

IT CENTER



Manual of Mainboard



sigma
square Σ

Model Superb

FCC Complementary

The device 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 instructions, 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 following measures:

- ◆ 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/TV technician for help.

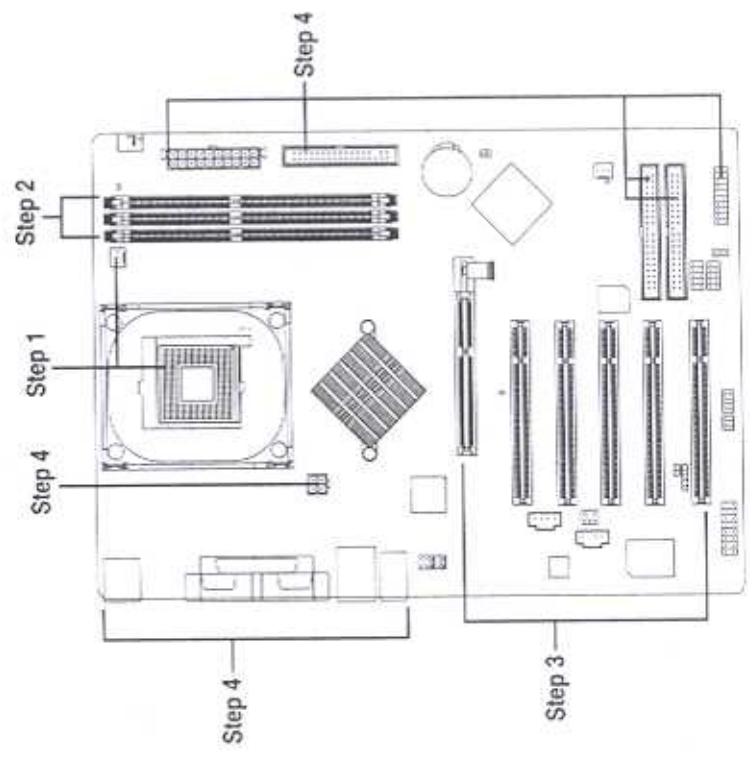
Notice

1. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.
2. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
 - ◆ This device may not cause harmful interference, and
 - ◆ This device must accept any interference received, including interference that may cause undesired operation.

Chapter 2 Hardware Installation Process

To set up your computer, you must complete the following steps:

- Step 1- Install the Central Processing Unit (CPU)
- Step 2- Install memory modules
- Step 3- Install expansion cards
- Step 4- Connect ribbon cables, cabinet wires, and power supply



Congratulations you have accomplished the hardware installation! Turn on the power supply or connect the power cable to the power outlet. Continue with the BIOS/software installation.

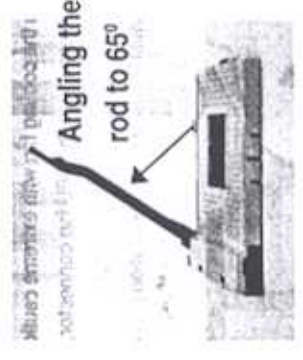
Step 1: Install the Central Processing Unit (CPU)

Before installing the processor, adhere to the following warning:

If you do not match the CPU socket Pin 1 and CPU cut edge well, it will cause improper installation. Please change the insert orientation. Please make sure the CPU type is supported by the motherboard.



Step 1-1: CPU Installation



1. Angling the rod to 65-degree maybe feel a kind of light, and then continue pull the rod to 90-degree when a noise "cough" made.



2. Pull the rod to the 90-degree directly.



3. CPU Top View



4. Locate Pin 1 in the socket and look for a (golden) cut edge on the CPU upper corner. Then insert the CPU into the socket.

Step 1-2 : CPU Cooling Fan Installation

Before installing the CPU Cooling Fan , adhere to the following warning:

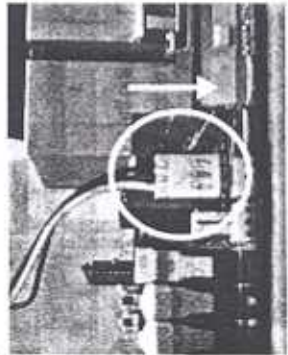


1. Please use Intel approved cooling fan.
2. We recommend you to apply the thermal tape to provide better heat conduction between your CPU and cooling fan.
(The CPU cooling fan might stick to the CPU due to the hardening of the thermal paste. During this condition if you try to remove the cooling fan, you might pull the processor out of the CPU socket alone with the cooling fan, and might damage the processor. To avoid this from happening, we suggest you to either use thermal tape instead of thermal paste, or remove the cooling fan with extreme caution.)
3. Make sure the CPU fan power cable is plugged in to the CPU fan connector, this completes the installation.

