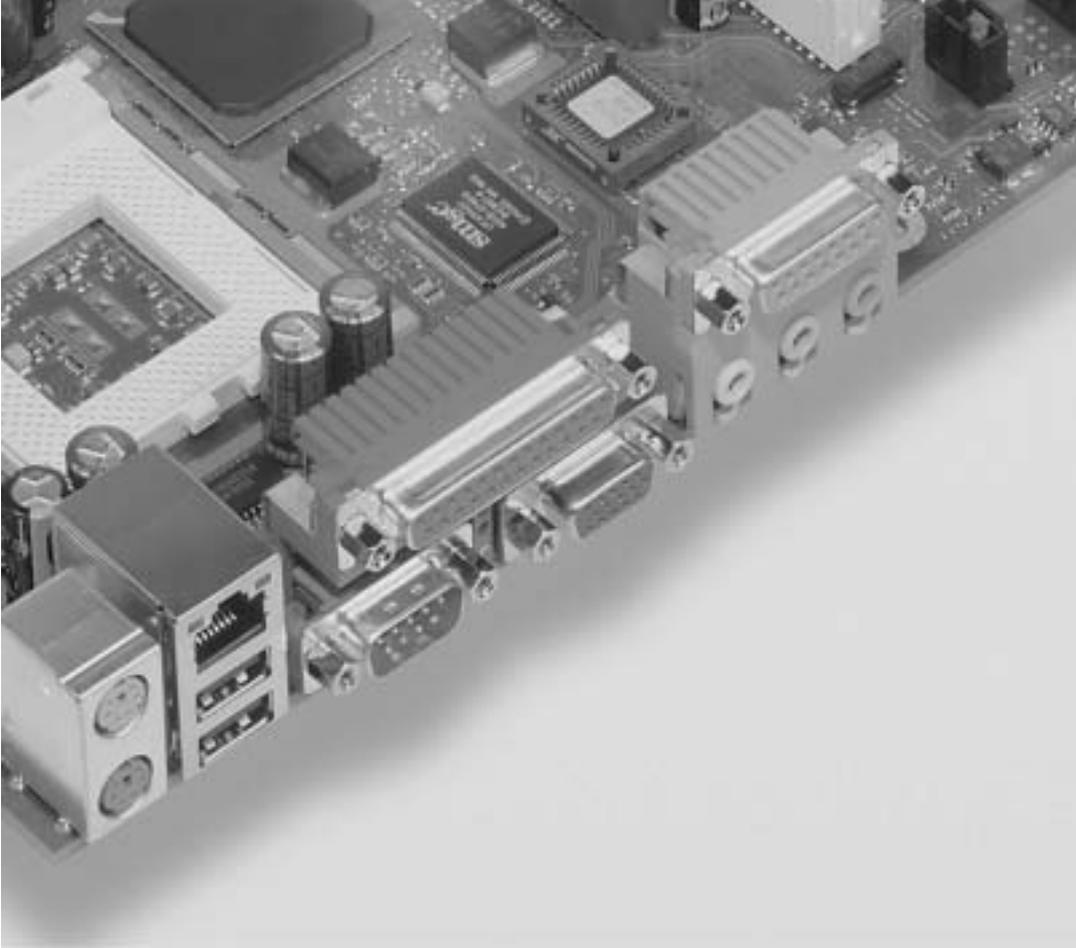


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## Systembaugruppe D1350 / System board D1350



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**Systembaugruppe  
D1350  
System Board D1350**

**Technisches Handbuch  
Technical Manual**

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# Introduction

This Technical Manual describes the system board D1350.

You will find further information in the "BIOS Setup" description.

Further information about drivers is provided in the readme files on the hard disk, on the supplied drivers diskettes, on the "Drivers & Utilities" or on the "ServerStart" CD.

## Notational conventions

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



Pay particular attention to text marked with this symbol. Failure to observe this warning endangers your life, destroys the device, or may lead to loss of data.



Supplementary information, remarks, and tips follow this symbol.

- ▶ 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

Store this manual close to the device. If you pass the device on to third parties, you should pass this manual on with it.



Be sure to read this page carefully and note the information before you open the device.

You cannot access the system board components without first opening the device. How to dismantle and reassemble the device is described in the Operating Manual accompanying the device.

Please observe the safety information provided in the "Important notes" chapter in the device's operating manual.

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

The Primergy L100 is no redundant system. Turn off the system and unplug the power cable before any repairing action.



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 Operating Manual or Technical Manual for the receiving device.

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



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



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

## Information about boards

To prevent damage to the system board or 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 system board, or any other components, for example EMI spring contacts.

