

Installation Procedures

The PAK-2005 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

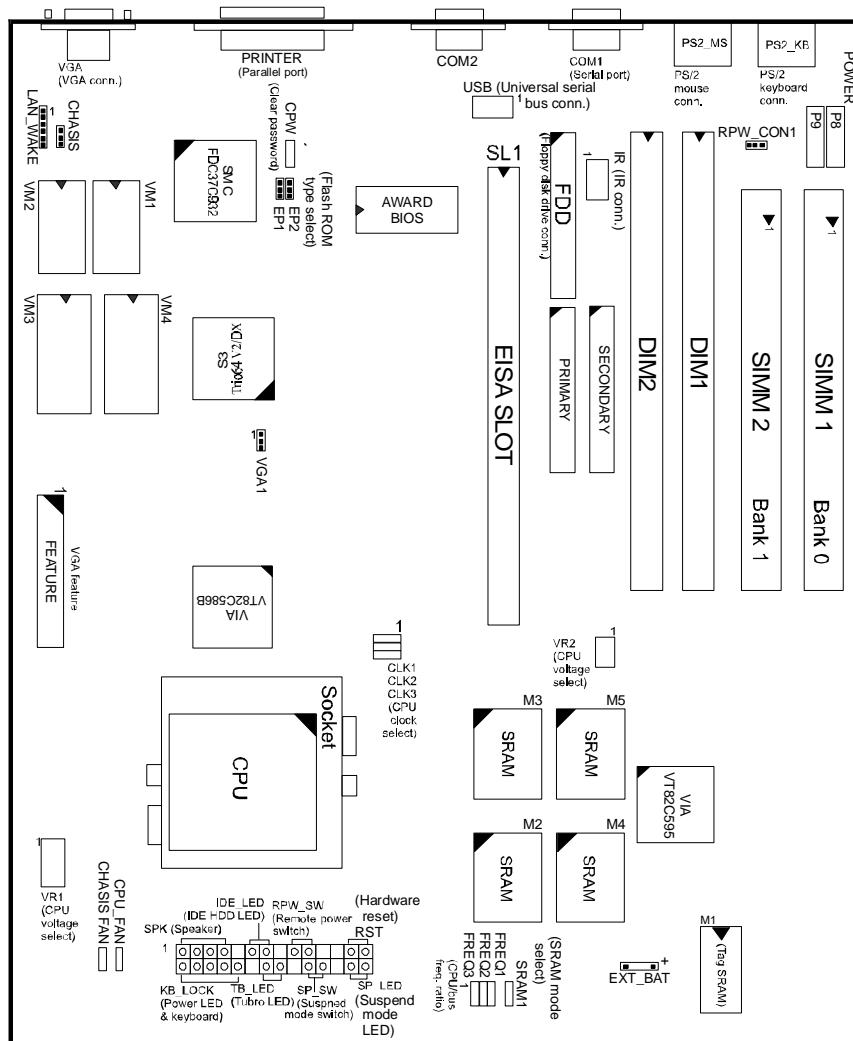
Before using the computer, you must complete the following steps:

- 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 (Please read Chapter Three)

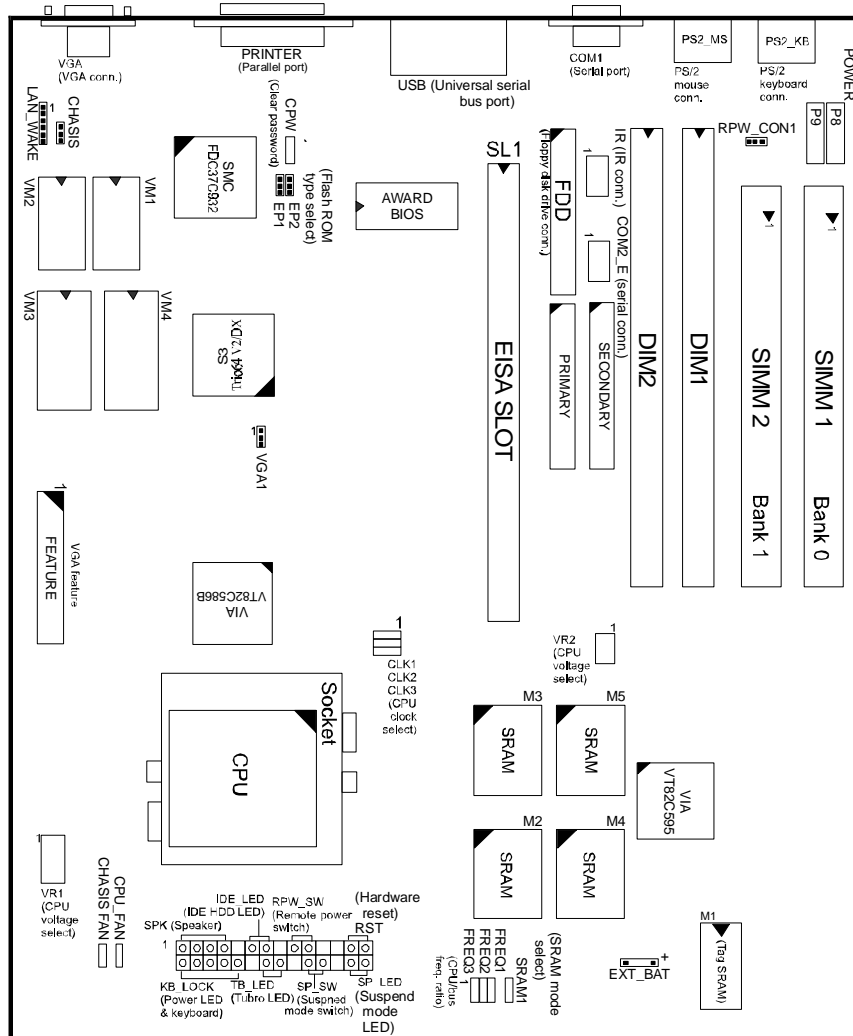
WARNING: Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm. Mainboard and components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming 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.

Mainboard Layout (with onboard COM1 and COM2 ports)



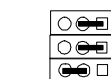
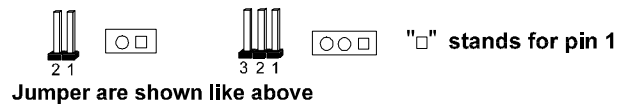
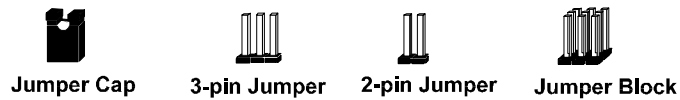
Mainboard Layout (with onboard USB port)



1). Set System Jumpers

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:

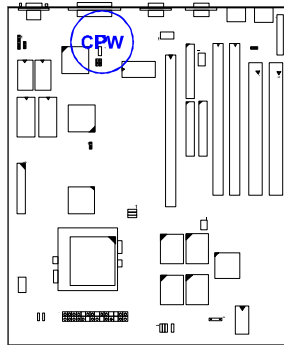


Jumpers in a Block

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

Clear Password: CPW

This jumper allows you to set the password configuration to Enabled or Disabled. You may need to enable this jumper if you forget your password.



Enable

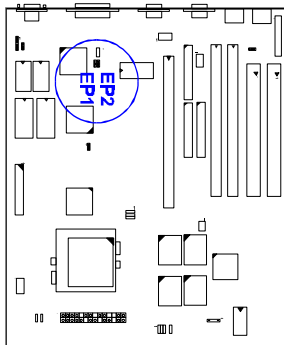


Disable
(Default)

NOTE : The SMC® FDC37C932 I/O chip does not support the Clear Password feature, only the SMC® FDC37C932FR chip.