Please refer to CPU cooling fan user's manual for more detail installation procedure.



1. Fasten the cooling fan supporting-base onto the CPU socket on the motherboard.



2. Make sure the CPU fan is plugged to the CPU fan connector, then install complete.

Step 2: Install memory modules

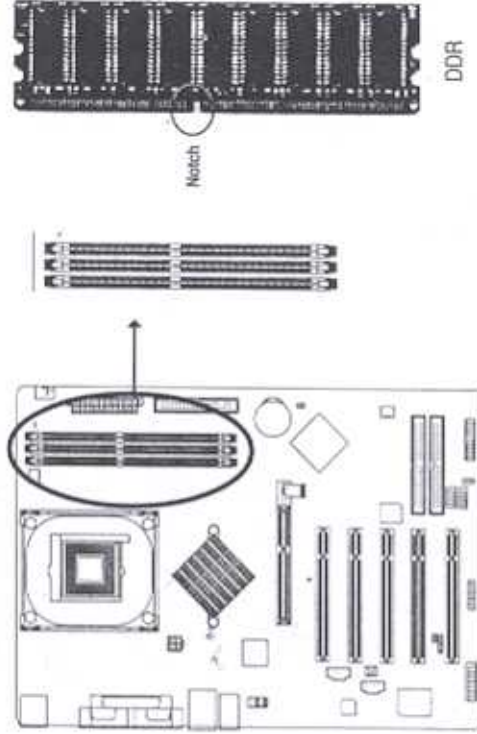
Before installing the processor and heatsink, adhere to the following warning:

When RAM_LED is ON, do not install/remove DIMM from socket.

Please note that the DIMM module can only fit in one direction due to the one notches.

Wrong orientation will cause improper installation. Please change the insert orientation.

The motherboard has 3 dual inline memory module (DIMM) sockets. The BIOS will automatically detects memory type and size. To install the memory module, just push it vertically into the DIMM socket. The DIMM module can only fit in one direction due to the notch. Memory size can vary between sockets.



	DDR1	DDR2	DDR3	
D:Double Sided DIMM	S	S	S	
S:Single Sided DIMM	D	S	S	
X:Not Use	D	D	X	
	D	X	D	
	S	D	X	
	S	X	D	



1. The DIMM slot has a notch, so the DIMM memory module can only fit in one direction.



2. Insert the DIMM memory module vertically into the DIMM slot. Then push it down.



3. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.
Reverse the installation steps when you wish to remove the DIMM module.

DDR Introduction

Established on the existing SDRAM infrastructure, DDR (Double Data Rate) memory is a high performance and cost-effective solution that allows easy adoption for memory vendors, OEMs, and system integrators.

DDR memory is a great evolutionary solution for the PC industry that builds on the existing SDRAM architecture, yet make the awesome advances in solving the system performance bottleneck by doubling the memory bandwidth. Nowadays, with the highest bandwidth of 3.2GB/s of DDR400 memory and complete line of DDR400/333/266/200 memory solutions, DDR memory is the best choice for building high performance and low latency DRAM subsystem that are suitable for servers, workstations, and full range of desktop PCs.

Step 3: Install expansion cards

1. Read the related expansion card's instruction document before install the expansion card into the computer.
2. Remove your computer's chassis cover, necessary screws and slot bracket from the computer.
3. Press the expansion card firmly into expansion slot in motherboard.
4. Be sure the metal contacts on the card are indeed seated in the slot.
5. Replace the screw to secure the slot bracket of the expansion card.
6. Replace your computer's chassis cover.
7. Power on the computer, if necessary, setup BIOS utility of expansion card from BIOS.
8. Install related driver from the operating system.



AGP Card



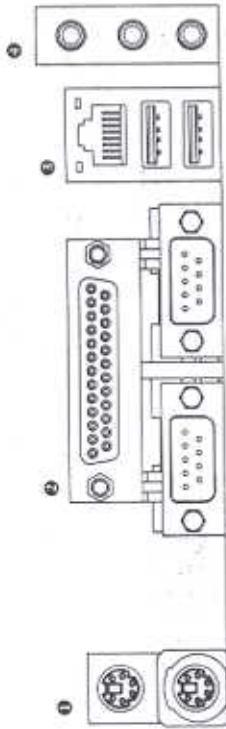
Please carefully pull out the small white-drawable bar at the end of the AGP slot when you try to install/uninstall the AGP card. Please align the AGP card to the onboard AGP slot and press firmly down on the slot. Make sure your AGP card is locked by the small white-drawable bar.



