



E3C226D2I

E3C224D2I

User Manual

Version 1.0

Published June 2017

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- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see

www.dtsc.ca.gov/hazardouswaste/perchlorate"

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Chapter 1: Introduction

Thank you for purchasing ASRock **E3C226D2I / E3C224D2I** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains the introduction of the motherboard and step-by-step hardware installation guide. Chapter 3 and 4 contains the configuration guide of BIOS setup and information of the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock's website without further notice. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website <http://www.asrock.com>

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.

www.asrock.com/support/index.asp

1.1 Package Contents

ASRock **E3C226D2I / E3C224D2I** Motherboard

(Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)

Quick Installation Guide

Support CD

6 x Serial ATA (SATA) Data Cables (Optional)

1 x I/O Panel Shield

1.2 Specifications

Physical Status	Form Factor	Mini-ITX
	Dimension	6.7" x 6.7" (17.0 cm x 17.0 cm)
Processor System	CPU	E3C226D2I: Intel® Xeon® E3-1200 processor v3/v4* series *BIOS version 3.0 or above is required. E3C224D2I: Intel® Xeon® E3-1200 processor v3/v4* series *BIOS version 3.0 or above is required.
	Socket	Single socket (LGA1150)
	Power Phase	4 power phase design
	Chipset	Intel® C226 / C224
BIOS	BIOS Type	64Mb AMI UEFI Legal BIOS
System Memory	Max. Capacity	16GB DDR3 ECC DIMM
	Type	Dual Channel memory technology Supports DDR3 1600/1333 ECC/non-ECC* UDIMM memory *non-ECC UDIMM support Client OS only.
	DIMM Size Per DIMM	8GB, 4GB, 2GB, 1GB
	Voltage	1.35V, 1.5V
Expansion Slot	PCIe 3.0 x 16	1 slot (PCIe1: x16 mode)
	PCIe 3.0 x 4	N/A
	PCIe 2.0 x 1	N/A
	PCI	N/A

Storage	SATA controller	Intel® C226: 6 x SATA3 6.0 Gb/s (support RAID 0, 1, 5, 10) Intel® C224: 4 x SATA3 6.0 Gb/s, 2 x SATA2 3.0 Gb/s (support RAID 0, 1, 5, 10)
	Additional Controller	N/A
Ethernet	Interface	Gigabit LAN 10/100/1000 Mb/s
	LAN Controller	2 x Intel® i210
Managememt	Controller	ASPEED AST2300
	IPMI Dedicated GLAN	Realtek RTL8211E
Graphics	Controller	ASPEED AST2300
	VRAM	DDR3 16MB
	Output	Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz
Rear Panel I/O	LAN Port (RJ45)	2
	PS/2 KB/ Mouse	1
	VGA Port	1 x D-Sub
	USB 2.0 Port	2
	USB 3.0 Port	2
	Serial Port	1
	UID Button/ UID LED	1

Internal Connector	COM Port Header	N/A
	Auxiliary Panel Header	1 (includes chassis intrusion, location button & LED, front LAN LED)
	TPM Header	1
	IPMB Header	1
	Buzzer	N/A
	Fan Header	3 x 4-pin
	ATX Power	1 (24-pin) + 1 (4-pin)
	USB 2.0 Header	1x USB2.0 header (each supports 2 USB 2.0)
	Type A USB 2.0 Port	1
	USB 3.0 Header	1x USB3.0 header (each supports 2 USB 3.0)
	Mezzanine card Board to Board connector	N/A
Supported OS	OS	Microsoft® Windows®: Server 2008 R2 SP1(x64) Server 2012 (x64) Linux: RedHat Enterprise Linux Server 5.5 / 6.4 (x32 and x64) CentOS 5.5 / 6.4 (x32 and x64) SUSE Enterprise Linux Server 11 SP1 (x32 and x64) FreeBSD 9.1 (x32 and x64) Fedora Core 18 (x64) UBuntu 12.04/12.10 (x64) Virtual: VMWare ESXi 5.1

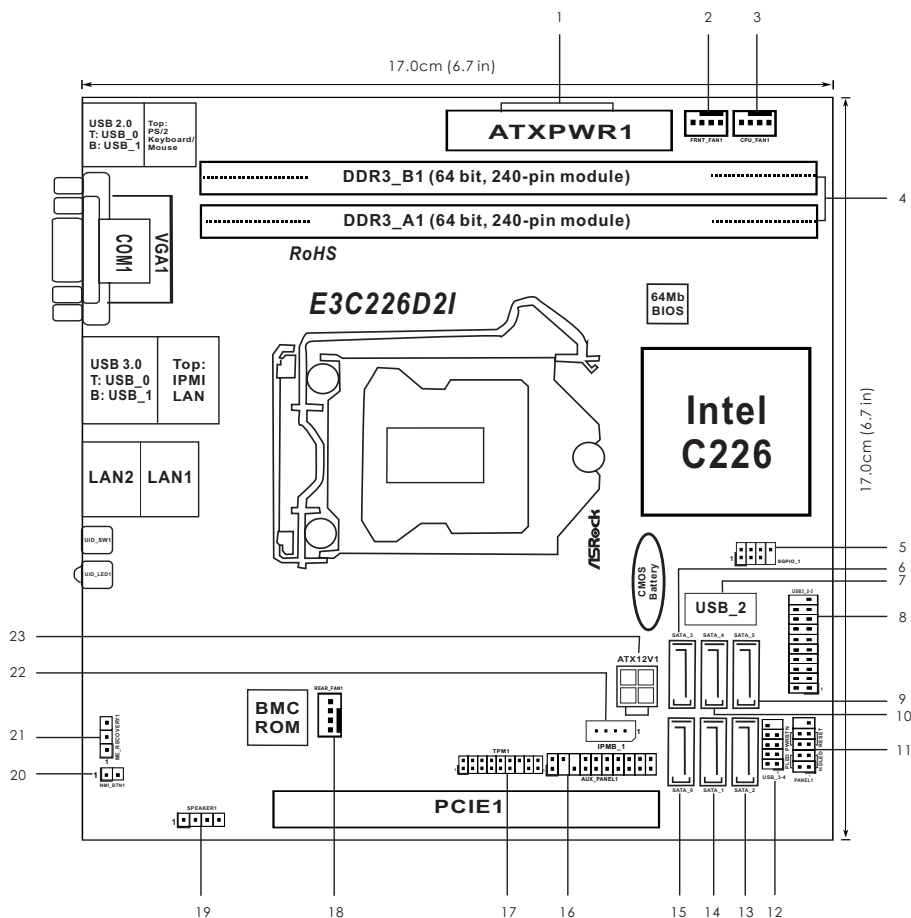
* For detailed product information, please visit our website: <http://www.asrock.com>