Flash EPROM Type Selection: EP1, EP2


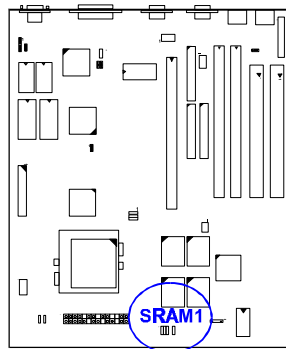
These two jumpers allow you to configure the Flash EPROM chip.




1M Flash ROM	EP1	EP2
INTEL 28F001 MXIC 28F1000P		
AMD 28F010A ATMEL 29C010A SST 29EE010		
2M Flash ROM	EP1	EP2
INTEL 28F002 MXIC 28F2000P		
AMD 28F020 ATMEL 29C020 SST 29EE020		

CPU to SRAM Data Transaction Mode Selection: SRAM1

This jumper allows you to select the CPU to SRAM data read/write mode. If you install a Cyrix or IBM processor please set the jumper at 2-3 and also set the Linear Burst feature of the Chipset Features Setup, Chapter 3.



Intel Burst
(Default)
For
Intel Pentium CPUs,
AMD CPUs,
Cyrix CPUs,
IBM CPUs




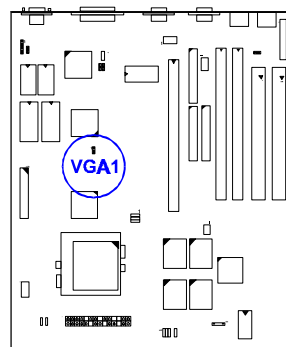
Linear Burst

For
Cyrix CPUs,
IBM CPUs


(Cache RAM Module
must support
linear burst mode)

VGA Selection: VGA1

This jumper allows you to enable onboard VGA.



Enable
(Default)



Disable

2). Install System RAM Modules

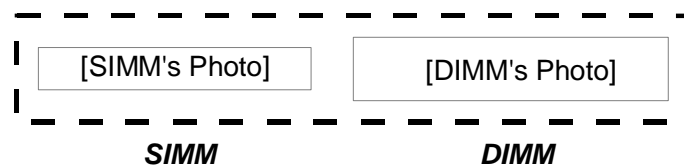
DRAM Memory

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 PAK-2005's RAM is comprised of two industry standard 72-pin Single In-line Memory Modules (SIMMs) and two 168-pin Dual In-line Memory Modules (DIMMs). Each SIMM socket supports from 4 to 64MB, either 60ns or 70ns FPM (Fast Page Mode) (asymmetric or symmetric) and high-speed EDO (Enhanced Data Out) DRAM (parity is not supported). Each DIMM socket is able to support up to 64MB EDO DRAM or lightning-fast SDRAM.

Occasionally the system must break apart data files because the entire file does not fit into the RAM area. Consequently, when the system needs data that is not in RAM, it must access the disk where the balance of the data is stored. Compared to the lightning speed access of the system has to RAM, accessing a mechanical disk drive is a slow process.

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.



DRAM Module Configuration

DRAM modules in Bank 0, Bank 1, and Bank 2 can be installed in many combinations. Some of them are listed in the following table.

TOTAL MEMORY	BANK 0 SIMM 1 (72-PIN)	BANK 0 SIMM 2 (72-PIN)	BANK 1 DIM1 (168-PIN)	BANK 2 DIM2 (168-PIN)
8MB	4MB	4MB		
			8MB	
				8MB
16MB	8MB	8MB		
			8MB	8MB
			16MB	
				16MB
32MB	16MB	16MB		
			16MB	16MB
			32MB	
				32MB
64MB	32MB	32MB		
			32MB	32MB
			64MB	
				64MB
128MB	64MB	64MB		
			64MB	64MB
256MB	128MB *	128MB *		

** This configuration has not been tested as of this writing.*

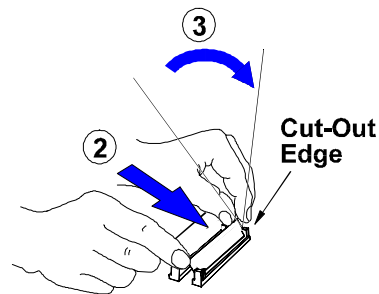
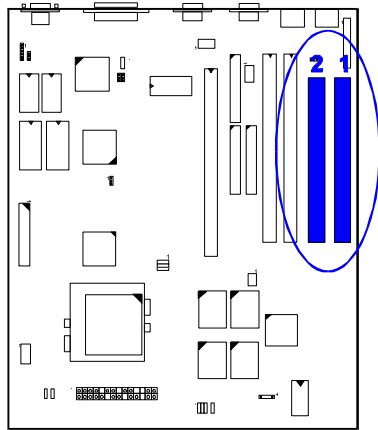
NOTE : DIM1 and DIM2 only support 3.3V (unbuffered) EDO and SDRAM modules but can support different memory configurations at the same time (e.g., BANK 1 is 16MB and BANK 2 is 8MB).
SIMMs and DIMMs are not to be installed at the same time on this mainboard or else you will burn your memory. Mixing SIMMs and DIMMs require 5.0Volt (signal level) tolerant memory chips which are currently unavailable.
SIMMs (ECC memory or parity check is not supported) with latency time of 60ns, 70ns and DIMMs with latency time of 10ns, 12ns are allowed on this mainboard.

Install SIMMs

Complete the following procedures to install SIMMs:

CAUTION: 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.

1. Locate the SIMM slots on the mainboard. (See figure below.)



NOTE : SIMMs in each bank must be of the same type; System BIOS automatically configures the memory size.

2. Carefully fit a SIMM at a 45 degree angle into each empty socket to be populated, making sure that all the contacts are aligned with the socket. The SIMM memory modules will only fit in one orientation as shown because of a “Plastic Safety Tab” on one end of the SIMM sockets which requires the “Notched End” of the SIMM memory modules.
3. With your fingers, swing each SIMM into its upright, locked position so that it clicks into place. When locking a SIMM in place, push on each end of the SIMM - do not push in the middle, as shown above.
4. The plastic guides should go through the two “Mounting Holes” on the sides and the “Metal Clips” should snap on the other side.

Remove SIMMs

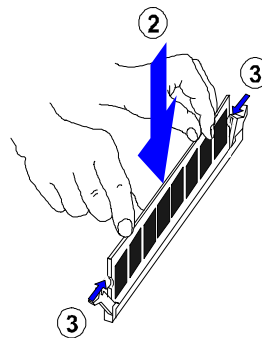
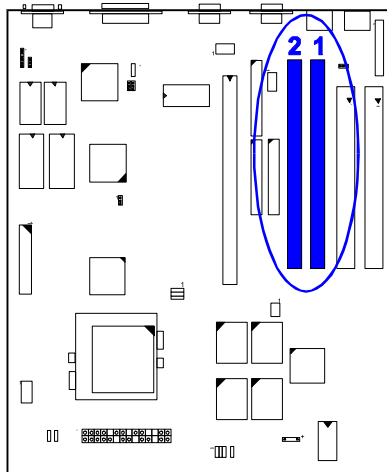
To remove the SIMMs, pull on the retaining latch (Metal Clips) on both ends of the socket and reverse the procedure above.

