

MS-S0891

(v1.X) Server Board



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Revision History

Revision	Date
V1.0	2013/07

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.



Visit the MSI website for technical guide, BIOS updates, driver updates, and other information:
<http://www.msi.com/service/download/>



Contact our technical staff at:
<http://support.msi.com/>

Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- Always Unplug the Power Cord before inserting any add-on card or module.
- All cautions and warnings on the equipment should be noted.
- Never pour any liquid into the opening that could damage or cause electrical shock.
- If any of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well or you can not get it work according to User's Manual.
 - The equipment has dropped and damaged.
 - The equipment has obvious sign of breakage.
- **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者:

這是甲類資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Chemical Substances Information

In compliance with chemical substances regulations, such as the EU REACH Regulation (Regulation EC No. 1907/2006 of the European Parliament and the Council), MSI provides the information of chemical substances in products at:

http://www.msi.com/html/popup/csr/evmtprtt_pcm.html

Battery Information



European Union:

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.



Taiwan:

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

廢電池請回收

California, USA:

The button cell battery may contain perchlorate material and requires special handling when recycled or disposed of in California.

For further information please visit:

<http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

CE Conformity

Hereby, Micro-Star International CO., LTD declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.



FCC-A Radio Frequency Interference Statement



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.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

WEEE Statement



ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...

Au sujet de la directive européenne (EU) relative aux déchets des équipements électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что....

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al término de su período de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling. Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podestiti da...

Po Direktivi Evropske unije ("EU") o odbačenju elektonskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je istekao vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...

Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. "produkty oraz wyposażenie elektryczne i elektroniczne" nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektronik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünk megvédjük, illetve környezetvédként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió („EU”) 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelesek válnak az ilyen termékek visszavételére azok hasznos élettartama végén. Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adegnerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

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NOTE

1 Overview



Thank you for choosing the MS-S0891 v1.X, an excellent server board from MSI.

Based on the innovative Intel® Lynx Point C222 chipset for optimal system efficiency, the MS-S0891 accommodates the Intel® Haswell processor and supports two 240-pin slots for up to 16 GB of DDR3 memory in dual-channel memory bus.

In the advanced-level and mid-range market segment, the MS-S0891 can provide a high-performance solution for today's front-end and general purpose server, as well as in the future.

Mainboard Specifications

Processor

- Intel Haswell processor (LGA1150)

Chipset

- Intel Lynx Point C222 chipset

Memory

- Two 240-pin slots for up to 16 GB of ECC unbuffered DDR3 1066/ 1333/ 1600 MHz memory
- Dual-channel memory bus

LAN

- 2 Intel i210AT Gigabit Fast Ethernet controllers

SATA

- ATX SKU, ATX IPMI SKU
 - 2 SATA 6Gb/s ports (SATA 1~2)
 - 3 SATA 3Gb/s ports (SATA 3~5)
 - 1 eSATA 3Gb/s port (ESATA1)
- DC-in SKU
 - 2 SATA 6Gb/s ports (SATA 1~2)
 - 2 SATA 3Gb/s ports (SATA 4~5)

System Management (Optional)

- Aspeed AST1300 BMC controller (ATX SKU, DC-in SKU)
- Aspeed AST2300 BMC controller (ATX IPMI SKU)

Rear Panel I/O

- ATX SKU, ATX IPMI SKU
 - 1 eSATA port
 - 2 USB 3.0 ports
 - 1 D-sub VGA port
 - 2 Gigabit LAN jacks (JLAN1 shares NIC, for IPMI only)
- DC-in SKU
 - 1 DC power jack
 - 2 USB 3.0 ports
 - 1 D-sub VGA port
 - 2 Gigabit LAN jacks

Onboard Pinheaders/ Connectors/ Jumpers

- 1 TPM pinheader
- 1 front panel pinheader
- 1 4-pin 12V power connector (ATX SKU, ATX IPMI SKU)
- 1 24-pin power connector (ATX SKU, ATX IPMI SKU)
- 1 4-pin 19V power connector (DC-in SKU)
- 1 4-pin SATA power connector (DC-in SKU)
- 3 system fan connectors
- 1 clear CMOS jumper
- 1 serial port connector
- 1 USB 2.0 pinheader

Slot

- 1 PCIe 3.0 x16 slot (x8 signal, for ATX SKU and ATX IPMI SKU only)

