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Network Application Platforms

Hardware platforms for next generation networking infrastructure

FW-8771 V1.8

User's Manual

Publication date:2019-03-22

About

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/download-center/
RMA	http://eRMA.lannerinc.com

Copyright and Trademarks

Acknowledgement

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.

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.

About

LITHIUM BATTERY CAUTION:

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

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).

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.

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

About

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).

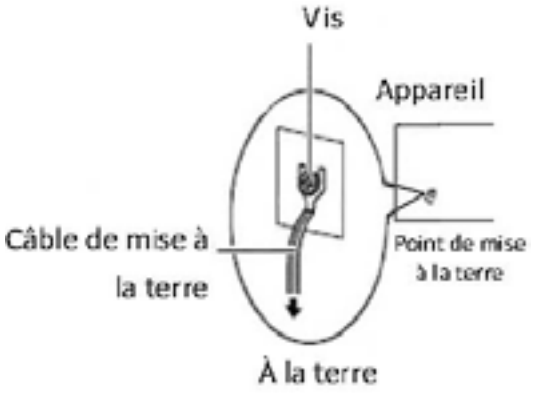
Consignes de sécurité électrique

- 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.



Revision History

Revision	Revision Date	Description
1.1	20131017	change specifications: Ethernet modules- from N/A to 2 or N/A Odering info- 8 GbE LAN ports with 3 pairs of G3 LAN bypass Board layout-add 80port0, PM-Bus1, Conn1, Con1/2, and J3 Appendix D: change note on the LAN module bypass settings
1.2	20131128	Append the HDD installation guide V1.0
1.3	20131209	-Append the HDD Installation Guide V1.0 and Power Installation Guide V1.0 to the main user guilde -Add riser card installation to the Hardware Installation
1.4	20131210	Modify the riser card installation procedure
1.5	20131211	Add VGA as an optional connector in the specification
1.6	20131219	-Add Ehternet module installation in the Hardware Setup Change -Change PCIe spec from 2x PCIEx8 for NIC (Optional Rear PCIE) to 1x only
1.7	20170418	Modifed the motherboard layout (con2 to J6)
1.8	20190322	Updated BIOS Settings

Table of Contents

Chapter 1: Introduction

Thank you for choosing the FW-8771. The new system module integrates the newest Intel Xeon Processors, codenamed Haswell, with the Intel C226 Series Chipset. It supports up to 32GB of DDR3 system memory at 1600MHz on dual-channel DIMM banks. Intel Intel® Turbo Boost Technology and Intel® Hyper-Threading Technology (Intel® HT Technology) are also supported in the system (you may need to enable these features in the BIOS menu under CPU configuration settings)

The FW-8771 is equipped with advanced I/O capacity which includes an RJ-45 console port, 2 PCIex8 (PCIe Generation 3) golden finger connected directly to the CPU for utmost network performance, 4 Serial-ATA ports (comply with SATA Standard 3.0), a CFast slot, and an OPMA slot, etc.

The system can add additional 16 LAN ports with 2 Etherent modules, proving a total of 24 LAN ports. Moreover, these LAN modules can be configured with Lanner Generation 2 or Generation 3 bypass or both depending on the module specification.

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

System Specification

Form Factor		Rackmount
Platform	Processor Options	Intel® Xeon® processor E3-1275 v3, E3-1225 v3(Haswell) and other LGA1150 processors
	Chipset	Intel C226 Chipset (Lynx Point PCH)
OS Support		Windows7,8,2000,XP,Vista, Server 2008, 2012, Linux Kernel 2.6 or above
BIOS		AMI BIOS 64Mb
System Memory	Technology	DDR3 1600MHz DIMM with ECC support
	Max. Capacity	32GB
	Socket	4 x 240-pin DIMM
Storage	HDD Bays	2 x 2.5 HDD kit
	CF/SD	1 x CFast
Networking	Ethernet Ports	8x GbE RJ-45 ports
	Bypass	N/A or 3 pair G3 LAN Bypass
	Controllers	8x Intel i210
	Ethernet Modules	N/A or Two
	Management Port	One, share with IPMI port
I/O Interface	Reset Button	Yes
	Console	1 x RJ45
	USB	2 x USB 3.0
	IPMI via OPMA slot	Yes
	VGA	Optional
Expansion	PCIe	1x PCIEx8 for NIC (Optional Rear PCIE)
	PCI	N/A
Cooling	Processor	Passive heatsink
	System	3x Cooling Fan
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	5~90%, non-condensing / 5~95%, non-condensing
Miscellaneous	LCD Module	2 x 20 characters
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	431 x 44 x 468mm
	Weight	7 Kg
Power	Type / Watts	270W Single Power Supply or Redundant 300W PSUs
	Input	110~240V AC
Approvals and Compliance		CE Emission, FCC Class A, RoHS

Chapter 1

Ordering Information

FW-8771A	Intel® Xeon® processor E3-1200 v3 family (Haswell) + 8 GbE LAN ports with 3 pairs of G3 LAN bypass, single PSU, LCM with keypad
FW-8771C	Intel® Xeon® processor E3-1200 v3 family (Haswell) + 8 GbE LAN ports with 3 pairs of G3 LAN bypass+ 2x NIC module expansion slots/ redundant PSUs, LCM with keypad

Package Contents

Your package contains the following items:

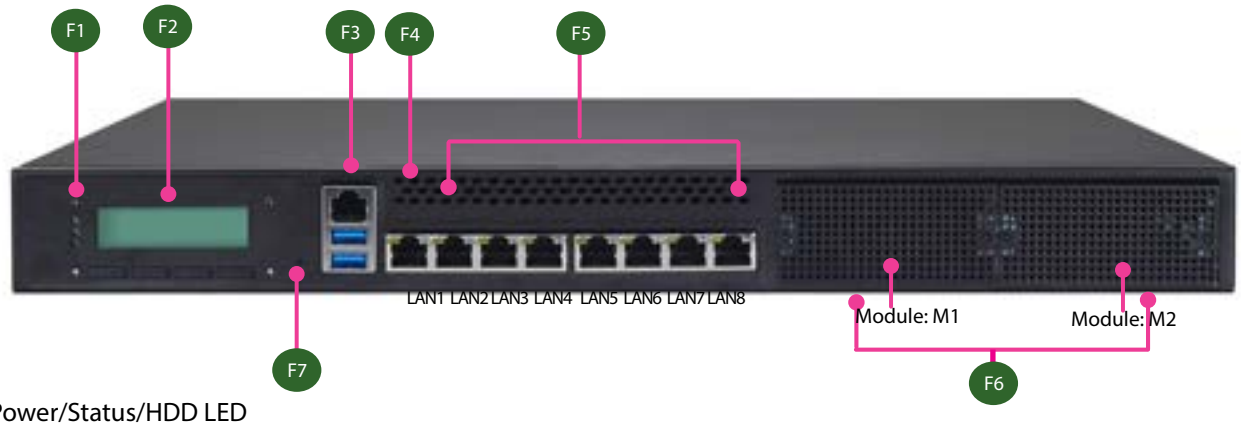
- FW-8771 Network Security Platform
- Power cable
- 1 straight-through Ethernet cable (1.8 meters)
- 1 RJ-45 to DB-9 (female) console cable
- Serial-ATA hard drive cable
- 1 threaded screw set
- 1 ear bracket set
- 1 nameplate
- Drivers and user's manual CD.

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-8771

Front Panel Features



F1 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 Console Port and Two USB 3.0 Ports

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.

F4 LAN1 Management Port (provided by Intel i210)

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

F5 Ethernet Ports (LAN2: non-bypass port, LAN3-LAN4: bypass pair; LAN5-LAN6: bypass pair; LAN7-LAN8: 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.

The 7 LAN ports provided by Intel i210. Moreover, 3pairs (LAN3-LAN4, LAN5-LAN6, LAN7-LAN8) 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.

F6 Swappable Ethernet Modules (not available on model FW-8771A)

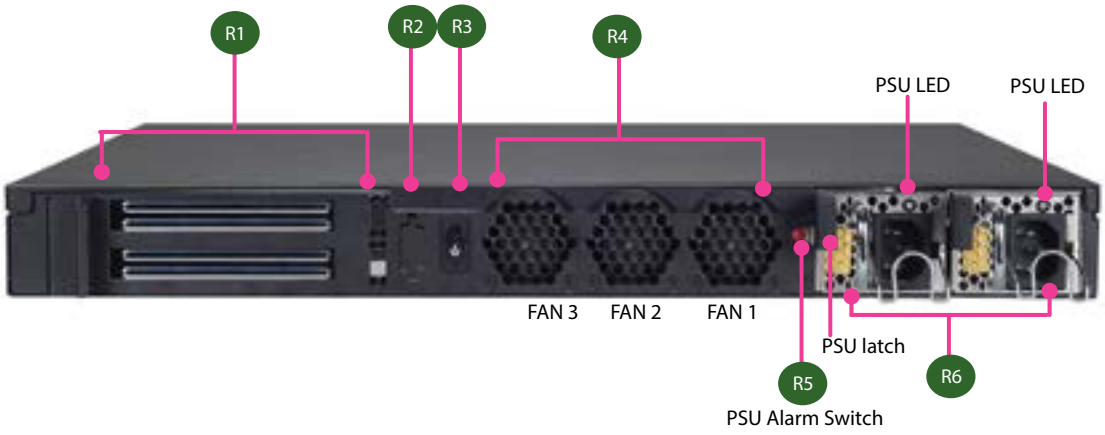
F7 Reset Switch

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

Note: The system can accommodate various Ethernet modules with different port number and speed. For more information, visit the Lanner product website at http://www.lannerinc.com/products/x86-network-appliances/nic-modules/