Be especially careful with the locking mechanisms (catches, centring pins etc.) when you replace the system board 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 points:

- 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.

## Features

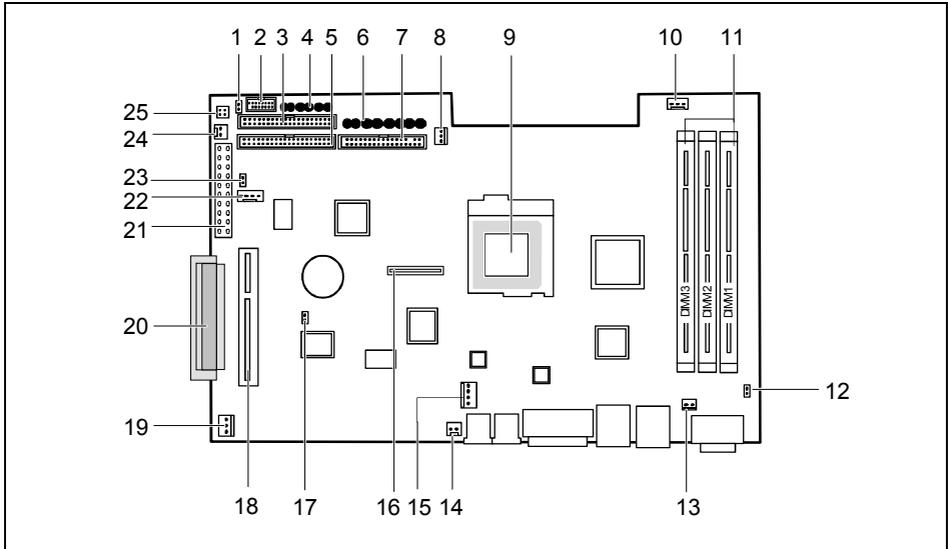
- one processor slot for Pentium III processors with up to 1.20 GHz and 66 /100 / 133 MHz Front Side Bus  
512 Kbyte second level cache
- two 32 bit PCI slots with 33 MHz
- three DIMM slots (PC133) for up to 1.5 Gbyte main memory (SDRAM memory modules)
- Intel 82550PM Ethernet LAN controller with 10/100 Mbit/s

Promise PDC20265R, IDE hard disk controller connected to PCI bus  
ultra DMA100 mode capable, supports PIO modes 0-4

VIA 686B, floppy disk drive controller (possible formats: 720 KB, 1.44 MB, 2.88 MB)

- IPMI server management onboard
- system monitoring
- Security functions:
  - Chipdisk interface
  - Cover monitoring: cover monitoring reports when the cover has been opened without authorisation.
  - Simple error detection and correction in the main memory with an ECC (only for memory modules with ECC)
  - System, Setup and Keyboard password
  - serial port can be deactivated
  - Write protection for floppy disk drive
  - Boot hard disk virus warning function
  - Flash BIOS and EEPROMs (on the memory modules) virus protection function.
- one external serial port (COM1)
- two external USB ports (USB = Universal Serial Bus)
- two LAN ports
- two external PS/2 interfaces for keyboard and mouse
- Real-time clock/calendar with integrated battery backup

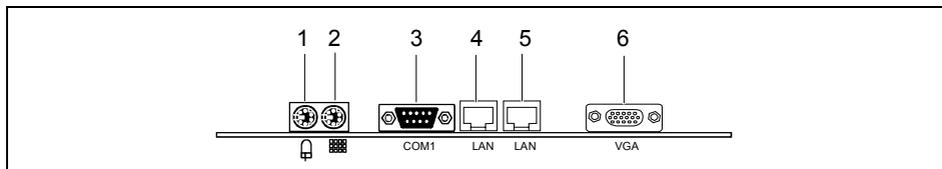
## Interfaces and connectors



- 1 = JP4
- 2 = Connector for LED board/USB
- 3 = Secondary RAID channel
- 4 = Cable for LED board
- 5 = Primary RAID channel
- 6 = Secondary IDE channel
- 7 = Primary IDE channel
- 8 = Connector for fan 2
- 9 = CPU
- 10 = Connector for fan 3
- 11 = DIMM sockets
- 12 = JP5
- 13 = Connector for fan 4

- 14 = RSB (Remote Service Board) power supply
- 15 = IPMB connector
- 16 = Connection for floppy disk drive
- 17 = JP3
- 18 = PCI slot
- 19 = Connector for fan 1
- 20 = PCI slot (low-profile)
- 21 = Power supply (ATX)
- 22 = Power supply for chipdisk
- 23 = JP2
- 24 = Fan for power supply
- 25 = JP10

## External ports



1 = PS/2 mouse port

2 = PS/2 keyboard port

3 = Serial interface COM1

4 = LAN connector

5 = LAN connector

6 = VGA port

## Temperature / System monitoring

Temperature and system monitoring aim to reliably protect the computer hardware against damage caused by overheating. In addition, any unnecessary noise is also prevented by reducing the fan speed, and information is provided about the system status. Cover monitoring protects the system from unauthorised opening.