Form Factor

- ITX form factor: 17cm x 17cm

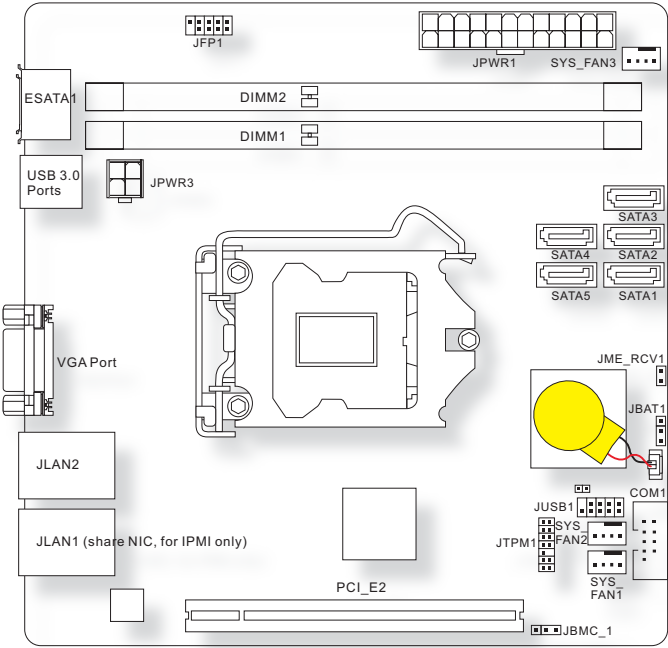
Mounting

- 4 mounting holes

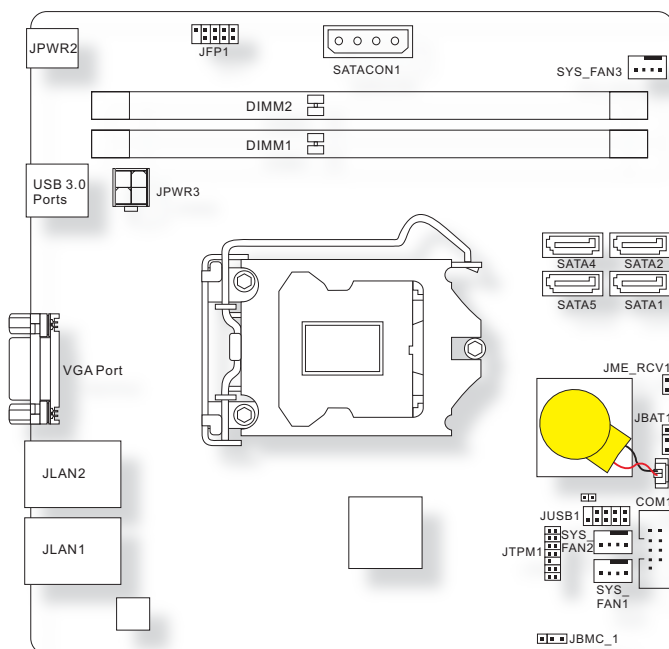
SKU Comparison

SKUs	ATX SKU	DC-in SKU	ATX IPMI SKU
Features			
AST1300 (w/ VGA)	V	V	
AST2300 (w/ IPMI)			V
SATA 6 G/bs qty	2	2	2
SATA 3 G/bs qty	3	2	3
eSATA port	V		V
PCI_E2 PCIe x16 (x8 signal)	V		V

Mainboard Layout



MS-S0891v1.0 ATX SKU/ ATX IPMI SKU

**MS-S0891v1.0 DC-in SKU**

NOTE

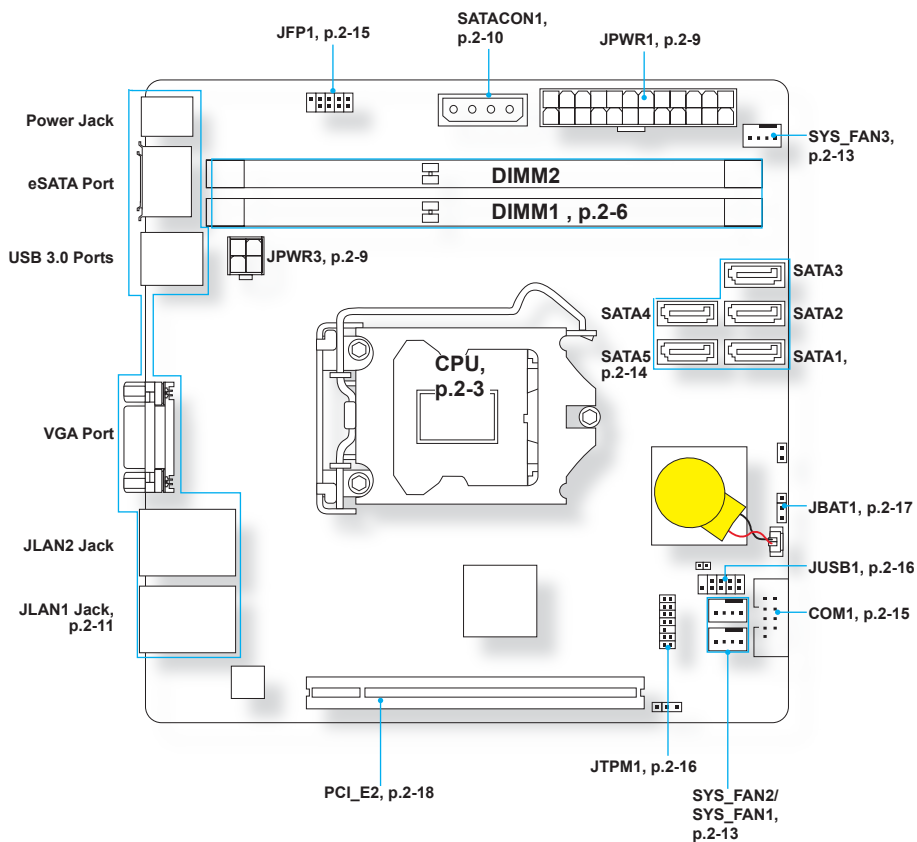
2 Hardware Setup



This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Quick Component Guide



CPU (Central Processing Unit)

When installing the CPU, make sure that you install the cooler to prevent overheating. If you do not have the CPU cooler, consult your dealer before turning on the computer.

Important

Overheating

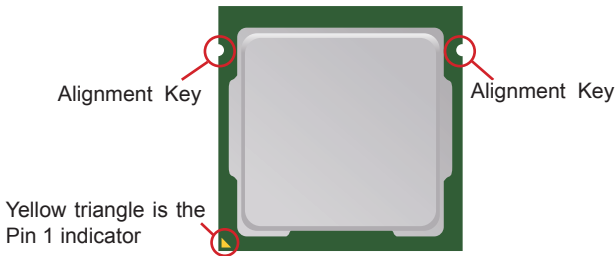
Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

Replacing the CPU

While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

Introduction to LGA 115x CPU

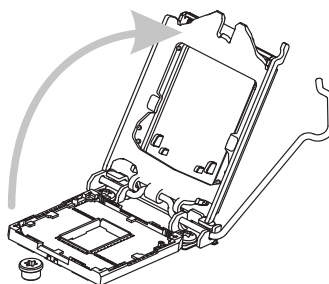
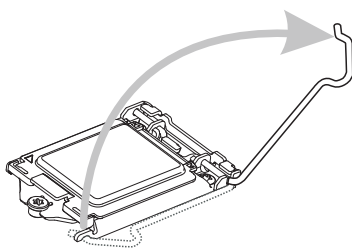
The surface of LGA 115x CPU. Remember to apply some thermal paste on it for better heat dispersion.



