answers 2

Technical Manual

Mainboard D1357

English

FUJITSU COMPUTERS SIEMENS

Are there ...

... any technical problems or other questions you need clarified?

Please contact:

- your sales partner
- your sales outlet

The latest information and updates (e. g. BIOS update) on our mainboards can be found on the Internet under: *http://www.fujitsu-siemens.com*

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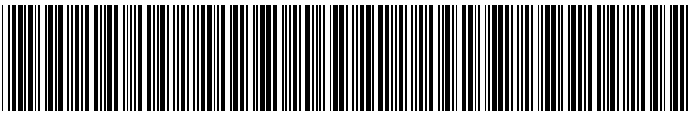

A26361-D1357-Z120-1-7619

English

Mainboard D1357

Technical Manual

December 2003 edition

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Contents

Mainboard D1357

Your mainboard is available in different configuration levels. Depending on the configuration chosen, some of the hardware components described may not be available on your mainboard.

Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:

indicates information which is important for your health or for preventing physical damage.

indicates additional information which is required to use the system properly.

► Text which follows this symbol describes activities that must be performed in the order shown.

␣ This symbol indicates that you must enter a blank space (press the Space Bar) at this point.

↵ This symbol indicates that you must press the Enter key.

`Text in this typeface` indicates screen outputs.

`Text in this bold typeface` indicates the entries you make via the keyboard.

Text in italics indicates commands or menu items.

"Quotation marks" indicate names of chapters or terms.

Important notes

With the mainboard installed you must open the system to access the mainboard. How to dismantle and reassemble the system is described in the operating manual accompanying the system.

Connecting cables for peripherals must be adequately shielded to avoid interference.

Observe the safety notes in the operating manual of your system.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the "Replacing lithium battery" section.

Components can become very hot during operation. Ensure you do not touch components when making extensions to the mainboard. There is a danger of burns!

The shipped version of this board complies with the requirements of the EEC directive 89/336/EEC "Electromagnetic compatibility".

Compliance was tested in a typical PC configuration.

When installing the board, refer to the specific installation information in the manual for the receiving device.

The warranty is invalidated if the system is damaged during the installation or replacement of expansions. Information on which expansions you can use is available from your sales outlet or the customer service centre.

Information about boards

To prevent damage to the mainboard, the components and conductors on it, please take great care when you insert or remove boards. Take great care to ensure that extension boards are slotted in straight, without damaging components or conductors on the mainboard, or any other components, for example EMI spring contacts.

Remove the plug from the mains outlet so that system and mainboard are totally disconnected from the mains voltage.

Be careful with the locking mechanisms (catches, centring pins etc.) when you replace the mainboard or components on it, for example memory modules or processors.

Never use sharp objects (screwdrivers) for leverage.

Boards with electrostatic sensitive devices (ESD) are identifiable by the label shown.

When you handle boards fitted with ESDs, you must, under all circumstances, observe the following:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Remove the power plug from the mains supply before inserting or removing boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

List of features

Processor

- Dual mPGA604 ZIF sockets
- Supports one or two Intel Xeon processors with 512KB of integrated L2 cache
- Onboard 4-phase VRM (VRM 9.1 spec)
- Supports 533MHz Front-Side Bus

Chipset

- Intel E7505 chipset
- MCH + ICH4 + P64H2 + FWH
- Intel P64H2 supports two PCI-(X) buses
- Winbond W83627HF Super I/O chip
- Analog Device ADM1027 systems monitor and multiple fan controller

Memory

- Four 184-pin 2.5-Volt DDR DIMM sockets
- Dual channel memory bus
- Supports ECC/non-ECC type unbuffered memory modules
- Supports PC2100 DDR (DDR266)
- Maximum 4 GB

Expansion Slots

- Three independent PCI-(X) buses
- One 8x/4x mode AGP Pro50 slot
- One 64-bit 133MHz (3.3-Volt) PCI-X slot
- Two 64-bit 100MHz (3.3-Volt) PCI-X slot
- Two 32-bit 33MHz (5-Volt) PCI slots
- Total of six usable slots

Integrated PCI IDE

- Provides two PCI bus master channels for up to four Enhanced IDE devices
- Supports for UDMA 33/66/100 IDE drives and ATAPI compliant devices
- Supports up to four Enhanced IDE devices

Integrated I/O

- Six USB 2.0 and 1.1 compatible ports (4 rear connectors and 2 front connectors via an optional USB cable)
- Supports one floppy drive with 3 mode
- One 9-pin serial connector
- One 25-pin ECP/EPP/SPP parallel connector
- PS/2 mouse and keyboard connectors
- Two IEEE1394 (firewire) ports (1 rear connector and 1 front connector)

One SPDIF RCA connector

System Management

- Total seven 3-pin fan headers
- Six fan headers with tachometer monitoring
- One 3-pin Chassis Intrusion header
- Temperature, voltage and fan monitoring

Integrated SCSI

- Adaptec 7902 dual channel Ultra320 SCSI at PCI-X 100MHz
- Adaptec Host RAID support
- Adaptec Zero-Channel RAID ready through PCI slot 5

Integrated LAN

- Intel 82540EM Gigabit Ethernet

Integrated Audio

- Intel ICH4 AC'97 compliant audio link
- AD 1981A CODEC
- Line-in, Headphone-out, Mic-in rear jacks
- SPDIF digital output with rear RCA connector
- Front panel audio header with headphone- out and Mic-in
- One 4-pin CD-ROM audio input header
- One 4-pin Auxiliary header