Slim Module	Ports	Chipset	Bypass
NCS2-IGM428A	4 GbE RJ45	Intel i350AM-4	2 pairs Gen3
NCS2-IGM428B	4 GbE RJ45	Intel i350AM-4	N/A
NCS2-ISM405A	4 GbE SFP Fiber	Intel I350-AM4	2 pairs
NCS2-ISM406A	4 GbE SFP Fiber	Intel I350-AM4	N/A
NCS2-ITM202A	2 10G RJ45	2 x Intel X540	N/A
NCS2-IXM204A	2 10G SFP+ Fiber	Intel 82599ES	N/A
NCS2-IXM205A	2 10G SFP+ Fiber	Intel 82599ES	1 pair
NCS2-IXM405A	4 10G SFP+ Fiber	Intel 82599ES	N/A
NCS2-ISM802A	8 GbE SFP Fiber	Intel i350AM-4	N/A
NCS2-ITM203A	2 10G Rj45	Intel X540	1 pair Gen3
NCS2-IGM808A	8 GbE RJ45	Intel i210AT	4 pair Gen3
NCS2-IGM808B	8 GbE RJ45	Intel i210AT	N/A

Rear Panel Features



R1 PCIe Expansion Slot (full-height and half-length PCI-E expansion card)*

R2 VGA port (optional)

R3 Power-on Switch

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

R4 FAN1~FAN3

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

R5 Power Supply (Redundant PSU is also an option)

The redundant power supply is hot-swappable and can be withdrawn and replaced when the alarm sounds. Note the redundant power supply is only available on some models. See table below for more information.

FW-8771A	8 GbE LAN ports (with 3 pair G3 LAN Bypass), single PSU, LCM & keypad
FW-8771C	8 GbE LAN ports (with 3 pair G3 LAN Bypass)+ 2x NIC module expansion slots, redundant PSU, LCM & keypad

R6 Redundant Power Supply Alarm Switch†

When the alarm sounds, press this switch to turn the alarm off and replace the failed power. However, the LED of the failed power supply will continue flashing.

* This is available for both model FW-8771A and FW-8771C.

† This slot can accommodate both single and redundant power supply unit; for installation guide, refer to the attached pdf file.

Chapter 2: Hardware Setup

Preparing the Hardware Installation

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

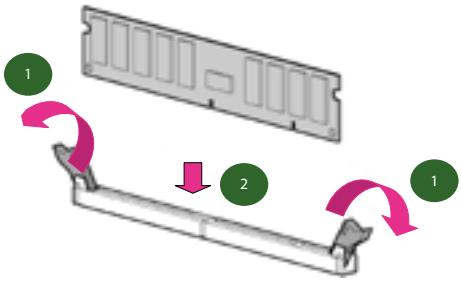
WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active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

1. Unpower the FW-8771 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-8771 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 1600, unbuffered ECC or non-ECC). Do not install DIMMs supporting different speeds.
2. The system can support up to32 GB in maximum.
3. Since the system is capable of Dual Channel Architecture, some installation guidelines have to be met to enable Dual Channel mode as directed. To insert two DIMMs on the system, insert DIMMS on slot DIMM1 (blue) and DIMM3 (blue). And use slot DIMM2 (black) and DIMM4 (black) if more slots are required.

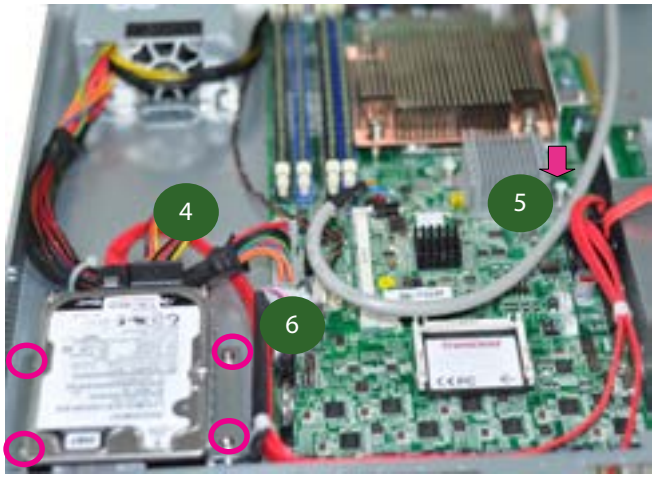
Hard Disk Installation

The system can accommodate two 2.5" Serial-ATA disks. Follow these steps to install hard disks into the FW-8771:

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: using the 2.5" HDD tray

2.5" HDD installation - on the front side of the chassis



Note:

It is also possible to install an additional 3.5" HDD disk or two additional 2.5" disks on the same system with the optional HDD kit. Please contact Lanner sales representative for such information. For installation guide, please refer to the attached PDF file.

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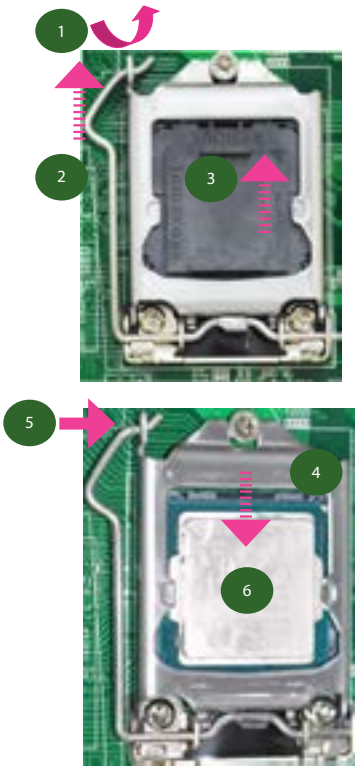
CPU and the Heat Sink Installation

The FW-8771 sever system is powered by the MB-8771 sever board, which comes with one ZIF type LGA1150 CPU socket.

Follow the procedures bellow for installing a CPU

1. Press the load lever and release it from the retention tab.
2. Lift the load lever and then the plate.
3. Remove the CPU socket cap.
4. Align the CPU key and the notch 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 plate and push the load lever to lock it back to the retention tab.
6. Peel off the sticker on the CPU to expose the thermal compound.
7. Put the heat sink on top of the installed CPU, and match the screws with the screw holes on the board. Fasten two screws which are opposite to each other at a time and then the other two. It is easier this way because of the force of the spring.
8. Place the heat sink cover on top of the installed heat sink and screw the three screws to fasten it on the case.



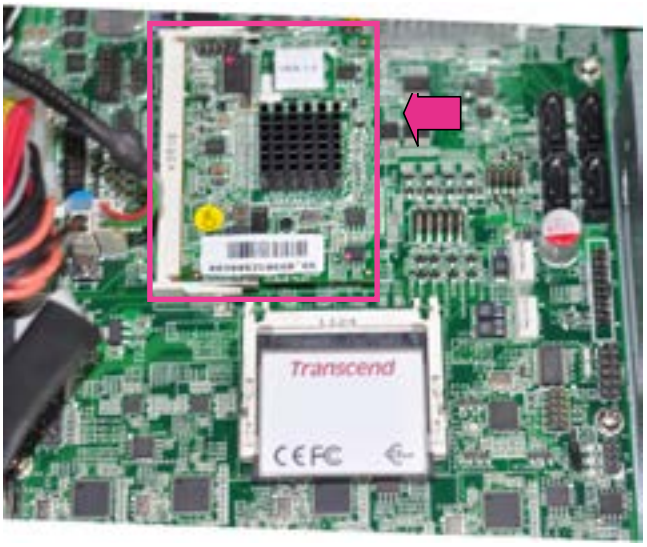
Note:

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.

IPMI Card Installation

The FW-8771 provides one OPMA slot for installing the IPMI card. Follow these procedures bellow for installing a CompactFlash card.

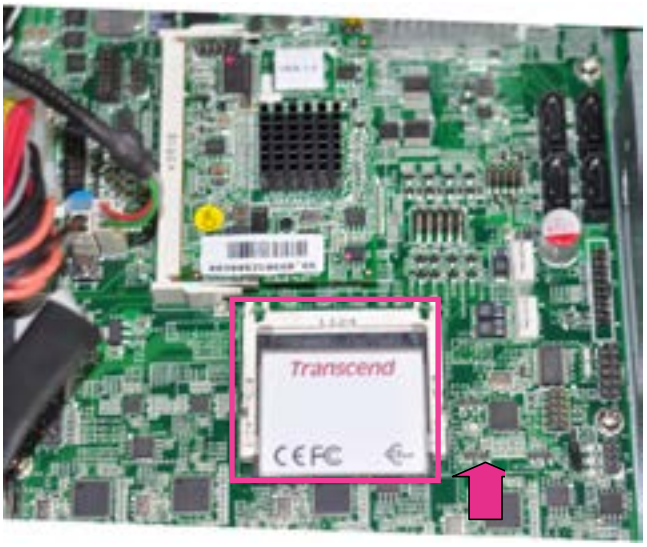
1. Align the notch of IPMI card with the slot key on the socket.
2. Press the card to insert the card into the socket until it snaps with the retaining clips.



