

INSTALLATION PROCEDURES

The **SAHARA** System has several user-adjustable jumpers on the mainboard that allow you to configure the system to suit your requirements. This chapter contains information on the various jumper settings on the mainboard.

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

- [Step 1](#) -
Set system jumpers
- [Step 2](#) -
Install system RAM modules
- [Step 3](#) -
Install the Central Processing Unit (CPU)
- [Step 4](#) -
Install expansion cards
- [Step 5](#) -
Connect ribbon cables, cabinet wires, and power supply
- [Step 6](#) -
Set up BIOS software (see Chapter Four)
- [Step 7](#) -
Set up supporting software tools (see Appendix C)



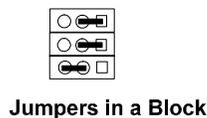
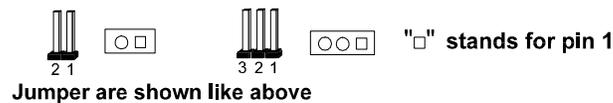
Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm.

Mainboard components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming any of the mainboard's sensitive components, you should follow some precautions whenever working on the computer:

1. *Unplug the computer when working on the inside.*
2. *Hold components by the edges and try not to touch the IC chips, leads, or circuitry.*
3. *Wear an anti-static wrist strap which fits around the wrist.*
4. *Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.*

1). Set System Jumpers

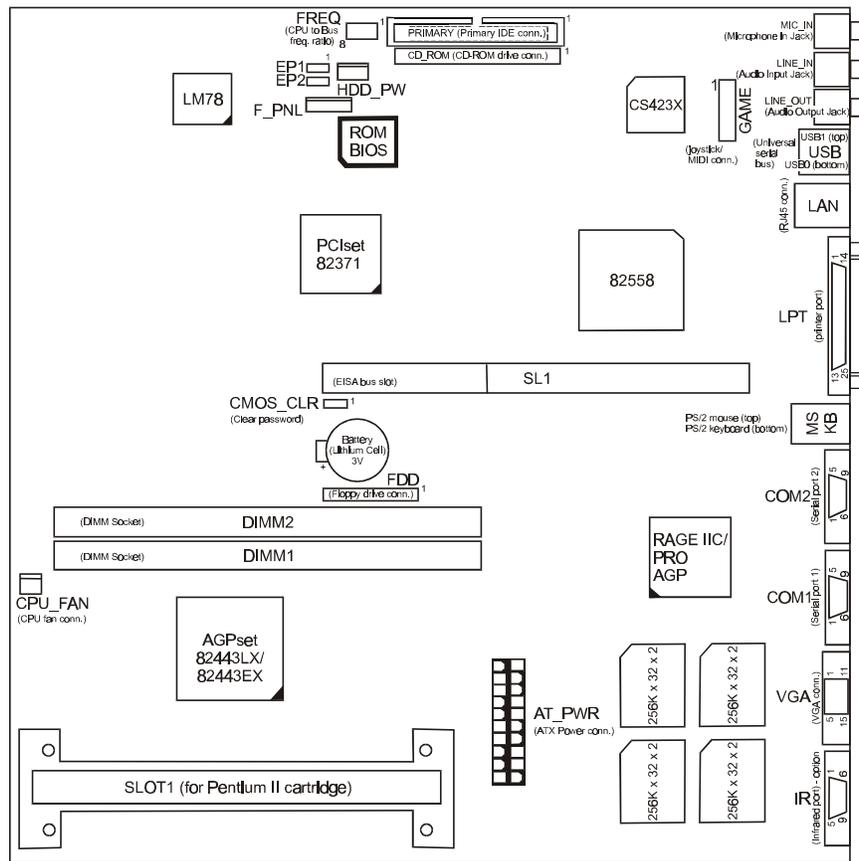
Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. A "1" is written besides pin 1 on jumpers with three pins. To **set** a jumper, a black cap containing metal contacts is placed over the jumper pin/s according to the required configuration. A jumper is said to be **shorted** when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:





Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

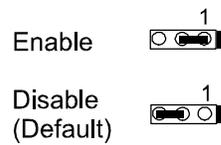
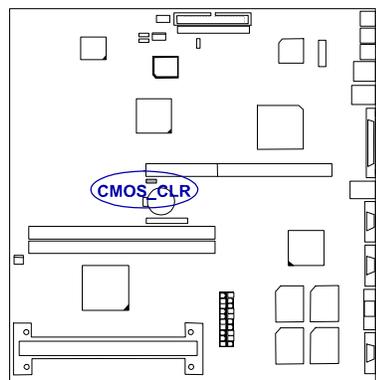
Components That Concern Installation



