

USER'S MANUAL
Of
Intel G41 Express Chipset
&
Intel ICH7 Chipset
Based
M/B for LGA 775 Quad Core Ready
Intel Core Processor Family

No. G03MI5G41SGMD2CF

Rev: 1.0

Release date: June 4, 2010

Trademark:

* Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.



Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



TABLE OF CONTENT

CHAPTER 1 INTRODUCTION OF INTEL G41 MOTHERBOARD SERIES	
1-1 FEATURES OF MOTHERBOARD	1
1-1.1 SPECIAL FEATURES OF MOTHERBOARD	2
1-2 SPECIFICATION	3
1-3 ITEM CHECKLIST	4
1-4 LAYOUT DIAGRAM	4
CHAPTER 2 HARDWARE INSTALLATION	
2-1 INSTALL LGA 775 SUPPORTED INTEL PROCESSOR	6
2-2 INSTALL MEMORY	7
2-3 EXPANSION CARDS	8
CHAPTER 3 CONNCTORS, HEADERS & JUMPERS SETTING	
3-1 CONNECTORS	9
3-2 HEADERS	12
3-3 JUPPER SETTING	14
CHAPTER 4 USEFUL HELP	
4-1 HOW TO UPDATE BIOS	16
4-2 TROUBLE SHOOTING	16

Chapter 1

Introduction of Intel G41 Motherboard Series

1-1 Features of motherboard

The Intel G41 chipset motherboard series are based on the latest Intel G41 Express Chipset and Intel ICH7 Chipset technology which supports the innovative 65nm and 90nm Intel® Pentium® Dual Core Processor, Intel® Core 2 Quad, Intel® Core 2 Duo® (Code Name: Conroe) Processor with Intel® Hyper-Threading Technology and fully supports the future 45nm processors. The motherboard is optimized to deliver innovative features and professional desktop platform solution with the advantages of the new generation dual core Intel® Core 2 Duo® Processor for those who demand the best experience of personal computing.

The motherboards implement Intel G41 Express Chipset which supports Front Side Bus 1333MHz of data transferring. The model **MI5-G41SGMD2-LF** supports dual-channel DDRII 667/DDRII 800 memory module with capacity expandable to 8GB while **MI5-G41SGMD3-LF** supports dual-channel DDRIII 800 /DDRIII 1066MHz RAM Module expandable to 8GB. The motherboard is embedded with ICH7 chipset of providing one parallel Ultra ATA 100 interface for one IDE drives and four serial ATA2 interface of 3Gb / s data transfer rate for four serial ATA devices.

The G41 motherboard series offer one PCI-Express x16 graphics slot of 8Gbyte/sec data transfer rate at each relative direction which gets 7 times of bandwidth more than AGP 8X and up to 16Gbyte/sec peak concurrent bandwidth at full speed to guarantee the ultimate GPU computing performance. One PCI Express x1 I/O slots and two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals. The motherboards are designed of tackling the profuse multimedia requirements nowadays.

The motherboards provide 10/100 Ethernet LAN function by using the PCI-E megabit LAN. The embedded Realtek ALC662 chipset is fully compatible with Sound Blaster Pro standards providing HD audio 6-CH CODEC offers you with the home cinema quality and satisfying software compatibility.

Embedded USB controller as well as capability of expanding to 8 of USB2.0 functional ports delivering 480Mb/s of rich connectivity, these motherboards meet the demands of future USB peripherals which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Some special features---CPU Thermal Throttling/OC-CON in this motherboard are designed for power user to use the over-clocking function in more flexible ways. But please be caution that the over-clocking maybe causes the fails in system reliabilities. This motherboard provides the guaranteed performance and meets the demands of the next generation computing. But if you insist to gain more system performance with variety possibilities of the components you choose, please be careful and make sure

to read the detailed descriptions of these value added product features, please get them in the coming section.

1-1.1 Special Features of Motherboard

CPU Thermal Throttling Technology---(The CPU Overheat Protection Technology)

To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter partially idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 40°C to 90°C). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working.

Solid Capacitors --- (High-polymer Solid Electrolysis Aluminum Capacitors)

The working temperature is from 55 degrees Centigrade below zero to 125 degrees Centigrade, Solid capacitors possess superior physical characteristics that can be while reducing the working temperature between 20 degrees Centigrade each time, intact extension 10 times of effective product operation lives, at not rising degrees Centigrade of working temperatures each time a relative one, life of product decline 10% only too.

