

Network Application Platforms

Hardware platforms for next generation networking infrastructure



FW-7585
V1.0



User's Manual
Date (Y/M/D): 2015/08/14

Overview

Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:



NOTE: This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



WARNING: This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

The listed websites are links to the on-line product information and technical support.

Resource	Website
Lanner	http://www.lannerinc.com
Product Resources	http://www.lannerinc.com/support/download-center

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Compliances

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated 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 is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated 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 is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

LITHIUM BATTERY CAUTION:

Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

- Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.
- Do not carry the handle of power supplies when moving to other place.
- The machine can only be used in a fixed location such as labs or computer facilities.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate

circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.

- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.

- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Rack Mounting Installation Environment Precaution

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."



Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- Portez des lunettes de sécurité pour protéger vos yeux.
- N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
-
- Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont présentes.
- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

Sécurité de fonctionnement

- L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de

fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.

- Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
 - Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.

Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Consignes de sécurité électrique

- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm² ou 10 AWG.

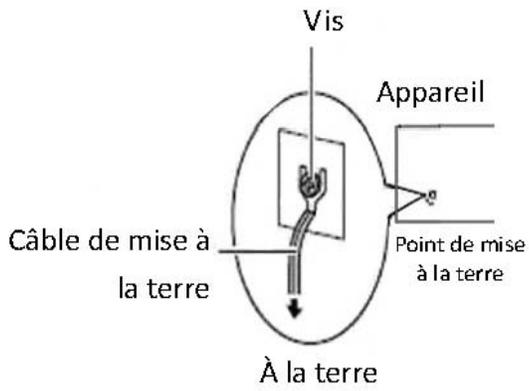
Procédure de mise à la terre pour source d'alimentation CC

Procédure de mise à la terre pour source d'alimentation CC

- Desserrez la vis du terminal de mise à la terre.
- Branchez le câble de mise à la terre à la terre.
- L'appareil de protection pour la source d'alimentation CC doit fournir 30 A de courant.

Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation CC.





Version	Descriptions
0.3	-PCIe golden finger spec changes to PCIe generation 3 instead of 2. -Add optional 3.5" HDD installation
1.0	Official release

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Chapter 1: Introduction

Thank you for choosing the FW-7585. The new system is powered by the newest Intel Core Processors, codenamed Shark Bay, with the Intel C226 Series chipset. It supports up to 8GB of DDR3 system memory at 1600MHz on dual-channel DIMM banks.

The FW-7585 is equipped with advanced I/O capacity which includes an RJ-45 console port, one PCIe8 (PCIe Generation 3.0) golden finger connected directly to the CPU for rear expansion, 3 Serial-ATA ports (comply with SATA Standard 3.0 or 2.0), a CompactFlash slot, and an OPMA slot, etc.

The system also leverages Intel Active Management Technology (Intel AMT), a hardware-based manageability solution that offers the following management benefits:

- Out of Band (OOB) access through the iAMT port (LAN8) allows remote management of PCs regardless of system power or OS state
- Remote troubleshooting and recovery significantly reduces desk-side visits and increases IT efficiency
- Proactive alerting and event logging decreases downtime and minimizes time to repair
- Remote HW and SW asset tracking eliminates time-consuming manual inventory tracking and reduces asset accounting costs

The onboard Ethernet ports be configured with Lanner Generation 3 bypass, which is a proprietary bypass technology designed by Lanner to support uninterrupted network connection even when a system is turned off or operating system is not functioning.

Please refer to the chart below for a summary of the system's specifications.

System Specifications

Form Factor		Rackmount
Platform	Processor Options	4th Generation Intel® Core™ processor i7/i5/i3 series with C226
	Chipset	C226
OS Support		Windows 7,8,2000, XP, Vista, Server 2008, 2012, Linux Kernel 2.6 or above
BIOS		AMI BIOS 64Mb
System Memory	Technology	Dual-channel DDR3/DDR3L 1066/1333/1600 MHz, un-buffered, non-ECC or ECC
	Max. Capacity	8 GB
	Socket	2 x 240-pin DIMM
Storage	HDD Bays	2 x 2.5 HDD/SDD kit
	CF/SD	1 x CF card Type II
Networking	Ethernet Ports	8 x GbE RJ-45 onboard
	Bypass	3 pair G3 LAN Bypass (optional)
	Controllers	1x Intel i217, 7 x Intel i210
	Ethernet Modules	N/A
	Management Port	1x GbE RJ45
I/O Interface	Reset Button	Yes
	Console	1 x RJ45
	USB	2 x USB 2.0
	IPMI via OPMA slot	By project
	Display	N/A
Expansion	PCIe	1 x PCIe x8 full height, half length
	PCI	N/A
Cooling	Processor	CPU heatsink
	System	2x cooling Fan with smart fan control
Environmental Parameters	Operating / Non-operating Temperature	0 ~ 40° C / -20~70° C
	Operating / non-operating Humidity	5~90%, non-condensing / 5~95%, non-condensing
Miscellaneous	LCD Module	2 x 20 LCM with keypad
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	431 x 44 x 305 mm
	Weight	7 Kg
Power	Type / Watts	220W ATX power supply
	Input	AC 100-240V 50-60Hz
Approvals and Compliance		CE Class A, FCC Class A, RoHS



Ordering Information

FW-7585A

4th Generation Intel® Core™ processor i7/i5/i3 series with C226 chipset, 6 Intel GbE LAN ports with Gen.3 Bypass, 220 W ATX PSU

Package Contents

Your package contains the following items:

- FW-7585 Network Security Platform
- Power cable
- 1 RJ-45 to DB-9 (female) console cable
- Serial-ATA hard drive cable
- 1 threaded screw set
- 1 ear bracket set
- Drivers and user's manual CD.

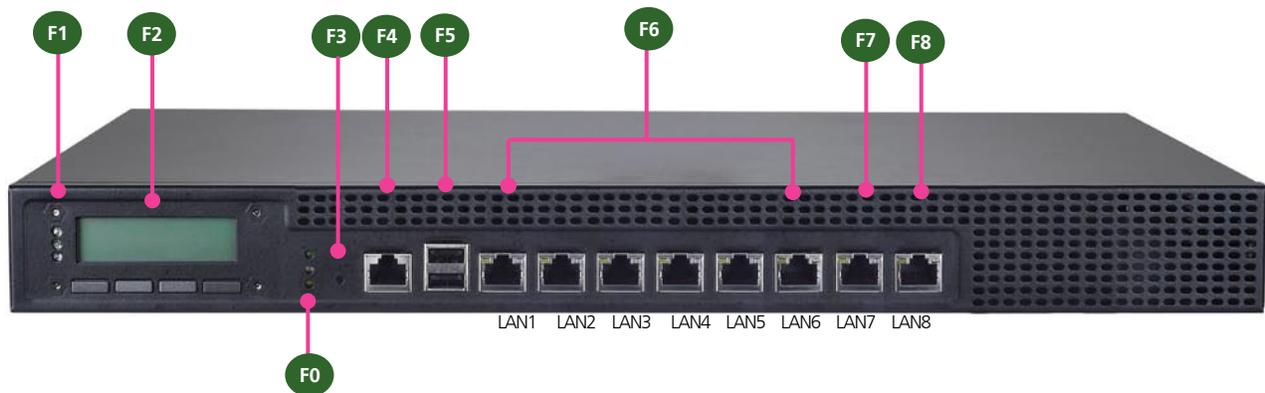
Optional Accessories

The system has a variety of optional accessories, visit the following website for more information.

<http://www.lannerinc.com/products/x86-network-appliances/rackmount/FW-7585>



Front Panel Features



F1, F9 Power/Status/HDD LED

Power: If the LED is on it indicates that the system is powered on. If it is off, it indicates that the system is powered off.

Status: This LED is programmable. You could program it to display the operating status with the following behavior:

If the LED is green, it indicates that the system's operational state is normal. If it is red, it indicates that the system is malfunctioning.

HDD: If the LED blinks, it indicates data access activities; otherwise, it remains off.

F2 LCD System Panel with keypad

The LCD System Panel can be programmed to display operating status and configuration information. For more details or sample programming code, please refer to the Drivers and user's manual CD.

F3 Reset Switch

The reset switch can be used to reboot the system without turning off the power.

F4 Console Port

By using suitable rollover cable or RJ-45 to DB-9 console cable, you can connect to a computer terminal for diagnostic or configuration purpose. Terminal Configuration Parameters: 115200 baud, 8 data bits, no parity, 1 stop bit, no flow control. The terminal parameters can be altered in the BIOS menu, go to BIOS -> Advanced -> Serial Port Console Redirection -> COM0->select *enabled* first and then go to ->Console Redirection Settings > [115200, 8, n, 1]

F5 Two USB 2.0 Ports

F6 Ethernet Ports (LAN1-LAN2: bypass pair, LAN3-LAN4: bypass pair; LAN5-LAN6: bypass pair)

LINK/ACT (Yellow)

- On/Flashing: The port is linking and active in data transmission.
- Off: The port is not linking.

SPEED (Green/Amber)

- Amber: The connection speed is 1000Mbps.
- Green: The connection speed is 100Mbps
- Off: The connection speed is 10Mbps.

They are provided by Intel i210. Moreover, 3pairs (LAN1-LAN2, LAN3-LAN4, LAN5-LAN6) can be configured as LAN bypass (Lanner Generation 3) when failure events occur. This feature can be enabled dynamically with a watch dog timer. Refer to your User's Manual CD for a sample implementation of this feature.



F7 LAN7 IPMI Port (provided by Intel i210)*

This FastEthernet port can be connected for configuration or troubleshooting purpose. Conformity with IPMI (Intelligent Platform Management Interface) can be implemented through OPMA on this interface. It also supports Preboot eXecution Environment (PXE) (This feature can be enabled or disabled in the BIOS; the default is disabled).