CFast Card Installation

FW-8771 provides one CFast slot. Follow the procedures bellow for installing a CFast card.

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

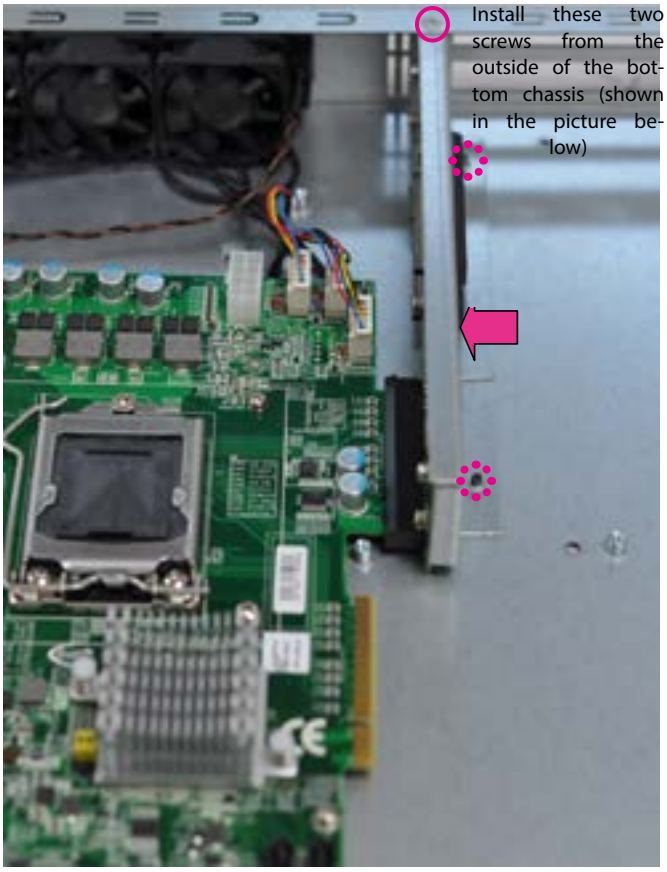


Riser Card Installation

The FW-8771 provides two PCIex8 (Generation 3) slots for installing the riser card for front Ethernet expansion (model FW-8771C) and/or rear expansion capability (model FW-8771C and FW-8771A). Follow these procedures bellow for installing a riser card.

For **rear expansion riser card installation** (FW-8771A and FW-8771C), order Riser Card kit RC-87713 and use the following procedure:

1. Remove the pre-installed riser card RC-87711 (model C only)
2. Align the divider of the riser card RC-87713 with the slot key on the socket.
3. Press the card to insert the card into the socket until it installs firmly. Secure the card with 3 screws.

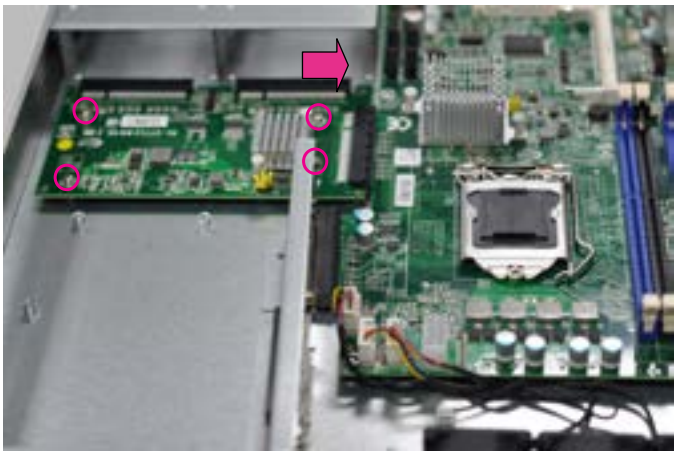


Note: the FW-8771C pre-installs the riser card RC-87711 which occupies two PCIe slosts on the system. Therefore, it is necessary to uninstall it first to make room for another card.

Front Ethernet Module Installation

For **front Ethernet module riser card installation** (model FW-8771C only), order the Riser Card Kit RC-87712 and use the following procedure:

1. Remove the pre-installed riser card RC-87711.
2. Align the divider of riser card RC-87712 with the slot key on the socket.
3. Press the card to insert the card into the socket until it installs firmly. Secure the card with 4 screws.



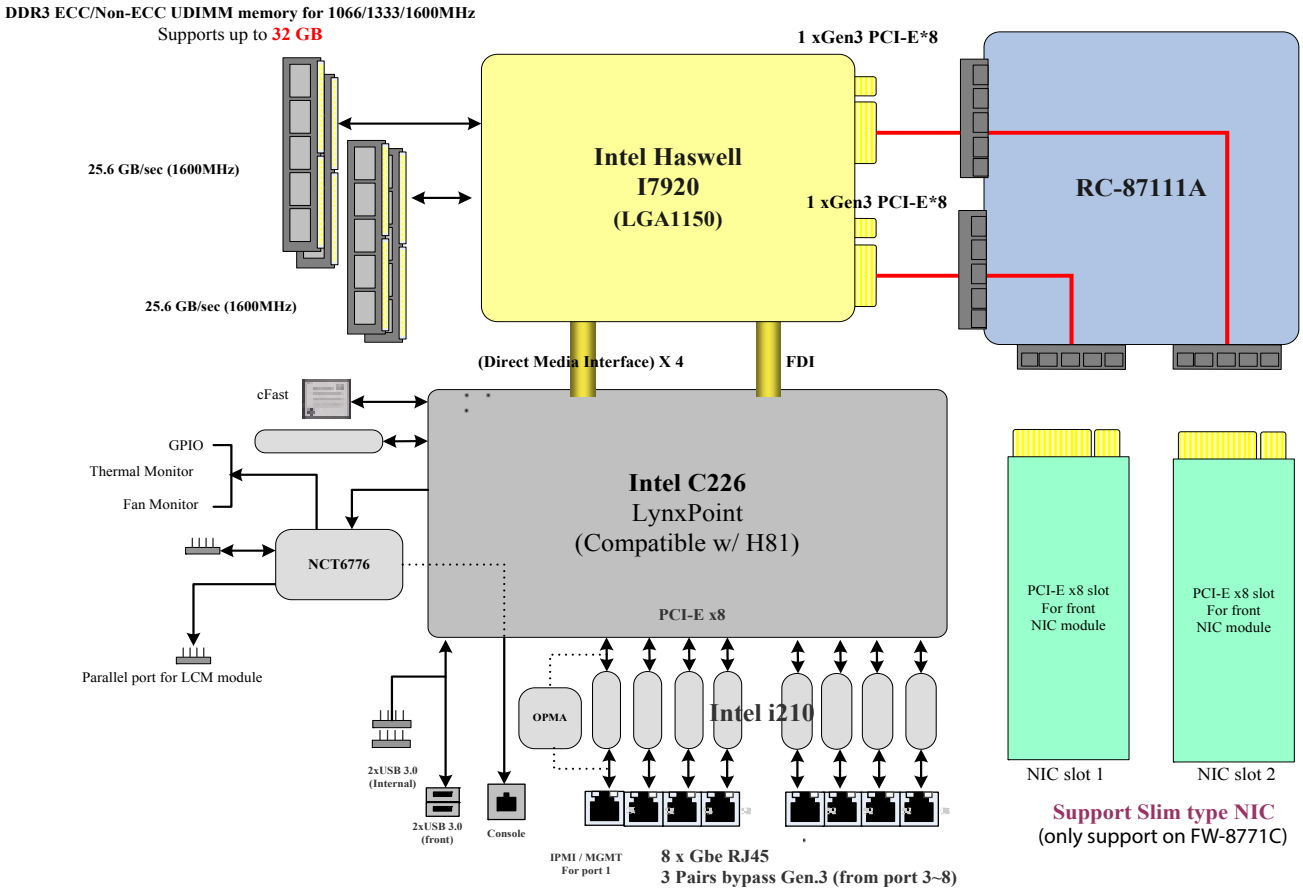
1. To install the front Ethernet module, take off the front bezel first by unfastening the thumbscrews on the front of the bezel.
2. Insert the Ethernet module into the front expansion slot. You should hear a click when the module connects to the system's mainboard.
3. Secure the Ethernet module by fastening the thumbscrews on the module. (Using a screw driver is highly recommended.)