1-2 Specification

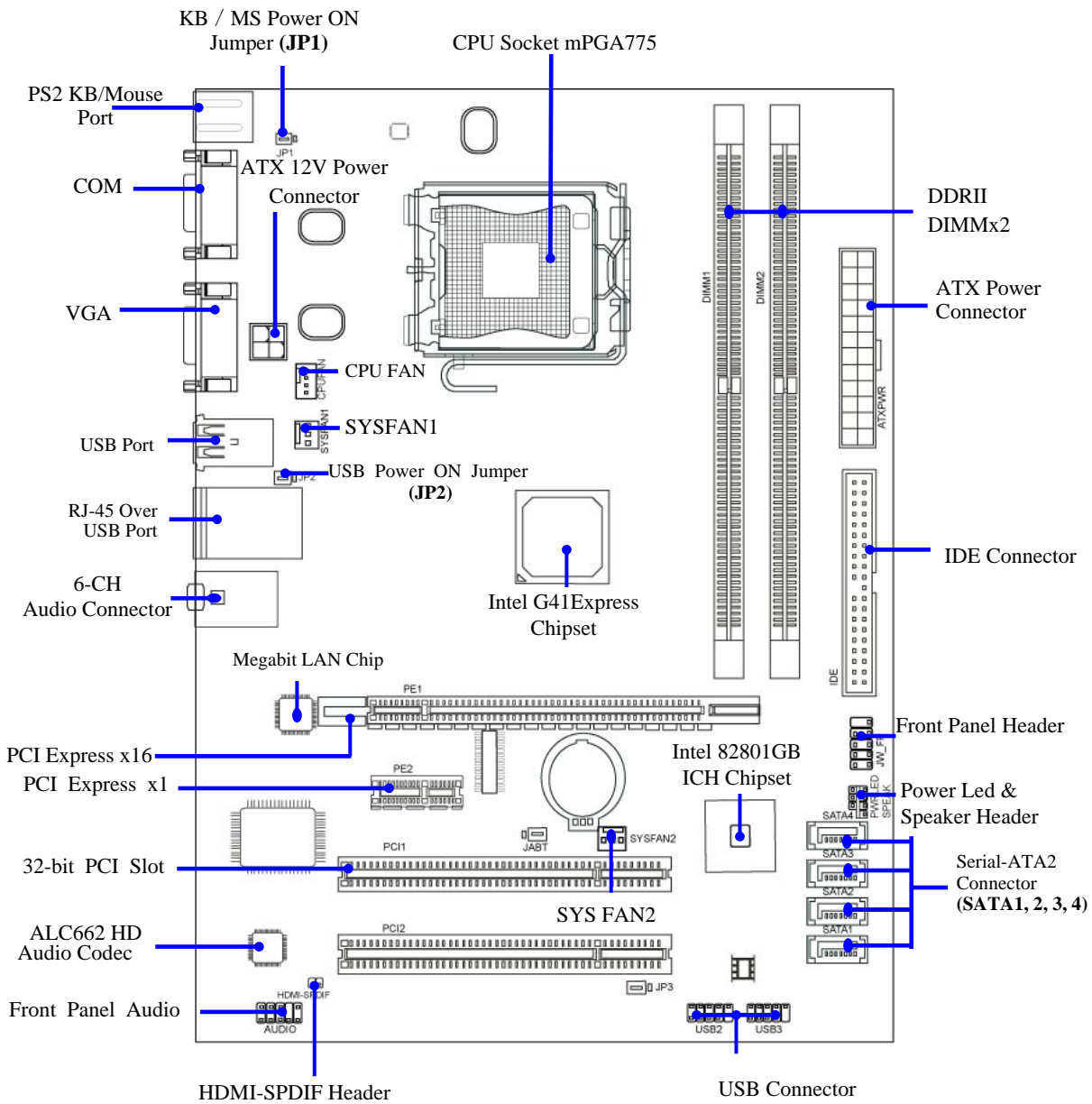
Spec	Description
Design	<ul style="list-style-type: none"> ● Micro ATX form factor 4 layers PCB size: 24.5*18cm
Chipset	<ul style="list-style-type: none"> ● Intel G41 Memory Controller Hub (MCH) Chipset ● Intel 82801GB I/O Controller Hub (ICH7) Chipset
CPU Socket (LGA775)	<ul style="list-style-type: none"> ● Supports the innovative 65nm and 90nm Intel® Pentium® Dual Core Processor , Intel® Core 2 Quad, Intel® Core 2 Duo® (Code Name: Conroe) Processor with Intel® Hyper-Threading Technology and fully supports the future 45nm processors. Suggest the power of the CPU should below 65w ● Support FSB Frequency 1333 / 1066 / 800MHz
Memory Socket	<ul style="list-style-type: none"> ● 240-pin DDR2 RAM module socket x 2 for MI5-G41SGMD2-LF ● MI5-G41SGMD2-LF supports dual-channel DDR2 667 /DDR2 800MHz RAM Module expandable to 8GB. ● 240-pin DDR3 RAM module socket x 2 for MI5-G41SGMD3-LF ● MI5-G41SGMD3-LF supports dual-channel DDR3 800 /DDR31066MHz RAM Module expandable to 8GB.
Expansion Slots	<ul style="list-style-type: none"> ● PCI-Express x16 slot 1pcs. ● PCI-Express x1 slot 1pcs ● 32-bit PCI slot 2pcs
Integrate IDE and Serial ATA2	<ul style="list-style-type: none"> ● One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100 functions that deliver the data transfer rate up to 100 MB/s; four Serial ATA2 ports each provides 3.0 Gb /sec data transfer rate.
Integrated VGA	<ul style="list-style-type: none"> ● Integrated Graphic Media Accelerator 4500
LAN	<ul style="list-style-type: none"> ● Integrated PCI-E 10/100 LAN chip ● Support Fast Ethernet LAN function of providing 10Mb / 100Mb data transfer rate
HD Audio	<ul style="list-style-type: none"> ● Realtek ALC662 Azalia 6-channel Audio Codec integrated ● Audio driver and utility included
BIOS	<ul style="list-style-type: none"> ● AMI 8MB DIP Flash ROM
Multi I/O	<ul style="list-style-type: none"> ● PS/2 keyboard and PS/2 mouse connectors ● Floppy disk drive connector x1 (optional) ● Parallel header x1 (optional)/ Serial port x1 ● D-Sub 15-pin VGA Conn. ● USB 2.0 connector x 4, headers x2 ● HDMI-SPDIF header x1 ● SATA Connector x4 ● RJ-45 LAN connector x1 ● Audio connector x1 (Line-in, Line-out, MIC)

