PTGD1-LA

(Grouper-GL8E)

User Guide

Motherboard

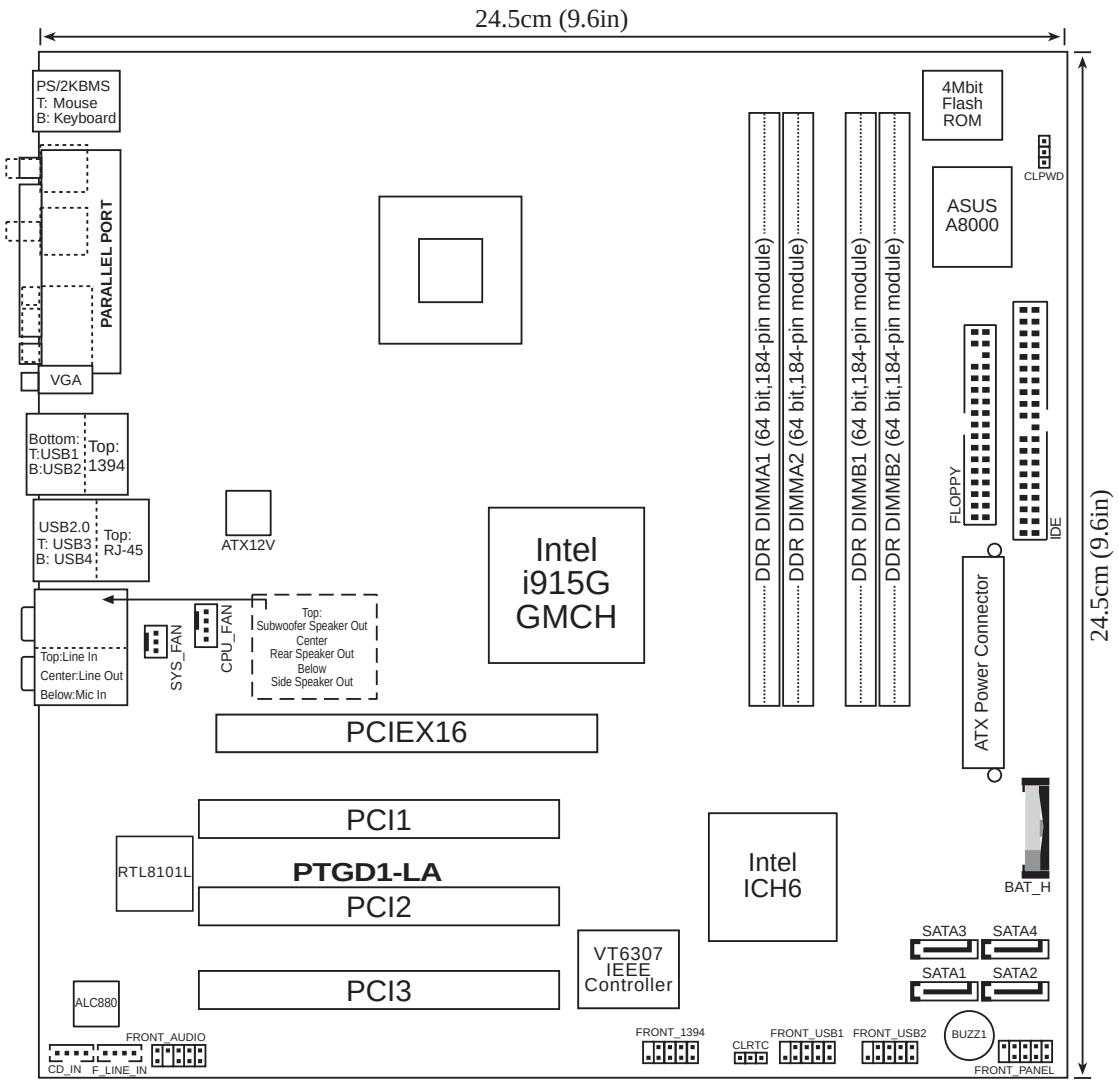
Contents

PTGD1-LA specifications summary

CPU	LGA775 socket for the Intel® Pentium® 4 processor in the 775-land package
Chipset	Intel® i915G graphics memory controller hub (GMCH) Intel® ICH6
Front Side Bus (FSB)	800MHz
Memory	4 x 184-pin DDR DIMM sockets for up to 4GB non-ECC DDR SDRAM
Expansion slots	1 x PCI Express x16 graphics connector (PEG slot) 3 x PCI slots
Onboard I/O	1 x Parallel port (ECP, EPP) 1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x VGA port 1 x RJ-45 Fast Ethernet LAN port 1 x IEEE 1394 port 8 x USB 2.0 ports support hot-plug function 6 x audio ports support 8-channel audio configuration 1 x Floppy connector 1 x IDE connector 4 x SATA connectors
Storage	Southbridge supports - 1 x Ultra DMA 66/100 - 4 x Serial ATA (SATA) ports with hot-swap function
Audio	Southbridge supports 8-channel audio configuration with Intel® High Definition Audio CODEC Realtek® Audio CODEC ALC880
LAN	Realtek® RTL8101L 10/100Mbps Fast Ethernet LAN controller
IEEE 1394	VIA VT6307 supports two IEEE 1394 ports
PC health monitoring	ASUS A8000 for CPU, system, and chassis fan control, motherboard and CPU temperature
BIOS features	4Mb FWH EEPROM HP BIOS with enhanced ACPI, DMI, Green, and PnP Features Plus
Form factor	Micro-ATX form factor: 9.6 in x 9.6 in