Motherboard Information

Block Diagram

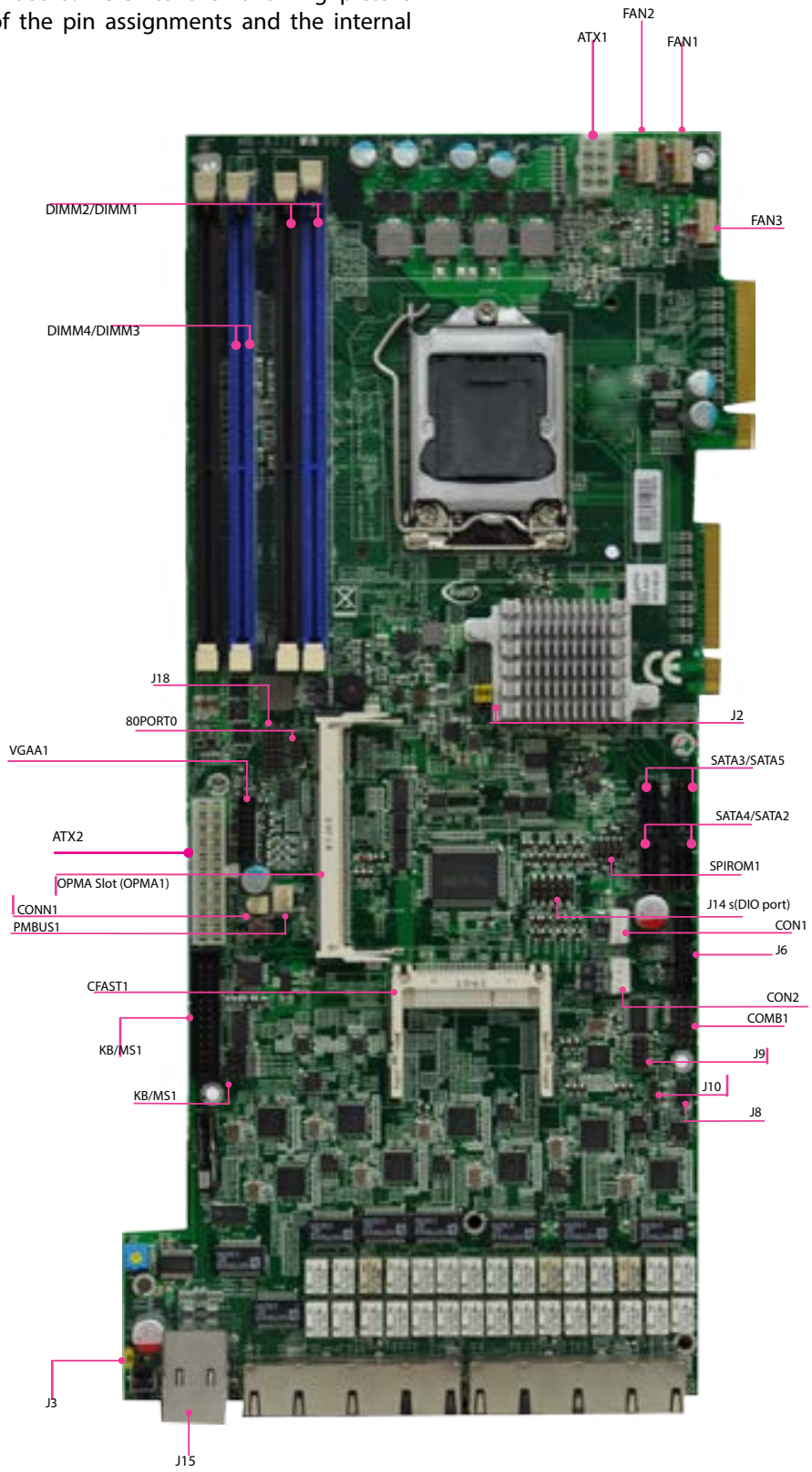
The block diagram depicts the relationships among the interfaces or modules on the motherboard. Please refer to the following figure for your motherboard's layout design.

MB-8771 Block Diagram



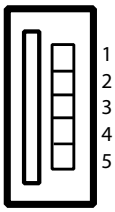
Motherboard Layout

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): 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	GND	P12V	Sensor	NC	FANOUT

DIMM Socket (DIMM1/DIMM2/DIMM3/DIMM4): The 240-pin DDR3 DIMM is for connecting the DDR3 1600 MHz with ECC support. The system can support up to32 GB in maximum. A DDR3 module has the same physical dimensions as a DDR2 DIMM but the notch on the pins is positioned differently. Channel information lists below:

Channel A DIMM0 (blue)

Channel A DIMM1 (black)

Channel B DIMM0 (blue)

Channel B DIMM1 (black)

Note: Since the system is capable of Dual Channel Architecture, some installation guidelines have to be met to enable Dual Channel mode as directed. To insert two DIMMs on the system, insert DIMMS on slot DIMM1 (blue) and DIMM3 (blue). And use slot DIMM2 (black) and DIMM4 (black) if more slots are required.

SATA 2, 3 and 4, 5 Connectors (SATA2/SATA3/SATA4/SATA5): 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. All SATA ports comply fully with SATA Revision 3.0 standard with data transfer rates of up to 6.0 Gb/s. 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. .

Note:

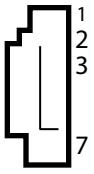
1. To configure your Hard disk using the integrated RAID feature, the Intel®Rapid Storage Technology Utility has to be installed on your Operating System.
2. You will need to select the RAID mode in the BIOS for your SATA drives first. There is also a Intel® RSTe OpROM utility for creating RAID volume; to enter the RSTe OpROM, press Ctrl-I during POST.
3. 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.

4. 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).

SATA2/SATA3/SATA4/SATA5: supports SATA 3.0 connection

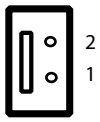
6Pin No.	Function
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



SATA HDD Power Connector (CON1/CON2):

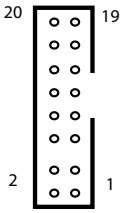
6Pin No.	Function
1	+12V
2	GND
3	GND
4	+5V

CONN1: Power-switch Connector



Pin No.	Pin name
1	GND
2	PSIN

USB Connector USB2&USB3 (J6): It is for connecting the USB module cable. It complies with USB3.0 .

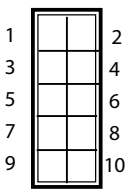


Pin No.	Function	Pin No.	Function
1	ID	2	D1+
3	D0+	4	D1-
5	DO-	6	GND
7	GND	8	USB3_TX+1
9	USB3_TX+0	10	USB3_TX-1
11	USB3_TX-0	12	GND
13	GND	14	USB3_RX+1
15	USB3_RX+0	16	USB3_RX-1
17	USB3_RX-0	18	VBUS
19	VBUS	20	KEY

J15: A combo port of RJ45 and USB3.0 Type A Port

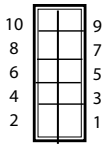
Pin No.	Function	Pin No.	Function
R1	TX+	R2	TX-
R3	RX+	R4	T45A
R5	T35B	R6	RX-
R7	T78A	R8	T78B
U1	VBUS	U2	D0-
U3	D0+	U4	GND0
U5	USB3_RX-0	U6	USB3_RX+0
U7	GND1	U8	USB3_TX-0
U9	USB3_TX+0	U10	VBUS1
U11	D1-	U12	D1+
U13	GND2	U14	USB3_RX-1
U15	USB3_RX+1	U16	GND3
U17	USB3_TX-1	U18	USB3_TX+1

Serial Interface Connectors (COMB1): It is for connecting the RS-232 serial port interface cable.



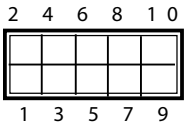
Pin No.	Function	Pin NO.	Function
1	Data Carrier Detect (DCDA#)	2	Data Set Ready (DSRA#)
3	Receive Data (RXDA)	4	Request To Send (RTSA#)
5	Transmit Data (TXDA)	6	Clear To Send (CTSA#)
7	Data Terminal Ready (DTRA #)	8	Ring Indicator (RIA#)
9	Ground (GND)	10	Key

80 Port 0: It is a proprietary connector for connecting a checkpoint device to output checkpoints throughout booting and Power-On Self Test (POST) to indicate the task the system is currently executing.



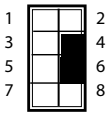
Pin No.	Function	Pin No.	Function
1	CLK	2	LAD1
3	RST-	4	LAD0
5	LRAME-	6	POWER
7	LAD3	8	KEY
9	LAD2	10	GND

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	KEY	2	KEY
3	CS0-	4	POWER
5	MIS0	6	HPLD-
7	KEY	8	CLK
9	GND	10	MOSI

Keyboard and Mouse Interface Cable Connectors (KB/MS1): It is for connecting the PS/2 keyboard and mouse interface cable.

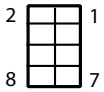


Pin No.	Function	Pin No.	Function
1	P5V	2	MSCLK
3	MSDATA	4	KEY
5	KBDATA	6	KEY
7	GND	8	KBCLK

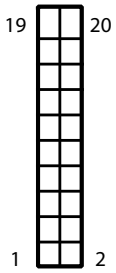
Hardware or Software Reset Jumper(J3): The jumper can be adjusted to be in either hardware or software reset mode when the reset switch is pressed. The hardware reset will reboot the system without turning off the power. The software reset can be programmed to reset a software to its default setting.

Pin No.	Function
1-2	Hardware 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.



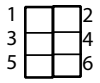
Pin No.	Function	Pin No.	Function
1	GND	2	+12V
3	GND	4	+12V
5	GND	6	+12V
7	GND	8	+12V



Pin No.	Function	Pin No.	Function
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	12	GND
15	PROK	16	-5V
17	5VSB	18	+5V
19	+12V	20	+5V

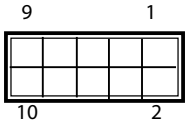
OPMA Slot (OPMA1): This is an optional OPMA (Open Platform Management Architecture) slot on the board. Through this card, the IPMI (Intelligent Platform Management Interface) implementation can be realized. ***Note that the IPMI card provides a VGA connector on the board.***

Clear CMOS and Disable ME Jumper Setting (J2): 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.



