
WMT-LX

Intel® 850 ATX Motherboard

Manual

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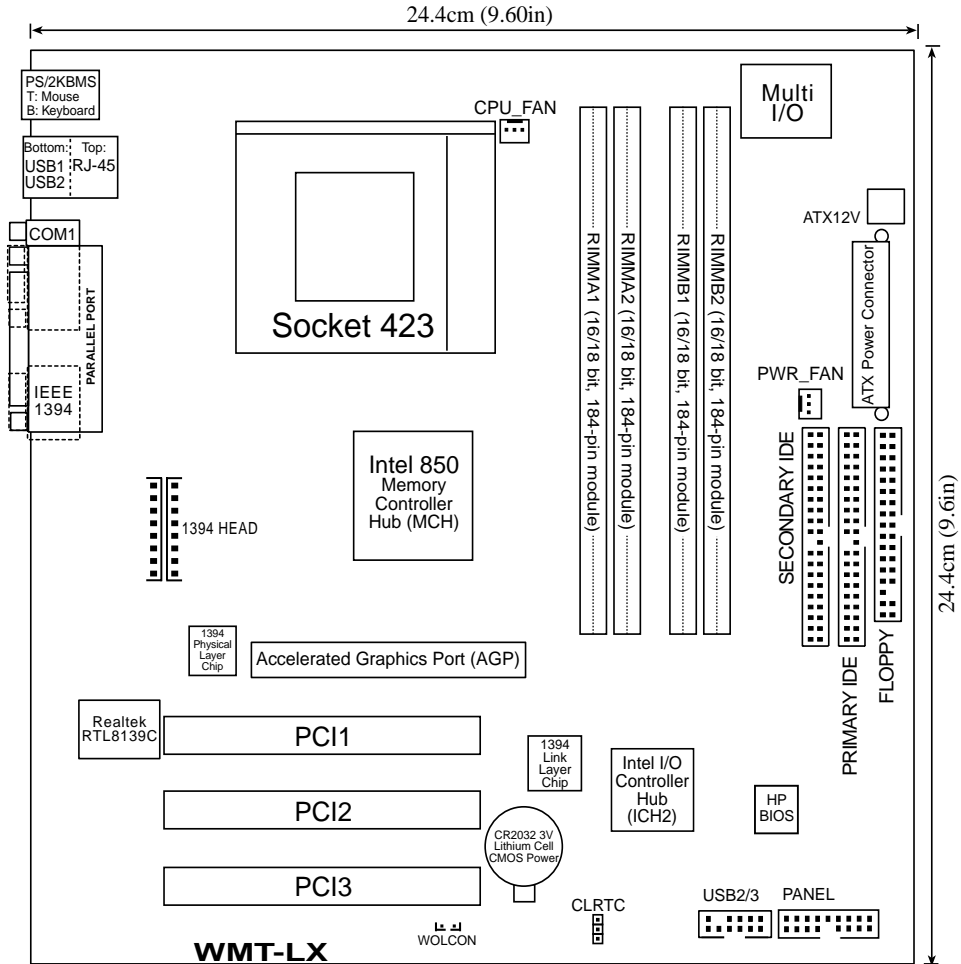
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Product Name: **HP WMT-LX**

Release Date: **2001**

1. FEATURES

1.1 WMT-LX Motherboard Layout



Grayed components are available only on certain models at the time of purchase.

1. FEATURES

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2. HARDWARE SETUP

2.1 Getting Started

IMPORTANT: Due to Pentium 4 CPU's power consumption requirement, an ATX12V power supply is recommended for this motherboard. For typical system configurations, an ATX12V power supply that can supply at least 230W and at least 8.5A on the +12V lead is required. For heavily-loaded configurations, an ATX12V power supply that can supply at least 300W is required.

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

- **Check Motherboard Settings**
- **Install Memory Modules**
- **Install the Central Processing Unit (CPU)**
- **Install Expansion Cards**
- **Connect Ribbon Cables, Panel Wires, and Power Supply**

WARNING! Computer motherboards and expansion cards contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not to touch the IC chips, leads or connectors, or other components.
4. Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.
5. Ensure that the ATX power supply is switched off before you plug in or remove the ATX power connector on the motherboard.

WARNING! Make sure that you unplug your power supply when adding or removing system components. Failure to do so may cause severe damage to your motherboard, peripherals, and/or components. The onboard LED when lit acts as a reminder that the system is in suspend or soft-off mode and not powered OFF.

2. HARDWARE SETUP

2.2 System Memory

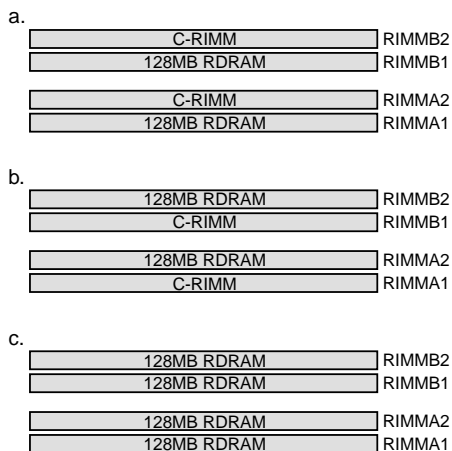
NOTE: No hardware or BIOS setup is required after adding or removing memory.