1-3 Item Checklist

- ✓ Intel G41 Platform Processor Chipset based motherboard
- ✓ DVD for motherboard utilities
- ✓ Hard disk cable
- ✓ User's Manual
- ✓ Back panel

1-4 Layout Diagram

Diagram is for MI5-G41SGMD2-LF



Chapter 2

Hardware Installation

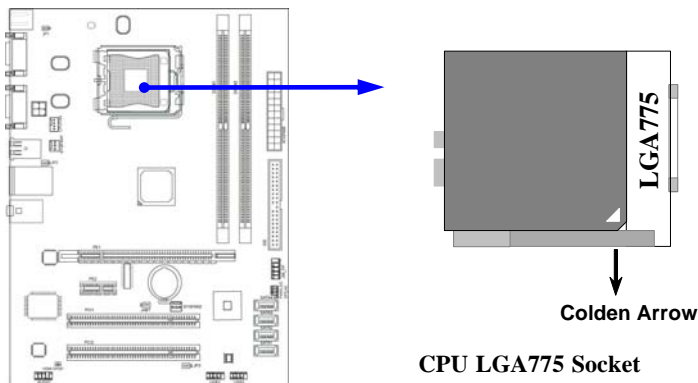
2-1 Install LGA 775 Supported Intel Processor

This motherboard provides a 775-pin surface mount, LGA775 Land Grid Array socket, referred to as the LGA775 socket supports Intel Pentium Dual Core processor in the 775 Pin package utilizes Flip-Chip Land Grid Array (FC-LGA) package technology.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

- WARNING!**
1. Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.
 2. Suggest the power of CPU should below 65w.

To install a CPU, first turn off your system and remove its cover. Locate the LGA775 socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.



2-2 Install Memory

Model **MI5-G41SGMD2-LF** provides two 240-pin **DDR2** DUAL INLINE MEMORY MODULES (DIMM) socket for DDR2 memory expansion to maximum memory volume of 8GB DDR2 SDRAM.

Valid Memory Configuration for MI5-G41SGMD2-LF

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR2 / 667/ 800	X1	4GB
Bank 2, 3 (DIMM2)	DDR2 / 667/ 800	X1	4GB
Total	Memory (Max.4GB)	2	8GB

Model **MI5-G41SGMD3-LF** provides two 240-pin **DDR3** DUAL INLINE MEMORY MODULES (DIMM) socket for DDR3 memory expansion to maximum memory volume of 8GB DDR3 SDRAM.

Valid Memory Configuration for MI5-G41SGMD3-LF

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR3 800/ DDR3 1066	X1	4GB
Bank 2, 3 (DIMM2)	DDR3 800/ DDR3 1066	X1	4GB
Total	Memory (Max.4GB)	2	8GB

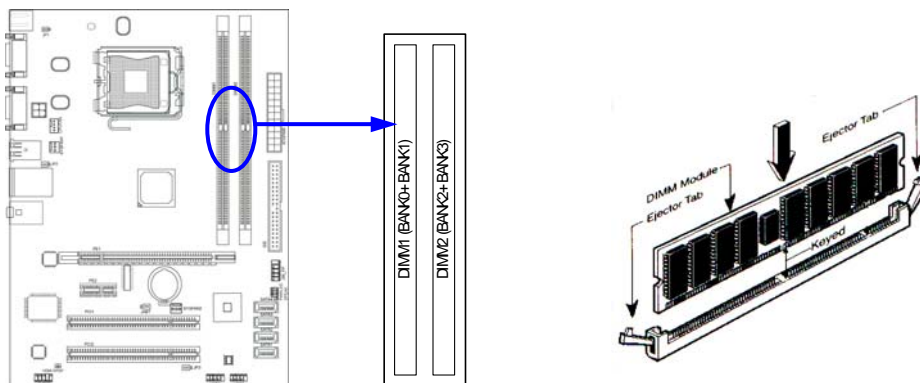
Recommend DIMM Module Combination

1. One DIMM Module ----Plug in DIMM1
2. Two DIMM Modules---Plug in DIMM1 and DIMM2 for Dual channel function

For Dual channel Limited!

