

FWA8207 Series
Networking Appliance

User's Manual

Version: 1.2

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Foreword

To prevent damage to the system board, please handle it with care and follow the measures below, which are generally sufficient to protect your equipment from static electricity discharge:

When handling the board, use a grounded wrist strap designed for static discharge elimination grounded to a metal object before removing the board from the antistatic bag. Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

When handling processor chips or memory modules, avoid touching their pins or gold edge fingers. Return the Network Appliance system board and peripherals back into the antistatic bag when not in use or not installed in the chassis.

Some circuitry on the system board can continue to operate even though the power is switched off. Under no circumstances should the Lithium battery cell used to power the real-time clock be allowed to be shorted. The battery cell may heat up under these conditions and present a burn hazard.

WARNING!

1. "CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS"
2. This guide is for technically qualified personnel who have experience installing and configuring system boards. Disconnect the system board power supply from its power source before you connect/disconnect cables or install/remove any system board components. Failure to do this can result in personnel injury or equipment damage.
3. Avoid short-circuiting the lithium battery; this can cause it to superheat and cause burns if touched.
4. Do not operate the processor without a thermal solution. Damage to the processor can occur in seconds.
5. Do not block air vents at least minimum 1/2-inch clearance required.

FWA8207 series was specifically designed for the network security & management market.

Network Security Applications:

- Firewall
- Unified Threat Management (UTM)
- Virtual Private Network (VPN)
- Proxy Server
- Caching Server

Network Management Applications:

- Load balancing
- Quality of Service
- Remote Access Service

The FWA networking appliance product line covers the spectrum from offering platforms designed for:

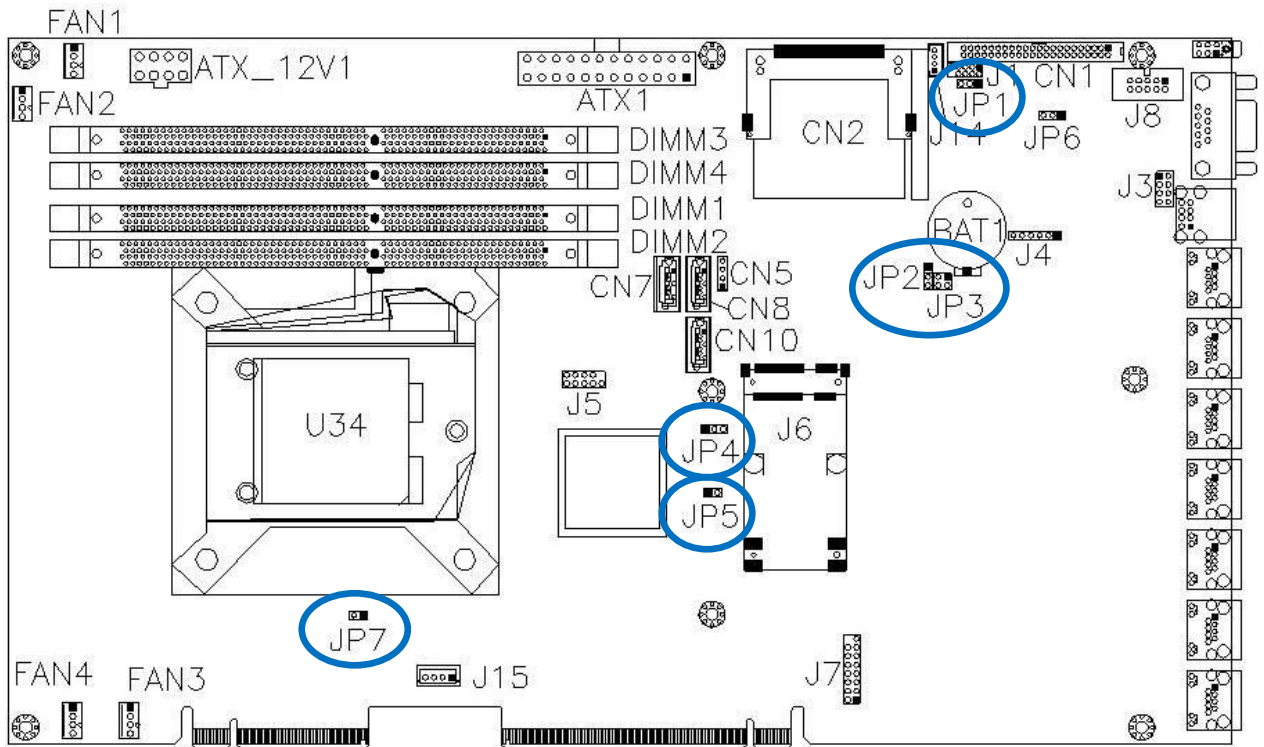
- SOHO
- SMB
- Enterprise

Each product is designed to address the distinctive requirements of its respective market segment from cost effective entry-level solutions to high throughput and performance-bound systems for the Enterprise level.

Chapter 2 System Specification

Product Name	FWA8207
Form Factor	19" 1U Mainstream Networking Product
Motherboard	MB966
CPU	Intel® LGA1156 Series Processors
Chipset	Intel® 3450 PCH
Supported CPUs	<ul style="list-style-type: none"> ● Intel® Xeon X3450, X3430 ● Intel® Core i7-860 ● Intel® Core i5-750 ● Intel® Core i5-660 (FWA8207-G) ● Intel® Core i3-540 (FWA8207-G) ● Intel® Pentium G6950 (FWA8207-G)
Network	<ul style="list-style-type: none"> ● Six onboard GLAN + one Management (ATM 6.0) ● Two segments hardware Bypass
Expansion Slot	<ul style="list-style-type: none"> ● One PCI-e x8 Golden Finger ● One PCI-e x16 (x8 Link) Golden Finger ● CF Card Socket ● Mini PCI-e Socket (m-SATA compatible)
Storage	One internal 2.5" HDD (FWA8207) or One internal 3.5" HDD (FWA8207-2SLOT & FWA8207-G)
Front Panel	<ul style="list-style-type: none"> ● DB-9 Console Port (COM1) ● 2x USB 2.0 type A connector ● 1x RJ-45 for Management port (ATM 6.0) ● 6x RJ-45 with Link/Act, Speed LED for 10/100/1000M Ethernet ● 3x LED (Power, Status)
Rear Panel	<ul style="list-style-type: none"> ● PSU inlet ● 1x or 2x Slot (Depend on product SKU)
USB 2.0	<ul style="list-style-type: none"> ● Two in front ● Two pin header on board
ATM	ATM 6.0
TPM	Winbond WPCT200 TPM1.2 controller for Trust Platform 1.2
VGA	Pin header on board (FWA8207-G)
LCM	2x16 characters LCM
Watchdog Timer	256 segments, 0, 1, 2...255 sec/min
Power Supply	300W Single PSU
Dimensions	44 (H) x 440 (W) x 406.5 (D) mm
Operation Temperature	0 ~ 45 ° C
Storage Temperature	-20 ~ 70 ° C
Operation Humidity	5% ~ 95%
Certifications	CE, FCC
Optional Front Expansion Cards	<ul style="list-style-type: none"> ● IBP161: 4-port RJ-45 10/100/1000 Copper Ethernet Card



MB966 Motherboard Layout



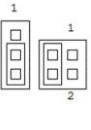
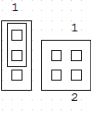
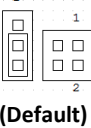
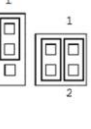
Jumper Setting

- JP1: TPM Enable/Disable Setting
- JP2, JP3: Watchdog Timer & CN11~CN14 LAN Bypass Settings
- JP4: Clear CMOS Contents
- JP5: ME (Intel® Management Engine) Enable/Disable
- JP7: PCIE1 & PCIE2 Golden Finger PCIe Configuration

JP1: TPM Enable/Disable Setting

JP1	Setting	Function
	Pin 1-2 Short/Closed	Enable
	Pin 2-3 Short/Closed	Disable



JP2, JP3: Watchdog Timer & LAN Bypass Settings

JP2, JP3	Setting	Function	Power Off	Power On OS Run Software
	JP2 Pin 2-3 Closed JP3 Pin 1-2 Open & 3-4 Closed	System LAN bypass function is controlled by Super I/O GP23	LAN Bypass	GP23 Active: Low: Bypass High: Normal
		System will reboot upon the time out of watchdog timer.		WDT Reboot System
	JP2 Pin 1-2 Closed JP3 Pin 1-2 & 3-4 Open	System will bypass LAN upon the time out of watchdog timer.	LAN Bypass	
 (Default)	JP2 Pin 2-3 Closed JP3 Pin 1-2 & 3-4 Open	System LAN bypass function is controlled by Super I/O GP23.		GP23 Active: Low: Bypass High: Normal
	JP2 Pin 1-2 Closed JP3 Pin 1-2 & 3-4 Closed	System LAN is at normal	LAN Bypass	LAN Always Normal
		System will reboot upon the time out of watchdog timer.		WDT Reboot System



JP4: Clear CMOS Contents

Use JP4 to clear the CMOS contents.



Note that the ATX-power connector should be disconnected from the board before clearing CMOS.