When an AGP 2x (3.3V) card is installed the 2X_DET will light up, indicating a non-supported graphics card is inserted. Informing users that system might not boot up normally due to AGP 2x (3.3V) is not supported by the chipset.

Step 4: Connect ribbon cables, cabinet wires, and power supply

Step 4-1: I/O Back Panel Introduction



1 PS/2 Keyboard and PS/2 Mouse Connector

PS/2 Mouse Connector
(6 pin Female)

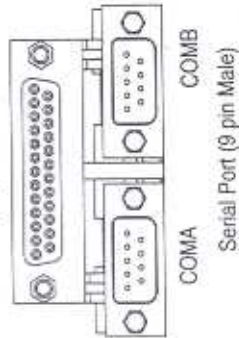
➤ This connector supports standard PS/2 keyboard and PS/2 mouse.

PS/2 Keyboard Connector
(6 pin Female)

2 Parallel Port and Serial Ports (COMA/COMB)

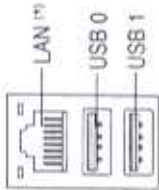
Parallel Port
(25 pin Female)

➤ This connector supports 2 standard COM ports and 1 Parallel port. Device like printer can be connected to Parallel port; mouse and modem etc can be connected to Serial ports.



3 USB / LAN Connector

➤ Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker, etc. Have a standard USB interface. Also make sure your OS supports USB controller.
If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.



4 Audio Connectors

➤ After install onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC In jack.

Device like CD-ROM, walkman etc can be connected to Line-In jack.

Please note:

You are able to use 2-/4-/6- channel audio feature by S/W selection.

If you want to enable 6-channel function, you have 2 choose for hardware connection.

Method1:

Connect "Front Speaker" to "Line Out"

Connect "Rear Speaker" to "Line In"

Connect "Center and Subwoofer" to "MIC Out"

Method2:

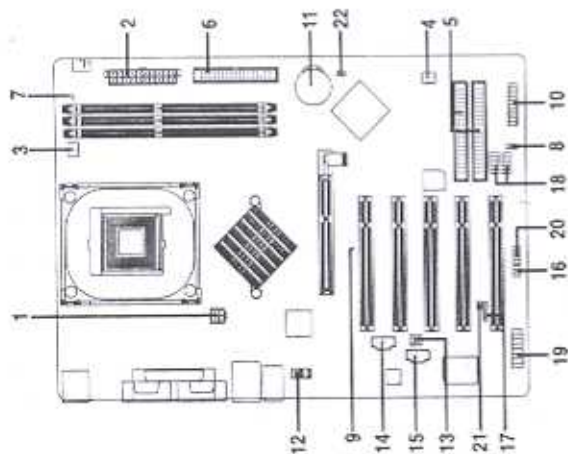
You can refer to page 25, and contact your nearest dealer for optional SUR_CEN cable.



If you want the detail information for 2-/4-/6-channel audio setup installation, please refer to page 63.

(*) For GA-8I848E-L only

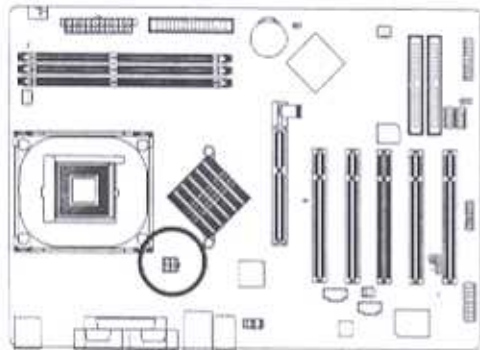
Step 4-2: Connectors & Jumper Setting Introduction



- | | |
|--------------|-------------------|
| 1) ATX_12V | 13) SUR_CEN |
| 2) ATX | 14) CD_IN |
| 3) CPU_FAN | 15) AUX_IN |
| 4) SYS_FAN | 16) SPDIF_IO |
| 5) IDE1/IDE2 | 17) IR |
| 6) FDD | 18) F_USB1/F_USB2 |
| 7) RAM_LED | 19) GAME |
| 8) PWR_LED | 20) INFO_LINK |
| 9) 2X_DET | 21) CI |
| 10) F_PANEL | 22) CLR_PWD |
| 11) BAT | |
| 12) F_AUDIO | |