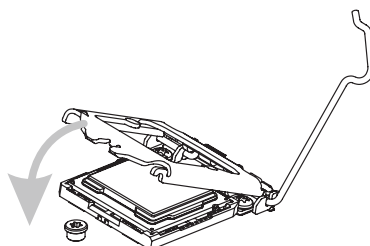
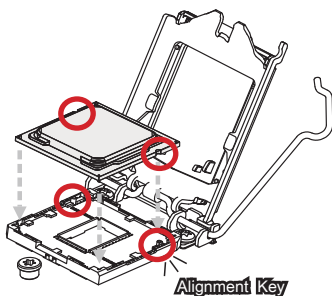
CPU Installation

When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating**. Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion.

1. Open the load lever and remove the plastic cap.
2. Lift the load lever up to fully open position.



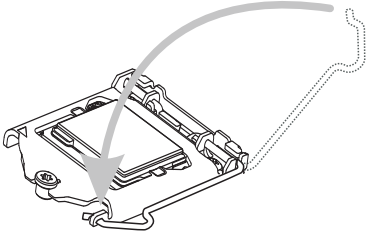
3. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.
4. Engage the load lever while pressing down lightly onto the load plate.



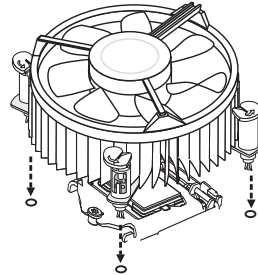
Important

Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.

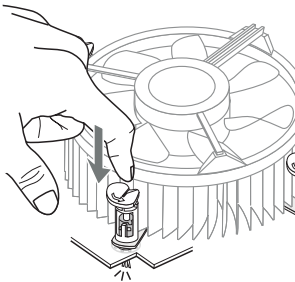
5. Secure the load lever with the hook under the retention tab.



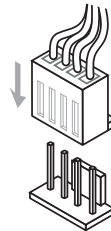
6. Make sure the four hooks are in proper position before you install the cooler. Align the holes on the motherboard with the cooler. Push down the cooler until its four clips get wedged into the holes of the motherboard.



7. Press the four hooks down to fasten the cooler. Turn over the motherboard to confirm that the clip-ends are correctly inserted.



8. Finally, attach the CPU Fan cable to the CPU fan connector on the motherboard.

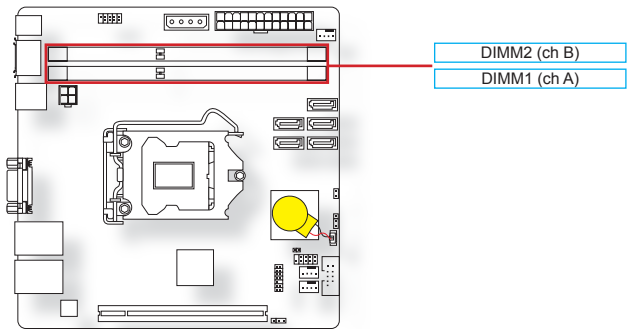


Important

- Confirm if your CPU cooler is firmly installed before turning on your system.
- Do not touch the CPU socket pins to avoid damage.
- Whenever CPU is not installed, always protect your CPU socket pins with the plastic cap covered.
- Please refer to the documentation in the CPU cooler package for more details about the CPU cooler installation.
- Read the CPU status in BIOS.

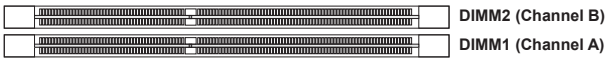
Memory

These DIMM slots are intended for memory modules.



Dual-Channel Mode

In Dual-Channel mode, make sure that you install memory modules of the **same type and density** in different channel DIMM slots.



Recommended Memory Population

Population Rule	1	2
DIMM1 (ch A)	V	V
DIMM2 (ch B)		V

Important

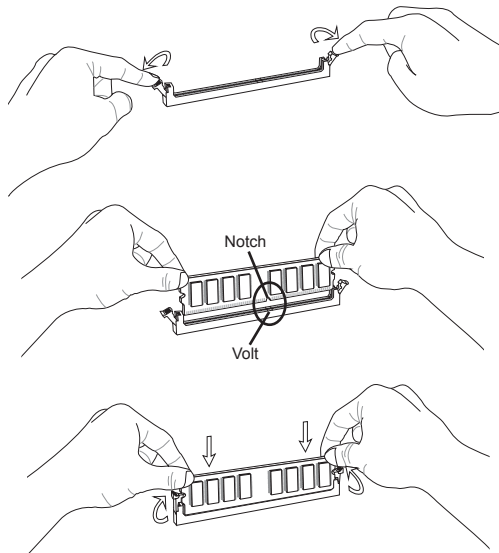
- "V" indicates a populated DIMM slot.
- 1st population on DIMM2 will also boot.
- Populate the same DIMM type in each channel, specifically: 1. Use the same DIMM size; 2. Use the same number of ranks per DIMM.

U-DIMM Module Support

DIMM & Data Width	2 DPC (DIMM per Channel)	
	1.35V	1.5V
SRx8 ECC	1066, 1333, 1600	1066, 1333, 1600
DRx8 ECC	1066, 1333, 1600	1066, 1333, 1600

Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot. The plastic clip at each side of the DIMM slot will automatically close when the memory module is properly seated.
3. Manually check if the memory module has been locked in place by the DIMM slot clips at the sides.