JP4	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

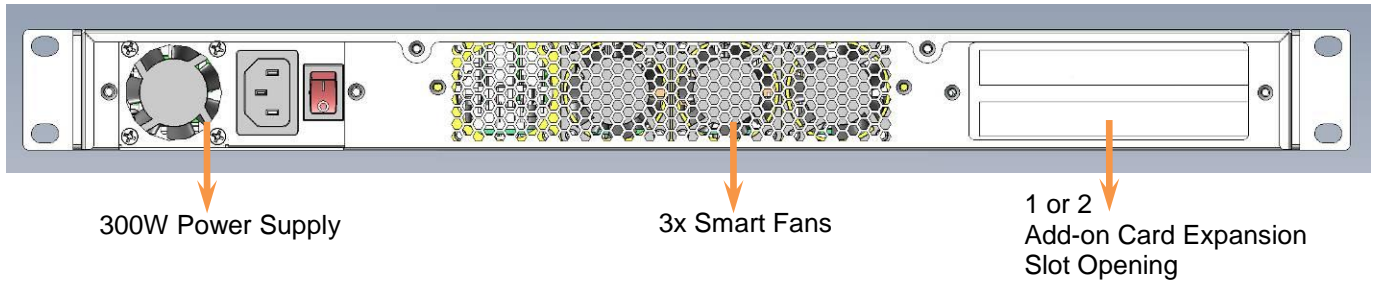
JP5: ME (Intel® Management Engine) Enable/Disable

JP5	Setting	Function
 Open	Open	Enable
 Short	Short/Closed	Disable

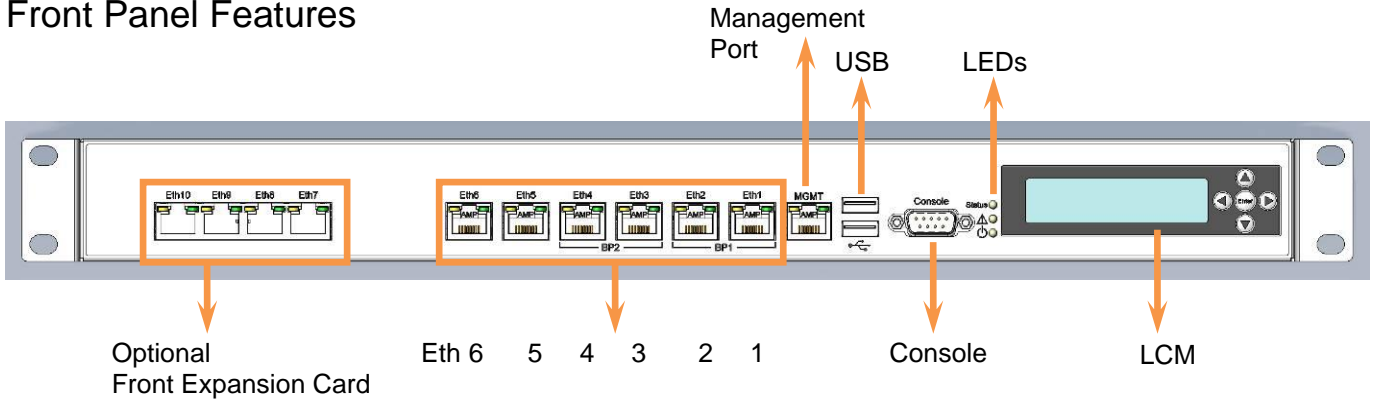
JP7: PCIE1 & PCIE2 Golden Finger PCIe Configuration

JP7	Setting	Function	Remarks
 Open	Open	Combine to 1x16	For CPU with Integrated Graphics support
 Short	Short/Closed	Separate to 2x8	Default Setting for CPU without Integrated Graphics support

Rear Panel Features



Front Panel Features

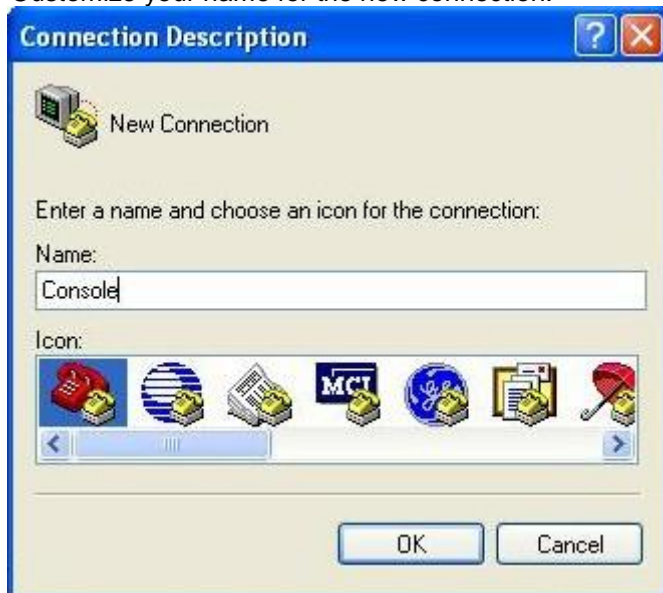


Chapter 4 Console Mode Information

FWA8207 supports output information via Console in BIOS level.

Prepare a computer as client loaded with an existing OS such Windows XP.
Connect client computer and FWA8207 with NULL Modem cable.
Follow the steps below to configure the Windows Hyper Terminal application setting:

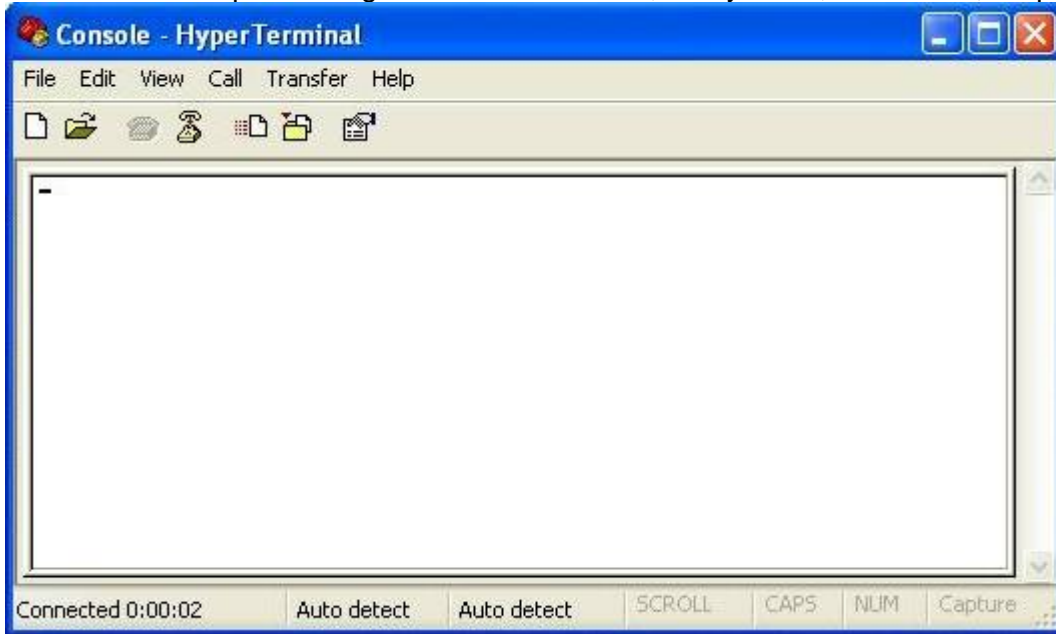
1. Execute Hyper Terminal. Issue command "hypertm".
2. Customize your name for the new connection.



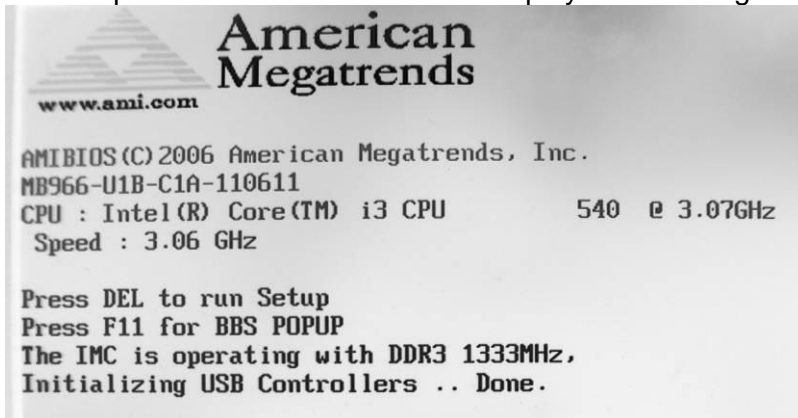
3. Choose COM port on the client computer for the connection.



4. Please make the port settings to Baud rate 19200, Parity None, Data bits 8, Stop bits 1



5. Power up FWA8207. The screen will display the following information.



6. Press <Tab> key to enter BIOS setup screen in **Console mode**.
Press key to enter BIOS setup screen in **VGA mode**.

Loosen six screws on sides and rear of chassis, and slide backward to remove the top lead.



Fig. 5-1 Take off screws



Fig. 5-2 The top lead



Fig. 5-3 The base stand

Chapter 6 Installing DDR3 Memory

Install system memory by pulling the socket's arm and pressing it into the slot gently.

