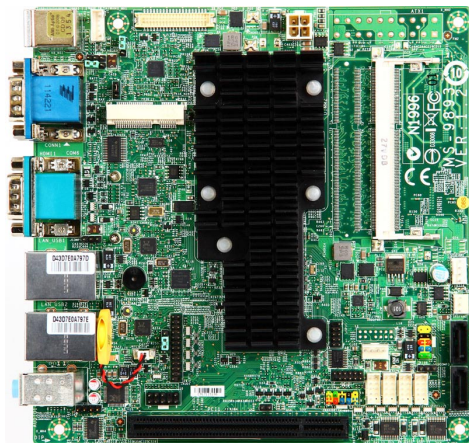# MS-9893

(v1.x) Industrial Computer Board

Copyright Notice

The material in this document is our intellectual property. We take every care in the preparation of this document, but no guarantee is given as to the correctness of its contents. Our products are under continual improvement and we reserve the right to make changes without notice.

Trademarks

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Revision History

Revision	Revision History	Date
V1.0	For PCB v1.0	2012/04
V1.2	For PCB v1.2	2012/11

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。

廢電池請回收
For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

CE Conformity

Hereby, we declare that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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

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.

DEUTSCH

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. Wir haben 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

Au sujet de la directive européenne (EU) relative aux déchets des équipement 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. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

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.

ESPAÑOL

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 termino de su período de vida.

NEDERLANDS

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.

SRPSKI

Po Direktivi Evropske unije ("EU") o odbačenoj ekektronskoj 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.

POLSKI

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.

TÜRKÇE

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 elektonik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır.

ČESKY

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.

MAGYAR

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 kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén.

ITALIANO

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.

CONTENTS

Chapter 1
Overview

Thank you for choosing the MS-9893, an excellent industrial computer board.

Based on the innovative **Intel® NM10** chipset for optimal system efficiency, the MS-9893 accommodates the **Intel® Cedarview-D/ Cedarview-M** processor and supports up to 1 DDR3 1066MHz Non-ECC SO-DIMM slot to provide the maximum of 4GB memory capacity.

In the advanced-level and mid-range market segment, the MS-9893 provides a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

CPU	■ Intel Cedarview-D D2550 processor (07S, 08S) ■ Intel Cedarview-M N2800 processor (09S)
Chipset	■ North Bridge: integrated with CPU ■ South Bridge: Intel NM10 chipset
Memory	■ 1 DDR3 800 / 1066MHz Non-ECC SO-DIMM slot ■ Supports the maximum of 4GB
LAN	■ 1 (07S, 09S) / 2 (08S) Realtek® RTL8111E GbE LAN controllers
Storage	■ 2 SATA 3Gb/s ports by Intel NM10 chipset
Audio	■ HDA Codec by Realtek® ALC887 ■ Compliant with Azalia 1.0 specs ■ With amplifier
Graphics	■ LVDS+VGA or VGA+HDMI
Back Panel I/O	■ 1 PS/2 mouse port ■ 1 PS/2 keyboard port ■ 1 VGA port ■ 1 HDMI port ■ 2 serial ports ■ 1 (07S, 09S) / 2 (08S) Gigabit LAN jacks ■ 4 USB 2.0 ports ■ 1 Line-In audio jack ■ 1 Line-Out audio jack ■ 1 Mic-In audio jack

Onboard Connectors/ Pinheaders	■ 1 USB 2.0 pinheader (2 ports) ■ 1 amplifier pinheader ■ 4 serial port pinheaders ■ 4 serial port power jumpers ■ 1 GPIO pinheader ■ 1 LVDS connector ■ 1 LVDS power jumper ■ 1 front audio pinheader ■ 1 TPM pinheader (07S), (08S and 09S has a TPM module built in) ■ 1 LPT pinheader ■ 1 AT/ATX jumper
Slot	■ 1 PCI slot (supports -12V) ■ 1 Mini PCI-E slot
Form Factor	■ Mini-ITX: 170mm x 170mm
Environmental	■ Operating Temperature: 0°C to 60°C ■ Storage Temperature: -20°C to 80°C ■ Humidity: 0% ~ 90% RH, non-condensing

Mainboard Layout

PCIE Jumper

LVDS Power
Select Jumper

Inverte
Pinheader

LVDS
Connector

DC Power Connector
(D2550/N2800+DC)

