

MS-96D9

(v1.X) Server Board

The MSI logo is a stylized lowercase "msi" in a white, italicized font, positioned diagonally across the center of the image.

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Revision History

Revision	Date
V1.1	2011/07

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 via <http://www.msi.com/service/download/>
- Contact our technical staff via <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/evmtprt_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-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

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 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. 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 período 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 Elektronische 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 gereturneerd 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 podesti da...

Po Direktivi Evropske unije ("EU") o odbačenoj elektronskoj 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 özelliğyle 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 bittiğten sonra ürünler 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 odebíráni výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdát v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédként fellépve az MSI emlékezeti Önt, hogy ...

Az Európai Unió („EU“) 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelv 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. 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 adeguerà 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.

CONTENTS

Copyright Notice	ii
Trademarks	ii
Revision History	ii
Technical Support.....	ii
Safety Instructions.....	iii
Chemical Substances Information	iv
Battery Information.....	iv
CE Conformity.....	v
FCC-B Radio Frequency Interference Statement.....	v
WEEE Statement	vi
Chapter 1 Overview	1-1
Mainboard Specifications	1-2
Mainboard Layout	1-4
Watch Dog Timer Setting	1-12
Chapter 2 Hardware Setup.....	2-1
Quick Components Guide	2-2
Memory	2-3
Power Supply	2-4
Rear Panel I/O	2-6
Connector.....	2-11
Jumper	2-17
Slot	2-19
Chapter 3 BIOS Setup	3-1
Entering Setup	3-2
The Menu Bar	3-4
Main	3-5
Advanced	3-6
Chipset.....	3-14
Boot.....	3-17
Security	3-19
Save & Exit.....	3-20

msi™

Chapter 1

Overview

Thank you for choosing the MS-96D9 v1.X, an excellent server board from MSI.

Based on the Intel® ICH8M chipset for optimal system efficiency, the MS-96D9 accommodates the Intel® Pineview processor (CPU + GPU + Northbridge) and supports up to 2 SO-DIMM slots to provide the maximum of 4GB memory capacity.

In the entry-level and mid-range market segment, the MS-96D9 can provide a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

Processor

- Intel Pineview D425/D525 processor (CPU + GPU + Northbridge)

FSB

- 667MHz

Chipset

- South Bridge: Intel ICH8M chipset

Memory

- 2 DDR3 800MHz SO-DIMM slots
- Supports the maximum of 4GB Unbuffered / non-ECC DIMM

LAN

- Supports Gigabit LAN by Intel 82574L Gb Ethernet controller
- Supports Ethernet bypass function with Programming Relay (optional)

SATA

- 2 SATA 3Gb/s ports by Intel ICH8M

IDE

- 1 IDE port by Intel ICH8M
- Supports Ultra DMA 66/100, PIO, Bus Master operation mode

CF

- 1 CompactFlash socket by Intel ICH8M

Onboard Input/Output

- Front Panel
 - 2 or 4 or 6 Gigabit LAN ports
 - 2 USB 2.0 ports
 - 1 RJ-45 serial console port
- Onboard Connectors
 - 1 USB 2.0 pinheader (2 ports)
 - 1 serial port connector
 - 1 SMBus connector
 - 1 SPI Flash ROM pinheader (for debugging)
 - 1 chassis intrusion connector
 - 1 TPM connector
 - 1 VGA port
 - 1 keyboard/mouse connector

Slot

- 1 PCIE x4 edge-type slot (with 2 PCIE x1 signal, for 4 GbE LAN sku only)
- 1 PCIE x1 edge-type slot (optional)