ONBOARD MARK	MEANING	PAGE
CMOS_CLR	Clear CMOS Data	69
EP1, EP2	Flash ROM Type Select	69
FREQ	CPU to Bus Frequency Ratio Select	75
DIMM1, DIMM2	DIMM Memory Module Support	70
SL1	EISA Bus Expansion Slot (32-bit)	75
SLOT1	Central Processing Unit (CPU) Cartridge Support	72
AT_PWR	ATX Power Connector	88
CD_ROM	CD-ROM Drive Connector	87
COM1, COM2	Serial Port	79
CPU_FAN	CPU Fan Connector	84
F_PNL	Connectors for LEDs and Switches on Front Panel	87
FDD	Floppy Diskette Drive Connector	85
GAME	Joystick/MIDI Connector	83
HDD_PW	Hard Disk Drive Power Connector	86
IR (option)	Infrared Port Module	82
KB	PS/2 Keyboard Connector	80
LAN	RJ45 Connector	82
LINE_IN	Audio Line-In Jack	81
LINE_OUT	Audio Line-Out Jack	81
LPT	Parallel Port	80
MIC_IN	Audio Microphone Jack	81
MS	PS/2 Mouse Connector	80
PRIMARY	IDE Device Connector	86
USB	Universal Serial Bus Connector	81
VGA	VGA Connector	83

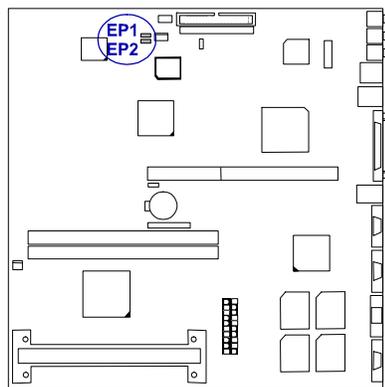
CMOS Clear: CMOS_CLR

This jumper allows you to enable or to disable the CMOS clear feature. When set at Enable, the original CMOS configuration will be replaced with whatever CMOS parameters are being entered. When set at Disable, the original CMOS configuration will not be affected. If you need to set the CMOS configuration, keep this jumper at Enable.



Flash ROM Type Select: EP1, EP2

These two jumpers allow you to configure the flash ROM chip. This jumper setting was installed with the manufacturer's default. If you want to know the flash ROM type installed on this mainboard, partially remove the sticker on top of the chip.



1MB Flash ROM	EP1	EP2
ATMEL AT29C010 SST 29EE010 AMD 28F010	 1	 1
INTEL 28F001 MXIC 28F1000	 1	 1
2MB Flash ROM	EP1	EP2
ATMEL AT29C020 SST 29EE020 AMD 28F020	 1	 1
INTEL 28F002 MXIC 28F2000	 1	 1

2). Install RAM Modules

SDRAM

The working space of the computer is the Random Access Memory (RAM). The system cannot act upon data unless it is loaded into RAM. When more memory is added, the working memory of the computer is larger, thereby increasing total performance. The mainboard RAM is comprised of two 168-pin Dual In-line Memory Modules (DIMMs). Each DIMM socket is able to support up to 128MB lightning-fast SDRAM.

SDRAM is an advanced new memory technology that helps boost overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on-chip burst counter that can be utilized to increment column addresses for very fast burst access, which means that SDRAM allows new memory access to be initiated before the preceding access has been finished.

Before making DRAM upgrades you should verify the type and speed of the RAM currently installed from your dealer. Installing mixtures of RAM types other than those described in this manual will have unpredictable results.



DIMM

RAM Module Configuration

The mainboard provides two onboard DIMM sockets allowing 3.3V (unbuffered) SDRAM DIMM modules. Either 8, 16, 32, 64, or 128MB DIMM can be installed on these two sockets. The maximum total memory supported is up to 256MB.

Memory Socket	Memory Module		Total Memory
DIMM Sockets 1&2 (DIMM1 & DIMM2)	8MB, 16MB, 32MB, 64MB, 128MB 168-pin 3.3V EDO/SDRAM DIMM	x2	
	Total System Memory (Max 256MB)	=	

Or one 256MB DIMM on either DIMM1 or DIMM2.