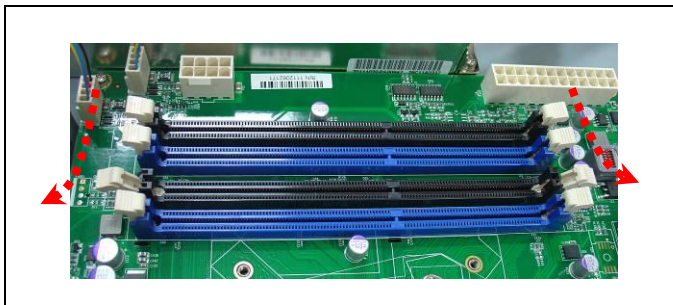


Fig. 6-1 Open both arms on DIMM socket

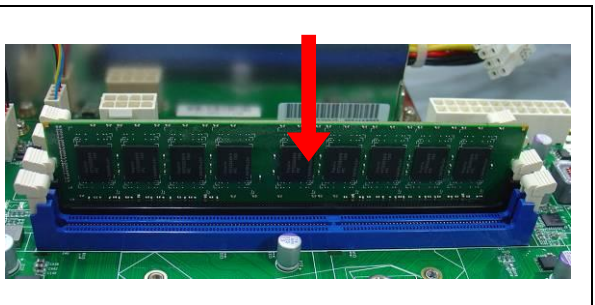


Fig. 6-2 Install DIMM

Notice:

1. MB966 supports two groups of dual channels memory.
One group is on the black DIMM sockets, and the other one is blue DIMM sockets.
2. The recommended height of memory module doesn't exceed 30 mm.

Chapter 7 Installing CompactFlash Card

Insert CompactFlash card into the socket.

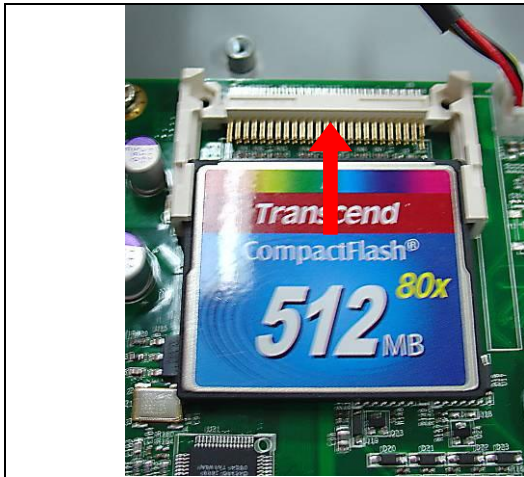


Fig. 7-1 Insert CompactFlash Card into the CF interface

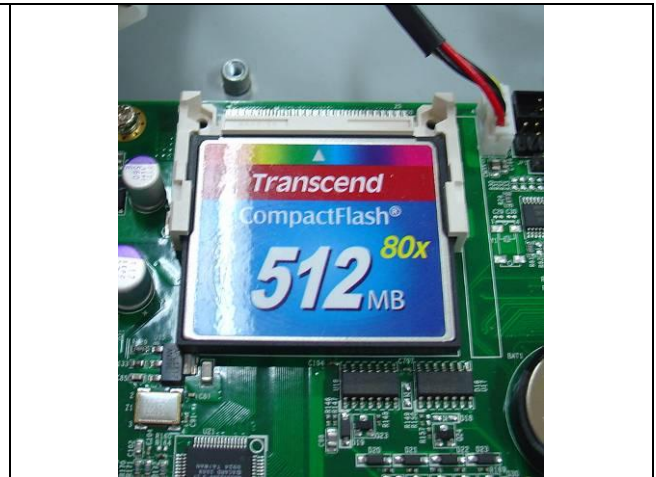


Fig. 7-2 Completion of CompactFlash Card connection

Chapter 8 Removing and Installing the Battery

1. Press the metal clip back to eject the button battery.
2. Replace it with a new one by pressing the battery with fingertip to restore the battery

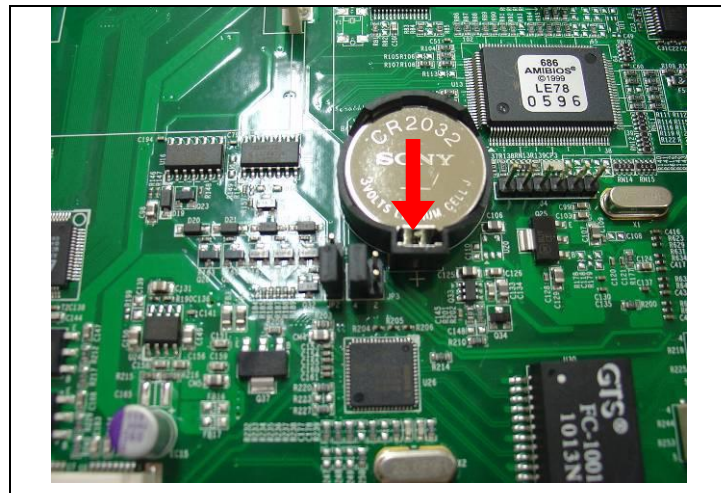


Fig. 8-1 Eject the battery and replace with new one

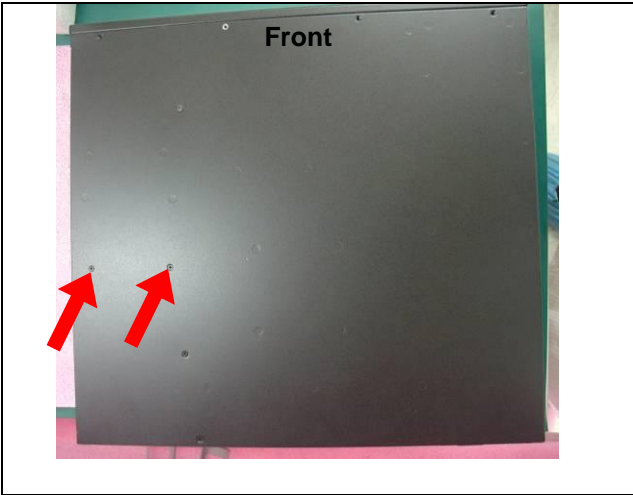


Fig. 9- Take off two screws on bottom to remove 2.5" HDD bracket.



Fig. 9-2 Fasten the four screws to lock HDD and bracket together.



Fig. 9-3 Push HDD into connector



Fig. 9-4 Completion of HDD connection

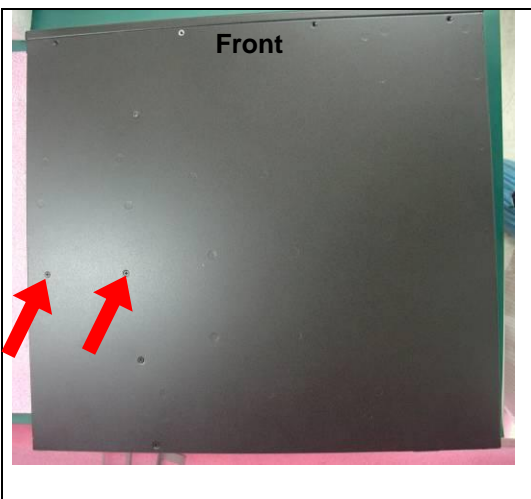


Fig. 9-5 Fix HDD bracket with two screws

The following is for optional Dual 2.5" HDD kit:

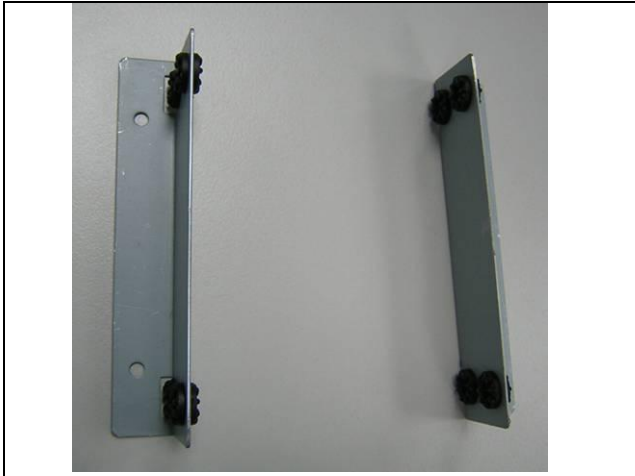


Fig. 10-1 Push eight shock-absorbent pads to fasten HDD bracket.



Fig. 10-2 Fasten the screws to lock 2.5" HDD bracket and bracket together.



Fig. 10-3 Fix HDD bracket on chassis with four screws

Chapter 11 Installing Add-on Card



Fig. 11-1 Loosen screw on slot bracket.



Fig. 11-2 Slide in PCI-e add-on card.



Fig. 11-3 Fix the add-on card

Chapter 12 Installing Mini PCI-e Card

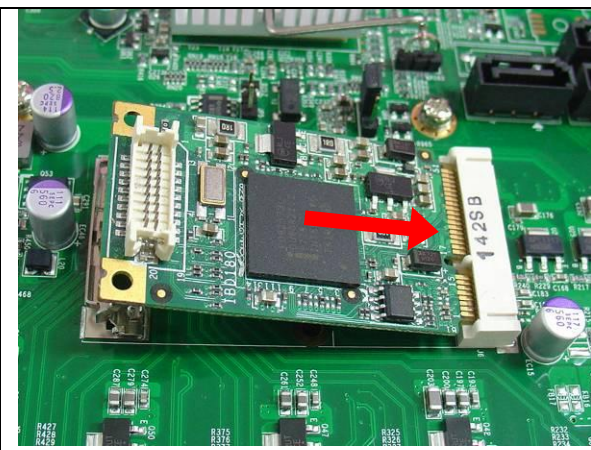


Fig. 12-1 Insert Mini PCI-e card.