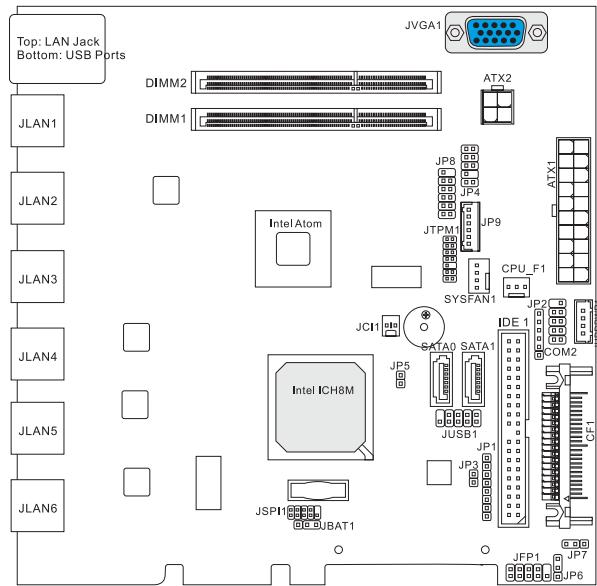
Form Factor

- Mini-ITX: 170mm x 170mm

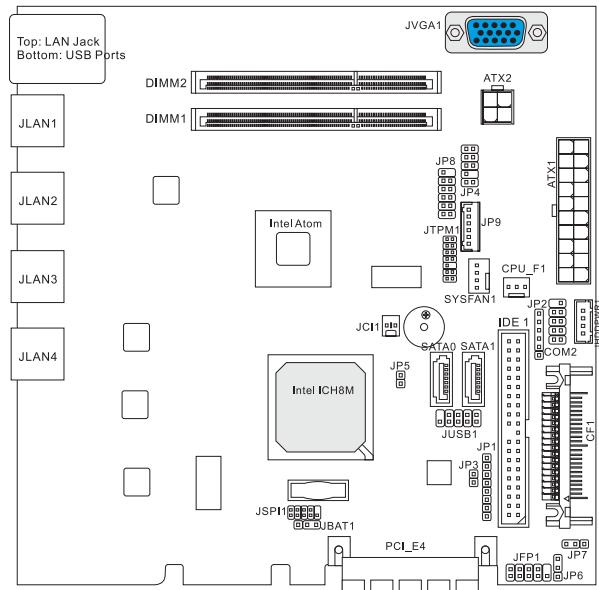
Mounting

- 4 mounting holes

Mainboard Layout

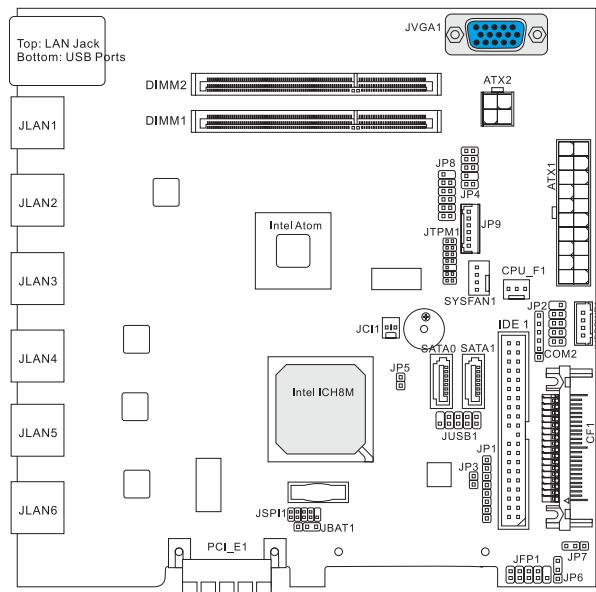


MS-96D9 v1.X Mainboard (ATX Power, 6 GbE LAN)

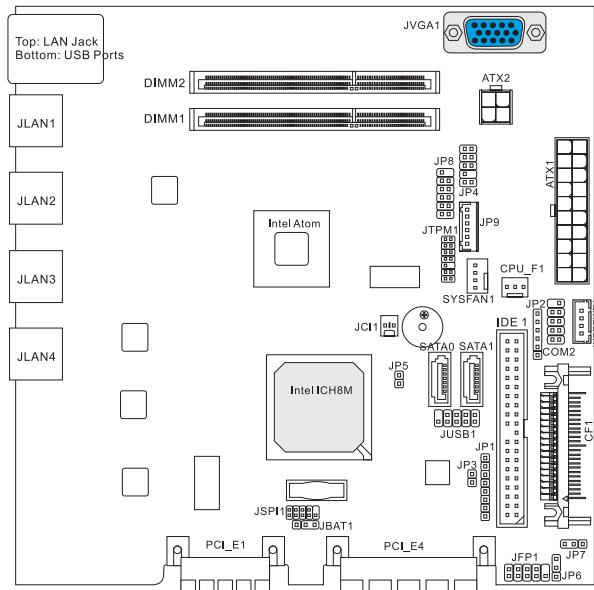


MS-96D9 v1.X Mainboard (ATX Power, 4 GbE LAN, PCIE x4)

Overview

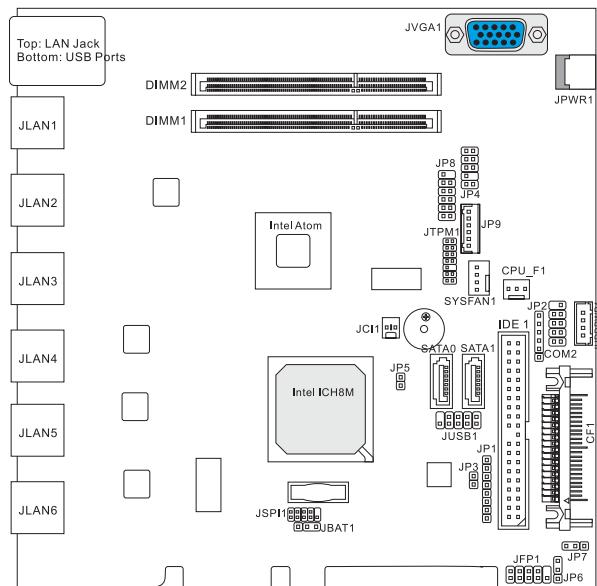


MS-96D9 v1.X Mainboard (ATX Power, 6 GbE LAN, PCIE x1)

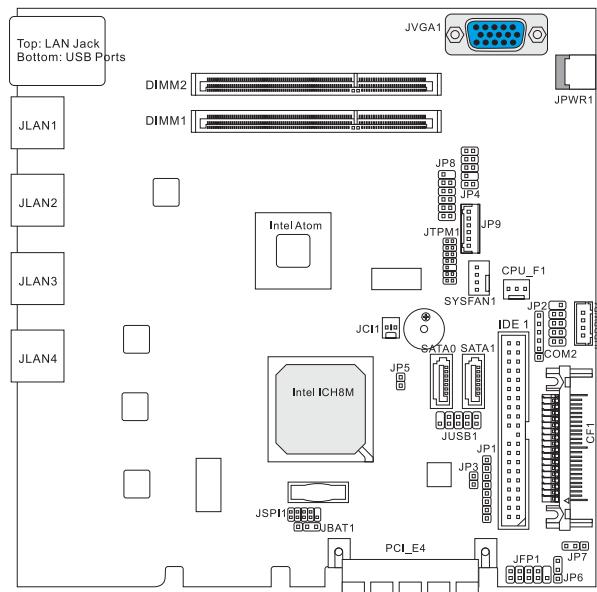


MS-96D9 v1.X Mainboard (ATX Power, 4 GbE LAN, PCIE x4, PCIE x1)

Overview

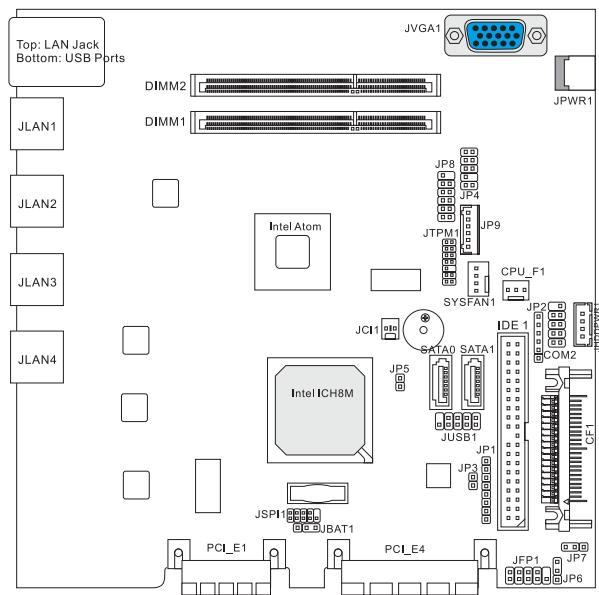


MS-96D9 v1.X Mainboard (DC Power, 6 GbE LAN)