** Specifications are subject to change without notice*

1. Motherboard layout



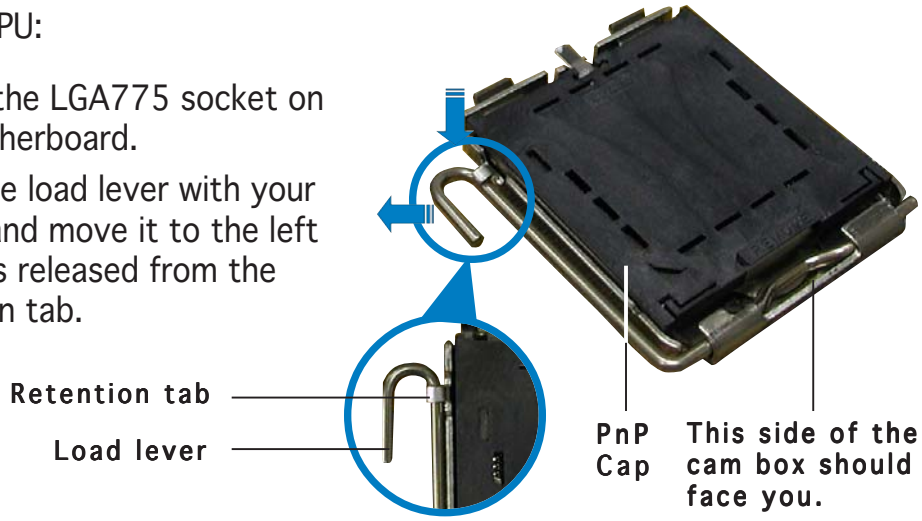
2. Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Pentium® 4 processor in the 775-land package with 1MB L2 cache. The processor, built on the 90-nanometer manufacturing technology, supports 800MHz front side bus (FSB), Intel® Hyperthreading Technology, and core speeds of up to 3.4GHz.

Before installing the CPU, make sure that the cam box is facing towards you and the load lever is on your left.

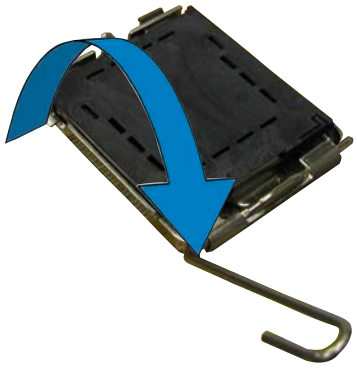
To install a CPU:

1. Locate the LGA775 socket on the motherboard.
2. Press the load lever with your thumb and move it to the left until it is released from the retention tab.

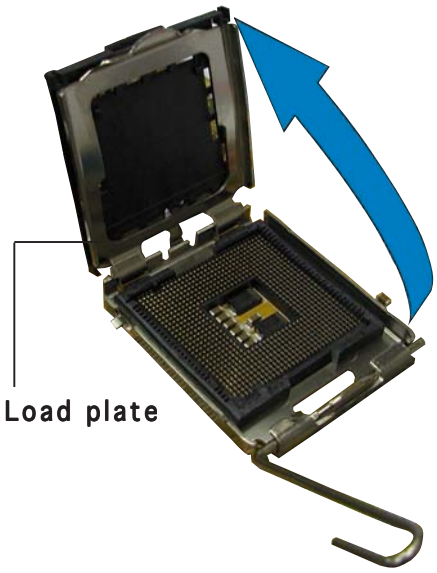


Remove the cap only after the CPU is installed to prevent bending and damaging the socket connectors.

