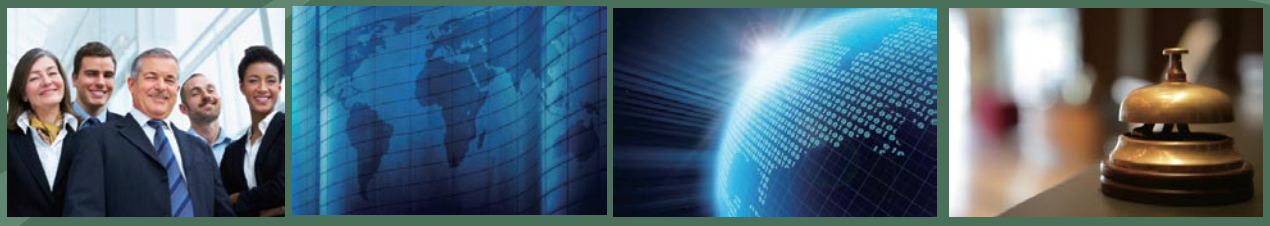
Lanner

Network Application Platforms

Hardware platforms for next generation networking infrastructure



FW-7543 V1.3

User's Manual

2015/08/05

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.

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 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).

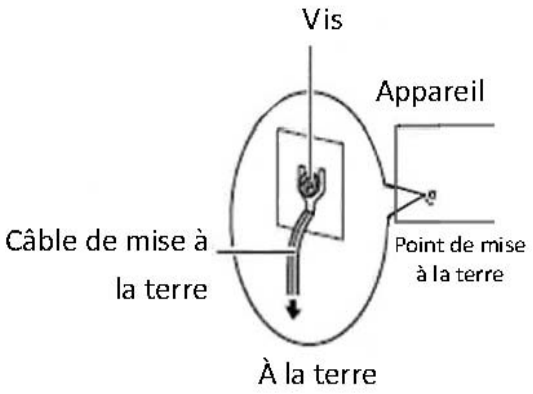
Consignes de sécurité électrique

- 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

Version	Date	Description
V1.1	2014/02/27	Remove the smart fan feature
V1.2	2015/01/12	Add mounting section
V1.3	2015/08/06	Add additional warning statement for hardware installation

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Chapter 1: Introduction

The FW-7543 platform is built on Intel BayTrail processors (single or quad-core). Theses processors come with Intel Virtualization Technology:

The FW-7543 is equipped with advanced I/O capabilities ,which incorporates a console port, a Serial-ATA port as well as a ComplactFlash slot. The back panel also has 4 GbE ports.

The system also features DDR3L SO-DIMM to support CPUs with low voltage requirement, which are often utilized in microservers to process lightweight, scale out workloads for hyper-scale data centers.

The Quick Start Guide will takes you through the basic steps necessary to install your FW-7543 System.

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

System Specification

Features	Descriptions	
Form Factor		Desktop
Platform	Processor	Single-core Intel® Atom™ processor E3815 or Quad-core Celeron® processor J1900* series (Codenamed "BayTrail")
	Chipset	N/A
OS Support		Win 7, WES 7, Win 8, WES 8, WEC 7, Linux (Fedora 18/ Yocto)
BIOS		AMI BIOS
System Memory	Technology	Single-channel DDR3L 1066/1333
	Max. Capacity	8GB
	Socket	1 x 204-pin SODIMM
Storage	HDD Bays	1x 2.5" HDD/SSD kit (Optional)
	CF/SD	1 x CF Card Type II
Networking	Ethernet ports	4 x GbE RJ-45 onboard
	Bypass	N/A
	Controllers	4 x Intel i211
	Ethernet Modules	N/A
	Management Port	N/A
I/O Interface	Reset Button	Yes
	Console	1 x RJ45
	USB	2 x USB 2.0
	IPMI via OPMA slot	N/A
	Display	2x6, 2.0 pin header
Expansion	PCIe/PCI	N/A
Cooling	Processor	Passive CPU heatsink
	System	1 x System Fan
Environmental Parameters	Temperature, Ambient Operating	0~40°C/-20~70°C
	Humidity (RH), ambient operating / ambient non-operating	5~90%, non-condensing/ / 5~95%, non-condensing

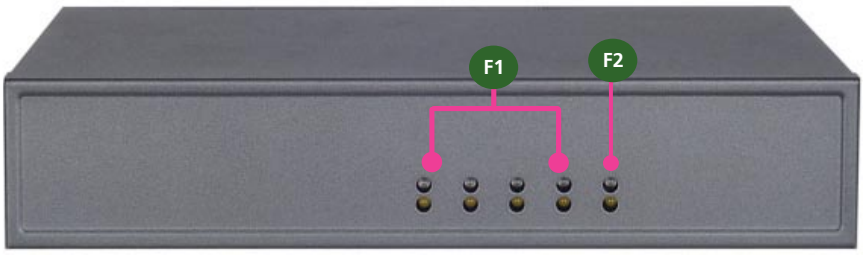
Features	Descriptions	
Miscellaneous	LCD Module	Reserve for ODM
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	231 x 44 x175.5mm
	Weight	1.2 kg
Power	Type / Watts	power adapter
	Input	110-240V @50~60 Hz
Approvals & Compliance		CE Class A, FCC Class B, RoHS
Ordering Information	FW-7543A	Intel® Atom™ processor E3815 (Codenamed "Bay Trail"), 4 Intel GbE LAN ports without Bypass, 1 RJ45 console, 2 x USB, 1 x CF socket, 1 x SATA, power adapter, optional 1 x 2.5" HDD Support
	FW-7543B	Intel® Celeron® processor J1900 series (Codenamed "Bay Trail"), 4 Intel GbE LAN ports without Bypass, 1 RJ45 console, 2 x USB, 1 x CF socket, 1 x SATA, power adapter, optional 1 x 2.5" HDD Support

Package Contents

Your package contains the following items:

- FW-7543 Network Security Platform
- Power cable
- Drivers and user's manual CD.

Front Panel Features



F1 Gigabit Ethernet Ports LED

These LEDs are indicators for the 4 Ethernet ports on the back panel.

Speed LED: If the LED is amber, it indicates that the connection speed is 1000Mbps. If the LED is green, it indicates that the connection speed is 100Mbps. And if it is off, it indicates that the speed is 10Mbps.