COM4 Power Jumper
COM1 Pin9 Jumper

MINI PCI
Slot

ATX Power Connector
(D2550+ATX)

Back Panel I/O

Clear CMOS
Jumper

DIMM Slot

TPM Pinheader
(D2550+ATX/N2800+DC)

Front USB
Pinheader

CPU Fan Power
Connector

Fan Power
Connector

SATA Connector

HDD Power
Connector

Amplifier
Pinheader

COM5 Power
Jumper

Parallel Port
Pinheader

PCI Slot

GPIO
Pinheader

Front Panel
Pinheader

COM3 Power
Jumper

AT/ATX Select
Jumper

Serial Port
Pinheader

Front Audio
Pinheader

Chassis Intrusion
Connector

Mouse Port

Serial Port
COM1

Serial Port
COM6

LAN Jack

LAN Jack

Line-In Jack

Keyboard
Port

VGA Port

HDMI Port

USB 2.0
Port
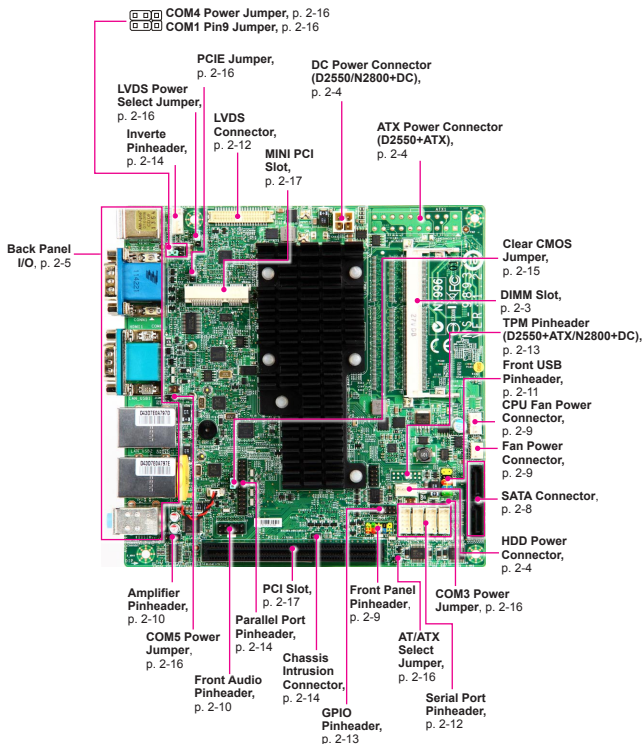
USB 2.0
Port

Line-Out Jack
Mic-In Jack

Chapter 2
Hardware Setup

This chapter provides you with the information on mainboard hardware configurations. Incorrect setting of jumpers and connectors may damage your mainboard. Please pay special attention not to connect these headers in wrong direction. DO NOT adjust any jumper while the mainboard is powered on.

Quick Components Guide

COM4 Power Jumper, p. 2-16
COM1 Pin9 Jumper, p. 2-16

PCIE Jumper, p. 2-16

LVDS Power Select Jumper, p. 2-16

DC Power Connector (D2550/N2800+DC), p. 2-4

LVDS Connector, p. 2-12

ATX Power Connector (D2550+ATX), p. 2-4

Inverte Pinheader, p. 2-14

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Front Panel Pinheader, p. 2-9

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AT/ATX Select Jumper, p. 2-16

Front Audio Pinheader, p. 2-10

Chassis Intrusion Connector, p. 2-14

GPIO Pinheader, p. 2-13

Serial Port Pinheader, p. 2-12
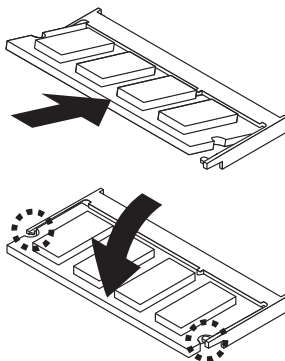
Memory

▶ Installing Memory Modules

1. Locate the SO-DIMM slot. Align the notch on the DIMM with the key on the slot and insert the DIMM into the slot.

2. Push the DIMM gently downwards until the slot levers click and lock the DIMM in place.

3. To uninstall the DIMM, flip the slot levers outwards and the DIMM will be released instantly.
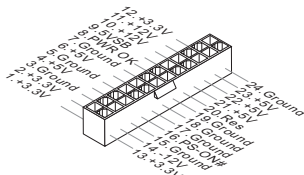

Important

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

Power Supply

ATX 24-Pin Power Connector: ATX1 (07S)

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, align the power supply cable with the connector and firmly press the cable into the connector. If done correctly, the clip on the power cable should be hooked on the mainboard's power connector.