BIOS

- Phoenix BIOS 4.06 on 4Mbit Flash ROM
- Supports Hyper-Threading technology
- Supports BIOS Boot Specification v1.1 (BBS)
- Supports ACPI
- Supports SMBIOS v2.3
- Support LAN remote boot (PXE)
- Auto configuration of IDE hard disk types

Integrated 1394

- TI TSB43AB22 single-chip solution
- Two ports (one on rear panel and one header for the front panel via an optional cable)

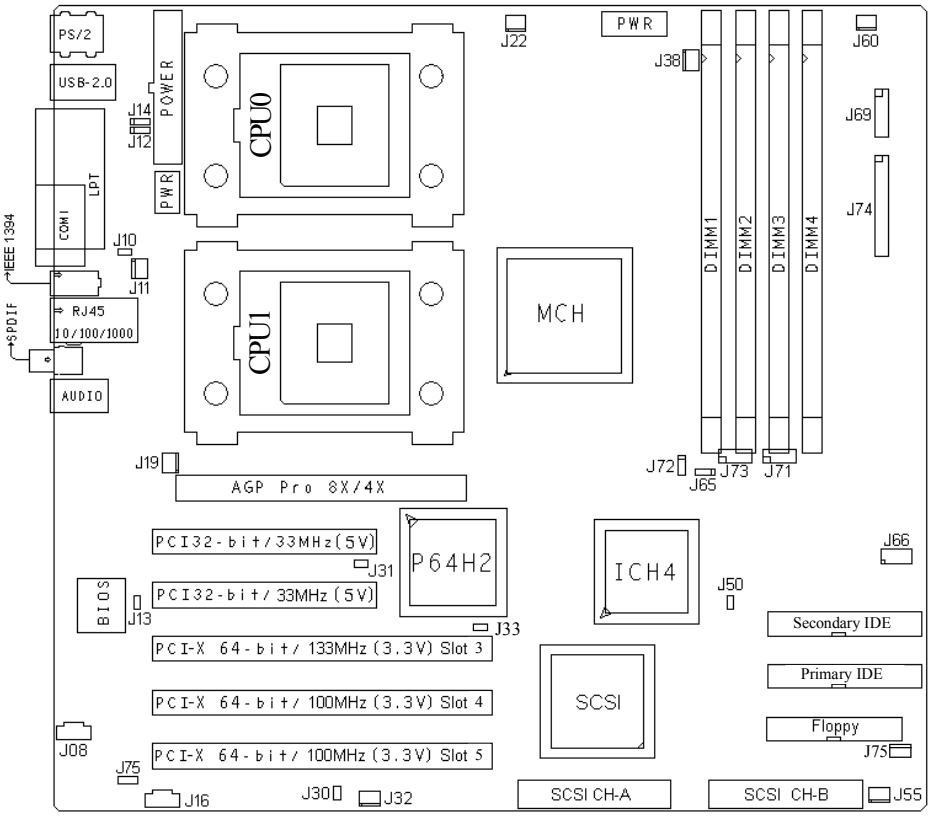
Form Factor

- SSI EEB v3.0 footprint (12" x 13")
- 8-layer design
- EPS12V with 24-pin baseboard power connector, WS 6-pin power connector & 8-pin processor power connector
- Stacked PS/2 keyboard and mouse ports
- Stacked four USB2.0/1.1 ports
- Stacked one serial port and one parallel port
- One RJ45 LAN port with LEDs
- One IEEE-1394 port
- One SPDIF RCA port
- Audio Line-in, HP-out, and Mic-in ports (Amplifier integrated)

Regulatory

- FCC DoC (Declaration of Conformity)
- European CE (Declaration of Conformity)

Overview Board, Jumpers and Connectors



This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

Jumper Legend

	Jumper OFF	without jumper cover
	Jumper ON	with jumper cover

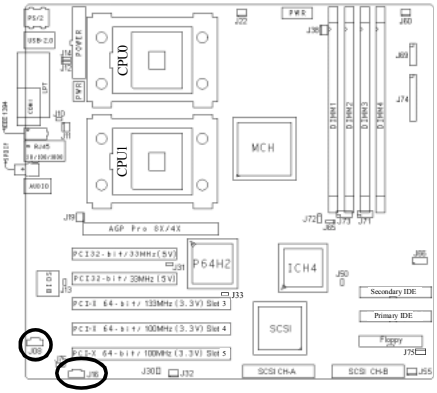
Jumper and Connector Settings

Overview

Jumper / Connector	Function	Settings
J8	AUX Audio Connector	
J10	Enable/Disable Onboard Intel 82540EM GbE NIC	Open: Enable (Default) Close: Disable
J11	Rear Chassis Fan (Fan3)	
J12	PS/2 Power Jumper	Close Pin-1 and Pin-2 (Default) Disable PS/2 devices' ACPI S4 wake up function Close Pin-2 and Pin-3 Enable PS/2 devices' ACPI S4 wake up function
J13	BIOS Flash Protection Jumper	Open: Disable Protection (Default) Close: Enable Protection
J16	CD Audio Input Connector	
J19	CPU1 Fan Connector (Fan1)	
J22	CPU0 Fan Connector (Fan0)	
J30	Disable PCI-X133 Capability Jumper (PCIX133 Slot 3)	Open: PCI-X Capable (Default) Close: Disable PCI-X Capability
J31	Disable PCI-X100 Capability Jumper (PCIX100 Slots 4&5)	Open: PCI-X Capable (Default) Close: Disable PCI-X Capability
J32	Auxiliary Fan Connector (Fan6)	
J33	Recovery	Open: Normal (Default) Close Pin-1 and Pin-2: Recovery mode
J38	Auxiliary Fan Connector (Fan5)	
J50	Clear CMOS Jumper	Open: Normal (Default) Close: Clear CMOS Mode
J55	Front Chassis Fan Connector (Fan2)	
J60	Auxiliary Fan Connector (Fan4)	
J66	IEEE 1394 Connector	
J69	LCD Panel Connector	
J71	Front Panel Audio Connector	
J72	Chassis Intrusion Connector	