Link/ACT LED: If the LED is on, it indicates that the port is active. If it blinks, it indicates that there is traffic.

F2 Power/HDD LED:

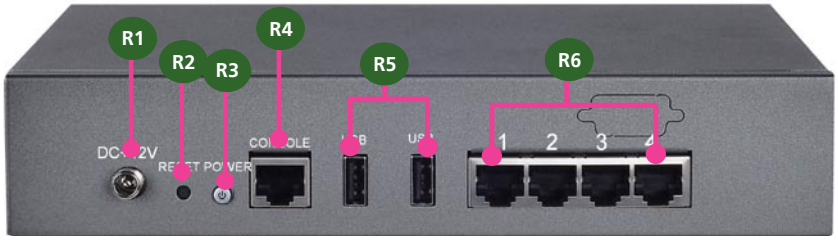
Power

Green indicates that the system is powered on.

HDD

It is an LED indicator (amber) for the HDD. If it is flashing, it indicates data access activities. If it is off, it indicates that the system's storage is not functioning or no data access activities.

Rear Panel Features



R1 Power Adapter socket

It requires a DC 12V/5A power input. Only use the power adapter supplied with the System.

R2 Reset Switch

It is a hardware reset switch. Use a pointed object to press it 5 seconds then release it to reset the system without turning off the power.

R3 Power Switch

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

R4 Console Port:

By using suitable rollover cable or RJ-45 to DB-9 Female, 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.

R5 Two USB 2.0 Ports

It connects to any USB devices, for example, a flash drive. Besides this external USB port, there is another one offered with the onboard pin header connectors (refer to *Jumper Setting* on *Chapter 3 Motherboard Information*)

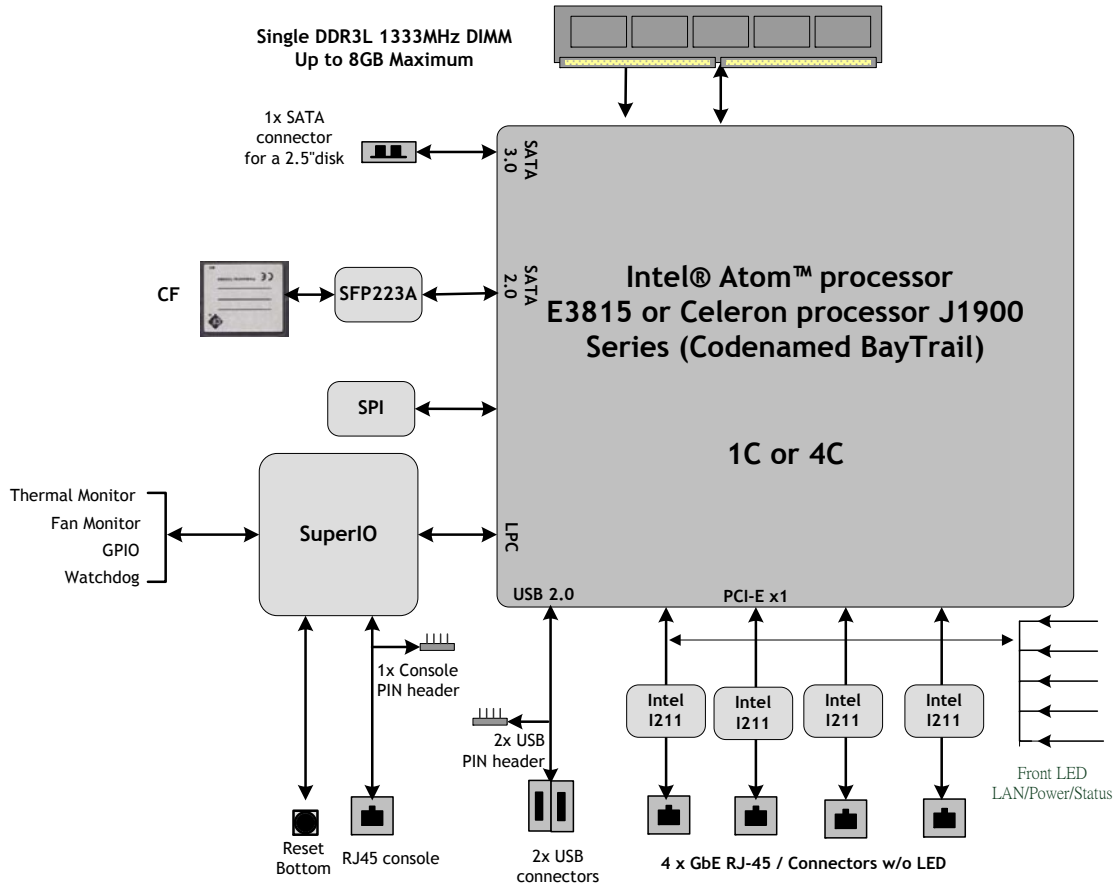
R6 4 Ethernet LAN Port switch module (provided by Intel i211)

Using suitable RJ-45 cable, you can connect FW-7543 System to a computer, or to any other piece of equipment that has an Ethernet connection such as a hub or a switch. These ports are capable of Preboot eXecution Environment (PXE). You need to turn on this feature in the BIOS menu under **Lan Boot Select** (the default is disabled).