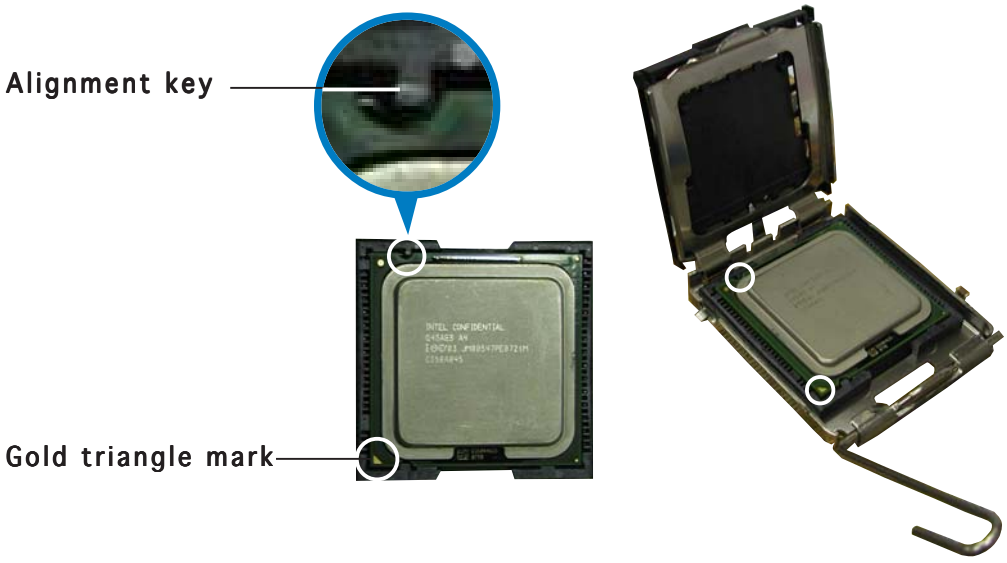
3. Lift the load lever in the direction of the arrow.



4. Lift the load plate from the corner with your thumb.



5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket. The socket alignment key should fit into the CPU notch.

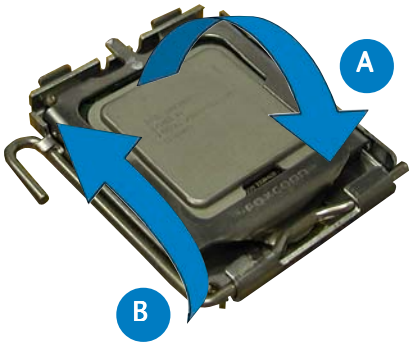


The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

6. Use both thumbs to carefully push out the PnP cap from the load plate window.

You can also remove the PnP cap by pushing out its top corner.

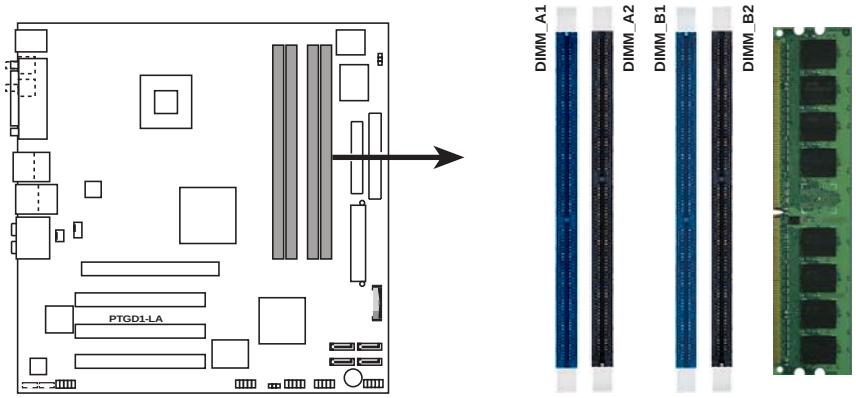
7. Close the load plate, then push the load lever until it snaps into the retention tab.



3. System memory

The motherboard comes with four Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets. These sockets support up to 4GB system memory using 184-pin unbuffered non-ECC 2.6V DDR SDRAM.

The following figure illustrates the location of the DDR DIMM sockets.



PTGD1-LA 184-Pin DDR DIMM Sockets

Memory configurations

You can install 128MB, 256MB, 512MB, and 1GB DDR SDRAM DIMMs into the DIMM sockets using the memory configurations in this section.

Important notes on memory configurations

- Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations in Table 1.
- Install only **identical** (the same type and size) DDR DIMM pairs using the recommended configurations.
- Make sure that the memory frequency matches the CPU FSB (Front Side Bus). Refer to Table 2 on the next page.
- This motherboard does not support double-sided 16-bit DDR DIMMs.
- Do not create a three-DIMM configuration in dual-channel mode. The third DIMM is ignored in the dual-channel operation.

Table 1 Recommended memory configurations

		Sockets			
Mode		DIMM1	DIMM2	DIMM3	DIMM4
Single-channel	(1)	Installed	—	—	—
	(2)	—	Installed	—	—
	(3)	—	—	Installed	—
	(4)	—	—	—	Installed
Dual-channel*	(1)	Installed	—	Installed	—
	(2)	—	Installed	—	Installed
	(3)	Installed	Installed	Installed	Installed