Install DIMMs

Dual In-Line Memory Modules (DIMM's) can be used when the SIMM sockets are not used. Two sockets are available for 3.3Volt (power level) Unbuffered Synchronous DRAMs (SDRAM) or Extended Data Out (EDO) DRAM of either 8, 16, 32, or 64MB to form a memory size between 8MB to 128MB. One side (with memory chips) of the DIMM module takes up one row on the mainboard. Because the number of pins are different on either side of the breaks, the module will only fit in one orientation. DRAM SIMM modules have the same pin contact on both sides. SDRAM DIMM modules have different pin contact on each side and therefore, have a higher pin density. Complete the following procedures to install DIMMs:

NOTE : 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 figure below.)



2. Install the DIMM straight down into the DIMM slot with both hands.
3. The clips of the 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.

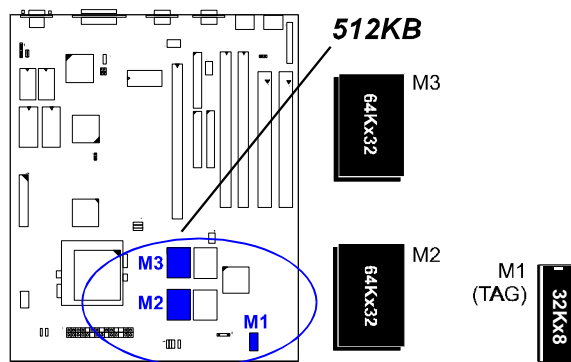
Cache Memory

The mainboard comes with onboard 512KB synchronous 3V Pipeline Burst SRAMs. Cache memory access is very fast compared to main memory access. The cache holds data for imminent use. Since cache memory is from five to more than ten times faster than main memory, the CPU's access time is reduced, giving you better system performance.

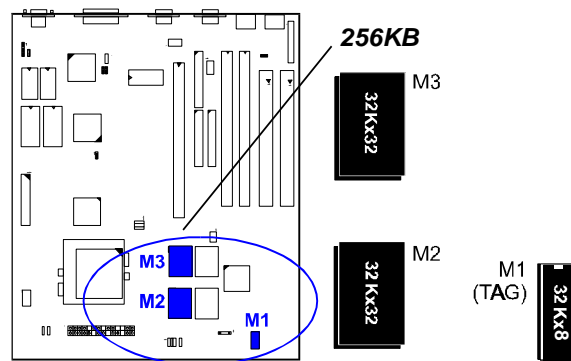
Pentium mainboards may implement various types of L2 cache SRAMs. Pipeline Burst SRAM is one of them, delivering the best price performance ratio. They perform much better than asynchronous SRAMs.

NOTE: The cache memory is not user upgradeable.
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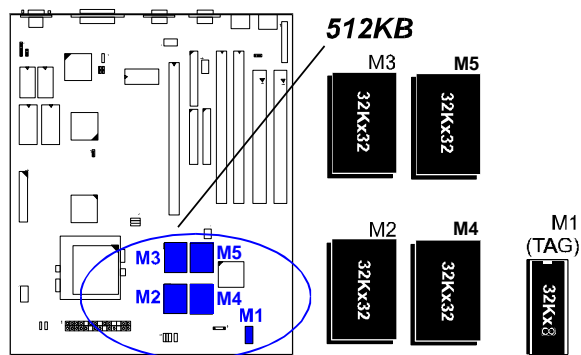
Option 1: 512KB Cache SRAM



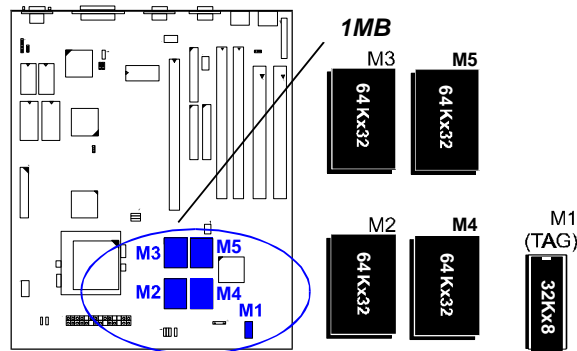
Option 2: 256KB Cache SRAM



Option 3: 512KB Cache SRAM



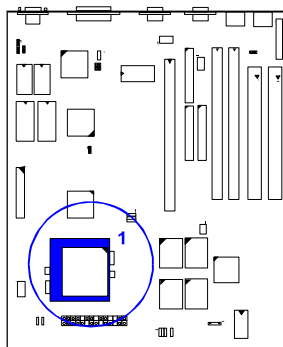
Option 4: 1MB Cache SRAM



3). Install the Central Processing Unit (CPU)

The CPU module resides in a 321-pin Zero Insertion Force (ZIF) Socket 7 on the mainboard that is backwards compatible with ZIF Socket 5 processors. The CPU that came with the mainboard should have a fan attached to it to prevent overheating. If this is not the case then purchase a fan before turning on the system. Apply thermal jelly to the CPU top and then install the fan onto the CPU.

NOTE : Without a fan circulating air on the CPU and heat sinks, the CPU and/or heat sinks can overheat and cause damage to both the CPU and the mainboard.

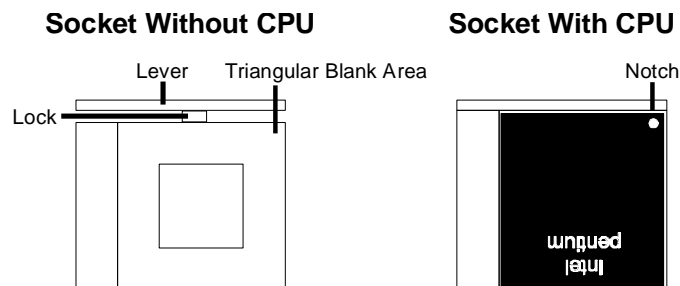


CAUTION: Always turn the system power off before installing or removing any device.
Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.
Inserting the CPU chip incorrectly may damage the chip.

To install the CPU, first turn off the system and remove its cover before doing the following:

1. Locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. The chip has a notched corner with the white dot to correctly orient the chip. Align the notch with pin one of the socket by pointing the white dot towards the end of the lever. Pin one is located in the blank triangular area where one hole is missing from that corner of the square array of pin holes. Do not force the chip as the CPU has a corner pin for three of the four corners, the CPU will only fit in the one orientation. With the added weight of the CPU fan, the CPU should slide easily into the socket.
4. Once completely inserted, hold down on the fan and swing the lever to the down position to lock the CPU in place.
5. See the following sections for information on the CPU jumpers settings.

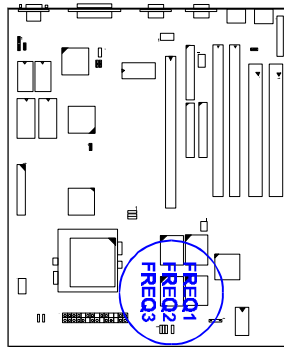
NOTE : You must set jumpers for "CPU to BUS Frequency Ratio" and "CPU External Clock (BUS) Frequency" depending on the CPU that you install.





















Select Frequency and Voltage

*CPU to BUS Frequency Ratio: **FREQ1**, **FREQ2**, **FREQ3***

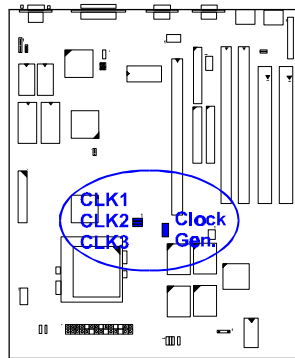
These three jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the external frequency (called the BUS clock) within the CPU. These must be set together with the jumpers on the next page (CPU external clock BUS frequency).