1) ATX_12V (+12V Power Connector)

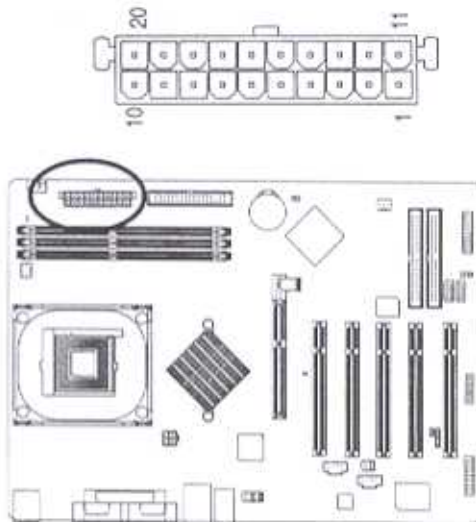
This connector (ATX_12V) supplies the CPU operation voltage (Vcore). If this * ATX_12V connector* is not connected, system cannot boot.



Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

2) ATX (ATX Power)

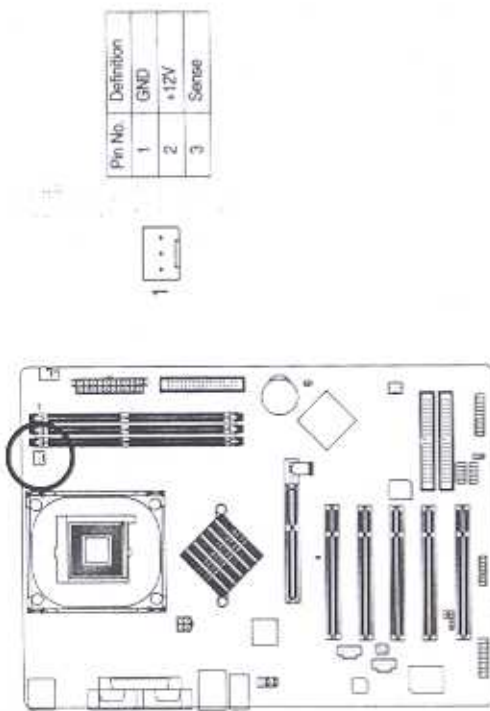
AC power cord should only be connected to your power supply unit after ATX power cable and other related devices are firmly connected to the motherboard.



Pin No.	Definition
1	3.3V
2	3.3V
3	GND
4	VCC
5	GND
6	VCC
7	GND
8	Power Good
9	5V Standby (+5V)
10	+12V
11	3.3V
12	-12V
13	GND
14	PS_ON (soft On/Off)
15	GND
16	GND
17	GND
18	-5V
19	VCC
20	VCC

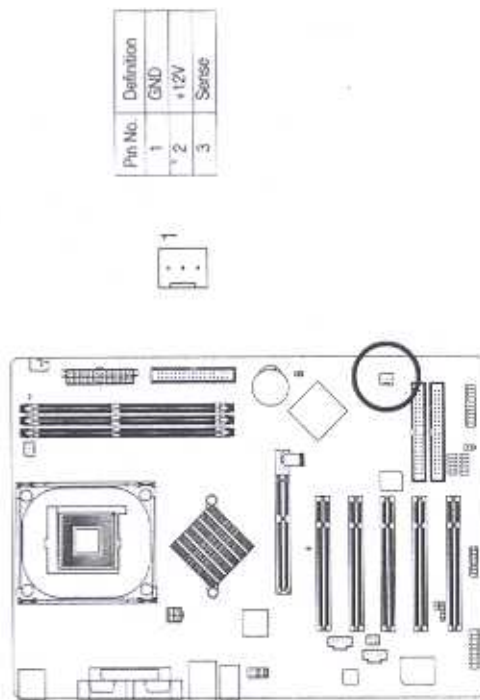
3) CPU_FAN (CPU FAN Connector)

Please note, a proper installation of the CPU cooler is essential to prevent the CPU from running under abnormal condition or damaged by overheating. The CPU fan connector supports Max. current up to 600 mA.