** Use only identical DDR DIMM pairs.*

Table 2 Memory frequency/CPU FSB synchronization

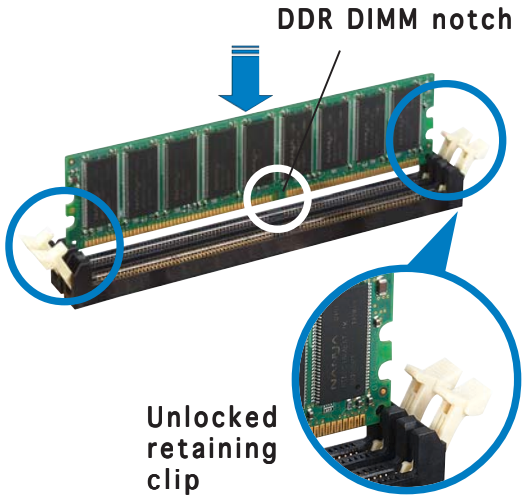
CPU FSB	DDR DIMM Type	Memory Frequency
800 MHz	PC3200/PC2700/PC2100	400/333/266 MHz
533 MHz	PC2700/PC2100	333/266 MHz

Installing a DIMM

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

Follow these steps to install a DIMM.

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



4. Expansion slots

The motherboard has one PCI Express and three PCI slots.

To install and configure an expansion card:

1. Install an expansion card following the instructions that came with the chassis.
2. Turn on the system and change the necessary BIOS settings, if any.
3. Assign an IRQ to the card. Refer to the tables below.
4. Install the drivers and/or software applications for the expansion card according to the card documentation.

Standard interrupt assignments

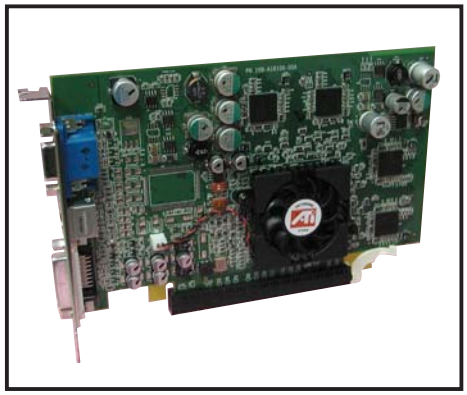
IRQ	Standard Function
0	System Timer
1	Standard 101/102-key or Microsoft® Natural PS/2 Keyboard
2	Programmable Interrupt Controller
3	AHPC IRQ Holder for PCI IRQ Steering
3	Intel® 82801FB/FBM PCI Express Root Port-2660
3	Intel® 82801FB/FBM USB Universal Host Controller-265B
3	Intel® i915G Graphics Controller 0
5	AHPC IRQ Holder for PCI IRQ Steering
5	AHPC IRQ Holder for PCI IRQ Steering
5	Realtek® TRL8139/810x Family Fast Ethernet NIC
5	Intel® 82801FB/FBM PCI Express Root Port-2662
5	Intel® 82801FB/FBM USB Universal Host Controller-2658
5	Intel® 82801FB/FBM USB2 Enhanced Host Controller-265C
6	Standard Floppy Disk Controller
7	ECP Printer Port (LPT1)
8	System CMOS/Real Time Clock
9	SCI IRQ used by ACPI Bus
10	AHPC IRQ Holder for PCI IRQ Steering
10	AHPC IRQ Holder for PCI IRQ Steering
10	VIA OHCI Compliant IEEE 1394 Host Controller
10	Intel® 82801FB/FBM PCI Express Root Port-2666
10	Intel® 82801FB/FBM Ultra ATA Storage Controllers-2659
11	AHPC IRQ Holder for PCI IRQ Steering
11	Intel® 82801FB/FBM PCI Express Root Port-2664
11	Intel® 82801FB/FBM USB Universal Host Controller-265A
12	Microsoft® Port Mouse
13	Numeric Data Processor
14	Intel® 82801FB/FBM Ultra ATA Storage Controllers-266F
14	Intel® 82801FB Ultra ATA Storage Controllers-2652

IRQ assignments for this motherboard

	A	B	C	D	E	F
PCI slot 1	—	—	—	shared	—	—
PCI slot 2	shared	—	—	—	—	—
PCI slot 3	—	used	—	—	—	—
PCI slot 4	—	—	—	shared	—	—
PCI slot 5	shared	—	—	—	—	—
Onboard LAN	—	—	—	—	—	used
Onboard 1394 controller	—	—	—	—	used	—

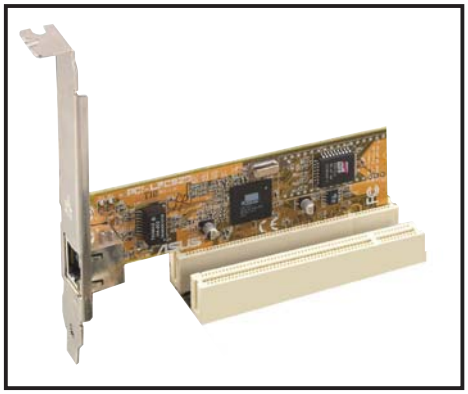
PCI Express slot

This motherboard has one PCI Express slot, which supports a 164-pin x16 interface graphics card.



PCI slots

There are three 32-bit PCI slots on this motherboard. The slots support PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications.