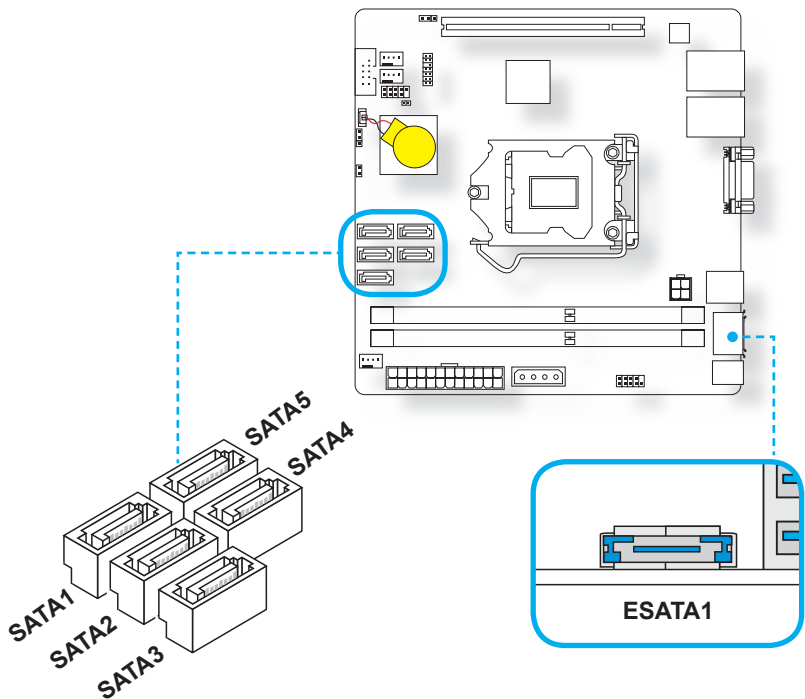


Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

Storage

Storage Port Location



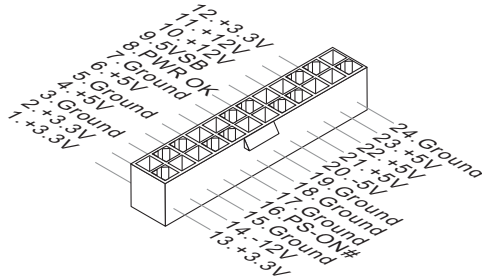
Storage Support & Speed

Speed SKU	SATA 6 Gb/s	
	SATA 3 Gb/s	
ATX	SATA1, SATA2	SATA3, SATA4, SATA5, ESATA1
DC-in	SATA1, SATA2	SATA4, SATA5
ATX IPMI	SATA1, SATA2	SATA3, SATA4, SATA5, ESATA1

Power Supply

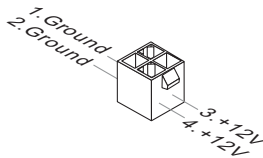
System Power Connector: JPWR1 (ATX SKU, ATX IPMI SKU)

This connector allows you to connect a power supply. To connect to the power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



12V Power Connector: JPWR3 (ATX SKU, ATX IPMI SKU)

This connector provides 12V power to the onboard CPU.

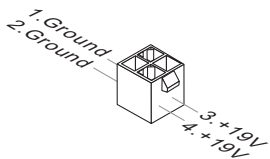


Important

Make sure that all power connectors are connected to the power supply to ensure stable operation of the motherboard.

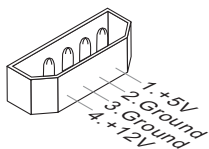
19V Power Connector: JPWR3 (DC-in SKU)

This connector provides 19V power to the system.



SATA Power Connector: SATACON1 (DC-in SKU)

This connector provides power to the SATA devices.

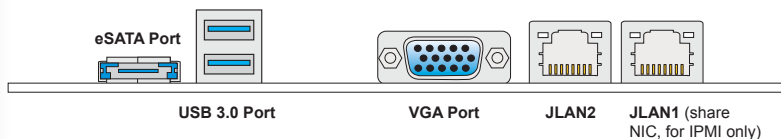


Important

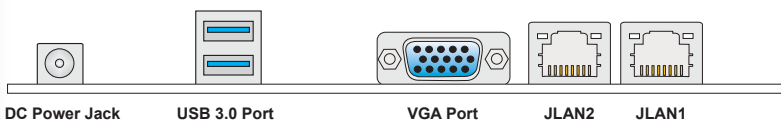
Make sure that all power connectors are connected to the power supply to ensure stable operation of the motherboard.

Rear Panel I/O

ATX/ ATX IPMI SKU



DC-in SKU



► DC Power Jack (DC-in SKU)

This connector provides 19V power to the system.

► eSATA Port (ATX/ ATX IPMI SKU)

eSATA is External Serial ATA interface. Serial ATA is a commonly used interface for internal hard drives, and eSATA is an extension of SATA specification to be used with external devices.

► USB 3.0 Port

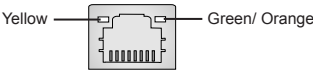
The USB 3.0 port is backward-compatible with USB 2.0 devices. It supports up to 5Gbit/s (SuperSpeed) data transfer rate.

► VGA Port

The DB15-pin female connector is provided for monitor.

► **LAN Jack**

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.

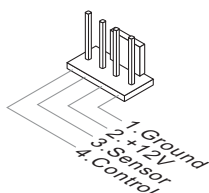


LED	Color	LED State	Condition
Left	Yellow	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (blinking)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

Connector

Fan Power Connector: SYS_FAN1 ~ SYS_FAN3

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the motherboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

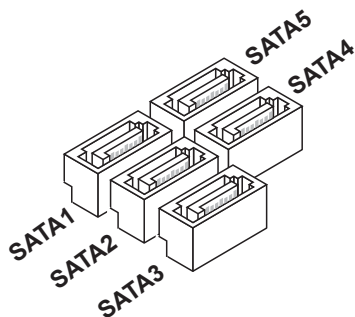


Important

- Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.
- Fan cooler sets with 3- or 4-pin power connector are both available.

Serial ATA Connector: SATA1 ~ SATA5

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device. SATA1 ~ SATA2, SATA7 ~ SATA10 are SATA 6Gb/s ports while SATA3 ~ SATA6 are SATA 3Gb/s ports.