FREQ1	FREQ2	FREQ3	Ratio			
			P54C	P55C/ M2/K6	K5	M1
			1.5 x	3.5x	1.5 x	3 x
			2 x	2 x		2 x
			2.5 x	2.5 x	1.75 x	1 x
			3 x	3 x	2 x	4 x
				4 x		
				4.5 x		

CPU External Clock (BUS) Frequency: CLK1, CLK2, CLK3

The table below shows the jumper settings for the different CPU speed configurations.



For ICW48C67-1/ PhaseLink PLL52C62-01XC Clock Generator

ICW48C67-1 External (CPU/CLK)	CLK1	CLK2	CLK3
66.6 MHz	 1	 1	 1
60 MHz	 1	 1	 1
55 MHz	 1	 1	 1

For IMI671 / CY2277 / W48567-71 (CLK3)



60 MHz



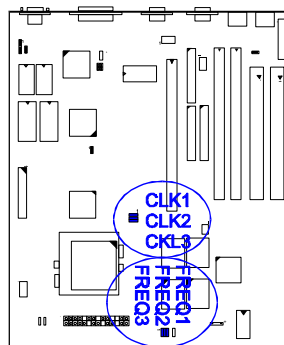
66 MHz

NOTE : This mainboard contains only one of the two different types of clock generators listed above; either ICW, or PhaseLink. Please check the onboard clock generator before setting CPU jumpers.

Intel Pentium CPUs

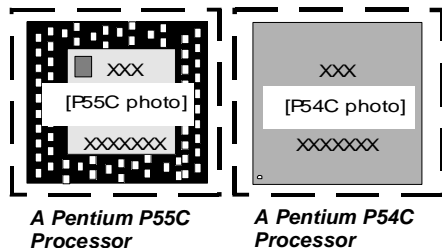
Frequency

CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate			
					Internal	FREQ1	FREQ2	FREQ3
Pentium MMX								
233 MHz	66 MHz				3.5 x Ext.			
200 MHz	66 MHz				3 x Ext.			
166 MHz	66 MHz				2.5 x Ext.			
Pentium								
200 MHz	66 MHz				3 x Ext.			
166 MHz	66 MHz				2.5 x Ext.			
150 MHz	60 MHz				2.5 x Ext.			
133 MHz	66 MHz				2 x Ext.			
120 MHz	60 MHz				2 x Ext.			
100 MHz	66 MHz				1.5 x Ext.			
90 MHz	60 MHz				1.5 x Ext.			

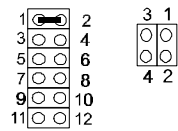


Voltage

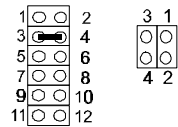
These jumpers set the voltage supplied to the CPU. The voltage regulators will automatically detect and switch between Single Power Plane and Dual Power Planes.



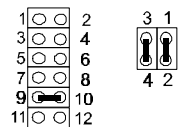
VR1 VR2



**Core : 3.5V
IO : Same
P54C VRE**

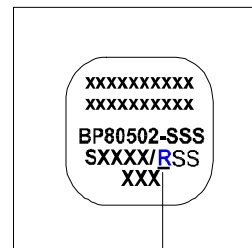


**Core : 3.3V
IO : Same
P54C STD**



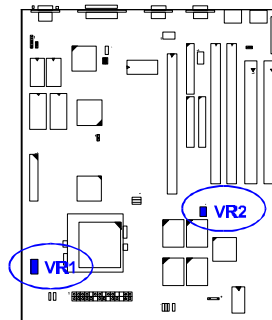
**Core : 2.8V
IO : 3.3V
P55C**

**Intel Pentium CPU
Bottom Side Marking**



R (Identflier for Voltage Range) :

V for VRE Voltage Range
or
S for Standard Voltage Range

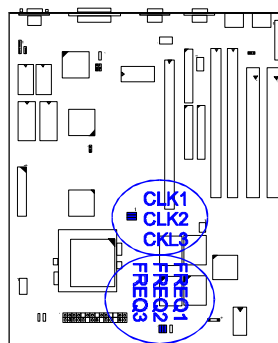


AMD-K5/K6 CPUs

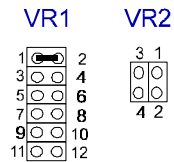
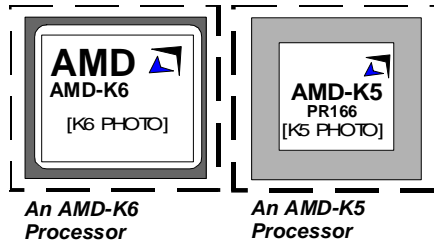
Frequency

Model Name	CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate			
						Internal	FREQ1	FREQ2	FREQ3
K6-300 *	300 MHz	66 MHz				4.5 x			
K6-266 *	266 MHz	66 MHz				4 x			
K6-233	233 MHz	66 MHz				3.5 x			
K6-200	200 MHz	66 MHz				3 x			
K6-166	166 MHz	66 MHz				2.5 x			
K5-PR200	133 MHz	66 MHz				2 x			
K5-PR166	116 MHz	66 MHz				1.75 x			
K5-PR150	105 MHz	60 MHz				1.75 x			
K5-PR133	100 MHz	66 MHz				1.5 x			
K5-PR120	90 MHz	60 MHz				1.5 x			
K5-PR100	100 MHz	66 MHz				1.5 x			
K5-PR90	90 MHz	60 MHz				1.5 x			

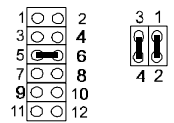
* This CPU setting has not been tested.



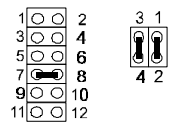
Voltage



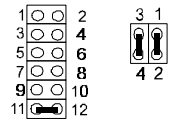
Core : 3.5V
IO : Same
AMD-K5 - B



Core : 3.2V
IO : 3.3V
AMD-K6 (233MHz)

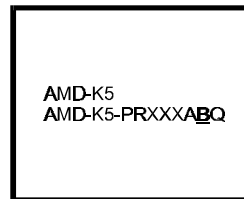


Core : 2.9V
IO : 3.3V
AMD-K6 (below 200MHz)



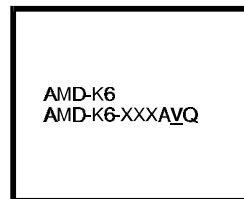
Core : 2.1V
IO : 3.3V
AMD-K6 (266/300MHz)

AMD-K5 CPU Top Side Marking

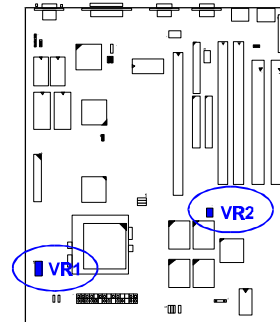


V (Identifier for Operational Voltage)

AMD-K6 CPU Top Side Marking



V (Identifier for Operational Voltage)
N 3.1-3.3V Core/3.135-3.6V I/O
L 2.755-3.045V Core/3.135-3.6V I/O



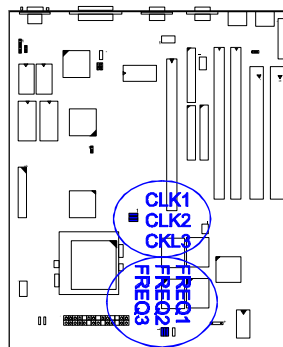
Cyrix 6x86/6x86MX / IBM 6x86/6x86MX CPUs

The Cyrix CPU supported on this mainboard that is labeled Cyrix 6x86 PR133+/PR150+/PR166+ must be Revision 2.7 and later. Look on the underside of the CPU for the serial number. The number should read G8DC6620A or larger.