Chapter 2:
Motherboard Information

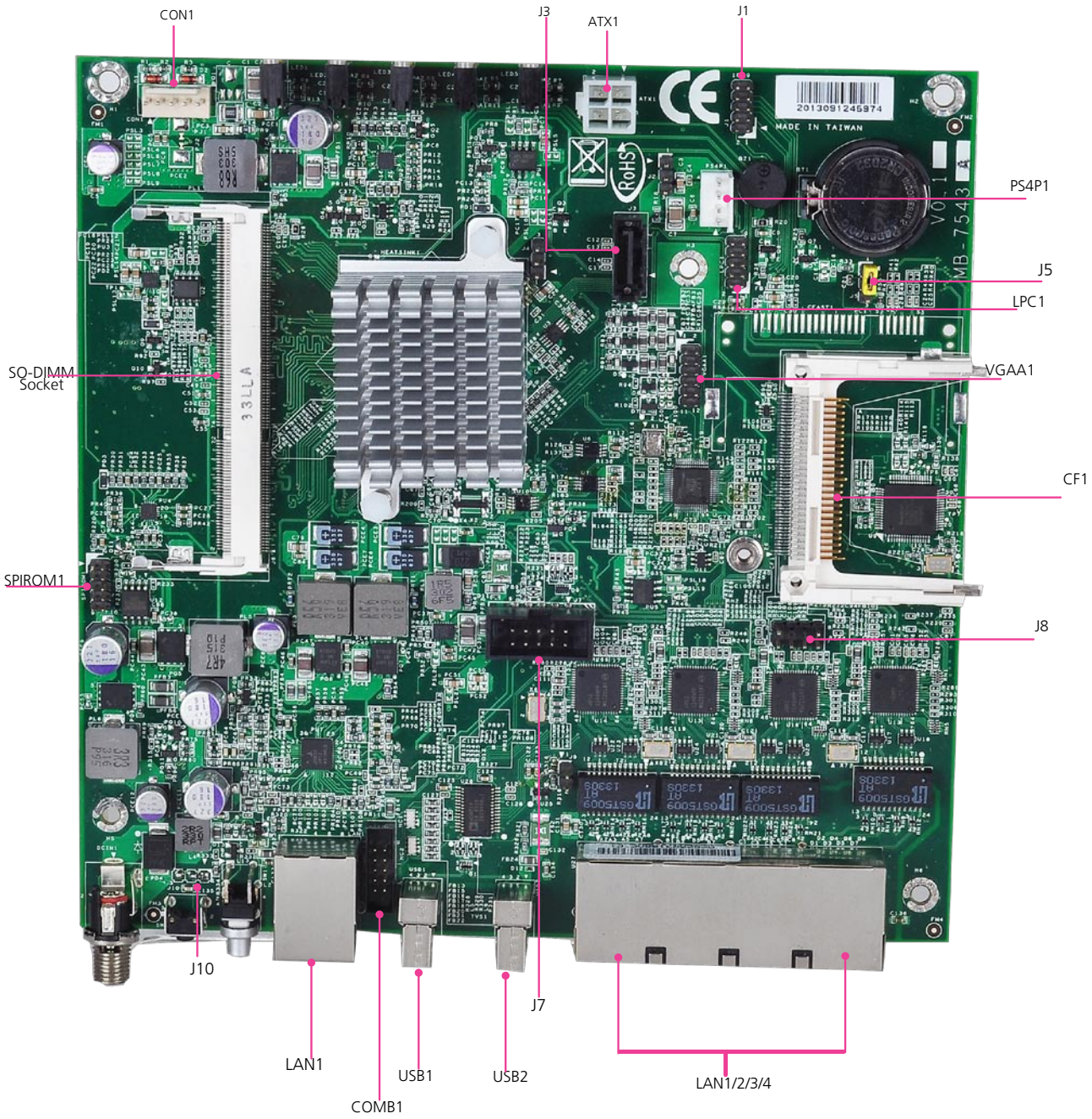
Block Diagram

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.



Motherboard Layout

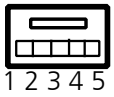
The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



Jumper Settings

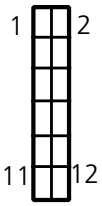
SO-DIMM Socket : The single memory slot (204 pin) is for connecting the DDR3L SO-DIMM (Small Outline Dual In-line Memory Module) memory. The system can suport up to 8 GB in maximum.

FAN Connector (CON1): The 5-pin connector is for connecting the system fan. The BIOS will show the CPU and system fans' monitored temperature and speed under the menu of Hardware Health Configuration.



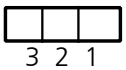
Pin No.	Function
1	FAN OUT
2	
3	FAN Status
4	+12V
5	GND

VGA Interface Connector (VGAA1): It is for connecting the VGA interface cable (2x6 to female DB15).



Pin No.	Function	Pin No.	Function
1	RED	2	GND
3	GREEN	4	GND
5	BLUE	6	GND
7	HSYNC	8	GND
9	VSYNC	10	GND
11	DDCDATA	12	DDCCLK

Hardware or Software Reset Jumper (J10): 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

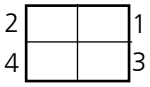
Clear CMOS jumper (J5): It is for clearing the CMOS memory and system setup parameters by erasing the data stored in the CMOS RAM such as the system passwords.

Pin No.	Function
1-2 (Default)	Normal
2-3	Clear CMOS

CompactFlash Connector (CF1): It is for connecting a Compact Flash card to be served as your system's storage. The socket is CF type II and can fit into both bype I and type II cards.

PIN NO.	DESCRIPTION	PIN NO	DESCRIPTION
1	GND	26	CF_CD1#
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_DCS1#	32	CF_DCS3#
8	GND	33	N/C
9	GND	34	CF_DIOR#
10	SATA_RXP	35	CF_DIOW#
11	SATA_RXN	36	WE#
12	GND	37	CF_IRQ#
13	VCC5	38	VCC5
14	GND	39	CSEL#
15	SATA_TXN	40	SATA_WP#
16	SATA_TXP	41	CF_RESET#
17	GND	42	CF_IORDY
18	CF_A2	43	CF_DMARQ
19	CF_A1	44	CF_DDACK#
20	CF_A0	45	CF_ACT#
21	CF_DD0	46	CF_DIAG
22	CF_DD1	47	CF_DD8
23	CF_DD2	48	CF_DD9
24	IOCS16#	49	CF_DD10
25	CF_CD2#	50	GND

ATX Power Connector (ATX1)



Pin No.	Function
1	Ground
2	VCC12 (12V)
3	Ground
4	VCC12 (12V)

Serial-ATA Power Connector (PS4P1): It is used for connectig the SATA power cord.

Pin No.	Function
1	VCC12 (12V)
2	Ground
3	Ground
4	VCC (5V)

SATA Connector(J3): It is for connecting a 2.5" SATA harddisk to be served as your system's storage. The ICH8 chipset supports the Serial ATA Specification Revision 3.0. with data transfer rates up to 6.0 Gb/s(600 MB/s).