DC Power Connector: JPWR1 (08S, 09S)

This connector allows you to connect a 12V DC power adapter.
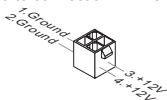
Important

Make sure that all the power cables are securely connected to a proper ATX power supply to ensure stable operation of the mainboard.

HDD Power Connector: JHDDPWR1

This connector provides power to SATA hard drives.

Back Panel I/O

Mouse Port | Serial Port COM1 | Serial Port COM6 | LAN Jack | LAN Jack (08S) | Line-In Jack
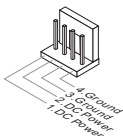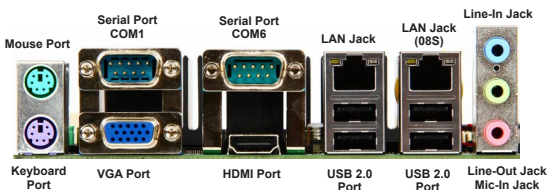
Keyboard Port | VGA Port | HDMI Port | USB 2.0 Port | USB 2.0 Port | Line-Out Jack Mic-In Jack

▶ **Mouse/Keyboard Port**

The standard PS/2 mouse/keyboard DIN connector is for a PS/2 mouse/keyboard.

▶ **VGA Port**

The DB15-pin female connector is provided for monitor.

▶ **HDMI Port**

The High-Definition Multimedia Interface (HDMI) is an all-digital audio/video interface capable of transmitting uncompressed streams. HDMI supports all TV format, including standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable.

▶ **COM1: RS-232/422/485 Serial Port (Optional)**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ **COM6: RS-232 Serial Port**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

RS-232

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	VCC_COM1	Voltage select setting by jumper

RS-422

PIN	SIGNAL	DESCRIPTION
1	422 TXD-	Transmit Data, Negative
2	422 RXD+	Receive Data, Positive
3	422 TXD+	Transmit Data, Positive
4	422 RXD-	Receive Data, Negative
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

RS-485

PIN	SIGNAL	DESCRIPTION
1	485 TXD-	Transmit Data, Negative
2	NC	No Connection
3	485 TXD+	Transmit Data, Positive
4	NC	No Connection
5	GND	Signal Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection

▶ **USB 2.0 Port**

The USB 2.0 port is for attaching USB devices such as keyboard, mouse, or other USB compatible devices. It supports data transfer rate up to 480Mbit/s (Hi-Speed).

▶ **LAN**

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

Activity Indicator ———[ ]——— Speed Indicator

		Left LED (Active LED)	Right LED (100M/1000M Speed LED)
LED Color		Yellow	Green/Orange
10M Cable Plug-in	**No Transmission**	Yellow (Lighting)	OFF
	Transmission	Yellow (Blinking)	OFF
100M Cable Plug-in	**No Transmission**	Yellow (Lighting)	Green (Lighting)
	Transmission	Yellow (Blinking)	Green (Lighting)
1000M Cable Plug-in	**No Transmission**	Yellow (Lighting)	Orange (Lighting)
	Transmission	Yellow (Blinking)	Orange (Lighting)
In S3/S4/S5 Standby State		Yellow (Lighting)	OFF

▶ **Audio Jack**

- **Line-In (Blue)** - for external CD player or other audio devices
- **Line-Out (Green)** - for speakers or headphones
- **Mic-In (Pink)** - for microphones

Connector

Serial ATA Connector: SATA1 ~ SATA2

This connector is a high-speed Serial ATA interface port. Each connector can connect one Serial ATA device.
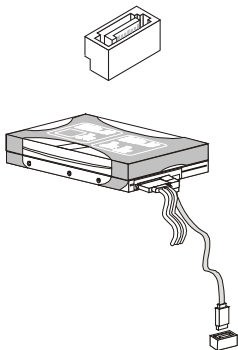
Important

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

Front Panel Pinheader: JFP1

This front panel connector is provided for electrical connection to the front panel switches & LEDs and is compliant with Intel Front Panel I/O Connectivity Design Guide.