1. Dual channel function only supports when 2 DIMM Modules plug in either both DIMM1 & DIMM2
2. DIMM1 & DIMM2 must be the same type, same size, and same frequency for dual channel function.

Install memory modules to your motherboard is not difficult, you can refer to figure below to see how to install a memory module.

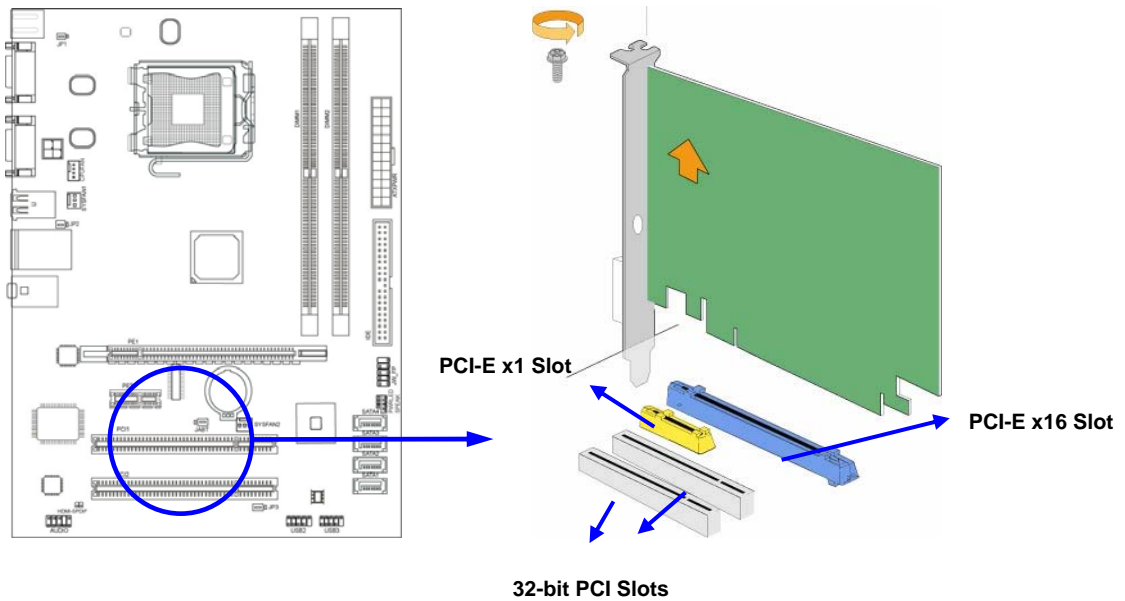


NOTE!

When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indentation on both sides.

2-3 Expansion Cards

The G41 motherboard series offer one PCI-Express x16 graphics slot of 8Gbyte/sec data transfer rate at each relative direction which gets 7 times of bandwidth more than AGP 8X and it's up to a peak concurrent bandwidth of 16Gbyte/sec at full speed to guarantee the ultimate GPU computing performance. One PCI Express x1 I/O slot and two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals. The motherboards are designed of tackling the profuse multimedia requirements nowadays.



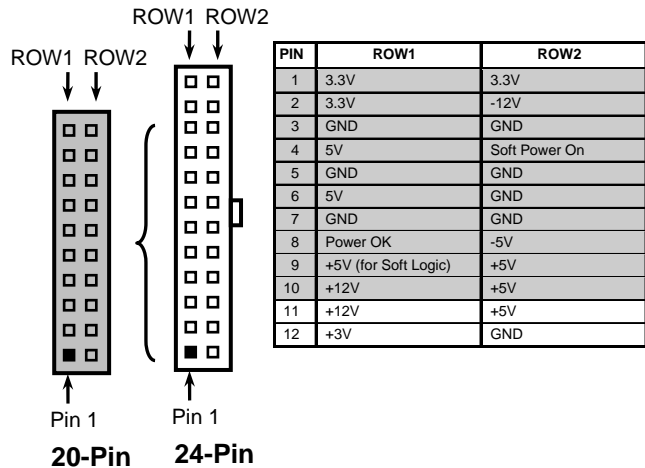
Chapter 3

Connectors, Headers & Jumpers Setting

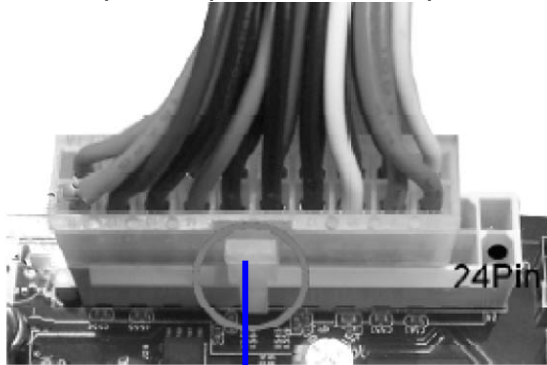
3-1 Connectors

(1) Power Connector (24-pin block): ATXPWR

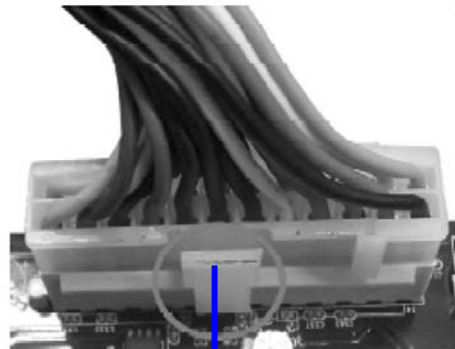
ATX Power Supply connector:
 This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.



- ** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- ** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.



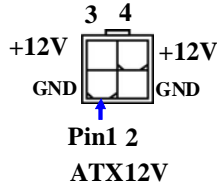
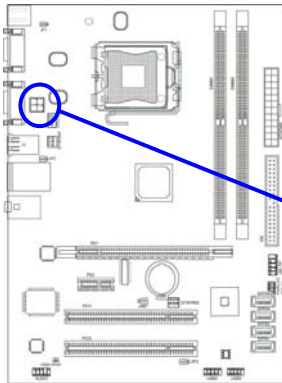
20-pin power plug



24-pin power plug

(2) ATX 12V Power Connector (4-pin block) : ATX12V

This is a new defined 4-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports AM2 processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



(3) PS/2 Mouse & PS/2 Keyboard Connector: KB1

The connectors are for PS/2 keyboard and PS/2 Mouse.

(4) USB Port connector: USB1, UL1

The connectors are 4-pin connectors that connect USB devices to the system board.

(5) LAN Port connector: UL1

This connector is standard RJ45 connector for Network.

The USBLAN1 support 10M/100M data transfer rate.

(6) Audio Line-In, Lin-Out, MIC Connector: AUDIO1

This Connector is 3 phones Jack for LINE-OUT, LINE-IN, and MIC

Line-out: (GREEN)

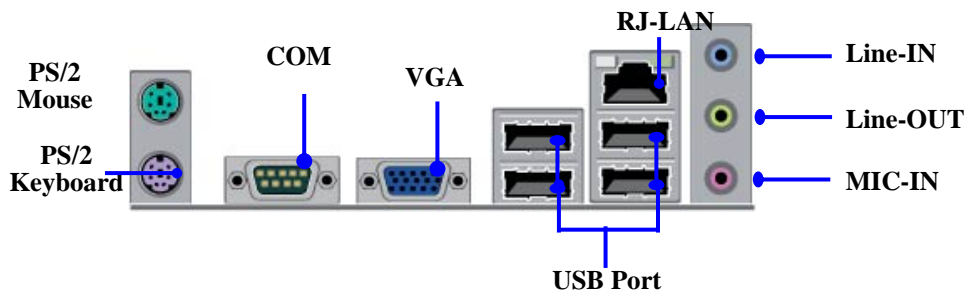
Audio output to speaker

Line-in: (BLUE)

Audio input to sound chip

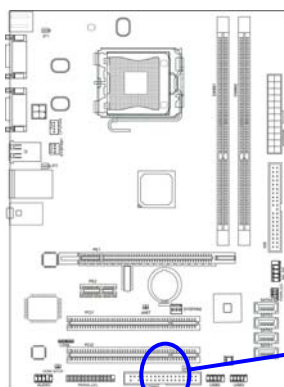
MIC: (PINK)

Microphone Connector

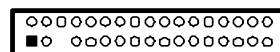


(7) Floppy drive Connector (34-pin block): FLOPPY (Optional)