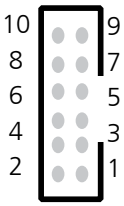
The controller contains two modes of operation—a legacy mode using I/O space, and an AHCI mode using memory space. Software that uses legacy mode will not have AHCI capabilities.

The AHCI (Advanced Host Controller Interface) is a programming interface which defines transactions between the SATA controller and software and enables advanced performance and usability with SATA. Platforms supporting AHCI may take advantage of performance features such as no master/slave designation for SATA devices—each device is treated as a master—and hardware assisted native command queuing. AHCI also provides usability enhancements such as Hot-Plug. Here is the list of the AHCI capabilities which exist in the system:

1. Hardware assisted native command queuing
2. Aggressive power management
3. LED indicator support

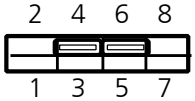
Note: To configure your hard disk as AHCI compatible, use the BIOS menu. Refer to *IDE Configuration Settings* on **Chapter 4 *BIOS Settings*.**

Serial Interface Connectors(COMB1): It is for connecting the RS-232 serial port module cable. This is COM2 where as the external console port (RJ45) is COM1.



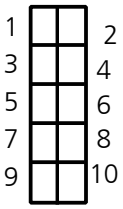
Pin No.	Function	Pin No.	Function
1	Data Carrier Detect (DCD)	6	Clear To Send (CTS)
2	Data Set Ready (DSR)	7	Data Terminal Ready (DTR)
3	Received Data (RxD)	8	Ring Indicator (RI)
4	Request To Send (RTS)	9	Signal Ground
5	Transmitted Data (TxD)	10	

Keyboard and Mouse Connector (J8): It is for connectig the PS/2 keyboard and mouse interface cable.



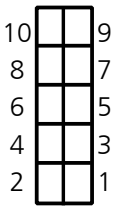
Pin No.	Function	Pin No.	Function
1	VCC	2	MSCLK
3	MSDAT	4	KEY
5	KBDAT	6	KEY
7	GND	8	KBCLK

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



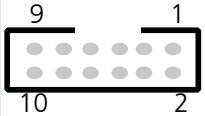
Pin No.	Function	Pin No.	Function
1	NC	2	NC
3	SPI_CS0	4	V_3P3_SPI
5	SPI_ICH_MISO	6	SPI_HOLD0_L
7	KEY	8	SPI_ICH_CLK
9	GND	10	SPI_ICH_MOSI

LPC I/O bus (Port 80 output for Debug Card) (LPC1): It is Intel proprietary connector for connecting a checkpoint device to output checkpoints throughout bootblock and Power-On Self Test (POST) to indicate the task the system is currently running.



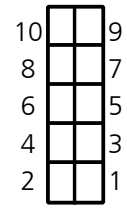
Pin No.	Function	Pin No.	Function
1	CLK_33M_P80	2	LPC_LAD1
3	RST_80DGPT_N	4	LPC_LAD0
5	LPC_FRAME_N	6	+3.3V
7	LPC_AD3	8	GND
9	LPC_AD2	10	GND

USB Connector(J7) : It is for connecting the USB module cable. It complies with USB2.0 and is capable of low-speed, full-speed, and high-speed which can support up to 480 Mbps connection speed.



Pin No.	Function	Pin No.	Function
1	VCC5	2	VCC5
3	USBx_N	4	USBx_N
5	USBx_P	6	USBx_P
7	GND	8	GND
9	GND	10	GND

Digital I/O Port (J1)



Pin No.	Function	Pin No.	Function
1	GPIO1	2	GPIO8
3	GPIO2	4	GPIO7
5	GPIO3	6	GPIO6
7	GPIO4	8	GPIO5
9	GND	10	GND

Chapter 3: Hardware Setup

Preparing the Hardware Installation

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

WARNING:

Please wear ESD-proof gloves when accessing the motherboard.

To reduce personal injury or system damage, please completely power off the system and remove all power source/connection before conducting the following steps.

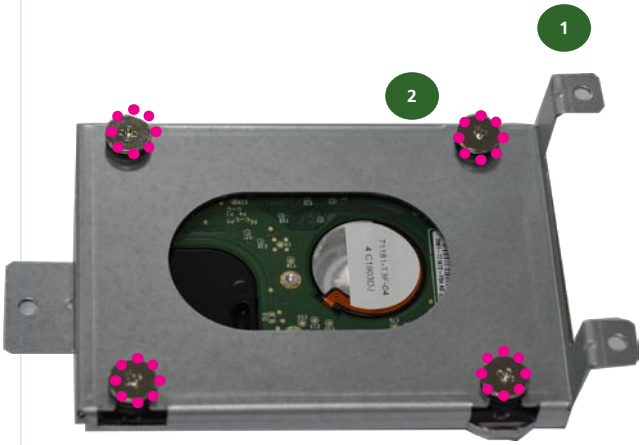
Do NOT pile items on top of the system to prevent damages due to this improper use. Lanner is not liable for damages caused by improper use of the product.

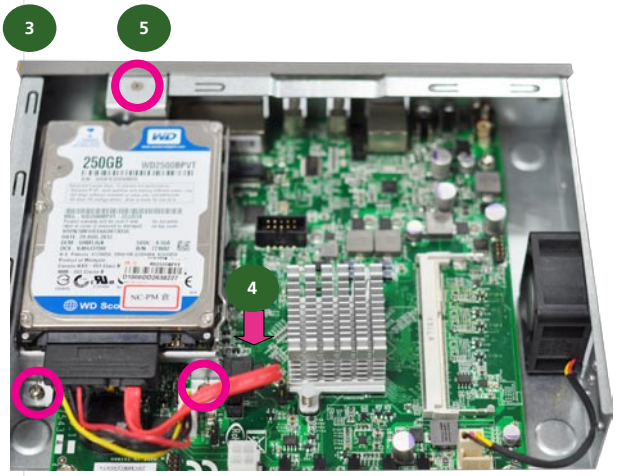
1. Unpower the FW-7543 and remove the power cord.
2. Turn the device upside down. Unscrew 2 screws from the two sides and on the bottom of the top cover of the FW-7543 System.
3. Slide the cover by following the arrow in the drawing below to open it.

Installing the Disk Drive

The system can accommodate one Serial-ATA disk (2.5"). Follow these steps to install a disk drive into the FW-7543:

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





Notes: motherboard standoffs are needed to mount the disk drive.