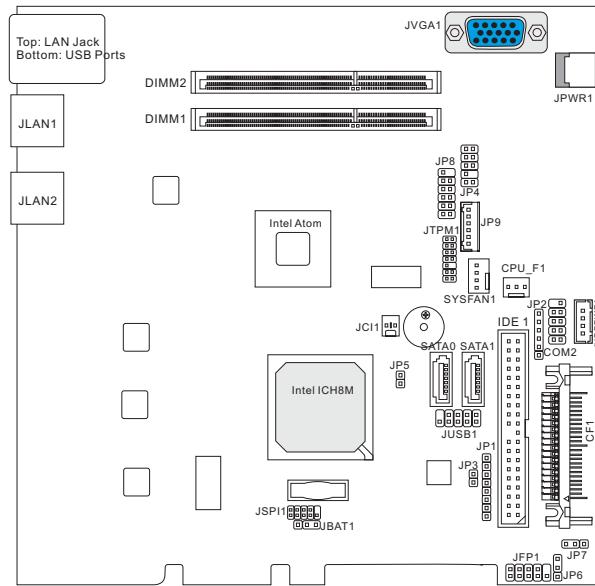


MS-96D9 v1.X Mainboard (DC Power, 4 GbE LAN, PCIE x4)

Overview



MS-96D9 v1.X Mainboard (DC Power, 4 GbE LAN, PCIE x4, PCIE x1)



MS-96D9 v1.X Mainboard (DC Power, 2 GbE LAN)

Watch Dog Timer Setting

Setup procedures

- A. Enter super I/O configuration mode -

```
mov      dx, 04eh
mov      al, 087h
out     dx, al
out     dx, al
```

- B. Set pin 77 to WDTO# function

BIT	READ / WRITE	DESCRIPTION
1	R / W	Pin 75 Select (reset by RSMRST#) = 0 RSMRST# = 1 GPIO51
0	R / W	Pin 77 Select (reset by RSMRST#) = 0 WDTO# = 1 GPIO50

```
mov      dx,04eh
mov      al,02Dh;; ;Register 2Dh
out     dx,al
inc      dx
in      al,dx
and      al,0FEh ;Config Bit 0 As 0
out     dx,al    ;Config PIN 77 as WDTO#
```

- C. Select Logical Device 8

```
mov      dx, 04eh
mov      al, 07h
out     dx, al    ;point to Logical Device Number Register
inc      dx
mov      al, 08h    ;select Logical Device 8
out     dx, al
```

D. Enable watchdog timer
Activate WDTO#

CR 30h. (Default 00h)

Bit	Read / Write	Description
7~1	Reserved.	
0	R / W	0: WDTO# is inactive. 1: Activate WDTO#.

```

mov      dx, 04eh ;CR 30h: bit 0 fill in 1
mov      al, 030h
out     dx, al
inc      dx
mov      al, 01h
out     dx, al

; Setup WDTO# count mode
; Set bit 4 and bit 3 by request
; Set bit 2 to 0
; Set bit 1 to 1

```

CR F5h. (WDTO#, PLED and KBC P20 control mode register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7~6	R / W	Select Power LED mode. 00: Power LED pin is tri-stated. 01: Power LED pin is driven low. 10: Power LED pin outputs 11Hz pulse with 50% duty cycle. 11: Power LED pin outputs 1/4Hz pulse with 50% duty cycle.
5	Reserved.	
4	R / W	Faster 1000 times for WDTO# count mode. 0: Disable. 1: Enable. (If bit-3 is Second Mode , the count mode be 1/1000 Sec.) (If bit-3 is Minute Mode , the count mode be 1/1000 Min.)
3	R / W	Select WDTO# count mode. 0: Second Mode. 1: Minuto Modo.
2	R / W	Enable the rising edge of KBC reset (P20) to issue time-out event. 0: Disable. 1: Enable.
1	R / W	Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60) 0: Disable. 1: Enable.
0	Reserved.	

CR F7h. (WDTO# control & status register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7	R / W	Mouse interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt.
6	R / W	Keyboard interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboard interrupt.
5	Write "1" Only	Trigger WDTO# event. This bit is self-clearing.
4	R / W Write "0" Clear	WDTO# status bit 0: Watchdog timer is running. 1: Watchdog timer issues time-out event
3-0	R / W	These bits select IRQ resource for WDTO#. (02h for SMI# event.)

```

mov      dx, 04eh ;CR F7h: bit 4 fill 0 (clear event)
mov      al, 0f7h
out     dx, al
inc      dx
in      al,dx
and      al, 0efh
out     dx, al    ;CR F6h: bit0~7 fill in counter time

```

CR F6h. (WDTO# counter register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7-0	R / W	Watch Dog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value to Watch Dog Counter and start counting down. If the bit 7 and 6 of CR F7h are set, any Mouse Interrupt or Keyboard Interrupt event will also cause the reload of previously-loaded non-zero value to Watch Dog Counter and start counting down. Reading this register returns current value in Watch Dog Counter instead of Watch Dog Timer Time-out value. 00h: Time-out Disable 01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes FFh: Time-out occurs after 255 second/minutes