1.3 Unique Features

ASRock Instant Flash

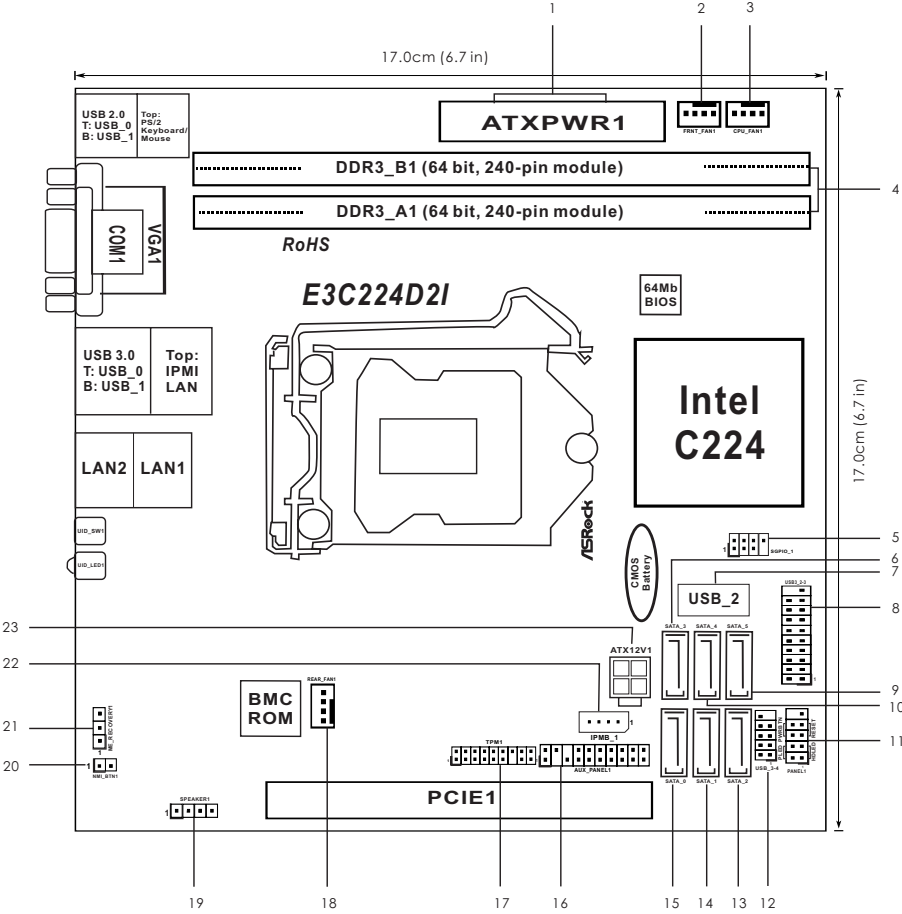
ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update your BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

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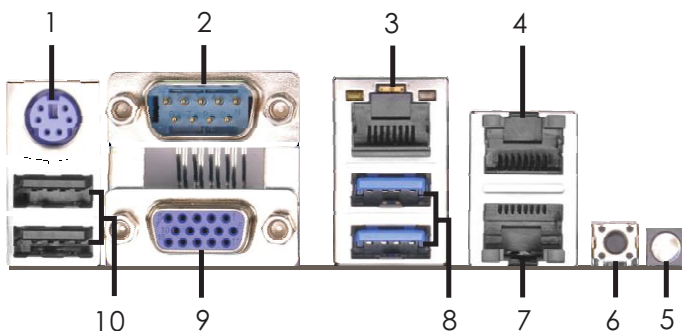
1	ATX Power Connector (ATXPWR1)
2	Front Fan Connector (FRNT_FAN1)
3	CPU Fan Connector (CPU_FAN1)
4	2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1, Blue)
5	SGPIO Connector (SGPIO1)
6	SATA3 Connector (SATA_3, White)
7	Vertical Type A USB 2.0 (USB_2)
8	USB 3.0 Header (USB3_2-3)
9	SATA3 Connector (SATA_5, White)
10	SATA3 Connector (SATA_4, White)
11	System Panel Header (PANEL1)
12	USB 2.0 Header (USB_3-4)
13	SATA3 Connector (SATA_2, White)
14	SATA3 Connector (SATA_1, White)
15	SATA3 Connector (SATA_0, White)
16	Auxiliary Panel Header (AUX_PANEL1)
17	TPM Header (TPM1)
18	Rear Fan Connector (REAR_FAN1)
19	Speaker Header (SPEAKER1)
20	Non Maskable Interrupt Button (NMI_BTN1)
21	ME Recovery Jumper (ME_RECOVERY1)
22	Intelligent Platform Management Bus header (IPMB_1)
23	ATX 12V Power Connector (ATX12V1)

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1	ATX Power Connector (ATXPWR1)
2	Front Fan Connector (FRNT_FAN1)
3	CPU Fan Connector (CPU_FAN1)
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21	ME Recovery Jumper (ME_RECOVERY1)
22	Intelligent Platform Management Bus header (IPMB_1)
23	ATX 12V Power Connector (ATX12V1)

1.5 I/O Panel



1 PS/2 Mouse/Keyboard Port

2 Serial Port (COM1)

3 Dedicated IPMI LAN Port*

4 LAN RJ-45 Port (LAN1)**

5 UID LED (UID_LED1)

6 UID Switch (UID_SW1)

7 LAN RJ-45 Port (LAN2)**

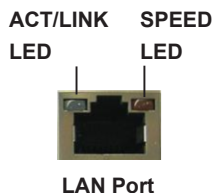
8 USB 3.0 Ports (USB_01)

9 D-Sub Port (VGA1)

10 USB 2.0 Ports (USB_01)

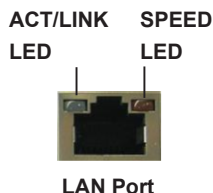
* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