Installing the System Memory

The motherboard supports DDR3L memory that features low power DDR3L SO-DIMM to support CPUs with low voltage requirements. It comes with one Double-Data-Rate Three Low (DDR3L) Small Outline Dual Inline Memory Modules (SO-DIMM) socket.

1. Align the memory module's cutout with the SO-DIMM's slot notch.
2. Install the SO-DIMM.

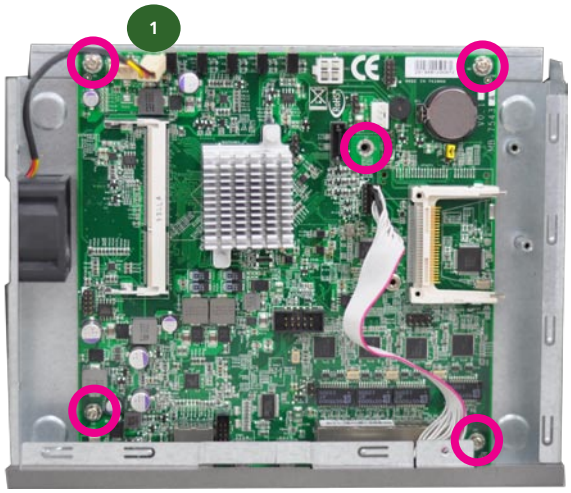
Note:

1. SO-DIMM installed must meet the speed requirement–DDR3L with low power consumption. Do not install DIMMs with different specifications.
2. The motherboard can support a total memory capacity of 8 GB in maximum.

Installing a CompactFlash Card

FW-7543 provides one CompactFlash slot. Follow the procedures bellow too install a CompactFlash card.

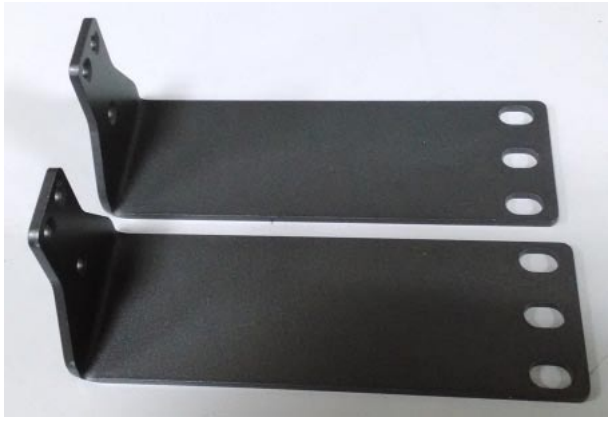
1. Take out the motherboard to make room for CF installation by unscrewing the screws on the motherboard.
2. Align CompactFlash card and the card slot with the arrow pointing toward the connector.
3. Push the card to insert into the connector.



Installing FW-7543 On A Rack

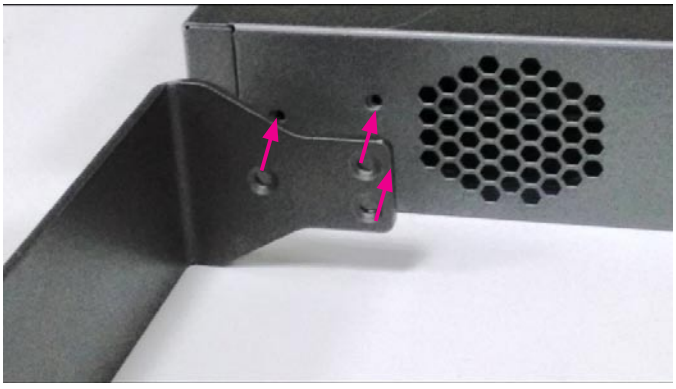
FW-7543 comes with an optional mounting kit. The following steps will show how to install FW-7543 on a rack with the optionally supplied kit.

1. Prepare the rack-mounting kit. There is a pair of mounting ear-brackets and screws.



2. Refer to the 3 circled screwholes on each side of the system.

3. Aligh the screwholes between the ear-bracket and the system, as shown in the image below.

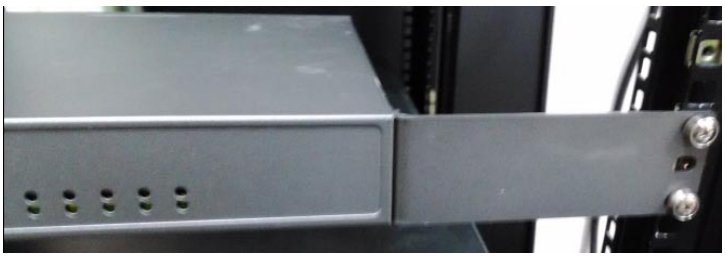


4. Secure the ear-bracket to the system with screws.

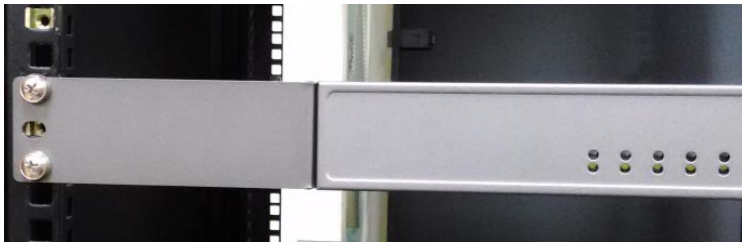
5. Do the same for another side.

6. Attach the ear-brackets to the rack as shown in the image below. Make sure the mounting screw holes are aligned.

7. Apply screws.



8. Do the same for another side.



9. Installation is completed.

Chapter 4:
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.

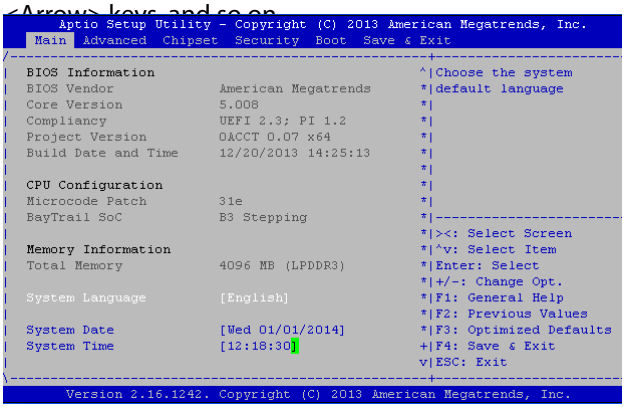
The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

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.