5. Jumpers

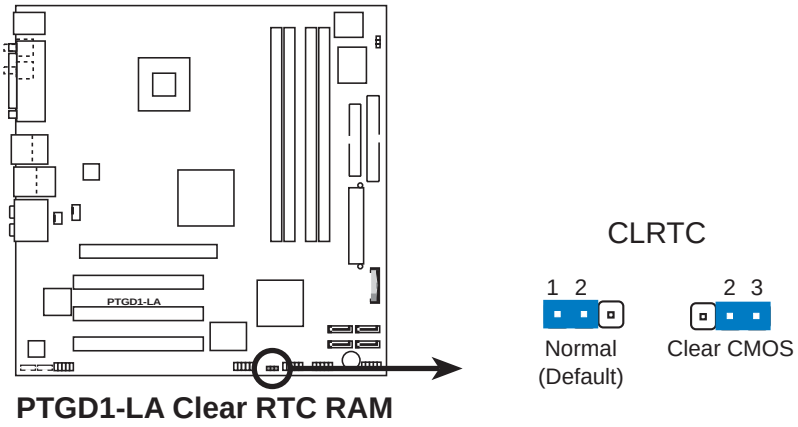
Clear RTC RAM (3-pin CLRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 2-3 (Normal) to pins 1-2 (Clear CMOS). Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 2-3.
3. Plug the power cord and turn ON the computer.
4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

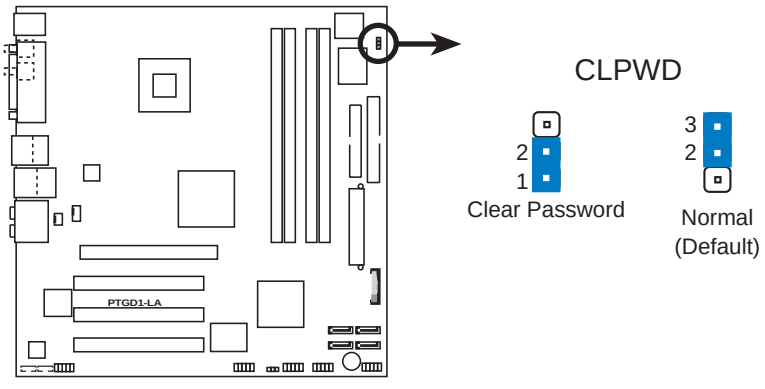
Except when clearing the RTC RAM, never remove the cap from the default position. Removing the cap will cause system boot failure!



PTGD1-LA Clear RTC RAM

Clear password (3-pin CLPWD)

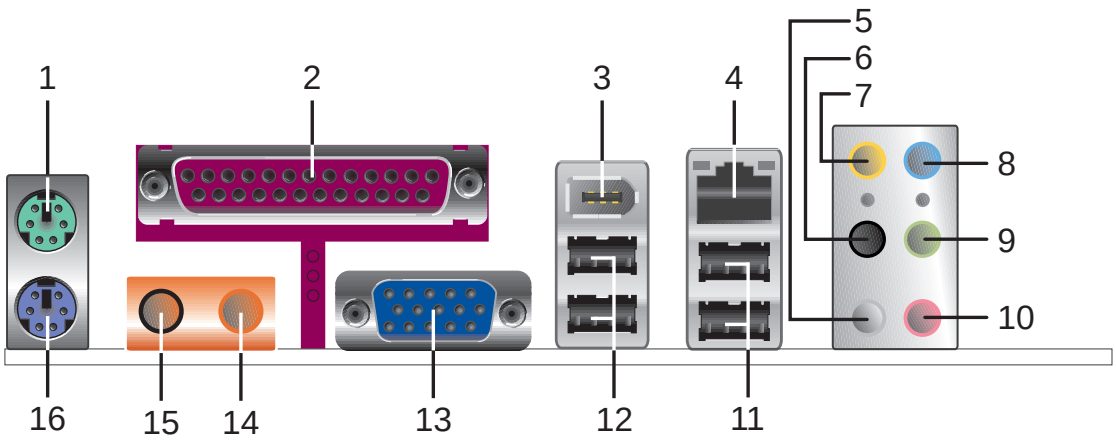
This jumper allows you to clear the password if you forgot your password.



PTGD1-LA Clear Password Setting

6. Connectors

6.1 Rear panel connectors



1. **PS/2 mouse port.** This green 6-pin port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **IEEE 1394 port.** This 6-pin IEEE 1394 port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
4. **RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub.
5. **Side Speaker Out port.** This Side Speaker out (gray) port connects to the side speakers in an 8-channel audio configuration.
6. **Rear Speaker Out port.** This Rear Speaker (black) port connects to the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.
7. **Center/Subwoofer port.** This Center/Subwoofer (yellow orange) port connects to the center/subwoofer speakers.
8. **Line In port.** This Line In (light blue) port connects a tape player or other audio sources.
9. **Line Out port.** This Line Out (lime) port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel mode, the function of this port becomes Front Speaker Out.
10. **Microphone port.** This Mic (pink) port connects a microphone.