The temperature and system monitoring are controlled by an onboard controller.

The following functions are supported:

### Temperature monitoring:

Measurement of the processor temperature, measurement of the system temperature with an onboard temperature sensor, measurement of the ambient temperature with an optional temperature sensor.

### Fan monitoring:

Fans that are no longer available, blocked or sticky fans are detected. Blocked or sticky fans are operated with 12 V pulse voltage. Fans removed while the system is switched off are signaled by the *Event* LED when the system is switched on again and processed by the BIOS or the application.

### Fan control:

The four fans are regulated according to temperature.

### Sensor monitoring:

The removal of, or a fault in, a temperature sensor is detected. Should this happen all fans monitored by this sensor run at maximum speed, to achieve the greatest possible protection of the hardware. Temperature sensors removed while the system is switched off are signaled by the *Event* LED and processed by the BIOS or the application.

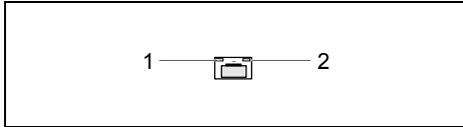
### Cover monitoring:

Unauthorised opening of the cover is detected, even when the system is switched off. However, this will only be indicated when the system is switched on again.

## LAN connector

This system board has an Intel 82550PM LAN controller. The LAN controller is equipped with a 3 KB transmission and receiving buffer (FIFO) and supports WOL function through Magic Packet™. It is also possible to boot a device without its own boot hard disk via LAN. Here Bootix LAN BootP and Intel PXE are supported.

The LAN RJ45 connector is equipped with a yellow and a green LED (light emitting diode).



- 1 = Yellow indicator
- 2 = Green indicator

Green            a connection exists (e.g. to a hub).  
 Yellow        Link Mode:    the LAN connection is active.  
                   WOL mode:    a Magic Packet™ is being received.

## PCI bus resources

### PCI slots

The following table shows an overview of the PCI slots:

PCI slot	64bit/32bit	Description	Bus frequency
1	32 bit	32 bit PCI bus slot	33 MHz / 5 V
2	32 bit	32 bit PCI bus slot	33 MHz / 5 V

### PCI IRQ line x - Assignment of the PCI interrupts

*PCI IRQ Line x* defines which ISA interrupts are used for the separate PCI slots.

If you select *Auto* in the BIOS setup, the interrupts are assigned automatically and no further settings are required.

Multifunctional PCI boards or boards with an integrated PCI-to-PCI bridge can use several PCI interrupts (INTA#, INTB#, INTC#, INTD#). Monofunctional PCI boards (default) only use one PCI interrupt (INTA#) per PCI slot.

The PCI interrupts INTA#, INTB#, INTC# and INTD# are available for every PCI slot.

The same interrupt can be assigned simultaneously to several PCI boards. You should avoid this condition due to reduced performance.

If you use a setting other than *Auto*, the Plug&Play functionality of the system BIOS for the corresponding PCI boards is deactivated.

*Auto* The PCI interrupts are assigned automatically in accordance with the Plug&Play guidelines.

*Disabled* No ISA interrupt is assigned to the PCI interrupt.

3, 4, 5, 7, 10, 11, 12, 14, 15

The selected ISA interrupt is assigned to the PCI interrupt. You may not select an ISA interrupt that is used by a component on the system board (e.g. controller) or an ISA board.

IRQ	Device
IRQ 0	Timer output 0
IRQ 1	Keyboard
IRQ 3	Serial port 2
IRQ 4	Serial port 1
IRQ 6	Diskette
IRQ 7	Printer port
IRQ 8	Real-time clock (RTC)
IRQ 12	PS/2 mouse
IRQ 13	Numeric processor
IRQ 14	Embedded hard disk

## Screen resolution

Depending on the operating system used, the screen resolutions in the following table refer to the system board screen controller. If you are using an external screen controller, you will find details of supported screen resolutions in the Operating Manual or Technical Manual supplied with the controller.

Screen resolution	Refresh rate (Hz)	Max. number of colours
640x480	200	16,7 mio.
800x600	200	16,7 mio.
1024x768	150	16,7 mio.
1057x864	120	16,7 mio.
1280x1024	100	16,7 mio.