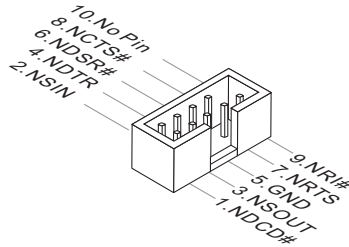
Speed SKU	SATA 6 Gb/s	SATA 3 Gb/s
ATX	SATA1, SATA2	SATA3, SATA4, SATA5
DC-in	SATA1, SATA2	SATA4, SATA5
ATX IPMI	SATA1, SATA2	SATA3, SATA4, SATA5

Important

Please do not fold the SATA cable into a 90-degree angle. Otherwise, data loss may occur during transmission.

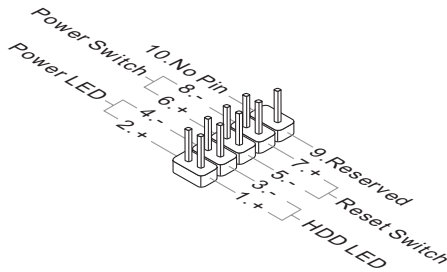
Serial Port Connector: COM1

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it.



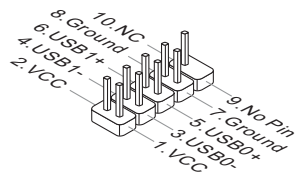
Front Panel Connector: JFP1

The front panel connector is provided for electrical connection to the front panel switches and LEDs. **Please note that pin 11 is specifically reserved for ID LED (optional for AST2300).**



USB 2.0 Connector: JUSB1

This connector, compliant with Intel I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.

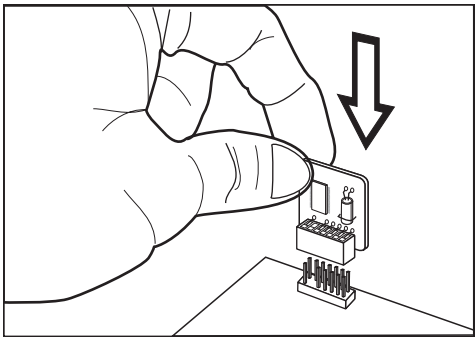
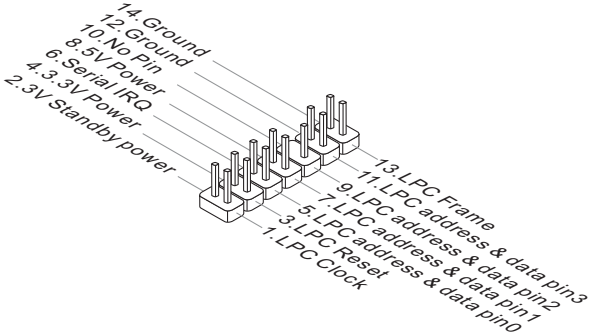


Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

TPM Module Connector: JTPM1

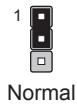
This connector connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details.



Jumper

Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.



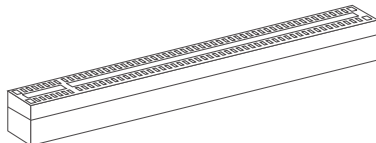
Important

You can clear CMOS by shorting pin 2-3 while the system is off. Then return to pin 1-2 position. Avoid clearing the CMOS while the system is on; it will damage the motherboard.

Slot

PCIe (Peripheral Component Interconnect Express) Slot (for ATX SKU, ATX IPMI SKU only)

The PCI Express slot supports PCIe interface expansion cards.



PCI_E2: PCIe 3.0 x16 slot
with x8 signal

Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

3 BIOS Setup

This chapter provides information on the BIOS Setup program and allows users to configure the system for optimal use.

Users may need to run the Setup program when:

- An error message appears on the screen at system startup and requests users to run SETUP.
- Users want to change the default settings for customized features.

Important

Please note that BIOS update assumes technician-level experience.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press or <F2> key to enter Setup.

Press or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

Control Keys

← →	Select Screen
↑ ↓	Select Item
Enter	Select
+ -	Change Option
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
Esc	Exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑ ↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

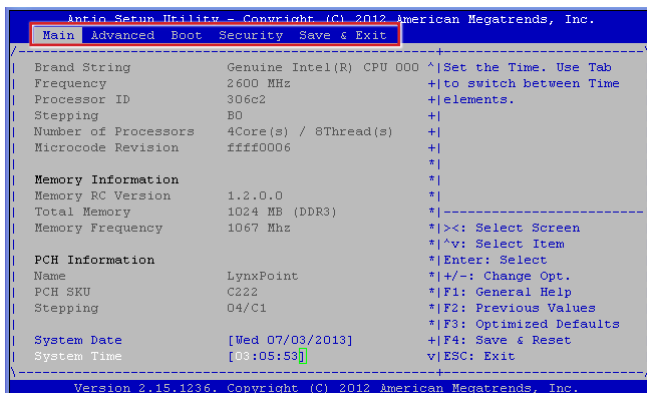
Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑ ↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar



► Main

Use this menu for basic system configurations, such as time, date, etc.

► Advanced

Use this menu to set up the items of special enhanced features.

► Boot

Use this menu to specify the priority of boot devices.

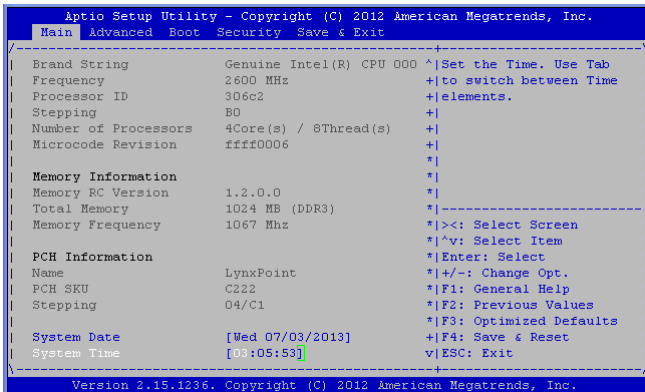
► Security

Use this menu to set supervisor and user passwords.