J73	Front Panel USB Connector	
J74	Front Panel Connector	
J75	Temperature Sensor Header	

AUX Audio Connector (J8) and CD Audio Connector (J16)



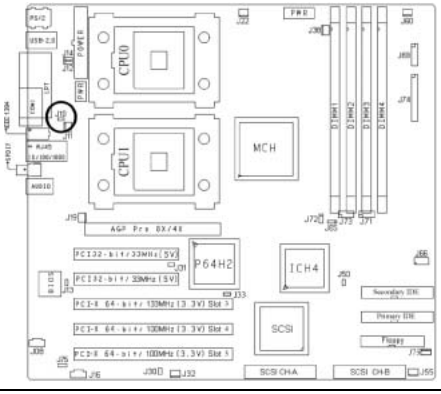
J 8 (AUX Audio connector)

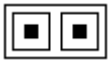
Connects to internal audio sources such as TV tuner, MPEG, or other similar cards

J16 (CD Audio connector)

Connects to a CD-ROM drive via an optional CD audio cable

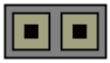
Enable/Disable Onboard LAN Jumper (J10)





OPEN (Default)

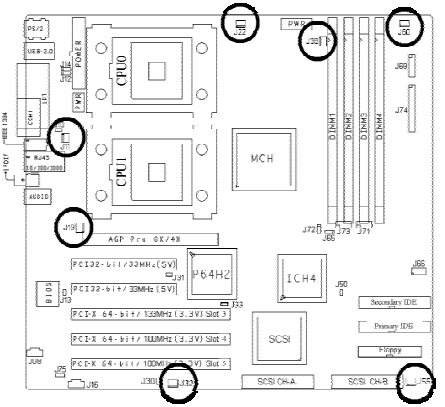
To enable onboard LAN

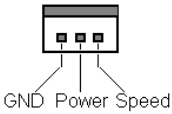


CLOSE

To disable onboard LAN

Fan Connectors (J11, J19, J22, J32, J38, J55 and J60)

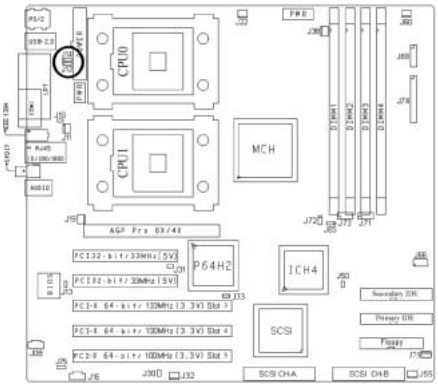


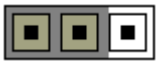


Use these headers to connect chassis and processor cooling fans to your motherboard. Cooling fans can keep the system stable and reliable for its product life.

Max 850mA fans supported

PS/2 ACPI Jumper (J12)

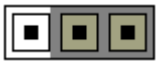




pin-3

CLOSE Pins 1 and 2 (Default)

To disable PS/2 devices' ACPI S4 wake up function

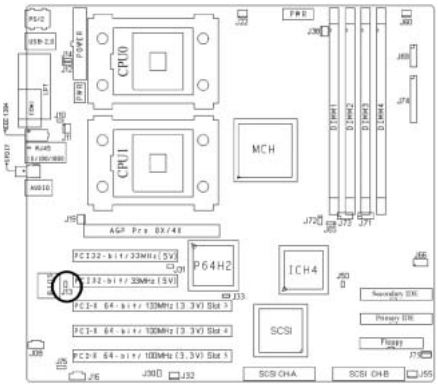


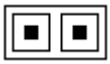
pin-3

CLOSE Pins 2 and 3

To enable PS/2 devices' ACPI S4 wake up function

Flashing BIOS Protection Jumper (J13)





OPEN (Default)

To disable BIOS protection

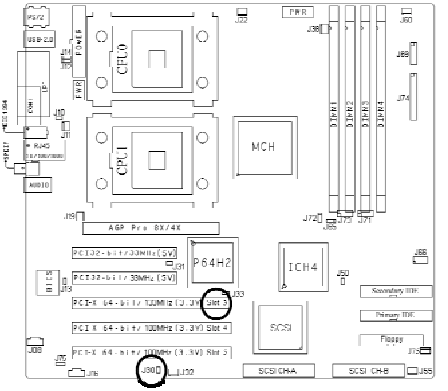
System BIOS **can** be flashed with flashing utility

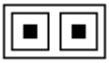
CLOSE

To enable BIOS protection

System BIOS **can not** be flashed with flashing utility

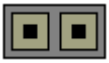
Disable 3PCI-X133 Capability Jumper (J30)





OPEN (Default)

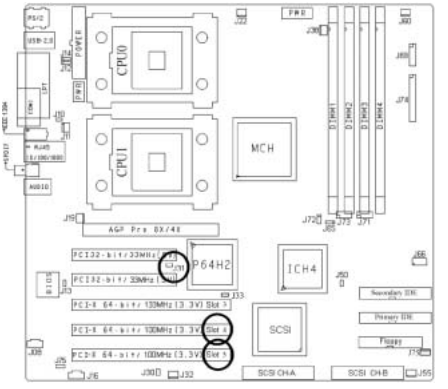
To enable PCI-X capability on PCIX133 Slot3