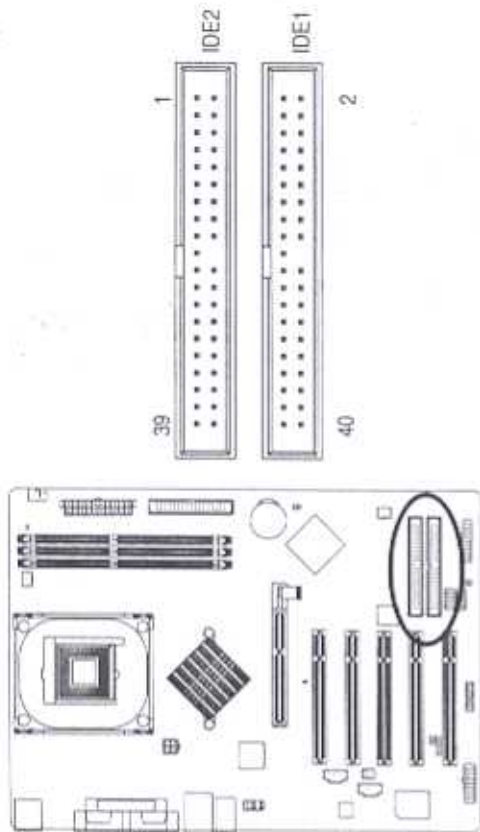
4) SYS_FAN (System FAN Connector)

This connector allows you to link with the cooling fan on the system case to lower the system temperature.



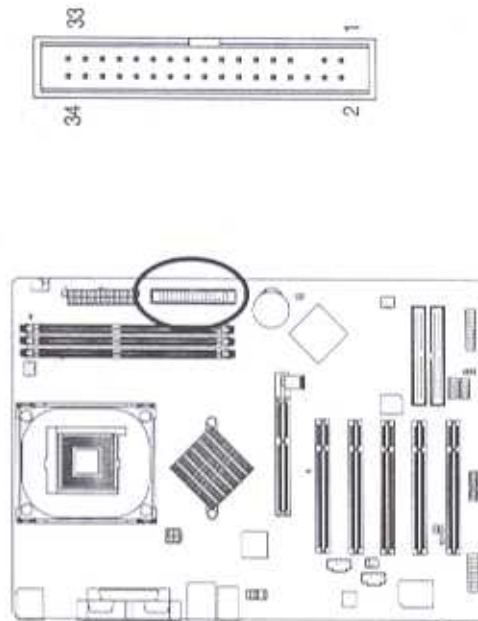
5) IDE1/IDE2 (IDE1/IDE2 Connector)

Please connect first harddisk to IDE1 and connect CDROM to IDE2. The red stripe of the ribbon cable must be the same side with the Pin1.



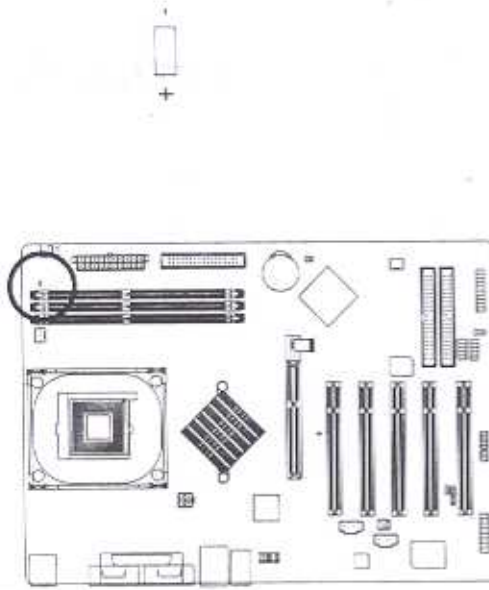
6) FDD (Floppy Connector)

Please connect the floppy drive ribbon cables to FDD. It supports 360K, 720K, 1.2M, 1.44M and 2.88Mbytes floppy disk types. The red stripe of the ribbon cable must be the same side with the Pin1.



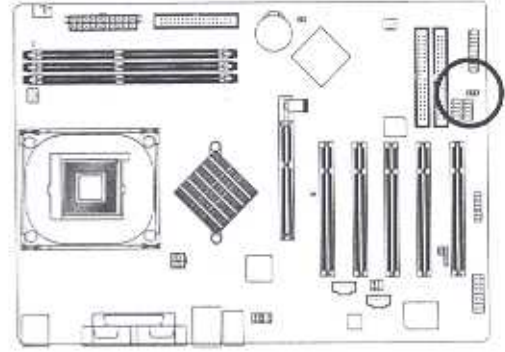
7) RAM_LED

Do not remove memory modules while RAM_LED is on. It might cause short or other unexpected damages due to the stand by voltage. Remove memory modules only when AC Power cord is disconnected.