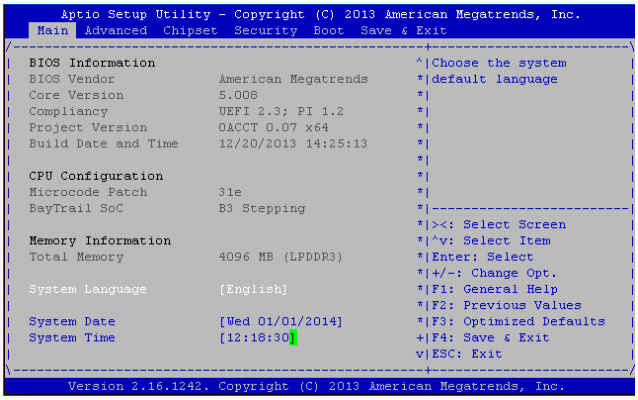
Keys	Description
-><- Left/Right ^ v	The Left and Right <Arrow> keys allow you to select an setup screen. For example: Main screen, Advanced screen, Boot screen, and so on.
Up/Down	The Up and Down <Arrow> keys allow you to select an setup item or sub-screen.
+- Plus/Minuss	The Plus and Minus <Arrow> 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.

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.

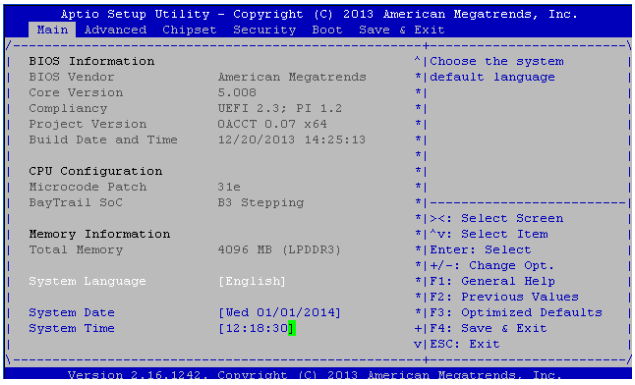


System Language

Use this item to choose the BIOS language.

System Time/System Date

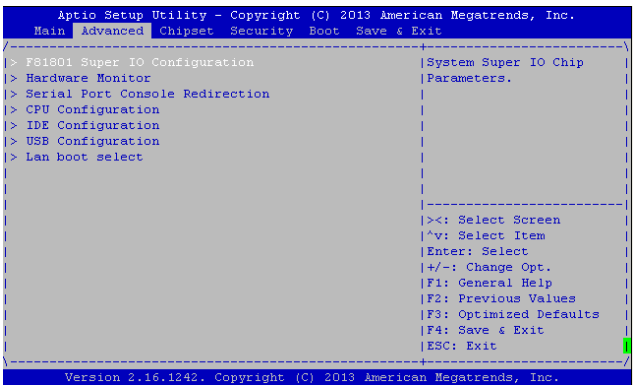
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.



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

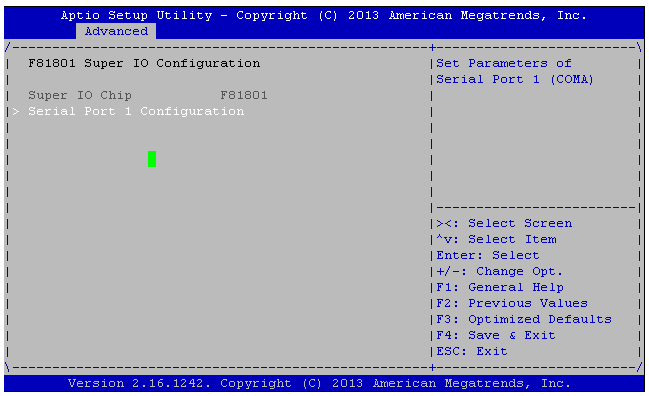
Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown at the right. The sub menus are described on the following pages.



Super IO configuration

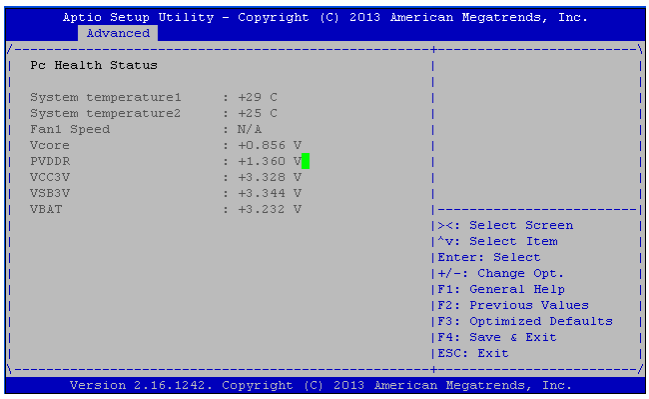
Serial Port 1 Configuration

Item	Selection
Serial Port	Enable or disable this serial port
Device Settings	Shows the serial port base address and IRQ port



PC Health Status

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



SYSTEM Temperature 1/2

The onboard hardware monitor automatically detects and displays motherboard temperature.

FAN1 Speed

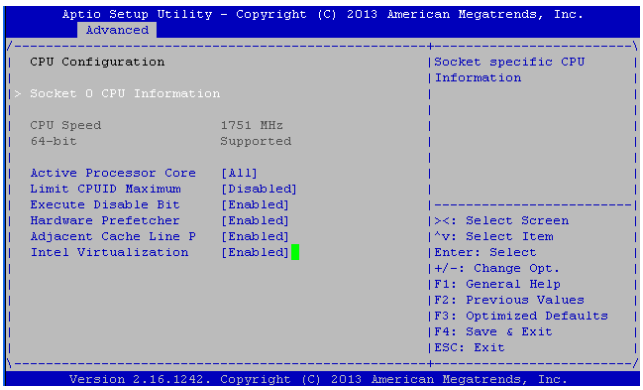
The onboard hardware monitor automatically detects and displays the fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, it displays N/A.