This motherboard has four 184-pin **R**ambus **I**nline **M**emory **M**odules (RIMM) sockets. These sockets support 64Mbit, 128Mbit, and 256Mbit Direct RDRAM technologies.

Location	Memory Module		Subtotal
RIMMA1 (Rows 0&1)	<input type="checkbox"/> RDRAM <input type="checkbox"/> C-RIMM (use when socket will not be populated)	x 1	
RIMMA2 (Rows 2&3)	<input type="checkbox"/> RDRAM <input type="checkbox"/> C-RIMM (use when socket will not be populated)	x 1	
RIMMB1 (Rows 4&5)	<input type="checkbox"/> RDRAM <input type="checkbox"/> C-RIMM (use when socket will not be populated)	x 1	
RIMMB2 (Rows 6&7)	<input type="checkbox"/> RDRAM <input type="checkbox"/> C-RIMM (use when socket will not be populated)	x 1	
TOTAL SYSTEM MEMORY (2GB Max)		=	

IMPORTANT

1. The memory configuration of channel A (RIMMA1 and RIMMA2) and channel B (RIMMB1 and RIMMB2) must be identical (see below).
2. C-RIMMs (Continuity RIMM) must be used to complete the sockets that are not populated by RDRAMs. A C-RIMM is necessary to avoid breaking the signal lines, which are a serial connection in a Rambus interface, such as used in this motherboard. This assures the electrical integrity of a Rambus interface.
3. When C-RIMMs are required, it is recommended that they be inserted into RIMMA2 and RIMMB2.



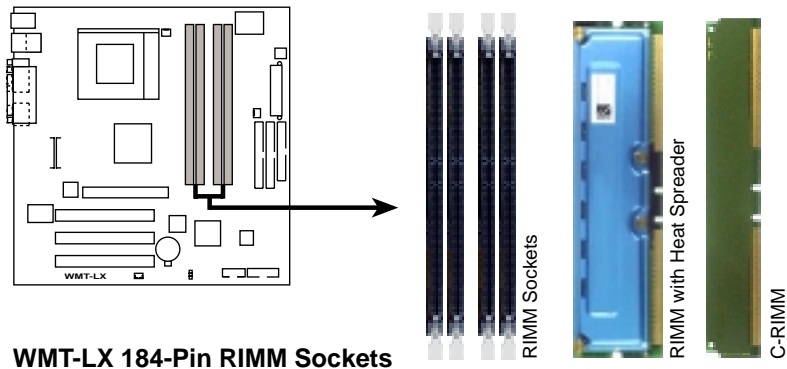
NOTE: When using only two memory modules, it is recommended that you use configuration **a**.

2. HARDWARE SETUP

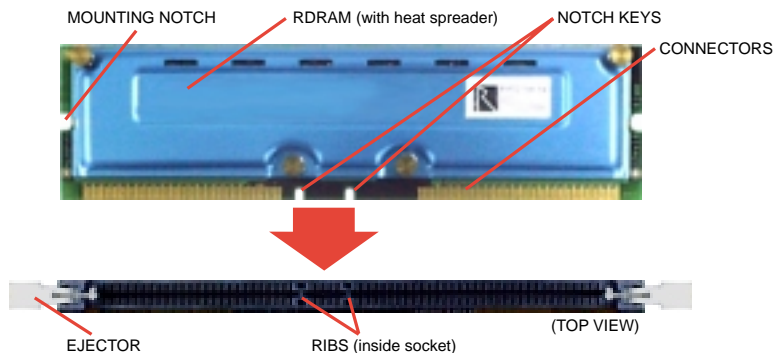
2.2.1 Installing Memory

The memory module (RIMM/C-RIMM) will fit in only one orientation.

IMPORTANT: Do not touch the memory module's connectors. Handle the module only by the edges.



1. Make sure that the notch keys in the module are aligned with the small ribs inside the RIMM sockets.



2. With the ejectors in the open position (as shown), push down gently but firmly on the memory module until it snaps into place. The guides on the socket's ejectors should go through the two mounting notches on the module and the ejectors should close. If necessary, push the ejectors inward to secure the module in place.

Removing Memory

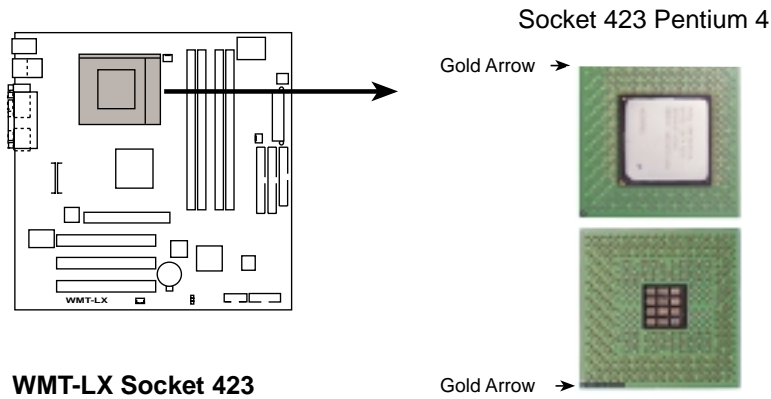
To release a memory module, push both ejectors outward and pull the module straight up and out of the RIMM sockets.