Memory Socket	Memory Module		Total Memory
DIMM Sockets 1/2 (DIMM1 or DIMM2)	256MB 168-pin 3.3V EDO/SDRAM DIMM	x1	256MB
	Total System Memory (Max 256MB)	=	256MB



This mainboard supports DIMMs with access speeds of 10ns, 12ns, and 15ns. ECC memory and parity check is also supported.

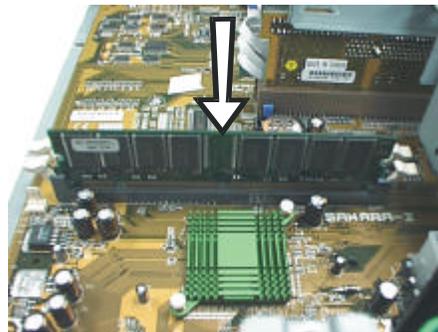
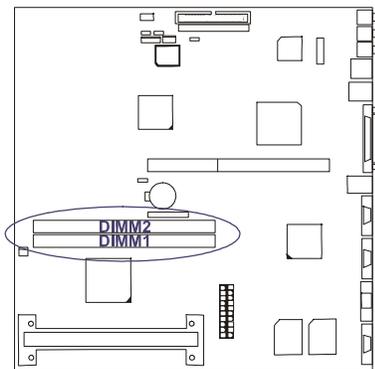
Install DIMMs

SDRAM DIMM modules have different pin contact on each side and therefore have a higher pin density. Complete the following procedures when installing DIMMs:



Do not use memory modules with more than 24 chips per module. Modules with more than 24 chips exceed the design specifications of the memory subsystem and will be unstable. The notch on the DIMM module will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the mainboard. Ask your retailer for the specifications before purchasing.

1. Locate the DIMM slots on the mainboard. (See the following figure.)



2. Install the DIMM straight down into the DIMM slot with both hands.

3. The clip on both ends of the DIMM slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.

Remove DIMMs

Press the clips with both hands to remove the DIMM.

3). Install the Central Processing Unit (CPU)

If the mainboard is for the Pentium® II CPU, then it comes with an onboard Retention Mechanism, a Heatsink with Fan, and two clips for attaching the Heatsink with Fan to the CPU cartridge. If any piece is missing, please contact your local system dealer to help you. If the mainboard is for the Celeron™ CPU, then it comes with an onboard Retention Mechanism, a Passive Heatsink, and a clip for attaching the Passive Heatsink to the CPU.



The Retention Mechanism is already installed onboard by the manufacturer.

CPU Cartridge and Heatsink with Fan Installation (for Pentium® II CPU)

To install the CPU cartridge and Heatsink with Fan, refer to the following steps:

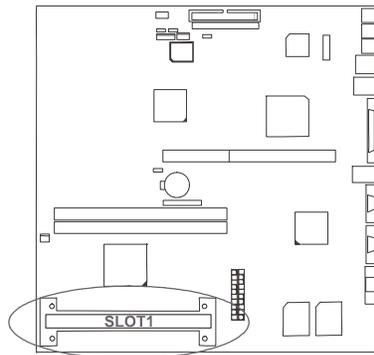
1. Peel off the backing tape located on the flat side of the Heatsink with Fan.



2. Carefully position the Heatsink with Fan on the center of the CPU cartridge, taking care to align the two protruding knobs of the Heatsink with Fan to the holes on the thermal plate side of the CPU cartridge, with the fan on the right side facing you.

Mainboard Installation Procedures

3. Push in both ends of each of the heatsink clip into the CPU cartridge thereby, fixing the Heatsink with Fan onto the CPU cartridge.
4. Slide the CPU module together with the heatsink into the Retention Mechanism Assembly located on SLOT1 of the mainboard.

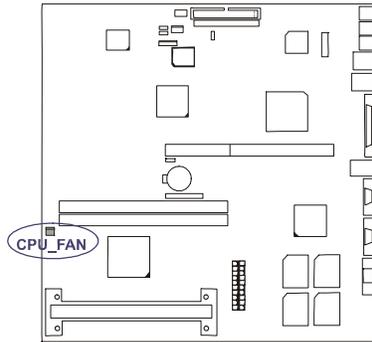


5. Press the buttons on either end of the CPU module.



If the Heatsink with Fan is not mounted tightly against the CPU cartridge, the CPU will overheat.