Dedicated IPMI LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection



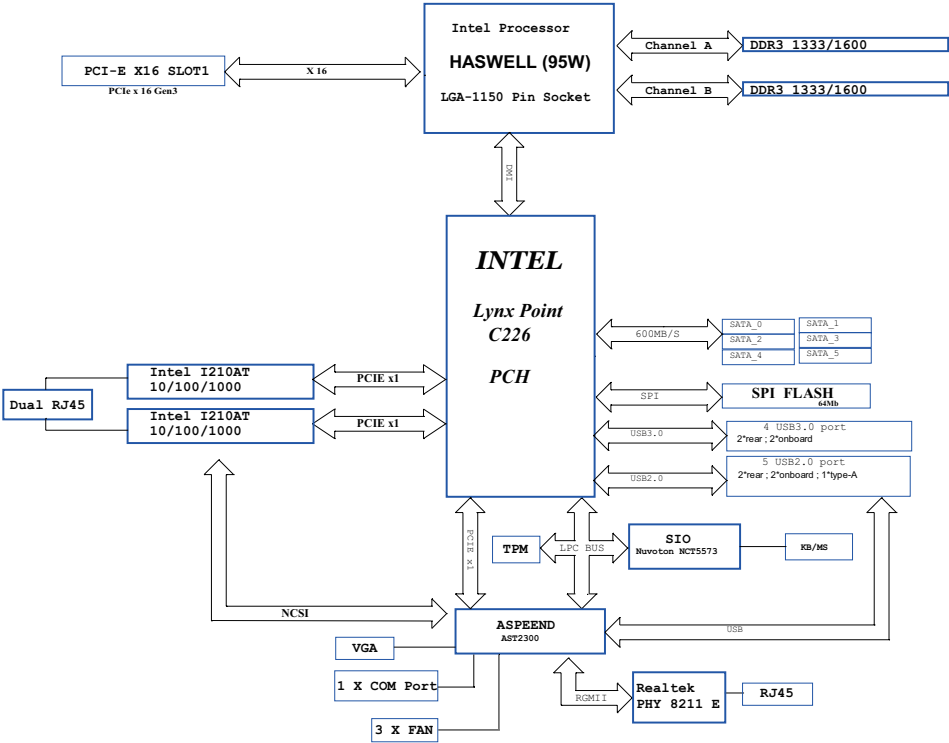
** There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port (LAN1, LAN2) LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Off	100Mbps connection
On	100Mbps connection	Green	1Gbps connection

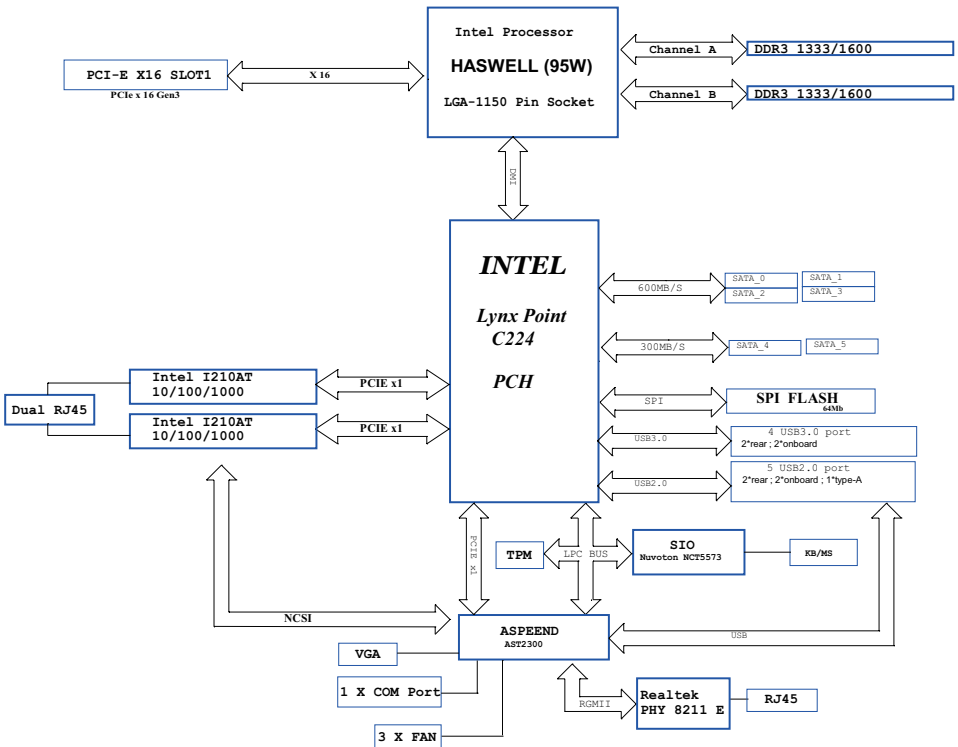


1.6 Block Diagram

E3C226D2I



E3C224D2I



Chapter 2: Installation

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

2.1 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

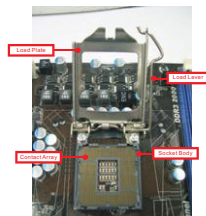
1. Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
2. In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
5. When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

2.3 CPU Installation

For the installation of Intel 1150-Pin CPU, please follow the steps below.



1150-Pin Socket Overview



Before you insert the 1150-Pin CPU into the socket, please check if the CPU surface is unclean or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

Step 1. Open the socket:

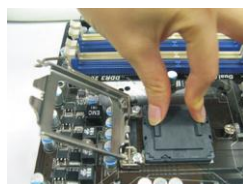
Step 1-1. Disengage the lever by pressing it down and sliding it out of the hook.



Step 1-2. Keep the lever positioned at about 135 degrees in order to flip up the load plate.



Step 2. Remove the PnP Cap (Pick and Place Cap).





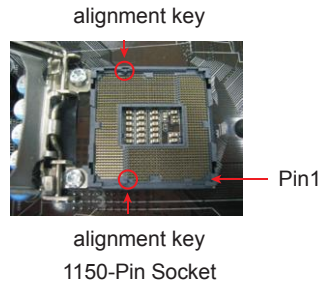
1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

Step 3. Insert the 1150-Pin CPU:

Step 3-1. Hold the CPU by the edge which is marked with a black line.



Step 3-2. Locate Pin1 and the two orientation key notches.



For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 3-3. Carefully place the CPU into the socket.

Step 3-4. Verify that the CPU is within the socket and properly mated to the orient keys.



Step 4. Close the socket:

Step 4-1. Flip the load plate onto the IHS.

Step 4-2. Press down the load lever, and secure it with the load plate tab under the retention tab.



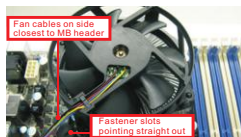
2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 1150-Pin socket that supports Intel 1150-Pin CPUs. Please adopt the type of heatsink and cooling fan compliant with Intel 1150-Pin CPU to dissipate heat. Before you install the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_FAN1, see page 10 or 12, No. 3).

For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 1150-Pin CPUs.

- Step 1. Apply thermal interface material onto the center of the IHS on the socket's surface.
- Step 2. Place the heatsink onto the socket. Ensure that the fan cables are faced on the side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 10 or 12, No. 3).
- Step 3. Align fasteners with the motherboard throughholes.
- Step 4. Rotate the fastener clockwise, then press the fastener caps down with your thumb to install and lock. Repeat with remaining fasteners.