WARNING! RIMM modules become extremely hot during operation. To reduce the risk of personal injury from hot surfaces, allow the modules to cool off before removing them.

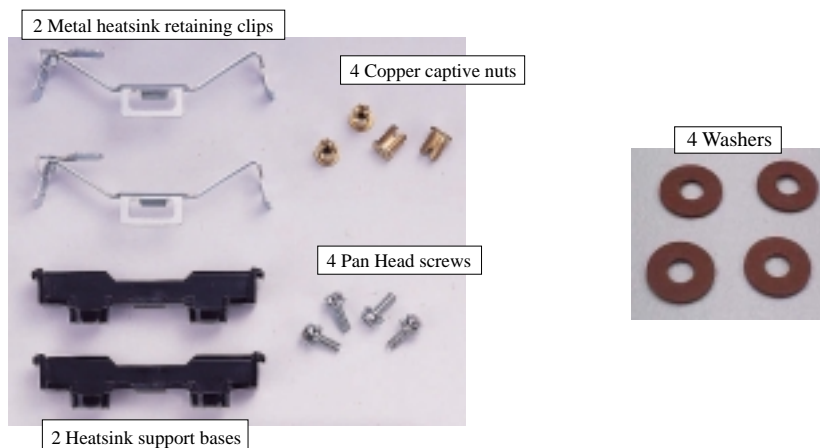
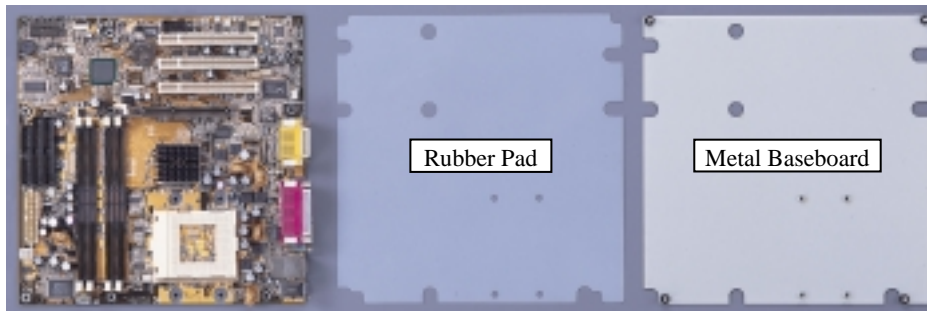
2. HARDWARE SETUP

2.3 Central Processing Unit (CPU)

The motherboard provides a ZIF Socket for the P4 CPU. The CPU that came with the motherboard should have a fan attached to it to prevent overheating. If this is not the case, then purchase a fan before you turn on your system.



Before you start, you should check to see that you have the following items:



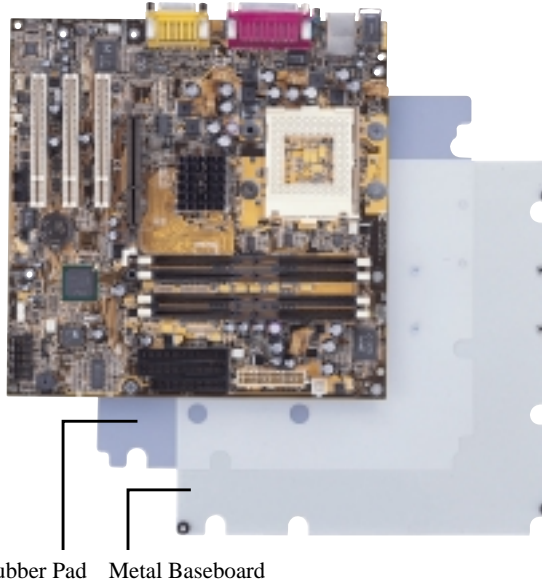
2. HARDWARE SETUP

3.5.1 CPU Installation

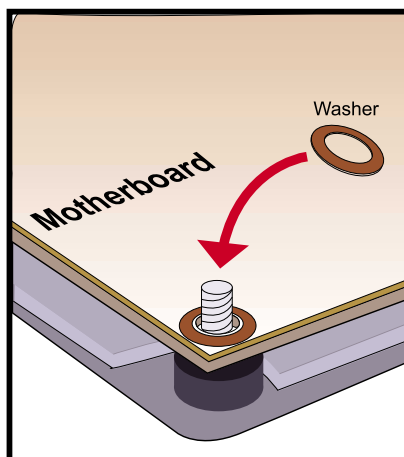
Step 1: Install the Baseboard

A metal baseboard is required to install the heatsink to the motherboard. A rubber pad is placed between the metal board and motherboard to provide insulation to prevent shorting.

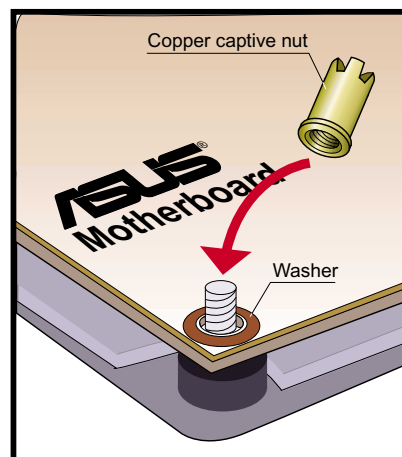
Align the rubber pad over the metal baseboard so that the holes match. Align the motherboard over the rubber pad and metal baseboard so that the screws on the baseboard match up with the motherboard's screw holes.