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



FDD



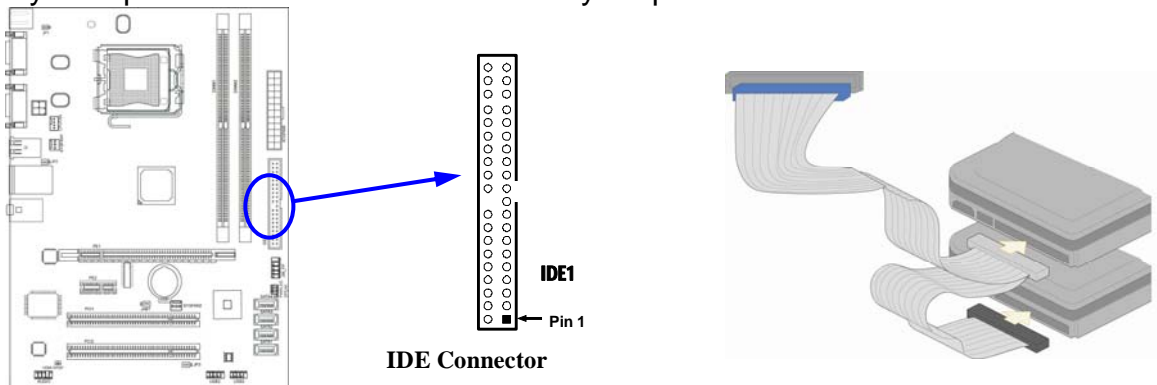
Pin 1

Floppy Drive Connector

(8) Primary IDE Connector (40-pin block): IDE

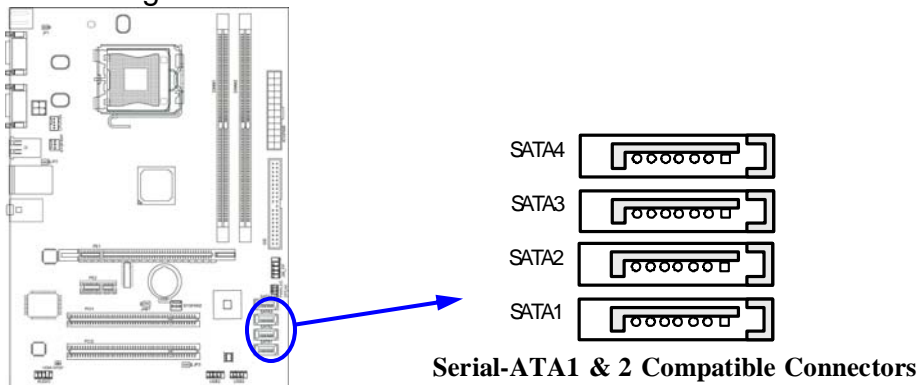
This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.

- Two hard disks can be connected to each connector. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For performance issues, we strongly suggest you don’t install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.



(9) Serial-ATA Port connector: SATA1 / SATA2 / SATA3/ SATA4

These connectors support the provided Serial ATA and Serial ATA2 IDE hard disk cable to connecting the motherboard and serial ATA hard disk.



(10) Serial COM Port: COM1

COM1 is the 9-pin connector. The On-board serial port can be disabled through BIOS SETUP.

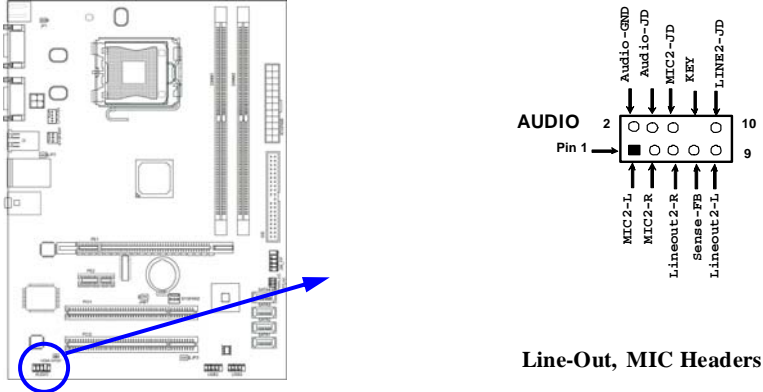
(11) VGA Connector (15-pin D-Sub) Connector: VGA

VGA is the 15-pin D-Subminiature female connector for display monitor.

3-2 Headers

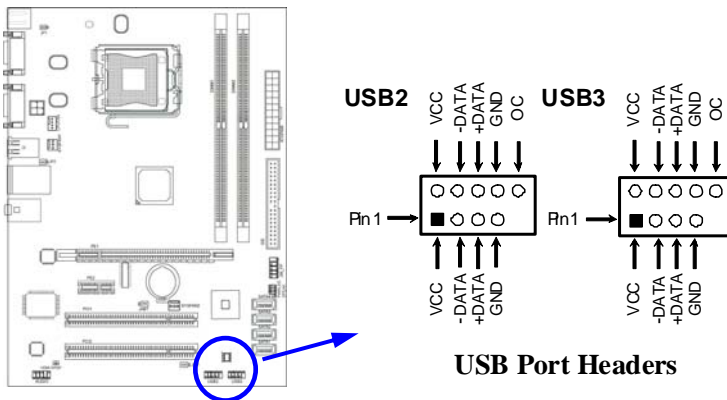
(1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO

This header is connected to Front Panel Line-out, MIC connector with cable.



(2) USB Port Headers (9-pin) : USB2 / USB3

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.



(3) Speaker connector: SPEAK

This 4-pin connector connects to the case-mounted speaker. See the figure below.

(4) Power LED: PWR LED

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

(5) IDE Activity LED: HD LED

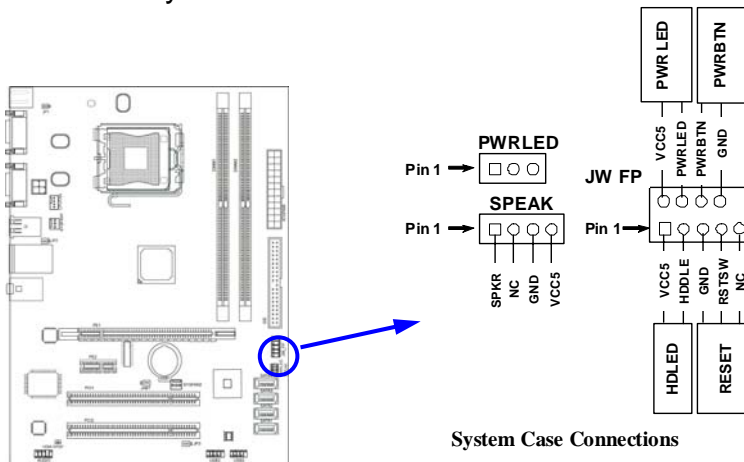
This connector connects to the hard disk activity indicator light on the case.