If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

- Step 5. Connect CPU fan connector with the fan header on the motherboard.
- Step 6. Secure redundant cable with tie-wrap to ensure that the cable does not interfere with the fan's operation or contact other components.

2.5 Installation of Memory Modules (DIMM)

This motherboard provides two 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install two identical (the same brand, speed, size and chip-type) memory modules in the DDR3 DIMM slots to activate Dual Channel Memory Technology. Otherwise, it will operate at single channel mode.



1. It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
2. If you install only one memory module or two non identical memory modules, it is unable to activate Dual Channel Memory Technology.
3. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.

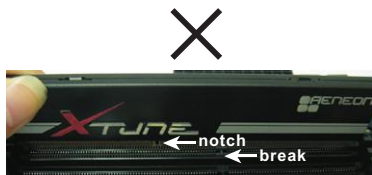
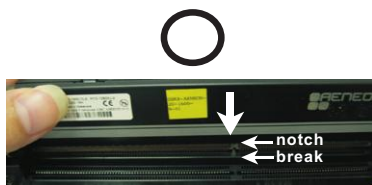
Installing a DIMM



Please make sure to disconnect the power supply before adding or removing DIMMs or system components.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.





The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.6 Expansion Slot (PCI Express Slot)

There is 1 PCI Express slot on the motherboard.

PCIe slot:

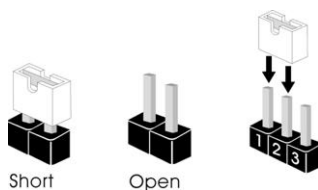
PCIe1 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

Installing an expansion card

- Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).
- Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 5. Fasten the card to the chassis with screws.
- Step 6. Replace the system cover.

2.7 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



ME Recovery Jumper

(3-pin ME_RECOVERY1)
(see p.10 or 12, No. 21)



1-2:

Default

2-3:

ME recovery mode

2.8 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard!

E3C226D2I:

Serial ATA3 Connectors

(SATA_0: see p.10, No. 15)

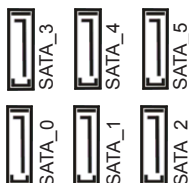
(SATA_1: see p.10, No. 14)

(SATA_2: see p.10, No. 13)

(SATA_3: see p.10, No. 6)

(SATA_4: see p.10, No. 10)

(SATA_5: see p.10, No. 9)



These six Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

E3C224D2I:

Serial ATA3 Connectors

(SATA_0: see p.12, No. 15)

(SATA_1: see p.12, No. 14)

(SATA_2: see p.12, No. 13)

(SATA_3: see p.12, No. 6)



These four Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

Serial ATA2 Connectors

(SATA_4: see p.12, No. 10)

(SATA_5: see p.12, No. 9)

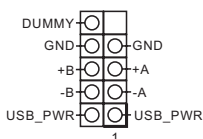


These two Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

USB 2.0 Headers and Ports

(9-pin USB_3-4)

(see p.10 or 12, No. 12)



(USB_2)

(see p.10 or 12, No. 7)

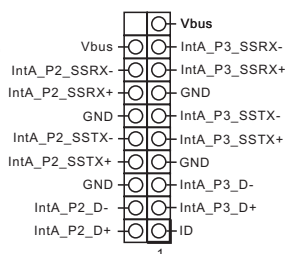


Besides two default USB 2.0 ports on the I/O panel, there is one USB 2.0 header and one port on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

USB 3.0 Headers

(19-pin USB3_2-3)

(see p.10 or 12, No. 8)

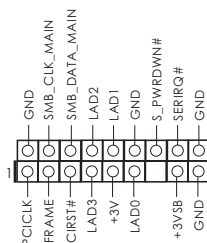


Besides two USB 3.0 ports on the I/O panel, there is one header on this motherboard. This USB 3.0 header can support two ports.

TPM Header

(17-pin TPM1)

(see p.10 or 12, No. 17)

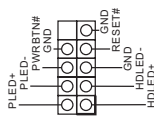


This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

System Panel Header

(9-pin PANEL1)

(see p.10 or 12, No. 11)



This header accommodates several system front panel functions.



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.



Power LED (PLED)

The Power LED connection is located on pins 2 and 4 of PANEL1. Refer to the table on the right for pin definitions.

Power LED (PLED) Pin Definitions	
Pin#	Definition
2	+5V/vcc
4	PCH GPIO Control

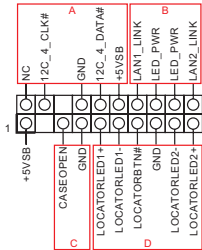
HDD LED (HDLED)

The HDD LED connection is located on pins 1 and 3 of PANEL1. Attach a cable here to indicate the status of HDD-related activities. See the table on the right for pin definitions.

HDD LED (HDLED) Pin Definitions	
Pin#	Definition
1	+3V/vcc
3	HDD Active Low

Auxiliary Panel Header

(18-pin AUX_PANEL1)
(see p.10 or 12, No. 16)



This header supports multiple functions on the front panel, including front panel SMB, internet status indicator and chassis intrusion pin.



A. Front panel SMBus connecting pin (6-pin FPSMB)

This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)

These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

C. Chassis intrusion pin (2-pin CHASSIS)

This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

D. Locator LED (6-pin LOCATOR)

This header is for the locator switch and LED on the front panel.



LAN1 LED

The LAN1 LED connection is located on pins 14 and 16 of AUX_PANEL1. Refer to the table on the right for pin definitions.

LAN1 LED Pin Definitions	
Pin#	Definition
14	LAN1 Active Low
16	+3VSB



LAN2 LED

The LAN2 LED connection is located on pins 18 and 20 of AUX_PANEL1. Refer to the table on the right for pin definitions.

LAN2 LED	
Pin Definitions	
Pin#	Definition
18	+3VSB
20	LAN2 Active Low

Locator(UID) LED

The Locator LED connection is located on 6pins of AUX_PANEL1. Refer to the table on the right for pin definitions.

Locator(UID) LED	
Pin Definitions	
Pin#	Definition
9	+5VSB
11	Locator1 Active Low
13	+5VSB/Locator BTN
15	Ground
17	Locator2 Active Low
19	+5VSB

Speaker Header

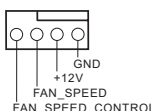
(4-pin SPEAKER1)
(see p.10 or 12, No. 19)



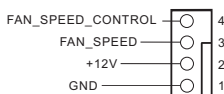
Please connect the speaker to this header.