Place the four washers over the four screws on the baseboard.



Tighten the four copper captive nuts over the washers.



IMPORTANT:

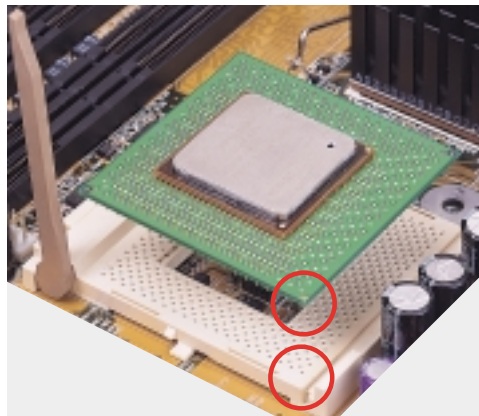
This step is a **MUST!** The washers are necessary to prevent shorting.

2. HARDWARE SETUP

Step 2: Install the CPU

- A. Locate the ZIF socket on the motherboard.
- B. Unlock the socket by pressing the lever sideways and then lifting it up to a 90-degree angle.
- C. Align the CPU over the socket such that its notched or marked corner matches the socket's corner near the end of the lever, while making sure that the CPU is parallel to the socket.
- D. Carefully insert the CPU into the socket until it fits in place. The illustration below shows how to insert a CPU properly.

CAUTION! The CPU fits in only one orientation. Do not force the CPU into the socket as it will bend the pins and damage the CPU. It should drop into the socket with minimal pressure. If not, check its orientation or check for bent pins.

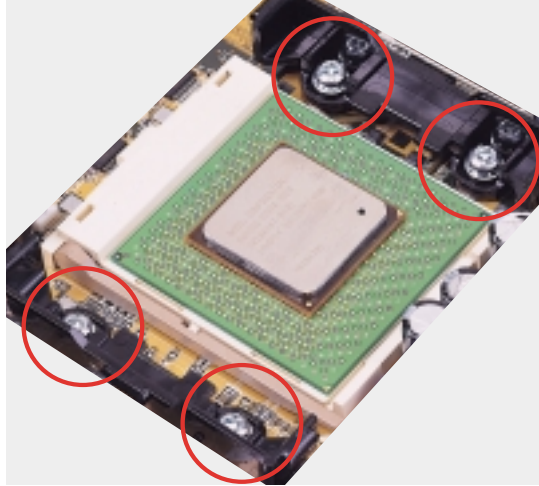


- E. Secure the CPU into the socket by pushing the socket lever all the way down. You will hear a click indicating that the lever is in place.

2. HARDWARE SETUP

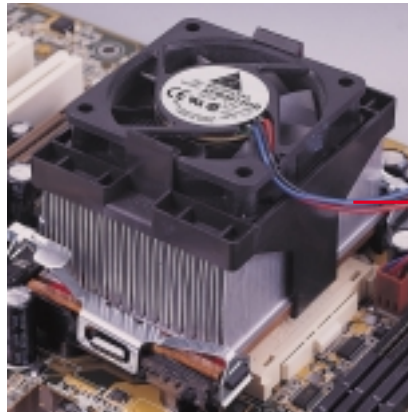
Step 3: Install the Heatsink Support Base

Place the two heatsink support base as shown and screw in the four pan head screws.



Step 4: Install the Heatsink

Carefully place the fan heatsink on top of the heatsink support base and connect the fan power cable to the CPU fan connector.



Connect to the
CPU fan connector.

2. HARDWARE SETUP

2.4 Expansion Cards

WARNING! Unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards (see **3.3 Hardware Setup Procedure** for more information).

2.4.1 Expansion Card Installation Procedure

1. Read the documentation for your expansion card and make any necessary hardware or software settings for your expansion card, such as jumpers.
2. Remove your computer system's cover and the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
3. Carefully align the card's connectors and press firmly.
4. Secure the card on the slot with the screw you removed above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary
(such as *IRQ xx Used By ISA: Yes* in PNP AND PCI SETUP)
7. Install the necessary software drivers for your expansion card.

2.4.2 Assigning IRQs for Expansion Cards

Some expansion cards need 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, leaving 6 IRQs free for expansion cards. If your motherboard has **PCI** audio onboard, an additional IRQ will be used. If your motherboard also has **MIDI** enabled, another IRQ will be used, leaving 4 IRQs free.

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	Sound Card (sometimes LPT2)
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when enabled
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

*These IRQs are usually available for ISA or PCI devices.