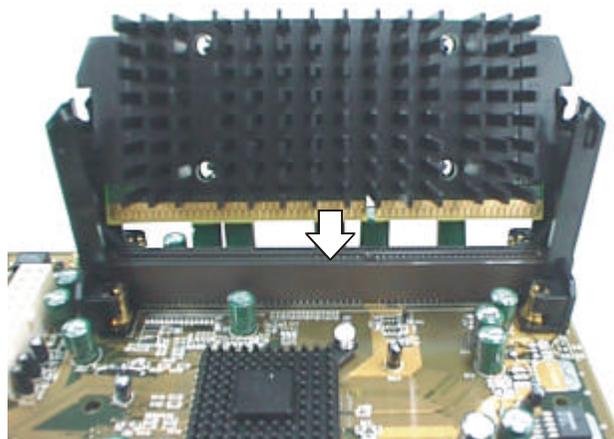
6. Plug the heatsink fan power cord into the CPU_FAN connector on the mainboard.



CPU and Passive Heatsink Installation (for Celeron™ CPU)

To install the CPU and Passive Heatsink, refer to the following steps:

1. Peel off the backing tape located on the flat side of the Passive Heatsink.
2. Carefully position the Passive Heatsink on the center of the front of the CPU, and on its backside, push in both ends of the heatsink clip taking care to align it to the holes of the CPU thereby, fixing the Passive Heatsink onto the CPU.
3. Slide the CPU together with the Passive Heatsink into the Retention Mechanism Assembly located on SLOT1 of the mainboard.

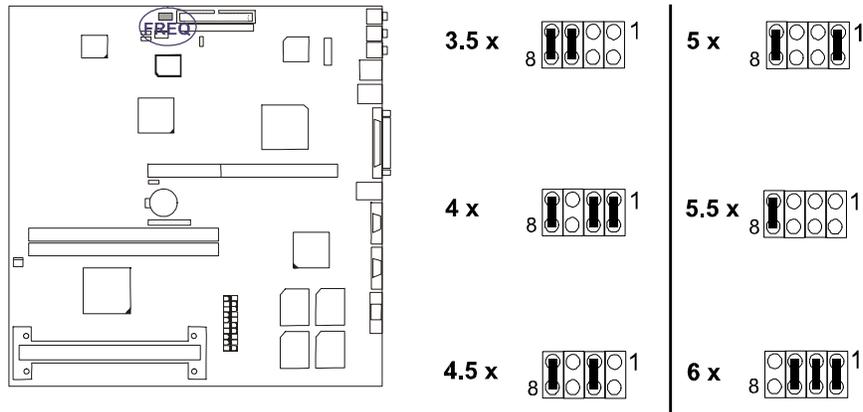




If the Passive Heatsink is not mounted tightly against the CPU cartridge, the CPU will overheat.

CPU to Bus Frequency Ratio: *FREQ*

This jumper is used set the ratio of the internal frequency of the CPU to the bus clock.



Intel Pentium II CPUs

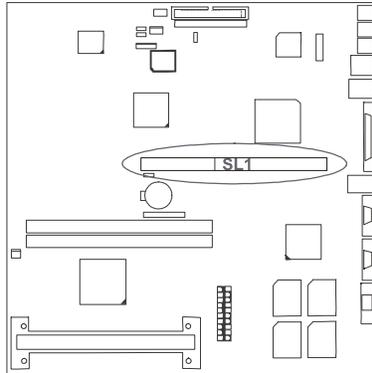
FREQUENCY	BUS FREQUENCY	RATIO
333 MHz	66 MHz	5 x
300 MHz	66 MHz	4.5 x
266 MHz	66 MHz	4 x
233 MHz	66 MHz	3.5 x

4). Install Expansion Cards



Make sure to unplug the power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the mainboard and expansion cards.

The mainboard features one 32-bit EISA bus expansion slot.