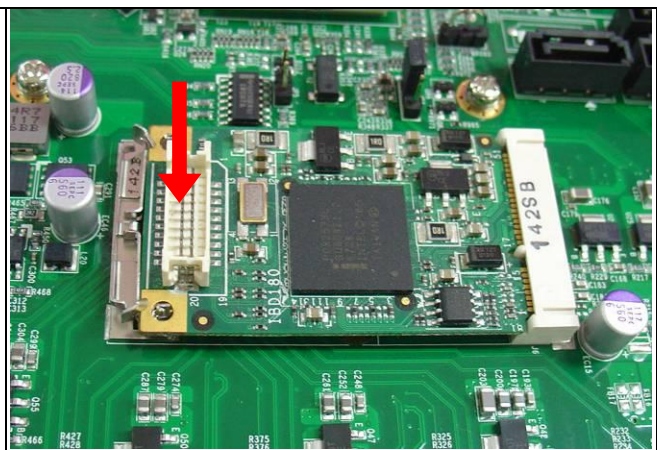


Fig. 12-2 Push down Mini PCI-e card.

Chapter 13 BIOS Information

This setup allows you to view processor configuration used in your computer system and set the system time and date.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Processor Intel(R) Core(TM) i5 CPU Speed : 3333MHz Count : 1			660 @ 3.33GHz		Use[ENTER], [TAB] or [SHIFT-TAB] to select a field.	
System Memory Size : 8056MB					Use [+] or [-] to configure system Time.	
System Time System Date			[02:29:50] [Fri 01/02/2009]		<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

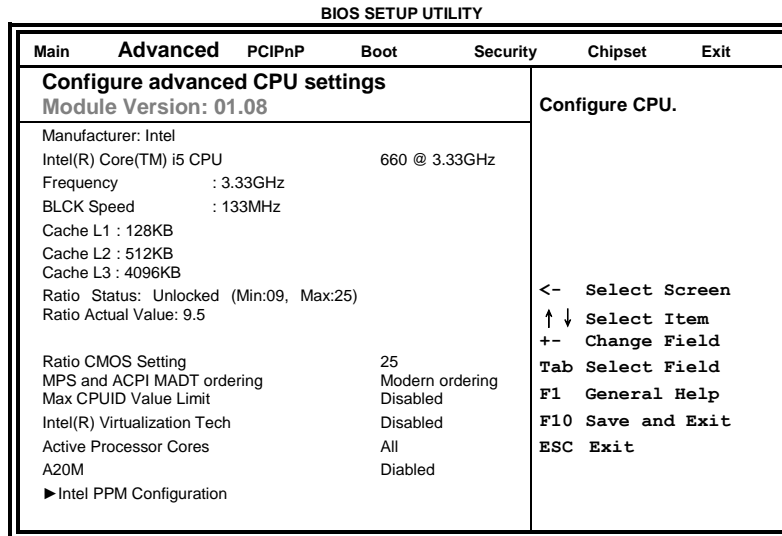
Notice: If the system cannot boot after making and saving system changes with Setup, the AMI BIOS supports an override to the CMOS settings that resets your system to its default.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

Advanced Settings

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced Settings WARNING: Setting wrong values in below sections may cause system to malfunction.					Configure CPU.	
▶ CPU Configurations ▶ IDE Configuration ▶ SuperIO Configuration ▶ Hardware Health Configuration ▶ ACPI Configuration ▶ AHCI Configuration ▶ Event Log Configuration ▶ Intel AMT Configuration ▶ Intel VT-d Configuration ▶ MPS Configuration ▶ PCI Express Configuration ▶ Remote Access Configuration ▶ Trusted Computing ▶ USB Configuration ▶ Clock Generator Configuration					<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

The Advanced BIOS Settings configurations are shown in the following pages, as seen in the computer screen. Please note that setting the wrong values may cause the system to malfunction.



The CPU Configuration menu shows the following CPU details including the manufacturer, CPU type, its frequency and cache levels. Other options include:

Ratio CMOS Setting

Sets the ratio between CPU core clock and the FSB frequency.

MPS and ACPI MADT ordering

Modern ordering for Windows XP or later OSes. Legacy ordering for Windows 2000 or earlier OSes.

Max CPU ID Value Limit

Disabled for Windows XP.

Intel Virtualization Tech

When enabled, a VMM can utilize the additional HW Caps. Provided by Intel® Virtualization Tech. Note: A full reset is required to change the setting.

Active Processor Cores

Number of cores to enable in each processor package.

A20M

Legacy OSes and Aps may need A20 M enabled.

Intel® PPM Configuration

This configuration includes the following options:

Intel SpeedStep tech

Disable: Disable GV3 Enable: Enable GV3

Intel TurboMode tech

Turbo mode allows processor cores to run faster than marked frequency in specific condition.

Intel C-STATE tech

CState: CPU idle is set to C2/C3/C4.

C State package limit setting

Selected option will program into C State package limit register.

C3 State / C6 State

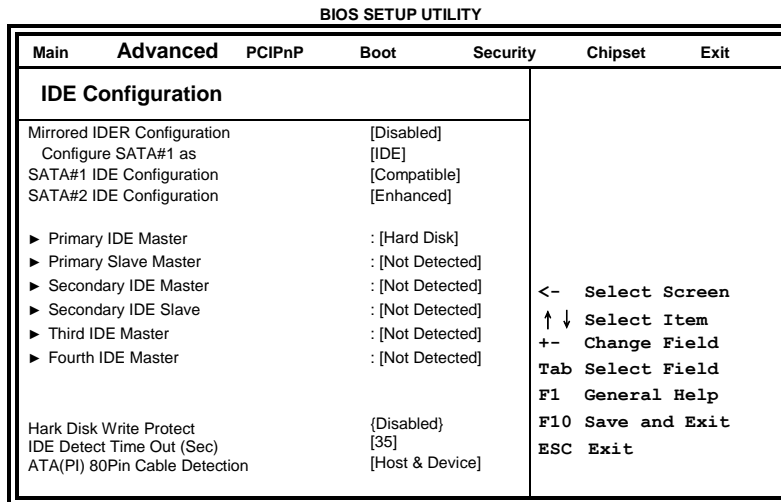
Nehalem C state action select.

C1 Auto Demotion

When enabled, CPU will conditionally demote C3/C6/C7 requests to C1 based on uncore auto-demote information.

C3 Auto Demotion

When enabled, CPU will conditionally demote C6/C7 requests to C3 based on uncore auto-demote information.



The IDE Configuration menu is used to change and/or set the configuration of the IDE devices installed in the system.

Hard Disk Write Protect

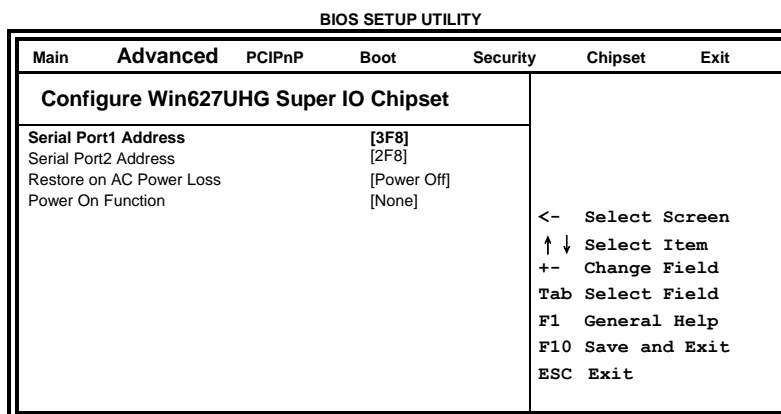
Disable/Enable device write protection. This will be effective only if device is accessed through BIOS.

IDE Detect Time Out (Sec)

Select the time out value for detecting ATA/ATAPI device(s).

ATA(PI) 80pin Cable Detection

Select the mechanism for detecting 80pin ATA(PI) cable.



Onboard Serial Port/Parallel Port

These fields allow you to select the onboard serial ports and their addresses. The default values for these ports are:

Serial Port 1 3F8
 Serial Port 2 2F8/

Restore on AC Power Loss

This field sets the system power status whether *on* or *off* when power returns to the system from a power failure situation.

Power On Function

This field is related to how the system is powered on. The options are *None, Mouse Left, Mouse Right, and Any Key.*

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Hardware Health Configuration						
System Temperature			:34°C/93°F			
CPU Temperature			:38°C/100°F			
PCH Temperature			:38°C/100°F			
Fan1 Speed			:0 RPM			
FAN2 Speed			:1074RPM			
FAN3 Speed			:0RPM			
FAN4 Speed			:0RPM			
VcoreA			:1.176 V			
3VCC			:3.472 V			
12V			:12.408 V			
VcoreB			:1.552 V			
VCCIN			:5.196 V			
VSB			:0.150 V			
SYS SMART FAN Setting			: Enable : Disabled		<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
CPU SMART FAN Setting			: Enable : Disabled			
ACPI Shut down Temperature			: Disabled			

The Hardware Health Configuration menu is used to show the operating temperature, fan speeds and system voltages.