Frequency

Model Name	CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate			
						Internal	FREQ1	FREQ2	FREQ3
6x86MX-PR266 *	233 MHz	66 MHz				3.5 x			
6x86MX-PR233 *	200 MHz	66 MHz				3 x			
6x86MX-PR200	180 MHz	60 MHz				3 x			
6x86MX-PR200	166 MHz	66 MHz				2.5 x			
6x86MX-PR200	165 MHz	55 MHz				3 x			
6x86MX-PR166	150 MHz	60 MHz				2.5 x			
6x86MX-PR166	138 MHz	55 MHz				2.5 x			
6x86MX-PR166	133 MHz	66 MHz				2 x			
6x86-PR166+ 6x86L-PR166+	133 MHz	66 MHz				2 x			
6x86-PR150+ 6x86L-PR150+	120 MHz	60 MHz				2 x			
6x86-PR133+ 6x86L-PR133+	110 MHz	55 MHz				2 x			


* These CPUs have not been verified as of this writing.



Voltage

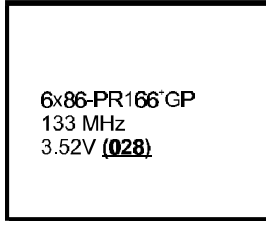


A Cyrix 6x86MX Processor

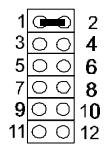


A Cyrix 6x86 Processor

**Cyrix 6x86 CPU
Top Side Marking**

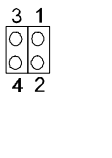


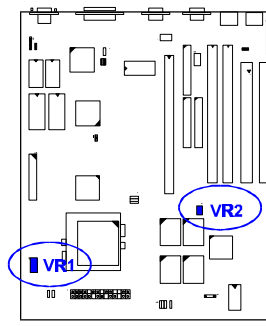
VR1



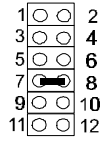
**Core : 3.5V
IO : Same
Cyrix 6x86**

VR2

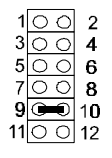




**Core : 2.9V
IO : 3.3V
Cyrix 6x86MX**



**Core : 2.8V
IO : 3.3V
Cyrix 6x86L**

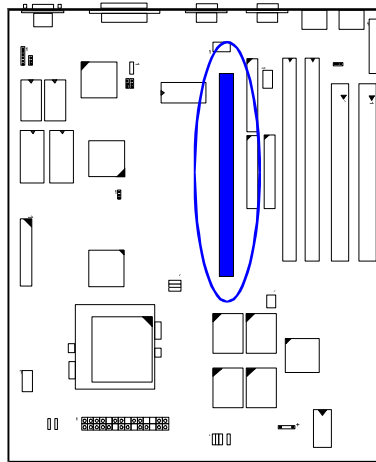


NOTE : The same specifications may be observed for IBM 6x86/6x86MX CPUs. Only Cyrix Rev 2.7 or later is supported on this mainboard. Bootup screen will show 6x86-P166+ with the Cyrix 166+ installed on this mainboard.

4). Install Expansion Cards

NOTE : Before installing an expansion card, a riser card has to be installed in the one available EISA slot (SL1). 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 slots.



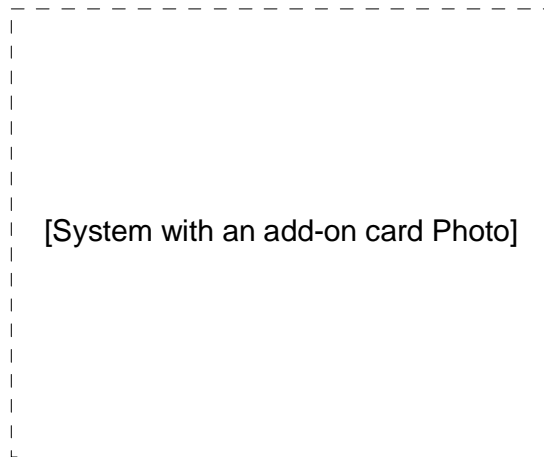
This section describes how to connect a riser card to the system's expansion slot. A riser card is a printed circuit board that, when connected to the mainboard, allows you to install additional ISA/PCI expansion cards which increases the capabilities of the system. For example, an expansion card can provide video and sound capabilities.

CAUTION: 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, do the following:

1. Remove the computer chassis cover and locate the empty EISA expansion slot (SL1).
2. Holding the edge of the riser card, carefully align the edge connector with the expansion slot.

3. Push the riser card firmly into the slot. Push down on one end of the riser card, then the other. Use this “rocking” motion until the riser card is firmly seated inside the slot.
4. Read the expansion card documentation on any hardware and software settings that may be required to setup the specific card.
5. Set any necessary jumpers on the expansion card.
6. Select an empty expansion slot on the riser card.
7. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.
8. Push the card firmly into the slot. Push in on one end of the expansion card, then the other. Use this “rocking” motion until the add-on card is firmly seated inside the slot. Make sure that the card has been placed evenly and completely into the expansion slot.
9. Replace the computer system’s cover.
10. Setup the BIOS if necessary.
11. Install the necessary software drivers for the expansion card. The photo below shows an add-on card that was installed in a system.



Assigning IRQs for Expansion Cards

Some expansion cards need to use an IRQ to operate. Generally an IRQ must be exclusively assigned to one use. In a standard design there are 16 IRQs available but most of them are already in use by parts of the system which leaves 6 free for expansion cards.

Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as “Legacy” ISA cards, requires that you configure the card’s jumpers manually and then install it in any available slot on the ISA bus. You may use Microsoft’s Diagnostic (MSD.EXE) utility included in the Windows directory to see a map of the used and free IRQs. For Windows 95 users, the “Control Panel” icon in “My Computer” contains a “System” icon which gives you a “Device Manager” tab. Double clicking on a specific device gives you a “Resources” tab which shows the Interrupt number and address. Make sure that no two devices use the same IRQs or the computer will experience problems when two devices are in use at the same time.

To simplify this process the mainboard has complied with the Plug and Play (PnP) specification which was developed to allow automatic system configuration whenever a PnP-compliant card is added to the system. For PnP cards, IRQs are assigned automatically from those available. For older Legacy cards that does not work with the BIOS, contact your vendor for an ISA Configuration Utility.

Assigning DMA Channels for ISA Cards

Some ISA cards, both Legacy and PnP may also need to use a DMA (Direct Memory Access) channel. DMA assignments for the mainboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PnP configuration section of the BIOS Setup utility.

5). Connector Cables and Power Supply

Connectors

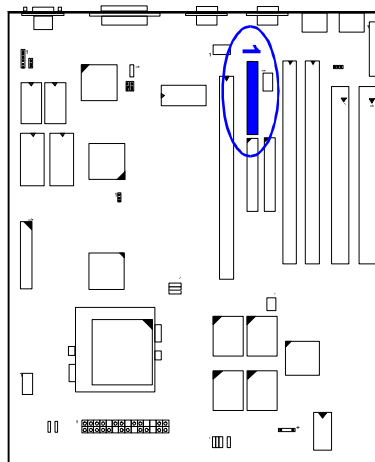
NOTE : Some pins are used for connectors or power sources. These are clearly separated from jumpers. Placing jumper caps over these will cause damage to the mainboard.