CPU Voltage, 3V voltage, 5V voltage, VBAT, etc

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

CPU Configuration

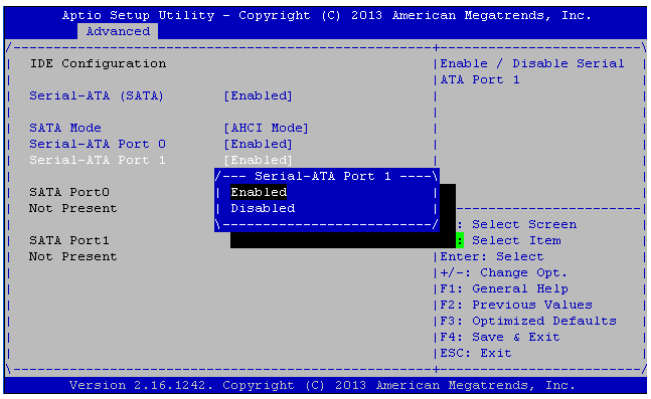
You can use this screen to view the capabilities of your CPU. You can also use this menu to enable/disable certain functions of your CPU. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item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



Item	Selection
Active Processor Core	Enter the number of processor cores to be enabled for Quad-core Celeron® processor J1900.
Limit CPUID Maximum	Allows legacy operating systems to boot even without support CPUs with extended CPUID functions. Select to enable or disable this function
Execute Disable Bit	Select to enable or disable the No-Execution Page Protection Technology.
Hardware Prefetcher	The processor has a hardware prefetcher that automatically prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads. When enabled, the processor's hardware prefetcher will be enabled and allowed to automatically prefetch data and code for the processor. When disabled, the processor's hardware prefetcher will be disabled.
Adjacent Cache Line P	Select to enable or disable prefetching of adjacent line
Intel Virtualization	The Intel VT is a hardware-assisted virtualization. This processor supports Intel Virtualization. Enable or disable this feature.

IDE Configuration

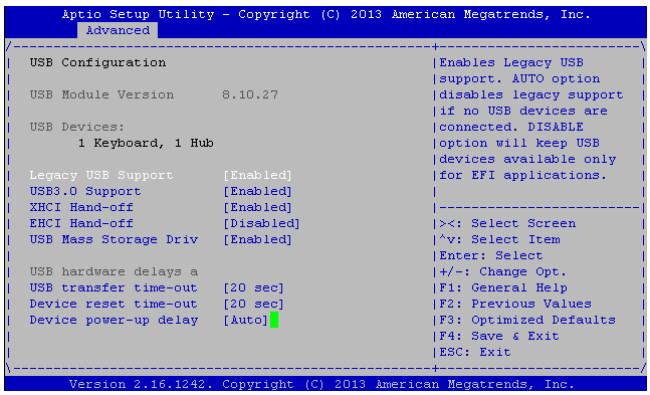
While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show "Not Present" if no SATA device is installed to the corresponding SATA port.



Item	Selection
Serial-ATA (SATA)	Enable/disable the SATA Controller.
SATA Mode	Set to IDE mode when your want to use the Serial-ATA hard disk drives as Parallel ATA physical storage devices. IDE Mode: Set to IDE mode when your 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.
SATA Port 0/1	Enable or disable the SATA port.

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.



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.

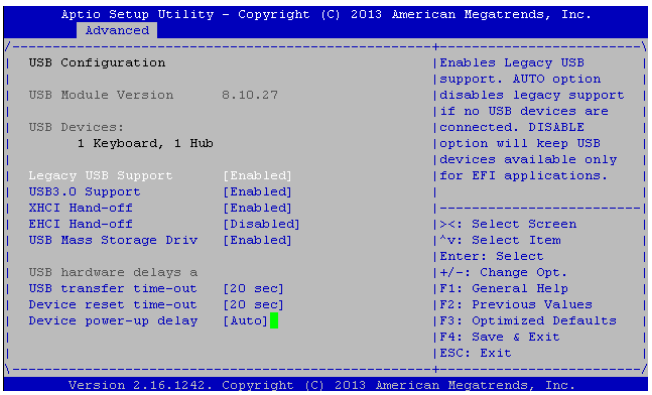
XHCI/EHCI Hand-Off

It allows you to enable support for operating systems which do not have the eXtensible Host Controller Interface (xHCI)/Enhanced Host Controller Interface hand-off (EHCI hand-off) feature for USB devices.

Option	Description
Enabled	Enable this feature
Disabled	Disable this feature

USB Mass Storage Driv

In this option, you can enable or disable the attached USB drive to be used as the system's hard drive.



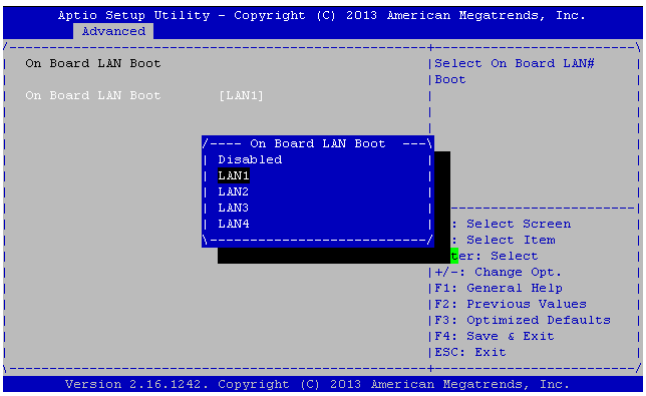
USB Hardware Delays a

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. • 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.
Device reset time-out	This option sets the reset timing for the USB Mass Storage to be initialized. When set to 10 Sec, the BIOS will wait for up to 30 seconds for the USB flash drive to initialize.
Device power-up delay	This option sets the power-up timing for the USB Mass Storage to be initialized.