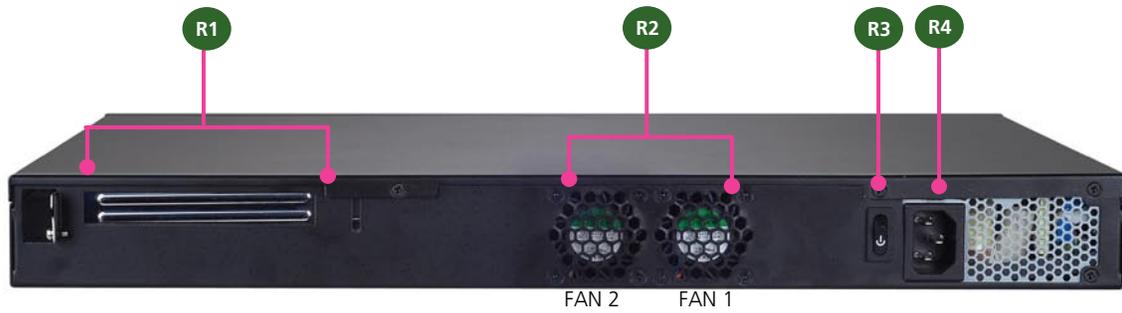
F8 Intel iAMT Management Port (provided by Intel i217)

This port equips with Intel iAMT, which allows IT to better discover, heal, and protect their network computing assets. To enter the Intel AMT setup menu, press *CTRL-P* when prompted during system boot process. It is also a serial over LAN (SOL) port whose console redirection parameters can be configured in the BIOS menu. (You don't need to enable the iAMT in the BIOS; however, you will need to download the Intel AMT driver in order to emulate serial communication over a network connection. The terminal parameters can be altered in the BIOS menu; go to BIOS -> Advanced -> Serial Port Console Redirection -> COM1->select enabled first and then select ->Console Redirection Settings > [115200, 8, n, 1]) This port also supports Preboot eXecution Environment (PXE) (This feature can be enabled or disabled in the BIOS; the default is disabled)



Note: The IPMI port is optional.

Rear Panel Features



R1 PCIe Expansion Slot (full-height, half-length PCIe expansion card)

R2 FAN1~FAN2

These fans have smart fan feature which can be turned on automatically when the temperature exceeds the set threshold.

R3 Power-on Switch

It is a switch to turn on or off the power.

R4 AC Power Socket

Chapter 2: Hardware Setup

Preparing the Hardware Installation

To access some components and perform certain service procedures, you must perform the following procedures first.



WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

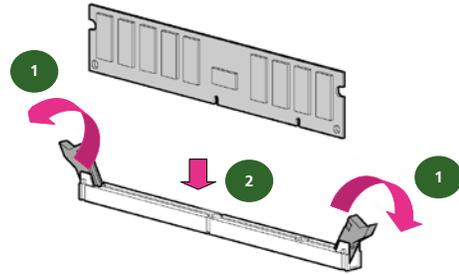
1. Unpower the FW-7585 and remove the power cord.
2. Unscrew the screws (one on each side and one on the rear) from the top cover of the FW-7585 System.
3. Slide the cover backwards and open the cover upwards.



System Memory Installation

The motherboard supports DDR3 memory that features data transfer rates of 1600 MHz (with ECC support) to meet the higher bandwidth requirements of the latest operating system and Internet applications. To install the memory:

1. Open the DIMM slot latches.
2. Install the DIMM.



Note:

1. All DIMMs installed must be the same speed (DDR3/DDR3L 1066/1333/1600MHz, unbuffered **non-ECC** or **ECC**). Do not install DIMMs supporting different speeds.
2. The system can support up to 8 GB in maximum.
3. Since the system is capable of dual channel architecture, insert DIMMS on both DIMM1 and DIMM2 slots to enable dual channel configuration.

Hard Disk Installation

The system can accommodate two 2.5" Serial-ATA disks. Follow these steps to install hard disks into the FW-7585:

1. Unscrew the 4 screws on the hard disk tray to take out the hard disk tray from the system.
2. Place hard disk on the hard disk tray and align the holes of the hard disk with the mounting holes on the tray.
3. Secure the hard disk with 4 mounting screws on the hard disk tray.
4. Connect the Serial-ATA power and data cables to the hard disk's power and data connectors respectively.
5. Plug the Serial-ATA cable to the Serial-ATA Connector on the main board.
6. Put the hard disk tray with the installed hard disk back to the system and install it with the mounting screws.

2.5" HDD installation

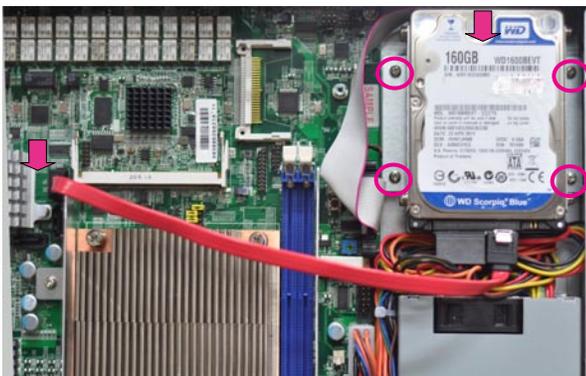


SATA power connector

SATA data connector



Note: Please note the orientation of the HDD tray placement when you take out the tray. It is recommended that the HDD is installed in this orientation on the system.

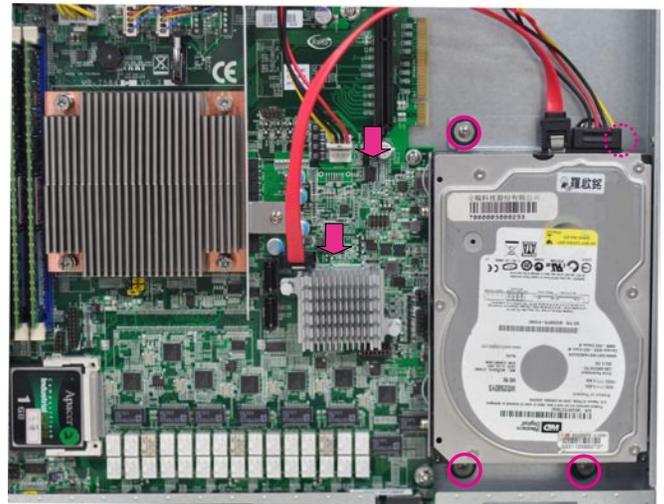


Note: Please note the original package only includes one SATA cable (data), You need to order another cable (SATA data cable or data+power cable) for additional SATA HDD installation.

3.5" HDD installation (optional)

The system can accommodate one 3.5" Serial-ATA disk. Follow these steps to install a hard disk into the FW-7585:

1. Place hard disk on the hard disk tray and align the holes of the hard disk with the mounting holes on the tray.
2. Secure the hard disk with 6 mounting screws on the hard disk tray.
3. Connect the Serial-ATA power and data cables to the hard disk's power and data connectors respectively.
4. Plug the Serial-ATA cable to the Serial-ATA Connector on the main board.
5. Put the hard disk tray with the installed hard disk back to the system and install it with the mounting screws.

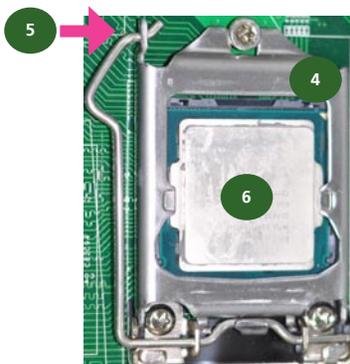
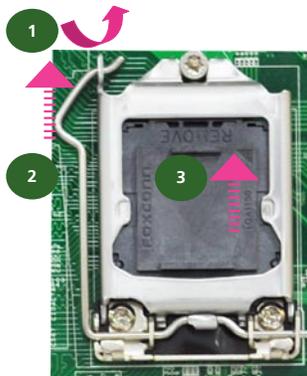


CPU and the Heat Sink Installation

The FW-7585 sever system is powered by the MB-7585 sever board, which comes with one ZIF type LGA1150 CPU socket.

Follow the procedures bellow for installing a CPU

1. Press the socket lever and release it from the retention tab.
2. Lift the socket lever and then the plate.
3. Remove the CPU socket cap.
4. Align the notches in the CPU base and the tabs on the socket. The CPU should fit perfectly into the socket. Note that the CPU fits in the socket in only one direction.
5. Close the CPU cover plate by lightly pressing down on the CPU cover plate while closing the socket lever.
6. Peel off the sticker on the CPU to expose the thermal compound.
7. Align the heatsink's four mounting screws with the mounting holes in the chassis. Carefully place the heatsink on the CPU. Tighten each heatsink screw a little at a time to ensure that the CPU stays level. Tighten each set of diagonally opposed screws at a time.
8. Place the airflow guide.



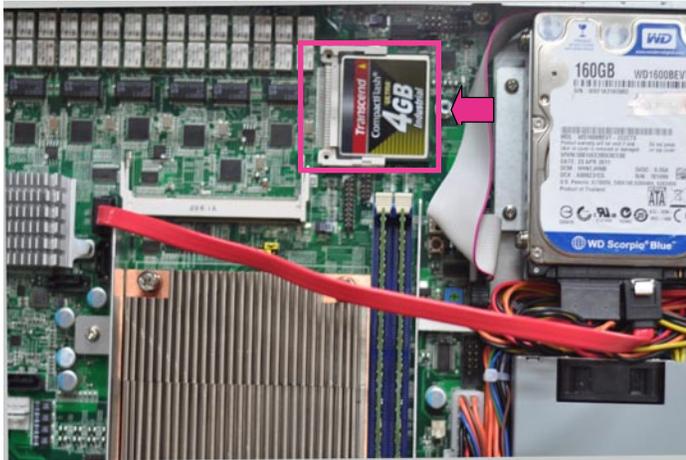
Note:

1. The CPU heat sink can only be installed in only one orientation as shown in the picture.
2. To protect the CPU socket pins, retain the CPU cap when the CPU is not installed.