SYS smart fan

The options are *Disabled and Enabled (Default)*

CPU smart fan

The options are *Disabled and Enabled (Default)*

ACPI Shutdown Temperature

The options are *Disabled, 70°C/158°F, 75°C/167°F, 80°C/176°F, 85°C/185°F, 90°C/194°F, and 95°C/203°F.*

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
ACPI Settings						
▶ General ACPI Configuration				General ACPI Configuration settings		
				<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
General ACPI Configuration						
Suspend mode			[S1 (POS)]		General ACPI Configuration settings	
				<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

Suspend Mode

The options of this field are *S1, S3.*

Repost Video on S3 Resume

Determines whether to invoke VGA BIOS POST on S3/STR resume.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
AHCI Settings						
AHCI BIOS Support			Enabled			
▶ AHCI Port0 [Not Detected]						
▶ AHCI Port1 [Not Detected]						
▶ AHCI Port2 [Not Detected]						
▶ AHCI Port3 [Not Detected]						
▶ AHCI Port4 [Not Detected]						
▶ AHCI Port05[Not Detected]						
				<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

AHCI BIOS Support

Enables for supporting AHCI controller operates in AHCI mode during BIOS control otherwise operates in IDE mode

AHCI Port

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

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Event Logging details						
View Event Log			view all unread events on the Event Log			
Mark all events as read						
Clear Event Log						
ECC Event Logging			[Disabled]			
PCIE Error Log			[Disabled]			
				<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Intel AMT Configuration						
Intel AMT Support			[Enabled]			
AMT/ME BIOS Extension (MEBx) Configuration						
ME BIOS Extension (MEBx)			[Enabled]			
Unconfigure AMT/ME			[Disabled]			
MEBx Ctrl+P Delay (Seconds)			256			
				Options: Disabled Enabled <- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

The Intel® AMT Configuration configures the Intel® Active Management Technology (AMT) options.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
				Options: Disabled Enabled		
Intel VT-d			[Disabled]			
				<- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

VT-d

Virtualization solutions allow multiple operating systems and applications to run in independent partitions all on a single computer. Using virtualization capabilities, one physical computer system can function as multiple "virtual" systems.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
MPS Configuration				Select MPS Revision		
MPS Revision VT-d			[1.4]			
				<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

MPS Version Control for OS

This option specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability.

The default setting is **1.4**.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
PCI Express Configuration				Enable/Disable PCI Express L0s and L1 link power states		
Active State Power Management			[Disabled]			
				<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Configure Remote Access type and parameters				Select Remote Access type.		
Remote Access			Enabled			
Serial port number			[COM1]			
Base Address, IRQ			[3F8h, 4]			
Serial Port Mode			[1115200 8,n,1]			
Flow Control			[None]			
Redirection After BIOS POST			Always			
Terminal Type			ANSI			
VT-UTF8 Combo Key Support			Enabled			
Sredir Memory Display Delay			No Delay			
				<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

When enabled, the Remote Access type and parameters are shown:

Serial port number - Select Serial Port for console redirection.

Serial port mode - Select Serial Port settings.

Flow Control - Select Flow Control for console redirection.

Redirection After BIOS POST

Disable: Turns off the redirection after POST.

Boot Loader: Redirection is active during POST and during Boot Loader.

Always: Redirection is always active. (Some OSs may not work if set to Always.)

Terminal Type - Select the target terminal type.

VT-UTF8 Combo Key Support – Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

Sredir Memory Display Delay – Gives the delay in seconds to display memory information.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Trusted Computing						
TCG/TPM SUPPORT				No		
				Enable/Disable TPM TCG (TPM 1.1/1.2) supp in BIOS <- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

USB Configuration

This option is used to configure USB mass storage class devices.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
USB Configuration						
Module Version – 2.24.5.14.4						
USB Devices Enabled: 2 Hubs						
Legacy USB Support				[Enabled]		
USB 2.0 Controller Mode				[HiSpeed]		
BIOS EHCI Hand-Off				[Disabled]		
Legacy USB1.1 HC Support				[Enabled]		
USB Beep Message				[Disabled]		
				Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected. <- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

Legacy USB Support

Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.

Legacy USB1.1 HC Support

Support USB 1.1 HC.

USB Beep Message

Enable the beep during USB device enumeration.

Clock Generator Configuration

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Spectrum Enable/Disable				[Disable]		
				Spectrum Enable/Disable <- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

PCIPnP Settings

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced PCI/PnP Settings			Clear NVRAM during System Boot			
WARNING: Setting wrong values in below sections may cause system to malfunction.						
Clear NVRAM		[No]				
Plug & Play O/S		[No]				
PCI Latency Timer		[64]				
Allocate IRQ to PCI VGA		[Yes]				
Palette Snooping		[Disabled]				
PCI IDE BusMaster		[Enabled]				
OffBoard PCI/ISA IDE Card		[Auto]				
IRQ3		[Available]				
IRQ4		[Available]				
IRQ5		[Available]				
IRQ7		[Available]				
IRQ9		[Available]				
IRQ10		[Available]				
IRQ11		[Available]				
IRQ14		[Available]				
IRQ15		[Available]				
DMA Channel 0		[Available]				
DMA Channel 1		[Available]				
DMA Channel 3		[Available]				
DMA Channel 5		[Available]				
DMA Channel 6		[Available]				
DMA Channel 7		[Available]				
Reserved Memory Size		[Disabled]				
			<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit			

Clear NVRAM

This item is used for clearing NVRAM during system boot.

Plug & Play O/S

This lets BIOS configure all devices in the system or lets the OS configure PnP devices not required for boot if your system has a Plug and Play OS.

PCI Latency Timer

This item sets value in units of PCI clocks for PCI device latency timer register. Options are: 32, 64, 96, 128, 160, 192, 224, 248.

Allocate IRQ to PCI VGA

This assigns IRQ to PCI VGA card if card requests IRQ or doesn't assign IRQ to PCI VGA card even if card requests an IRQ.

Palette Snooping

This informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.

PCI IDE BusMaster

This uses PCI busmastering for BIOS reading / writing to IDE devices.

OffBoard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card. **AUTO**: Works for most PCI IDE cards.

IRQ#

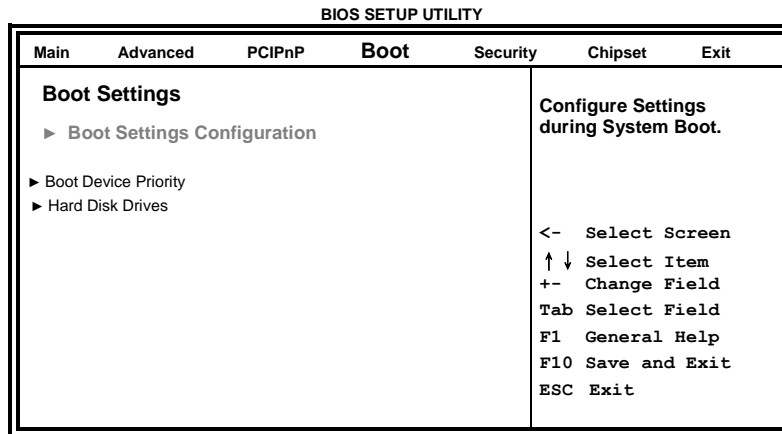
Use the IRQ# address to specify what IRQs can be assigned to a particular peripheral device.

Reserved Memory Size

Size of memory block to reserve legacy ISA devices.

Boot Settings

This option configures the settings during system boot including boot device priority and HDD/CD/DVD drives.



Boot Settings Configuration

This configuration includes the following items:

Quick Boot - Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quiet Boot – **Disabled**: Displays normal POST messages. **Enabled**: Displays OEM Logo instead of POST messages.

Bootup Num-Lock – Select Power-on state for Numlock.

PS/2 Mouse Support – Select support for PS/2 Mouse.

Wait for 'F1' If Error – Wait for F1 key to be pressed if error occurs.

Hit 'DEL' Message Display – Displays "Press DEL to run Setup" in POST.

Interrupt 19 Capture – This allows option ROMs to trap interrupt 19.

Boot Device Priority

This specifies the boot sequence from the available devices. A device enclosed in parenthesis has been disabled in the corresponding type menu.

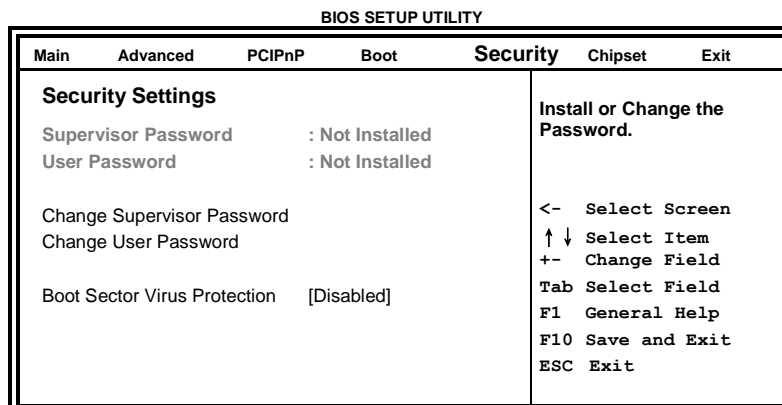
Hard Disk Drives

This specifies the Boot Device Priority sequence from available Hard Drives.