E. Exit configuration mode

```

mov      dx, 04eh
mov      al, 0aah
out     dx, al

```

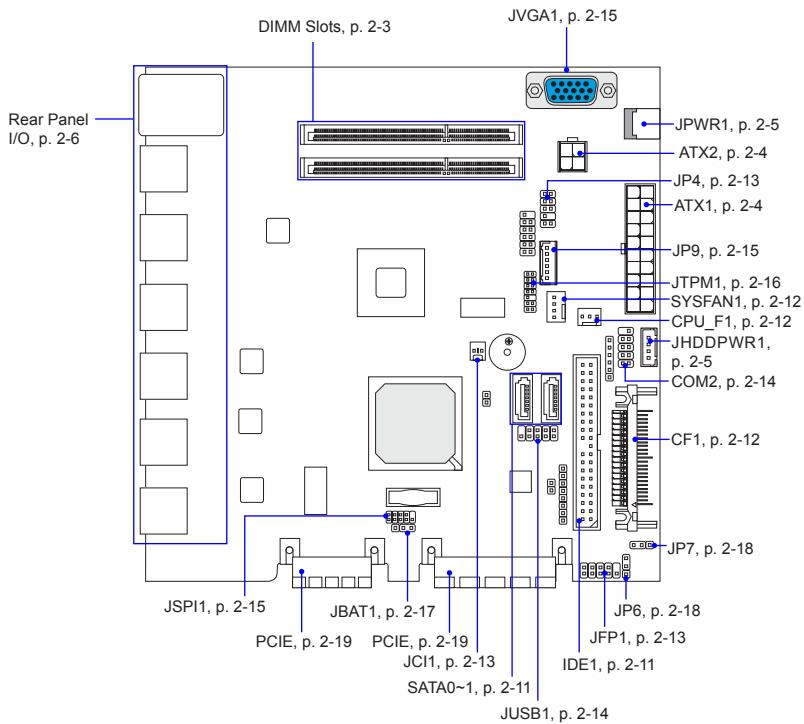
Chapter 2

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 Components Guide



Memory

The SO-DIMM slots are intended for memory modules.



DDR3 SO-DIMM Slot

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 slot 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.

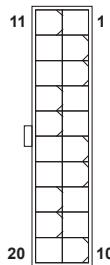
Important

- You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.
- To enable successful system boot-up, always insert the memory modules into the DIMM1 first.

Power Supply

System Power Connector: ATX1 (Optional)

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.



PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS-ON#
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWR OK	18	+3.3VSB
9	5VSB	19	+5V
10	+12V	20	+5V

CPU/Memory Power Connector: ATX2 (Optional)

This connector provides 12V power output to the CPU & memory.



PIN	SIGNAL
1	GND
2	GND
3	+12V
4	+12V

Important

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

DC Adapter Connector: JPWR1 (Optional)

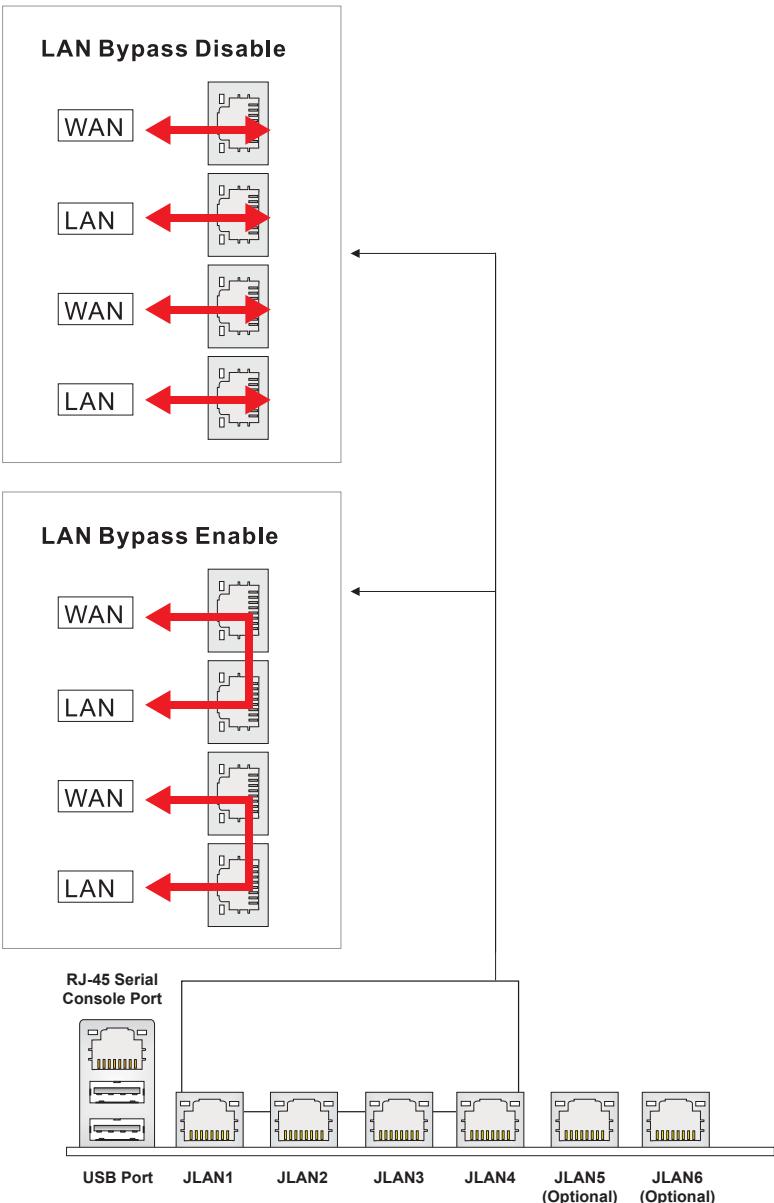
This connector is used to connect DC power adapter.

**HDD Power Connector: JHDDPWR1**

This connector provides power to the hard disk drives.

PIN	SIGNAL
1	+12V
2	GND
3	GND
4	VCC5

Rear Panel I/O



► RJ-45 Serial Console Port

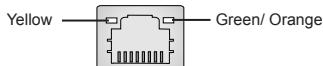
The RJ-45 serial console port allows direct connection to the Serial Console Server for local access and configuration.

► USB Port

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

► LAN

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

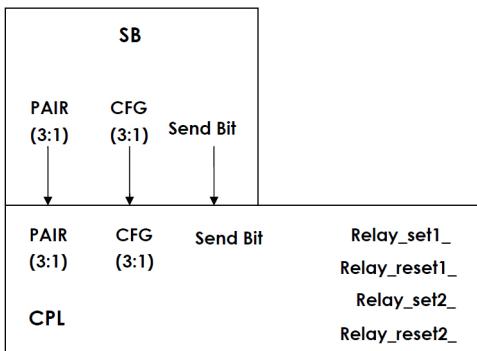


LED	Color	LED State	Condition
Left	Yellow	Off	LAN link is not established.
		On (steady)	LAN link is established.
		On (blinking)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000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

LAN Bypass Function Programming Guide

The Southbridge GPIO controls CPLD to realize LAN Bypass/PassThrough/WDT function.