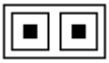


CLOSE

To disable PCI-X capability on PCIX133Slot3

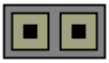
Disable 45PCI-X100 Capability Jumper (J31)





OPEN (Default)

To enable PCI-X capability on PCIX100 Slots 4&5

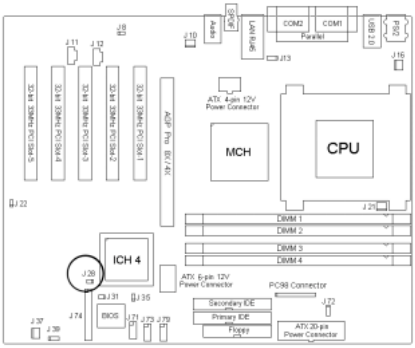


CLOSE

To disable PCI-X capability on PCIX100 Slots 4&5

Onboard SCSI chip PCI-X capability will be disabled due to sharing of the same bus

Clear CMOS Jumper (J28)



 Clear

 Default

You can reset the CMOS settings by using this jumper when you

- Have forgotten your system/setup password
- Need to clear system BIOS setting

► Power off system and disconnect power supply from AC source

► Use jumper to close JP28 for several seconds to Clear CMOS

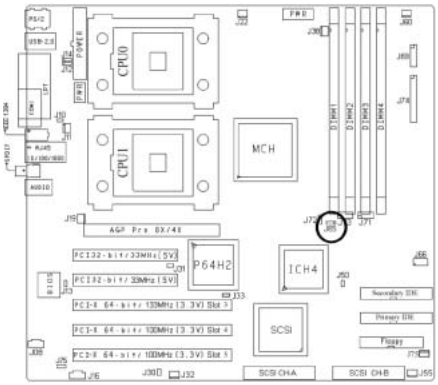
► Take off jumper from JP28 (default setting)

► Reconnect power supply to AC source

► Power on system

► Use “F2” key to go into system BIOS setup

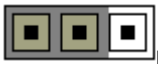
Front Panel USB ACPI Jumper (J65)



 pin-1

CLOSE Pins 1 and 2

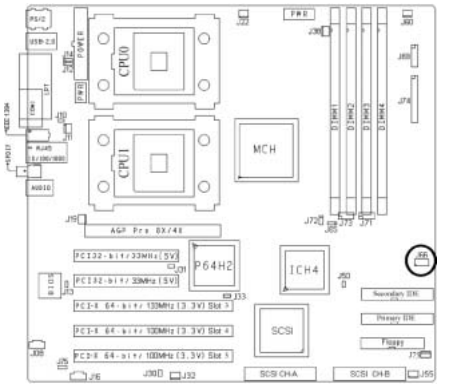
To disable front panel USB devices’ ACPI S4 wake up function

 pin-1

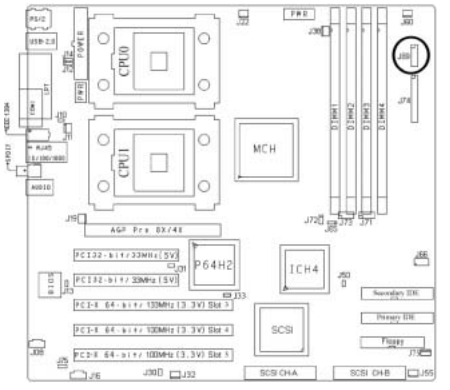
CLOSE Pins 2 and 3 (Default)

To enable front panel USB devices’ ACPI S4 wake up function

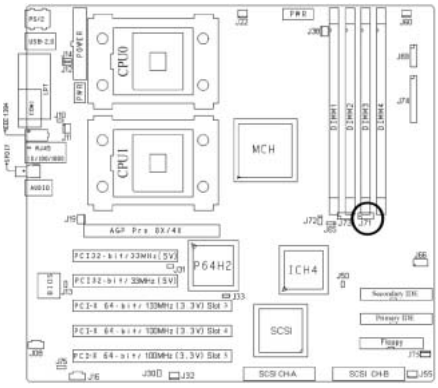
IEEE 1394 Connector (J66)

	Connects to a 1394 device via an optional 1394 cable

LCD Panel Connector (J69)

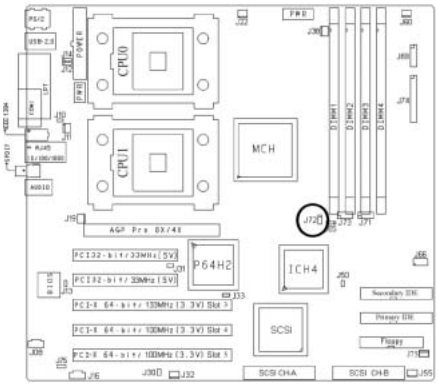
	Connects to a LCD display via an optional cable

Front Panel Audio Connector (J71)



Signal Description	Pin #	Pin #	Signal Description
MIC input	**1**	**2**	Analog GND
MIC bias	**3**	**4**	Analog VCC
Right line output	**5**	**6**	Right line return
NC	**7**	**8**	Key
Left line output	**9**	**10**	Left line return

Chassis Intrusion Connector (J72)

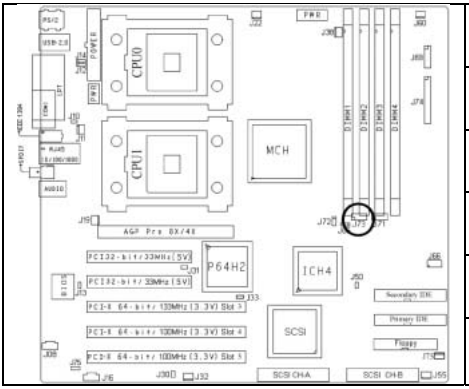


Pin-1
Intrusion cable detection (low asserted)