2. HARDWARE SETUP

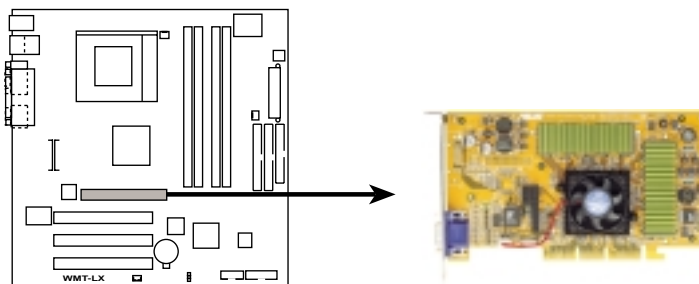
Interrupt Request Table for this Motherboard

	INT-A	INT-B	INT-C	INT-D	INT-E	INT-F	INT-G	INT-H
PCI slot 1	—	—	—	—	—	shared	—	—
PCI slot 2	—	—	—	—	—	—	used	—
PCI slot 3	—	—	—	—	—	—	—	shared
AGP slot	used	—	—	—	—	—	—	—
USB HC0	—	—	—	used	—	—	—	—
USB HC1	—	—	—	—	—	—	—	shared
SMB	—	shared	—	—	—	—	—	—
AC'97	—	shared	—	—	—	—	—	—
LAN (8139C)	—	—	—	—	—	shared	—	—

IMPORTANT: If using PCI cards on shared slots, make sure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

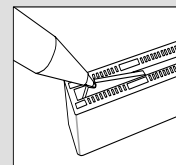
2.4.3 Accelerated Graphics Port (AGP) Pro Slot

This motherboard provides an accelerated graphics port (AGP) pro slot to support a new generation of AGP graphics cards with ultra-high memory bandwidth.



WMT-LX Accelerated Graphics Port (AGP)

CAUTION! The AGP Pro slot is shipped with a warning label over the 20-pin bay. DO NOT remove this label and the safety tab underneath it if you will be using an AGP card *without* a retention notch. Removing may cause the card to shift and may cause damage to your card, slot, and motherboard. Remove **ONLY** when you will be using an *AGP Pro* card. Use a rigid tip, such as a pen tip, to dislodge and remove the tab from the bay.



Removing the tab

2.5 External Connectors

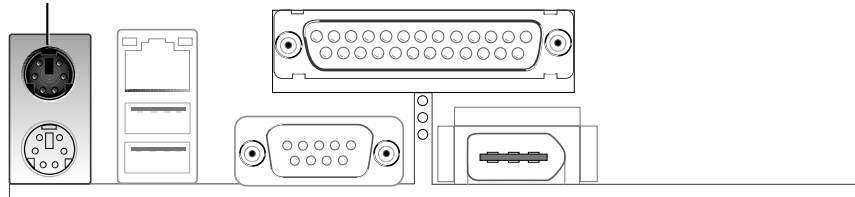
WARNING! Some pins are used for connectors or power sources. These are clearly distinguished from jumpers in the Motherboard Layout. Placing jumper caps over these connector pins will cause damage to your motherboard.

IMPORTANT: Ribbon cables should always be connected with the red stripe to Pin 1 on the connectors. Pin 1 is usually on the side closest to the power connector on hard drives and CD-ROM drives, but may be on the opposite side on floppy disk drives. Check the connectors before installation because there may be exceptions. IDE ribbon cables must be less than 46 cm (18 in.), with the second drive connector no more than 15 cm (6 in.) from the first connector.

1) PS/2 Mouse Connector (Green 6-pin PS2MS)

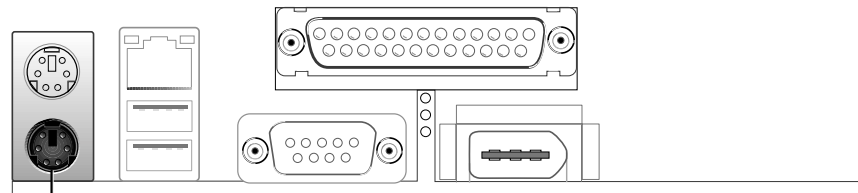
The system will direct IRQ12 to the PS/2 mouse if one is detected. If one is not detected, expansion cards can use IRQ12. See **PS/2 Mouse Function Control** in *4.4 Advanced Menu*.

PS/2 Mouse (6-pin Female)



2) PS/2 Keyboard Connector (Purple 6-pin PS2KB)

This connection is for a standard keyboard using an 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.**

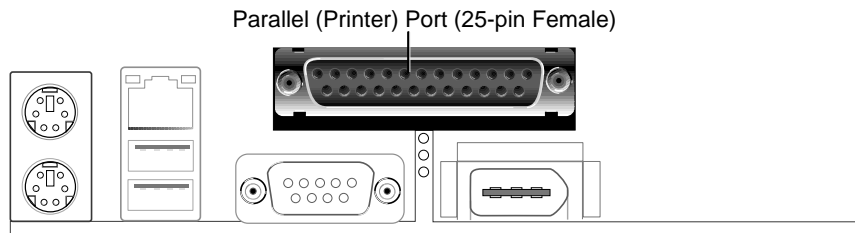


PS/2 Keyboard (6-pin Female)

3) Parallel Port Connector (Burgundy 25-pin PRINTER)

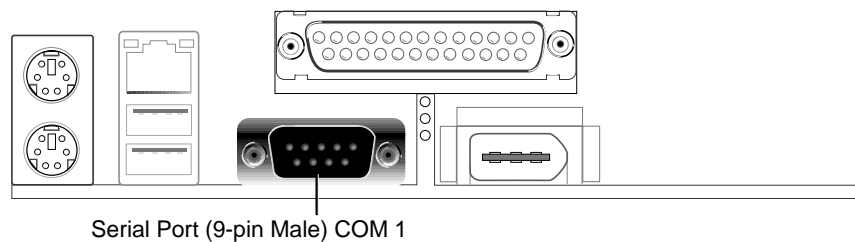
You can enable the parallel port and choose the IRQ through **Onboard Parallel Port** (see **4.4.2 I/O Device Configuration**).