8) PWR_LED

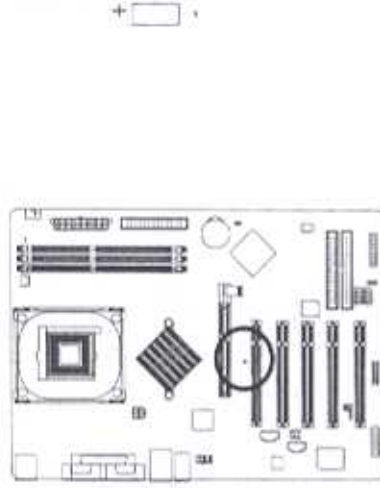
PWR_LED is connect with the system power indicator to indicate whether the system is on/off. It will blink when the system enters suspend mode. If you use dual color LED, power LED will turn to another color.



Pin No.	Definition
1	MPD+
2	MPD-
3	MPD-

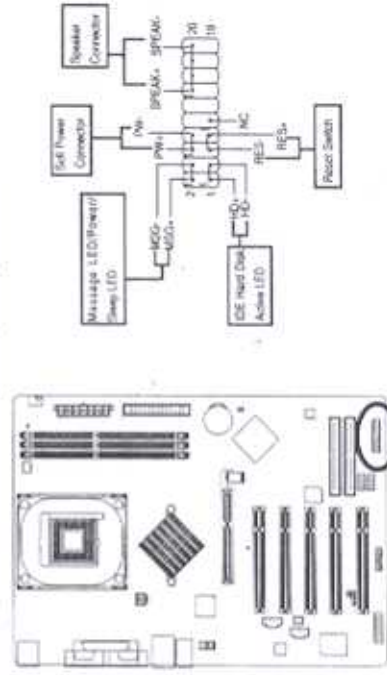
9) 2X_DET

When an AGP 2X (3.3V) card is installed the 2X_DET will light up, indicating a nonsupported graphics card is inserted. Informing users that system might not boot up normally due to AGP 2X (3.3V) is not supported by the chipset.



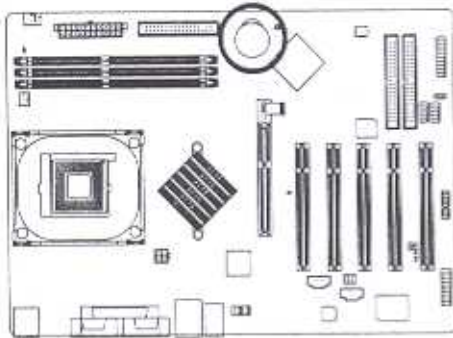
10) F_PANEL (2x10 pins connector)

Please connect the power LED, PC speaker, reset switch and power switch etc of your chassis front panel to the F_PANEL connector according to the pin assignment above.



HD (IDE Hard Disk Active LED) (Blue)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
SPEAK (Speaker Connector) (Amber)	Pin 1: VCC(+) Pin 2: Pin 3: NC Pin 4: Data(-)
RES (Reset Switch) (Green)	Open: Normal Operation Close: Reset Hardware System
PWR (Soft Power Connector) (Red)	Open: Normal Operation Close: Power On/Off
MSG(Message LED/Power) Sleep LED(Yellow)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
NC(Purple)	NC

11) BAT (Battery)

**CAUTION**

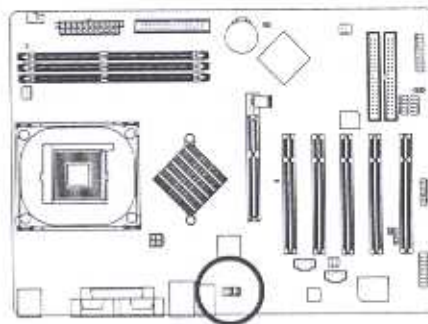
- ❖ Danger of explosion if battery is incorrectly replaced.
- ❖ Replace only with the same or equivalent type recommended by the manufacturer.
- ❖ Dispose of used batteries according to the manufacturer's instructions.

If you want to erase CMOS...

1. Turn OFF the computer and unplug the power cord.
2. Remove the battery, wait for 30 second.
3. Re-install the battery.
4. Plug the power cord and turn ON the computer.