Pin-2
Intrusion detection (low asserted)

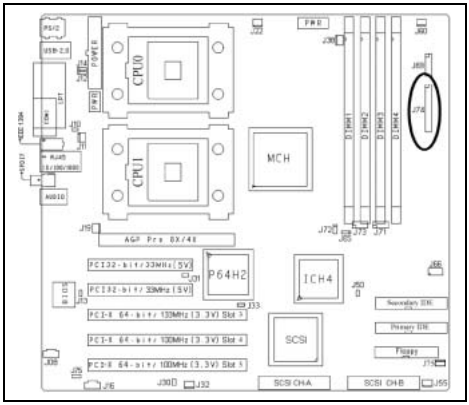
Pin-3
GND

Front Panel USB Header (J73)



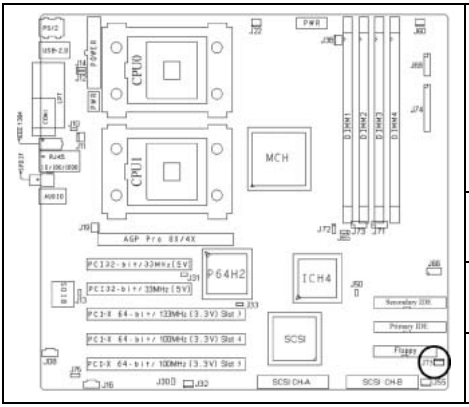
Signal Description	Pin #	Pin #	Signal Description
VCC	1	2	VCC
Data negative A	3	4	Data negative B
Data positive A	5	6	Data positive B
GND	7	8	GND
Key	9	10	Not connected

Front Panel Connector (J74)



Signal Description	Pin #		Pin #	Signal Description
Sleep LED “– “	**1**		**2**	Speaker “– “
Sleep LED “+ “	**3**		**4**	Key
Key	**5**		**6**	GND
Power LED “+ “	**7**		**8**	Speaker “+ “
Power LED “+ “	**9**		**10**	Key
GND	**11**		**12**	Key
Message LED “+ “	**13**		**14**	Key
Message LED “– “	**15**		**16**	Not connected
Key	**17**		**18**	SCSI LED Input
HD LED “+ “	**19**		**20**	SCSI LED Input
HD LED “– “	**21**		**22**	Not connected
GND	**23**		**24**	Key
Power Button	**25**		**26**	GND
Sleep Button	**27**		**28**	GND
Reset Button	**29**		**30**	GND

Thermal Sensor Connector (J75)



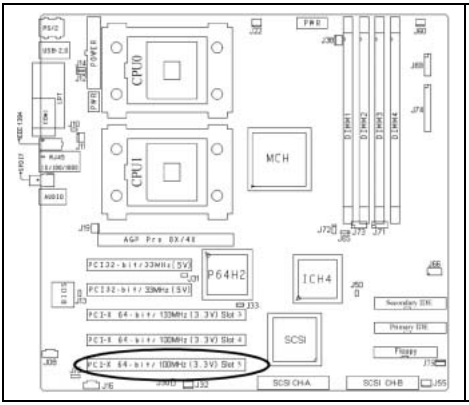
Can be used as additional temperature sensor

Pin-1
GND

Pin-2
Temperature Voltage

Pin-3
GND

SCSI RAID PCIX100 Slot5



Connects Adaptec Zero-Channel RAID card for SCSI RAID solution

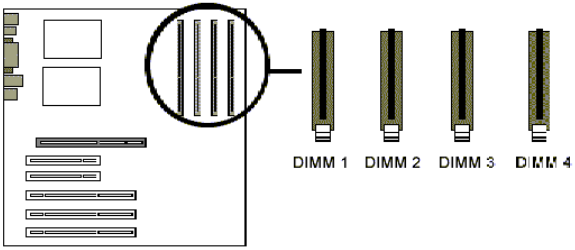
OEM Reserved Connectors and Jumpers

These connectors and jumpers which are not listed are reserved for OEM use only.

Installing the Memory

Before attempting to install any memory, here are a few key points to note before installing memory modules onto your board.

- Memory modules must be installed in pairs **(DIMM1+DIMM2 or DIMM3+DIMM4)**
- At least two unbuffered DDR ECC/non-ECC modules must be installed
- All installed memory will be automatically detected - no need to set any jumpers
- Supports 128MB, 256MB, 512MB and 1GB unbuffered DDR266 modules
- Supports up to 4GB of memory