Security Settings

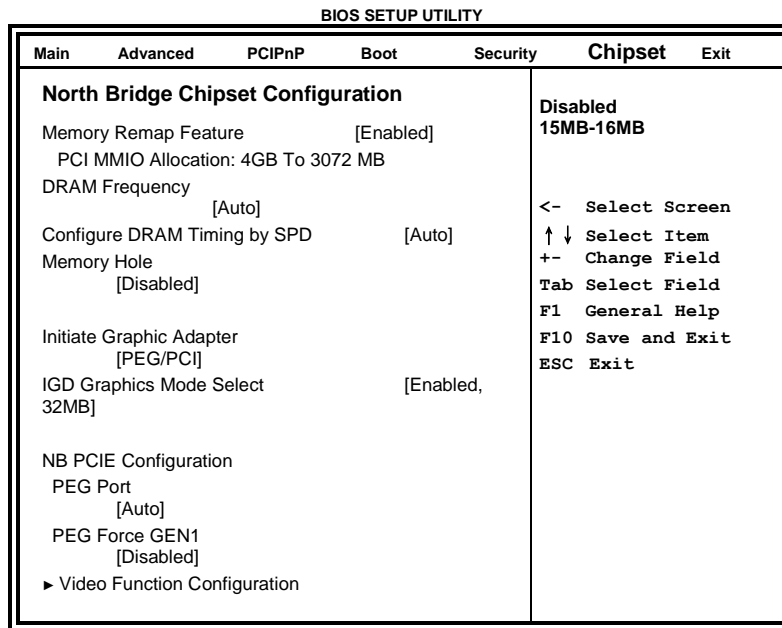
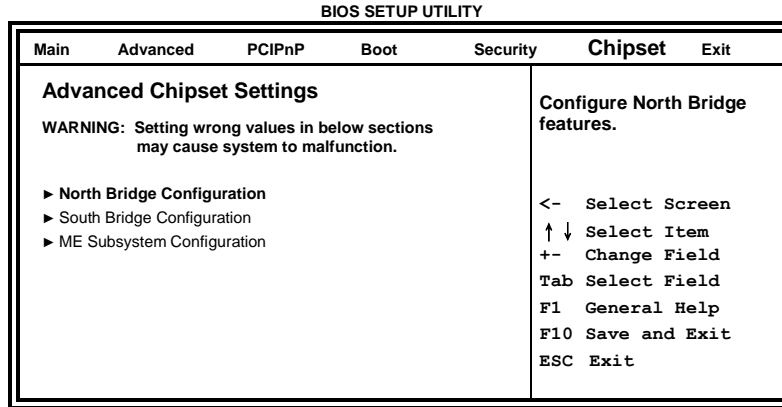
This setting comes with two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.



Advanced Chipset Settings

This setting configures the north bridge, south bridge and the ME subsystem. **WARNING!** Setting the wrong values may cause the system to malfunction. -



Memory Remap Feature

This allows remapping of overlapped PCI memory above the total physical memory.

DRAM Frequency

The options are **Auto**, **1067 MHz** and **1333 MHz**.

Configure DRAM Timing by SPD

The options are **Auto** and **Manual**.

Memory Hole

This option is used to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly.

Initiate Graphic Adapter

This option selects which graphics controller to use as the primary boot device.

IGD Graphics Mode Select

This option selects the amount of system memory used by the internal graphics device.

PEG Port

The options are **Auto** and **Disabled**.

PEG Force GEN1

Some non-graphics PCI-E devices may not follow PCI-E specifications and may incorrectly report their GEN capability or link width.

Video Function Configuration

The configuration allows setting to DVMT/FIXED memory.

Main	Advanced	PCI/PnP	Boot	Security	Chipset	Exit
Video Function Configuration					DVMT Mode	
DVMT Mode Select [DVMT Mode]						
DVMT/FIXED Memory [256MB]						
PAVP Mode [Lite]						
Boot Display Device [CRT]						
					<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

BIOS SETUP UTILITY

Main	Advanced	PCI/PnP	Boot	Security	Chipset	Exit
South Bridge Chipset Configuration					Enabled	
USB Function [Enabled]					Disabled	
EHCI Controller#1 [Enabled]						
EHCI Controller#2 [Enabled]						
GbE Controller [Enabled]						
Wake On PCIE LAN [Enabled]						
Wake On RTC Alarm [Disabled]						
SLP_S4# Min. Assertion Width [4 to 5 seconds]						
					<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

Exit Setup

The exit setup has the following settings that are:

BIOS SETUP UTILITY

Main	Advanced	PCI/PnP	Boot	Security	Chipset	Exit
Exit Options					Exit system setup	
Save Changes and Exit					after saving the	
Discard Changes and Exit					changes.	
Discard Changes						
Load Optimal Defaults						
Load Failsafe Defaults						
					<- Select Screen ↑ ↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

Save Changes and Exit

This option allows you to determine whether or not to accept the modifications and save all changes into the CMOS memory before exit.

Discard Changes and Exit

This option allows you to exit the Setup utility without saving the changes you have made in this session.

Discard Changes

This option allows you to discard all the changes that you have made in this session.

Load Optimal Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Load Failsafe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Chapter 14 Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

Filename : Main.cpp

```
//-----  
//  
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY  
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE  
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR  
// PURPOSE.  
//  
//-----  
#include <dos.h>  
#include <conio.h>  
#include <stdio.h>  
#include <stdlib.h>  
#include "W627DHG.H"  
//-----  
int main (void);  
  
void WDTInitial(void);  
void WDTEnable(unsigned char);  
void WDTDisable(void);  
  
//-----  
int main (void)  
{  
    char SIO;  
  
    SIO = Init_W627DHG();  
    if (SIO == 0)  
    {  
        printf("Can not detect Winbond 83627DHG, program abort.\n");  
        return(1);  
    }  
  
    WDTInitial();  
  
    WDTEnable(10);  
  
    WDTDisable();  
  
    return 0;  
}  
//-----  
void WDTInitial(void)  
{  
    unsigned char bBuf;  
  
    bBuf = Get_W627DHG_Reg(0x2D);  
    bBuf &= (~0x01);  
    Set_W627DHG_Reg(0x2D, bBuf);           //Enable WDTO  
}  
//-----  
void WDTEnable(unsigned char NewInterval)  
{  
    unsigned char bBuf;  
  
    Set_W627DHG_LD(0x08);                 //switch to logic device 8  
    Set_W627DHG_Reg(0x30, 0x01);         //enable timer  
  
    bBuf = Get_W627DHG_Reg(0xF5);  
    bBuf &= (~0x08);  
    Set_W627DHG_Reg(0xF5, bBuf);         //count mode is second  
  
    Set_W627DHG_Reg(0xF6, NewInterval);  //set timer  
}  
//-----  
void WDTDisable(void)  
{
```

```

Set_W627DHG_LD(0x08); //switch to logic device 8
Set_W627DHG_Reg(0xF6, 0x00); //clear watchdog timer
Set_W627DHG_Reg(0x30, 0x00); //watchdog disabled
}
//-----

```

Filename : W627DHG.cpp

```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include "W627DHG.H"
#include <dos.h>
//-----
unsigned int W627DHG_BASE;
void Unlock_W627DHG (void);
void Lock_W627DHG (void);
//-----
unsigned int Init_W627DHG(void)
{
    unsigned int result;
    unsigned char ucDid;

    W627DHG_BASE = 0x4E;
    result = W627DHG_BASE;

    ucDid = Get_W627DHG_Reg(0x20);
    if (ucDid == 0xA0) //W83627DHG
    {
        goto Init_Finish;
    }
    else if (ucDid == 0xB0) //W83627DHG-P
    {
        goto Init_Finish;
    }

    W627DHG_BASE = 0x2E;
    result = W627DHG_BASE;

    ucDid = Get_W627DHG_Reg(0x20);
    if (ucDid == 0xA0) //W83627DHG
    {
        goto Init_Finish;
    }
    else if (ucDid == 0xB0) //W83627DHG-P
    {
        goto Init_Finish;
    }

    W627DHG_BASE = 0x00;
    result = W627DHG_BASE;

Init_Finish:
    return (result);
}
//-----
void Unlock_W627DHG (void)
{
    outportb(W627DHG_INDEX_PORT, W627DHG_UNLOCK);
    outportb(W627DHG_INDEX_PORT, W627DHG_UNLOCK);
}
//-----
void Lock_W627DHG (void)
{
    outportb(W627DHG_INDEX_PORT, W627DHG_LOCK);
}
//-----
void Set_W627DHG_LD( unsigned char LD)
{
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, W627DHG_REG_LD);
    outportb(W627DHG_DATA_PORT, LD);
    Lock_W627DHG();
}
//-----
void Set_W627DHG_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, REG);
    outportb(W627DHG_DATA_PORT, DATA);
    Lock_W627DHG();
}
//-----
unsigned char Get_W627DHG_Reg(unsigned char REG)

```

```

{
    unsigned char Result;
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, REG);
    Result = inportb(W627DHG_DATA_PORT);
    Lock_W627DHG();
    return Result;
}
//-----

```

Filename : W627DHG.h

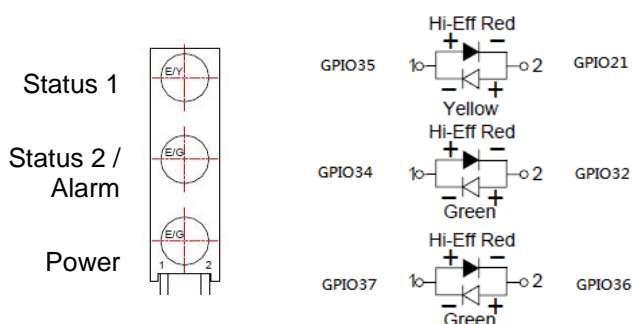
```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#ifndef __W627DHG_H
#define __W627DHG_H                1
//-----
#define W627DHG_INDEX_PORT        (W627DHG_BASE)
#define W627DHG_DATA_PORT         (W627DHG_BASE+1)
//-----
#define W627DHG_REG_LD             0x07
//-----
#define W627DHG_UNLOCK             0x87
#define W627DHG_LOCK               0xAA
//-----
unsigned int Init_W627DHG(void);
void Set_W627DHG_LD( unsigned char);
void Set_W627DHG_Reg( unsigned char, unsigned char);
unsigned char Get_W627DHG_Reg( unsigned char);
//-----
#endif  //__W627DHG_H

```

Chapter 15 LED GPIO Definition

This chapter describes GPIO definition of three LEDs on front panel.