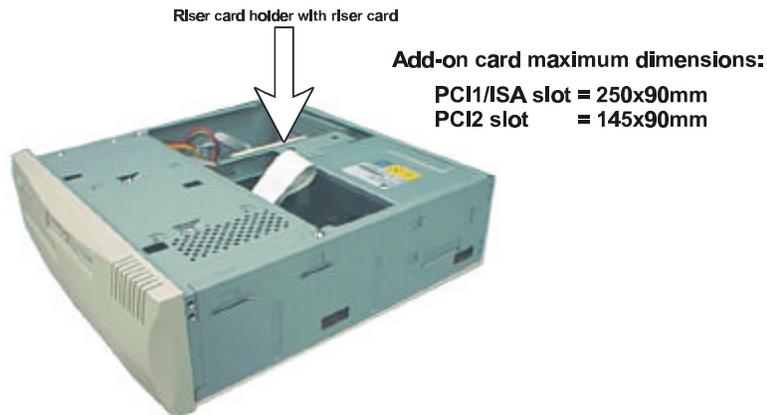
This section describes how to connect an expansion card to the system's riser card. An expansion card is a printed circuit board that, when connected to the mainboard, allows you to increase the capabilities of the system. For example, expansion cards can provide video and sound capabilities.



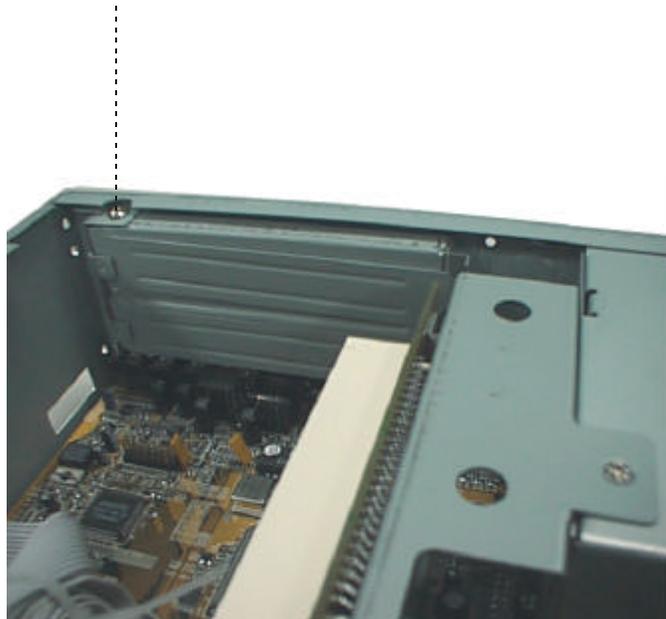
Always turn the system power off before installing or removing any device. Always observe static electricity precautions. See “Handling Precautions” at the start of this manual.

To install an expansion card, follow the steps below:

1. Remove the computer chassis cover (see Chapter 3 “Removing the Chassis Cover”) and locate the riser card on the EISA expansion slot (SL1).

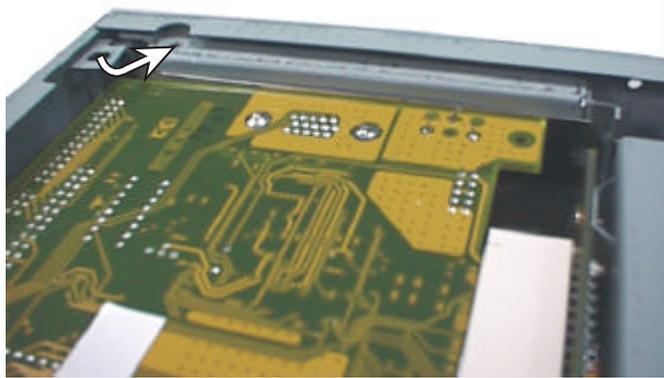


2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and swing open the slot holder securing plate prior to pulling the slot cover out from the computer chassis. Keep the slot cover mounting screw nearby.



3. Read the expansion card documentation on any hardware and software settings that may be required to setup the specific card.
4. Set any necessary jumpers on the expansion card.
5. Select an empty expansion slot on the riser card.
6. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.
7. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-on card is firmly seated inside the expansion slot.

8. Swing close the slot holder securing plate and secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.



9. Replace the computer system's cover. (See Chapter 3 "Re-installing the Chassis Cover".)
10. Setup the BIOS if necessary.
11. Install the necessary software drivers for the expansion card.

5). Connect Cables and Power Supply

Connectors



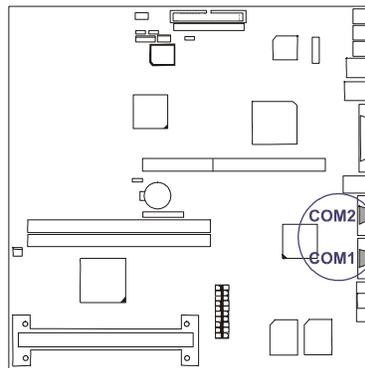
Some pins are used for connectors or power sources. These are clearly separated from jumpers. Placing jumper caps over these will cause damage to the mainboard.

Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. The four corners of the connectors are labeled on the mainboard. Pin 1 is the side closest to the power connector on hard drives and floppy drives.

Connectors allow the mainboard to link electronically with other parts of the system. Some malfunctions encountered may be caused by loosed or improper connections. Ensure that all connections are in place and firmly attached.

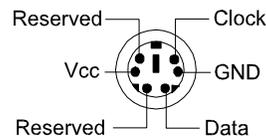
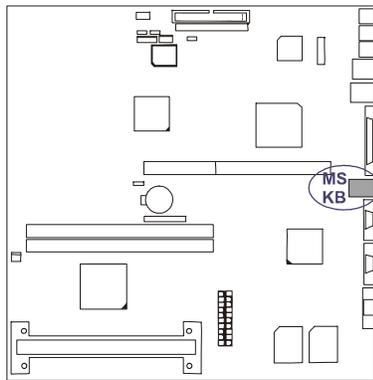
Serial Port Connectors: COM1, COM2

These two 9-pin D-sub male connectors allow you to connect with your devices that use serial ports, such as a serial mouse or a modem. Usually, it is recommended to connect the serial mouse to COM1 and the fax/modem to COM2.



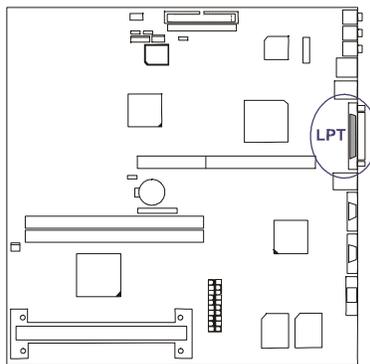
PS/2 Keyboard and Mouse Connector: MS, KB

These two 6-pin female connectors are used for your PS/2 keyboard and PS/2 mouse. The PS/2 keyboard connector is for a standard keyboard using a PS/2 plug (mini DIN). This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards. The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards may be using IRQ12.



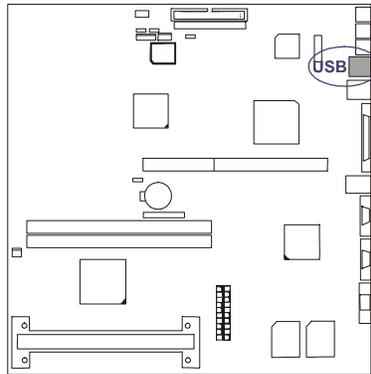
Printer Connector: LPT

This 25-pin D-sub female connector is attached to your printer. Serial printers must be connected to the serial port.



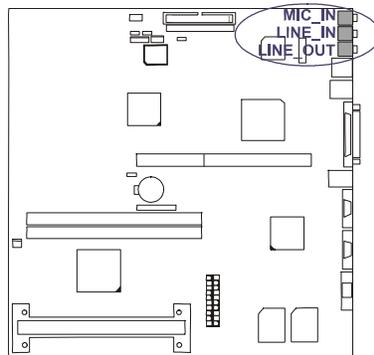
Universal Serial Bus Connectors: USB

These two connectors are used for linking with USB peripheral devices.



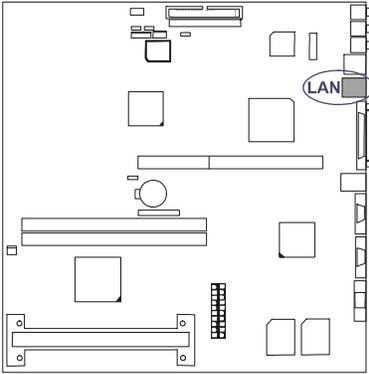
Audio Port Connectors: LINE_OUT, LINE_IN, MIC_IN

LINE_OUT can be connected to headphones or preferably powered speakers. LINE_IN allows tape players or other audio sources to be recorded by your computer or played through the LINE_OUT. MIC_IN allows microphones to be connected for inputting voice.



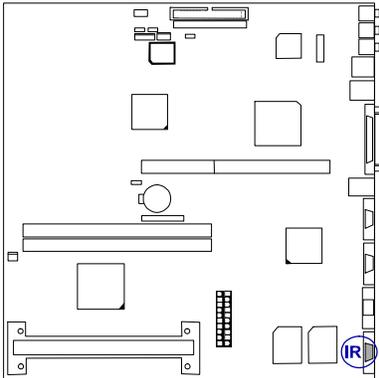
RJ45 Connector: LAN

This connector allows you to connect to the LAN cable for network connections.