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. IDE ribbon cable must be less than 18in. (46cm), with the second drive connector no more than 6in. (15cm) from the first connector.

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.

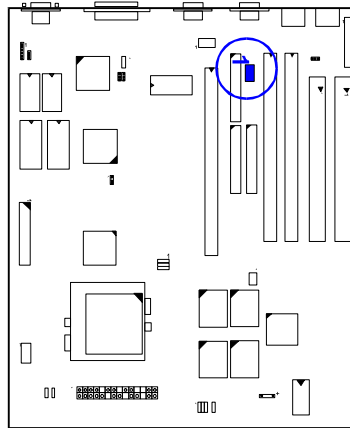
Floppy Diskette Drive Connector (34-pin block): FLOPPY

This 34-pin block connector connects to your floppy disk drive using the cable that is provided with this mainboard. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged.



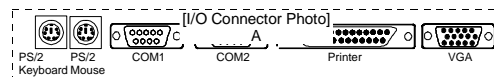
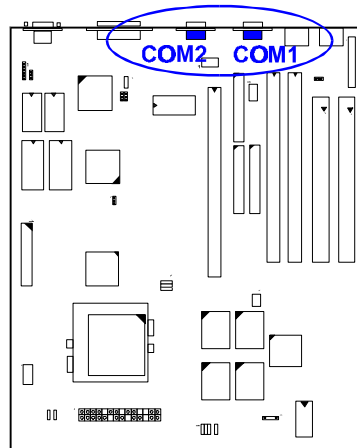
Infrared Connector: IR

This 10-pin male connector is used for connecting to the infrared (SIR/FIR) port and allows the data transaction with another system which also supports the SIR/FIR feature.



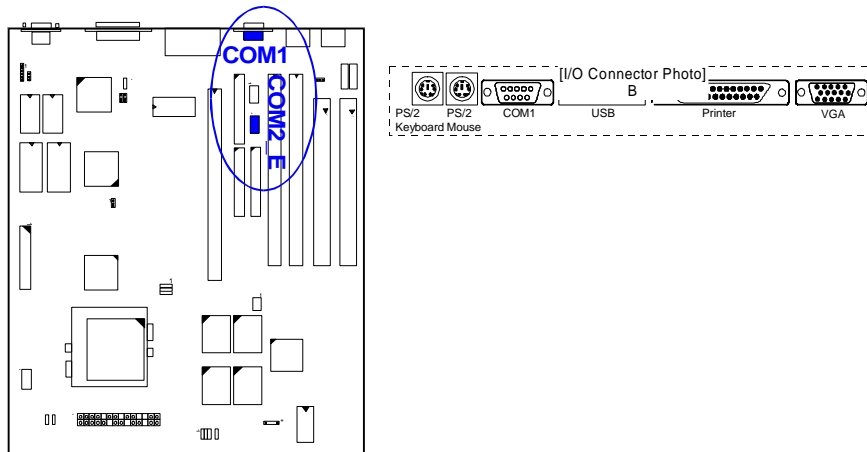
***Serial Port Connectors (Two 9-pin Male): COM1, COM2
(for mainboard with onboard COM1 and COM2 ports)***

These two connectors allow you to connect with devices that take 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. Because COM2 and IR utilizes the same IRQ, COM2 will not work if an IR device is connected to the IR connector.



***Serial Port (9-pin Male) and Serial
Connector (10-pin Male): COM1, COM2_E
(for mainboard with onboard COM1 port and COM2_E connector)***

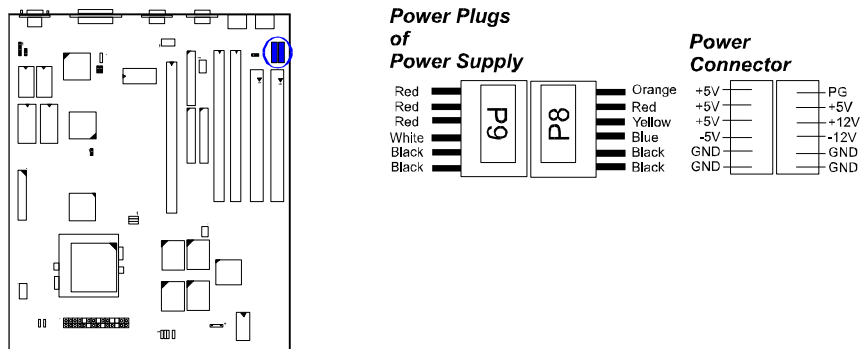
This mainboard comes with an optional COM2 connector that is connected by a cable to the onboard COM2_E pinhead. The bracket can be installed in one of the I/O expansion slots on the rear panel of the system.



Standard Power Connector:

POWER

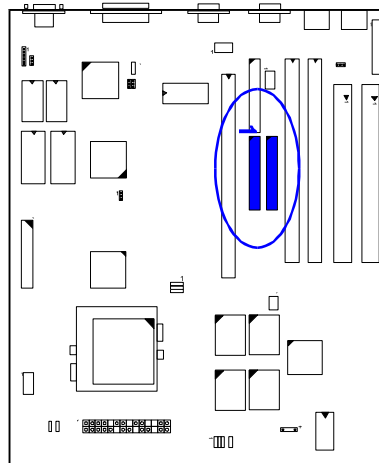
This 6-pin each block connector is used for connecting to the standard 5V power supply. In the picture below, notice that, in most cases, there are two marks “P8” and “P9” on the surface of the connector. You have to insert the “P8” plug into the “P8” section of the connector, and so forth for “P9”. Two black wires must be facing each other.



IDE HDD Device Connector (Two 40-pin Block): PRIMARY, SECONDARY

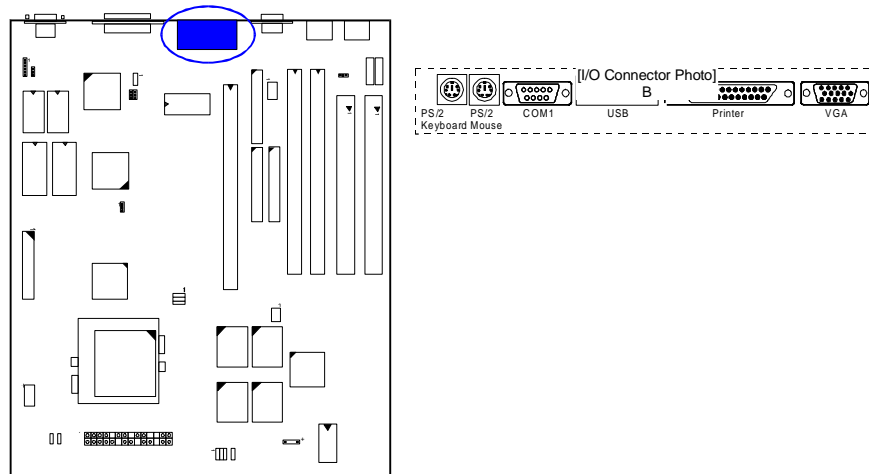
These two 40-pin block connector are used for your IDE hard disks. If you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. The BIOS auto detection sets it to be a “Primary Master” disk. If you want to install another IDE hard disk or CD-ROM drive, please use the SECONDARY connector. If two hard disks are connected to PRIMARY connector using the same cable, one of them is the master drive, the other one is the slave drive. You may need to set jumpers for the slave drive; please refer to the hard disk drive manual for details. Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged.

You may configure two hard disks to be both Masters using one ribbon cable to the primary IDE connector and another ribbon cable on the secondary IDE connector. You may install one operating system on an IDE drive and another on a SCSI drive and select the boot disk through the BIOS Setup.