CompactFlash Card Installation

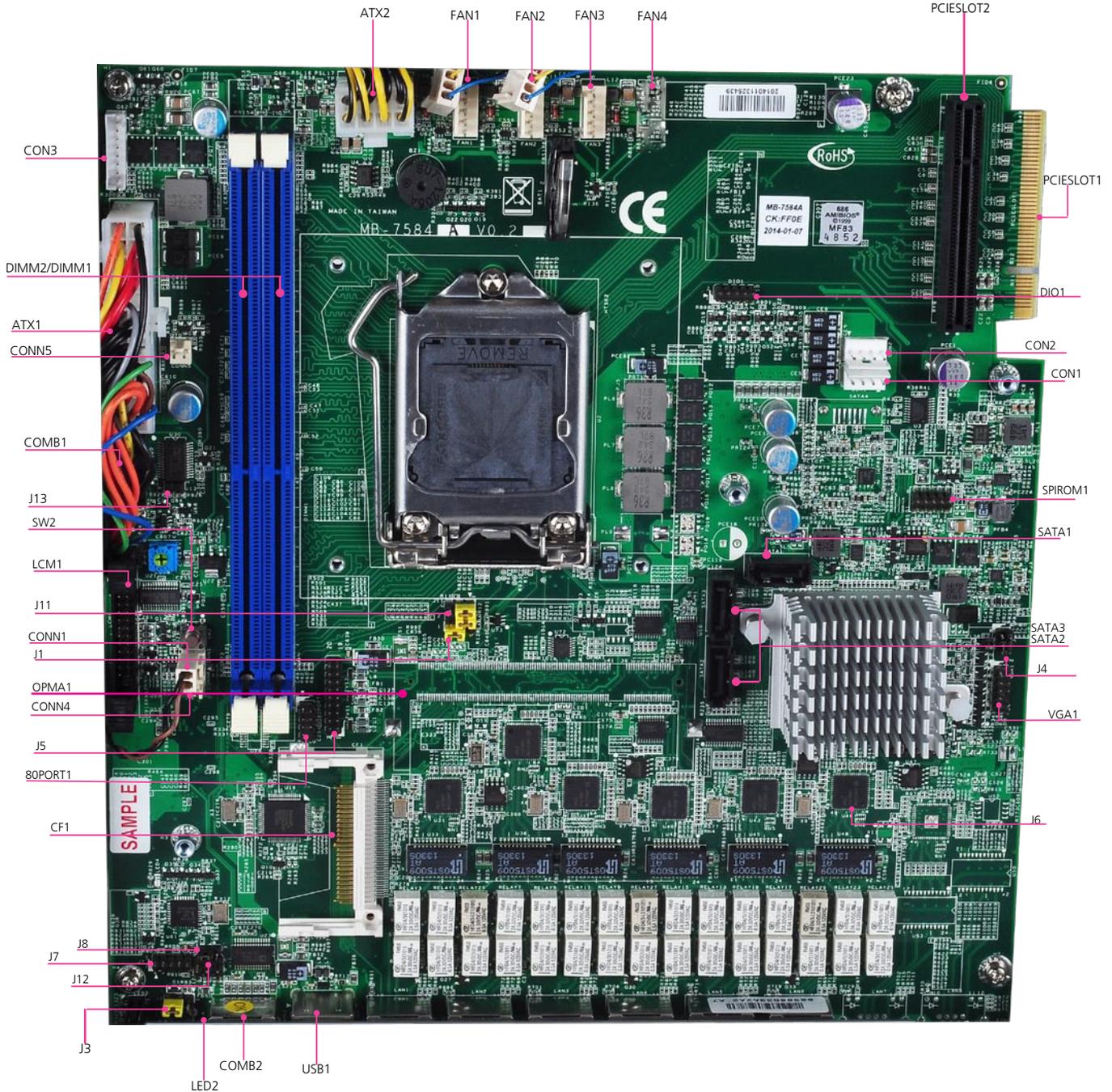
FW-7585 provides one CompactFlash slot. Follow the procedures below for installing a CompactFlash card.

1. Align CompactFlash card and the card slot with the arrow pointing toward the connector.
2. Push the card to insert into the connector.



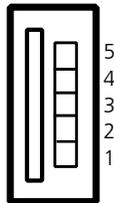
Motherboard Layout

The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



Jumper Settings

Fan Connectors(FAN1/FAN2/FAN3/FAN4): The 5-pin connector is for connecting the CPU and system fans. It comes with the smart fan feature by which the fans could be monitored and turned on when the temperature exceed the set threshold.



Pin No.	1	2	3	4	5
Function	CPUFANOUTPWM_1	NC	CPUFANIN	P12V	GND

DIMM Socket (DIMM1/DIMM2): The 240-pin DDR3 DIMM is for connecting the DDR3/DDR3L 1600 MHz. The system can support up to 16 GB in maximum. A DDR3 module has the same physical dimensions as a DDR2 DIMM but the notch on the pins is positioned differently.



Note: Since the system is capable of dual channel architecture, both DIMMs have to be populated to enable dual channel mode.

SATA 1, 2 and 3 Connectors (SATA1/SATA2/SATA3):

It is for connecting a SATA harddisk to be served as your system's storage. The system can accommodate 2 disks (2.5") in maximum. **SATA 1** complies fully with **SATA Revision 3.0** standard with data transfer rates of up to 6.0 Gb/s; **SATA 2, 3** comply with **SATA Revision 2.0** standard. The controller contains two modes of operation—a legacy mode using I/O space, and an AHCI mode using memory space. Software that uses legacy mode will not have AHCI capabilities.

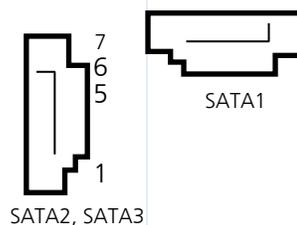
You will need to configure your disk to one of the 3 modes of SATA configuration, i.e., IDE, RAID, and AHCI in the BIOS.



Note:

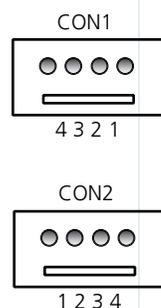
- To configure your Hard disk using the integrated RAID feature, the Intel®Rapid Storage Technology Utility has to be installed on your Operating System.
- You will need to select the RAID mode in the BIOS for your SATA drives first. There is also a Intel® RSTe OpROM utility for creating RAID volume; to enter the RSTe OpROM, press Ctrl-I during POST.
- For operating systems other than Microsoft® Windows Vista and Windows® 7, it is required to pre-install the Intel Rapid Storage Technology driver during the F6 installation of Windows setup ("press F6 if you need to install a third party SCSI or RAID driver..."). Visit the Intel support page at http://www.intel.com/p/en_US/support/highlights/chpsts/imsm for more information and download links.
- The Intel controller hubs are also supported by Linux. Beginning with Linux kernel version 2.6.27, the *mdadm* utility 3.0 supports RAID 0, RAID 1, RAID 5, and RAID 10. To use the RAID features in dmraid and mdadm, you will need to set up the RAID volume using the Intel® Matrix Storage Manager option ROM (click CTRL + I when prompted during boot to enter the option ROM user interface).

SATA1/SATA2/SATA3: supports SATA 3.0/SATA 2.0/SATA2.0 connection respectively



6Pin No.	Function
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA HDD Power Connector (CON1/CON2):



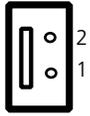
6Pin No.	Function
1	+12V
2	GND
3	GND
4	+5V



Chapter 3

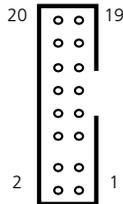
Motherboard Information

CONN1: Power-switch Connector



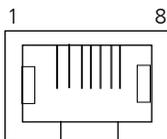
Pin No.	Signals
1	PWR_BTIN_N
2	GND

USB Connector USB2&USB3 (J5): It is for connecting the USB module cable. It complies with USB3.0 .



Pin No.	Function	Pin No.	Function
1	NC	2	USB+5
3	USB+4	4	USB-5
5	USB-4	6	GND
7	GND	8	USB3T+2
9	USB3T+1	10	USB3T-2
11	USB3T-1	12	GND
13	GND	14	USB3R+2
15	USB3R+1	16	USB3R-2
17	USB3R-1	18	V5USB2
19	V5USB2	20	NC

RJ45 Console Connector (COMB2): It is for serial communication.

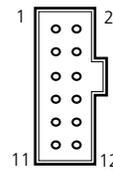


Pin No.	Signal	Pin NO.	Signal
1	LNRTSB#	2	LNDRB#
3	LNSOUTB#	4	GND
5	GND	6	LNSINB
7	LNDSRB#	8	LNCTSB#

Serial Interface Connectors (COMB1): It is for connecting the RS-232 serial port interface cable. This serial port setting can be altered in the BIOS menu: go to BIOS->Advanced->Super IO Configuration->Serial Port 0 Configuration

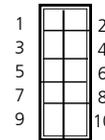


Note: In the Super IO Configuration of the BIOS menu, *Serial Port 0* refers to the console port on the front panel whereas *Serial Port 1* refers to the COMB1 here.



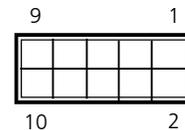
Pin No.	Function	Pin NO.	Function
1	Data Carrier Detect (DCDA#)	2	Data Set Ready (DSRA#)
3	Receive Data (RXDA)	4	Request To Send (RTSA#)
5	Transmit Data (TXDA)	6	Clear To Send (CTSA#)
7	Data Terminal Ready (DTRA #)	8	Ring Indicator (RIA#)
9	Ground (GND)	10	Key

Port 80h POST Debug (80Port1): It is a proprietary connector for connecting a checkpoint device to generate diagnostic progress codes (POST codes) to I/O port 80h throughput booting and Power-On Self Test (POST) to indicate the task the system is currently executing.



Pin No.	Function	Pin No.	Function
1	CLK	2	LAD1
3	RST-	4	LAD0
5	LFRAME-	6	P3V3
7	LAD3	8	KEY
9	LAD2	10	GND

SPI-ROM Update Connector (SPIROM1): Using the appropriate cable to connect this 10-pin ISP-in header connector, the user can update the SPI Flash soldered on board.



Pin No.	Function	Pin NO.	Function
1	NC	2	NC
	SPI_CS0-	4	P3V3ME
	SPI_MISO	6	HPLD-
	NC	8	SPI_CLK
	GND	10	SPI_MOSI

PSU PM.BUS and TTL Function Connectors (CON3):



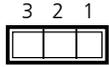
Pin No.	Signal
1	PSU_TTL1
2	PSU_TTL2
3	NC
4	GND
5	NC
6	PMBUS_CLK
7	PMBUS_DAT
8	GND



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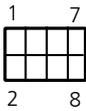
Motherboard Information

Hardware or Software Reset Jumper(J3):The jumper can be adjusted to be in either hardware or software reset mode when the reset switch is pressed. The hardware reset will reboot the system without turning off the power. The software reset can be programmed to reset a software to its default setting.

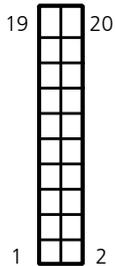


Pin No.	Function
1-2	HW Reset
2-3	Software Reset

ATX Power Connector(ATX1, ATX2): Find the proper orientation when inserting the plugs, for the supply plugs are designed to fit these connectors in only one orientation.