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

DIO Port (J14)

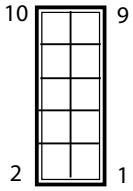


Pin No.	Function	Pin No.	Function
1	GPO_1	2	GPI_1
3	GPO_2	4	GPI_2
5	GPO_3	6	GPI_3
7	GPO_4	8	GPI_4
9	GND	10	GND

PMBUS Pin Headers (PMBUS1)

Pin No.	Function
1	SMBCLK
2	SMBDAT
3	GND

Gen3 Bypass Pin Headers (J9)

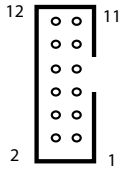


Pin No.	Function	Pin No.	Function
1	KEY	2	KEY
3	RXD	4	RTS
5	TXD	6	CTS
7	KEY	8	KEY
9	GND	10	POWER

Gen3 Bypass Firmware download Setting (J10)

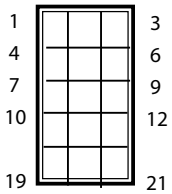
Pin No.	Function
1-2	Normal
2-3	Flash

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 (J18): 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

BIOS Settings

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.

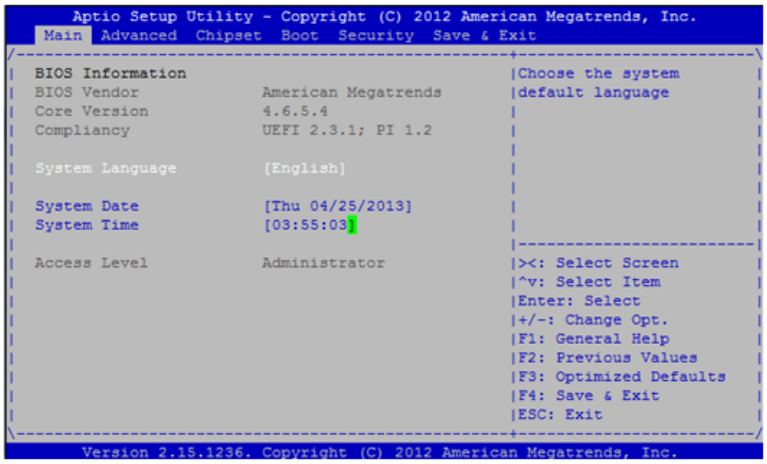
The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

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 mays 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.



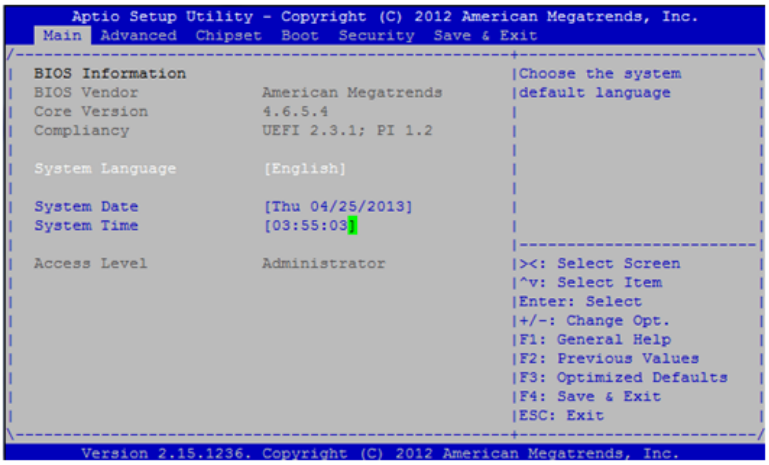
Control Keys	
→←	Select Screen
↑↓	Select Item
<Enter>	Select
+/-	Change Option
F1	General help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
<Esc>	Exit

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.

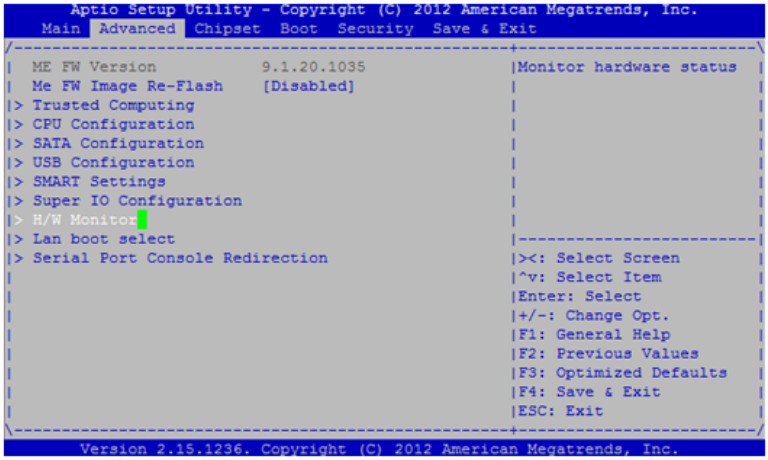


Feature	Description
BIOS Information	BIOS Vendor: American Megatrends Core Version: AMI Kernel version, CRB code base, X64 Compliancy: UEFI version, PI version Project Version: BIOS release version Build Date and Time: MM/DD/YYYY Access Level: Administrator / User
System Date	To set the Date, use **<Tab>** to switch between Date elements. Default Range of Year: 2005-2099 Default Range of Month: 1-12 Days: dependent on Month.
System Time	To set the Date, use **<Tab>** to switch between Date elements.

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

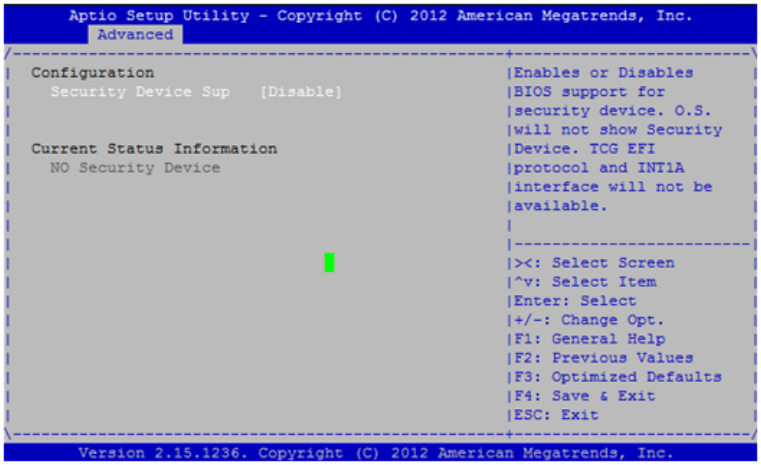
Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown at the right. The sub menus are described on the following pages.



Trusted Computing

Configuration

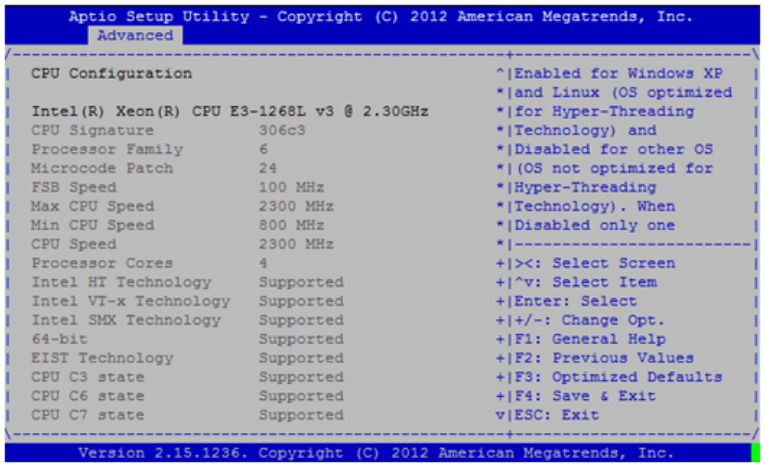
Use this menu to disable or enable Trusted Platform Module (TPM) support. Note that the TPM is an optional hardware module. Your system may not be equipped. The Trusted Platform Module can be used to authenticate hardware devices.



Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

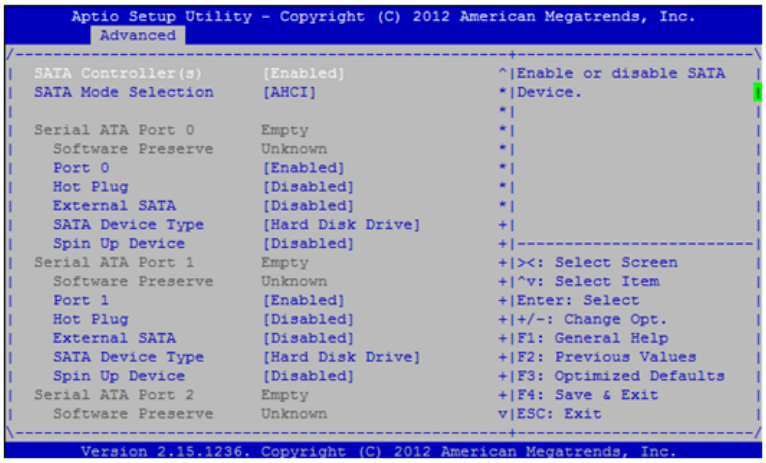
CPU Configuration Settings

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.