12) F_AUDIO (F_AUDIO Connector)

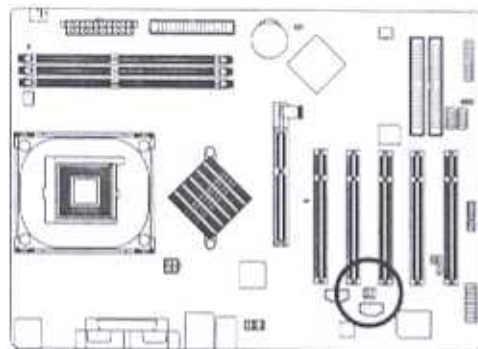
If you want to use Front Audio connector, you must remove 5-6, 9-10 Jumper. In order to utilize the front audio header, your chassis must have front audio connector. Also please make sure the pin assignment on the cable is the same as the pin assignment on the MB header. To find out if the chassis you are buying support front audio connector, please contact your dealer. Please note, you can have the alternative of using rear audio connector or of using rear audio connector to play sound.



Pin No.	Definition
1	MIC
2	GND
3	REF
4	POWER
5	FrontAudio(R)
6	RearAudio(R)
7	Reserved
8	No Pin
9	FrontAudio(L)
10	RearAudio(L)

13) SUR_CEN

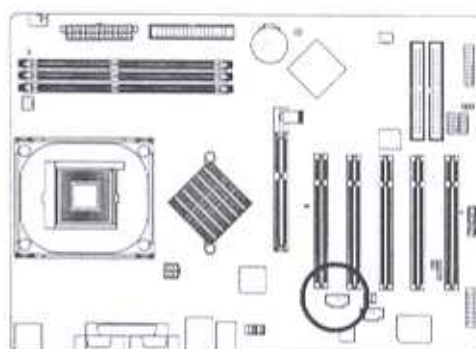
Please contact your nearest dealer for optional SUR_CEN cable.



Pin No.	Definition
1	SUR_OUTL
2	SUR_OUTR
3	GND
4	No Pin
5	CENTER_OUT
6	BASS_OUT

14) CD_IN (CD IN, Black)

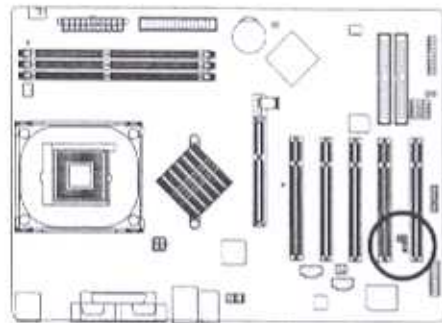
Connect CD-ROM or DVD-ROM audio out to the connector.



Pin No.	Definition
1	CD_L
2	GND
3	GND
4	CD_R

17) IR

Be careful with the polarity of the IR connector while you connect the IR. Please contact your nearest dealer for optional IR device.

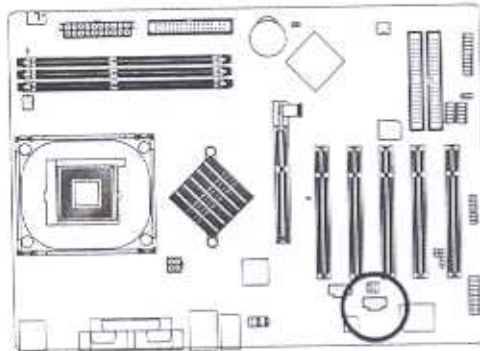


Pin No.	Definition
1	VCC
2	No Pin
3	IR Data Input
4	GND
5	IR Data Output

1

15) AUX_IN (AUX in Connector)

Connect other device (such as PCI TV Tuner audio out) to the connector.



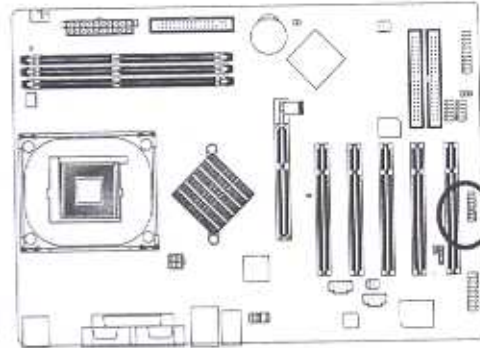
Pin No.	Definition
1	AUX-L
2	GND
3	GND
4	AUX_R



16) SPDIF_IO (SPDIF In/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. Use SPDIF IN feature only when your device has digital output function.

Be careful with the polarity of the SPDIF_IO connector. Check the pin assignment carefully while you connect the SPDIF_IO cable. Incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional SPDIF_IO cable, please contact your local dealer.