Fan Power Connector: CPUFAN1, SYSFAN1

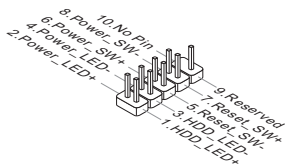The fan power connectors support system cooling fans with +12V. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with a speed sensor to take advantage of the CPU fan control. Remember to connect all system fans. Some system fans may not connect to the mainboard and will instead connect to the power supply directly. A system fan can be plugged into any available system fan connector.

CPUFAN   SYSFAN
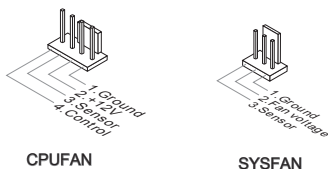
Important

- *If there are not enough ports on the mainboard to connect all system fans, adapters are available to connect a fan directly to a power supply.*

- *Before first boot up, ensure that there are no cables impeding any fan blades.*

Audio Amplifier Pinheader: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.

1. AMP_L-
2. AMP_L+
3. AMP_R-
4. AMP_R+
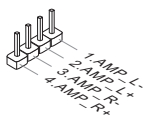
Front Audio Pinheader: JAUD1

This connector allows you to connect the front panel audio and is compliant with Intel Front Panel I/O Connectivity Design Guide.

10. Head Phone Detection
8. No Pin
6. MIC_Detection
4. PRESENCE#
2. Ground

9. Head Phone L
7. SENSE_SEND
5. Head Phone R
3. MIC_R
1. MIC_L
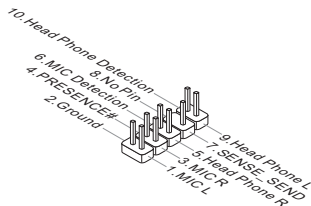
Front USB Pinheader: JUSB1

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.

USB 2.0 Bracket (Optional)
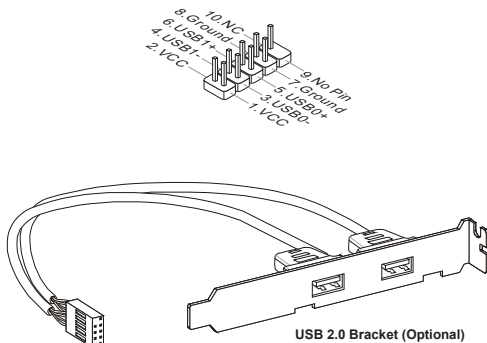
Important

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

RS-232 Serial Port Pinheader: JCOM2~JCOM5

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

2 SIN
4 DTR
6 DSR
8 CTS
9 RI
7 RTS
5 GND
3 SOUT
1 DCD
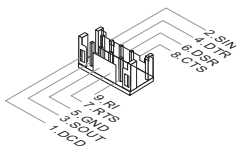
LVDS Connector: JLVDS1

The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels. After connecting an LVDS interface flat panel to this connector, be sure to check the panel datasheet and set the JVDD1 jumper to proper power voltage.

GPIO Connector: JGPIO1

This connector is provided for the General-Purpose Input/Output (GPIO) peripheral module.
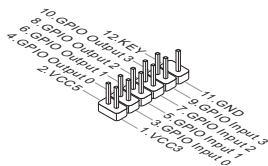
TPM Module Pinheader: JTPM1 (07S)

This connector connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details and usages.
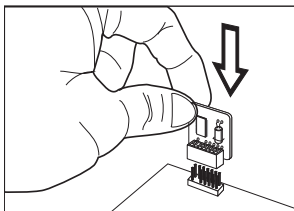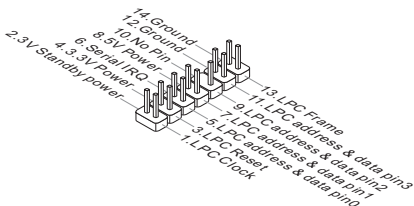
Inverter Pinheader: J1