ICH8M – CPLD block diagram



ICH8M GPIO pin – CPLD input pin table

ICH8M GPO	CPLD input pin
GPO6	CPLD_PAIR1
GPO34	CPLD_PAIR2
GPO33	CPLD_PAIR3
GPO39	CPLD_CFG1
GPO38	CPLD_CFG2
GPO35	CPLD_CFG3
GPO24	CPLD_SendBIT, default low

Programming Sequence

1. program GPO6,34,33, PAIR(3:1) to switch LAN1-2 or LAN3-4 pair
2. program GPO39,38,35 CFG(3:1) to control LAN pair behavior Bypass/ PassThrough/WDT
3. set GPO24, CPLD_SendBIT high about 150ms then set it low about 50ms to complete the LAN pair configuration progress
4. go to next programming sequence loop for the next LAN pair!

Corresponding ICH8M GPIO bit definition

GP_LVL—GPIO Level for Input or Output Register	
Offset Address: 0480h + 0Ch, Size: 32-bit	
Bit	Description
6	0: GPO6, CPLD_PAIR1 low 1: GPO6, CPLD_PAIR1 high
24	0: GPO24, CPLD_SendBIT, low 1: GPO24, CPLD_SendBIT, high

GP_LVL2—GPIO Level for Input or Output 2	
Offset Address: 0480h + 038h, Size: 32-bit	
Bit	Description
2	0: GPO34, CPLD_PAIR2 low 1: GPO34, CPLD_PAIR2 high
1	0: GPO33, CPLD_PAIR3 low 1: GPO33, CPLD_PAIR3 high
7	0: GPO39, CPLD_CFG1 low 1: GPO39, CPLD_CFG1 high
6	0: GPO38, CPLD_CFG2 low 1: GPO38, CPLD_CFG2 high
3	0: GPO35, CPLD_CFG3 low 1: GPO35, CPLD_CFG3 high

Boolean table for CPLD behavior of Bypass/PassThrough/WDT function**LAN1-2**

PAIR_3	PAIR_2	PAIR_1	CFG_3	CFG_2	CFG_1		
0	0	0	0	0	0	ON	PassTru
						OFF	PassTru
						WDT	Reset
0	0	0	0	0	1	ON	PassTru
						OFF	PassTru
						WDT	ByPass
0	0	0	0	1	0	ON	PassTru
						OFF	ByPass
						WDT	Reset
0	0	0	0	1	1	ON	PassTru
						OFF	ByPass
						WDT	ByPass
0	0	0	1	0	0	ON	ByPass
						OFF	PassTru
						WDT	Reset
0	0	0	1	0	1	ON	ByPass
						OFF	PassTru
						WDT	ByPass
0	0	0	1	1	0	ON	ByPass
						OFF	ByPass
						WDT	Reset
0	0	0	1	1	1	ON	ByPass
						OFF	ByPass
						WDT	ByPass

Hardware Setup

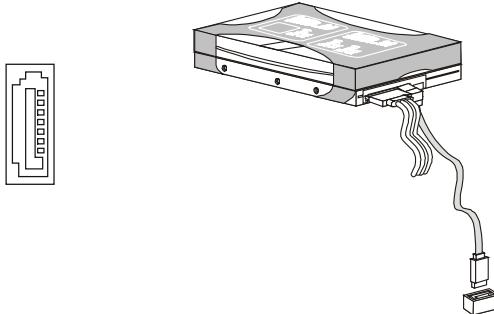
LAN3-4

PAIR_3	PAIR_2	PAIR_1	CFG_3	CFG_2	CFG_1		
0	0	1	0	0	0	ON	PassTru
						OFF	PassTru
						WDT	Reset
0	0	1	0	0	1	ON	PassTru
						OFF	PassTru
						WDT	ByPass
0	0	1	0	1	0	ON	PassTru
						OFF	ByPass
						WDT	Reset
0	0	1	0	1	1	ON	PassTru
						OFF	ByPass
						WDT	ByPass
0	0	1	1	0	0	ON	ByPass
						OFF	PassTru
						WDT	Reset
0	0	1	1	0	1	ON	ByPass
						OFF	ByPass
						WDT	Reset
0	0	1	1	1	1	ON	ByPass
						OFF	ByPass
						WDT	ByPass

Connector

Serial ATA Connector: SATA0, SATA1

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

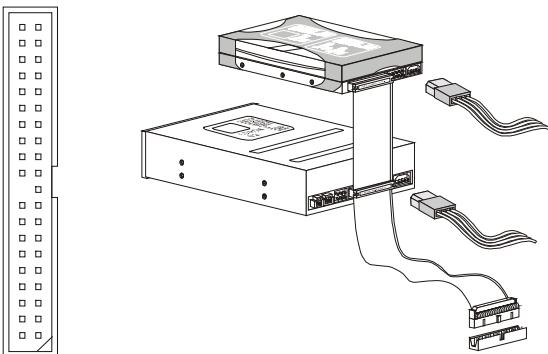


Important

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

IDE Connector: IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

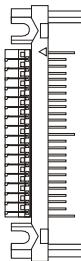


Important

If you install two IDE devices on the same cable, you must configure the drives separately to master/slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

CompactFlash Socket: CF1

This socket is provided for CompactFlash (CF) cards.



Fan Power Connector: CPU_F1, SYSFAN1

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 mainboard 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.

CPU_F1



PIN	SIGNAL
1	GND
2	+12V
3	Sensor

SYSFAN1



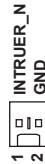
PIN	SIGNAL
1	GND
2	+12V
3	Sensor
4	Control

Important

Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.

Chassis Intrusion Connector: JCI1

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



Front Panel Connectors: JFP1

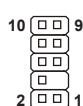
This connector is provided for electrical connection to the front panel switches and LEDs and is compliant with Intel Front Panel I/O Connectivity Design Guide.



PIN	SIGNAL	PIN	SIGNAL
1	HDD+	2	PLED
3	HDD-	4	SLED
5	RESET-	6	PWSW+
7	RESET+	8	PWSW-
9	NC	10	KEY

Keyboard/Mouse Connector: JP4

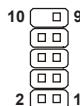
This connector is used to connect a mouse/keyboard.