\*\* Horizontal values tolerance  $\pm 0.3$  kHz.

Shaded screen resolutions are not supported by LCD monitors (TFT).

## Jumper settings

### IDE RAID / ATA controller – jumper JP2

Supports IDE RAID or ATA interface.

- 1-2* RAID interface (default entry)
- 2-3* ATA interface

### Clear CMOS - jumper JP3

Chooses between normal or Clear CMOS setting.

- 1-2* Normal CMOS setting (default entry). CMOS will not be cleared (default entry).
- 2-3* CMOS settings are not cleared.

### VGA interrupt – jumper JP5

Decides whether VGA can send out IRQ signals to system.

- 1-2* The VGA interrupt function is disabled. VGA cannot send out interrupting signals (default entry).
- 2-3* The VGA interrupt function is enabled. VGA can send out interrupting signals.

### Power on circuit – jumper JP10

The system is powered on by one of the following mechanisms: IPMI or South Bridge.

- 3-5/4-6* Power on by IPMI (default entry).
- 1-3/2-4* Power on by South Bridge.

## Processor's clock speed

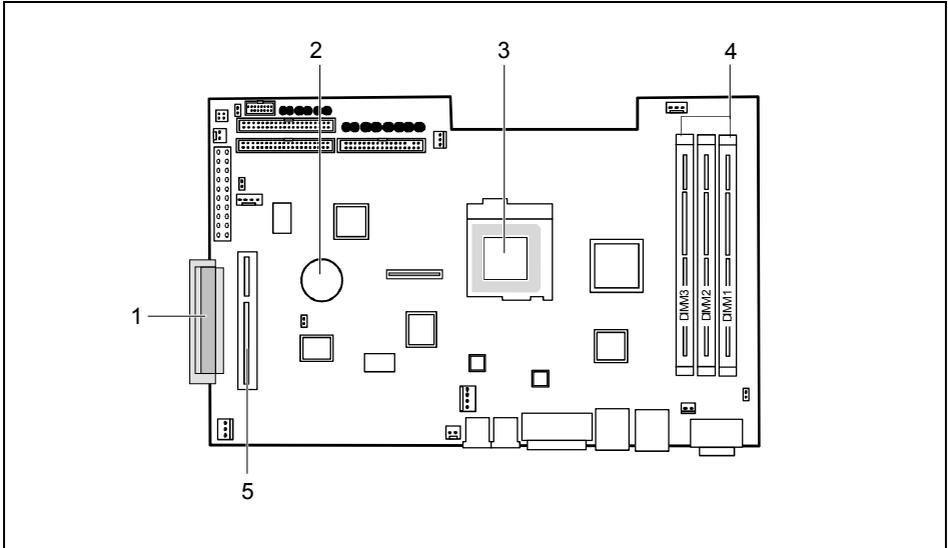
The clock frequency of the processor is set automatically. It cannot be changed manually.

Bit 1	Bit 2	Bit 3	Bit 4	C0			D0	
				Ratio	FSB 100	FSB 133	Ratio	FSB 133
ON	ON	ON	ON	X2	200	266	X4	533
ON	ON	OFF	ON	X2.5	250	333	Reserved	Reserved
ON	OFF	ON	ON	X3	300	400	X8.5	1133
ON	OFF	OFF	ON	X3.5	350	466	Reserved	Reserved
OFF	ON	ON	ON	X4	400	533	Reserved	Reserved
OFF	ON	OFF	ON	X4.5	450	600	Reserved	Reserved
OFF	OFF	ON	ON	X5	500	666	Reserved	Reserved
OFF	OFF	OFF	ON	X5.5	550	733	X5.5	733
ON	ON	ON	OFF	X6	600	800	X6	800
ON	ON	OFF	OFF	X6.5	650	866	X6.5	866
ON	OFF	ON	OFF	X7	700	933	X7	933
ON	OFF	OFF	OFF	X7.5	750	1000	X7.5	1000
OFF	ON	ON	OFF	X8	800	1066	X8	1066
ON	OFF	ON	ON	X8.5	850	1133	Reserved	Reserved
ON	OFF	OFF	ON	X9	900	1200	Reserved	Reserved

## Add-on modules



For all steps described in this chapter pull the power plug out of the mains outlet!



1 = PCI slot (low-profile)

2 = Lithium battery

3 = Processor socket

4 = Memory

5 = PCI slot

Both PCI slots support 3.3 V operating voltage.

## Slot sequence

No sequence concern for PCI slots. Either PCI slot 1 or PCI slot 2 first, then the other.