SATA Controllers Configuration Settings

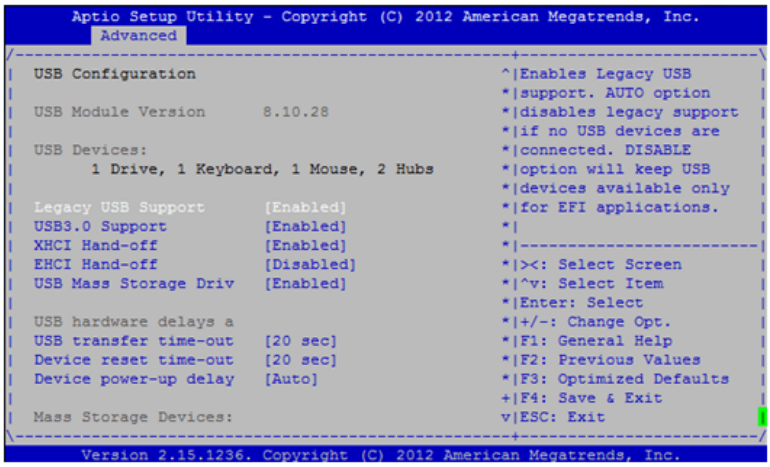
While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show "Not Installed" if no SATA device is installed to the corresponding SATA port.



Feature	Options	Description
SATA Controller(s)	Disabled Enabled	Enable/Disable SATA Device.
SATA Mode	AHCI RAID IDE	Determines how SATA controller(s) operate.
SATA Port X	Disabled Enabled	Enable or disable SATA Device.
Hot Plug	Disabled Enabled	Designates this port as Hot Pluggable.
External SATA	Disabled Enabled	External SATA Support.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Spin Up Device	Disabled Enabled	On an edge detect from 0 to 1, the PCH starts a COMRESET initialization sequence to the device.

USB Configuration Setting

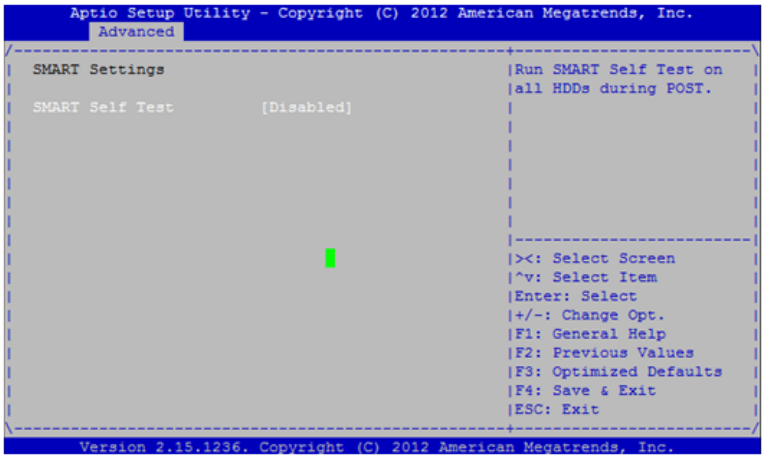
You can use this screen to select options for the USB Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.



Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.
USB3.0 Support	Enabled Disabled	Enable/Disable USB3.0 (XHCI) Controller support.
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-off	Enabled Disabled	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	1 sec 5 sec 10 sec 20 sec	USB mass storage device Start Unit command time-out
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

S.M.A.R.T Settings

Enable this to enable logging of the hard disks when errors occurs, and monitors many statistics of the hard drive, such as temperature over time and errors that occur. Its useful when you use a SMART application inside windows and actually get some useful information, as when you didn't enable it, it would not have recorded as much information.



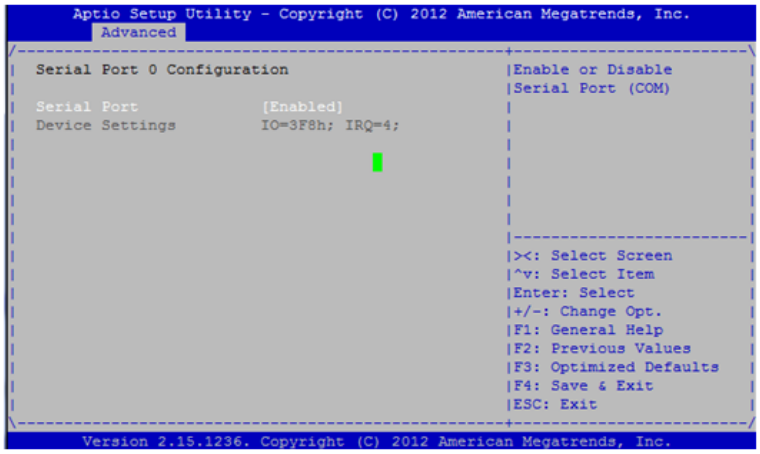
Feature	Options	Description
SMART Self Test	Enabled Disabled	Run SMART Self Test on all HDDs during POST.

SuperIO Configuration

In this screen, you will be able to enable or disable the serial ports which are provided by the SuperIO chip.

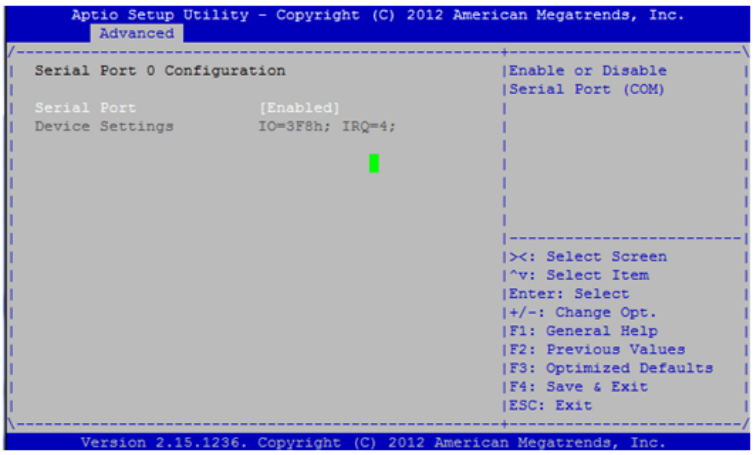
Serial Port 0 Configuration

Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO=3F8h; IRQ = 4



Serial Port 1 Configuration

Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO=2F8h; IRQ = 3



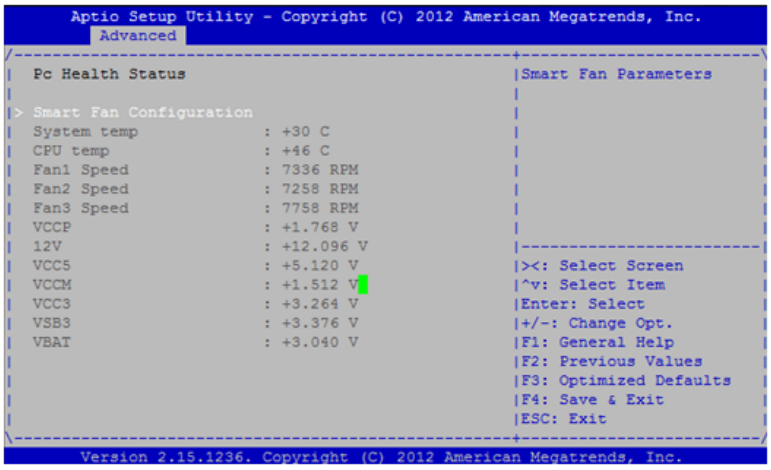
Power Failure

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

Feature	Options	Description
Power Failure	Always off Always on Last state	Power Failure

H/W Monitor Configuration

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(FAN1/FAN2/FAN3) Speed

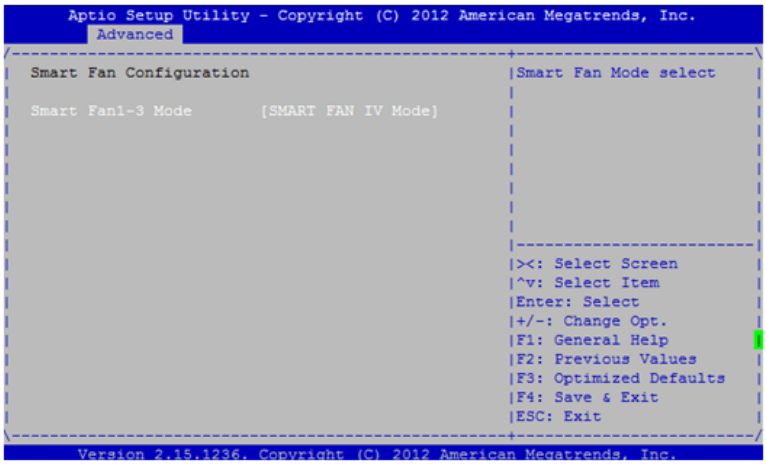
The onboard hardware monitor automatically detects and displays the CPU , chassis and system fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, it displays N/A.

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

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

Smart Fan Configuration

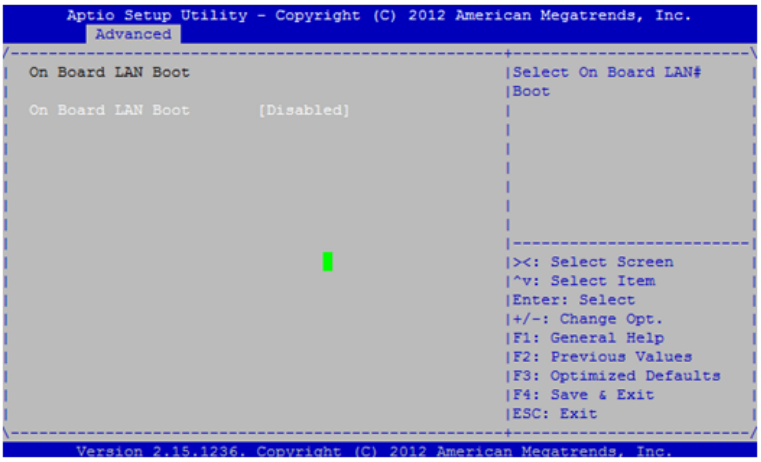
It allows you to configure the smart fan feature. You can manually turn on the fans or set the target CPU temperature at which the fans will start running if the fan is not yet turned on. And the fans can also be turned off automatically if the temperature for the CPU is at or below the specified value.