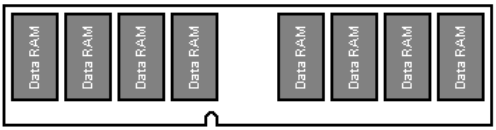
DIMM1 + DIMM2

Or

DIMM3 + DIMM4

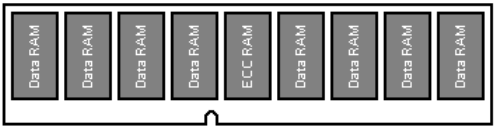
Or

DIMM1 + DIMM2 +
DIMM3 + DIMM4



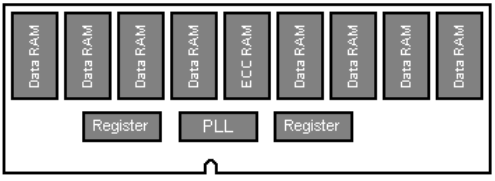
DDR Unbuffered Non-ECC

supported



DDR Unbuffered ECC

supported

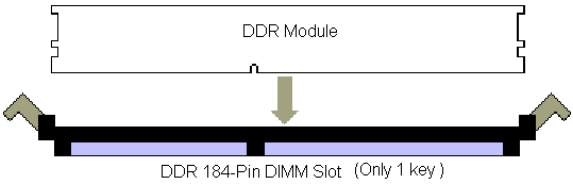


DDR Registered ECC

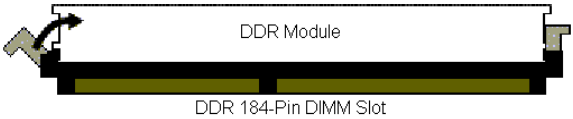
unsupported

Memory Installation Procedure

When installing memory modules, make sure the modules align properly with the memory socket. There should be a key (small indent) on your memory module that fits according to the key in the memory socket. DDR modules and sockets have only one key, which is slightly off-center of the module/socket. The method of installing memory modules is detailed in the following diagrams.



Once the memory modules are firmly seated in the socket, two clamps on either side will close and secure the module into the socket. Sometimes you may need to close the clamps manually.



To remove the memory module, simply push the clamps outwards until the memory module pops up. Then remove the module.

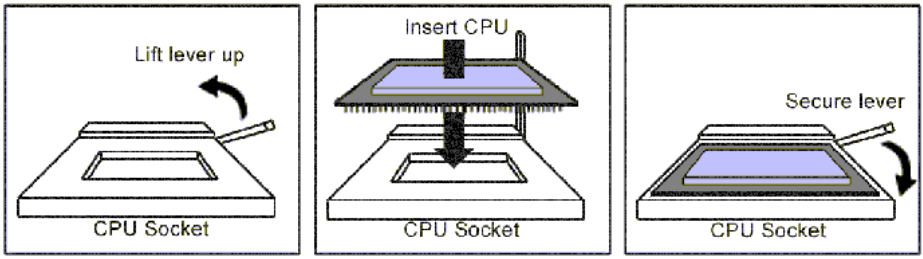
When installing memory, a module may require a considerable amount of force to seat properly, although this is very rare. To avoid bending and damaging your motherboard, place it on its anti-static bag and onto a flat surface, then proceed with memory installation.

YOU MUST unplug the power supply before performing system hardware changes in order to avoid damaging the board or expansion device..

Installing the Processor and Heatsink

Your Thunder i7505 S2665 supports the latest processor technologies from Intel. A current list of the processors supported by this mainboard is available on the Internet at: *www.fujitsu-siemens.com.*

The following diagrams will detail how to install your processor:



i

Only **identical** CPUs can be used.

When installing only 1 processor, ensure to install it in **CPU socket CPU0**.

The processors you choose to use may not look exactly like the one pictured above, nor will the socket look exactly the same. The diagram is a visual guide to help you install processors.

- ► Lift the lever on the socket as far back as possible to the socket.
- ► Align the processor with the socket. There are keys underneath the processor just like on memory modules to ensure that they insert the correct way.
- ► Seat the processor firmly into the socket by gently pressing down until the processor sits flush with the socket.
- ► Place the socket lever back down until it snaps into place.

Your processor is installed. Repeat these steps for the second processor if you are using two processors.

i

Take extra care when installing Xeon processors as they have fragile connector pins that can bend and break if inserted improperly.

Heat sink Installation

After you are done installing the processor, you should proceed to installing the heatsink. The heat sink will ensure that the processor does not overheat, and will continue to operate at maximum performance. An overheated processor is also dangerous to the long-term reliability of the motherboard.

Heatsink with nuts on the fixing bolt

Heatsink without nuts on the fixing bolt

- ► When you have a heat sink with nuts on the fixing bolt then you have to place a copper plate with conducting paste between heat sink and processor.

i If you want to reuse a copper plate then take care to renew heat conducting paste on the copper plate.

- ► Place the heat sink on the copper plate or directly on the processor (dependent on the heat sink.)
- ► Fix the heat sink with the four screws.

Cover

Heat sink with mounted cover

Cover with air hose

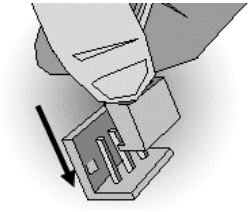
Heat sink with mounted air hose cover

► Mount the corresponding cover over the heat sink.

i With a processor speed of 3.2 GHz or higher, you require a cover with an air hose. This is a condition for the cooling system.

Finishing Installing the Heat sink

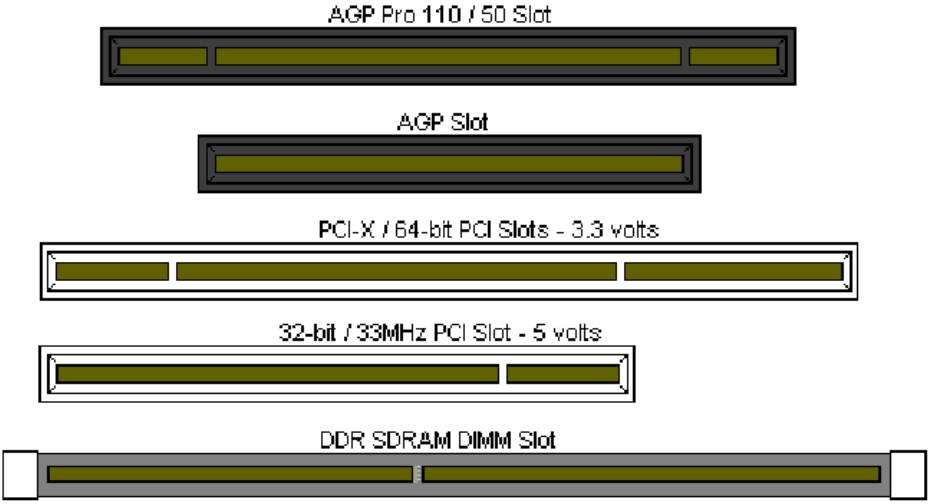
After you finish installing the heat sink onto the processor and socket, attach the end wire of the fan (which should already be attached to the heatsink) to the motherboard. The following diagram illustrates how to connect fans onto the motherboard.