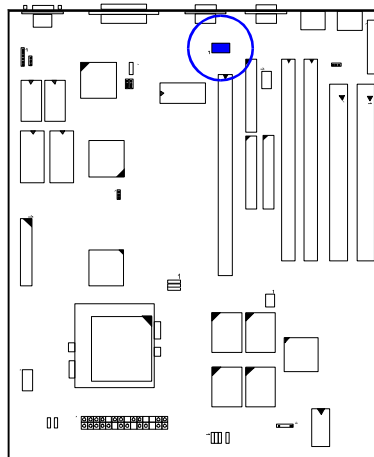
Universal Serial Bus Port: USB (with onboard USB port)

The onboard USB port allows the system to link with USB peripheral devices.



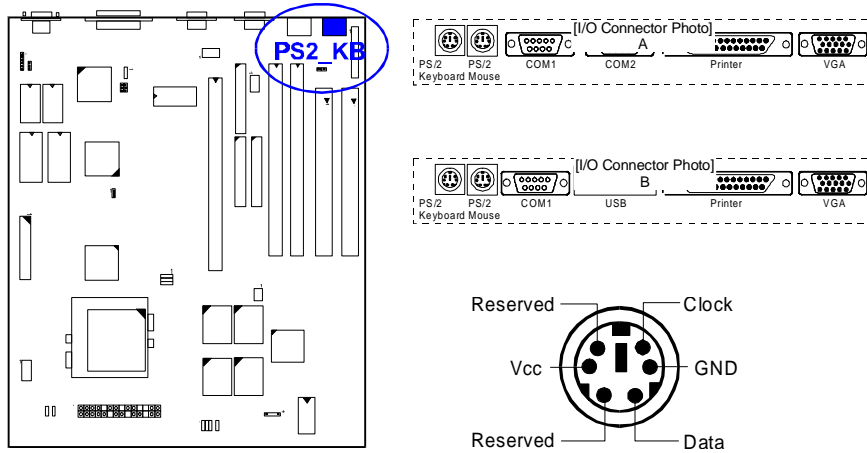
Universal Serial Bus Connector: USB (with onboard COM1 and COM2 port)

This onboard USB connector allows the system to link with USB peripheral devices, such as a USB hub.



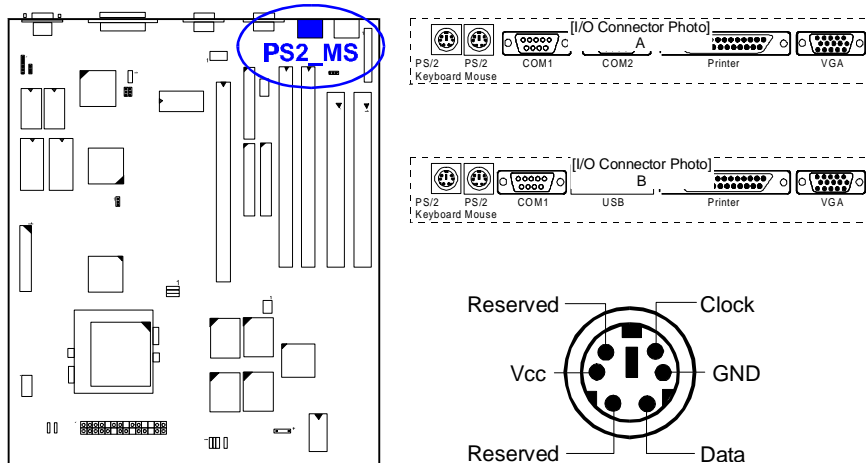
PS/2 Keyboard Connector (6-pin Female): PS2_KB

This connector is used to connect a standard keyboard using a PS/2 plug (mini DIN) to the system. 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.



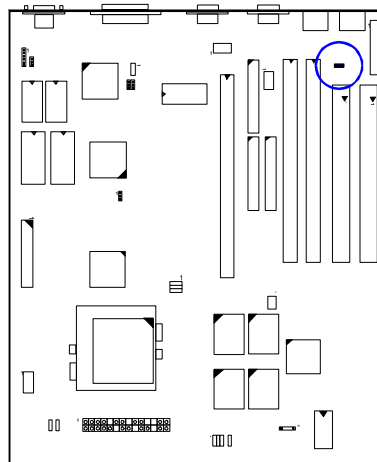
PS/2 Mouse Connector (6-pin Female): PS2_MS

This connector is used to connect the PS/2 mouse to the system. The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards can use IRQ12.



Remote Power Supply Connector: RPW_CON1

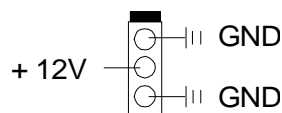
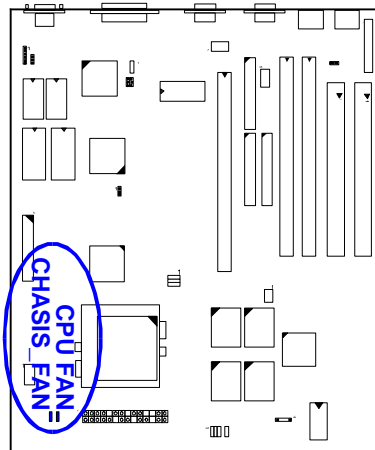
This 3-pin male connector allows you to enable (or disable) the system power if the RPW_SW is on (or off) — located at the F_PNL connector.



CPU Fan Connector: CHASIS_FAN, CPU_FAN

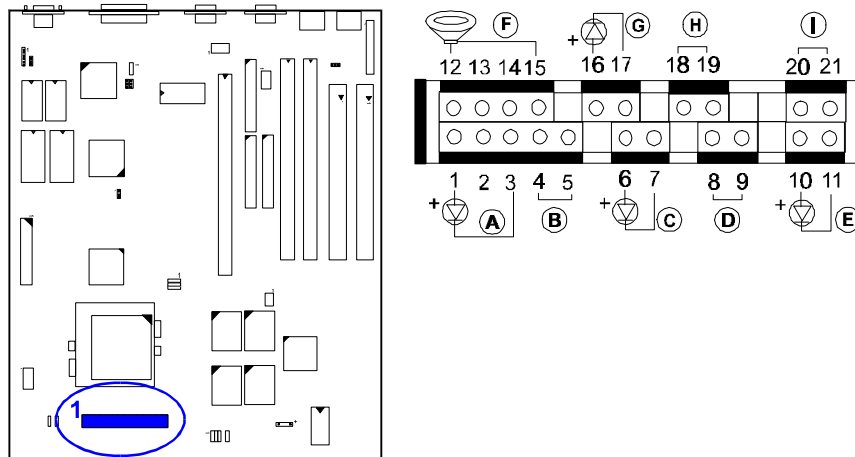
These connectors support cooling fans of 500mAMP (6WATT) or less. Orientate the fans so that the heat sink fins allow airflow to go accross the onboard heat sink(s) instead of the expansion slots. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive, while the black wire should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector. Either one is connected to the CPU fan. CHASIS_FAN causes the CPU fan to be activated only when a set temperature is reached. CPU_FAN causes the CPU fan to be activated upon booting the system – for as long as the system is on, irrespective of CPU temperature.

NOTE : The CPU and/or mainboard will overheat if there is no airflow across the CPU and onboard heatsinks. Damage may occur to the mainboard and/or CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.



Front Panel Block Connector: F_PNL

This block connector includes: PW_LED, KB_LOCK, TB_LED, SP_SW, SPK, SP_LED, IDE_LED, RPW_SW, and RST connectors.