Infrared Connector: IR (optional)

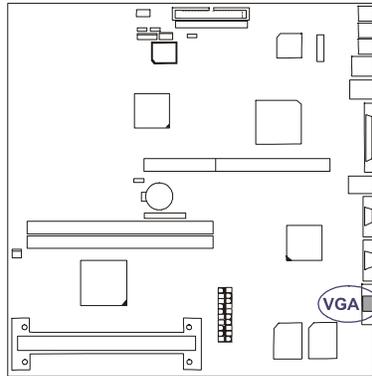
This 9-hole D-sub female infrared (SIR) port allows transmission of data to another system which also supports the IR feature.



Your system may or may not have this connector.

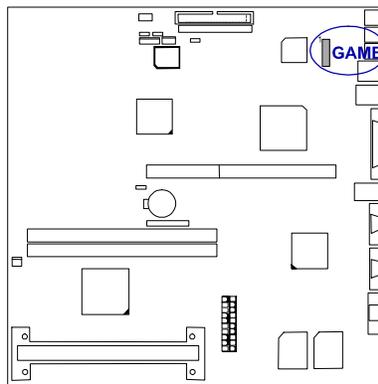
VGA Connector: VGA

The 15-hole D-sub female connector is linked to the VGA monitor by a cable.



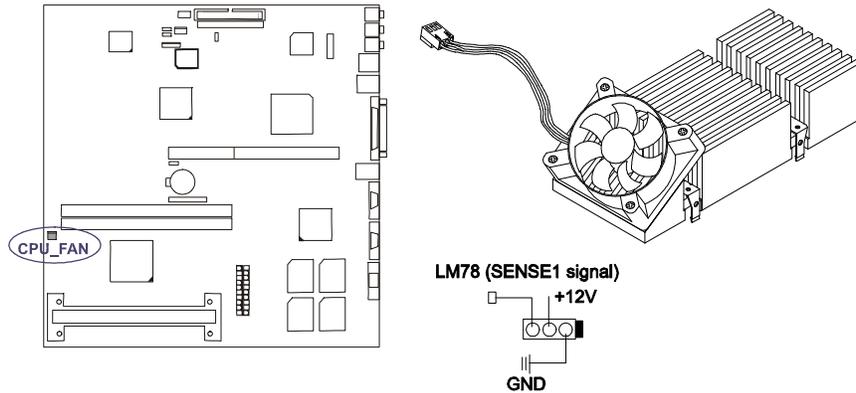
Joystick/MIDI Connector: GAME

This 16-pin male connector allows you to connect a 15-hole female D-sub game port adapter cable which in turn allows you to use game joysticks or game pads for playing games. Connect MIDI devices for playing or editing audio.



CPU Fan Connector: CPU_FAN

This connector is linked to the CPU fan. When the system is in suspend mode, the CPU fan will turn off; when it reverts back to full-on mode, the fan will turn back on. The picture below shows the type of CPU fan with heatsink for your system.



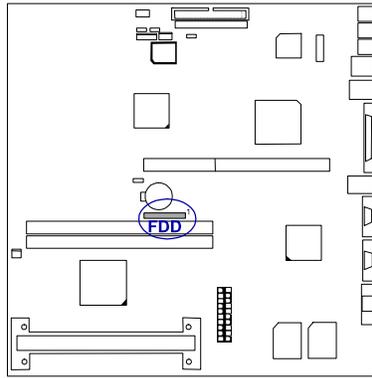
Without sufficient air circulation, the Pentium® II CPU cartridge may overheat and cause damage to both the CPU cartridge and the mainboard. Damage may occur to the mainboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.

Floppy Diskette Drive Connector: FDD

This 26-pin block connector connects to your slim floppy disk drive using the FFC-cable that is provided with this mainboard. Insert one end of the silver-finger contact and press down the FDD connector on both sides to lock it in place. After connecting the single end to the mainboard, connect the other end to the floppy drive.