Front and Rear Fan Connectors

(4-pin FRNT_FAN1)
(see p.10 or 12, No. 2)



(4-pin REAR_FAN1)
(see p.10 or 12, No. 18)

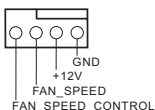


Please connect the fan cables to the fan connectors and match the black wire to the ground pin. All fans supports Fan Control.

CPU Fan Connector

(4-pin CPU_FAN1)

(see p.10 or 12, No. 3)

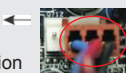


Please connect the CPU fan cable to the connector and match the black wire to the ground pin.



Though this motherboard provides a 4-Pin CPU fan (Quiet Fan) connector, 3-Pin CPU fans can still work successfully even without the fan speed control function. If you plan to connect a 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

Pin 1-3 Connected

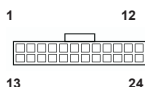


3-Pin Fan Installation

ATX Power Connector

(24-pin ATXPWR1)

(see p.10 or 12, No. 1)

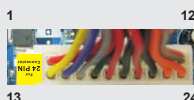


Please connect an ATX power supply to this connector.



Though this motherboard provides a 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use a 20-pin ATX power supply, please plug your power supply along Pin 1 and Pin 13.

20-Pin ATX Power Supply Installation



ATX 12V Power Connector

(4-pin ATX12V1)

(see p.10 or 12, No. 23)

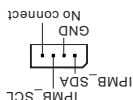


Please connect an ATX 12V power supply to this connector.

Intelligent Platform Management Bus header

(4-pin IPMB_1)

(see p.10 or 12, No. 22)

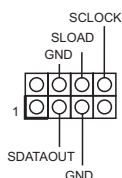


This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Serial General Purpose Input/Output Header

(8-pin SGPIO1)

(see p.10 or 12, No. 5)



This header supports Serial Link interface for onboard SATA connections.

Non Maskable Interrupt Button Header

(2-pin NMI_BTN1)

(see p.10 or 12, No. 20)



Please connect a NMI device to this header.

2.9 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.



If you want to use RAID mode on SATA ports, please make a copy of “Serial ATA For Floppy Disk” driver from the support CD to your USB storage device first.

Browse and Install this driver during the installation of your operating system, after installing the driver you may continue to install the operating system.

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main For setting system time/date information

Advanced For advanced system configurations

H/W Monitor Displays current hardware status

Boot For configuring boot settings and boot priority

Security For security settings

Event Logs For event log configuration

Server Mgmt For managing the server

Save & Exit Exit the current screen or the UEFI Setup Utility

3.1.2 Navigation Keys

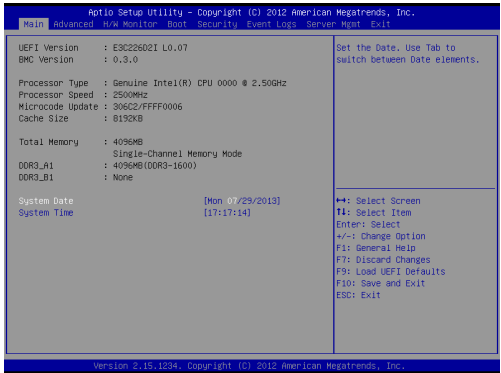
Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Function Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

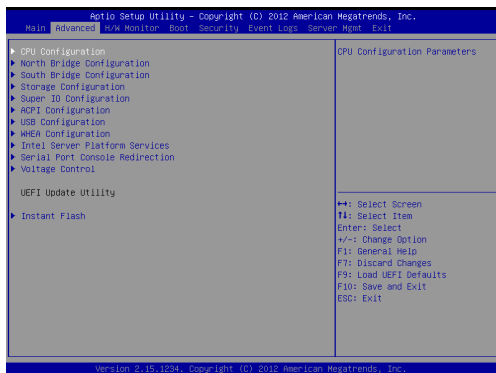
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, North Bridge Configuration, South Bridge Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration, WHEA Configuration, Intel Server Platform Services, Serial Port Console Redirection and Voltage Control.

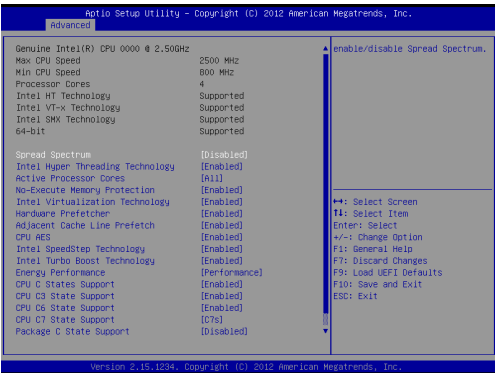


Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.3.1 CPU Configuration



Spread Spectrum

Select [Auto] for better system stability.

Intel Hyper Threading Technology

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology is required. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

Active Processor Cores

Use this item to select the number of cores to enable in each processor package. The default value is [All].

No-Execute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

Hardware Prefetcher

Use this to turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

Use this to turn on/off prefetching of adjacent cache lines.

CPU AES

Enable/disable CPU Advanced Encryption Standard instructions.

Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.



Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

Intel Turbo Boost Technology

Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

Energy Performance

Use this item to configure Energy Performance.

CPU C State Support

Use this to enable or disable the support of CPU C State.

Enhance Halt State (C1E)

All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches.

CPU C3 State Support

Use this to enable or disable CPU C3 (ACPI C2) report to OS.

CPU C6 State Support

Use this to enable or disable CPU C6 (ACPI C3) report to OS.

CPU C7 State Support

Use this to enable or disable CPU C7 (ACPI C3) report to OS.

Package C State Support

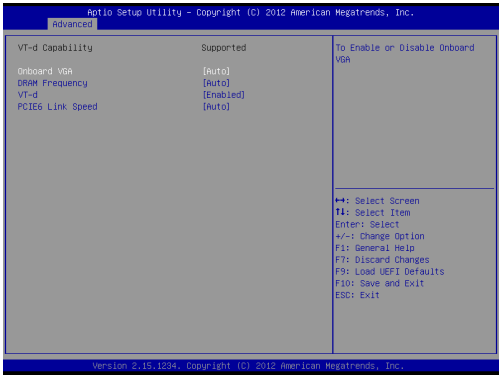
Selected option will program into C State package limit register.

The default value is [Auto].

Intel TXT(LT) Support

Use this option to enable or disable Intel(R) TXT(LT) support. The default value is [Disabled].

3.3.2 North Bridge Configuration



Onboard VGA

Enable or disable the onboard VGA.

DRAM Frequency

This allows you to configure the DRAM frequency.