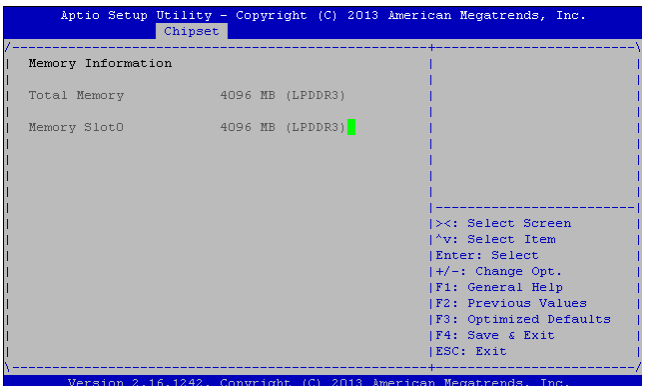
LAN Boot Select

The 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 with this option here.



Chipset

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



Memory Information

It lists the total memory detected and the memory populated in each slot.

USB Configuration

Item	Description
USB mode	Select the USB interface specification from either the most current xHCI (eXtensible Host Controller Interface) or previous EHCI (Extensible Host Controller Interface) or disable both interfaces.

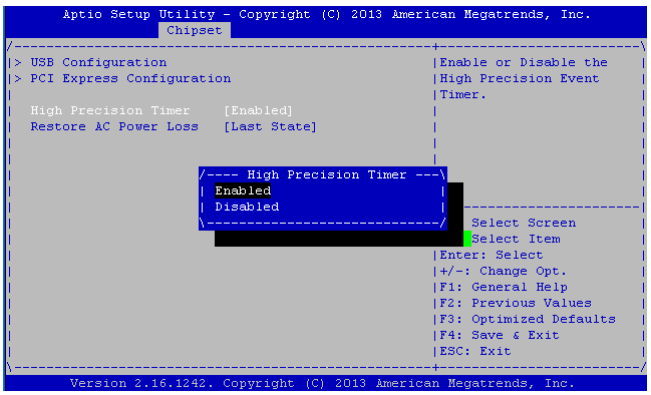
PCI Express Configuration

Item	Description
Enable/disable	Select to enable or disable the PCIe controller. Be cautious that communications or devices that use this controller will be affected when setting this option.
Speed	Select the PCIe standard to specify the speed for each PCIe port: Gen1: 250 MB/s Per lane Gen2: 500MB/s Per lane

Restore on 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 Power Off, the system goes into "off state" after an AC power interruption.
Power On	When setting to Power 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.

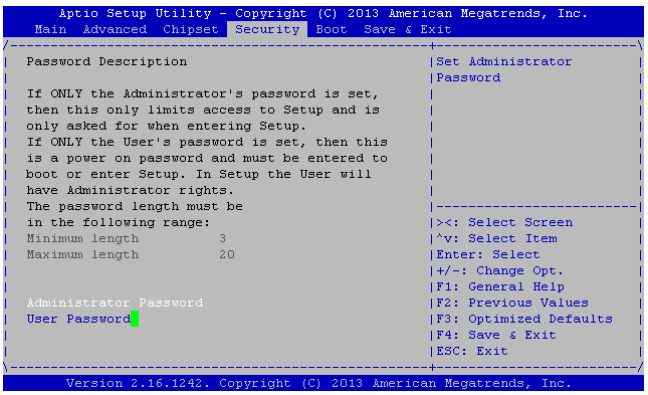


High Precision Timer

Select to enable or disable the High Precision Event Timer.

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>:



Administrator Password

If you have set an administrator password, you should enter the administrator password for accessing the BIOS setup. 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 and accessing the system; however, some functions may be disabled.

To set an Administrator/User password:

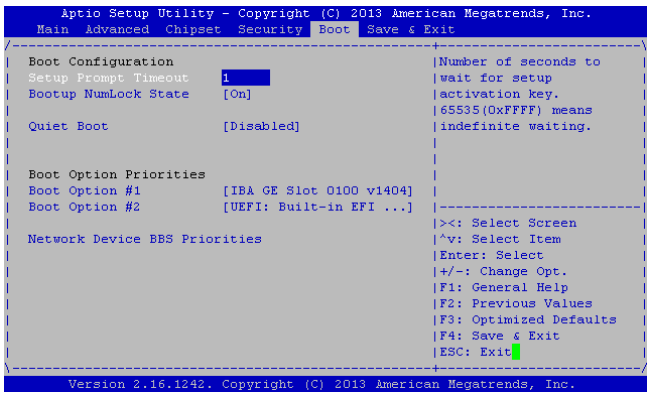
1. Select the option item and press Enter.
2. From the Create New Password box, key in a password, then press enter.
3. Confirm the password when prompted.

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.

Boot Configuration



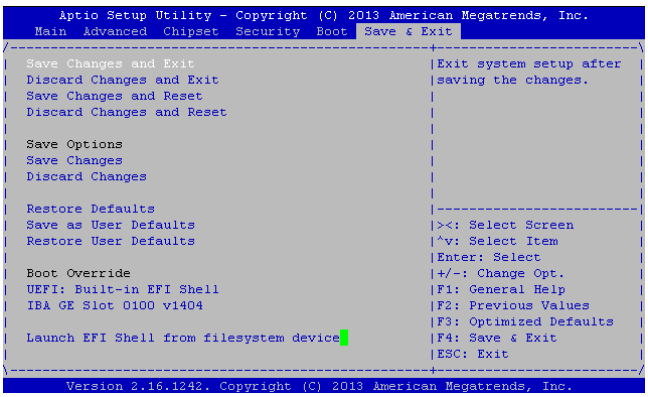
Boot Configuration

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.
Quiet Boot	Enabling this item allows the BIOS to suppress the message displayed during the POST.
Set Boot Priority	Use this screen to specify the order in which the system checks for the device to boot from.

Save and 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 User 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 filesys-tem 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* folder on the *Driver and Manual CD*

To execute the sample code: enter the number of seconds to start count down before the system can be reset. Press start to start the counter and stop to stop the counter..

Dwd_tst --swt xxx (Set Watchdog Timer 1-255 seconds)

wd_tst[*] --start (Start Watchdog Timer)

wd_tst --stop (Stop Watchdog Timer)

For sample watchdog code, see *watchdog* 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. This following steps illustrate how to use this feature. The BIOS of the system allows the redirection of console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port.

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:

   BIOS > Advanced > Serial Port Console Redirection > Console Redirection Settings > [115200, 8 , None,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.

Appendix C: 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.

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 ***Confirmed By Supplier***

_____ _____

Authorized Signature / Date **Authorized Signature / Date**