Pin No.	Signal	Pin No.	Signal
1	GND	2	+12V
3	GND	4	+12V
5	GND	6	+12V
7	GND	8	+12V



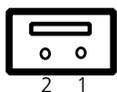
Pin No.	Signal	Pin No.	Signal
1	+3.3V	2	+3.3V
3	+3.3V	4	-12V
5	GND	6	GND
7	+5V	8	PSON
9	GND	10	GND
11	+5V	12	GND
13	GND	14	GND
15	PROK	16	-5V
17	5VSB	18	+5V
19	+12V	20	+5V

ATX Mode Selection Header (J13)



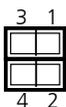
Pin No.	Signal
1	P3V3
2	MR#

AT Mode Power Connector (CONN5)



Pin No.	Signal
1	GND
2	PSON-

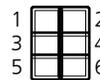
Onboard Power-on Tact Switch(SW2)



Pin No.	Signal
1	GND
2	GND
3	PWR_BTIN_N
4	PWR_BTIN_N

Clear CMOS and Disable ME Jumper Setting (J4): It is for clearing the CMOS memory and system setup parameters by erasing the data stored in the CMOS RAM such as the system passwords. The ME_disable setting allows updating the Intel Management Engine firmware through software without an electronic programmer. The Intel ME's leverage of non-volatile storage prevents users from removing critical inventory, remote control, or virus protection agents.

To clear CMOS, disconnect AC power supply. Set the jumper to 4-6 and wait a minute to be sure the CMOS has been cleared. Then return the CMOS jumper to its original position. Restore power to the system.



Pin No.	Function
1-3	ME_DISABLE
3-5	NORMAL
2-4	NORMAL
4-6	CLEAR CMOS

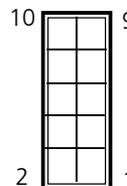
Pin No.	Signal	Pin No.	Signal
1	P3V3SB	2	NC
3	ME_DISABLE	4	RTCST#
5	NC	6	GND

Bypass LED Function (J12)



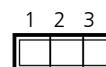
Pin No.	Signal	Pin No.	Signal
1	CPLD_LED1_L	2	CPLD_LED1
2	CPLD_LED2_L	4	CPLD_LED2
3	CPLD_LED3_L	6	CPLD_LED3

Generation 3 Bypass Firmware Download Connector (J7)



Pin No.	Function	Pin No.	Function
1	NC	2	NC
3	NXP_RXD	4	NXP_RTS_N
5	NXP_TXD	6	NXP_CTS_N
7	NC	8	NC
9	GND	10	P3V3SB

Generation 3 Bypass Program Selection Header (J8)



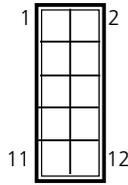
Pin No.	Function
1	P3V3SB
2	CPLD_LED3
3	GND



Chapter 3

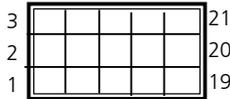
Motherboard Information

VGA Interface (VGA1): It is for connecting the VGA interface cable (2X6 pin to female DB15 connector)



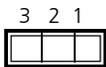
Pin No.	Function	PIN NO.	Function
1	CRT-R	2	GND
3	CRT-G	4	GND
5	CRT-B	6	GND
7	AHSYNC	8	NC
9	AVSYNC	10	GND
11	DDC_DATA	12	DDC_CLK

Onboard or IPMI VGA Signal Selection (J6): A jumper to select VGA output between the onboard VGA connector and the VGA connector on the IPMI card.



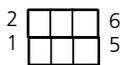
Pin No.	Function
1-2	Onboard
2-3	IPMI

PCIe Interface Signal Reversal Header (J11)



Pin No.	Function
1	NC
2	CFG2
3	GND

PCIe Bandwidth Selection between x8 or x4 (J1): It is for selecting PCIESLOT1 PCIe bandwidth.



Pin No.	Function
1	NC
2	NC
3	CFG6
4	CFG5
5	GND
6	GND

Pin No.	Function
1-3	Select two x8 signals
3-5	Select one x8, two x4 signals
4-6	Select low default

PCIe Connector (PCIESLOT1): It is a reserved PCIe golden finger for connecting a riser card.

Pin No.	Signal	Pin No.	Signal
B1	P12V	A1	
B2	P12V	A2	P12V
B3	P12V	A3	P12V
B4	GND	A4	GND
B5	SLOT2SMBCLK	A5	
B6	SLOT2SMBDAT	A6	
B7	GND	A7	
B8	P3V3	A8	PCIE1_IO_GP
B9		A9	P3V3
B10	P3V3SB	A10	P3V3
B11	PCIWAKE-	A11	PCIESLOT2REST-
B12		A12	GND
B13	GND	A13	PCIESLOT2CLK+
B14	PEG_TX+8	A14	PCIESLOT2CLK-
B15	PEG_TX-8	A15	GND
B16	GND	A16	PEG_RX+8
B17		A17	PEG_RX-8
B18	GND	A18	GND
B19	PEG_TX+9	A19	
B20	PEG_TX-9	A20	GND
B21	GND	A21	PEG_RX+9
B22	GND	A22	PEG_RX-9
B23	PEG_TX+10	A23	GND
B24	PEG_TX-10	A24	GND
B25	GND	A25	PEG_RX+10
B26	GND	A26	PEG_RX-10
B27	PEG_TX+11	A27	GND
B28	PEG_TX-11	A28	GND
B29	GND	A29	PEG_RX+11
B30	PCIEX8_RISER_2_CLK+	A30	PEG_RX-11
B31	PCIEX8_RISER_2_CLK-	A31	GND
B32	GND	A32	
B33	PEG_TX+12	A33	
B34	PEG_TX-12	A34	GND
B35	GND	A35	PEG_RX+12
B36	GND	A36	PEG_RX-12
B37	PEG_TX+13	A37	GND
B38	PEG_TX-13	A38	GND
B39	GND	A39	PEG_RX+13
B40	GND	A40	PEG_RX-13
B41	PEG_TX+14	A41	GND
B42	PEG_TX-14	A42	GND
B43	GND	A43	PEG_RX+14
B44	GND	A44	PEG_RX-14
B45	PEG_TX+15	A45	GND
B46	PEG_TX-15	A46	GND
B47	GND	A47	PEG_RX+15
B48		A48	PEG_RX-15
B49	GND	A49	GND



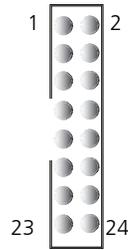
Chapter 3

Motherboard Information

PCIe Connector (PCIESLOT2): A PCIe Generation 3 x8 slot for connecting a riser card for rear expansion.

Pin No.	Signal	Pin No.	Signal
B1	P12V	A1	
B2	P12V	A2	P12V
B3	P12V	A3	P12V
B4	GND	A4	GND
B5	SLOT2SMBCLK	A5	
B6	SLOT2SMBDAT	A6	
B7	GND	A7	
B8	P3V3	A8	
B9		A9	P3V3
B10	P3V3SB	A10	P3V3
B11	PCIWAKE-	A11	PCIESLOT1REST-
B12		A12	GND
B13	GND	A13	PCIESLOT1CLK+
B14	PEG_TX+0	A14	PCIESLOT1CLK-
B15	PEG_TX-0	A15	GND
B16	GND	A16	PEG_RX+0
B17		A17	PEG_RX-0
B18	GND	A18	GND
B19	PEG_TX+1	A19	
B20	PEG_TX-1	A20	GND
B21	GND	A21	PEG_RX+1
B22	GND	A22	PEG_RX-1
B23	PEG_TX+2	A23	GND
B24	PEG_TX-2	A24	GND
B25	GND	A25	PEG_RX+2
B26	GND	A26	PEG_RX-2
B27	PEG_TX+3	A27	GND
B28	PEG_TX-3	A28	GND
B29	GND	A29	PEG_RX+3
B30	PCIEX8_SLOT2_2_CLK+	A30	PEG_RX-3
B31	PCIEX8_SLOT2_2_CLK-	A31	GND
B32	GND	A32	
B33	PEG_TX+4	A33	
B34	PEG_TX-4	A34	GND
B35	GND	A35	PEG_RX+4
B36	GND	A36	PEG_RX-4
B37	PEG_TX+5	A37	GND
B38	PEG_TX-5	A38	GND
B39	GND	A39	PEG_RX+5
B40	GND	A40	PEG_RX-5
B41	PEG_TX+6	A41	GND
B42	PEG_TX-6	A42	GND
B43	GND	A43	PEG_RX+6
B44	GND	A44	PEG_RX-6
B45	PEG_TX+7	A45	GND
B46	PEG_TX-7	A46	GND
B47	GND	A47	PEG_RX+7
B48		A48	PEG_RX-7
B49	GND	A49	GND

Front LCD Module Connector (LCM1): It is for connecting the front LCD and Keypad module.



Pin No.	Signal	Pin No.	Signal
1	P5V	2	GND
3	SLIN-	4	VEE
5	AFD-	6	INIT-
7	FL_PD1_R	8	FL_PDO_R
9	FL_PD3_R	10	FL_PD2_R
11	FL_PD5_R	12	FL_PD4_R
13	FL_PD7_R	14	FL_PD6_R
15	LCM_LCD-	16	P5V
17	KEY_UP	18	KEY_RIGHT
19	KEY_LEFT	20	KEY_DOWN
21	LCM_RST-	22	CTR_GRN_R
23	CTR_YLW_R	24	HD_LED-

CompactFlash Connector (CF1): A CompactFlash Type I/II connector.