(6) Reset switch lead: RESET

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

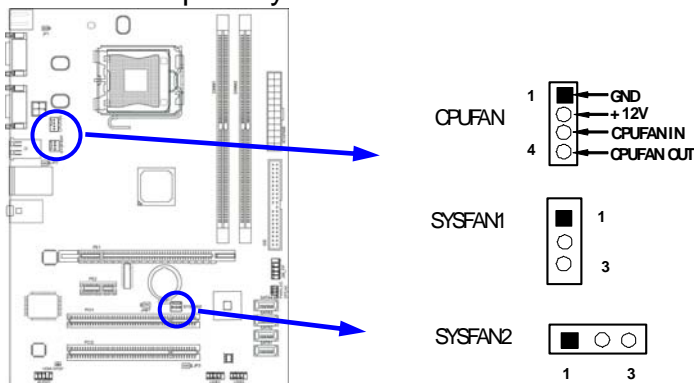
(7) Power switch: PWR BTN

This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



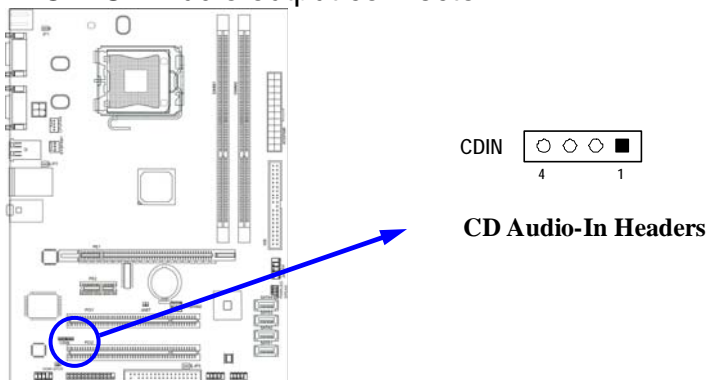
(8) FAN Power Headers: SYSFAN1, SYSFAN2 (3-pin), CPUFAN (4-pin)

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



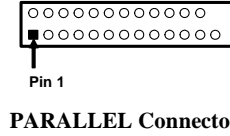
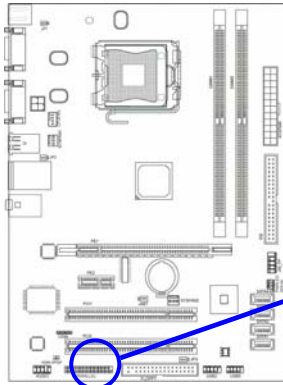
(9) CD Audio-In Headers (4-pin): CDIN (Optional)

CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



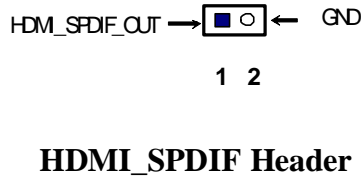
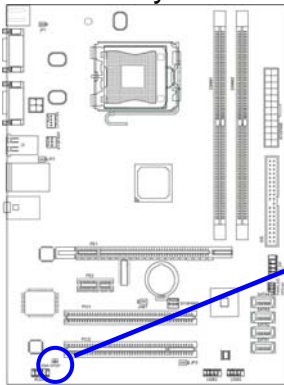
(10) Parallel Port header (25-pin): PARALLEL (Optional)

The On-board Parallel Port can be disabled through the BIOS SETUP.



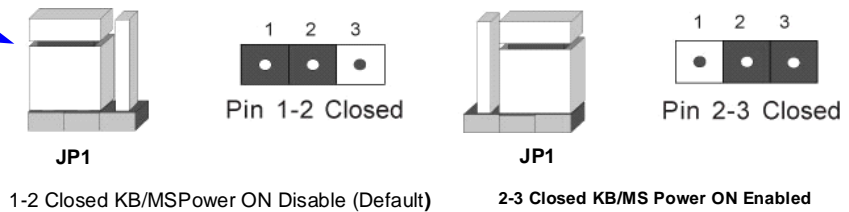
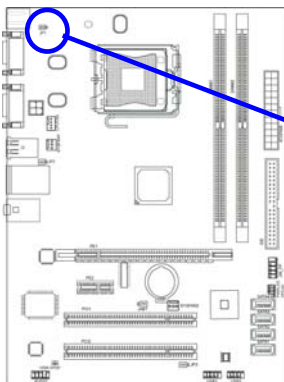
(11) SPDIF Out header: SPDIF Out

The SPDIF output is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby digital decoder. Use this feature only when your stereo system has digital input function.