After you have finished installing all the fans you can connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

Installing Add-In Cards

Before installing add-in cards, it is helpful to know if they are fully compatible with your motherboard. For this reason, we have provided the diagrams below showing the most common slots that may appear on your motherboard. Not all of the slots shown will necessarily appear on your motherboard. However, there will be combinations of what you see here.



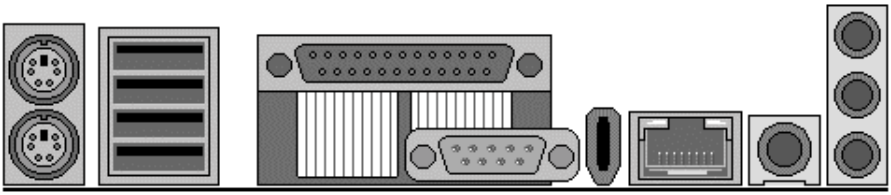
Find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards (or anything else) into any slots if they will not seat in place.

YOU MUST unplug the power supply before performing system hardware changes in order to avoid damaging the board or expansion device.

Before continuing onto section **Connecting External Devices**, make sure everything is properly connected. Things like jumpers and case wiring are the most common causes of troubleshooting frustrations, both for the end-user and for any company doing technical support.

Connecting External Devices

The following diagrams will detail the rear port stack for this S2662 motherboard:



Audio Port

Line In Jack - Connects to external devices for playback or recording

Headphone Out Jack - Connects to headphone or speakers (Amplifier integrated)

Microphone In Jack - Connects to an external microphone

USB 2.0/1.1

USB 2.0 /1.1

Four rear USB 2.0/1.1 connectors

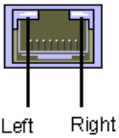
Two front USB 2.0/1.1 headers (J73)

S/PDIF (digital out)

S/PDIF RCA connector

Sony/Philips Digital Interface (S/PDIF) is the newest audio transfer file format. It provides impressive sound quality through this RCA connector and allows you to enjoy digital audio instead of analog audio.

RJ45 LAN Port



RJ45 Link/Activity LED (Right Side)

Without LINK	Green LED OFF
With LINK	Green LED ON
Activity	Green LED BLINK

RJ45 Speed LED (Left side)

1000	Green LED ON
100	Yellow LED ON
10	LED OFF

IEEE 1394

IEEE 1394 connector

One rear IEEE 1394 Firewire connector

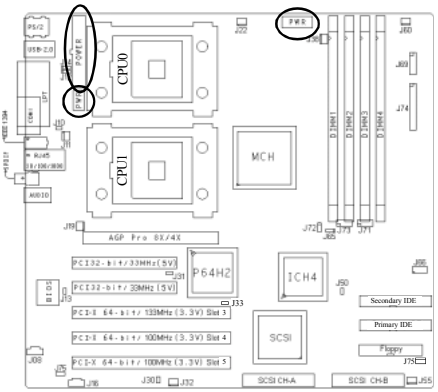
One front IEEE 1394 Firewire header J66

(See page-8 for jumper)

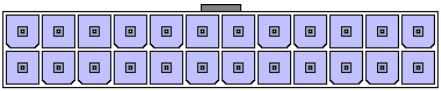
Installing the Power Supply

There are three power connectors on your Thunder i7505 S2665. By default, the Thunder i7505 S2665 requires that you have an EPS12V power supply that has a 24-pin and an 8-pin power connector. The extra 6-pin AUX power connector is needed if you plan on using an AGP Pro video card. Please be aware that ATX 2.x, ATX12V and dual AMDGES (24+8-pin) power supplies are **not compatible** with the board.

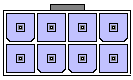
EPS 12V power connector	24-pin power connector	8-pin power connector	6-pin power connector
S2665 with **PCI/AGP** video card	Required	Required	Not required
S2665 with **AGP Pro** video card	Required	Required	Required



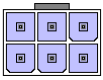
24-pin (main power connector)



8-pin (12V power connector)



6-pin (AUX power connector)



Disconnect power supply from electrical outlet

Connect 8-pin 12V power connector

Connect 6-pin AUX power connector (required if using an AGP pro video card)

Connect 24-pin main power connector

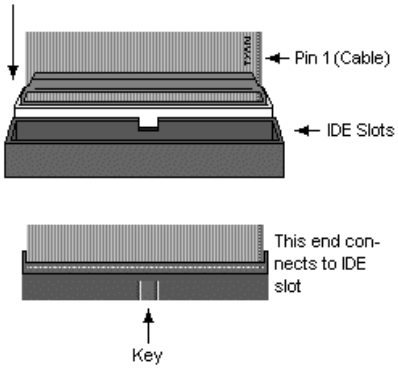
Connect power cable to power supply to power outlet

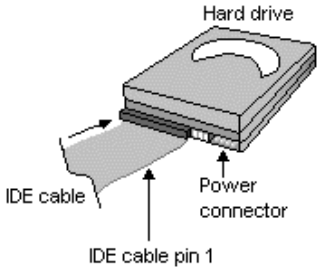
Certain EPS12V power supplies do not have the 6-pin AUX power connector. Please check with your power supply vendors if you plan to use an AGP Pro video card.