PIN	SIGNAL	PIN	SIGNAL
1	KBMS_Power	2	KBMS_Power
3	NC	4	NC
5	GND	6	GND
7	MSCLK_PH#	8	KBCLK_PH#
9	MSDAT_PH#	10	KBDAT_PH#

Serial Port Connector: COM2

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



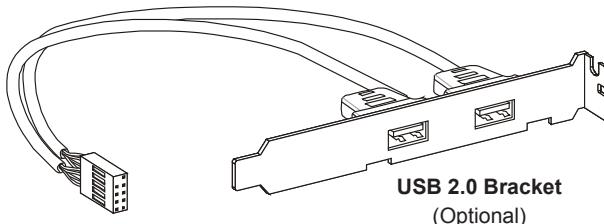
PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Front USB 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.

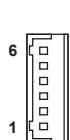


PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	KEY	10	NC



SMBus Connector: JP9

This connector, known as I2C, is for users to connect System Management Bus (SMBus) interface.



PIN	SIGNAL
1	GND
2	VCC5
3	SMBCLK
4	SMBDATA
5	+12V
6	PWRBTN#

SPI Flash ROM Connector: JSPI1

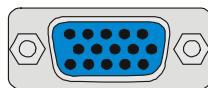
This connector is used to flash SPI flash ROM.



PIN	SIGNAL	PIN	SIGNAL
1	+3.3V_DUAL	2	+3.3V_DUAL
3	SPI_MISO	4	SPI_MOSI_R
5	SPI_CS0#_R	6	SPI_CLK_R
7	GND	8	GND
9	SPI_HOLD#	10	NC

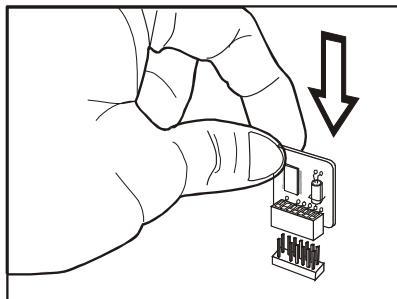
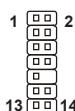
VGA Connector: JVGA1

The DB15-pin female connector is provided for monitor.



TPM Connector: JTPM1 (Optional)

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



PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	LCLK	LPC clock	2	3V dual/3V_STB	3V dual or 3V standby power
3	LRST#	LPC reset	4	VCC3	3.3V power
5	LAD0	LPC address & data pin0	6	SIRQ	Serial IRQ
7	LAD1	LPC address & data pin1	8	VCC5	5V power
9	LAD2	LPC address & data pin2	10	KEY	No pin
11	LAD3	LPC address & data pin3	12	GND	Ground
13	LFRAME#	LPC Frame	14	GND	Ground

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.

CF Voltage Select Jumper: JP7

This jumper is provided for users to select CompactFlash voltage.



JP7



VCC3



VCC5

CF Mode Select Jumper: JP6

This jumper is provided for users to select CompactFlash operation mode.



J6



Master

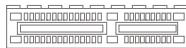


Slave

Slot

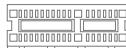
PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports PCI-E interface expansion cards.



PCI Express x4 slot

(with 2 PCIE x1 signal, for 4 GbE LAN sku only)



PCI Express x1 slot

(optional)

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.

msi™

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 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.
- Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:

A96D9IMS V1.0 063010 where:

*1st digit refers to BIOS maker as A = AMI, W = AWARD, and
P = PHOENIX.*

2nd - 5th digit refers to the model number.

*6th digit refers to the chipset as I = Intel, N = NVIDIA, A = AMD and
V = VIA.*

7th - 8th digit refers to the customer as MS = all standard customers.

V1.0 refers to the BIOS version.

063010 refers to the date this BIOS was released.

Control Keys

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

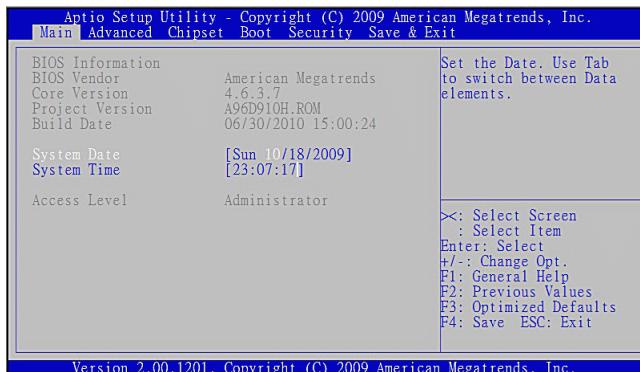
Sub-Menu

If you find a right pointer symbol (as shown in the right view) 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.

► Chipset

This menu controls the advanced features of the onboard Host Bridge and South Bridge.

► 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



► BIOS Information, Access Level

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

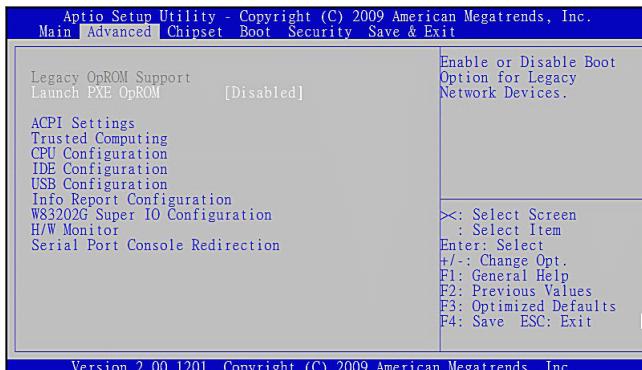
► System Date

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>.

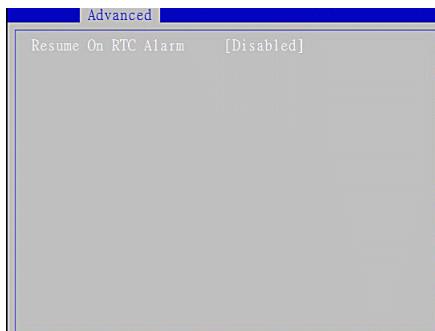
Advanced



► Launch PXE OpROM

Use this setting to launch the PXE option ROM.