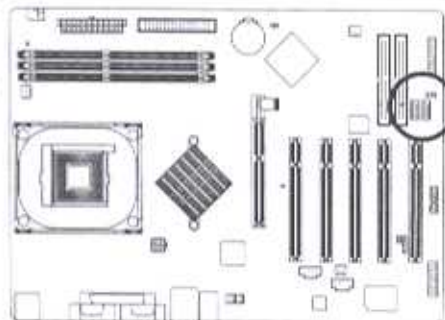


Pin No.	Definition
1	VCC
2	No Pin
3	SPDIF
4	SPDIF
5	GND
6	GND



18) F_USB1 / F_USB2 (Front USB Connector, Yellow)

Be careful with the polarity of the front USB connector. Check the pin assignment while you connect the front USB cable. Please contact your nearest dealer for optional front USB cable. Be careful with the polarity of the F_USB connector. Check the pin assignment carefully while you connect the F_USB cable. Incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional F_USB cable, please contact your local dealer.

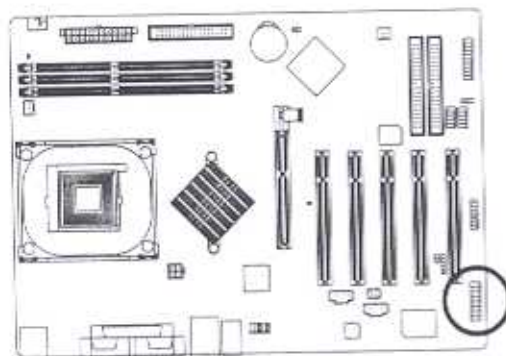


Pin No.	Definition
1	Power
2	Power
3	USB D+
4	USB D-
5	USB D+
6	USB D+
7	GND
8	GND
9	No Pin
10	NC



19) GAME (GAME Connector)

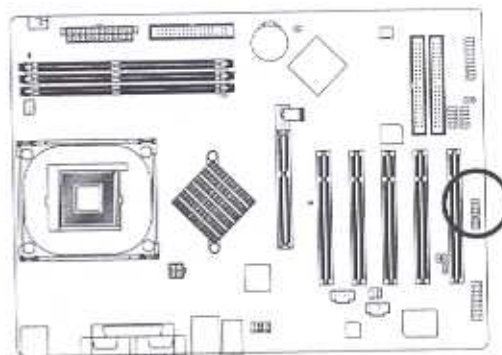
This connector supports joystick, MIDI keyboard and other relate audio devices.



Pin No.	Definition
1	VCC
2	GRX1_R
3	GND
4	GPSA2
5	VCC
6	GPX2_R
7	GPY2_R
8	MSI_R
9	GPSA1
10	GND
11	GPY1_R
12	VCC
13	GPSB1
14	MSO_R
15	GPSB2
16	No Pin

20) INFO_LINK

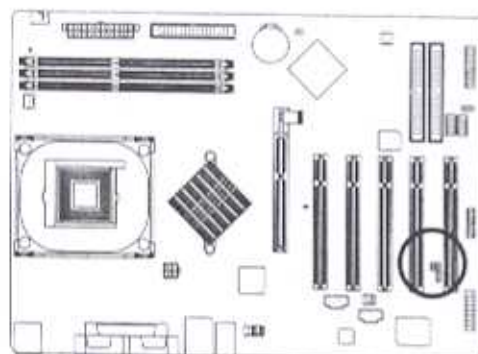
This connector allows you to connect some external devices to provide you extra function.



Pin No.	Definition
1	SMBCLK
2	VCC
3	SMBDATA
4	GPIO
5	GND
6	GND
7	No Pin
8	NC
9	+12V
10	+12V

21) CI (CASE OPEN)

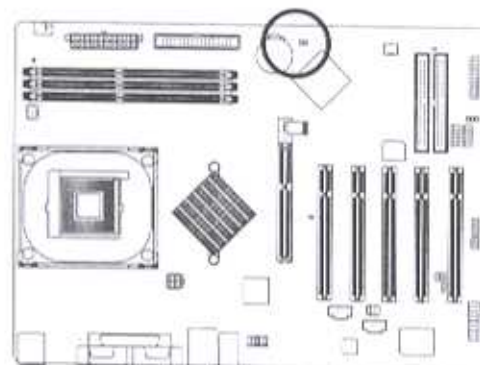
This 2 pin connector allows your system to enable or disable the "case open" item in BIOS if the system case begin remove.



Pin No.	Definition
1	Signal
2	GND

22) CLR_PWD

When Jumper is set to "open" and system is restarted, the password that is set will be cleared. On the contrary when Jumper is set to "close", the current status remains.



open: Clear password

close: Normal