Pin No.	Function	Pin No.	Function
1	GND	26	DET1
2	CF_DD3	27	CF_DD11
3	CF_DD4	28	CF_DD12
4	CF_DD5	29	CF_DD13
5	CF_DD6	30	CF_DD14
6	CF_DD7	31	CF_DD15
7	-CF_DCS0	32	-CF_DCS1
8	GND	33	CF_VS1
9	GND	34	CF_DIOR_N
10	GND	35	CF_DIOW_N
11	GND	36	P3V3
12	GND	37	CF_IDEIRQ
13	P3V3	38	P3V3
14	GND	39	MST_SLV
15	GND	40	CF_VS2
16	GND	41	CF_IDERST_N
17	GND	42	CF_IORDY
18	CF_DA2	43	CF_DMARQ
19	CF_DA1	44	CF_DDACK_N
20	CF_DA0	45	CFASTLED-
21	CF_DD0	46	CF_PDIAG
22	CF_DD1	47	CF_DD8
23	CF_DD2	48	CF_DD9
24		49	CF_DD10
25	CF_DS_N	50	GND



Front Panel LEDs (LED2)

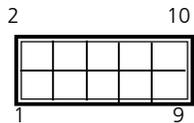
Pin No.	Signal	Pin No.	Signal
A1	P5V	C1	GND
A2	CTR_YLW_R	C2	CTR_GEN_R
A3	P5V	C3	HD_LED-

PC Case Open Detection Header (CONN4): It is for detecting case open event.



Pin No.	Signal
1	CASEOPEN-
2	GND

Digital Input/Output Port (DIO1)



Pin No.	Signal	Pin No.	Signal
1	GPO_1	2	GPI_1
3	GPO_2	4	GPI_2
5	GPO_3	6	GPI_3
7	GPO_4	8	GPI_4
9	GND	10	GND

Chapter 4: BIOS Settings

Updating the BIOS

The Basic Input/Output System (BIOS) can be updated using the designated Flash Utility. To obtain the utility, please contact us either through the sales rep or technical support.



Accessing the BIOS menu

When you are installing a motherboard or when the system prompts “Run Setup” during start-up, you will use the BIOS Setup program to configure the system. This section explains how to configure your system using this program.

Even if you are not prompted to enter the BIOS Setup program when you are installing a motherboard, you can still change the configuration of your computer later on with this program. For example, you may want to enable the security password feature or change the power management settings. This requires you to reconfigure your system by using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM.

When you start up the computer, the system provides you with the opportunity to run this program. Press <Delete> during the Power-On-Self-Test (POST) to enter the Setup utility (There are a few cases that other keys may be used, such as <F1>, <F2>, and so forth.); otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

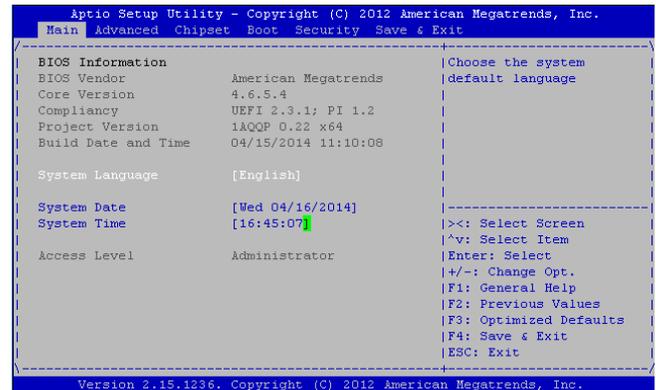


Note: This manual describes the standard look of the setup screen. There may be some instances in which the motherboard features can vary from one to another due to customization. This means that some of the options described in this manual may not match that of your motherboard’s AMIBIOS.

Navigating the BIOS menu

The BIOS setup utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.



Keys	Description
<Left/Right> ↑ ↓	The Left and Right <Arrow> keys allow you to select an setup screen. For example: Main screen, Advanced screen, Boot screen, and so on.
Up/Down	The Up and Down <Arrow> keys allow you to select an setup item or sub-screen.
+/- Plus/Minuss	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item. For example: Date and Time.
Tab	The <Tab> key allows you to select setup fields.



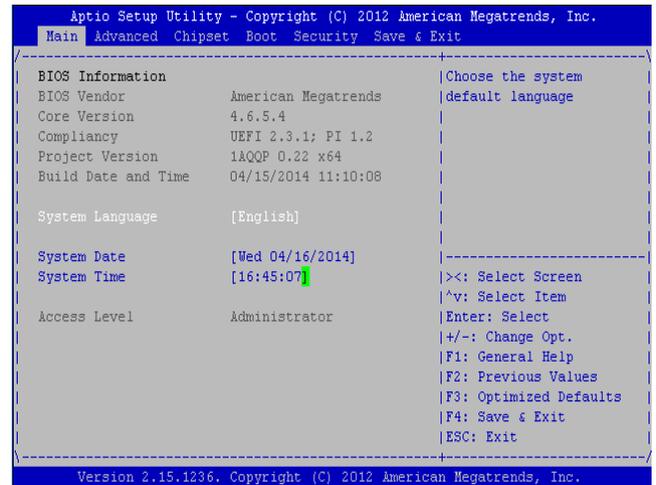
Note: The <F8> key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the <F8> key on your keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

The Main Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this chapter.

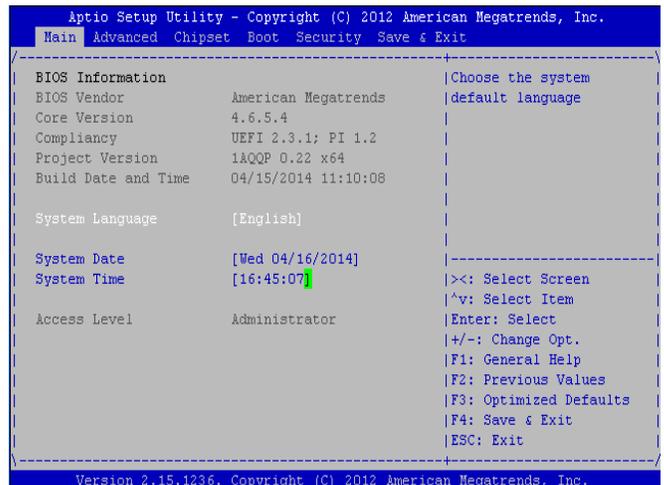
The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options are configured parameters and cannot be modified. On the other hand, Options in blue can be modified.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.



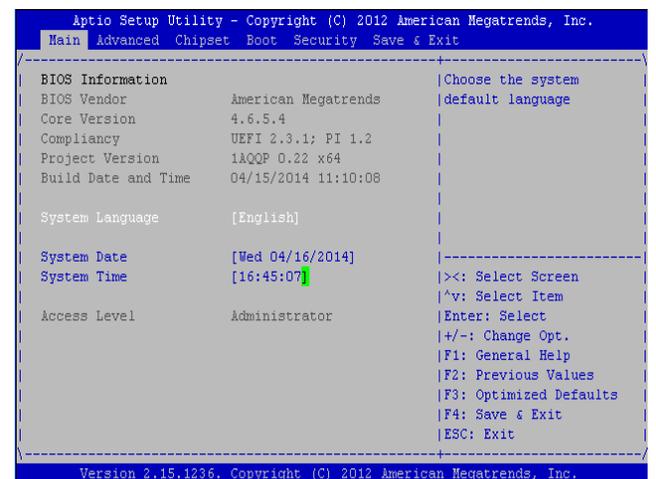
System Language

Use this item to choose the BIOS language.



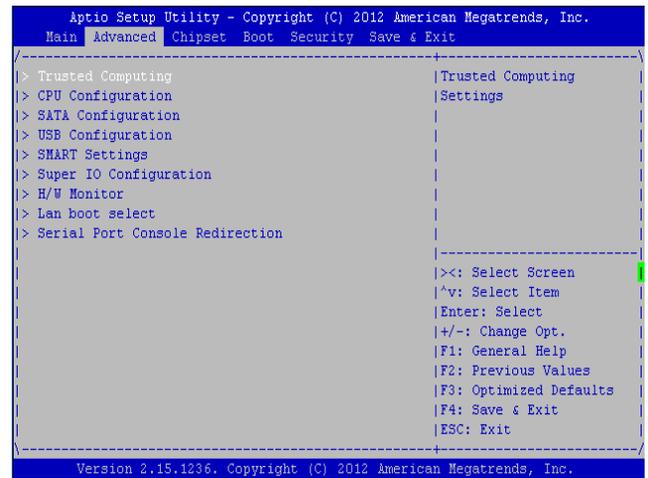
System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.



Advanced Settings

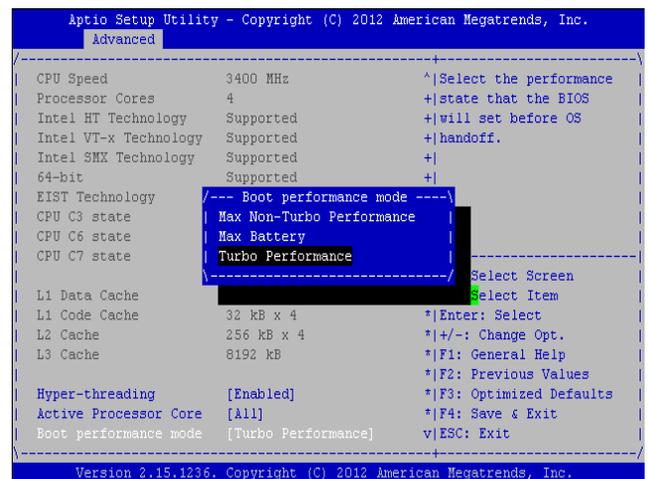
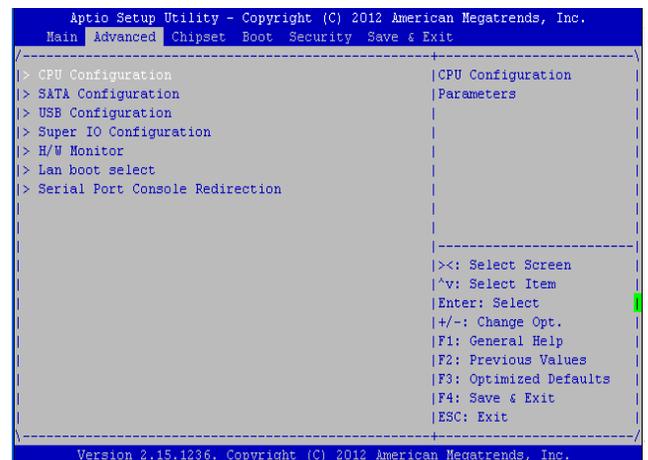
Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown at the right. The sub menus are described on the following pages.



CPU Configuration Settings

You can use this screen to view the capabilities and of your CPU. You can also use this menu to enable/disable certain functions of your CPU. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described below.

