic. The time-out status bit may be mapped to an interrupt or KRST# through the WDT Configuration register. The WDT has a programmable time-out range from 1 to 255 minutes or 1 to 255 seconds. The units is also programmable, either a minute or a second, via bit7 of the WDT Configuration register. When the WDT Time-out Value register is set to a non-zero value, the WDT loads the value and begin counting down from the value. When the value reaches to 0,

the WDT status register will set .

Watch Dog Timer Control Register (Index =71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC(mouse) interrupt
5	WDT is reset upon a KBC(keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status. 1:WDT value reaches 0 0: WDT value is not 0

Watch Dog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select 1: Second 0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level for WDT

Watch Dog Timer Time-Out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT time-out value 7-0

If you enable the watch-dog, the hardware timer will reboot your system if your software encounters an unexpected error, or stops responding. The watch-dog timer period (from enable to reset) was decided by the jumper setting of watch-dog time out period. Please refer to the chapter on jumper settings and connectors. During the period of enable to reset, you could still cancel reset by disabling the watch-dog.

Notes : Lanner provide the sample code in the Manual/Driver CD. The path is under //FW-7650_MB-X71/Watchdog

Appendix C

Console Redirection

Console redirection allows you to maintain a system from a remote location by re-directing keyboard input and text output through the serial port. This section will tell you how to use console redirection.

1. Please insert console cable between on FW-7650 and Remote Client System.
2. Setup BIOS in FW-7650.
BIOS → Advanced Chipset Features → Baud Rate : 115200 (Default)
BIOS → Advanced Chipset Features → Console Redirection : Enabled(Default)

Enabled	Attempt to redirect console via COM port.
Disabled	Attempt to redirect console when keyboard absent.
Auto	If keyboard is plug in the Controller board, the Console Redirection will not display BIOS screen on remote client. If keyboard is not plug in the Controller board, the Console Redirection will display BIOS screen on remote client.

3. Configure Console redirection on client system. This example is for Windows platform.
 - i . Click the Start button, point to **programs → Accessories → Communications**, and click **Hyper Terminal**.
 - ii. Enter any name for the new connection and select any icon.
 - iii. Click OK.
 - iv. From the Connect to pull-down menu, select a COM port available on your client system and click OK.
 - v. Select **Baud Rate → 115200** , **Flow control → None** , **Data bit → 8** , **Parity check → None** , **Stop bit → 1**.
4. Power on FW-7650 and it will display the bios information on the client system.

Appendix D

LCD Module and Key Pad For FW-7650

Purpose

The purpose of this document is to provide installation information for the LCD module and key pad installed in the FW-7650.

Specification overview

The LCD module is designed to provide real-time operating status and configuration information for the system. You can reference the document in the Manual/Driver CD for detail specification. The path is under // FW-7650_MB-X71/LCD Module Sample Code/LCD_Datasheet.pdf.

The Driver and library is in the Manula/Driver CD. The path is under // FW-7650_MB-X71/LCD Module Sample Code

How to install the driver in Windows 2000/XP.

In the W2K_WinXP folder,

[LCM.SYS → Windows 2000/XP Driver](#)

[LCM.REG → Windows 2000/XP Registry](#)

1. In Windows 2000, copy LCM.SYS to \\Winnt\system32\drivers
In Windows XP , copy LCM.SYS to \\windwos\system32\drivers
2. Double click the LCM.REG and select “YES”
3. Restart the system.

[LCM1.LIB → LCM & Keypad library](#)

- 1.Copy LCM1.LIB to your make tool directory.
- 2.If you use "Visual Studio C",add LCM1.LIB path to your Complie Setting

How to install in Linux

[LLCM1.O → LCM & Keypad library](#)

- 1.Copy LCM1.O to your make tool directory.
- Ex. if your test program file name is 'LLCM2.c'
2. Compile: 'gcc LLCM1 -o LLCM2 LLCM2.c'
- then use root to run ./LLCM2 for excution.

LCM & KeyPad Function Library description

Description :

- 1.Clear_LCM();

=>This Function is Clear the LCD Module.

=>Direct write the function to your program.

2.Read_KeyPad();

=>This Function get the KeyPad number if user pressed key.

=>Direct write function to your program.

Ex.

```
int a;  
a=Read_KeyPad();
```

Return Value: "1"=>The Upper Key

"2"=>The Down Key

"3"=>The Enter Key

"4"=>The ESC Key

3.Show_Data(int Dp_Type1,int Dp_Type2,int Dp_Type3,int Dp_Type4, char *Showdata1, char *Showdata2);

=>Show string Function.

=>Dp_type1 => Entry Mode Set

=>Dp_type2 => Display On/Off

=>Dp_type3 => Shift

=>Dp_type4 => Set Function

Please refer the Data Sheet about LCM and Use Decimal to input

=>Showdata1 & Showdata2 are the strings that you want to show.

=>Showdata1 Shown on Line1 Limited between 20 Character

=>Showdata2 Shown on Line2 Limited between 20 Character

Ex.

```
Show_data(0,15,0,56,"1234","5678");
```

Terms and Conditions

Date:2004.07.08

Warranty Policy

1. All products are warranted against defects in materials and workmanship for a period of two years from the date of your purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas manufacturer will bear the after service freight charges back to user site.
3. The buyer will pay for repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on “RMA Service“, RMA goods will be returned at customer’s expense.
5. The following conditions resulting to the defective goods are excluded from this warranty:
 - A. Improper or inadequate maintenance by the customer
 - B. Unauthorized modification, misuse, or reversed engineering of the product
 - C. Operation outside of the environmental specifications for the product.

RMA Service

1. Requesting for a RMA#:

To obtain a RMA number, simply fill out and fax the “RMA Request Form” to your supplier.

2. Shipping:

- A. The customer is required to fill up the problem code as listed. If your problem is not among the codes listed, please write the symptom description on the remark.
- B. Ship the defective unit(s) on freight prepaid terms.
- C. Mark the RMA # clearly on the box.
- D. Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s).
- E. Use the original packing materials whenever possible.

3. All RMA# are valid for 30 days only:

RMA goods received after the effective RMA# period will be rejected.

RMA Service Request Form

When requesting RMA service, please fill out this **RMA Service Request Form**.

Without this form your RMA will be REJECTED!!!

RMA No: _____		Reasons to Return: <input type="checkbox"/> Repair(Please include failure details) <input type="checkbox"/> Testing Purpose	
Company: _____		Contact Person: _____	
Phone No. _____		Purchased Date: _____	
Fax No.: _____		Applied Date: _____	
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____ <input type="checkbox"/> Others: _____			
Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

- | | | | |
|------------------------|------------------------------|--------------------|--------------------------|
| 01: D.O.A. | 07: BIOS Problem | 13: SCSI | 19: DIO |
| 02: Second Time R.M.A. | 08: Keyboard Controller Fail | 14: LPT Port | 20: Buzzer |
| 03: CMOS Data Lost | 09: Cache RMA Problem | 15: PS2 | 21: Shut Down |
| 04: FDC Fail | 10: Memory Socket Bad | 16: LAN | 22: Panel Fail |
| 05: HDC Fail | 11: Hang Up Software | 17: COM Port | 23: CRT Fail |
| 06: Bad Slot | 12: Out Look Damage | 18: Watchdog Timer | 24: Others (Pls specify) |

Request Party

Confirmed By Supplier

Authorized Signatures / Date

Authorized Signatures / Date