NOTE: Serial printers must be connected to the serial port.



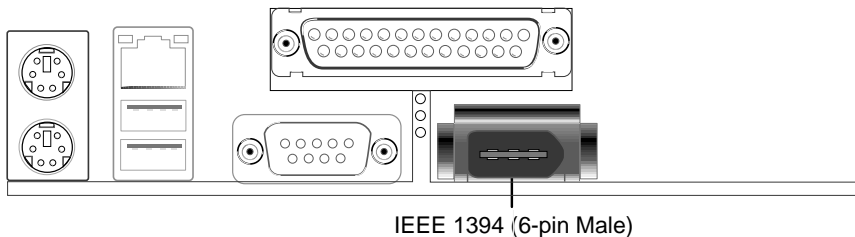
4) Serial Port Connectors (Teal/Turquoise 9-pin COM1)

One serial port is ready for a mouse or other serial devices. A second serial header is available using a serial port bracket connected from the motherboard to an expansion slot opening. See **Onboard Serial Port 1/2** in **4.4.2 I/O Device Configuration** for settings.



5) IEEE-1394 Controller Interface Connector (6-pin 1394_CON)

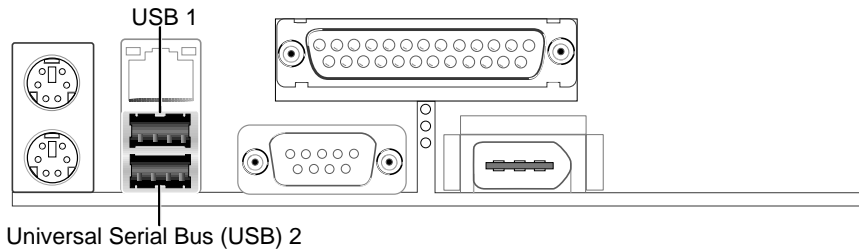
This connector supports external digital devices.



6) Universal Serial Bus Ports (Black two 4-pin USB)

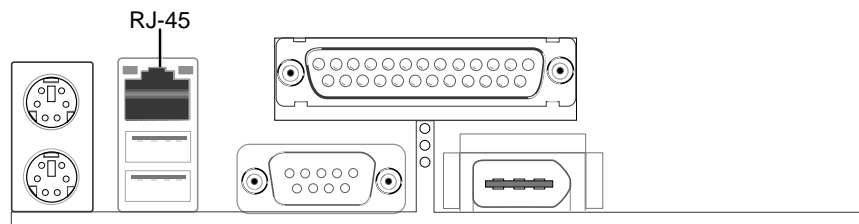
Two USB ports are available for connecting USB devices. For additional USB ports, you can use the USB headers (see **USB Headers** later in this section).

NOTE: USB Function (see **4.4.3 PCI Configuration**) must be *Enabled* to use these ports.



7) Fast-Ethernet Port Connector (RJ45)

The RJ45 connector is optional at the time of purchase and is located on top of the USB connectors. The connector allows the motherboard to connect to a Local Area Network (LAN) through a network hub.



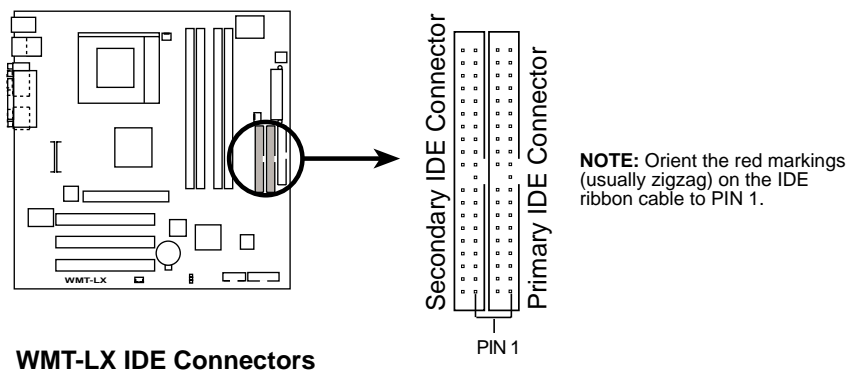
2. HARDWARE SETUP

8) Primary (Blue) / Secondary IDE Connectors (Two 40-pin IDE)

These connectors support the IDE hard disk ribbon cable. Connect the cable's blue connector to the motherboard's primary (recommended) or secondary IDE connector, and then connect the gray connector to your UltraDMA/100 slave device (hard disk drive) and the black connector to your UltraDMA/100 master device. It is recommended that non-UltraDMA/100 devices be connected to the secondary IDE connector. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Please refer to your hard disk documentation for the jumper settings. BIOS now supports specific device bootup (see *4.6 Boot Menu*). **(Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged).**

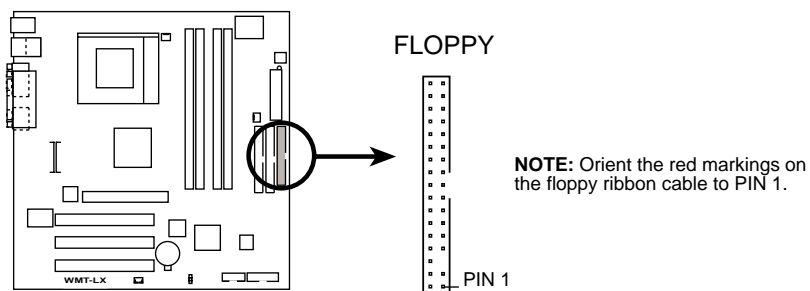
TIP: You may configure two hard disks to be both Masters with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector. You may install one operating system on an IDE drive and another on a SCSI drive and select the boot disk through *4.6 Boot Menu*.