YOU MUST unplug the power supply before plugging the 20-pin and 4-pin cables to motherboard connectors.

Attaching IDE and Floppy Drive Cables

Attaching IDE drive cabling is simple. These cables are “keyed” to only allow them to be connected in the correct manner. Tyan motherboards have two on-board IDE channels, each supporting two drives. The black connector designates the Primary channel, while the white connector designates the Secondary channel. Attaching IDE cables to the IDE connectors is illustrated below





Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard. The other two connectors are used to connect to drives.

Attaching a floppy drive can be done in a similar manner to an IDE drive. Most of the current floppy drives on the market require that the cable be installed with the colored stripe (pin-1) positioned next to the power connector. In most cases, there will be a key pin on the cable which will force proper connection of the cable.

Below are some symptoms of incorrectly installed floppy drives:

- Drive is not automatically detected
  - Check if the floppy controller is enabled under the BIOS settings
  - Verify that the floppy cable is installed correctly
  - Verify that the floppy drive is working properly (i.e. try a new drive)
- Drive Fail message at bootup
  - Verify with another drive or cable
- Drive does not power on
  - Check power cable and cabling
  - Check power supply
- Drive activity light is constantly on
  - Cable is on backwards

i Pin 1 on the cable (usually designated by a colored wire) faces the drive’s power connector.

Replacing lithium battery

In order to permanently save the system information, a lithium battery is installed to provide the CMOS-memory with a current. A corresponding error message notifies the user when the charge is too low or the battery is empty. The lithium battery must then be replaced.

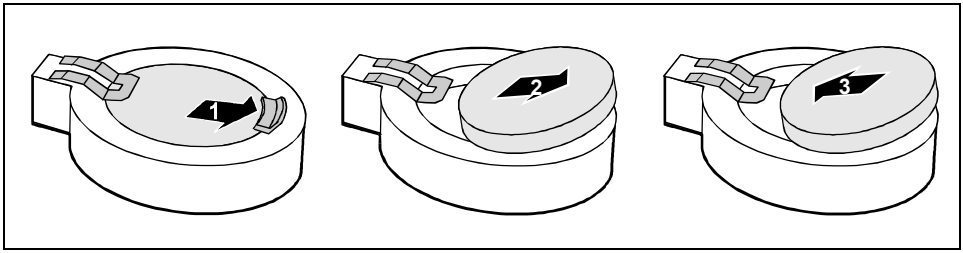
Incorrect replacement of the lithium battery may lead to a risk of explosion!

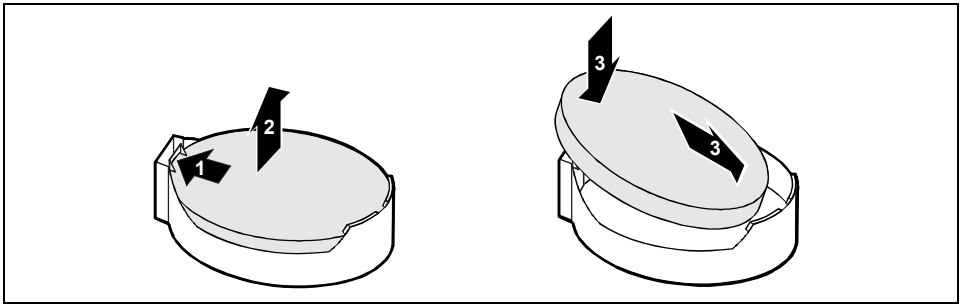
The lithium battery may be replaced only with an identical battery or with a type recommended by the manufacturer.

Do not throw lithium batteries into the household waste. They must be disposed of in accordance with local regulations concerning special waste.

Ensure that you insert the battery the right way round. The plus pole must be on the top!

The lithium battery holder exists in different designs that function in the same way.





- ► Press the locking lug in the direction of the arrow; the battery jumps somewhat out of the holder (1).
- ► Remove the battery (2).
- ► Insert a new lithium battery of the same type into the socket (3).

Glossary

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.
Not all technical terms and abbreviations listed here are valid for the described mainboard.

ACPI	Advanced Configuration and Power Management Interface
AC'97	Audio Codec '97
AGP	Accelerated Graphics Port
AMR	Audio Modem Riser
AOL	Alert On LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
BMC	Baseboard management controller
CAN	Controller Area Network
CPU	Central Processing Unit
CNR	Communication Network Riser
C-RIMM	Continuity Rambus Inline Memory Module
DIMM	Dual Inline Memory Module
ECC	Error Correcting Code
EEPROM	Electrical Erasable Programmable Read Only Memory
FDC	Floppy disk controller
FIFO	First-In First-Out
FSB	Front Side Bus
FWH	Firmware Hub
GMCH	Graphics and Memory Controller Hub
GPA	Graphics Performance Accelerator
I^2C	Inter Integrated Circuit
IAPC	Instantly Available Power Managed Desktop PC Design
ICH	I/O Controller Hub
IDE	Intelligent Drive Electronics
IPSEC	Internet Protocol Security

ISA	Industrial Standard Architecture
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
P64H	PCI64 Hub
PCI	Peripheral Component Interconnect
PXE	Preboot eXecution Environment
RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analogue Converter
RDRAM	Rambus Dynamic Random Access Memory
RIMM	Rambus Inline Memory Module
RTC	Real Time Clock
SB	Soundblaster
SDRAM	Synchronous Dynamic Random Access Memory
SGRAM	Synchronous Graphic Random Access Memory
SIMD	Streaming Mode Instruction (**S**ingle **I**nstruction **M**ultiple **D**ata)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphic Adapter
WOL	Wake On LAN