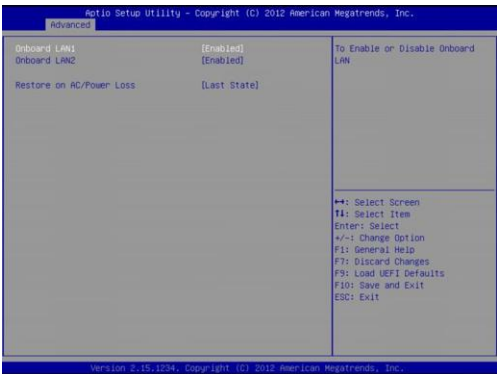
VT-d

Use this item to enable/disable Intel(R) Virtualization Technology for Directed I/O.

PCIE6 Link Speed

This allows you to select PCIE6 Link Speed.ers.

3.3.3 South Bridge Configuration



Onboard LAN1

This allows you to enable or disable the Onboard LAN1.

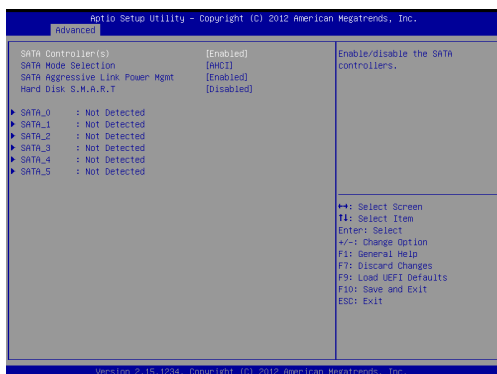
Onboard LAN2

This allows you to enable or disable the Onboard LAN2.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

3.3.4 Storage Configuration



SATA Controller(s)

Use this item to enable or disable the SATA Controller feature.

SATA Mode Selection

Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [AHCI Mode].



1. If you want to use RAID mode on SATA ports, please make a copy of "Serial ATA For Floppy Disk" driver from the support CD to your USB storage device first. Browse and Install this driver during the installation of your operating system, after installing the driver you may continue to install the operating system.
2. AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Aggressive Link Power Management

Use this item to configure Aggressive Link Power Management.

Hard Disk S.M.A.R.T.

Use this to enable or disable S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

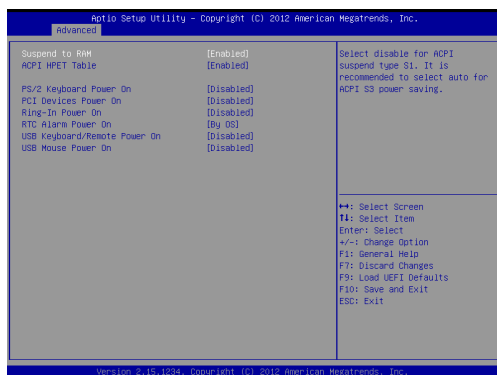
3.3.5 Super IO Configuration



Serial Port 1 Configuration

Use this item to configure the onboard serial port 1.

3.3.6 ACPI Configuration



Suspend Mode

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Selecting [Auto] will enable this feature if the OS supports it.

ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled].

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

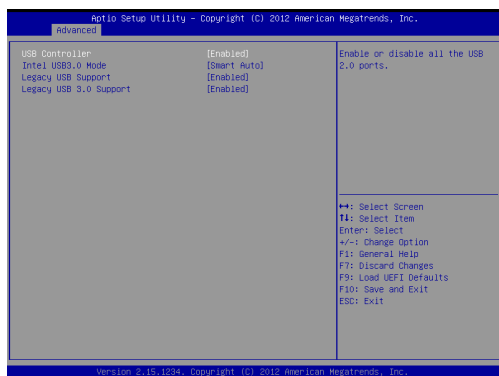
USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to turn on the system from the power-soft-off mode.

USB Mouse Power On

Use this item to enable or disable USB Mouse to turn on the system from the power-soft-off mode.

3.3.7 USB Configuration



USB Controller

Enable or disable all the USB ports.

Intel USB 3.0 Mode

Enable or disable all the USB 3.0 ports

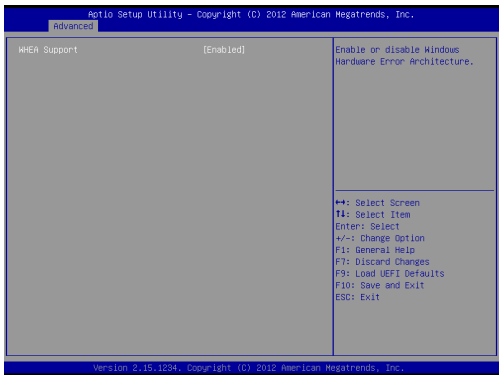
Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

Legacy USB 3.0 Support

Enable or disable Legacy OS Support for USB 3.0 devices.

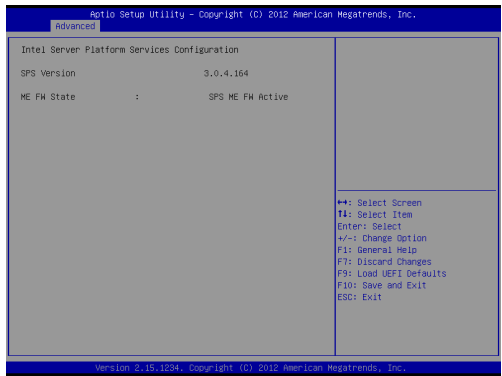
3.3.8 WHEA Configuration



WHEA Support

Use this option to enable or disable Windows Hardware Error Architecture. The default value is [Enabled].

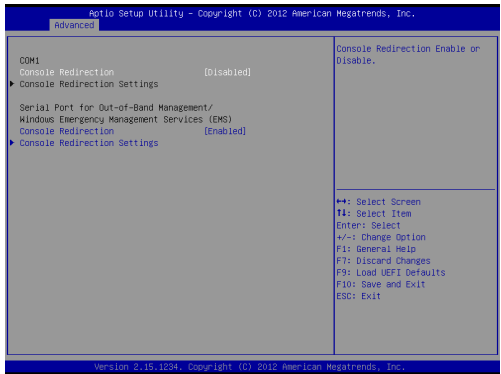
3.3.9 Intel Server Platform Services



Intel Server Platform Services

Configure Intel Server Platform Services.

3.3.10 Serial Port Console Redirection



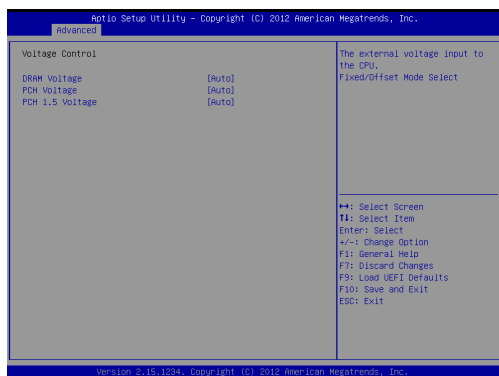
Console Redirection

Use this option to enable or disable Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings.