## Upgrading main memory

These slots are suitable for 128, 256, 512 and 1024 Mbyte SDRAM memory modules. The board supports a maximum of 1,5 Gbytes.

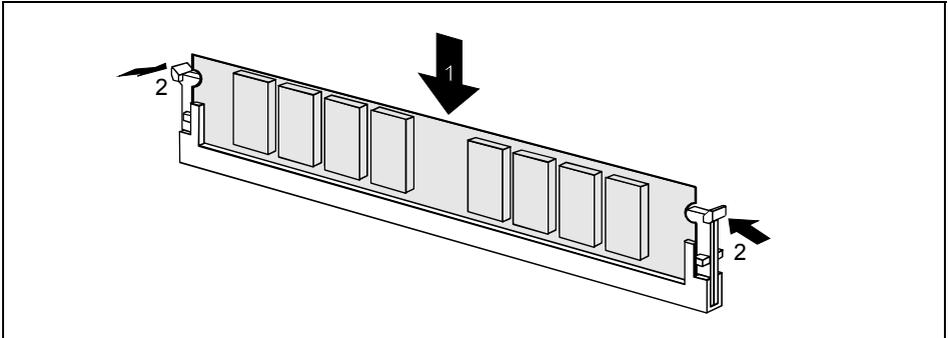
In other words, you fit the first pair to bank 0, and the second pair in bank 1. One memory bank must always be fully equipped with memory modules of the same type.



You may only use buffered 3.3V memory modules. Unbuffered memory modules are not permitted. You may only use unstacked modules.

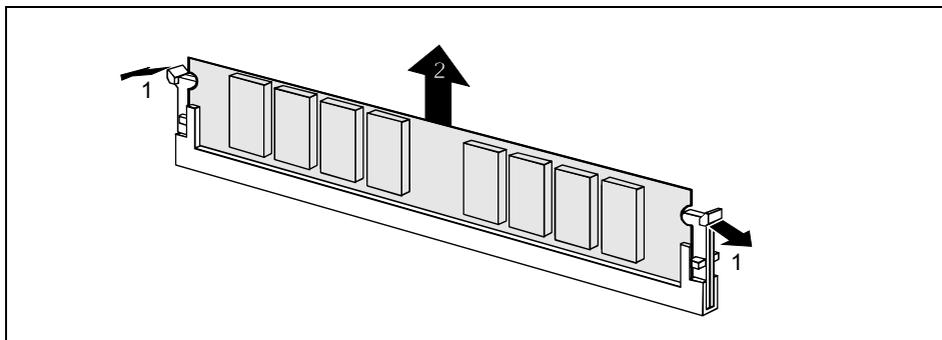
SDRAM memory modules must be designed for a clock frequency of 66 / 100 / 133 MHz (meets PC133 specification).

### Installing a memory module



- ▶ Push the holders on each side of the memory compartment outwards.
- ▶ Insert the memory module in the slot while folding the side holders up until the memory module engages (2).

### Removing a memory module



- ▶ Push the clips on the right and left of the compartment outward (1).
- ▶ Carefully remove the memory module from the compartment (2).

## Replacing the lithium battery

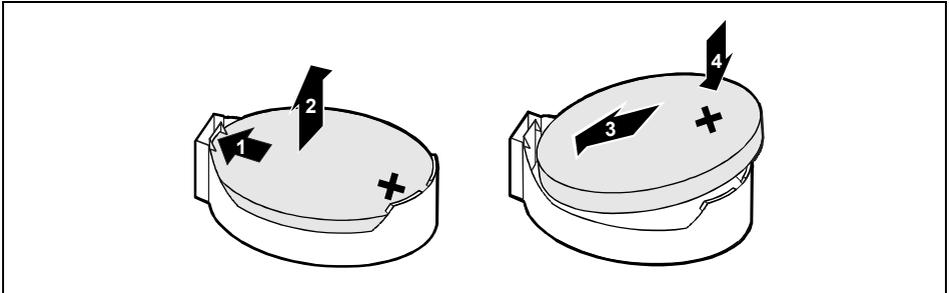


Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer (CR2032).

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

Make sure that you insert the batteries the right way round! The plus pole must be on the top!



- ▶ Lift the contact (1) a few millimetres and remove the lithium battery from its socket (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 system board.

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
CAN	Controller Area Network
CPU	Central Processing Unit
CNR	Communication Network Riser
C-RIMM	Continuity Rambus Inline Memory Module
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
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 <sup>2</sup> C	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
NIC	Networking Interface Card
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 (Single Instruction Multiple Data)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphic Adapter
WOL	Wake On LAN