Item	Selection
Intel Hyper-threading	The Intel Hyper-Threading Technology allows a hyper-threading processor to appear as two logical processors to the operating system, allowing the operating system to schedule two threads or processes simultaneously. Select to enable or disable this feature.
Active Processor Core	Select the number of processor cores to be active in each processor package.
Boot performance mode	Select boot type from Max Non-Turbo Performance, Max Battery, or Turbo Performance. Intel Turbo Boost Technology provides the capability for the CPU to overclock itself higher than its stated clock speed if there is enough power to do so. The Max Battery option contributes to energy saving by dynamically adjusting the power consumption.



SATA Configuration Settings

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show “Empty” if no SATA device is installed to the corresponding SATA port.

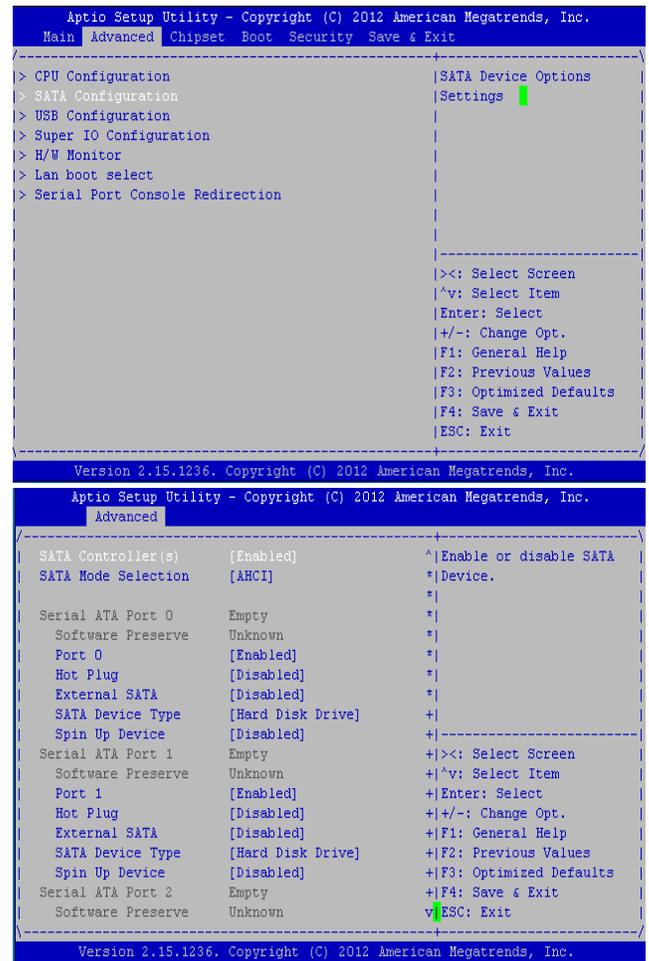
SATA Controllers

Item	Selection
Enable or Disable SATA Controller(s)	Set this value to enable or disable SATA controllers

SATA Mode Selection

The system supports advanced SATA features such as software RAID.

Item	Selection
IDE Mode	Set to IDE mode when you want to use the Serial-ATA hard disk drives as Parallel ATA physical storage devices.
AHCI Mode	Set to AHCI mode when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced SATA features that increases storage performance or workloads where multiple simultaneous read/write requests are outstanding, most often occurring in server-type applications (native command queuing). It also facilitates hot swapping.
RAID	Set to the RAID mode when you want to create a RAID configuration from the SATA Hard disk drives. This chipset supports software RAID by using the Intel® Matrix Storage Manager software. For more information, visit http://www.intel.com/design/chipsets/matrixstorage_sb.htm#benefit



Serial ATA Port 0/1/2

Use this menu to configure specific SATA Port for all ports on the system.

Option	Description
Port 0	Enable or disable the specific port
Hot Plug	The AHCI of SATA provides hot plug capability to allow drives to be added or removed with the PC running.
External SATA	Called external SATA or eSATA, you can now utilize shielded cable lengths up to 2 meters outside the PC to transform SATA to be an external storage. enable or disable this feature.
SATA Device type	Select the SATA type from either Hard Disk Drive or Solid State Drive
Spin Up Device	Spin-up is a simple mechanism by which the storage subsystem controller can sequence hard disk drive initialization and spin-up.set to control whether each specific drive will spin up.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
-----
SATA Controller(s)  [Enabled]          ^|Enable or disable SATA
SATA Mode Selection [AHCI]             *|Device.
*|
Serial ATA Port 0  Empty             *|
  Software Preserve Unknown         *|
  Port 0           [Enabled]         *|
  Hot Plug        [Disabled]         *|
  External SATA   [Disabled]         *|
  SATA Device Type [Hard Disk Drive] +|
  Spin Up Device  [Disabled]         +|
-----
Serial ATA Port 1  Empty             +|<: Select Screen
  Software Preserve Unknown         +|^v: Select Item
  Port 1          [Enabled]         +|Enter: Select
  Hot Plug        [Disabled]         +|+/-: Change Opt.
  External SATA   [Disabled]         +|F1: General Help
  SATA Device Type [Hard Disk Drive] +|F2: Previous Values
  Spin Up Device  [Disabled]         +|F3: Optimized Defaults
Serial ATA Port 2  Empty             +|F4: Save & Exit
  Software Preserve Unknown         v|ESC: Exit
-----
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

USB Configuration Setting

You can use this screen to select options for the USB Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.

```

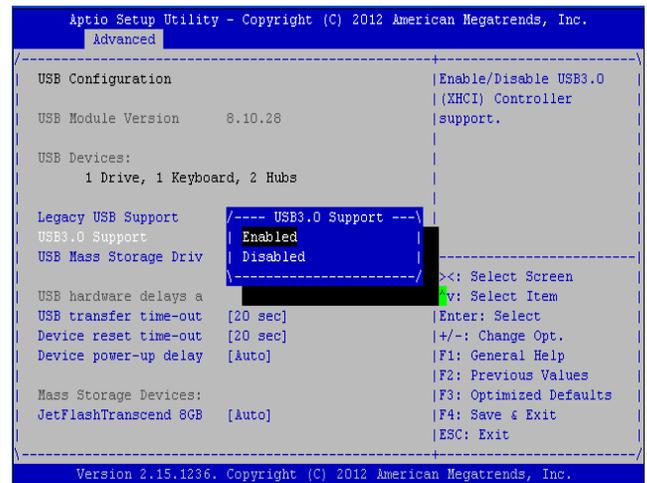
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit
-----
> CPU Configuration           |USB Configuration
> SATA Configuration         |Parameters
> USB Configuration          |
> Super IO Configuration     |
> H/W Monitor                 |
> Lan boot select            |
> Serial Port Console Redirection |
-----
|<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```

Legacy USB Support

This option enable or disable the support for USB devices on legacy operating systems (OS), e.g., Windows ME/98/NT, and MS-DOS. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can be used on the system even when there is no USB drivers loaded on it.

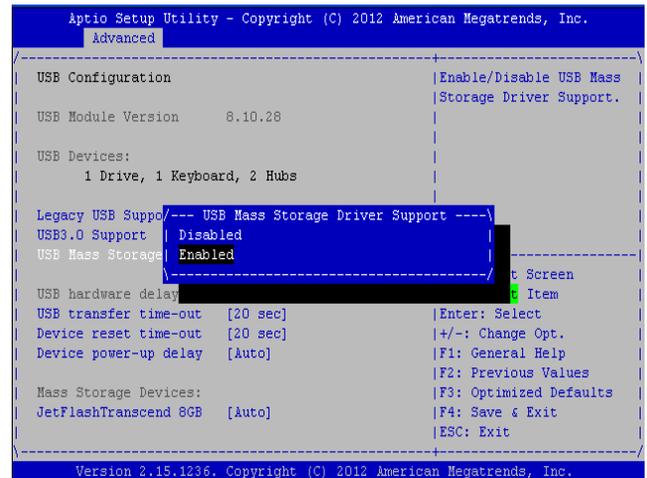


Option	Description
Auto	Allow the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If it is not detected, the USB controller legacy mode is disabled.
Enabled	Enable the support for USB devices on legacy operating system
Disabled	Disable this function.



USB 3.0 Support

Enable or disable USB3.0 support



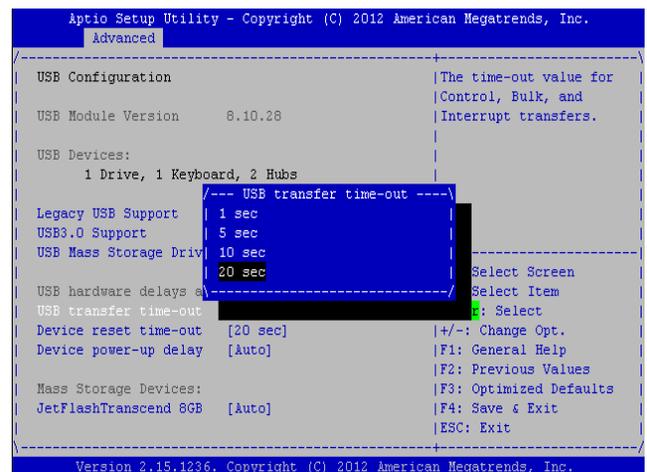
USB Mass Storage

Select to enable or disable the system to mount the USB mass storage device.

USB Hardware Delays a

The menu sets delay time for USB operations.

Item	Description
USB transfer time-out	set transfers to an endpoint to complete within a specific time. <ul style="list-style-type: none"> If set to zero, transfers will not time out because the host controller will not cancel the transfer. In this case, the transfer waits indefinitely until it is manually canceled or the transfer completes normally. If set to a nonzero value (time-out interval), the host controller starts a timer when it receives the transfer request. When the timer exceeds the set time-out interval, the request is canceled.



Item	Description
Device reset time-out	This option sets the reset timing for the USB Mass Storage to be initialized.
Device power-up delay	This option sets the power-up timing for the USB Mass Storage to be initialized.



SuperIO Configuration

In this screen, you will be able to enable or disable the serial ports provided by the super IO chipset.

```

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Main  Advanced  Chipset  Boot  Security  Save & Exit

> CPU Configuration
> SATA Configuration
> USB Configuration
> Super IO Configuration
> H/W Monitor
> Lan boot select
> Serial Port Console Redirection

System Super IO Chip
Parameters.