3.3.11 Voltage Control



DRAM Voltage

Use this to select DRAM Voltage. The default value is [Auto].

PCH Voltage

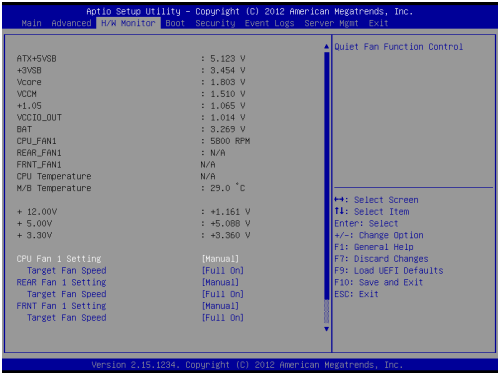
Use this to select PCH Voltage. The default value is [Auto].

PCH 1.5V Voltage

I/O 1.5V Voltage. Use default settings for best performance.

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature and the critical voltage.



CPU Fan 1 Setting

This allows you to set the speed of CPU fan 1. The default value is [Manual].

Target Fan Speed

This allows you to set the speed of Target Fan. The default value is [Full On].

REAR Fan 1 Setting

This allows you to set the speed of REAR Fan 1. The default value is [Full On].

Target Fan Speed

This allows you to set the speed of Target Fan. The default value is [Full On].

FRNT Fan 1 Setting

This allows you to set the speed of FRNT Fan 1. The default value is [Full On].

Target Fan Speed

This allows you to set the speed of Target Fan. The default value is [Full On].

Watch Dog Timer

This allows you to enable or disable the Watch Dog Timer.

The default value is [Disabled].

Case Open Feature

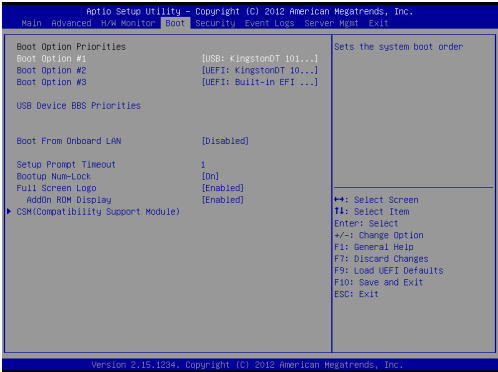
This allows you to enable or disable the Case Open Feature. The default value is [Enabled].

Clear Status

Enable to clear case open status if case open has been detected.

3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup NumLock State

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

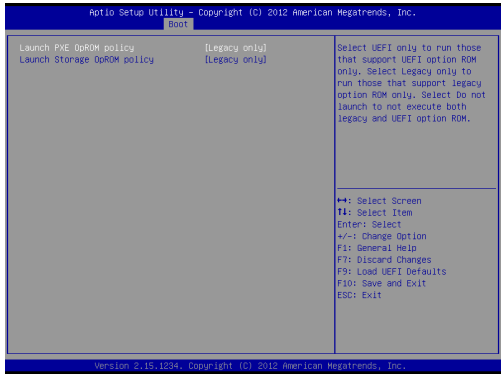
Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

CSM (Compatibility Support Module)



Launch PXE OpROM Policy

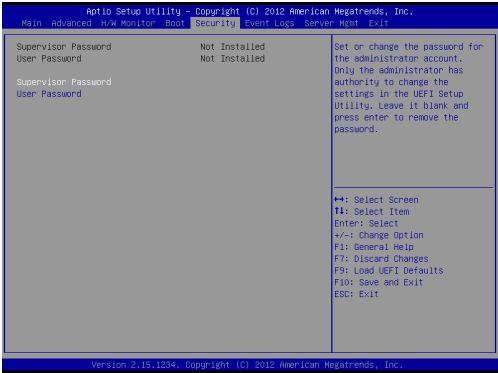
Select UEFI only to run those that support UEFI option ROM only.
Select Legacy only to run those that support legacy option ROM only.

Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only.
Select Legacy only to run those that support legacy option ROM only.

3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



3.7 Event Logs



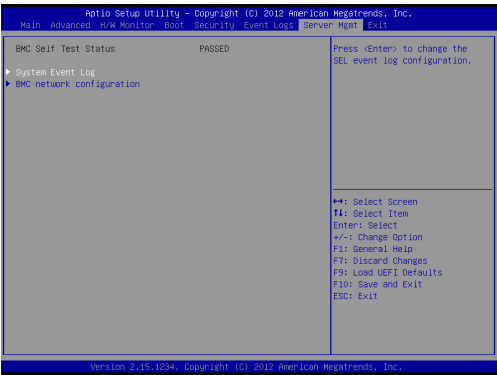
Change Smbios Event Log Settings

This allows you to configure the Smbios Event Log Settings.

View Smbios Event Log

This allows you to view the Smbios Event Log.

3.8 Server Management



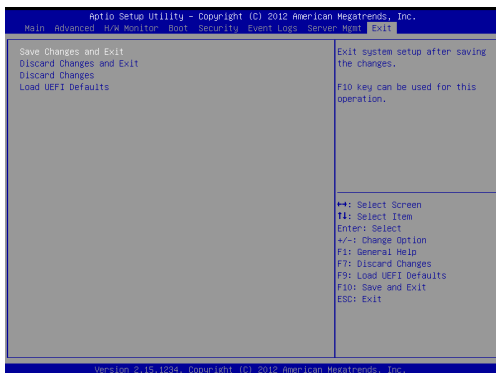
System Event Log

Enter to configure System Event Logging features during boot.

BMC Network Configuration

Enter to configure BMC Network parameters.

3.9 Exit Screen



Save Changes and Exit

When you select this option, the following message “Save configuration changes and exit setup?” will pop-out. Select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message “Discard changes and exit setup?” will pop-out. Select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message “Discard changes?” will pop-out. Select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports Microsoft® Windows® Server 2008 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.

Chapter 5: Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.



Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries to you and damages to motherboard components.

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...

1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...

1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR3 1600/1333/1066 ECC DIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify

faulty ones.

5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether your power supply provides adequate and stable power.

Other problems...

1. Try searching keywords related to your problem on ASRock's FAQ page:
<http://www.asrock.com/support/faq.asp>
2. Try downloading and updating the latest UEFI on ASRock's website:
<http://www.asrock.com/support/download.asp>

5.2 Technical Support Procedures

If you have tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock's technical support with the following information:

1. Your contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

You may contact ASRock's technical support at:
<http://www.asrock.com/support/tsd.asp>

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of your invoice marked with the date of purchase is required. By calling your vendor or going to our RMA website (<http://www.asrock.com/support/index.asp?cat=RMA>) you may obtain a Returned Merchandise Authorization (RMA) number.