IMPORTANT: UltraDMA/100 IDE devices must use a 40-pin 80-conductor IDE cable for 100MByte/sec transfer rates.



9) Floppy Disk Drive Connector (34-pin FLOPPY)

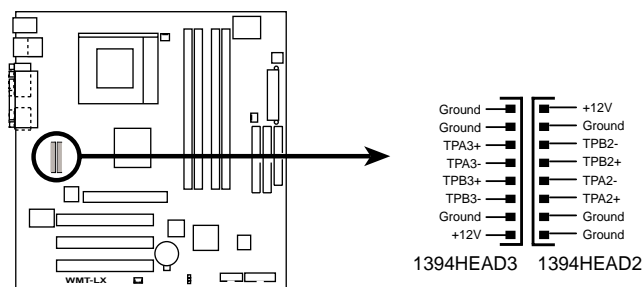
This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. **(Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged).**



WMT-LX Floppy Disk Drive Connector

10) IEEE-1394 Headers (8-pin 1394HEAD2/1394HEAD3)

These headers support an IEEE-1394 serial connector cable set that mounts to a standard expansion slot in the computer case. 1394-compliant internal fixed disk drives may also be connected to these headers.



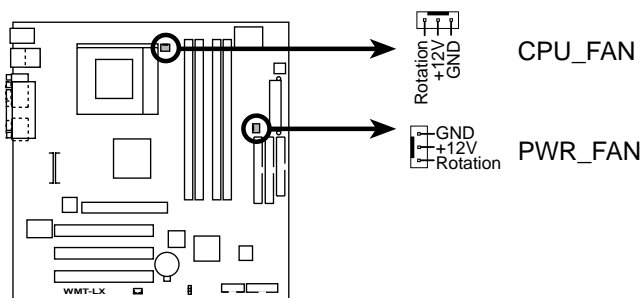
WMT-LX IEEE-1394 Headers

11) POWER (PWR_FAN), CPU (CPU_FAN), Fan Connectors (3 pins)

These connectors support cooling fans of 350mA (4.2 Watts) or less. Orientate the fans so that the heat sink fins allow airflow to go across 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 should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

NOTE: The "Rotation" signal is to be used only by a specially designed fan with rotation signal. The Rotations per Minute (RPM) can be monitored using a utility such as HP PC Probe or Intel LDCM.

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

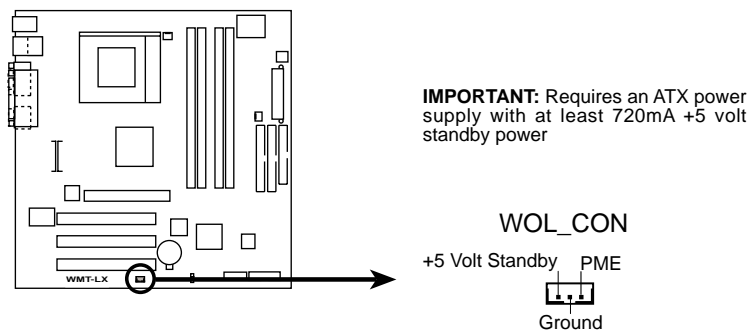


WMT-LX 12-Volt Cooling Fan Power

12) Wake-On-LAN Connector (3-pin WOL)

This connector connects to a LAN card with a Wake-On-LAN output, such as the HP PCI-L101 Ethernet card (see 7. *Appendix*). The connector powers up the system when a wakeup packet or signal is received through the LAN card.

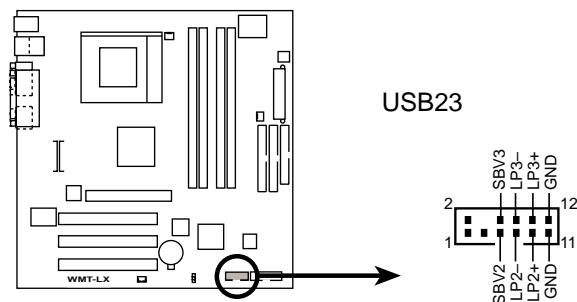
IMPORTANT: This feature requires that **Wake On LAN or PCI Modem** is enabled (see 4.5.1 *Power Up Control*) and that your system has an ATX power supply with at least 720mA +5V standby power.



WMT-LX Wake-On-LAN Connector

13) USB2/3 Headers (10-1 pin USB2/3)

If the USB Ports on the back panels are inadequate, a USB header is available for two additional USB ports. Connect the 10-1 pin ribbon cable from the provided 2-port USB connector set to the midboard 10-1 pin USB header and mount the USB connector set to an open slot on your chassis.