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

```
5. VCC5
4. LBKLT
3. INV_ON  CTL_C
2. GND
1. +12V
```
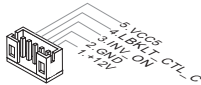
Chassis Intrusion Connector: J2

This connector connects to the chassis intrusion switch cable. If the computer case is opened, the chassis intrusion mechanism will be activated. The system will record this intrusion and a warning message will flash on screen. To clear the warning, you must enter the BIOS utility and clear the record.

```
2. Ground
1. CINTRU
```
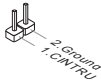
Parallel Port Header: JLPT1

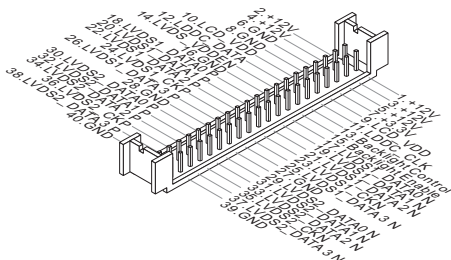This connector is used to connect an optional parallel port bracket. The parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

```
26. No Pin
24. Ground
22. Ground
20. Ground
18. Ground
16. Ground
14. Ground
12. Ground
10. Ground
8. LPT                        25. SLCT
6. PINT#                      23. PE
4. ERR#                       21. BUSY
2. AFD                        19. ACK#
                              17. PRND7
                              15. PRND6
                              13. PRND5
                              11. PRND4
                               9. PRND3
                               7. PRND2
                               5. PRND1
                               3. PRND0
                               1. RSTB#
```
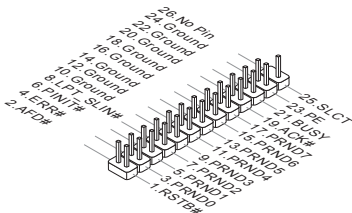
Jumper

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.

JBAT1   Normal   Clear CMOS

Important

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

Serial Port Power Jumper: JCOMP1/ 3/ 4/ 5

This jumper specify the operation voltage of the onboard serial port 1/ 3 .

1 ▢▢▢	1 ▢▢▢	1 ▢▢▢
JCOMP3/ 5	+5V	+12V

▢▢▢ 1	▢▢▢ 1	▢▢▢ 1
JCOMP1/ 4	+5V	+12V
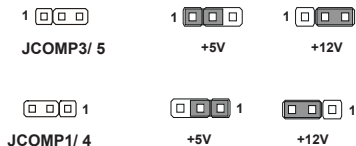
LVDS Power Select Jumper: JVDD1

This jumper specifies the operation voltage of LVDS.

1 ▢	1 ▢	1 ▢
	3V (default)	5V
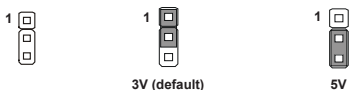
Mini-PCIe Select Jumper: JPCIE_SEL1

This jumper specify the function for the Mini-PCIe slot.

1 ▢	1 ▢	1 ▢
	PCI-E	M-SATA
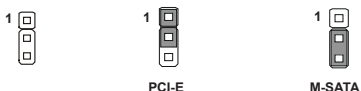
AT/ATX Select Jumper: JAT

This jumper allows users to select between AT and ATX power.

1 ▢	1 ▢	1 ▢
	AT Power	ATX Power

Slot

Mini PCI-E (Peripheral Component Interconnect Express) Slot

The Mini PCI-E slot is provided for wireless LAN card, TV tuner card, and Robson NAND Flash card.
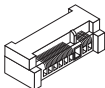
PCI (Peripheral Component Interconnect) Slot

The PCI slot supports PCI interface expansion cards.
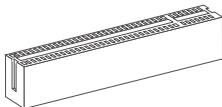
Important

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.

Chapter 3
BIOS Setup

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

You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

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 <DEL> key to enter Setup.