The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when you return the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

Contact your distributor first for any product related problems during the warranty period.

Chapter 6: Net Framework Installation Guide

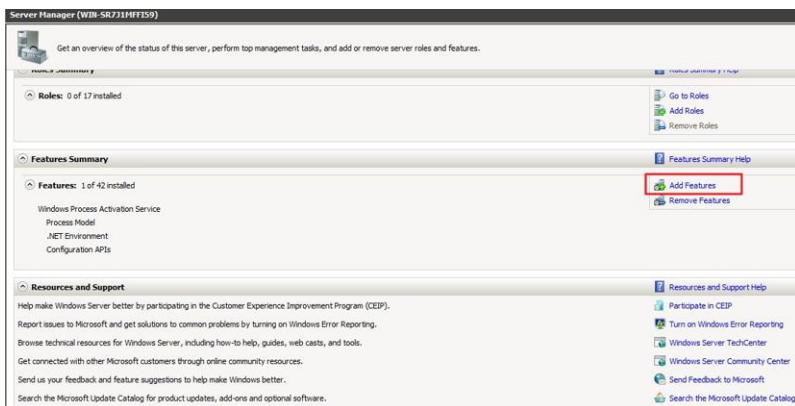
To let Intel® RSTe works properly, it is required to install Net Framework. Please follow the steps below to enable “.Net Framework” feature on Microsoft® Windows® Server 2008 R2.

Installing .Net Framework 3.5.1 (For Server 2008 R2)

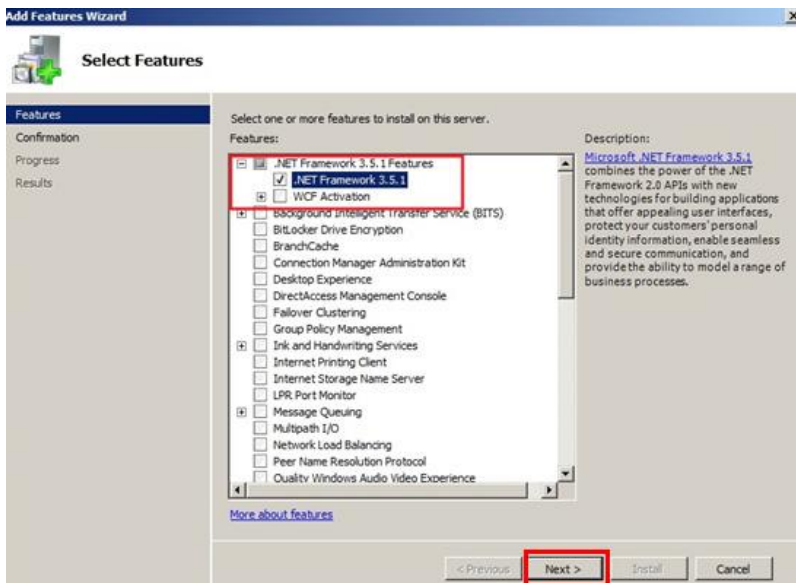
1. Double-click the **Server Manager** icon in the Windows system tray.



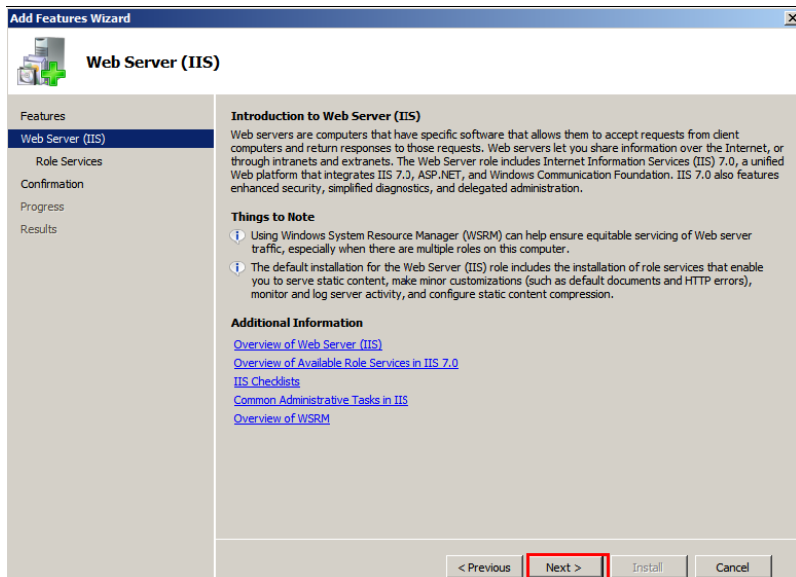
2. Click **Add Features** in the right hand pane.



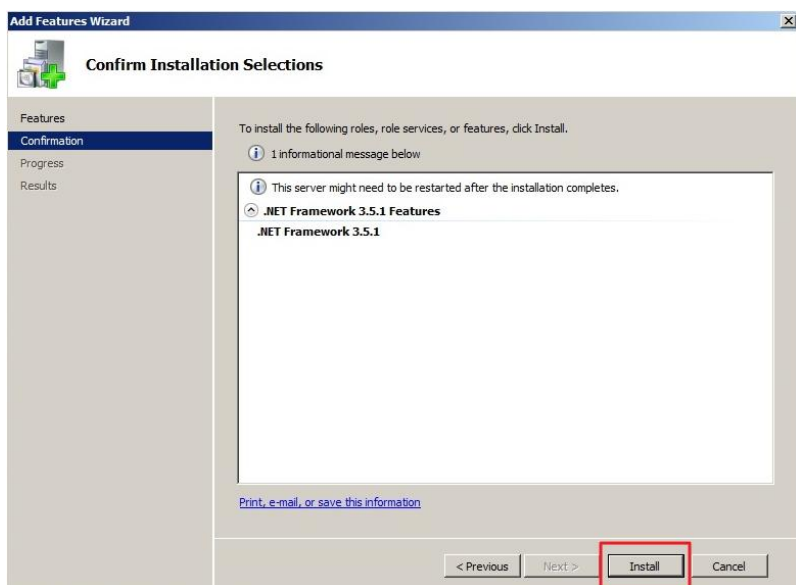
3. Check the box next to **.Net Framework 3.5.1** and then click **Next**.



Click **Next** to continue.



4. Click **Install** to start installing .Net Framework 3.5.1.



5. After the installation completes, click **Close**.