-<-> Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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```

Serial Port 0 Configuration

This option specifies the base I/O port address and Interrupt Request address of serial port 0 and 1. *Serial Port 0* is the console port on the front panel whereas *serial port 1* is the COMB1 pin header.

item	Selection
Enabled/Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable.
Change Settings	Selects the serial port base address and IRQ for the interrupt address.

```

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Advanced

Super IO Configuration
Super IO Chip      NCT6776F
> Serial Port 0 Configuration
> Serial Port 1 Configuration

Set Parameters of
Serial Port 0 (COMA)

-<-> Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
    
```



H/W Monitor

This menu shows the hardware monitor configuration settings. Select an item then press <Enter> to display the configuration options.

System/CPU Temperature

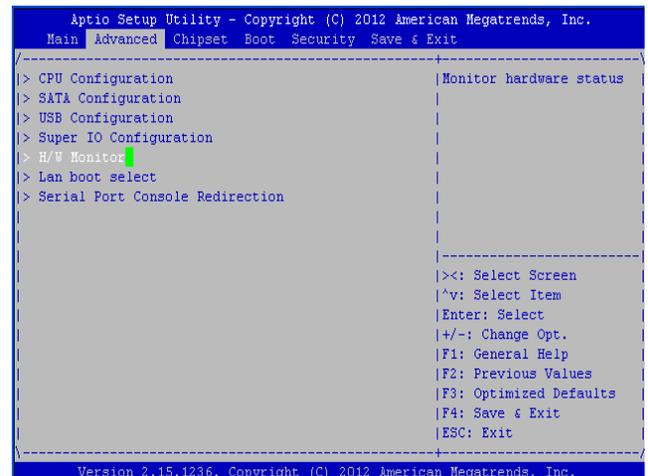
The onboard hardware monitor automatically detects and displays the CPU and motherboard temperatures.

FAN Speed

The onboard hardware monitor automatically detects and displays the CPU , chassis and system fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, it displays N/A.

CPU Voltage, 3V voltage, 5V voltage, 12V voltage

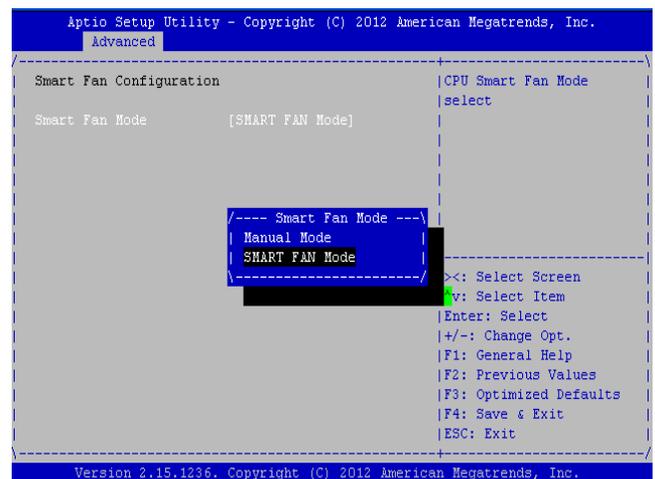
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.



Smart Fan Mode Configuration

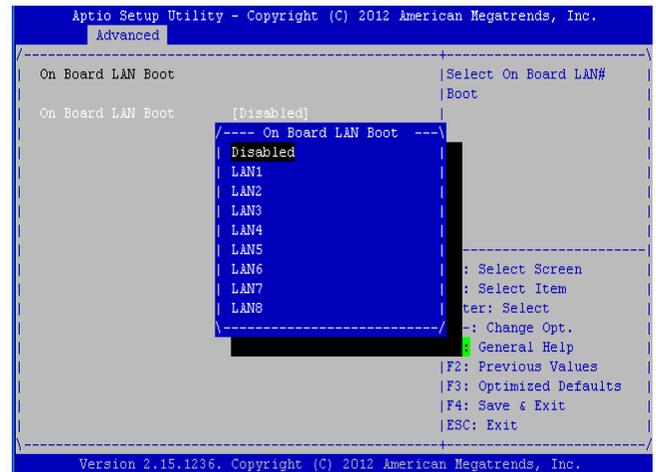
It allows you to configure the smart fan feature. You can manually turn on the fans or set the target CPU temperature at which the fans will start running if the fan is not yet turned on. And the fans can also be turned off automatically if the temperature for the CPU is at or below the specified value. Refer to *Motherboard Layout* on Chapter 3 *Block Diagram* for CPU fan connectors.

Item	Selection
Manual Mode	Manually set the fan speed from 0 (lowest) speed to 255 (highest speed)
Smart Fan Mode	It presets the target system temperature at which the system fan will start running if the fan is not yet turned on with this mode. And the system fan can also be turned off automatically if the temperature for the system is at or below the specified value. This feature specifies the temperature with the corresponding fan speed but it may vary depending on model specifications.



LAN Boot Select

The LAN boot, i.e., Preboot eXecution Environment (PXE) allows you to boot computers using a network interface independently of data storage devices (like hard disks) or installed operating systems. Enable or disable this function on the management port (LAN1 to LAN8 on the front panel) with this option here.



Serial Port Console Redirection

Use this menu to set the settings for BIOS remote access feature.

Item	Selection
Console Redirection	Enable or disable BIOS through remote access
Console Redirection Settings	Enter to view more options

COM0/COM1 Console Redirection Settings: *COM0* is the console port whereas *COM1* refers to the iAMT port (LAN8) on the front panel; see Front Panel Features in **Chapter 1 Introduction**. The Intel iAMT utilize Out of Band (OOB) access to allow remote management of PCs regardless of system power or OS state.

Item	Selection
Terminal Type	Sets the connection terminal type
Bits per second, Data bits, Parity, Stop Bits, Flow Control	Sets the terminal connection parameters such as the baud rate, parity check mechanism, etc.

```

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Main  Advanced  Chipset  Boot  Security  Save & Exit

> CPU Configuration
> SATA Configuration
> USB Configuration
> Super IO Configuration
> H/W Monitor
> Lan boot select
> Serial Port Console Redirection

Serial Port Console Redirection

|<<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit

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```

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced

<<< Select Console Redirection Port:COM0/1 >>>
COM0:ISA Serial Port
COM1:(PCI/iAMT) Serial Over Lan (LAN8)

COM0
Console Redirection [Enabled]
> Console Redirection Settings

COM1(Pci Bus0,Dev22,Func3)
Console Redirection [Disabled]
> Console Redirection Settings

Console Redirection
Enable or Disable.

|<<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
    
```

```

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Advanced

COM0
Console Redirection Settings

Terminal Type [VT100+]
Bits per second [115200]
Data Bits [8]
Parity [None]
Stop Bits [1]
Flow Control [None]
VT-UTF8 Combo Key Sup [Enabled]
Recorder Mode [Disabled]
Resolution 100x31 [Disabled]
Legacy OS Redirection [80x24]
Putty KeyPad [VT100]
Redirection After BIO [Always Enable]

Emulation: ANSI:
Extended ASCII char
set. VT100: ASCII char
set. VT100+: Extends
VT100 to support color,
function keys, etc.
|VT-UTF8: Uses UTF8
encoding to map Unicode
chars onto 1 or more

|<<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
    
```



Chipset

The chipset menu will let you further configure your Intel CPU and PCH capabilities:

PCH I/O Configuration

It shows the model name and version of the Intel Platform Controller Hub on the system.

Restore AC Power Loss

This option lets you set the state of the system when it has just recovered from a power outage.

Option	Description
Power Off	When setting to Always Off, the system goes into "off state" after an AC power interruption.
Power on	When setting to Always on, the system turns on automatically after a power interruption
Last State	When setting to Last State, the system goes into whatever the state was before the power interruption.

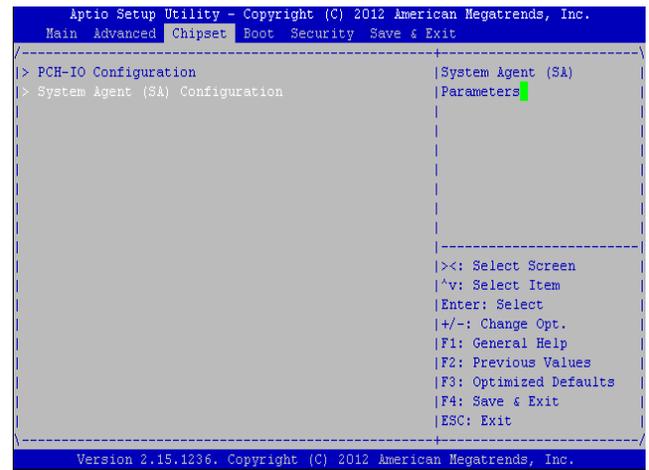
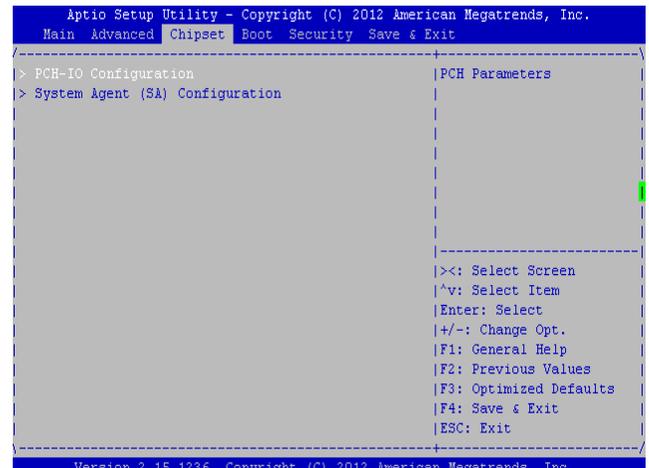
System Agent (SA) Configuration

Intel VT-d

Select to enable or disable the Intel Virtualization Technology for Directed I/O" (VT-d). The Memory and I/O virtualization are supported by the chipset as part of Intel Virtualization Techonology for hardware-assisted virtualization.

Memory Configuration

It shows the memory capacity of the system and the installed memory on the system.