Press DEL 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
F7	Previous Values
F9	Optimized Defaults
F10	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

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Boot  Security  Chipset  Power  Save & Exit

    System Date                          [Wed 01/28/2009]          Set the Date. Use Tab to
    System Time                          [17:20:21]                switch between Data
                                                                   elements.
    SATA1                                Not Present
    SATA2                                Not Present

    SATA Mode Selection                  [IDE]

    USB Devices:
        1 Drive, 1 Keyboard

    Intel(R) Atom(TM) CPU D2700  @ 2.13GHz
    Processor Speed                      2132 MHz
    Processor ID                         30661                     →←: Select Screen
    BIOS Version                         E9893IMS V1.0b8 042912    ↑↓: Select Item
    Total Memory                         2048 MB                   Enter: Select
                                                                   +/-: Change Opt.
                                                                   F1: General Help
                                                                   F7: Previous Values
                                                                   F9: Optimized Defaults
                                                                   F10: Save & Exit
                                                                   ESC: Exit


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```

‣ **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.

‣ **Chipset**

This menu controls the advanced features of the onboard chipsets.

‣ **Power**

Use this menu to specify your settings for power management.

‣ **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
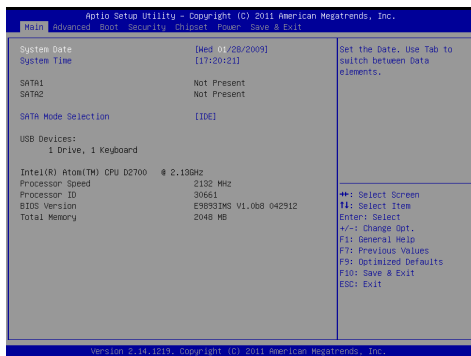
▶ **System Date**

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>.

▶ **SATA1/ 2**

[Type]	Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.

[LBA/Large Mode]	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors
[Block (Multi-Sector Transfer)]	Any selection except Disabled determines the number of sectors transferred per block
[PIO Mode]	Indicates the type of PIO (Programmed Input/Output)
[DMA Mode]	Indicates the type of Ultra DMA
[S.M.A.R.T.]	This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.
[32 Bit Data Transfer]	Enables 32-bit communication between CPU and IDE controller

▸ **SATA Mode Selection**

This setting specifies the SATA controller mode.

Advanced
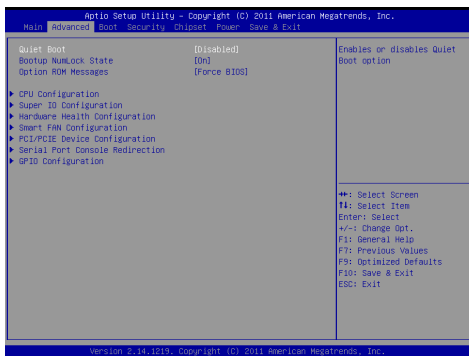
▶ **Quiet Boot**

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.

▶ **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.

▶ **Option ROM Messages**

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

▶ **CPU Configuration**
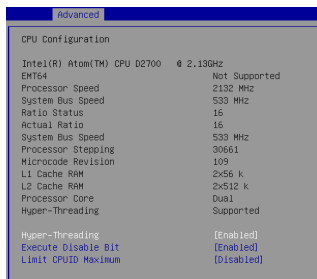
▶ **Hyper-Threading**

The processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.

▶ **Execute Disable Bit**

Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

▶ **Limit CPUID Maximum**

The Max CPUID Value Limit BIOS feature allows you to circumvent

problems with older operating systems that do not support the Intel Pentium 4 processor with Hyper-Threading Technology. When enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

▶ **Super IO Configuration**
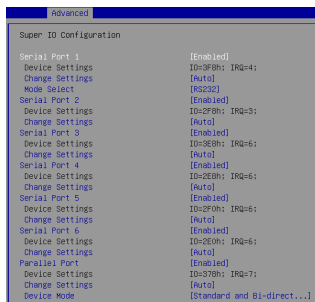
▶ **Serial Port 1/ 2/ 3/ 4/ 5/ 6**

This setting enables/disables the specified serial port.

   ▶ **Change Settings**

   This setting is used to change the address & IRQ settings of the specified serial port.

   ▶ **Mode Select**

   Select an operation mode for the serial port.

▶ **Parallel Port**

This setting enables/disables the parallel port.

   ▶ **Change Settings**

   This setting is used to change the address & IRQ settings of the parallel port.

   ▶ **Device Mode**

   Select an operation mode for the parallel port.

▶ **Hardware Health Configuration**

These items display the current status of all monitored hardware devices/components such as voltages, temperatures and all fans' speeds.