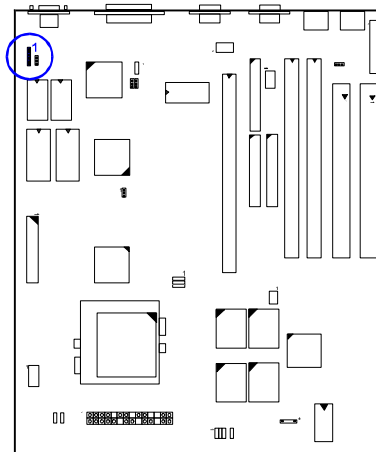


ITEM	CONNECTOR	PIN TYPE	FEATURE
A	PW_LED	2-pin male	The system power LED lights when the system is powered on.
B	KB_LOCK	2-pin male	allows the keyboard to access the system
C	TB_LED	2-pin male	indicates if the system speed is in normal or turbo
D	SP_SW	2-pin male	Suspend mode switch allows user to manually place the system into a suspend mode or "Green" mode where system activity will be instantly decreased to save electricity and expand the life of certain components when the system is not in use. This connector connects to the case-mounted suspend switch. Wake-up can be controlled by settings in the BIOS but the keyboard will always allow wake-up (the SP_SW connector cannot wake-up the system). If you want to use this connector, the corresponding function in the Power Management Setup of the BIOS software section should be on the default setting of Enable.
E	SP_LED	2-pin male	indicates the system is in Suspend mode when LED is lit
F	SPK	4-pin male	This connector connects to the case-mounted speaker.
G	IDE_LED	2-pin male	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 and Secondary IDE connectors) is being accessed when LED is lit
H	RPW_SW	2-pin male	remote power switch
I	RST	2-pin male	This connector connects to the case-mounted reset switch for rebooting the system without having to turn off power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

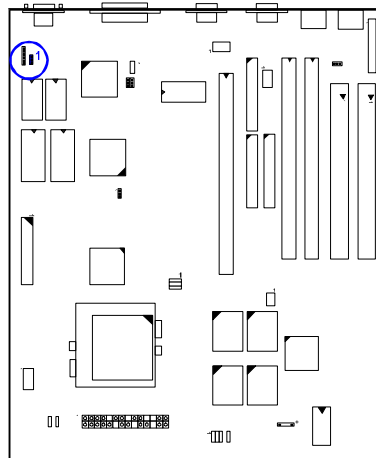
LAN Sytem Wakeup Connector: LAN_WAKE

The 6-pin male connector allows you to wakeup the system from Suspend mode via a remote workstation or server. This is only possible if both systems are linked in a Local Area Network.



System Chassis Open Alarm Connector: CHASIS

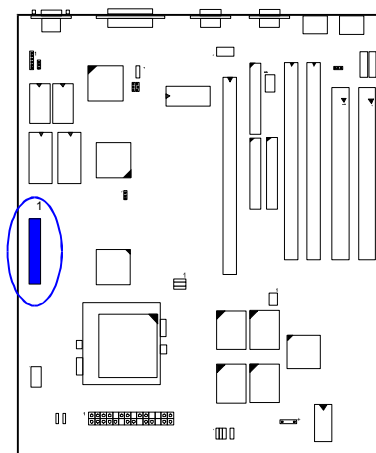
The 3-pin male connector allows you to enable (or disable) system alarm activation if and when the system's outer casing is being removed. A high level signal to the connector will indicate to the system that the chassis has been opened.



VGA Feature FEATURE

Connector:

The onboard S3® Trio64 V2/DX™ chip provides an interface to a pass-through bidirectional feature connector. The FEATURE connector is a 26-pin male connector for utilizing the VGA feature of the mainboard.

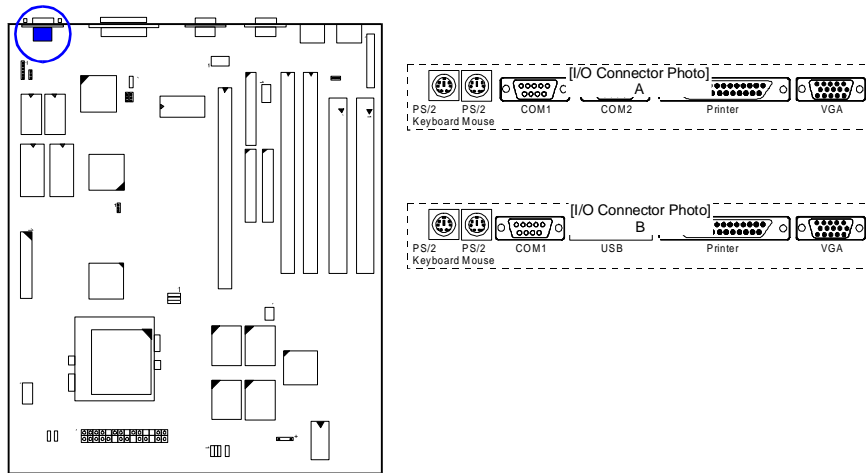


VGA

Connector:

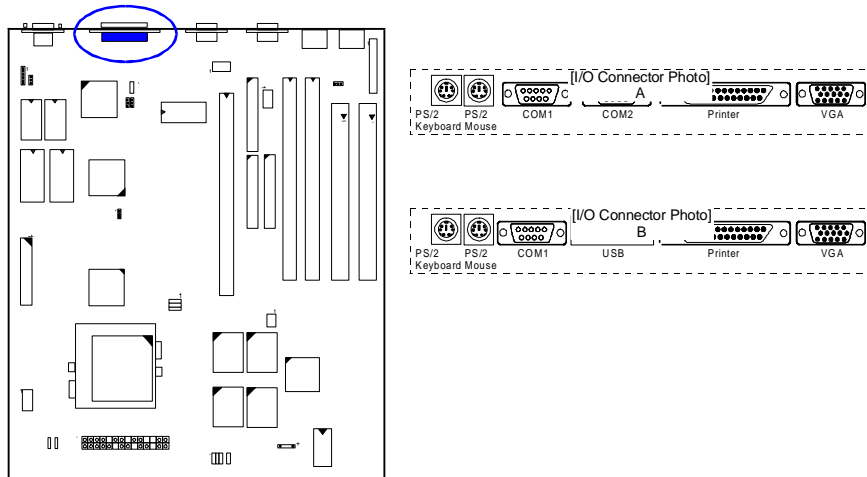
VGA

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



Parallel Printer Connector (25-pin Female): PRINTER

The onboard 26-pin female connector allows the system to link with printer devices via a printer cable. Serial printers must be connected to the serial port.



Power Connection Procedures

1. After all jumpers and connections are made, close the system case cover.
2. Make sure that all switches are in the off position.
3. Connect the power supply cord into the power supply located at the back of your system case as instructed by the system user's manual.
4. Connect the power cord into a power outlet that is equipped by a surge protector.
5. You may then turn on your devices in the following order:
 - a. The monitor
 - b. External SCSI devices (starting with the last device on the chain)
 - c. The system power
6. The power LED on the front panel will light. The monitor LED may light after the system's if it complies with "Green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck the jumper settings and connections or call the retailer for assistance.
7. During power-on, hold down the <Delete> key to enter BIOS Setup. Follow the next chapter for instructions.

Powering Off the Computer

You must first exit or shut down the operating system before switching off the power switch. For Windows 95 users, select shut down the computer from the "Start" button and the system will give three quick beeps after about 30 seconds and power off after Windows shut down.