► Save & Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main



► Memory Information, PCH Information

These items show the firmware and hardware specifications of your system. Read only.

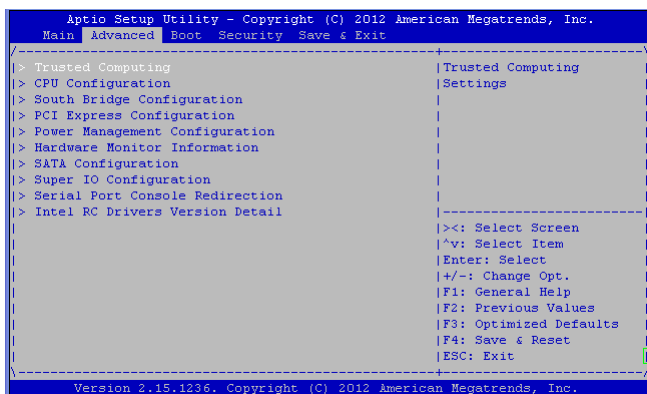
► System Date

This setting allows you to set the system date. The date format is <Day>, <Month> <Date> <Year>.

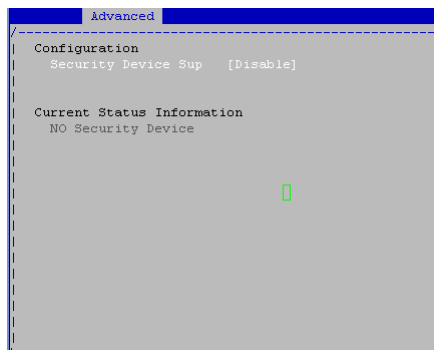
► System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

Advanced



► Trusted Computing



► Security Device Support

This setting enables/disables BIOS support for security device. When set to [Disable], the OS will not show security device. TCG EFI protocol and INT1A interface will not be available.

► CPU Configuration

This menu shows all CPU-related information.

Advanced	
CPU Configuration	
Genuine Intel(R) CPU 0000 @ 2.60GHz	*
CPU Signature	306c2 *
Microcode Patch	ffff0006 *
Max CPU Speed	2600 MHz *
Min CPU Speed	800 MHz *
CPU Speed	2800 MHz *
Processor Cores	4 *
Intel HT Technology	Supported *
Intel VT-x Technology	Supported *
Intel SMX Technology	Supported *
64-bit	Supported +
EIST Technology	Supported +
CPU C3 state	Supported +
CPU C6 state	Supported +
CPU C7 state	Supported +
L1 Data Cache	32 kB x 4 V

► South Bridge Configuration

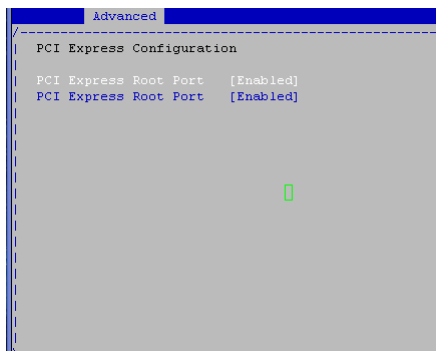
Advanced	
XHCI Mode	[Smart Auto]
	

► XHCI Mode

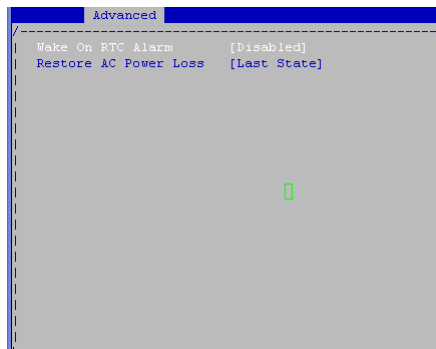
This setting controls the eXtensible Host Controller Interface (XHCI) mode. The eXtensible Host Controller Interface (XHCI) is a computer interface specification that defines a register-level description of a Host Controller for Universal Serial bus (USB), which is capable of interfacing to USB 1.0, 2.0, and 3.0 compatible devices. The specification is also referred to as the USB 3.0 Host Controller specification.

► PCI Express Configuration

The following settings allow users to configure the PCI Express ports.



► Power Management Configuration



► Wake On RTC Alarm

When [Enabled], you can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

► Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

- [Power Off] Leaves the computer in the power off state.
- [Power On] Leaves the computer in the power on state.
- [Last State] Restores the system to the previous status before power failure or interrupt occurred.

► Hardware Monitor Information

This menu shows hardware monitor status.

```

Advanced
-----
Hardware Monitor Status
BMC FW Revision      : 3
BMC FW Product ID    : AST1300
PECI_CPU              : +60 C
Temp_BMC              : +37 C
Temp_ENV              : +39 C

SYS_FAN1              : N/A
SYS_FAN2              : 1482 RPM
SYS_FAN3              : N/A

> HMM VOLTAGE Configuration

```

► SATA Configuration

```

Advanced
-----
SATA Mode Selection   [AHCI]
Serial ATA Port 0      Empty
Software Preserve      Unknown
Port 0                 [Enabled]
Hot Plug               [Disabled]
Serial ATA Port 1      Empty
Software Preserve      Unknown
Port 1                 [Enabled]
Hot Plug               [Disabled]
Serial ATA Port 2      Empty
Software Preserve      Unknown
Port 2                 [Enabled]
Hot Plug               [Disabled]
Serial ATA Port 3      Empty
Software Preserve      Unknown
Port 3                 [Enabled]
Hot Plug               [Disabled]
Serial ATA Port 4      Empty

```

► SATA Mode Selection

This setting specifies the SATA controller mode.