Feature	Options	Description
Smart Fan1-3 Mode	Manual Mode SMART FAN IV Mode	Smart Fan mode select

LAN Boot Select

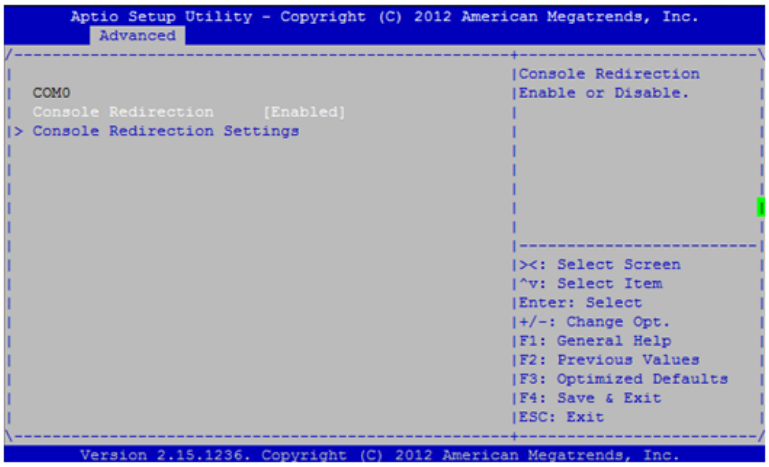
The LAN boot, i.e., Preboot eXecution Environment (PXE) allows you to boot computers using a network interface independently of data storage devices (like hard disks) or installed operating systems. Enable or disable this function on the management port (LAN1 to LAN8 on the front panel) with this option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



Feature	Options	Description
On Board LAN Boot	Disabled LAN1	Select On Board LAN# Boot

Serial Port Console Redirection

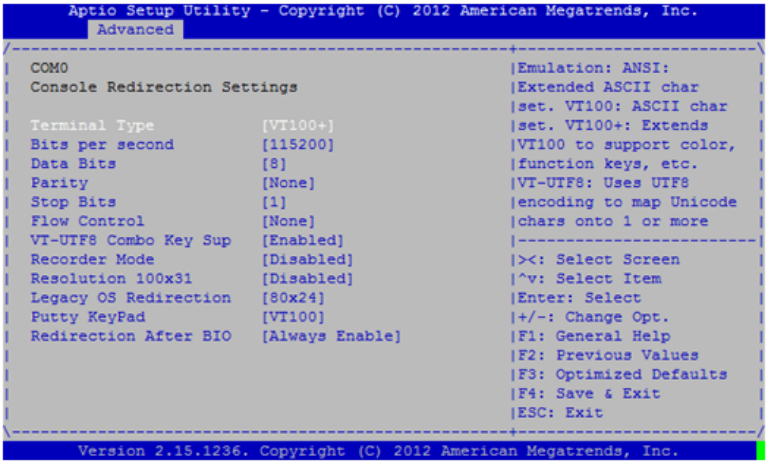
Use this menu to set the settings for BIOS remote access feature.



Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection

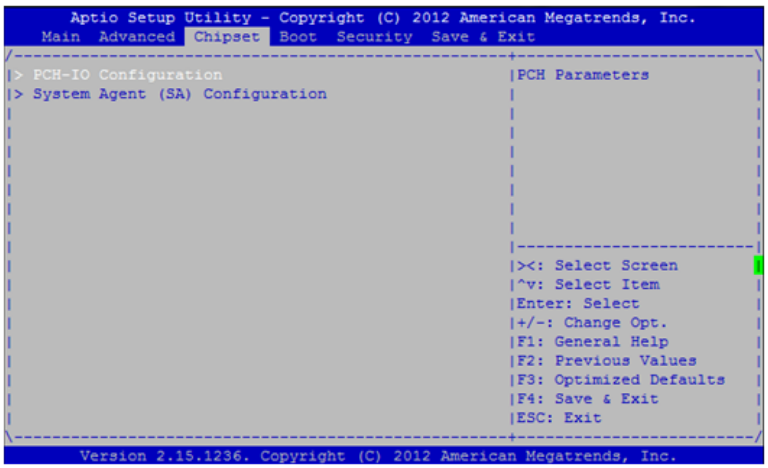
COM0 Console Redirection Settings

Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**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 bytes **ANSI:** Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	1 2	Indicates the end of a serial data packet.
Flow Control	None Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution
Legacy OS Redirection Resolution	80x24 80x25 100x31	On Legacy OS, the Number of Rows and Columns supported redirection
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects Function Key and KeyPad on Putty.
Redirection After BIOS POST	Always Enable BootLoader	The Settings specify if BootLoader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.



Chipset

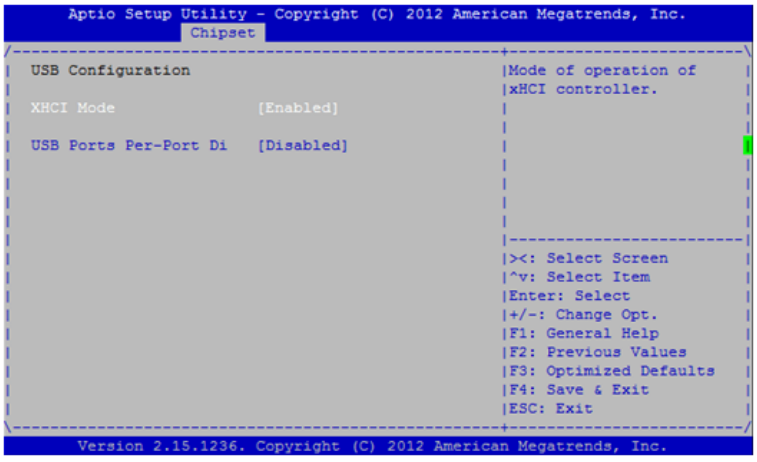
The chipset menu will let you further configure your Intel CPU and PCH capabilities:



PCH I/O Configuration

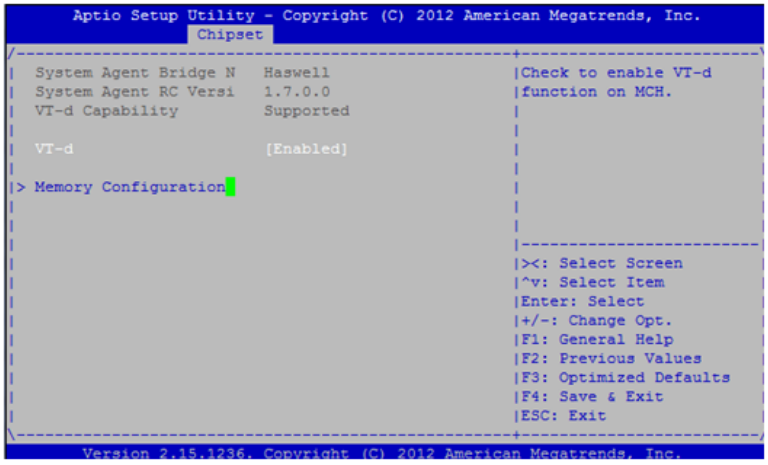
It shows the model name and version of the Intel Platform Controller Hub on the system.

USB Configuration



Feature	Options	Description
XHCI Mode	Disabled Enabled	Mode of operation of xHCI controller.
USB Ports Per-Port Disable Control	Disabled Enabled	Control each of the USB ports (0~13) disabling.

System Agent (SA) Configuration



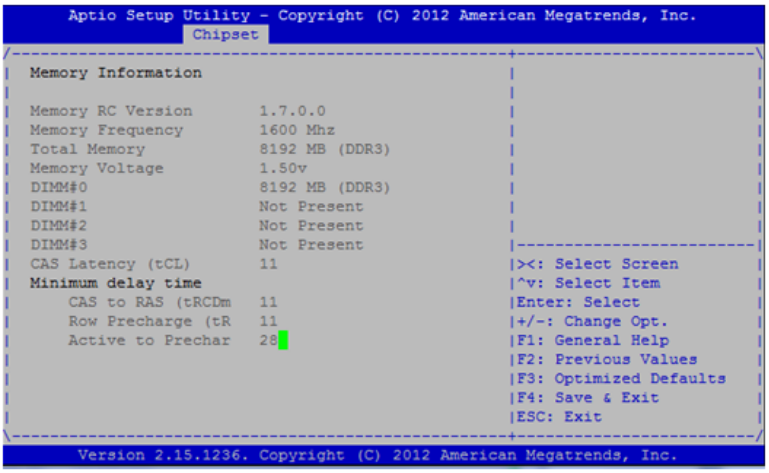
Intel VT-d

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.