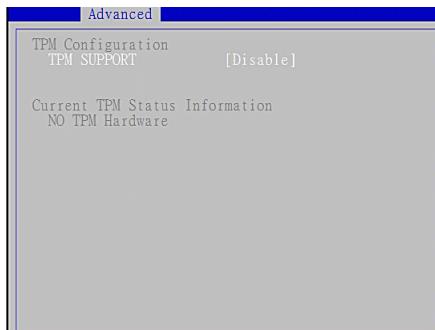
► ACPI Settings



► Resume 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.

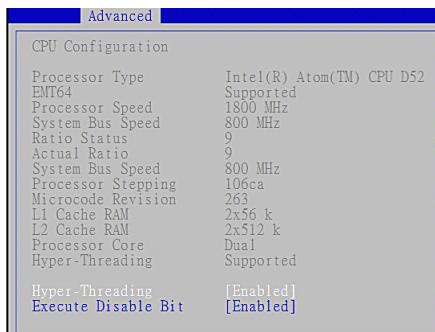
► Trusted Computing



► 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.

► CPU Configuration



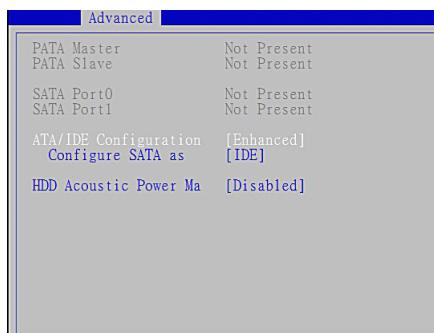
► Hyper-Threading

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.

► IDE Configuration



► ATA/IDE Configuration

This setting specifies the PATA/SATA controller mode.

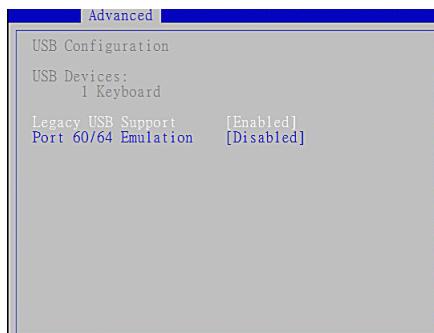
► Configure SATA as

This setting specifies the SATA operation mode.

► HDD Acoustic Power Ma

This setting enables/disables the HDD acoustic power.

► USB Configuration

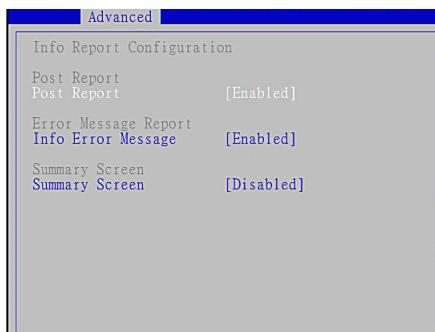


► Legacy USB Support

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. Set to [Disabled] only if you want to use any USB device other than the USB mouse.

► Port 60/64 Emulation

This field allows you to enable/disable the USB Port 64/60 Emulation function. When the function is enabled, the USB keyboard is allowed to type some special combination keys.

► Info Report Configuration**► Post Report**

This setting enables/disables the post report.

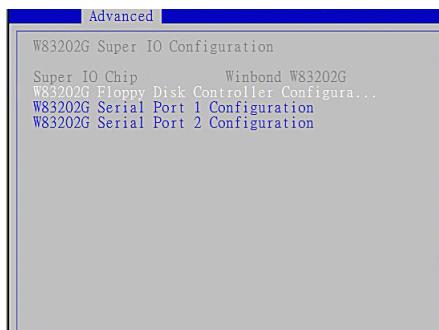
► Info Error Message

This setting enables/disables the error message report.

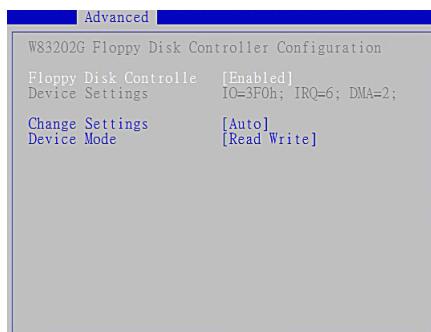
► Summary Screen

This setting enables/disables the system summary screen.

► W83202G Super IO Configuration



► W83202G Floppy Disk Controller Configuration



► Floppy Disk Controller

This setting enables/disables the floppy disk controller.

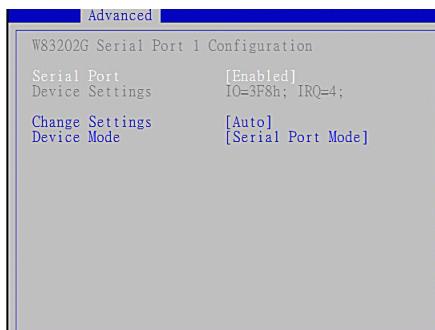
► Change Settings

This setting is used to change the settings of the floppy disk controller.

► Device Mode

This setting is used to change the device mode of the floppy disk drive.

► W83202G Serial Port 1/2 Configuration



► Serial Port

This setting enables/disables the specified serial port.

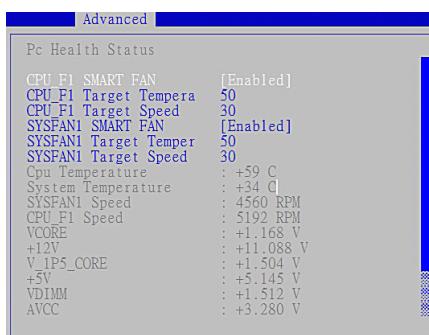
► Change Settings

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

► Device Mode

This setting is used to change the device mode of the specified serial port.