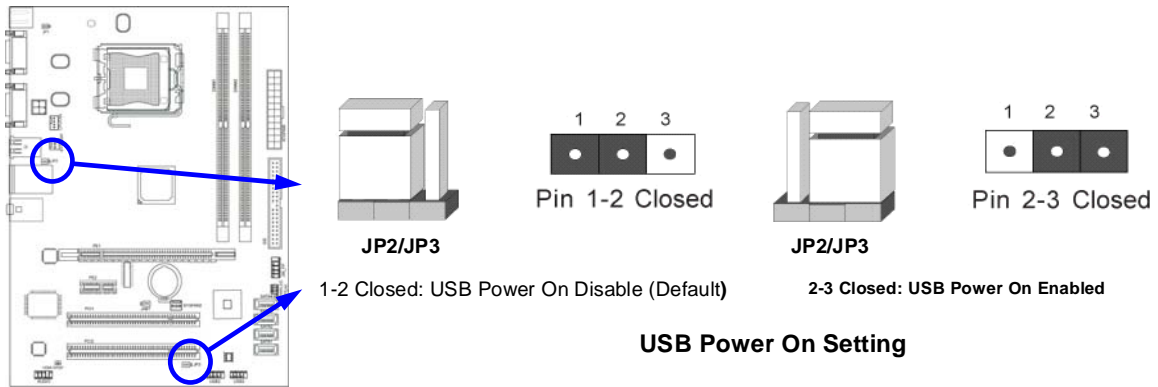
3-3 Jumper Setting

(1) Keyboard/Mouse Power-on Enabled/Disabled: JP1



Keyboard/Mouse Power On Setting

(2) USB Power-on Enabled/Disabled: JP2/JP3



(3) CMOS RAM Clear (3-pin): JBAT

A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

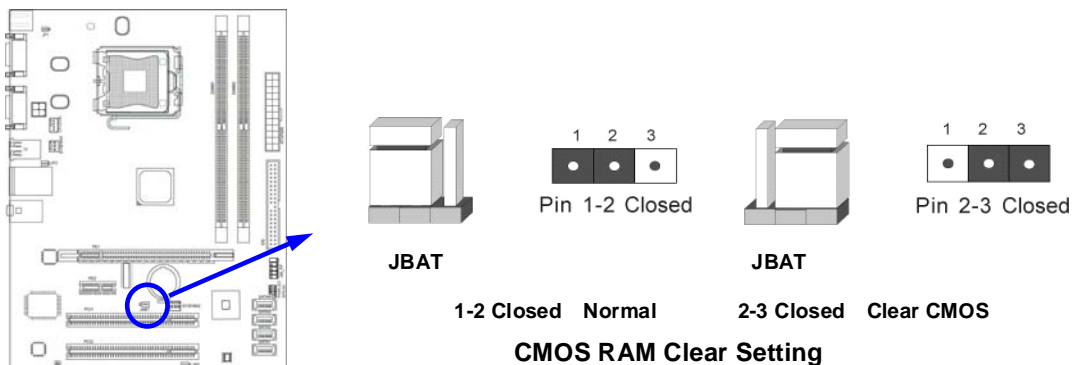
To clear the CMOS, follow the procedure below (**for MI5-G41SGMD2-LF only**):

1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

Note: When should clear CMOS

1. **Troubleshooting**
2. **Forget password**
3. **After over clocking system boot fail**

For MI5-G41SGMD2-LF



NOTE!

JBAT for MI5-G41SGMD3-LF has only 2-pin. To clear CMOS user needs to short 1-2pins. The normal state is to leave Pin 1-2 open.

Chapter 4

Useful Help

4-1 How to Update BIOS

- Step 1.** Prepare a bootable disc. (You may make one by click START click RUN type SYS A: click OK)
- Step 2.** Download upgrade tools and the latest BIOS files of the motherboard from official website and then make a copy of it to your bootable disk after decompressing these files
- Step 3.** Insert the disk into A: start your computer and then type in "A:\xxxxxx.BAT"(xxxxxxx being the file name of the latest BIOS)
- Step 4.** Type Enter to update and flash the BIOS. The system will restart automatically when BIOS is upgraded.

4-2 Trouble Shooting

Problem	Solution
No power to the system to the all power light don't illuminate, fan inside power supply doesn't turn on.	1. Make sure power cable is security plugged in. 2. Replace cable. 3. Contact technical support.
System inoperative. Keyboard lights are on , power indicator lights are lit, and hard drive is spinning.	Using ever pressure on both ends of the DIMM , press down firmly until the module snaps into places.
System doesn't boot from hard disk drive, can be booted from optical drive.	1. Check cable running from disk to disk controller board. .Make sure both ends are securely plugged in, check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important .All hard disks are capable of breaking down at any time.
System only boots from optical drive .Hard disk can be read and applications can be used but booting from hard disk is impossible.	1. Back up date and applications files. 2. Reformat the hard drive. Reinstall applications and date using backup disks.
Screen message says "Invalid Configuration" or "CMOS Failure"	Review system 's equipment .Make sure correct information on is in setup.
Can not boot system after installing second hard drive.	1. Set master /slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacture for compatibility with other drives.