Status1 LED	GPIO35	GPIO21
RED	H	L
YELLOW	L	H

Status2 / Alarm LED	GPIO34	GPIO32
RED	H	L
GREEN	L	H

Power LED	GPIO37	GPIO36
RED	H	L
GREEN	L	H

Digital I/O Sample Configuration

Filename : Main.cpp

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "W627DHG.H"
//-----
int main (void);

void Dio2Initial(void);
void Dio2SetOutput(unsigned char);
unsigned char Dio2GetInput(void);
void Dio2SetDirection(unsigned char);
unsigned char Dio2GetDirection(void);

void Dio3Initial(void);
void Dio3SetOutput(unsigned char);
unsigned char Dio3GetInput(void);
```

```

void Dio3SetDirection(unsigned char);
unsigned char Dio3GetDirection(void);
//-----
int main (void)
{
    char SIO;

    SIO = Init_W627DHG();
    if (SIO == 0)
    {
        printf("Can not detect Winbond 83627DHG, program abort.\n");
        return(1);
    }

    Dio2Initial();
    Dio3Initial();

    //for GPIO30..37
    Dio3SetDirection(0x0F);    //GP30..33 = input, GP34..37=output
    printf("Current DIO direction = 0x%X\n", Dio3GetDirection());

    printf("Current DIO status = 0x%X\n", Dio3GetInput());

    printf("Set DIO output to high\n");
    Dio3SetOutput(0x0F);

    printf("Set DIO output to low\n");
    Dio3SetOutput(0x00);

    return 0;
}
//-----
void Dio2Initial(void)
{
    unsigned char ucBuf;

    //switch GPIO multi-function pin
    ucBuf = Get_W627DHG_Reg(0x24);
    ucBuf &= 0xFE;
    Set_W627DHG_Reg(0x24, ucBuf);

    Set_W627DHG_LD(0x09);    //switch to logic device 9

    //enable the GP2 group
    ucBuf = Get_W627DHG_Reg(0x30);
    ucBuf |= 0x01;
    Set_W627DHG_Reg(0x30, ucBuf);
}
//-----
void Dio2SetOutput(unsigned char)
{
    Set_W627DHG_LD(0x09);    //switch to logic device 9
    Set_W627DHG_Reg(0xE4, NewData);
}
//-----
unsigned char Dio2GetInput(void)
{
    unsigned char result;

    Set_W627DHG_LD(0x09);    //switch to logic device 9
    result = Get_W627DHG_Reg(0xE4);
    return (result);
}
//-----
void Dio2SetDirection(unsigned char)
{
    //NewData : 1 for input, 0 for output
    Set_W627DHG_LD(0x09);    //switch to logic device 9
    Set_W627DHG_Reg(0xE3, NewData);
}
//-----
unsigned char Dio2GetDirection(void)
{
    unsigned char result;

    Set_W627DHG_LD(0x09);    //switch to logic device 9
    result = Get_W627DHG_Reg(0xE0);
    return (result);
}
//-----
void Dio3Initial(void)
{
    unsigned char ucBuf;

```

```

//switch GPIO multi-function pin
ucBuf = Get_W627DHG_Reg(0x2C);
ucBuf &= 0x1F;
Set_W627DHG_Reg(0x2C, ucBuf); //clear

Set_W627DHG_LD(0x09); //switch to logic device 9

//enable the GP3 group
ucBuf = Get_W627DHG_Reg(0x30);
ucBuf |= 0x02;
Set_W627DHG_Reg(0x30, ucBuf);

//input detect type
Set_W627DHG_Reg(0xFE, 0xFF);
}
//-----
void Dio3SetOutput(unsigned char NewData)
{
    Set_W627DHG_LD(0x09); //switch to logic device 9
    Set_W627DHG_Reg(0xF1, NewData);
}
//-----
unsigned char Dio3GetInput(void)
{
    unsigned char result;

    Set_W627DHG_LD(0x09); //switch to logic device 9
    result = Get_W627DHG_Reg(0xF1);
    return (result);
}
//-----
void Dio3SetDirection(unsigned char NewData)
{
    //NewData : 1 for input, 0 for output
    Set_W627DHG_LD(0x09); //switch to logic device 9
    Set_W627DHG_Reg(0xF0, NewData);
}
//-----
unsigned char Dio3GetDirection(void)
{
    unsigned char result;

    Set_W627DHG_LD(0x09); //switch to logic device 9
    result = Get_W627DHG_Reg(0xF0);
    return (result);
}
//-----

```

Filename : W627DHG.cpp

```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include "W627DHG.H"
#include <dos.h>
//-----
unsigned int W627DHG_BASE;
void Unlock_W627DHG (void);
void Lock_W627DHG (void);
//-----
unsigned int Init_W627DHG(void)
{
    unsigned int result;
    unsigned char ucDid;

    W627DHG_BASE = 0x4E;
    result = W627DHG_BASE;

    ucDid = Get_W627DHG_Reg(0x20);
    if (ucDid == 0xA0) //W83627DHG
    {
        goto Init_Finish; }
    else if (ucDid == 0xB0) //W83627DHG-P
    {
        goto Init_Finish; }

    W627DHG_BASE = 0x2E;
    result = W627DHG_BASE;
}

```

```

ucDid = Get_W627DHG_Reg(0x20);
if (ucDid == 0xA0) //W83627DHG
{
    goto Init_Finish; }
else if (ucDid == 0xB0) //W83627DHG-P
{
    goto Init_Finish; }

W627DHG_BASE = 0x00;
result = W627DHG_BASE;

Init_Finish:
    return (result);
}
//-----
void Unlock_W627DHG (void)
{
    outportb(W627DHG_INDEX_PORT, W627DHG_UNLOCK);
    outportb(W627DHG_INDEX_PORT, W627DHG_UNLOCK);
}
//-----
void Lock_W627DHG (void)
{
    outportb(W627DHG_INDEX_PORT, W627DHG_LOCK);
}
//-----
void Set_W627DHG_LD( unsigned char LD)
{
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, W627DHG_REG_LD);
    outportb(W627DHG_DATA_PORT, LD);
    Lock_W627DHG();
}
//-----
void Set_W627DHG_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, REG);
    outportb(W627DHG_DATA_PORT, DATA);
    Lock_W627DHG();
}
//-----
unsigned char Get_W627DHG_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_W627DHG();
    outportb(W627DHG_INDEX_PORT, REG);
    Result = inportb(W627DHG_DATA_PORT);
    Lock_W627DHG();
    return Result;
}
//-----

```

Filename : W627DHG.h