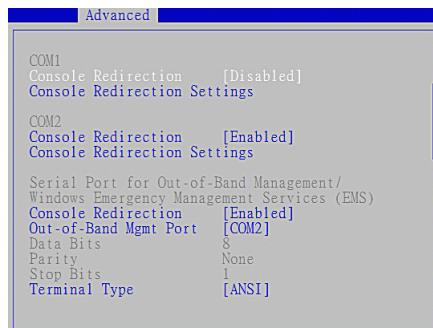
► H/W Monitor



► CPU_F1 SMART FAN, SYSFAN1 SMART FAN

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

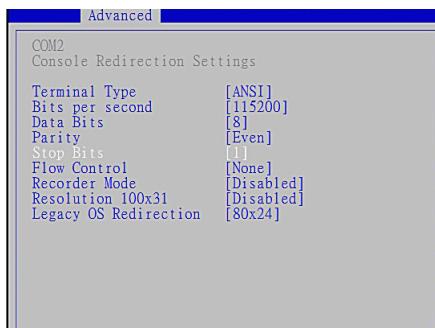
► Serial Port Console Redirection



► 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.

► Recorder Mode

This setting enables/disables the recorder mode.

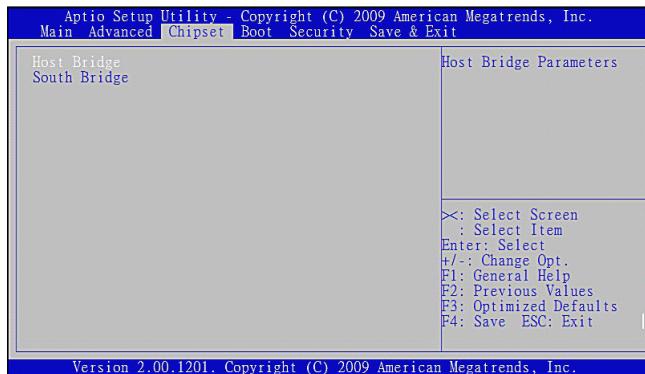
► Resolution 100x31

This setting enables/disables the 100x31 resolution.

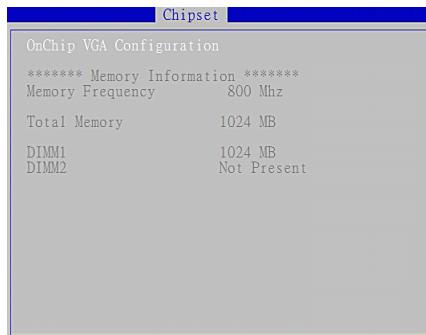
► Legacy OS Redirection

This setting specifies the redirection resolution of legacy OS.

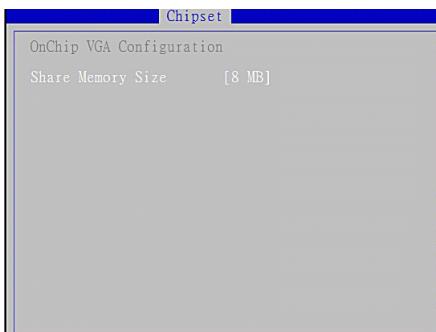
Chipset



► Host Bridge



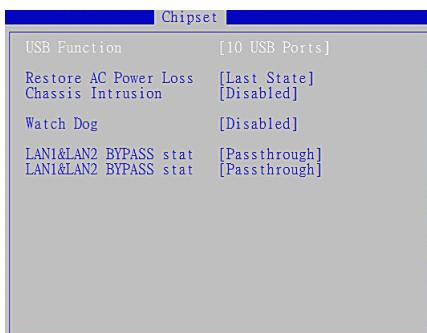
► OnChip VGA Configuration



► Share Memory Size

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

► South Bridge



► USB Function

This setting specifies the USB controller function.

► 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.

► Chassis Intrusion

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enable] later.

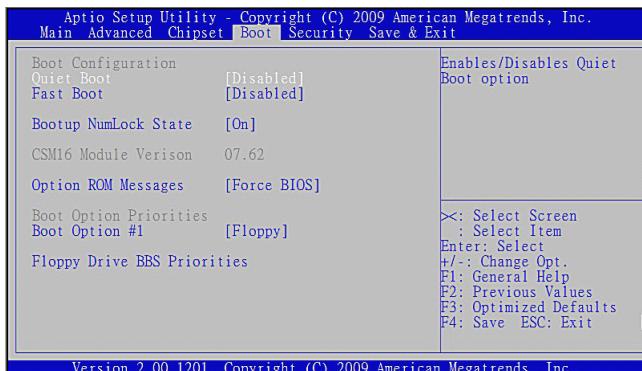
► Watch Dog

You can enable the system watch-dog timer, a hardware timer that generates either a LAN bypass or a system reboot when the software that it monitors does not respond as expected each time the watch dog polls it.

► LAN1 & LAN2 ByPass stat (*Optional*)

LAN Bypass removes a single point of failure so that essential business communication can continue while a network failure is diagnosed and resolved. In the event of a power, hardware or software failure, Hardware Bypass will automatically activate, allowing network traffic to continue. Traffic between the LAN and WAN is allowed without interruption.

Boot



► 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.

► Fast Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

► 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.

► 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.

Security



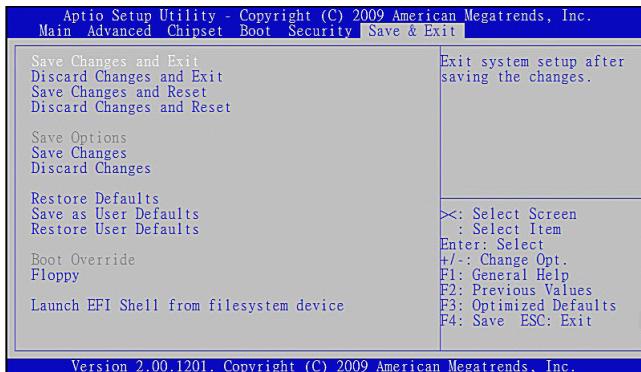
► Administrator Password

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



► 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.

► Save Changes and Reset

Save changes to CMOS and reset the system.

► Discard Changes and Reset

Abandon all changes and reset the system.

► Save Changes

Save all changes and continue with the Setup Utility.

► Discard Changes

Abandon all changes and continue with the Setup Utility.

► Restore Defaults

Restore the factory defaults.

► Save as User Defaults

Save all changes as the user defaults.

► Restore User Defaults

Restore the preset user defaults.