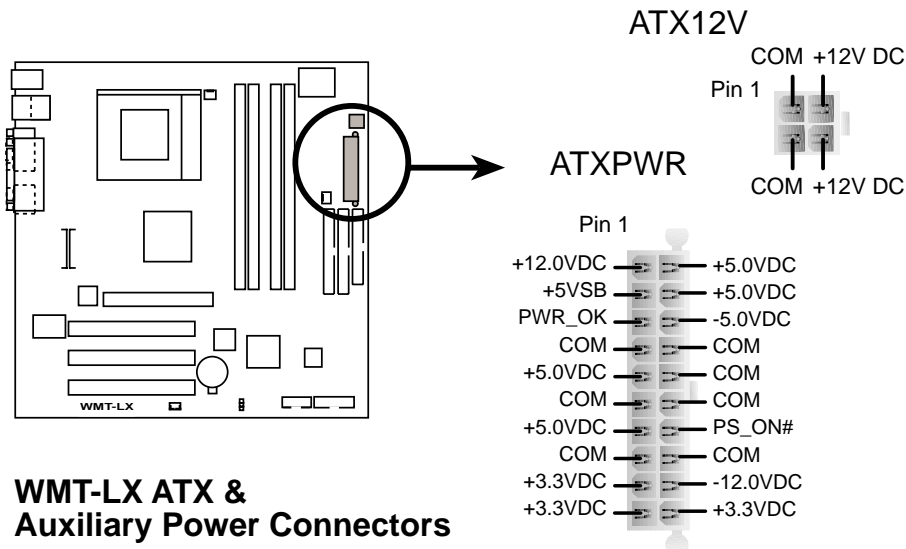


WMT-LX USB Port

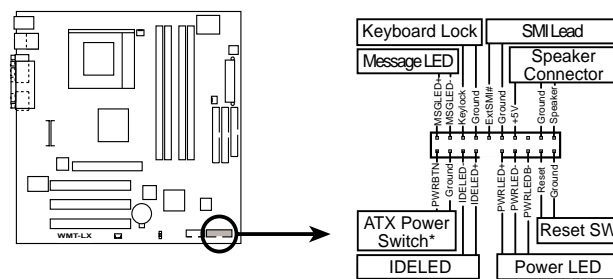
14) Power Supply Connectors (20-pin block ATXPWR) (6-pin AUXPWR) (4-pin ATX12V)

These connectors connect to an ATX 12V power supply. Each 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. An auxiliary power supply may be needed depending on your system configuration.

IMPORTANT: Make sure that your ATX 12V power supply (minimum recommended wattage: 230 watts; 300W for a fully-configured system) can supply at least 20 amperes on the +5-volt lead and at least 720mA on the +5-volt standby lead (+5VSB). Your system may become unstable/unreliable and may experience difficulty in powering up if your power supply is inadequate. For Wake-On-LAN support, your ATX power supply (minimum recommended wattage: 230watts) must supply at least 720mA +5VSB.



The following diagram is for items 15–22



WMT-LX System Panel Connectors

* Requires an ATX power supply.

15) ATX Power Switch Lead (2 pin PWR)

The system power is controlled by a momentary switch connected to this lead. Pressing the button once will switch the system between ON and SOFT OFF. Pushing the switch while in the “ON mode” for more than 4 seconds turns the system off. The system power LED shows the status of system power.

16) IDE Activity LED (2 pin IDELED)

This connector supplies power to the cabinet’s IDE activity LED. Reading and writing activity by devices connected to the Primary/Secondary IDE causes the LED to light up.

17) System Power LED Lead (3-1 pin PLED)

This 3-1 pin connector supplies the system power LED, which lights when the system is powered on and blinks in sleep or soft-off mode.

18) Reset Switch Lead (2 pin RESET)

This 2 pin connector powers the case-mounted reset switch for rebooting without having to turn off the power switch. Use the reset switch to prolong the life of the power supply.

19) System Message LED Lead (2 pin MLED)

This LED indicates an incoming of message from a fax/modem. The LED will remain lit when there is no signal and blink when data is received. This LED requires an ACPI OS and a driver.

20) Keyboard Lock Switch Lead (2 pin KEYLOCK)

This 2-pin connector connects to the case-mounted key switch to allow keyboard locking.

21) System Management Interrupt Switch Lead (2 pin SMI)

This is a system power switch that allows the user to put the system into suspension to save electricity and prolong the life of certain components. The connector supports a 2 pin case-mounted switch.

22) System Warning Speaker Connector (4 pin SPEAKER)

This 4-pin connector supplies the case-mounted speaker. Two sources (LINE_OUT and SPEAKER) support system beeps and warnings. Only this SPEAKER connector supports system beeps before the integrated audio has been properly initialized.

23) Erasing the CMOS Real Time Clock (RTC) RAM

A Note about Passwords

BIOS Setup programs allow you to specify passwords in the Main menu. The passwords control access to the BIOS during system startup. The passwords are not case sensitive. The BIOS Setup program allows you to specify two separate passwords: a *Supervisor* password and a *User* password. When disabled, anyone may access all BIOS Setup program functions. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full access to all configuration fields.

Forgot the Password?

If you forgot the password, you can clear the password by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. To erase the RTC RAM: (1) Unplug your computer, (2) Move jumpers from Normal [2-3] to Clear CMOS [1-2], then immediately return the jumper cap to the Normal position [2-3], (3) Turn ON your computer, (4) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.