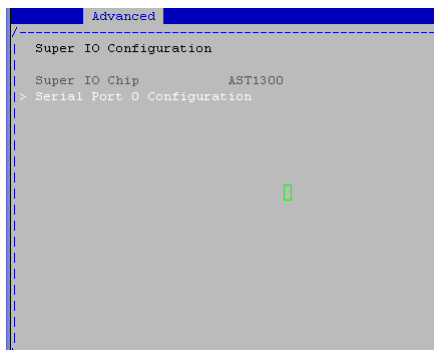
► Port 0~3

These settings enable/disable the specified SATA ports.

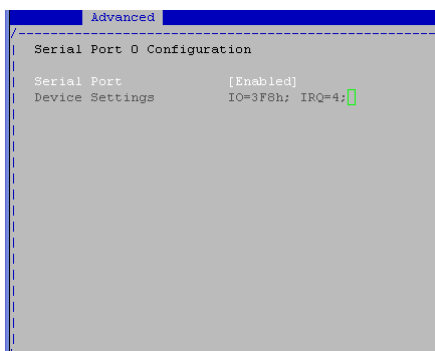
► Hot Plug

These settings enable/disable hot plugging of the specified SATA ports.

► Super IO Configuration



► Serial Port 0 Configuration



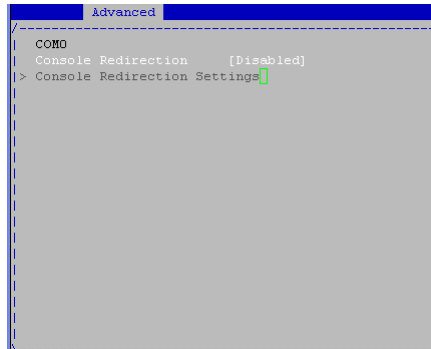
► Serial Port

This setting enables/disables the specified serial port.

► Device Settings

This setting shows the address & IRQ settings of the specified serial port.

► Serial Port Console Redirection



► Console Redirection

Console Redirection operates in host systems that do not have a monitor and keyboard attached. This setting enables/disables the operation of console redirection. When set to [Enabled], BIOS redirects and sends all contents that should be displayed on the screen to the serial COM port for display on the terminal screen. Besides, all data received from the serial port is interpreted as keystrokes from a local keyboard.

► Console Redirection Settings

► Terminal Type

To operate the system's console redirection, you need a terminal supporting ANSI terminal protocol and a RS-232 null modem cable connected between the host system and terminal(s). This setting specifies the type of terminal device for console redirection.

► Bits per second, Data Bits, Parity, Stop Bits

This setting specifies the transfer rate (bits per second, data bits, parity, stop bits) of Console Redirection.

► Flow Control

Flow control is the process of managing the rate of data transmission between two nodes. It's the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data. This is particularly important where the sending device is capable of sending data much faster than the receiving device can receive it.

► VT-UTF8 Combo Key Support

This setting enables/disables the VT-UTF8 combination key support for ANSI/VT100 terminals.

► Recorder Mode, Resolution 100x31

These settings enable/disable the recorder mode and the resolution 100x31.

► Legacy OS Redirection Resolution

This setting specifies the redirection resolution of legacy OS.

► Putty Keypad

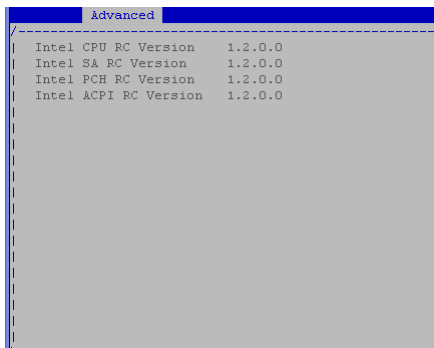
PuTTY is a terminal emulator for Windows. This setting controls the numeric keypad for use in PuTTY.

► Redirection After BIOS POST

This setting determines whether or not to keep terminals?console redirection running after the BIOS POST has booted.

► Intel RC Drivers Version Detail

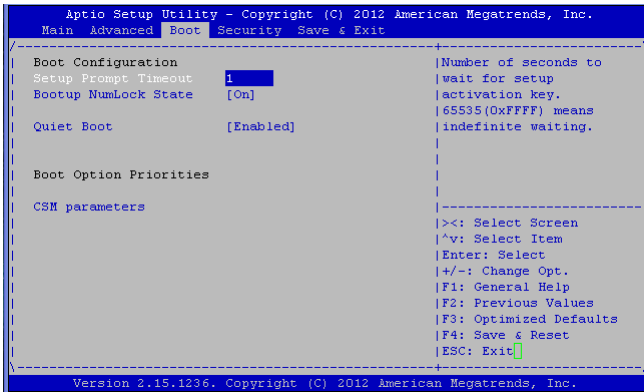
This menu shows RC driver versions. Read only.



The screenshot shows a BIOS Setup window with a blue title bar labeled 'Advanced'. The main area is a grey rectangle with a dashed blue border. Inside, the following text is displayed:

Intel CPU RC Version	1.2.0.0
Intel SA RC Version	1.2.0.0
Intel PCH RC Version	1.2.0.0
Intel ACPI RC Version	1.2.0.0

Boot



► Setup Prompt Timeout

This setting specifies the number of seconds to wait for setup activation key.

► Bootup NumLock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

► Quiet Boot

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo.

When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

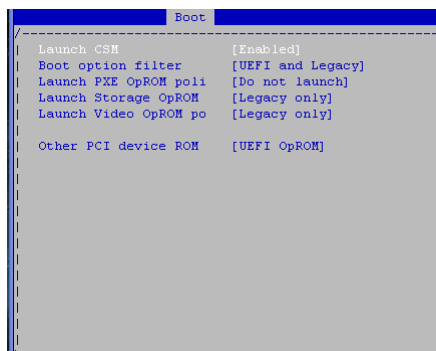
When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

► Boot Option Priorities

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

► CSM Parameters



► Launch CSM

This setting enables/disables the support for Compatibility Support Module, a part of the Intel Platform Innovation Framework for EFI providing the capability to support legacy BIOS interfaces.