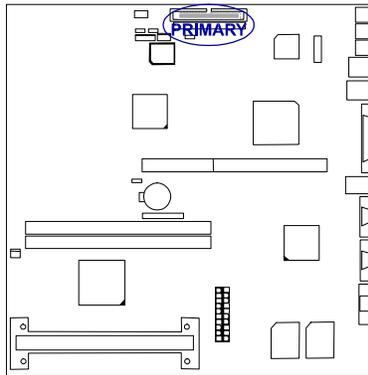


The FFC-cable should always be inserted with the side with the exposed silver-finger in contact with the FDD connector pins.



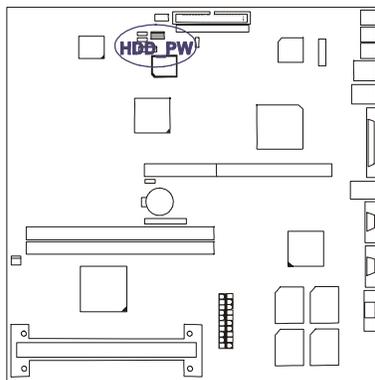
IDE HDD Device Connector: PRIMARY

This connector, which supports the provided IDE hard disk ribbon cable, is used for your IDE hard disk drive. After connecting the single end to the mainboard, connect the other plug to the other end of your hard disk. Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged.



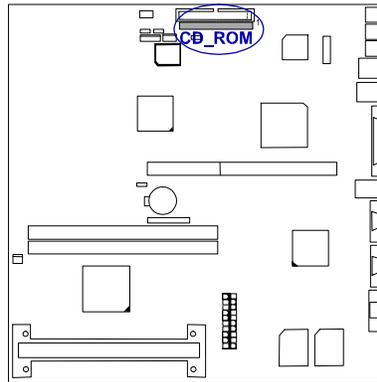
Hard Disk Drive Power Connector: HDD_PW

This allows you to connect one end of the hard disk drive power cord to the 4 pin block connector (HDD_PW) on the mainboard and the other end to the rear of the hard disk drive.



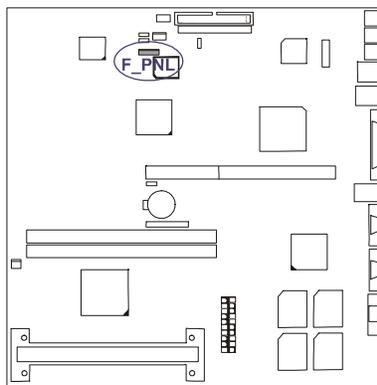
CD-ROM Drive Connector: CD_ROM

This connector, which supports the provided CD-ROM drive ribbon cable, is used for your slim CD-ROM drive. After connecting the single end to the mainboard, connect the other plug to the other end of your CD-ROM drive.

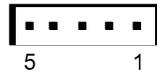


Front Panel Block Connector: F_PNL

This block connector includes: RESET, POWER LED, IDE LED, LAN LED, and POWER BUTTON connectors.



F_PNL connector GROUND (1) – Connects to ground.



POWER LED (2) – The system power LED lights when the system is powered on.

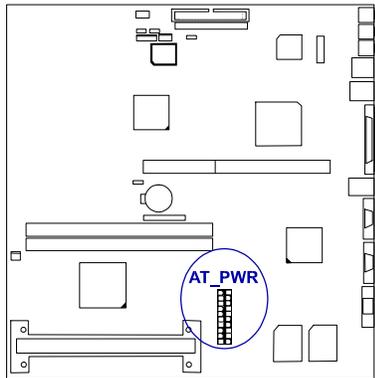
IDE LED (3) – This connector supplies power to the cabinet’s IDE activity LED. Indicates the IDE HDD I/O (read and write activity by devices connected to the Primary IDE connector) is being accessed when LED is lit.

LAN LED (4) – This connector supplies power to the cabinet’s LAN activity LED. Indicates the LAN (Local Area Network) is being accessed when LED is lit.

POWER BUTTON (5) – This connector connects to the case-mounted power switch for powering on or off the system.

ATX Power Connector: AT_PWR

This 20-pin male block connector is connected to the ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.



+3.3V	11	1	+3.3V
-12V	12	2	+3.3V
GND	13	3	GND
-PWR_ON	14	4	+5V
GND	15	5	GND
GND	16	6	+5V
GND	17	7	GND
-5V	18	8	PWR_GOOD
+5V	19	9	5V_VR
+5V	20	10	+12V



Your SAHARA System’s power supply does not support –5V. The system mainboard’s special design under LDCM testing for –5V will show normal.