Feature	Options	Description
VT-d	Disabled Enabled	Check to enable VT-d function on MCH

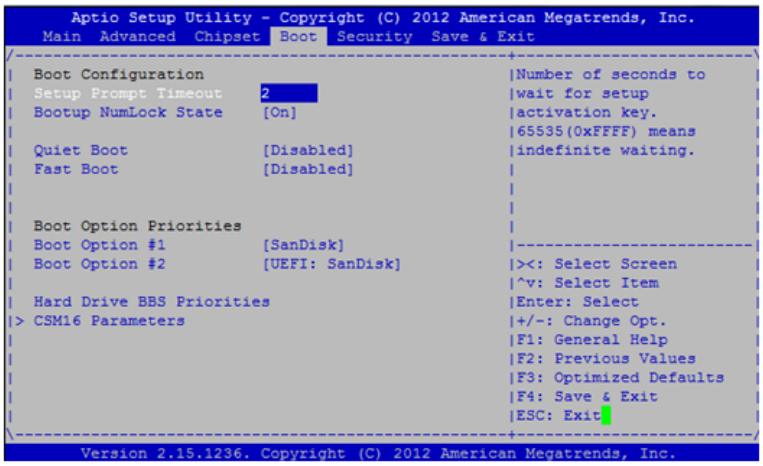
Memory Configuration

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



Boot Setup

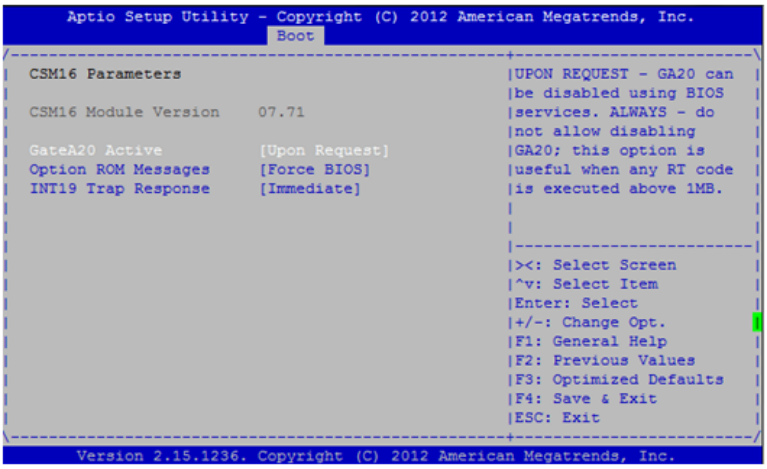
Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display an Boot BIOS Setup option by highlighting it using the <Arrow> keys. Select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



Feature	Options	Description
Setup Prompt Timeout	2	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Fast Boot	Disabled Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Choose boot priority from boot option group.

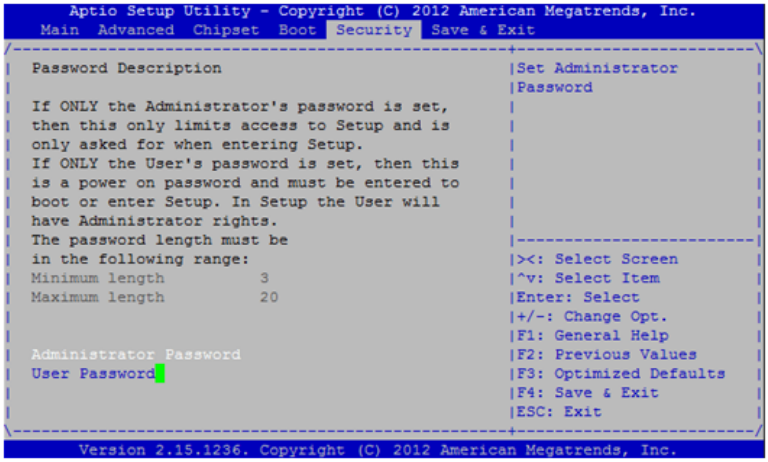
CSM16 Parameters



Feature	Options	Description
GateA20 Active	Upon Request Always	UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS Keep Current	Set display mode for Option ROM
INT19 Trap Response	Immediate Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE - execute the trap right away; POSTPONED - execute the trap during legacy boot."

Security Settings

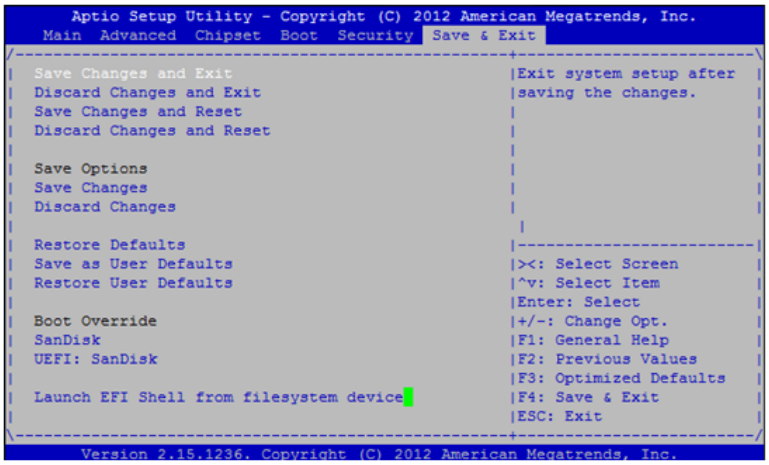
Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub menu for the following items, select the item and press <Enter>:



Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

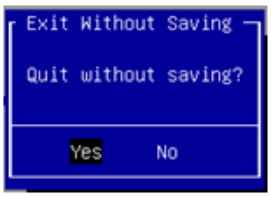
Save & Exit

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.



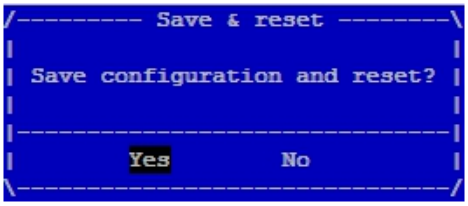
■ Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. The following window will appear after the “Discard Changes and Exit” option is selected. Select “Yes” to Discard changes and Exit Setup.



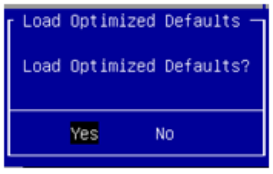
■ Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and reset from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the “Save Changes and Reset” option is selected. Select “Yes” to Save Changes and reset.



■ Restore Defaults

Restore default values for all setup options. Select “Yes” to load Optimized defaults.



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*

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. This 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 on 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 contorl, 8 for the Data Bit, None for Parity Check, and 1 for the Stop Bit.

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* foler 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

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.

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

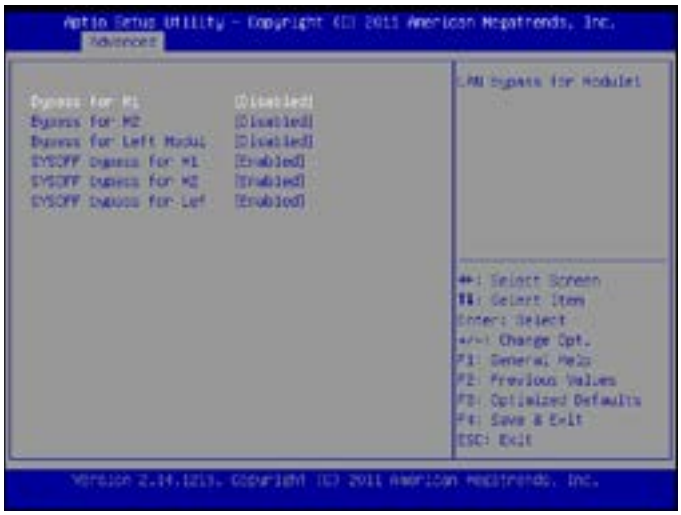
Please refer to the LAN_Bypass_Watchdog folder on the Driver and Manual CD.

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/.

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

Lanner Generation 2 Bypass

Unlike Lanner Generation 3 bypass, Generation 2 bypass is configured through the BIOS menu as shown below:



states, i.e., power on and power off. The following are the illustration of the possibilities of LAN bypass configuration with respect to both power-on and power-off states.

Bypass settings / System Status	LAN Bypass for Port1 and Port 2		LAN Bypass 1&2 when power off
	Enabled	Disabled	Enabled
PWR ON	Bypass	Non-Bypass	
PWR OFF	Bypass	Bypass	

Bypass settings / System Status	LAN Bypass for Port1 and Port 2		LAN Bypass 1&2 when power off
	Enabled	Disabled	Disabled
PWR ON	Non-Bypass	Non-Bypass	
PWR OFF	Non-Bypass	Non-Bypass	

2. A watchdog timer can be used to control the LAN Bypass function dynamically by programming. Lanner also provides sample code for bypass control with WDT via programming. For sample code, look in the LAN_Bypass_Watchdog directory under Driver and Manual CD.

   To compile:

   #gcc wdbp.c -o wdbp

   then switch to a root account to run ./wdbp for excution:

   #./wdbp

   Commands:

   Enable the bypass

   #wdbp.exe –f

   Set Watchdog Timer. This command will set the time interval at which the counter will start count down.

   #wdbp.exe -wl xxx (xxx: 1-255 sec for timer count down)

   Reset Watchdog Timer. This command will reset the watchdog timer's counter and the bypass status to non-bypass.

   #wdbp.exe -wr xxx (xxx: 1-255 sec for timer count down)

Note:

For a description of the physical LAN ports equipped with this functionality, 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

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: □ Repair(Please include failure details) □ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____	
Shipping by: □ Air Freight □ Sea □ Express_____ □ 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

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date