```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#ifndef __W627DHG_H
#define __W627DHG_H                1
//-----
#define W627DHG_INDEX_PORT        (W627DHG_BASE)
#define W627DHG_DATA_PORT        (W627DHG_BASE+1)
//-----
#define W627DHG_REG_LD            0x07
//-----
#define W627DHG_UNLOCK            0x87
#define W627DHG_LOCK              0xAA
//-----
unsigned int Init_W627DHG(void);
void Set_W627DHG_LD( unsigned char);
void Set_W627DHG_Reg( unsigned char, unsigned char);
unsigned char Get_W627DHG_Reg( unsigned char);
//-----
#endif //__W627DHG_H

```


This section describes the installation procedures for software and drivers under the Windows. The software and drivers are included with the board. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

Intel® Chipset Software Installation Utility
Intel® Graphics Driver Installation
LAN Drivers Installation
Intel® Management Engine Interface

IMPORTANT NOTE:

After installing your Windows operating system, you must install first the Intel® Chipset Software Installation Utility before proceeding with the drivers installation.

Intel® Chipset Software Installation Utility

The Intel® Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel® chipset components. Follow the instructions below to complete the. (Before installed Intel® Chipset Software Installation Utility.

1. Insert the DVD that comes with the board. Click **Intel** and then **Intel(R) Chipset Software Installation Utility**.



3. When the Welcome screen appears, click **Next** to continue.
4. Click **Yes** to accept the software license agreement and proceed with the installation process.
5. On the Readme Information screen, click **Next** to continue the installation.
6. When the Setup Progress screen appears, click **Next** to continue.

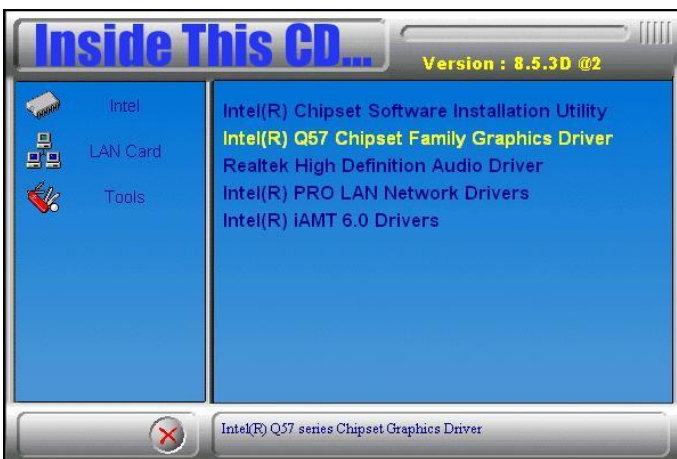


7. The Setup process is now complete. Click **Finish** then restart the computer and for changes to take effect.



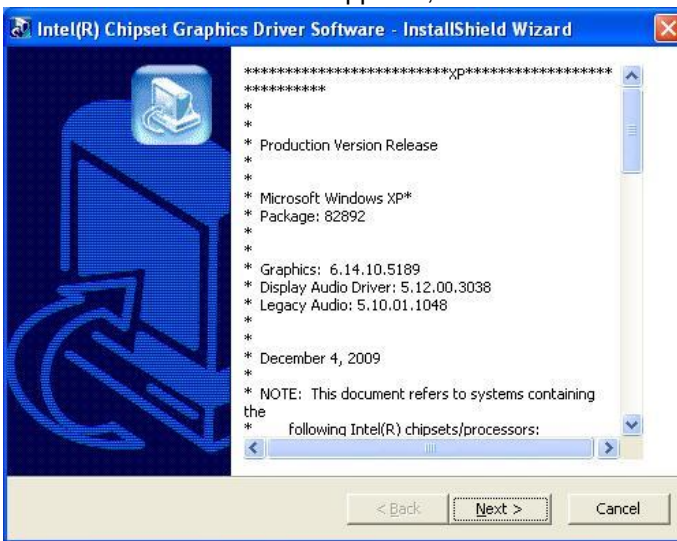
Intel® Graphics Driver Installation

1. Insert the DVD that comes with the board. Click **Intel** -> **Intel® Q57 Chipset Family Graphics Driver**.



2. When the InstallShield Wizard screen appears, click **Next**.

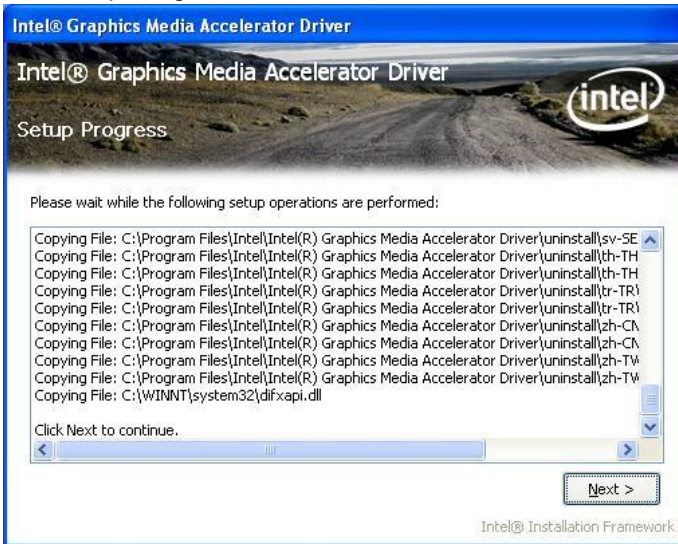
3. When the Welcome screen appears, click **Next** to continue.



4. Click **Yes** to accept the software license agreement and proceed with the installation process.

5. On Readme File Information screen, click **Next** to continue.

6. On Setup Progress screen, click **Next** to continue the installation.



7. The Setup process is now complete. Click **Finish** to restart the computer and for changes to take effect.

LAN Drivers Installation

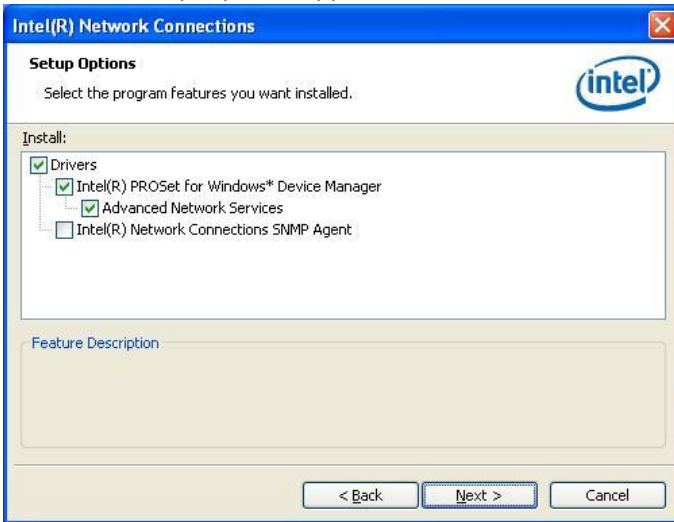
Follow the steps below to start installing the Intel® LAN drivers.

1. Insert the DVD that comes with the board. Click **Intel** and then **Intel(R) PRO LAN Network Drivers**.
2. Click **Intel(R) PRO LAN Network Drivers**.

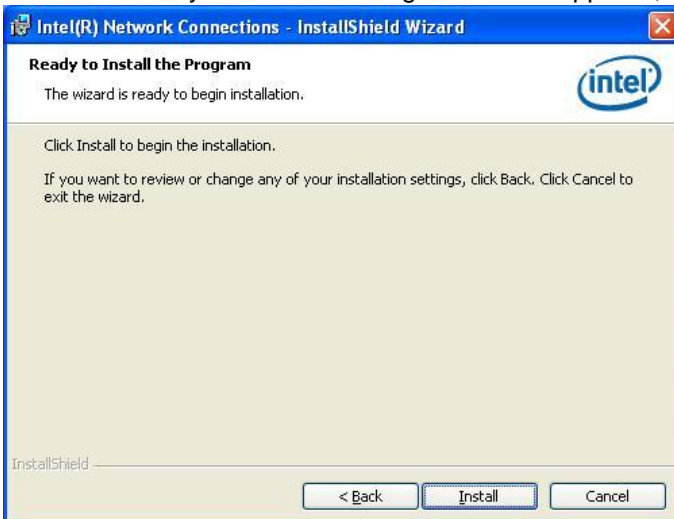


3. On the next screen, click **Install Drivers** to start the drivers installation.
4. When the Welcome screen appears, click **Next** to continue.
5. In the License Agreement screen, click **I accept the terms in license agreement** and **Next** to accept the software license agreement and proceed with the installation process.

6. When the Setup Options appears, click **Drivers** as shown below and **Next** to continue.



7. When the Ready to Install the Program screen appears, click **Install** to continue.



8. The Setup process is now complete (InstallShield Wizard Completed). Click **Finish** to restart the computer and for changes to take effect.

Intel® Management Engine Interface

1. Insert the drivers disc that comes with the motherboard. Click **Intel** and then **Intel(R) AMT 6.0 Drivers**. When the welcome screen of the Intel® Management Engine Components appears, click **Next** to continue. On the next screen, click **Next** to agree to the license agreement.



2. On the next screen, the Readme File Information shows the system requirements and installation information, click **Next**.



3. When the Setup Progress screen appears, click **Next** to continue. Then, click **Finish** when the setup progress has been successfully installed to restart the computer.



Appendix-A FWA8207 Series Configurations

The following lists the available SKUs of FWA8207 for different system requirement.

FWA8207 2.5" HDD x1, PCI-e add-on card rear expansion x1, front panel expansion card x1, 300W PSU

- MB966 x1
- IP327 x1: 1-to-1 Riser Card
- IP328 x1: PCI-e Adapter
- Single 2.5" HDD Bracket x1
- 4-pin Smart Fan x3
- 300W Single PSU

FWA8207 Optional Items

- IBP161: 4-port GLAN Card
- PS2G PS/2 Keyboard /Mouse Cable
- Dual 2.5" HDD Kit



FWA8207-2SLOT 3.5" HDD x1, PCI-e add-on card rear expansion x2, 300W PSU

- MB966 x1
- IP329 x1: 2-to-2 Riser Card
- Single 3.5" HDD Bracket x1
- SATA Cable x1
- 4-pin Smart Fan x3
- 300W Single PSU

FWA8207-2SLOT Optional Items

- PS2G PS/2 Keyboard /Mouse Cable
- Dual 2.5" HDD Kit



FWA8207-G Supports Integrated Graphics CPUs, 3.5" HDD x1, PCI-e add-on card rear expansion x1, 300W PSU

- MB966 x1
- IP327 x1: 1-to-1 Riser Card
- Single 3.5" HDD Bracket x1
- SATA Cable x1
- 4-pin Smart Fan x3
- 300W Single PSU

FWA8207-G Optional Items

- PS2G PS/2 Keyboard /Mouse Cable
- VGA4 Cable
- Dual 2.5" HDD Kit



FWA8207-G-NB

No Bypass function MB966, Supports Integrated Graphics CPUs,
3.5" HDD x1, PCI-e add-on card rear expansion x1, 300W PSU

- MB966-NB x1
- IP327 x1: 1-to-1 Riser Card
- Single 3.5" HDD Bracket x1
- SATA Cable x1
- 4-pin Smart Fan x3
- 300W Single PSU

FWA8207-G-NB Optional Items

- PS2G PS/2 Keyboard /Mouse Cable
- VGA4 Cable
- Dual 2.5" HDD Kit