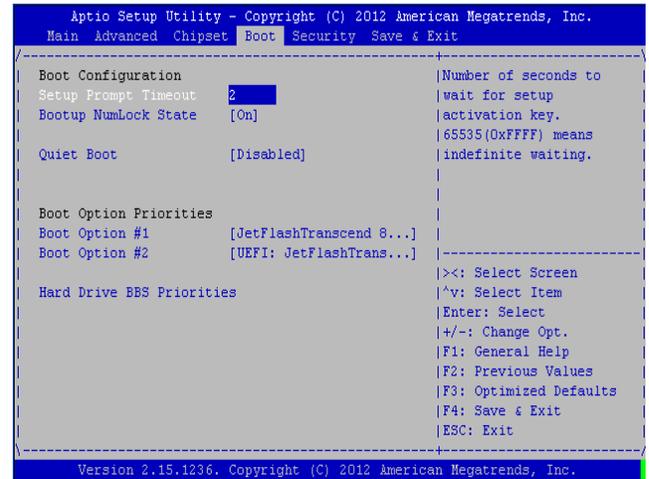
Boot Setup

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display an Boot BIOS Setup option by highlighting it using the <Arrow> keys. Select an item on the Boot Setup screen to access the sub menus for the following described functions.

Boot Configuration

In this screen, you will be able to configure the boot procedures and the related elements.

Items	Options
Setup Prompt Timeout	Specify the number of seconds for the boot setup prompt to wait for user's intervention during the POST.
Bootup Num-Lock State	This option lets you to enable or disable the function of the NumLock key.
Boot Option Priorities	Use this screen to specify the order in which the system checks for the device to boot from.
Hard Drive BBS Priorities	You will enter a submenu that presents all the drives connected to the system. Here you can define the boot order for the Hard disks.



Security

Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

Administrator Password

If you have set an administrator password, you should enter the administrator password for accessing the BIOS menu. Otherwise, you will only be able to see or change selected fields in the BIOS setup program.

User Password

If you have set a user password, you must enter the user password for booting the system and accessing the BIOS menu.

To set an Administrator/User password:

1. Select the option item and press Enter.
2. From the Create New Password box, key in a password, then press enter.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the option item and press Enter.
2. From the Enter Current Password box, key in the current password, then press enter.
3. From the Create New Password box, key in a new password, then press Enter.
4. Confirm the password when prompted.

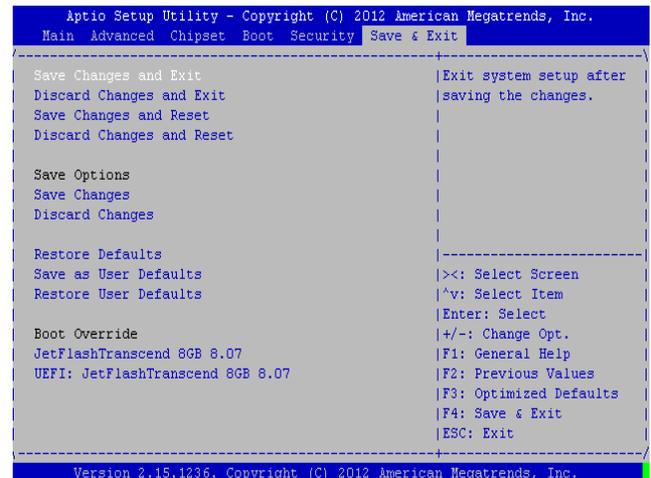
To clear the administrator password, follow the same steps as in changing an administrator password, then press Enter when prompted to create/confirm the password.



Save & Exit

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. The following table lists the options in this menu.

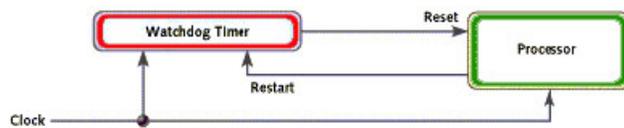
Item	Options
Saving Changes and Exit	Select this option to save changes and exit the BIOS menu. It will automatically resets if the changes made require rebooting the system to take effect.
Discard Changes and Exit	Select this option to discard changes and exit and BIOS menu to continue the booting process.
Save Changes and Reset	When you have completed the system configuration changes, select this option to leave setup and reboot the computer so the new system configuration parameters can take effect.
Discard Changes and Reset	This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select Yes to discard any changes and load the previously saved values.
Save Changes	Save your changes
Discard Changes	Discard changes
Restore Defaults	Restore to factory defaults
Save as User Defaults	Save all of your changes as an user default setting.
Restore User Defaults	Loads your saved user default setting.
Boot Override	This section of the Boot Menu allows booting from a specific device immediately. Therefore you should see an entry for all bootable devices.
Launch EFI Shell from filesystem device	This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available filesystem devices.



Appendix A: Programming Watchdog Timer

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

For sample watchdog code, see *Watchdog_LAN_Bypass* folder on the *Driver and Manual CD*



Appendix B: Setting up Console Redirections

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. The console port configuration parameters can be set up in the **Serial Port Console Redirection** of the BIOS menu. The following steps illustrate how to use this feature.

1. Connect one end of the console cable to console port of the system and the other end to serial port of the Remote Client System.
2. Configure the following settings in the BIOS Setup menu for the device: Please refer to the **Serial Port Console Redirection menu** in Chapter 4 *BIOS Settings*.

BIOS > Advanced > Serial Port Console Redirection
> select enabled first and then go to >Console
Redirection Settings > [115200, 8 , n ,1]

3. Configure Console Redirection on the client system. The following illustration is an example on Windows platform:
 - a. A. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.
 - b. B. Enter any name for the new connection and select any icon.
 - c. Click OK.
 - d. From the "Connect to". Pull-down menu, select the appropriate Com port on the client system and click OK.
 - e. Select 115200 for the Baud Rate, None. for Flow control, 8 for the Data Bit, None for Parity Check, and 1 for the Stop Bit.



Note: In the **Serial Port Console Redirection** of the BIOS menu, *COM0* refers to the console port on the front panel whereas *COM1* refers to the iAMT port (LAN8) on the front panel.

Appendix C: Programming the LCM

The LCD panel module (LCM) is designed to provide real-time operating status and configuration information for the system. For sample LCM code, see *LCM* folder in the *Driver and Manual CD*. The driver and the program library can also be found in the folder.

The system supports the following type of LCM:

- **Parallel Text-based LCM:** The LCM connects to the motherboard's parallel port. The LCD screen can display 2 lines, 20 characters per line.

Parallel Text-based LCM

Build

To build program source code on Linux platform, use the following steps as a guideline:

1. Copy the proper makefile from the Driver and Manual CD to your system: `Makefile.linux`
2. Type `make` to build source code:
`make Makefile` (Note: omit the file extensions)

After compiled, the executable programs (`plcm_test`, `plcm_cursor_char`, `Test`) and the driver (`plcm_drv.ko` or `plcm_drv.o`) will appear in the program's folder.



Note: The OS supported by Lanner Bypass function include platforms based on Linux Kernel series 2.4.x and Linux Kernel series 2.6.x.

Install

Install the driver and create a node in the `/dev` directory by:

```
#insmod plcm_drv.ko
#mknod /dev/plcm_drv c 241 0
```



Note: If you cannot install the driver, check whether you have enabled the parallel port in the BIOS setting .

Execution

This section contains sample executable programs that you could test on your platform. It demonstrates some useful functionality that the LCM provides.

To execute, type:

`#!/plcm_test:` This program runs through the following functions in sequence:

Backlight Off/On (turning off/on the backlight of the LCM display)

Display Off/On (turning off /on the LCM display)

Cursor Off/On (NOT showing/showing the cursor on the LCM display)

Blinking off/On (turning off/on the cursor blinking)

Writing Lanner@Taiwan (displaying the specific sentences)

Reading Lanner@Taiwan (reading the specific sentence)

CGram Test (displaying the user-stored characters)

Keypad Testing (Get the keypad input: the 1st button is read in as left, the 2nd button is read in as up, the 3rd button is read in as down, and the 4th button is read in as right)

Plcm_cursor_char: This program provides a menu to demonstrate the following functions:

Insert line (set the starting line to either line 1 or line 2)

Move Cursor right (select to move the cursor to the right)

Move Cursor Left (select to move the cursor to the left)

Add a char (select to display a character on the LCM screen)

Clear (select to clear the LCM display)

Leave (select to leave the program)

To execute, type:

```
#!/ plcm_cursor_char
```



Note: For descriptions of the command, refer to the *Readme* file contained within the program's folder.



Appendix D: Programming Generation 2 and 3 LAN Bypass

Lanner Generation 3 Bypass

The bypass function is used to link two independent Ethernet ports when the system crashes or powers off. This means if your system is equipped with a LAN Bypass function, a condition in your system will not interrupt your network traffic. Different from the previous two generations (Gen1 and Gen2), the Lanner Bypass Gen 3 employs a programming method to control the bypass function by software. There are typically two communication status for the bypass function, one is "Normal" and another is "Bypass" status. Furthermore, the Lanner Bypass software is capable to control the bypass status in the following 3 states:

1. When the system powers off, it can be forced to enable the LAN Bypass function .
2. When the system is in the just-on state which is a brief moment when it powers up .
3. When the system is running

And the Lanner bypass possess the following features:

1. Communication through SMBUS (I2C)
2. Independent bypass status control for each pair up to a total of 4 pairs
3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), system off, or upon software request (during run-time).
4. Software programmable bypass or normal mode
5. Software programmable timer interval:
 - JUST-ON watchdog timer, used during JUST-ON, has timer setting of 5~1275 seconds of timer interval.
 - Run-Time watchdog timer, used during run-time, has setting of 1~255 seconds of timer interval.
6. Multiple Watchdog Timers:
 - Two for run-time: It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of bypass, you have the flexibility to manage the bypass status for them differently.
 - One for just-on: It is designed to give you the precise control of the bypass during this phase. You can use

this timer to delay enabling the bypass in just-on state.

Please refer to the LAN_Bypass_Watchdog folder on the Driver and Manual CD.

For sample LAN bypass code and the Bypass Manual, see the *LAN_Bypass* folder on the *Driver and Manual CD* or the *Lanner support Website* at <http://www.lannerinc.com/download-center/>.

For a description of the physical LAN ports equipped with this function, refer to *Front Panel Features* in *Chapter 1 Introduction*.



Appendix E: Terms and Conditions

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
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 are excluded from this warranty:

Improper or inadequate maintenance by the customer
Unauthorized modification, misuse, or reversed engineering of the product
Operation outside of the environmental specifications for the product.

RMA Service

Requesting a RMA#

6. To obtain a RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
7. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
8. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
9. Mark the RMA# clearly on the box.



Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

Appendix E

Terms and Conditions

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

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 Signature / Date

Authorized Signature / Date