Advanced
Hardware Health
System Temperature	: +33 C
System1 FAN Speed	: 3978 RPM
VCC3V	: +3.312 V
CPU VCore	: +1.208 V
VCC5	: +5.003 V
+12V	: +12.056 V
VCC_DDR	: +1.504 V
VBAT	: +3.264 V

▶ **Smart FAN Configuration**

Advanced
Configuration Smart FAN
SYSFAN1 Type	[3 Pin]
Smart SYSFAN1 Function	[Disabled]

▶ **SYSFAN1 Type**

This setting specifies the SYSFAN1 type.

▶ **Smart SYSFAN1 Function**

This setting enables/disables the Smart Fan function. Smart Fan is an excellent feature which will adjust the system fan speed automatically depending on the current system temperature, avoiding the overheating to damage your system.

▶ **PCI/PCIE Device Configuration**

Advanced
PCI Latency Timer	[32 PCI Bus Clocks]
USB Support	[Enabled]
Legacy USB Support	[Enabled]
Audio Controller	[Enabled]
Launch PXE OpROM	[Disabled]
Launch Storage OpROM	[Enabled]

▶ **PCI Latency Timer**

This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. For better PCI performance, you should set the item to higher values.

▶ **USB Support**

This setting enables/disables support for USB devices.

▶ **Legacy USB Support**

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

▶ **Audio Controller**

This setting enables/disables the onboard audio controller.

▶ **Launch PXE OpROM, Launch Storage OpROM**

This setting enables/disables the initialization of the onboard LAN Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

▶ **Serial Port Console Redirection**
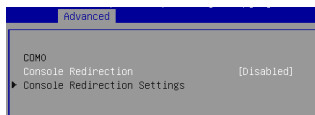
▶ **Console Redirection**

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.

▶ **GPIO Configuration**
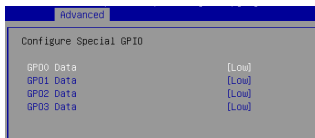
▶ **GPO0 Data, GPO1 Data, GPO2 Data, GPO3 Data**

This setting controls the operation mode of the specified GPIO.

Boot

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
       Main  Advanced  Boot  Security  Chipset  Power  Save & Exit

                                                                     Sets the system boot order
       Boot Option Priorities
       Boot Option #1                    [UEFI: USB 2.0 Flash Di...]
       Boot Option #2                    [USB 2.0 Flash Disk 0.00]
       Boot Option #3                    [UEFI: Built-in EFI Shell ]

       Hard Drive BBS Priorities



                                                                     →←: Select Screen
                                                                     ↑↓: Select Item
                                                                     Enter: Select
                                                                     +/-: Change Opt,
                                                                     F1: General Help
                                                                     F7: Previous Values
                                                                     F9: Optimized Defaults
                                                                     F10: Save & Exit
                                                                     ESC: Exit


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```

▸ **Boot Option #1 / #2 / #3**

This setting allows users to set the sequence of boot devices where BIOS attempts to load the disk operating system.

▸ **Hard Drive BBS Priorities**

This setting allows users to set the priority of the specified devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑ ↓) to select the desired device, then press <+>, <-> or <PageUp>, <Page-Down> key to move it up/down in the priority list.

Security
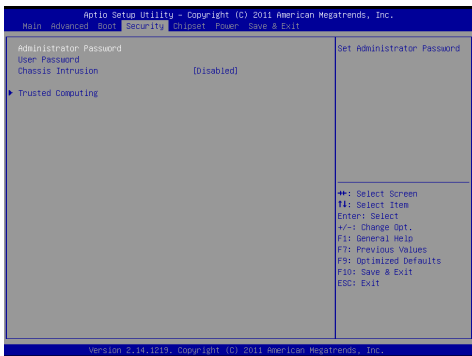
▸ **Administrator Password**

Administrator Password controls access to the BIOS Setup utility.

▸ **User Password**

User Password controls access to the system at boot and to the BIOS Setup utility.

▸ **Chassis Intrusion**

Enables or disables the feature of recording the chassis intrusion status and issuing a warning message if opened. To clear the warning logs, set the field to [Reset]. The setting of the field will return to [Enabled] later.