Audio 2, 4, 6, or 8-channel configuration

	Headset/ 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Yellow Orange	-	-	Center/Subwoofer	Center/Subwoofer
Black	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Gray	-	-	-	Side Speaker Out

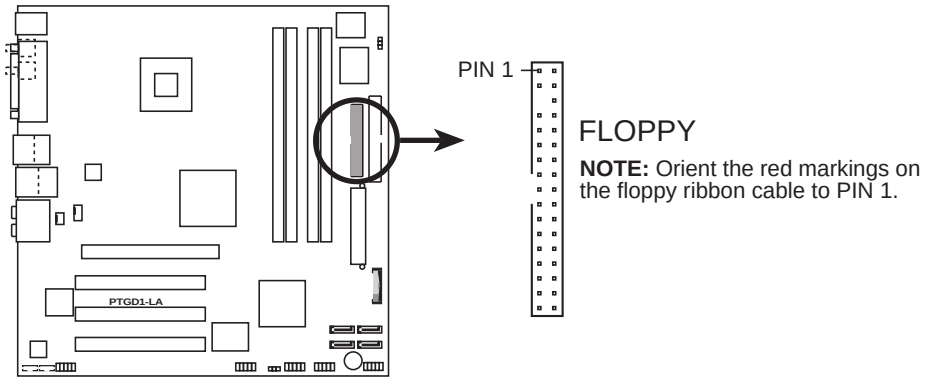
11. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
12. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
13. **Video Graphics Adapter port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.
14. **S/PDIF Out port.** This port is the digital output interface for external audio devices. It supports S/PDIF devices that provide 6- or 8-channel surround sound and 3D audio.
15. **S/PDIF In port.** This port is the digital input interface for external audio devices. It supports S/PDIF devices that provide 6- or 8-channel surround sound and 3D audio.
16. **PS/2 keyboard port.** This purple connector is for a PS/2 keyboard.

6.2 Internal connectors

This section describes and illustrates the internal connectors on the motherboard.

1. Floppy disk drive connector (34-1 pin FLOPPY)

This connector supports the provided floppy drive ribbon cable. After connecting one end to the motherboard, connect the other end to the floppy drive. (Pin 5 is removed to prevent incorrect insertion when using ribbon cables with pin 5 plug).

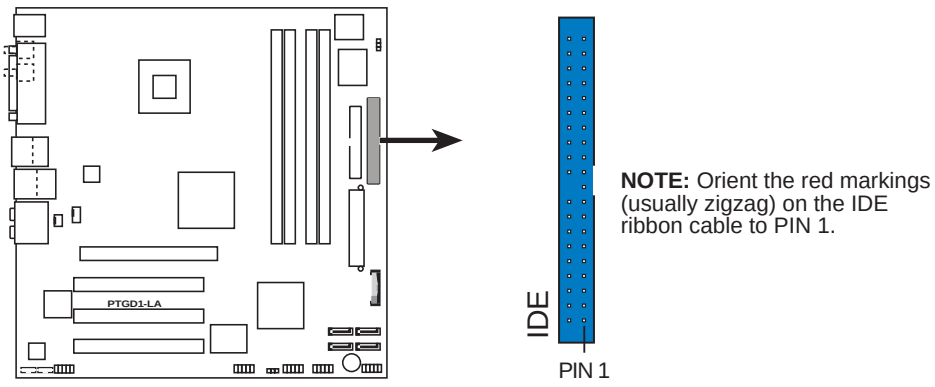


PTGD1-LA Floppy Disk Drive Connector

2. IDE connector (40-1 pin IDE)

This connector supports the provided UltraDMA100/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the IDE connector, then connect the gray connector to the UltraDMA100/66 slave device (hard disk drive) and the black connector to the UltraDMA100/66 master device.

- Pin 20 on the IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.
- The hole near the blue connector on the UltraDMA100/66 cable is intentional.



PTGD1-LA IDE Connector

3. ATX power connectors (24-pin ATXPWR, 4-pin ATX12V)

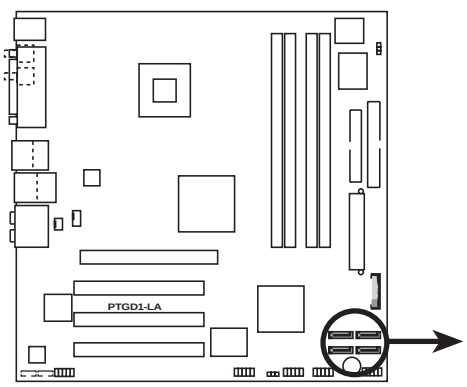
These connectors are for an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

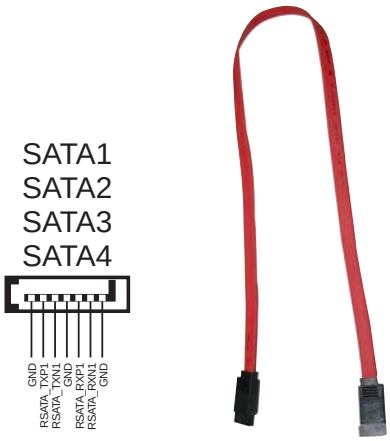
In addition to the 24-pin ATXPWR connector, this motherboard requires that you connect the 4-pin ATX +12V power plug to provide sufficient power to the CPU.

Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.

4. Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4)

These connectors support the thin Serial ATA cables for Serial ATA hard disks. The current Serial ATA interface allows up to 150 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra ATA133).

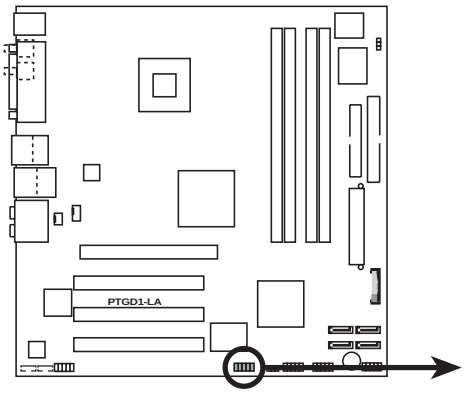




PTGD1-LA SATA Connectors

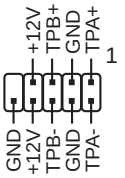
5. IEEE 1394 connector (10-1 pin FRONT_1394)

This connector is for a 10-to-6-pin 1394 serial connector cable that connects to a 1394 module. Attach the 10-1 pin cable plug to this connector, and the 6-pin cable plug to the 1394 module. You can also connect a 1394-compliant internal hard disk to this connector.



PTGD1-LA FRONT_1394 Connector

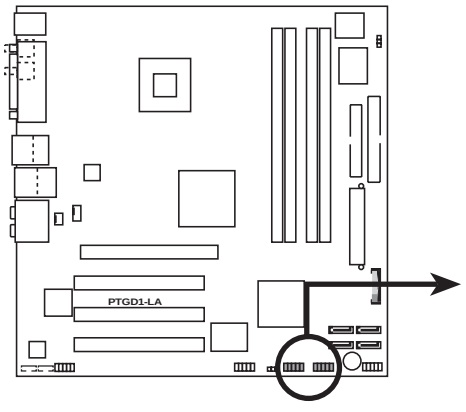
FRONT_1394



6. USB connectors (10-1 pin FRONT_USB1, FRONT_USB2)

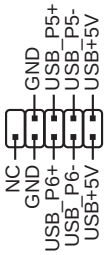
If the USB ports on the rear panel are inadequate, two USB connectors are available for additional USB ports. The USB headers comply with USB 2.0 specification that supports up to 480 Mbps connection speed. This speed advantage over the conventional 12 Mbps on USB 1.1 allows faster Internet connection, interactive gaming, and simultaneous running of high-speed peripherals. You can connect a USB module to any of the USB connectors.

The USB module is purchased separately.

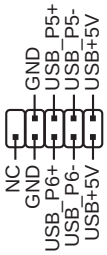


PTGD1-LA USB 2.0 Connectors

FRONT_USB1

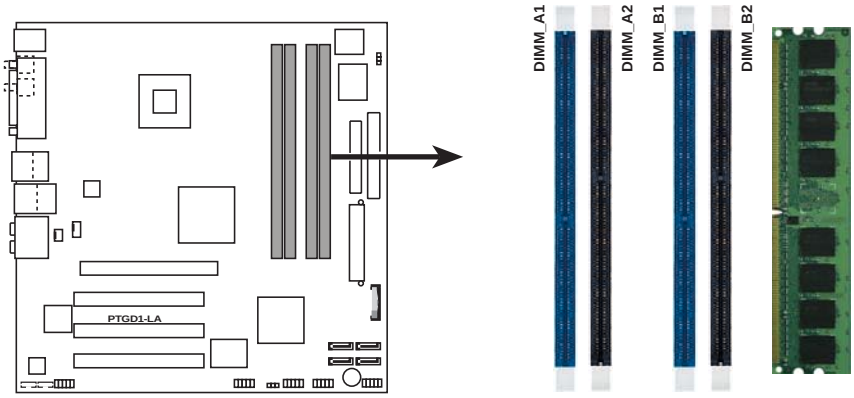


FRONT_USB2



7. DDR DIMM connectors (184-pin DIMMA1, DIMMA2, DIMMB1, DIMMB2)

These four 184-pin DIMM sockets support up to 4GB system memory using unbuffered ECC PC3200/2700/2100 DDR DIMMs.