► Boot Option Filter

This setting specifies a parameter used as the search filter. Only boot candidates that support the preset BIOS boot mode are listed on the BIOS Setup Utility screens in the Boot Option Priorities list.

► Launch PXE OpROM Policy

This setting controls the execution of UEFI and legacy PXE OpROM.

► Launch Storage OpROM Policy

This setting controls the execution of the storage option ROM.

► Launch Video OpROM Policy

This setting controls the execution of the video option ROM.

► Other PCI Device ROM Priority

This setting prioritizes the option ROMs of other PCI devices.

Security



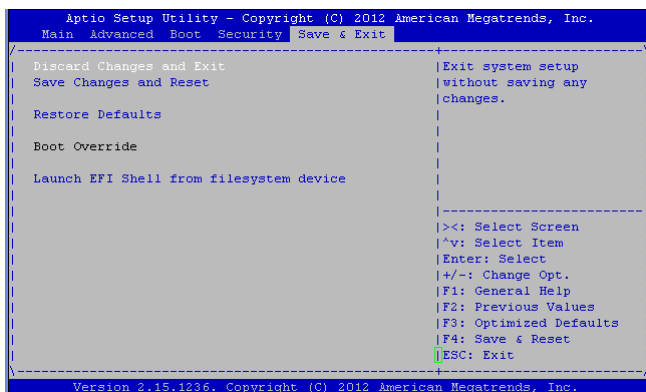
► Administrator Password

Administrator Password controls access to the BIOS Setup utility. Users will be prompted for Administrator password only when they enter BIOS Setup.

► **User Password**

User Password controls access to the system at boot and access to the BIOS Setup utility. Users will be prompted for User password when they power on the system or enter BIOS Setup. In BIOS Setup, users will have Administrator rights.

Save & Exit



► Discard Changes and Exit

Exit system setup without saving any changes.

► Save Changes and Reset

Save changes and reset the system.

► Restore Defaults

Restore the factory defaults.

► Launch EFI Shell from filesystem device

This setting helps to launch the EFI Shell application from one of the available file system devices.

4 Drivers & Utilities



This chapter provides information on system drivers and utilities.

Important

Please note that firmware update assumes technician-level experience.

Installation

Take out the Driver/Utility Disc that is included in the mainboard package, and place it into the optical drive. The installation will auto-run, simply click the driver or utility and follow the on-screen instructions to complete the installation.

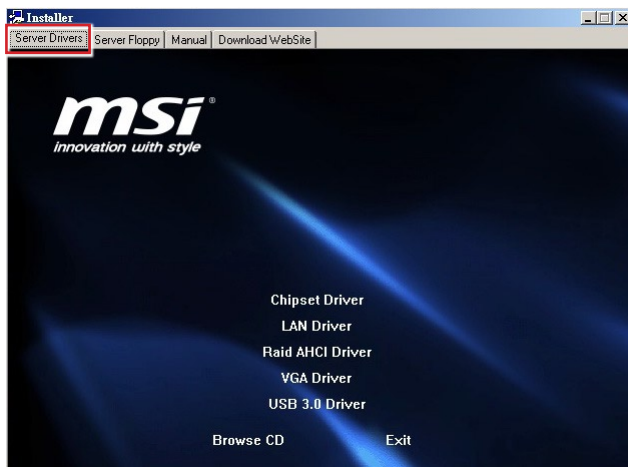


Important

Please visit the MSI website to get the latest drivers and BIOS for better system performance.

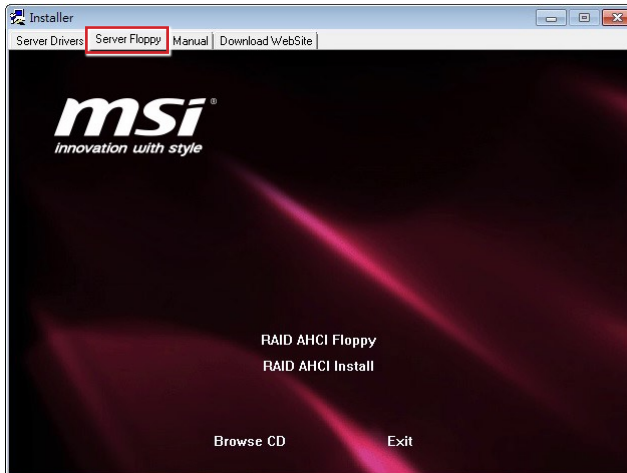
Server Drivers

This menu provides available drivers. Install the drivers at your desire to activate the installed devices.



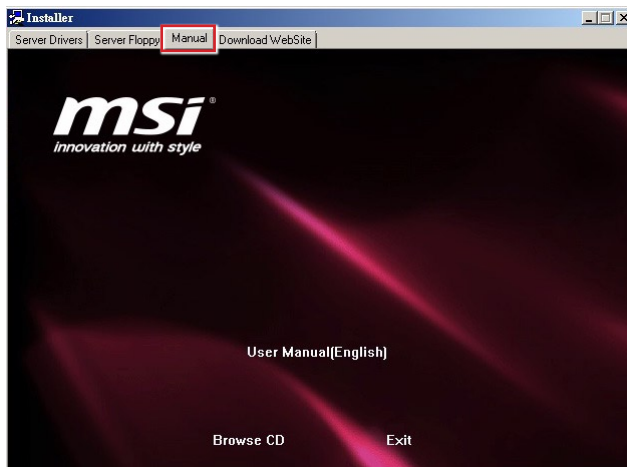
Server Floppy

To use RAID functions, users need to make a SATA RAID Driver floppy diskette before installing the operation system. Refer to this menu for installing a SATA RAID driver without a physical floppy drive.



Manual

A user's manual in PDF format can be acquired through this menu.



Download Website

Visit the MSI website for technical guides, BIOS updates, driver updates and other information.