▶ **Trusted Computing**
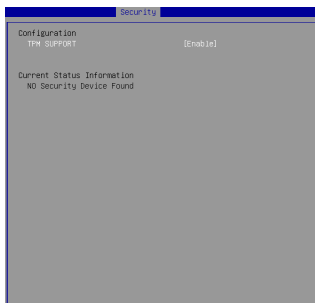
▶ **TPM Support**

This setting controls the Trusted Platform Module (TPM) designed by the Trusted Computing Group (TCG). TPMs are special-purpose integrated circuits (ICs) built into a variety of platforms to enable strong user authentication and machine attestation - essential to prevent inappropriate access to confidential and sensitive information and to protect against compromised networks.

Chipset


```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  Boot  Security  Chipset  Power  Save & Exit

   IGFX - Boot Type                 [CRT]                          Select the Video Device
   DP Panel Type                    [1280x 768 & $18]              which will be activated
   Fixed Graphics Memory Size       [128MB]                        during POST.  This has no
                                                                   effect if external
                                                                   graphics present.




                                                                   ↔: Select Screen
                                                                   ↑↓: Select Item
                                                                   Enter: Select
                                                                   +/-: Change Opt.
                                                                   F1: General Help
                                                                   F7: Previous Values
                                                                   F9: Optimized Defaults
                                                                   F10: Save & Exit
                                                                   ESC: Exit


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```

▸ **IGFX - Boot Type**

Use the field to select the type of device you want to use as the boot display of the system.

▸ **DP Panel Type**

This setting allows you to set the resolution of the boot display device.

▸ **Fixed Graphics Memory Size**

This setting specifies the size of system memory allocated for video memory.

Power

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  Boot  Security  Chipset  Power  Save & Exit

 ACPI Sleep State                      [S3 (Suspend to RAM)]        Select the highest ACPI
 Restore AC Power Loss                 [Last State]                 sleep state the system
                                                                    will enter when the
 Advanced Resume Events Control                                     SUSPEND button is pressed.
 Resume On USB from S3/S4              [Enabled]
 Resume On PCIE/PCI PME                [Disabled]
 Resume On Ring                        [Disabled]
 Resume On RTC                         [Disabled]



                                                                    →←: Select Screen
                                                                    ↑↓: Select Item
                                                                    Enter: Select
                                                                    +/-: Change Opt.
                                                                    F1: General Help
                                                                    F7: Previous Values
                                                                    F9: Optimized Defaults
                                                                    F10: Save & Exit
                                                                    ESC: Exit


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```
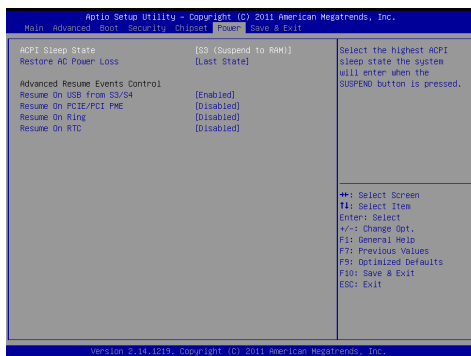
▸ **ACPI Sleep State**

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field.

▸ **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.

▸ **Resume On USB from S3/S4**

The item allows the activity of the USB device to wake up the system from S3/S4 sleep state.

▸ **Resume On PCIE/PCI PME**

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard PCIE/PCI PME is detected.

▸ **Resume On Ring**

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.
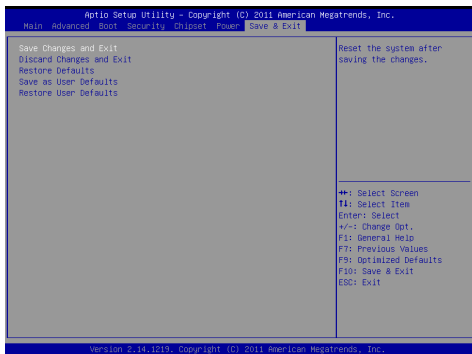
Important

You need to install a modem card supporting power on function for "Wake Up On Ring" function.

▸ **Resume On RTC**

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

Save & Exit

▶ **Save Changes and Exit**
Save changes to CMOS and exit the Setup Utility.

▶ **Discard Changes and Exit**
Abandon all changes and exit the Setup Utility.

▶ **Restore Defaults**
Restore the factory defaults.

▶ **Save as User Defaults**
Save all changes as user defaults.

▶ **Restore User Defaults**
Restore the preset user defaults.