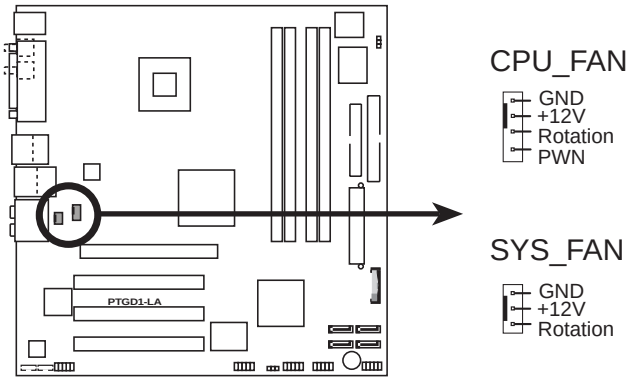


PTGD1-LA 184-Pin DDR DIMM Sockets

8. Fan connectors (3-pin SYS_FAN, 4-pin CPU_FAN)

The fan connectors support cooling fans of 350mA~740mA (8.88W max.) or a total of 1A~2.22A (26.64W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

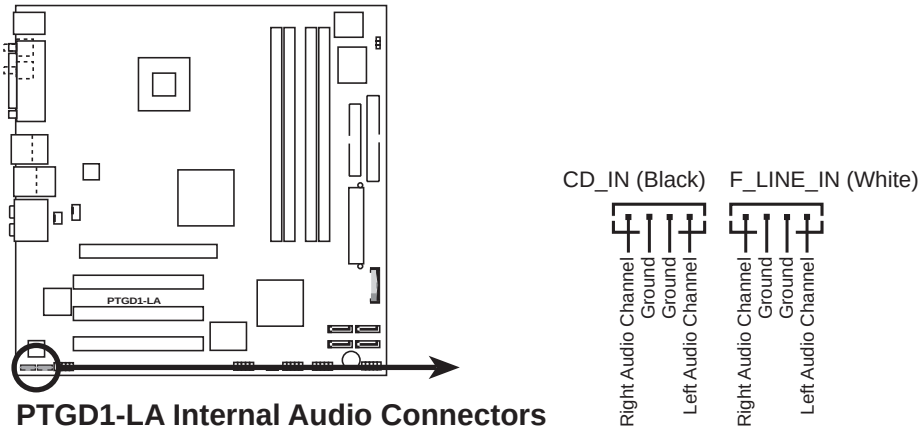
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow within the system can damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!



PTGD1-LA Fan Connectors

9. Internal audio connectors (4-pin CD-IN, F_LINE_IN)

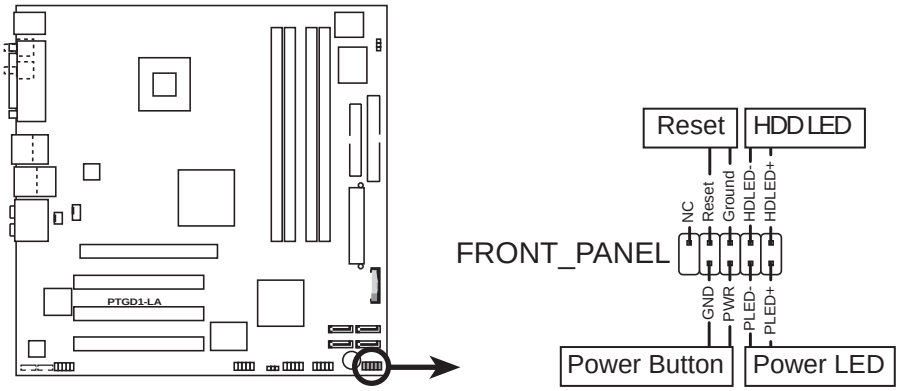
These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



PTGD1-LA Internal Audio Connectors

10. Front panel audio connector (10-1 FRONT_PANEL)

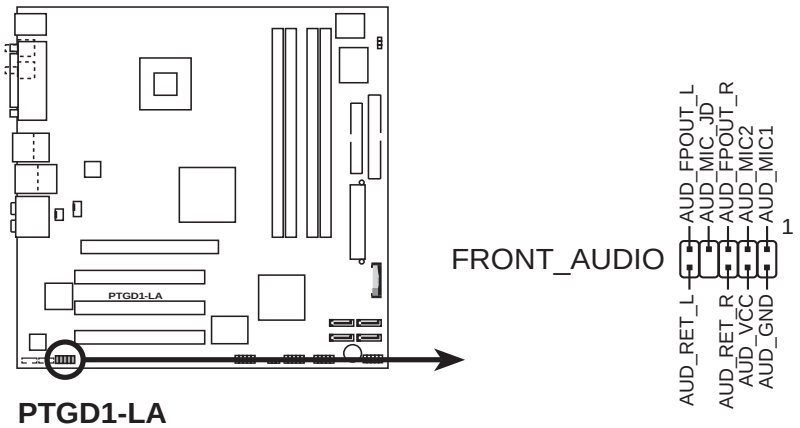
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.



PTGD1-LA
Front Panel Audio Connector

11. Front headphone connector (10-1 pin FRONT_AUDIO)

This connector is for a chassis-mounted front panel headphone port.



PTGD1-LA
Front HeadPhone & MIC-IN Header Connector